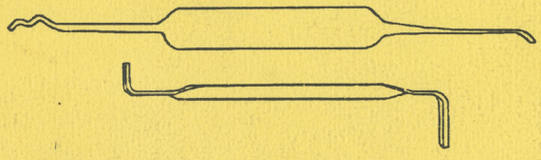
# MANUAL OF
# LOCK PICKING

## THE THEORY, TECHNIQUES AND TOOLS OF LOCK PICKING

A COMPLETE COURSE OF STUDY IN THE ART OF LOCK PICKING



Written and illustrated by

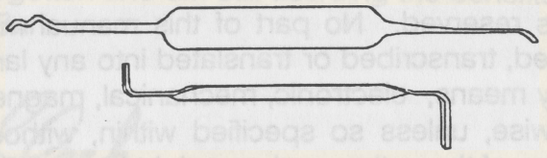
**G. L. "GERRY" FINCH**

**The Locksmith Publishing Corporation**
**850 Busse Highway**
**Park Ridge, Ill. 60068**

# MANUAL OF
# LOCK PICKING

## THE THEORY, TECHNIQUES AND TOOLS OF LOCK PICKING

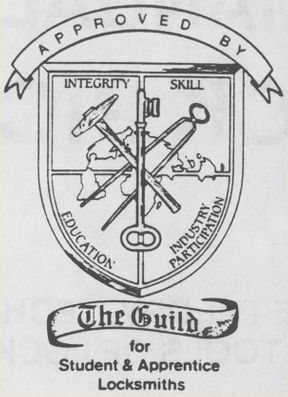
A COMPLETE COURSE OF STUDY IN THE ART OF LOCK PICKING



Written and illustrated by

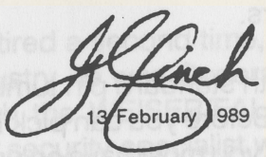
**G. L. "GERRY" FINCH**

**The Locksmith Publishing Corporation**
**850 Busse Highway**
**Park Ridge, Ill. 60068**



## DEDICATION

It is with great respect that I dedicate this manual to a man I have had the privilidge of working for and with. HIDEO HORI, President of the HORI LOCK AND HARDWARE CO. of Tokyo, Japan the man responsible for my desire to seek and strive for the highest level of knowledge and skill in this profession. His philosophy, his knowledge, his teaching, so willingly shared, and most of all his patience and belief in me, I credit for whatever degree of success I have attained in the Locksmith profession. He also taught me a great deal about people and the world around us which has benefited me greatly. Everyone should be as lucky as I was, to have someone who believed in him and saw his potential and was willing to take the time and make the effort to nurture it. Though it all happened many long years ago, I have never forgotten and am still accruing the benefits. My sincere thanks HORI-San.



13 February 1989

## FORWARD

Lock Picking is a skill that can be mastered by anyone willing to invest the time and effort. Skill and ability come from a thorough study of a subject, and long hours of concentrated practice. Practice is not simply picking up a cylinder or a padlock, sitting down in front of the T.V. and going through the motions as so many would be lock pickers do. Real practice is mounting the cylinder in a lock on the door or in a display mount, or the padlock on a hasp and then honing your skills under realistic conditions. All of your attention must be given to the manipulation of your tools and the responses you are receiving from the lock through the tools. You must learn to feel the contact the pick is making with the pins and feel it well enough to determine if the pin has been picked or if the pin stack is bound or not bound. A true professional can identify any of these conditions from the feel he receives through his Pick and Turning Tool.

I have been teaching Lock Picking since 1963. I have taught those with no knowledge of Lock Picking and those who were highly skilled in the art. One thing I find common to all of them is their lack of understanding of the basics of the skill. This is understandable. There are very few sources of information and training available. What works that are available to the Locksmith are very brief and limited in scope. None offer a planned course of study to achieve proficiency. The purpose of this manual is to provide you with a good basic understanding of WHEN a lock can be picked, WHY it can be picked , HOW it can be picked and WHAT tools to use and a detailed method of study to follow to achieve the necessary skill to consistently and successfully neutralize lock cylinders.

This manual is mainly concerned with standard pin tumbler cylinders and there is a good reason for this. Before you can pick High Security or other types of locks and cylinders you must have an understanding and a degree of skill in picking the standard pin tumbler cylinder. Mushroom, Spool and Serrated Pins are also covered in this Manual. Disc Tumbler cylinders are also covered as are common lever type locks and Warded Locks.

Like all other skills, I can only present you with the knowledge and techniques. How proficient you become will depend entirely upon the amount of effort and time you are willing to invest. Skill and ability come from a thorough study of the subject and long hours of practice. May you be willing to invest these. My best wishes go with this manual. May you profit greatly from your investment in it.

## THE AUTHOR

G. L. "Gerry" FINCH, a Locksmith, has been teaching organized Lock Picking classes for the Associated Locksmiths of America and various state and regional Locksmith Associations since 1965 throughout the United States, Hawaii and Canada. He has written several articles on the subject for the various trade journals. Gerry retired from the United States Air Force in December 1964. Prior to his retirement he was an Instructor with the U. S. Army's Technical Intelligence Center in the DEFENSE AGAINST METHODS OF ENTRY (D.A.M.E.) course at the now defunct Fort Holabird in Baltimore, Md.

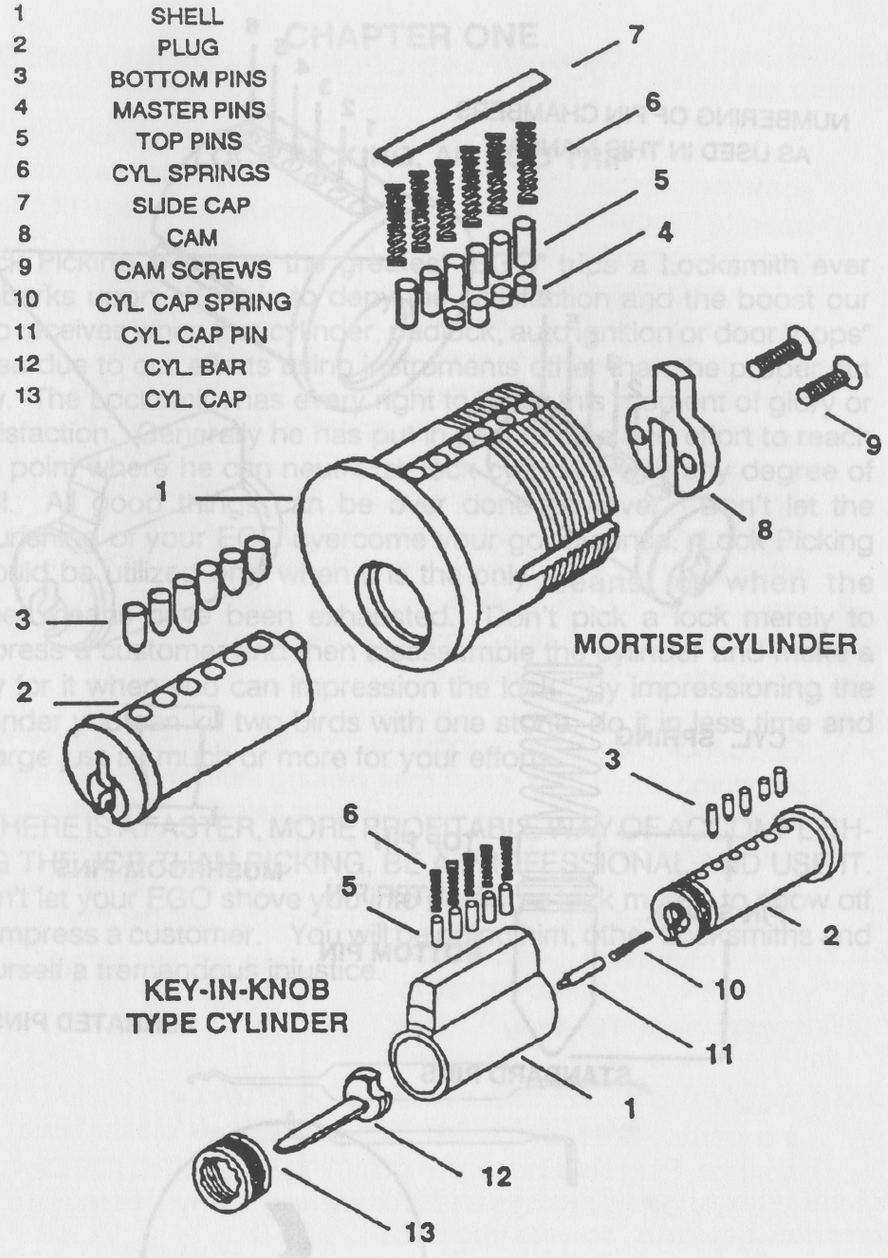
This manual is based on these many years of experience successfully teaching many hundreds of Locksmiths and Security Personal from Industry and government, and on the personal methods of teaching the subject he devised while with the Technical Intelligence Center.

Gerry is well known as a Locksmith and Instructor throughout the U.S., Canada and Hawaii. He has been elected to the LOCKSMITH LEDGER's HALL OF FAME by his peers. He has been a member of the ASSOCIATED LOCKSMITHS OF AMERICA since 1964 and has been teaching classes on Interchangeable Cores, Master Keying and Professional Locksmithing as well as Lock Picking since his retirement from the Air Force. Gerry is also the author of the MANUAL OF MASTER KEYING, the SERVICING INTERCHANGEABLE CORES manual and SERVICING SARGENT INTERCHANGEABLE CORES.

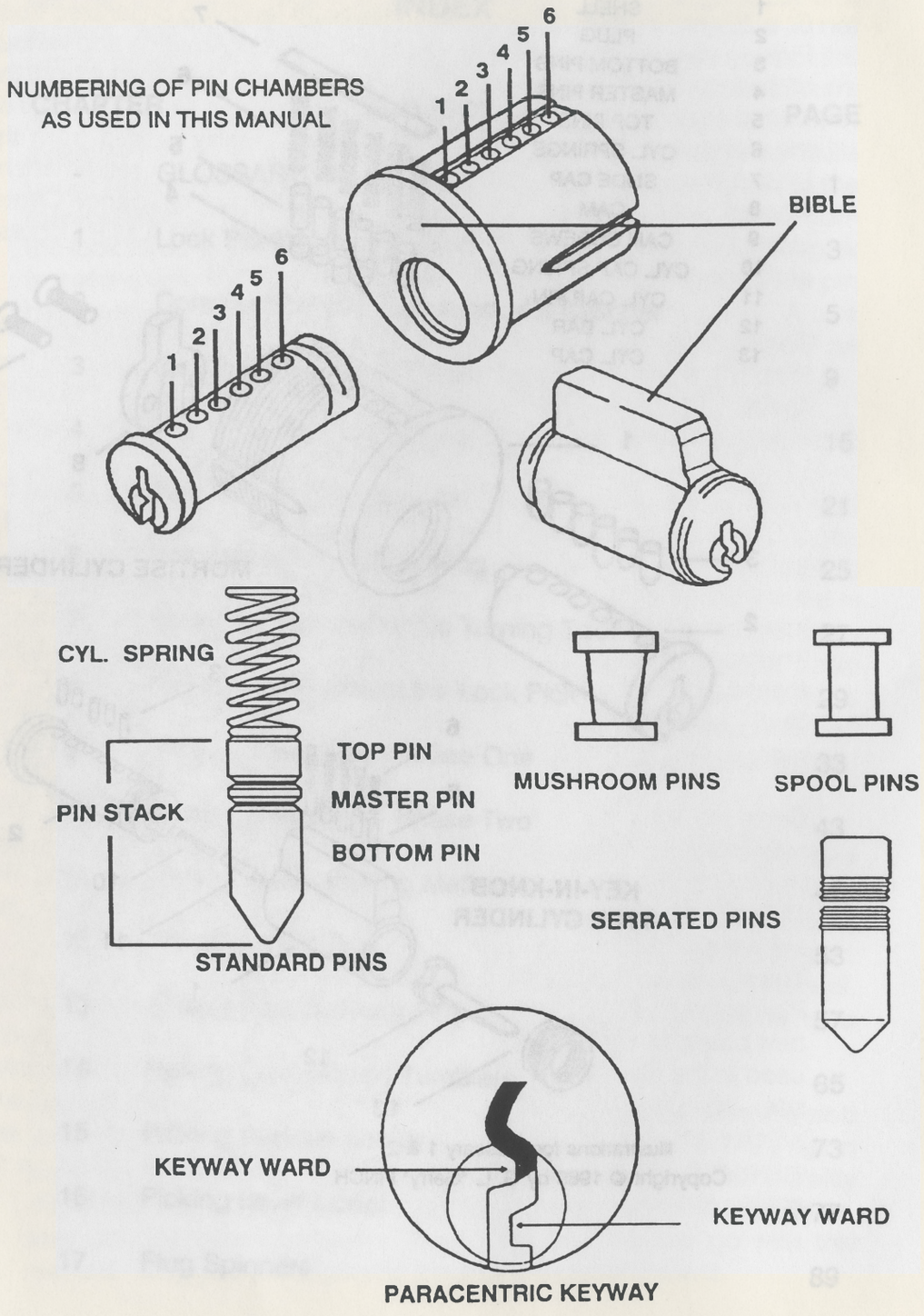
Gerry retired a second time, from industry on March 27, 1987. While with industry he was General Manager of Keying and Security Systems with the WEISER/FALCON Lock Companies, was Lock and Cylinder security specialist with ADAMS RITE, was a Technical Consultant and Advisor with the HORI LOCK MANUFACTURING CO. in Tokyo, Japan. With LAB Manufacturing, he designed a line of Lock Picking tools and other tools. Also while with LAB he designed the new charts currently in the LAB kits as well as the new charts currently used in the new SCHLAGE, CORBIN and RUSSWIN original pinning kits. He is currently writing a column for the Locksmith Ledger and articles for various trade journals as well a teaching classes and supplying Master Key systems to industry. He is still called on for advise and expertise by industry and the Locksmith profession.

# INDEX

1 SHELL
2 PLUG
3 BOTTOM PINS
4 MASTER PINS
5 TOP PINS
6 CYL. SPRINGS
7 SLIDE CAP
8 CAM
9 CAM SCREWS
10 CYL. CAP SPRING
11 CYL. CAP PIN
12 CYL. BAR
13 CYL. CAP




Illustrations for Glossary 1 & 2


NUMBERING OF PIN CHAMBERS
AS USED IN THIS MANUAL
1
2
3
4
5
6
BIBLE
CYL. SPRING
TOP PIN
MASTER PIN
BOTTOM PIN
PIN STACK
STANDARD PINS
MUSHROOM PINS
SPOOL PINS
SERRATED PINS
KEYWAY WARD
KEYWAY WARD
PARACENTRIC KEYWAY

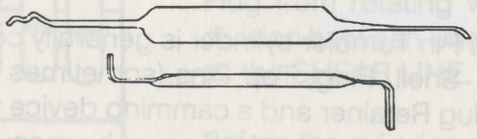
## GLOSSARY

# CHAPTER ONE

## LOCK PICKING, AN EGO TRIP

Lock Picking is one of the greatest "EGO" trips a Locksmith ever embarks upon. Who is to deny the satisfaction and the boost our ego receives when that cylinder, padlock, auto ignition or door "pops" open due to our efforts using instruments other than the proper cut key. The Locksmith has every right to enjoy this moment of glory or satisfaction. Generally he has put in a lot of time and effort to reach the point where he can neutralize lock cylinders with any degree of skill. All good things can be over done however. Don't let the nourishing of your EGO overcome your good sense. Lock Picking should be utilized only when it is the only means, or when the other means have been exhausted. Don't pick a lock merely to impress a customer and then disassemble the cylinder and make a key for it when you can impression the lock. By impressioning the cylinder you can kill two birds with one stone, do it in less time and charge just as much or more for your efforts.

IFTHERE IS A FASTER, MORE PROFITABLE WAY OF ACCOMPLISHING THE JOB THAN PICKING, BE A PROFESSIONAL AND USE IT. Don't let your EGO shove you into picking a lock merely to show off or impress a customer. You will be doing him, other Locksmiths and yourself a tremendous injustice.



# CHAPTER TWO

## CONSTRUCTION AND OPERATION OF A CYLINDER

I define Lock Picking as the act of neutralizing a lock cylinder with something other than the properly cut key that was designed to operate the cylinder. This statement implies the usage of specialized tools designed for this specific purpose, however, it takes much more than just possessing the proper tools. You must have an excellent knowledge of the construction and operation of the cylinder. You must be able to identify every part in a cylinder, its purpose for being there and its working relationship with other working parts. You must understand construction and operation of the cylinder so well that you can visualize each and every part of the cylinder in either the locked or neutralized condition and be able to visualize exactly what is happening to any part of the cylinder as you act upon it and what effect this part is having on the other parts. You wouldn't attempt to manipulate a Safe Lock without this knowledge, yet all too many Locksmiths ignore one or more of the knowledges I have listed below when attempting to pick a lock.

Good lock pickers, like good Doctors are able to visualize what they are doing when they insert their picking instrument into the cylinder. When they insert their pick and manipulate the pins, they see in their "minds eye" what the reaction of the pin is to their maneuvering. This can only be done by possessing a thorough knowledge of the construction and operation of the particular cylinder they are attempting to neutralize.

### CONSTRUCTION:

A standard Pin Tumbler cylinder is generally comprised of the following parts: Shell, Plug, Top Pins,(sometimes Master Pins), cylinder springs, Plug Retainer and a camming device that can be configured in many different ways and is known by many different names. See Figure 1.

The Cylinder Springs and Top Pins are loaded into the Shell and the Bottom Pins (and Master Pins if present) are loaded into the Plug which in turn is inserted into the Shell. Some form of retaining device is placed at the back of the Plug or Shell to prevent the accidental

removal of the Plug. Often the camming device serves as a Plug retainer also.

Regardless of the type of Pin Tumbler Cylinder, Mortise, Rim, Auto, Desk, Switch, etc. they are all constructed basically as described above and will contain the same basic parts.

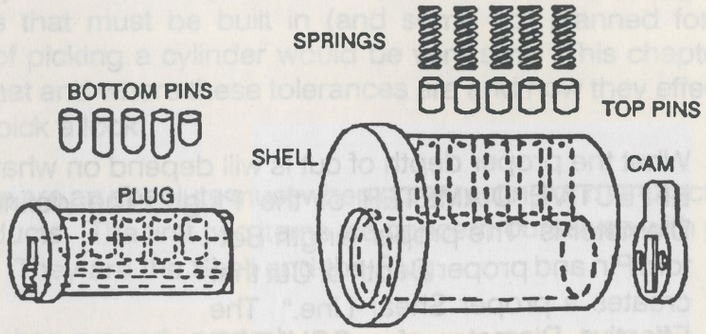



FIGURE 1

## OPERATION:

Shown in Figure 2 is an X-Ray view of a standard Mortise cylinder in the LOCKED condition. With no key in the cylinder the cylinder Springs are forcing the pin stacks (Top and Bottom Pins) down into the Plug. Note that it is the TOP PINS, under spring pressure that are down across the division between the Plug and Shell (Figure 3) and are preventing the Plug from rotating with the Shell. The division between Shell and Plug is known as the SHEAR LINE.

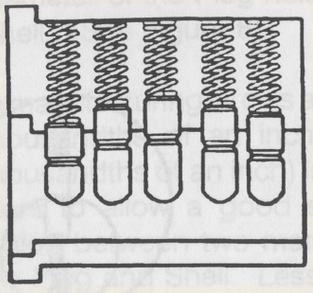


FIGURE 2

Before the cylinder can supply the force to activate or engage whatever mechanism it is housed in, the obstruct ion created by the Top Pins across the Shear Line must be removed. To do this a properly cut Key is used.

Each of the Bottom Pins shown in Figure 2 are of a different length. To raise each stack of pins to a point where the split between them is located at the Shear Line requires different depths of cuts for each stack of pins as shown in Figure 4. Figures 4 and 5 shows the cylinder in the UNLOCKED condition.

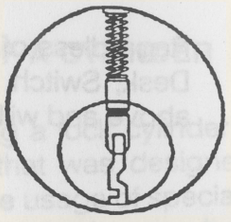


FIGURE 3

What the proper depth of cut is will depend on what is known as the EFFECTIVE DIAMETER of the Plug. The definition of Effective Diameter is "The proper length Bottom Pin and proper Depth of Cut that creates a proper Shear Line." The Effective Diameter of a SCHLAGE Plug is .500 thousandths of an inch. The Effective Diameter is not the true diameter of the Plug. The true diameter of a SCHLAGE Plug is around .505" thousandths of an inch. A number one (1) Bottom Pin which measures .180" will require a key to be cut of .320 thousandths of an inch to create a proper Shear Line. (.180" + .320" = .500").

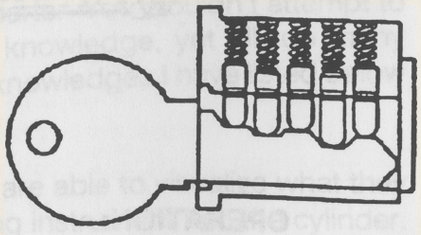


FIGURE 4

Generally a cylinder is picked because the key to it doesn't exist or is unavailable. Thus we must attempt to duplicate the actions of a properly cut key with something other than the proper key.

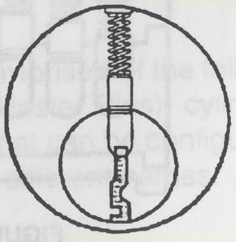


FIGURE 5

# CHAPTER THREE

## WHY LOCKS CAN BE PICKED

Why is it possible to pick a lock cylinder? There is only one word that adequately answers that question, TOLERANCE. Without the various tolerances that must be built in (and some not planned for) our chances of picking a cylinder would be very slim. This chapter will explain what and where these tolerances are and how they effect our efforts to pick a lock.

Tolerances are an absolute must when constructing or manufacturing most products. The first two items we concern ourselves with prove this point. They are the Shell and the Plug.

The Plug when properly neutralized must rotate freely within the Shell in order to supply the force or movement necessary to ctivate the mechanism the Cyl inder is housed in. This means the OUTSIDE diameter of the Plug must be somewhat dif ferent than the INSIDE diameter of the Plug hole in the Shell. (See Figure 6)

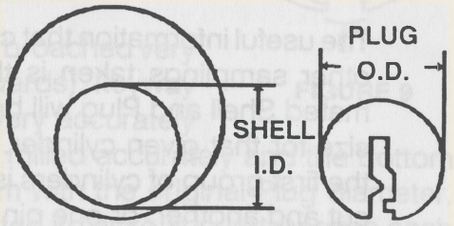



FIGURE 6

In manufacturing circles a tolerance of .0025 thousandths of an inch (two and a half thousandths of an inch) is considered sufficient to allow a good sliding or rotating action between two mating parts such as the Plug and Shell. Less than .0025 is too tight for proper turning action and more than .0025" is considered to be a loose or sloppy fit. To obtain this .0025", the difference in dimension between the two parts must be .005" of an inch. Now if the Plug were perfectly centered within the hole in the Shell, there would be an even tolerance at

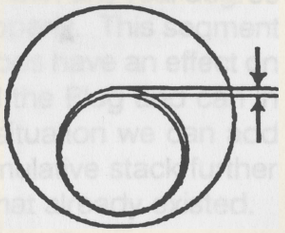


FIGURE 7

all points around the circumference of .0025". However, the Plug rests on the bottom of the hole therefore the entire tolerance of .005" is located between the outside diameter of the Plug and the inside diameter of the Shell at the top of the Plug as shown in Figure 7.

The tolerance of .0025" is an ideal figure, BUT, not one that is commonly found in the manufacture of lock Shells and Plugs today. Seldom does that tolerance between the Shell and Plug come close to this figure regardless of the manufacturer.

The stated and ideal difference between the Plug and Shell is very seldom found in todays pin tumbler cylinders. When the actual difference is measured for any given group of cylinders (Shell and Plug) of any manufacturer the dimensions are generally quite different. Without mentioning any names, a sample listing of these dimensions for two well known manufacturers cylinders are shown in Figure 8. Many more samplings were taken but the figures shown are indicative of all and better than a great many.

The useful information that can be derived from Figure 8 and the many other samplings taken is that the average tolerance between any mated Shell and Plug will be about one third of the stated increment size for that given cylinder. For example if the increments used for the first group of cylinders is .015, that is, the difference between one cut and another, or one pin and the next one, the average difference between the Shell and the Plug is .006 thousandths of an inch, slightly more than one third of a given increment (.015"). This means that the tolerance between the Plug and Shell at the SHEAR LINE will be .006", one third of an increment. A side note, this should give you a clue to

| | SHELL I.D. | PLUG I.D. | TOLERANCE |
|---|---|---|---|
| A | .5095 | .503 | .0065 |
| | .511 | .603 | .008 |
| | .508 | .503 | .005 |

**Average Tolerance is .006**

| | | | |
|---|---|---|---|
| B | .5165 | .506 | .0105 |
| | .517. | .5068 | .0102 |
| | .513 | .5068 | .0062 |
| | .519 | .5075 | .012 |

**Average Tolerance is .0097**

**FIGURE 8**

why badly cut keys will often open cylinders they were not intended to.

The average difference for the second group is .0097 and that is over one half an increment for this particular brand of cylinder. No wonder that a key cut to a certain depth will often create a Shear Line for a pin one increment different when all the remaining tolerances are included.

Other tolerances that play just as important a role in making it possible for us to pick a lock must also be taken into consideration. Let's look at these. Regardless of how minor a tolerance may be, it must be taken into consideration because it, along with other tolerances accumulate and have a definite effect on the "pickability" of a cylinder.

In most brass cast or extruded brass Plugs, broaching the Keyway removes a small portion of the Plug. (Figure 9)

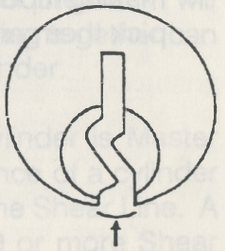


FIGURE 9

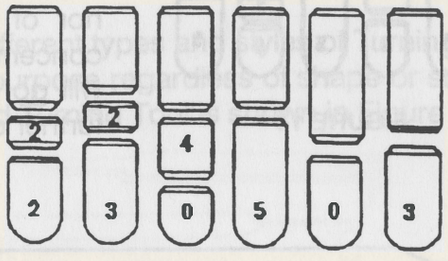
In days gone by, a quality Plug was broached very accurately. That is, the grooves (wards), keyway width, height and angles were all very accurately located. The proper key was also milled accurately and the bottom of the key shaved so as to conform with the original Plug diameter. The proper key when inserted, seated so as to accurately raise each pin to the proper Shear Line if it were accurately cut. With proper broaching of the Plug and proper milling of the Key, the small segment of the arc on the bottom of the plug that was removed added little or no tolerance to the accumulation of tolerances between the Shell and the Plug. Today, seldom is a Key "shaved" to match the arc or is the milling of the key or broaching of the Plug done with any real degree of accuracy therefore a key seldom indexes properly. This segment of metal removed from the bottom of the Plug does have an effect on the tolerance that exists between the Shell and the Plug and can in some cases be significant. So in an extreme situation we can add another half a thousandth (.0005") to our accumulative stack further increasing the one third or one half increment that already existed.

Another tolerance that can increase our total is a flat existing at the top of the Plug. In some cases this is deliberately placed there by the manufacturer and in others by an amateur or careless Locksmith. This can add .005 to .014 to our total. See Figure 10.

Drilling the pin chambers in the Plug and Shell is done in one of two ways. Some manufacturers will drill the chambers one at a time while others will drill all chambers at the same time by using "gang drill" set ups. Either way will produce chambers of varying diameters in the same Plug or Shell. Every time a drill bit is used its diameter changes minutely, and over several thousand or even hundreds of uses this can become a significant amount. The "gang drill" method of drilling pin chambers will produce more and considerably different dimensions from chamber to chamber than will drilling all the chambers with the same drill bit. Because the "gang drill" method employees five or six different drill bits, the variance of chambers dimensions, location and concentricity will be considerably greater than Plugs and Shells drilled by one single drill bit. Also just how long a company will use a drill bit or set of bits to get the "maximum bang for the buck" will effect the above factors. Drilling both the Shell and Plug together can also have an effect on the pick resistance of the cylinder.

One last factor that effects the "pickability" of a cylinder is Master Keying. Master Keying has an effect on the resistance of a cylinder to picking. A non-Master Keyed cylinder has only one Shear Line. A Master Keyed cylinder can have from two to 2,000 or more Shear Lines.

As stated in Chapter 15 of the MANUAL OF MASTER KEYING by this author, "Master keying reduces the security of a lock or cylinder. The degree of reduction of security is in direct proportion to the complexity of the system desired." The more complex a Master Key system is, the less security a cylinder in the system will provide. Master Keying




| | |
|---|---|
| 230503 | 430503 |
| 234503 | 434503 |
| 250503 | 450503 |
| 254503 | 454503 |

FIGURE 13

is accomplished by adding Master Pins to a cylinder to create Shear Lines for the additional keys required. What is not understood by the layman who request or specify the use of Master Key systems (and many Locksmiths as well) is that as we create the Shear Lines for additional keys, we are also creating some unintentional Shear Lines. These Shear lines are not for the keys specified in the system, so keys are not usually cut to them except when one is used as a Sub-Master Key. The key that is cut to operate one of these unplanned Shear Lines is called an "Incidental Master Key."

As shown in Figure 13, the use of a Master Pin in three chambers of a five or six pin cylinder will create eight (8) Shear Lines. The eight Shear Lines are shown. This means that there are eight possible keys we could cut to operate this cylinder.

A six pin cylinder, Figure 14 with one Master Pin in each chamber will contain sixty four (64) different Shear Lines. Sixty four different keys can be cut that will operate this one cylinder.

What does all this mean to the pick resistance of a cylinder? The answer should be obvious. Instead of having to create a single Shear line, a Master Keyed cylinder offers us numerous Shear Lines, any one or combination of, if created will neutralize the cylinder.

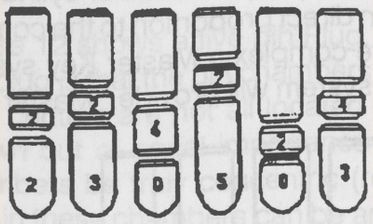


FIGURE 14

Of all the foregoing reasons why we can pick a Pin Tumbler cylinder, the most important one is the fact that the pin chambers will not all be in perfect alignment nor of the same diameters or concentricity. See Figure 12. We will go into much greater detail further on.

***The MANUAL OF MASTER KEYING is available from the author of this manual.***

# CHAPTER FOUR

## THE TOOLS OF LOCK PICKING

### TURNING TOOLS

As I have stated several time in several ways "when we pick a lock cylinder, we are neutralizing it with something other than the properly cut key". What is this "something other". It is actually two items, a Lock Pick and a Turning Tool. Of these two tools, the Turning Tool is given the least amount of consideration when it comes to selecting a set of picking tools, yet it is every bit as important a tool as is the pick you select. Selecting the proper Turning Tool and a knowledge of its proper use is of the utmost importance if you are ever to achieve any great amount of success with lock picking.

For years the Turning Tool has been called a Tension Wrench. This is incorrect. This tool does not apply tension but applies a Torque or turning force. Some how I just can't get up the courage to call it a Torque Wrench, though in the broadest sense of the word it is. When I think of Torque Wrenches I associate them with heavy equipment, therefore I have settled on the term Turning Tool. This name, Turning Tool, is truly descriptive of the tool. It is used to apply turning force.

There are several different types and styles of Turning Tools. All are used for the same purpose regardless of shape or style. The basic and most often used Turning Tool is shown in Figure 15.

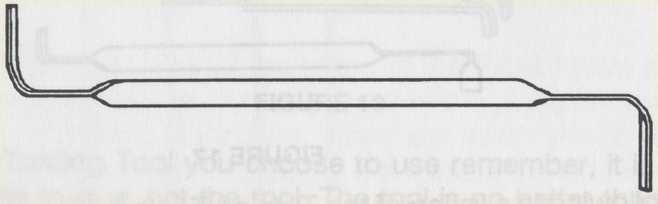


FIGURE 15

Most all Turning Tools sold commercially are all of one size and thickness. I have found these to be unacceptable. Little or no thought has been given to the size, width or intricacy of the keyways of the various cylinders. No one Turning Tool can possibly do the job. Figure 15 shows a standard Turning Tool sold by many Locksmith Suppliers individually or as a part of a Pick Set. Note that both ends of the tool, (theTangs) are the same lengths.

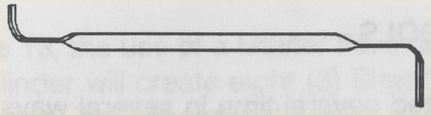


FIGURE 16

Because I consider commercial Turning Tools unacceptable, I have designed my own Turning Tools. Figures 16, and17 show the Turning Tools I have designed and are being manufactured and marketed by LAB. Each one differs from the other in metal thickness, metal width and flexibility. The thickness of the metal determines the flexibility. The width of the metal determines the width of the tang. There are three different widths and thicknesses. See Figure 18. Note that these Turning Tools have a different length tip on each end. The short tip is used for those cylinders whose Plug face is flush with the surface of the locking device and the long end for those cylinders that are recessed such as in some Key-In-Knob locksets. Also note that an additional right angle twist has been put on some of the tools Figure 17. This is for use those times the cylinder is set close to the jamb, or some other obstruction is present preventing the use of a standard Turning Tool.

The Turning Tools shown in Figures 16, 17, and 19 are manufactured by LAB and sold through Locksmith Distributors and myself. These are the same Turning Tools I designed years ago for my own use.

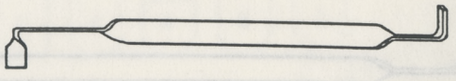
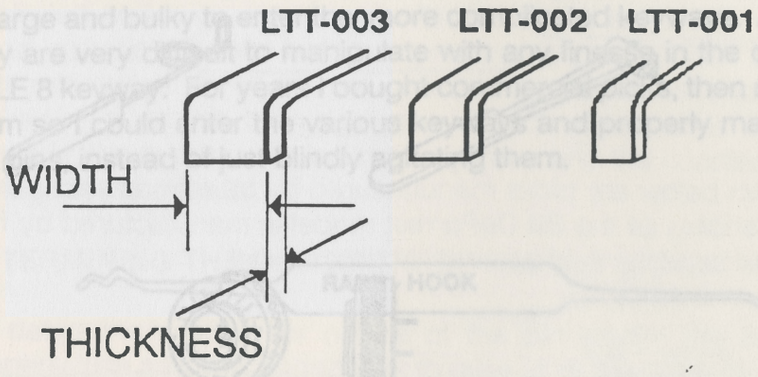


FIGURE 17

The following is a listing of the Turning Tools being marketed by LAB and are what I use. Figure 18. The Turning Tool in Figure 19 is also made by LAB. They can be purchased individually from stocking distributors.

| ORDER PART NO. | WIDTH OF MATERIAL | MATERIAL THICKNESS HEAVY | MEDIUM | LIGHT |
|---|---|---|---|---|
| LTT-001 | .075 | .042 | .030 | .025 |
| LTT-002 | .093 | .042 | .030 | .025 |
| LTT-003 | .125 | .042 | .030 | .025 |




**NOTE:**
The type of Turning Tool shown in Figure 17 is currently manufactured in the following sizes:
LTT- 002 Medium (.093" Thickness, .030" Width) and
LTT- 003 Medium (.125" Thickness, .030" Width)

**FIGURE 18**

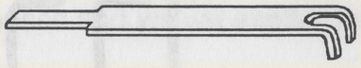


**FIGURE 19**

Whatever Turning Tool you choose to use remember, it is you that supplies the torque, not the tool. The tool is no better than the skill and finise you acquire to use it, so spend the necessary time to learn to use it properly. Don't take the Turning Tool lightly if you want to succeed.

Shown below are some additional types of Turning Tools available from various manufacturers and distributors. With the exception of the last five tools shown, the others are attempts by their designers to produce a tool that will provide the proper torque or turning pressure with little or no help from the user. I do not use them because I feel that only I can feel and determine the necessary amount of torque needed. Also the amount of torque used can vary from pin to pin in some cylinders. This is discussed later in detail.

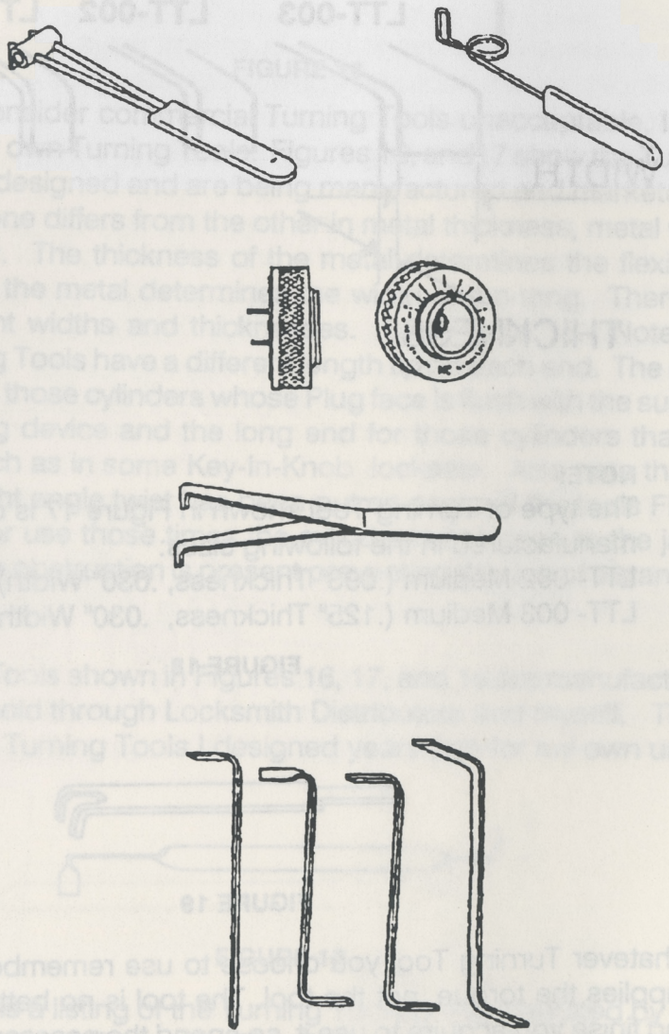


FIGURE 20

## LOCK PICKS

Beginning with the first warded type locks in Europe, Locksmiths made their own picking tools. Sometime around the mid or late 1930's, "ready made" lock picks became available commercially. Very few if any changes have been made in the basic design of the picks with the exception of adding various types of handles since their first appearance on the market. What changes their have been, have been made by the better Lock Pickers who design and make their own Lock Picks to accommodate their method or style of picking. I too, have been doing this for years. Most commercial Lock Picks are to large and bulky to enter the more complicated keyways. Actually, they are very difficult to manipulate with any finesse in the common YALE 8 keyway. For years I bought commercial picks, then modified them so I could enter the various keyways and properly manipulate the pins, instead of just blindly agitating them.

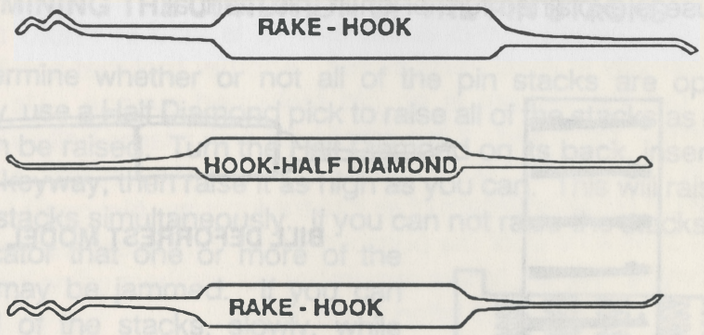



**FIGURE 21**

All of the many style picks shown in the various catalogs are based on three basic types. The Hook or Curved Pick, the Half Diamond and the Rake. Figure 21. The Hook pick comes in several different configurations as does the Rake. Each of these types of picks are used for different purposes and we will explain this later.

Shown in Figures 21 and 22 are some of the Picks I have designed for my own personal use. Actually most of the picks shown are just refinements of the old standards. They are much smaller in overall dimensions so as to enter and easily manipulate the pins of even the most complicated of keyways. Note also that they are double ended and do not have handles. We will go into the details of these picks when we cover the specific methods of neutralizing cylinders.

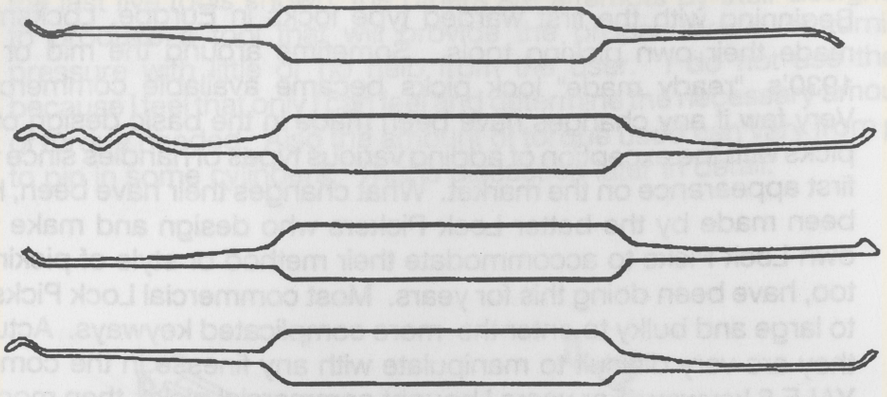
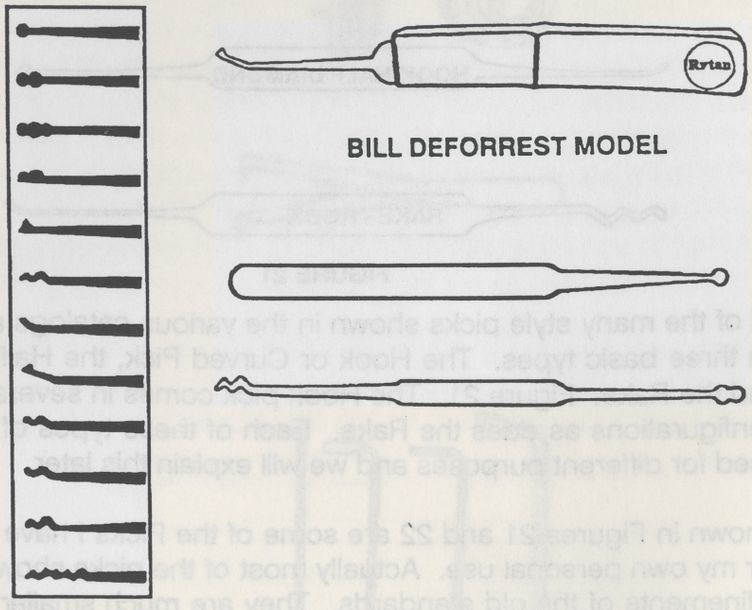


FIGURE 22

Shown below are picks manufactured by other manufacturers. The pick shown as the Bill DeForrest model is manufactured by RYTAN. Its use is explained further on in this manual.




BILL DEFORREST MODEL

FIGURE 23

# CHAPTER FIVE

## BEFORE YOU PICK THE LOCK

I have watched all too many Locksmiths fail in their efforts to pick a lock because of a lack of preparation. They approach the lock, select their tools, then step right up and start picking. All to often ending up frustrated and foiled for all their efforts.. There are certain steps all good lock pickers take before attempting to pick a lock. They first determine whether or not the cylinder is operational and can be picked. To do this they determine if each pin stack is operating properly, the number of pins in the cylinder and the condition of the springs in the cylinder.

### DETERMINING THE CONDITION OF THE PIN STACKS

To determine whether or not all of the pin stacks are operating properly, use a Half Diamond pick to raise all of the stacks as high as they can be raised. Turn the Half Diamond on its back, insert it fully into the keyway, then raise it as high as you can. This will raise all of the pin stacks simultaneously. If you can not raise the stacks, this is an indicator that one or more of the stacks may be jammed. If you can raise all of the stacks, slowly, while holding the stacks up, pull your pick forward and allow the stacks to drop one at a time. Figure 24. If a stack is operating properly, it will drop and you will feel it. If it is not, and drops very sluggishly or not at all, you will still feel it and know that something is preventing the proper operation of the stack.

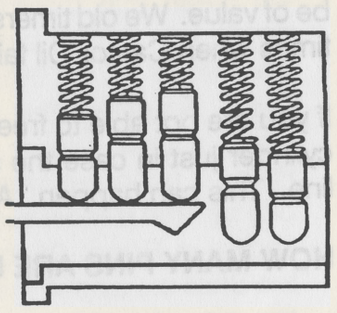


FIGURE 24

One of the most common reasons for a pin stack to freeze up or operate very sluggishly is some form of oil being used to lubricate the cylinder. Graphite is also famous for gumming up the pin stacks when used excessively in a humid, damp climate. The world is full of well intentioned, but poorly informed people who believe that if something doesn't work properly, lubricate it. Lubricating a poorly

operating cylinder seldom is of any value. The causes for a malfunctioning cylinder are generally such things as foreign objects in the keyway, pins becoming "gummed up" because of the amount or type of lubrication used, wear of pins or damage to pin chamber edges which can cause small pins (master pins) to jam between the Shell and Plug, or the Cam on the cylinder being loose.

## FREEING UP A JAMMED PIN STACK

What do you do if a stack is bound up? Their are several different types of solvents (cleaners) available that will cut grease and oil very satisfactorily. Some of these are sold by Locksmith Distributors (LPS Cleaner,and others), some can be purchased from Auto Parts stores (GUNK, Carburetor Cleaner,etc.) and from Electronics parts stores (Contact Cleaner). Spray this freely into the keyway, then work the pins in all stacks up and down with a Rake or cut key to spread the cleaner. Next remove as much of the cleaner as possible by blowing air into the keyway. Don't put your mouth up to the keyway to do it, unless you like the taste of cleaner or don't mind an eyeful. Use some form of "canned compressed air". It is sold in Photo stores and occasionally in Auto Parts stores. Another tool that can be used to blow out the cleaner is an old fashioned syringe. Us old timers remember them well. It is a small tube with a large hollow rubber ball on the other end. You insert the tube into the keyway, squeeze the ball and it blows a stream of air into the keyway. Not nearly as effective in this case as it is for the purpose it was truly designed for, but it can be of value. We old timers remember our mothers using it on us those times when Castor Oil failed to do its job.

If you are not able to free up the pin stack you should try to pick the cylinder just in case the stack happens to be froze up at the shear line. This can happen. At least try it for a few seconds

## HOW MANY PINS ARE IN THE CYLINDER?.

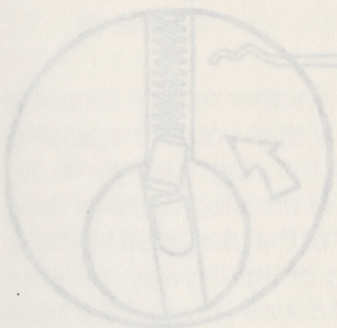
While you are checking your pin stacks by pulling the pick forward and letting them drop, count the number of pin stacks. Is it a five, six or seven pin cylinder? It does make a difference as to the number of pins in a cylinder. A five or six pin cylinder will not offer the difficulty a seven pin cylinder will. One of the characteristics of a good lock picker is that he knows where he is at in the cylinder during certain type picking operations and to do this he must know how many pins

there are in the cylinder. As you pull the pick forward and let the stacks drop, count the number of stacks.

## DETERMINING THE CONDITION OF CYLINDER SPRINGS

At this same time it is possible to determine the condition of the Cylinder Springs. The condition of the Springs is one of the determining factors as to the degree of difficulty the cylinder will offer to picking. Generally cylinders with springs that have a heavier pressure are easier to pick than cylinders with a lighter spring pressure. Mixed spring pressure can make a cylinder more difficult to pick than one with all heavy, or all light pressure.

While checking the condition of the stacks you can check the spring strength. If the stack snaps down quickly when you release it, it is in good condition. If the stack drops slowly or sluggishly, it is a weaker spring. Determining the condition of the springs is something you will learn only from practice and you can become very good at it.



# CHAPTER SIX

## THE THEORY OF LOCK PICKING

As we stated earlier, the reason we are able to pick lock cylinders is because of the tolerances that exist in a cylinder. Also we stated that picking a lock is the act of neutralizing a cylinder by duplicating the actions of a properly cut key. In Chapter Two we stated that in the Locked condition the Top Pins are across the Shear Line and prevent the Plug from rotating within the Shell. When a properly cut key is inserted, each of the pin stacks are raised to a point where the Top and Bottom Pins split at the Shear Line removing the obstruction that prevented the Plug from rotating.

Now with a Lock Pick and a Turning Tool, we must accomplish the same results. Depending on the method of picking we are using we generally neutralize from one to three pins at a time with one possible exception which we will discuss later.

Because the five or six pin stacks in a cylinder are not in perfect alignment (along with other tolerances) we are able to cause one pin stack to bind before the other stacks. By bind we mean that the Top Pin has force applied on it from one direction by the Shell and from the other direction by the Plug. To cause this binding we must apply a turning force or Torque to the Plug so as to put side pressure on the one pin that is most out of alignment. As shown in Figure 25, both the plug and the Shell are applying a side pressure to this pin. We call this the first binding pin. Only this one pin will be bound if we are using the proper turning force. To neutralize this pin stack we must now raise the stack with our pick to a point where the top of the Bottom Pin is at the Shear Line. When this occurs, the Plug rotates very minutely and traps the Top Pin in the Shell as shown in Figure 26. Another Top Pin now binds. This will be the pin that is the most out of alignment of the remaining pins. The same procedure must be followed to neutralize this stack and succeeding stacks until all are neutralized and the Plug is free to rotate.

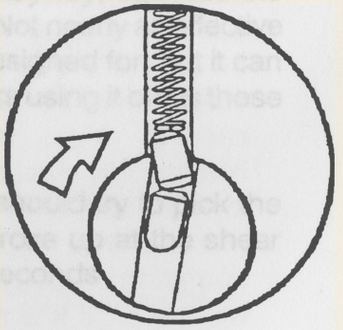


FIGURE 25

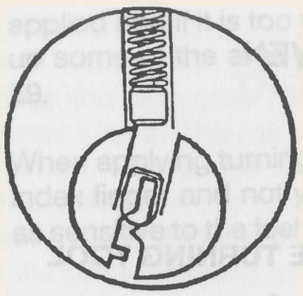
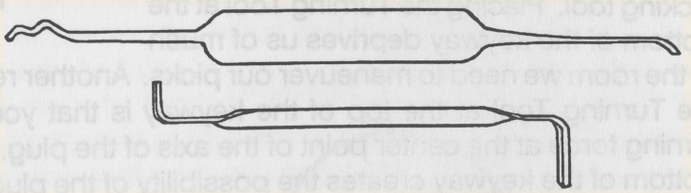


FIGURE 26

This is the basic theory of Lock Picking. To turn this theory into practicle usage requires knowledge of the proper usage of our tools, knowledge of the reaction of the pins to our picking efforts and knowledge of the different methods we can use to pick the cylinder. These subjects we take up in the following chapters.



# CHAPTER SEVEN

## SELECTION AND USE OF THE TURNING TOOL

Learning to use the Turning Tool properly is just as important as learning to use your picks. The Turning Tool provides the torque, (from here on we will call this turning force) needed to bind the pins so that we can pick them. To provide the proper turning force and not interfere with our pick requires us to choose the proper Turning Tool and to use it properly.

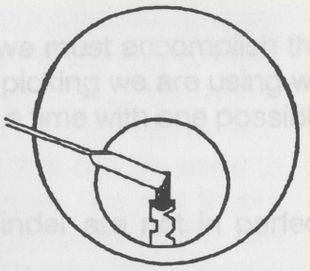


FIGURE 27

Before we select our Turning Tool we must know how and where to use it. Ninety percent of the time, the Turning Tool should be used at the top of the keyway as shown in Figure 27. There are valid reasons for this. The first and most important reason is that in this position we have full access to the keyway to insert and manipulate our picking tool. Placing the Turning Tool at the bottom of the keyway deprives us of much of the room we need to maneuver our picks. Another reason for using the Turning Tool at the top of the keyway is that you are applying turning force at the center point of the axis of the plug. Using it at the bottom of the keyway creates the possibility of the plug canting, (one end higher than the other) with the possibility of the plug itself binding. When inserting the Turning Tool into the top of the keyway, be sure it does not touch the first pin. If it does it will cause you to get a false reading as to the condition of this pin stack.

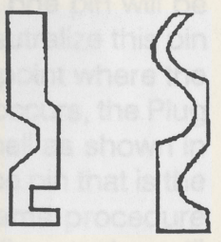


FIGURE 28

Before selecting your Turning Tool, look at the keyway of the cylinder. Is it a wide open keyway, such as the WEISER or a narrow paracentric keyway such as the YALE 8 or somewhere between. See Figure 28. The tang on the Turning Tool you select should be wide enough to fit snugly into the keyway when a turning force is placed on it. If it is too narrow, it will slip out of the keyway as pressure is

applied and if it is too wide it will not fit the keyway properly and take up some of the area you need for manipulating your picks. Figure 29.

When applying turning force on the Turning Tool use the end of your index finger and not your thumb. See Figure 30. The thumb is not as sensitive to the feel you can obtain from the cylinder as is the index

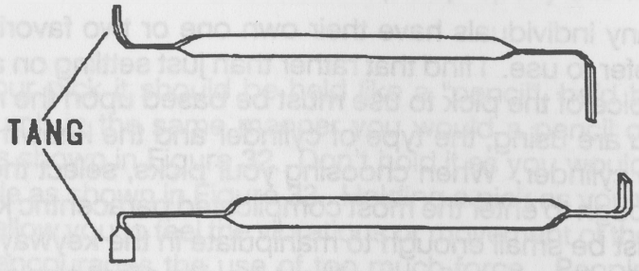



FIGURE 29

finger and there is a tendency to apply to much pressure with the thumb. With the proper turning force you can tell when a pin becomes neutralized. Your sense of touch with the Turning Tool is just as important as it is with your pick. Don't neglect it. The method we use to learn how to apply the proper turning force is taken up in the training exercises that follow.

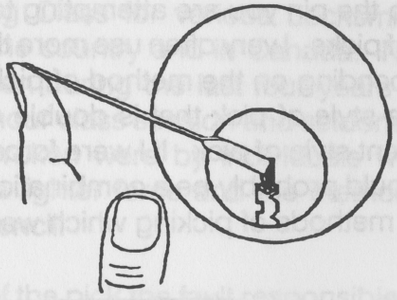


FIGURE 30

# CHAPTER EIGHT

## SELECTION AND USE OF THE LOCK PICK

Many individuals have their own one or two favorite picks that they prefer to use. I find that rather than just settling on a favorite pick, the choice of the pick to use must be based upon the method of picking you are using, the type of cylinder and the known characteristics of the cylinder. When choosing your picks, select those that are small enough to enter the most complicated paracentric keyway. The picks must be small enough to manipulate in the keyway, that is enter and probe for a specific pin without moving other pins or completely filling the keyway to the point where they cannot be maneuvered freely. Many of the commercial picks available are so large that just inserting them into the keyway pushes the bottom pins up across the Shear Line and if the Turning Tool is used at the bottom of the keyway it multiplies the problem.

To settle on just one or two picks is to cheat yourself of the versatility various styles can provide. For instance, there are many times when a very shallow Hook pick will suffice, however, in the very same cylinder there may be one or two pins you find you can not raise to the Shear Line because the pin in front of them is very long in comparison to the pin you are attempting to neutralize. This will call for a change of picks. I very often use more than one pick to neutralize a cylinder depending on the method of picking I am using. For this reason I use a style of pick that is double ended. Each end of the pick is a different style of pick. If I were forced to choose one pick as a favorite, it would probably be a combination Hook-Rake due to one of my favorite methods of picking which we will discuss later.

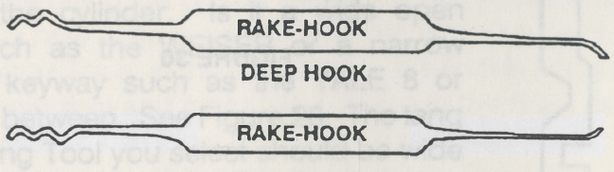



FIGURE 31

Your pick must be of the type that allows you to feel the contact the pick is making with the pin. To feel the vibrations and movements through the pick, your hand must be in contact with the main body of the pick itself. This means using a pick that does not have a handle. Handles on picks definitely interfere with the necessary sensitivity. The reason given by most people who use picks with handles is, that a pick without a handle hurts or cuts there hands. If they will learn to use the proper turning force and hold their pick properly this will not happen.

When using your pick it should be held like a "pencil", held by the fingers and thumb in the same manner you would a pencil or pen when writing as shown in Figure 32. Don't hold it as you would a file or shovel handle as shown in Figure 33. Holding a pick as you would a file does not allow you to feel the vibrations or movement of the pins and definitely encourages the use of too much force. People who hold their picks in this manner break far more picks than those who hold them as they would a pencil.

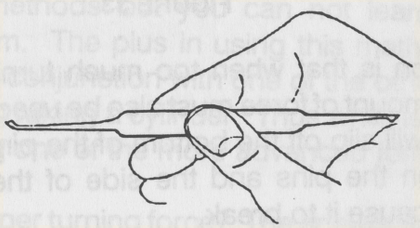


FIGURE 32

I teach a Lock Picking Class for various Locksmith and Security Associations around the country and in Canada. No more than six picks have been broken during the last four years of teaching this class. This is a seven hour class session and seldom is a pick broken in the class. Picks broken were by individuals who were having difficulty adjusting to a lighter force and the method of holding the pick as you would a pencil.

Seldom is the quality of the pick the fault responsible for its breakage regardless of who manufactures it. There are three major reasons picks are broken. The first is that the pins are bound so tight that they must be pried up by force to reach the Shear Line. If you see a lot of bent or broken picks you can bet the owner is one who applies an unnecessary amount of force.

The second reason is that not having learned to distinguish between a pin that has been picked and one that has not, the lock picker tries to raise a picked pin to the Shear Line. Only the Bottom pin remains in the Plug after the stack has been picked, the Top Pin is trapped in the Shell. When he tries to raise the Bottom Pin he is pushing it up against the Shell. There is no pin chamber there and he doesn't stand a snowballs chance in Hell of pushing that pin up into solid brass.

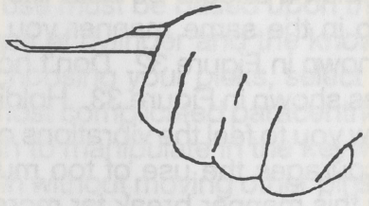


**FIGURE 33**

The third reason is that when too much turning force is used, an unnecessary amount of force must also be used to raise the pin stack. Often the pick will slip off the bottom of the pin or pins and become lodged between the pins and the side of the Plug and efforts to dislodge it will cause it to break.

We will discuss picks and rakes in greater detail when we study the various methods we can use to pick a lock.

# CHAPTER NINE

## TRAINING EXERCISES - PHASE ONE

Just how successful one becomes at Lock Picking will depend almost entirely on learning the art of applying the proper turning force. It is an art and the importance of it can not be over emphasized. Lack of the knowledge of how to apply it is the cause for more failed attempts to pick locks than any other reason.

Before we start our practice sessions the following should be understood. The method we use to teach the skills necessary to master Lock Picking is one of the actual methods of picking locks. There are much faster methods but you can not learn the basic skills by employing them. The plus in using this method is that it is almost always used in conjunction with one of the other methods of picking locks, including raking a cylinder. Thus while learning the basic skills we are learning one of the more advanced forms of lock picking.

What is the proper turning force? The answer is simply, enough force to cause only one Top Pin to bind. Learning to apply the proper torque, turning force, and knowing when only one Top Pin is binding is quite simple, however, it requires considerable practice. I have been teaching the following technique for the past 25 years and I KNOW it works if one will but make the effort and take the time to learn it.

In a previous chapter, we explained what we meant by binding one pin stack and the need for it. Review that information before moving on if necessary.

Practice under as near actual conditions as possible. This means using a mounted lock to hold the cylinder you are learning on. Use a lock display mount. They can be purchased from your distributor or make one. Holding a cylinder in your hands while learning to pick is of no real value. Learn under as realistic conditions as possible. ***DO NOT HOLD THE CYLINDER LOOSE IN YOUR HAND WHILE PRACTICING.***

The cylinder you start your training on should be a WEISER five pin. The least expensive WEISER Deadbolt set in a Display Mount is the ideal way to start. The WEISER cylinder is by far the best cylinder to start with when learning the art of Lock Picking. It is used because of the keyway and the amount of tolerance built into the cylinder by the flat on the Plug. The keyway is wide open with plenty of room to manipulate your picks and the amount of tolerance built into the Plug provides an exaggerated feel each time a pin is picked. These are conditions that are ideal for developing your skills. Use this WEISER cylinder for exercises one, two and three. See Figure 34. In exercise three we will branch out to several other keyways.

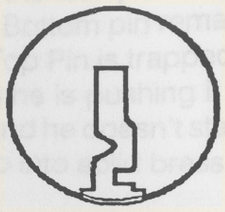


FIGURE 34

## THE TRAINING BEGINS

To become a good "lock picker" you must develop an excellent sense of touch. The following exercises will develop that touch plus teach you to recognize the various conditions that exist in a cylinder. You must be able to recognize when a pin stack is binding, when a pin stack is not bound and when a pin stack has been picked. Each of these conditions exist at all times while picking a cylinder and you must be able to recognize them.

## PHASE ONE - EXERCISE NUMBER ONE

First, remove all the pins and springs from the WEISER cylinder you will use for this exercise. Now load only the first chamber of your cylinder using new pins and springs. At this stage do NOT use previously used pins and springs. Use a standard WEISER Top Pin and spring and a number 6 Bottom Pin.

For this exercise use the LPT-003 pick shown in Figure 35 if you have it. It was manufactured by LAB to my specifications. If you do not have one use one as close to this length and configuration as possible. If necessary take a Swiss Pattern file and shape your pick

MATERIAL THICKNESS .025"

FIGURE 35

to the approximate shape of the LPT-003. This is how I made my picks for years.

For this exercise use Turning Tool LTT-003 Medium Flex (.030) or Heavy Flex (.042) or one as close to these specifications as possible. Remember, it is the user that determines the amount of Turning Force and not the tool. The tang on the LTT-003 is the proper width for the WEISER keyway. See Figure 18, Chapter 4.

**Your learning objectives are:**

1. ***To learn the proper amount of Torque (turning force) required to bind a Top Pin***

2. ***To recognize the feel coming through your Turning Tool the instant the Shear Line is reached and the Plug rotates.***

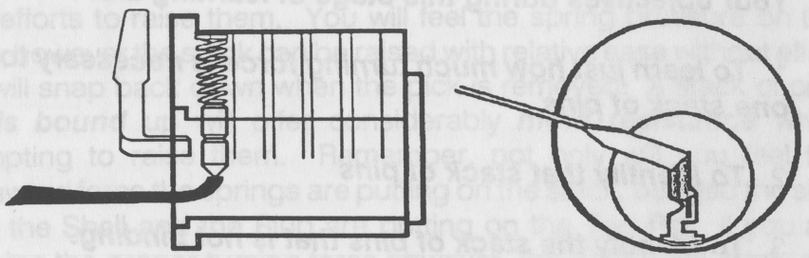


**FIGURE 36**

Now with only one set of pins and springs in the cylinder and the cylinder mounted in a lockset, spend about a half hour or as long as necessary applying a turning force to the pin and raising it with your pick to a point where the split between the pins exist. When this point, the shear line,is reached the plug will rotate. Use your Turning Tool at the top of the keyway as shown in Figure 36. Start by using your normal amount of turning force, then gradually reduce the amount of force to the ***lightest*** possible amount that will still cause the Top Pin to bind. One thing that becomes dramatically clear during this exercise is that very little turning force is actually needed to cause a pin to bind. With too much force applied to the Turning Tool, the pin must be forcefully pried up with your Pick. This puts an unnecessary amount of stress on your Pick as well as reducing the amount of feel that can be obtained through your Pick and Turning Tool. Too much turning force is one of two major causes for breaking picks. We will talk more of this later. An hour or so of this exercise may seem too long, but believe me it is not if you truly want to develop the sense of

touch necessary for successful lock picking. Close your eyes as you practice so that nothing distracts you and you can concentrate exclusively on the vibrations and feeling you are getting through and from your Turning Tool and Pick.

After you have learned just how little turning force is necessary to cause the pin stack to bind, and can recognize the instant the Shear Line is reached move on to Exercise Two.

## EXERCISE NUMBER TWO

To prepare your cylinder for Exercise Two, insert a Top and Bottom Pin, along with the cylinder spring in the number 2 pin chamber. Use a Bottom Pin of the same length as in the first chamber.. Continue to use the same Pick and Turning Tool you did during Exercise One.

**Your objectives during this stage of learning are:**

1. ***To learn just how much turning force is necessary to bind just one stack of pins***

2. ***To identify that stack of pins***

3. ***To identify the stack of pins that is not binding.***

4. ***To identify the pin stack that has been picked.***

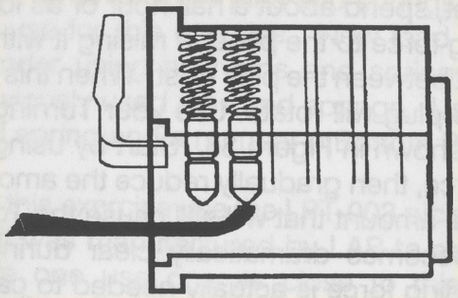


FIGURE 37

How do we know when we have only one Top Pin binding? To answer this we must understand the following idiosyncracy of lock cylinders.

All pin tumbler lock cylinders pick in ***SEQUENCE***. The sequence will remain the same until such time as damage is done to the pin chambers or pins, or a different Plug or Shell is substituted for the present one. What do we mean by picking in sequence? Simply that the pin that binds first in a cylinder, will always bind first whenever it is picked. This pin could be any one of the five or six Top Pins in the cylinder.

The pin that binds second, will always be the pin that binds second whenever it is picked and so on for each pin until the cylinder is neutralized. If the pin in the second chamber is the first pin to bind, and the pin in the first chamber to bind is the second, we would say the cylinder picks in a 2 - 1 sequence. Technically, the first binding pin is the one the most out of alignment in the direction of the turning force. See Figure 12, Chapter 3.

In Exercise One we worked on the first learning objective of Exercise Two, learning the proper amount of turning Force required to bind a Top Pin and we should continue to hone our skills on it throughout Exercise Two.

Our second learning objective is to Identify the stack of pins that is binding. How do we do it?

A stack of pins that is ***not binding*** will offer very ***little resistance*** to your efforts to raise them. You will feel the spring pressure on the stack, however the stack can be raised with relative ease without effort and will snap back down when the pick is removed. A stack of pins that ***is bound*** up will offer considerably ***more resistance*** when attempting to raise them. Remember, not only will you feel the downward force the springs are putting on the stack, but also the side force the Shell and the Plug are putting on the Top Pin. If you are applying the proper turning force however, the bound pin stack can be raised with very little difficulty.

During this exercise you are learning to identify a pin stack that is bound and one that is not, and continuing to practice applying the proper amount of turning force necessary to bind just one stack of pins. During this exercise you will become aware of the fact that applying too much turning force can cause both pin stacks to bind up. You can not pick a cylinder in sequence when using too much turning force. Let up on the amount of turning force you are using until you reach the point where just one stack of pins binds. Start your practice with two bottom pins of the same length. After a time change the pins using one short pin, a number 3, and one long pin, a number 6. Change the position of the pins after a time so the long pin in is front of the short pin. Doing this is the start of learning to manipulate your pick properly to pick one pin while not disturbing another.

**Your learning objectives now are:**

1. ***Identify which pin stack IS binding.***

2. ***Identify which pin stack is NOT binding.***

3. ***Identify which pin stack has been picked.***

4. ***Learn to identify which stack of pins you are in contact with at any given time.***

5. ***Determine the order in which the pins must be picked. ( The sequence of picking).***

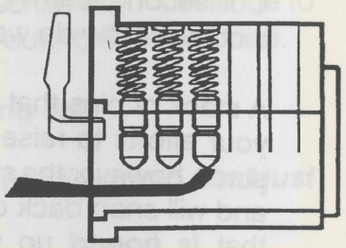


FIGURE 38

Learning objectives 1, 2 and 3 of Exercise Three have all been covered in the first two exercises and you should have a pretty good handle on them. Now, a thorough understanding and mastery of Learning objectives 4 and 5 must be obtained while continuing to enhance your skills on 1 through 3.

From this point on it becomes absolutely essential that you are able to identify which stack of pins your pick is in contact with. This is a skill needed to pick a cylinder by sequence. To accomplish this place your pick against the bottom of the first pin stack. Next slide it inward until you feel it make contact with the second pin stack and continue this process, counting the pin stacks as you go, until you reach the last stack. This is an easy skill to learn and one you will use almost every time you pick a lock cylinder.

The meaning of picking a cylinder in sequence was explained in Exercise Two. The reason for learning to pick in sequence is to teach you how to apply the proper turning force. A cylinder will only pick in sequence if the proper turning force is employed. Using too much turning force will defeat you as will too little. Start by applying the lightest possible turning force and check each of the stacks to find the binding one. If no stack is bound, add a little more pressure and check again. Continue this until you have the right amount of turning force that binds ***ONLY ONE*** pin stack. Then identify that stack of pins as either number 1, 2 or 3. Remember, you can only bind a single

After you have identified the binding pin stack, raise it slowly until the top of the Bottom Pin is at the Shear Line. The same amount of force you used to bind the stack will be enough to rotate the plug enough to trap the Top Pin in the chamber in the Shell. In Exercise One, one of your learning objectives was to recognize the feeling you received through your Turning Tool when the Shear Line was reached and the Plug rotated. This rotation is ever so little, but it can be felt and you must learn to identify it if you are truly to become skilled in this art.

This is a good time to learn the feel of a pin stack that has been picked. With only two stacks in the cylinder, the difference in a stack that is picked and one that is not should be very obvious. It is a feel and condition that you ***must*** master along with the other stack conditions. After you have picked the first stack, compare it to the stack that is not picked. The difference is that there is ***NO*** pressure on the stack that has been picked. The Top Pin and spring are trapped in the Shell and have no effect on the Bottom Pin. The Bottom Pin is in essence floating free.

Practice with just two pins in your cylinder until you can identify with little or no effort the difference in the feel of the two pin stacks. This is the start of picking a cylinder in sequence. You will soon learn which of the two stacks is bound and picks first. Also practice until the act of applying just the proper amount of turning force becomes second nature. This exercise can take anywhere from hours to days and will be well worth the time spent. Remember, luck plays very little part in lock picking, SKILL is everything. The more time you spend learning these first two Learning Objectives thoroughly, the less time will be needed for the remaining objectives.

When you feel that you have reached the level of competency outlined in Exercise Two, move on to Exercise Three.

## EXERCISE NUMBER THREE

Continuing to work with the same WEISER cylinder, put a third set of pins in the cylinder. Start with three Bottom Pins of all the same length, #6 pins. Spend an hour or two practicing the objectives of Exercise Three with these pins before inserting pins of different lengths into the cylinder. Continue to use the same Pick and Turning Tool you have been using.

stack of pins when you have the right turning pressure, too much binds more than one stack, and no stack will bind if not enough force is applied. Now raise the binding stack of pins to a point where the top of the bottom pin is at the shear line. The amount turning force you employed to bind the stack will be enough to rotate the plug minutely and trap the Top Pin in the chamber in the Shell.

After you have picked the first pin stack, identify the next binding stack and pick it. If you maintained the proper turning force after picking the first binding stack, it will be a relatively easy task to identify the second binding stack. Now pick this second stack in the same manner you did the first. Each time the Shear Line is reached and the Plug rotates ever so little, you should feel it. Continue to practice until you do.

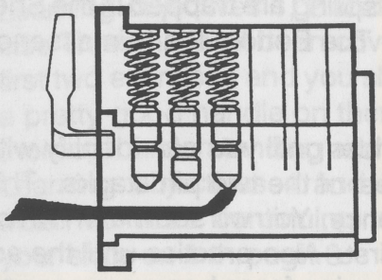
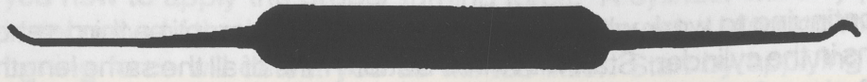


FIGURE 39

If you have successfully picked the first two chambers, you know which chamber you must pick next and you know the sequence (order) in which the pins will pick. Practice this again and again.

Up to now you have been using three pins of the same size. Now change the pins in the cylinder. Put a long pin in the first chamber, short pin in the second and a long pin in the third. Use a 6, 3 and a 6 pin and change your Pick. Figure 39.

Select a pick with a deeper hook. Use the LPT-002 Pick (hook end) or one of equivalent size and configuration. The deeper hook will allow you to contact the shorter pin without contacting the longer pin in front of it. See Figure 40.



**Material Thickness .025"**

FIGURE 40

To enhance your training now shift the pins to the 2nd, 3rd and 4th pin chambers as shown in Figure 41. Also change the length of the

pins from time to time and move the pins to the last three chambers. You must get used to working deep in the cylinder.

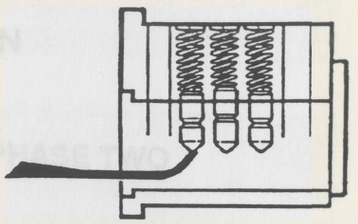


FIGURE 41

At this point in your training the following situation often arises. With just two pins in the cylinder it was easy to determine which pin picked first and which second. With three pins often you will experience the situation where two pins seem to pick at the same time. Actually they do not and can not. What actually happens is that when the binding pin is raised to the Shear Line and becomes trapped in the Shell, the next binding pin is contacted by some portion of the pick and raises it to the Shear Line where it becomes trapped. Figure 42 illustrates a cylinder with three pins picked and the pick tip in contact with the number 5 pin. The number 4 pin is also in contact with the pick and will be raised as the number 5 is raised. The Shear Line for the fourth pin is so near that of the fifth pin that it will seem to pick simultaniously. Should this happen, very carefully try picking one of what appears to be the two binding pins. If it does not go you will know this is the pin that is being contacted ***after*** the true binding pin is picked. This often happens in the classes I teach and I often recommend that a pick with a deeper hook be used and/or the pick be held at a greater angle. This will allow you to reach up behind a long pin to neutralize a short pin with less chance of making contact with the long pin.

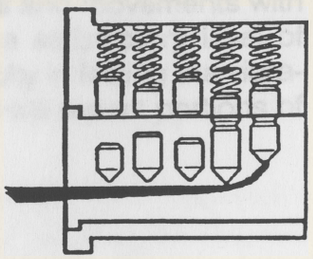


FIGURE 42

You should spend a considerable amount of time on Exercises Two and Three with the WEISER cylinder. The skills required to successfully pick locks are easier mastered with this cylinder than with the various ones that follow. If you do not attain a fairly high level of skill during this period of training, the exercises that follow using various keyways will be much more difficult for you and slow your progress considerably. Also remember that the method we are using to pick the cylinder at this time, is used to teach the application of the proper amount of turning force.

When you feel that you can perform the tasks described in each of the Learning Objectives of Exercise Three to your own satisfaction, move on to the next phase of training.

# CHAPTER TEN

## TRAINING EXERCISES - PHASE TWO

Up to this point the exercises have all been conducted using only the WEISER cylinder. There is a good reason for this as we stated earlier. To start your training on a more difficult keyway is foolish and will accomplish little, however once you have reached a given level of competency more difficult keyways should be introduced into the training process. You should have had very little difficulty maneuvering your pick in a standard WEISER keyway. It is a much wider keyway than most with minimum obstruction to prevent maneuvering the pick freely.

Starting with Exercise four we will be using different keyways. The purpose of this is to further enhance the skills you acquired in Phase One. The training exercises in Phase Two will employ the YALE 8 and SCHLAGE C keyways. Not only will you discover the increased difficulty in manuevering your picks in these two keyways, but will notice that you do not get the pronounced vibrations and feel of the movement of the pins from these cylinders that you did from the WEISER cylinder. Though not as pronounced as the WEISER cylinder, you can learn to feel these vibrations and movements with practice and you must if you are to reach a satisfactory level of competency. Because of the increased difficulty in feeling the vibrations and movements, Training Exercise Four will repeat portions of Exercises Two and Three.

### EFFECT OF KEYWAYS ON PICKING

In Chapter Five we outlined several things that should be done before attempting to pick a cylinder. Now it is time to add another.

***KNOW YOUR KEYWAY***. Examine the keyway. Check the configuration for the amount of room you have to work with. Determine the manner in which you will insert your pick to contact the pins in the most effective manner. See Figure 43.

The dark area in the keyway of Figure 43 represents the Bottom Pin. Remember, all the Bottom Pins in the cylinder drop to the same point. Learn to recognize this point for each cylinder. When you insert your

Turning Tool be certain it does not touch the first pin. If it does you will get a false feel making the cylinder difficult to pick.

If you are using a Hook Pick with not to large a hook, such as LTT-003, Figure 35, you can insert your pick on the right side of the keyway above the keyway ward. Just how far the pin stack must be raised to reach the Shear Line will depend on the length of the Bottom Pin. In this exercise you are using two pins only so you should not experience any great difficulty. When we insert additional pins we will discus this keyway again.

## EXERCISE NUMBER FOUR

For the first part of Exercise Four use a new YALE cylinder with the 8 keyway. Use original manufacturers cylinders if at all possible. If you must work with a used cylinder make sure it is in good condition. Disassemble it, clean the Plug and Shell with a cleaner and dry well before using. When pinning it use original pins and springs if possible. For these first exercises Do not use previously used pins and springs. ***Load the first and second pin chambers only***. Load the Plug with a long Bottom Pin and a medium length Bottom Pin to start with. After a few minutes of practice change the position of the pins.

FIGURE 43

***For the first part of this Exercise continue to use the same Pick you have been using but change your Turning Tool.*** Use LTT-002 Medium or Heavy Flex strength. The tang is of the proper width for the YALE keyway. The Turning Tool you have been using is too wide. See Figure 18, Chapter 4.

Learning objectives for Exercise Four are:

1. ***To learn just how much turning force is necessary to bind just one stack of pins.***

2. ***To identify the pin stack that is binding.***

3. ***To identify the pin stack that is not binding.***

4. ***To identify the pin stack that has been picked.***

Because the level of difficulty is increasing with the change of keyways we are repeating portions of the learning objectives of Exercises Two and Three.

Practice as long as necessary to accomplish the Learning Objectives of Exercise Four. When you feel you have accomplished the objectives move on to Exercise Five.

## EXERCISE FIVE

Continue to work with the YALE cylinder. ***Your Learning Objectives will be the same as those of Exercise Four with one addition, learning to manipulate short pins behind long pins.*** You should already have a short and a medium pin in your cylinder, now add third pin, a short one in relation to the medium. Change the position of the pins from time to time. This is good practice in learning to pick a short pin behind a long one without disturbing the long one. Arrange your pins so that you have a medium length pin first, a long one second and a short one in the third chamber. With this arrangement use your LPT-002 Pick, the Hook end, or an equivalent, Figure 40. It has a deeper hook whereas the LPT-003 has a shallower hook. The deeper hook can reach up behind a long pin with out interfering with it. Practice this exercise until you are satisfied you have accomplished the goals of Exercise Five.

## EXERCISE SIX

For this exercise use a SCHLAGE original cylinder with a "C" keyway. Repeat Exercises Four and Five using the same pin set ups, Picks and Turning Tool. ***The Learning Objectives for Exercise Six will be the same as Exercises Four and Five***. The Schlage **C** keyway is different than either the WEISER or YALE therefore we need to master the same Learning Objectives. Study the keyway closely. See Figure 44.

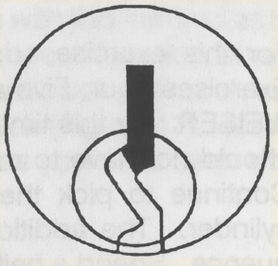


**FIGURE 44**

Note where the bottom of the Bottom Pins are located. They are located right at the top of the ward. This means that if we try to insert a pick straight into the keyway above the ward our pick will immediately raise the pins. If any of the bottom pins are from medium length, a 5, to a long pin, an 8 or a 9 the top of the

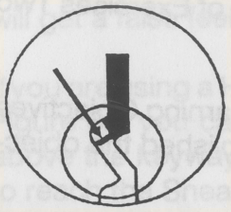


FIGURE 45

pin will be raised above the Shear Line by just inserting the pick, especially if the pick is one of the larger ones as so many commercial picks are. To prevent this, insert your pick from the left side of the keyway at an angle, Figure 45. As you raise the pin gradually bring the pick to a upright, vertical position, Figure 46. If the pin is a long one you may not have to raise it high enough for the pick to become upright.

Practice with this SCHLAGE cylinder until you feel really comfortable with it. The SCHLAGE cylinder has long been the nemesis of many a Locksmith. In reality it is no more difficult to pick than any other cylinder once you overcome the psychological barriers created in the Locksmith trade by some very fine salesmen.

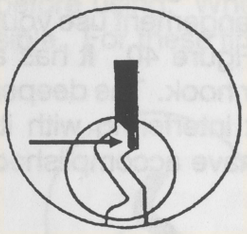


FIGURE 46

When you think you are ready to move on, change to the type of cylinders you get the most calls to service and/or pick. Stay with Mortise, Rim, Key-In-Knob and Padlock types. Stay away from Auto cylinders for a while longer. We will take them up later. Whatever cylinders you choose repeat Exercises Four, Five and Six.

## EXERCISE SEVEN

For this exercise add a fourth pin to your cylinders and repeat Exercises Four, Five and Six. Do this for all cylinders, including the WEISER. By this time if you have taken your practice seriously you should not have to much difficulty with the addition of a fourth pin. Continue to pick them to establish the proper sequence for the cylinder. The addition of a fourth pin will change a cylinders sequence. Spend a half hour or more on each cylinder before moving on to the next phase of training which is learning the different methods of picking..

# CHAPTER ELEVEN

## PHASE THREE - PICKING METHODS

Up to now we have been learning to master the techniques necessary to successful lock picking. From this point on the emphasis is on the various methods and styles of picking. It is at this stage that you will realize just how important the beginning exercises were. You will need all the skill you have developed while learning these techniques.

For these exercises again go back to the WEISER cylinder and load the first four chambers only. For each particular method of picking we will recommend a pick. Use your Turning Tool LTT-003 (Heavy or medium) or equivalent. It is the proper width for the WEISER keyway. At this point let me state that I do not consider raking a cylinder a separate division of picking and for this reason. Raking by itself is seldom produces a success rate of one hundred percent, in fact it is considerably less. When combined with another method of picking however, it can produce the best results of all the methods. Also raking is not done with only a rake, any of your picking tools can be used to accomplish it.

### METHOD ONE

This first method of picking was taught me by a good Japanese friend over 28 years ago. I have had great success with this method as have many of the people I have taught it to. It is a combination of raking and picking one pin at a time. Use a standard hook pick such as the hook end of the LPT-002 or an equivalent pick (Figure 47). Also use your Turning Tool at the top of the keyway as you have been doing.

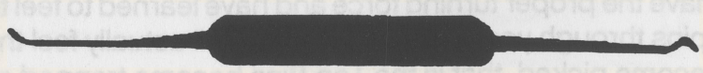


FIGURE 47

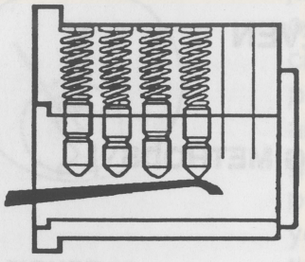


FIGURE 48

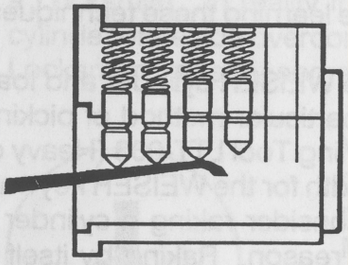


FIGURE 49

Turn the pick so that the point of the hook is pointing down. See Figure 48. Insert the pick fully into the cylinder at a slight angle so that only the tip touches the pins. Without depressing any of the pins insert the pick until you are in contact with the last pin stack. Using a light to medium turning force, pull the pick forward quickly depressing the pins as the pick is moved forward. See Figure 49. Pull the pick out of the cylinder on the forward stroke. Often this one pass of the pick is all that is necessary to neutralize the cylinder. If it is not, while maintaining the same turning force run your pick from back to front a second time. If this doesn't get results, turn the pick over and with the hook try to find the one or two pins that have not been picked. If you can locate them, pick them. Also after the first or second pass of the pick from back to front, try inserting the pick from the front of the cylinder, moving from front to back depressing the pins as you go. After a couple of passes through the cylinder, another action that will often neutralize the remaining pins is while applying a slight upward force, rub the pick back and forth three or four time over the Bottom Pin of the stack or stacks not picked while maintaining a light turning force. I call this the "Rubbing Technique". What happens is that often you will have picked all but one or two of the pins. One or two of the Bottom Pins may actually be trapped across the Shear Line. By agitating the pin stacks and allowing your turning force to vary ever so slightly it is possible to allow these pins to drop to the Shear Line, trapping the Top Pin in the Shell.

If you have the proper turning force and have learned to feel the action of the pins through your Turning Tool you will actually feel the pins as they become picked, that is the Top Pins become trapped above the shear line.

## METHOD TWO

A variation of this style of picking uses the Half Diamond pick, LPT-003 or equivelant, shown below, or the Bill DeForrest model pick (Figure 23). Again use the Turning Tool at the top of the keyway but apply a fairly heavy turning force. Insert your pick all the way into the keyway. Raise the pick slightly and quickly draw it forward, contacting each stack of pins. Because you are using a heavier turning force you will have to use more force to raise each pin stack as you pass under it. Immediately after the pick exits the keyway, let up on the turning pressure for just a fraction of a second. This action is not much more than a "twitch" of the finger, that is applying pressure on the Turning Tool. What you are attempting to do by this action is to allow any Bottom Pin or pins trapped across the shear line to drop below the shear line. The speed with which you perform this maneuver will trap the Top Pin in the Shell. Often you will trap them all on one pass. If necessary run your pick from back to front three or four times while maintaining fairly heavy turning force, each time making the quick release with your Turning Tool. If after three or four times you don't get them all, locate the stack or stack that is not picked and use the "rubbing technique" to attempt to pick this stack. The reason for using the "rubbing technique first is because of the heavy turning pressure this technique uses. The heavy turning pressure with the stronger upward force applied by the pick tends to cause the Bottom Pins to become trapped across the shear line more often. Often people who find it difficult to develop a fine sense of touch and to recognize the feel and condition of the Pin Stacks they are receiving through their tools, find this method or the first method the easiest to learn.

LPT-003

## METHOD THREE

Method Three is the raking method. Some people do not consider this a form of picking, however I do. Successful Raking requires just as much skill and knowledge of the use of your tools and the same fine touch and feel as does picking a cylinder one stack at a time. There are two methods of Raking:

### Raking Method Number One:

The first method requires you to run your Rake back and forth along the bottom of each of the Pin Stacks. Use a smooth straight line "in and out" motion raising each pin stack as you pass under it. Figure 50. Once again use a fairly light turning pressure, the same amount you would for picking one pin stack at a time. The Rake is shaped so that it creates various bitting combinations. Passing it back and forth under the pin stacks hopefully creates the proper combinations to trap the Top Pins in the Shell. With this method of straight in and out motion I find that a rake with exaggerated curves works best. The rake shown in Figure 51 (LPT-004) is one I designed many years ago and works well for this method in those keyways that it will enter, which is most of the common residential type. The reason it can be used in a rather restricted keyway is that no true manipulation of the rake is required, only a straight in and out motion. The exaggerated curves on this Rake (LPT-004) create many more possible bitting combinations than does most Rakes.

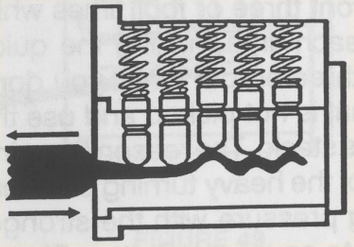


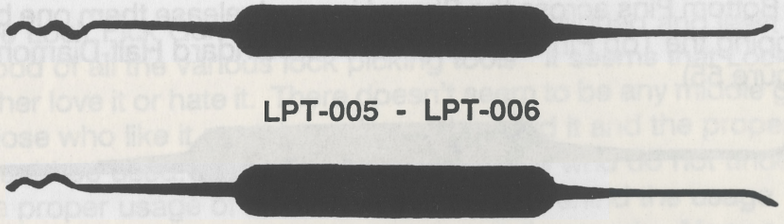
FIGURE 50

LPT-004

FIGURE 51

**Raking Method Number Two:**

With this type of raking you can use a Rake with less exaggerated curves and humps such as the two shown in Figure 52 (LPT-005 and LPT-006).



**LPT-005 - LPT-006**

FIGURE 52

Again use your Turning Tool at the top of the keyway and apply the same amount of turning force you would if you were picking one stack at a time. Starting from the face of the cylinder, rock your pick up and down as you fully insert it and retract it two or three times. In other words raise the pick handle so that the tip of the Rake is down and the back end is up and then lower the handle so the tip of the Rake is up and the back end is down. Make this a smooth flowing continuous motion as you insert and retract your Rake two or three times. If you do not pick the cylinder, switch to a hook pick, locate the stack or stacks not picked and pick them individually. Again if you have used to much turning force you may have a bottom pin trapped across the shear line. Try the "rubbing " technique if you are unable to pick the stack. The LPT-004 (Figure 51) type Rake can also be used very effectively in this type of raking if the keyway is of a size and configuration to accept it.

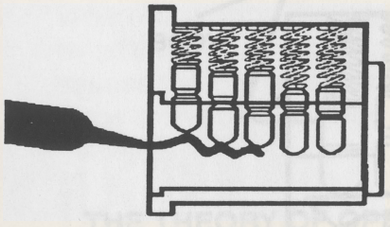


FIGURE 53

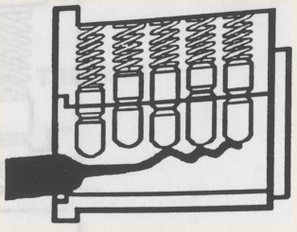
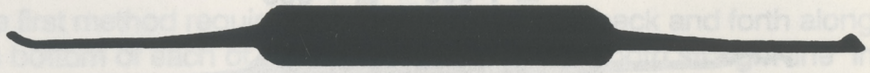


FIGURE 54

## METHOD THREE

This method is sometimes called the "double locked" method and is one of the most difficult to master therefore one of the least used. Again use your Turning Tool at the top of the keyway but this time use a heavy turning force. The object of this method is to trap all of the Bottom Pins across the Shear Line and release them one by one, trapping the Top Pin in the Shell. Use a standard Half-Diamond pick (Figure 55).



LPT-003

FIGURE 55

Turn it so the half diamond is pointing away from the bottom of the pins. Place pick so that it touches the bottom of all five or six pin stacks at the same time. Now raise the pick as high as it will go. This action pushes each of the Bottom Pins up and across the Shear Line. Now apply turning force heavy enough to hold the pins stationary. DO NOT apply a turning force until all the pin stacks have been raised to their maximum. After you have trapped all the pin stacks turn your pick over so the half diamond will contact the bottom of the pin stacks and employ the "rubbing" technique while varying the amount of turning force you are using. You can vary this turning force by a slight "twitch" of the finger being used to apply pressure on the turning tool. This method requires lots of practice and patience but some people do master it. Try it.

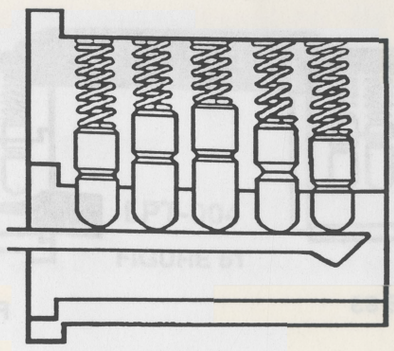


FIGURE 56

# CHAPTER TWELVE

## THE LOCK PICK GUN

The Lock Pick Gun is probably the most maligned and least understood of all the various lock picking tools. It seems that Locksmiths either love it or hate it. There doesn't seem to be any middle ground. Those who like it are those who understand it and the proper way it should be used, those who don't are those who do not understand the proper usage of the tool or the theory behind the usage. I have found that it is an excellent tool when used properly. Many a person who have taken my class have changed their opinion of the tool after the theory and the principles of it's usage were explained to them.

### CONSTRUCTION:

As shown in Figure 57, the Pick Gun is composed of the Body, Pick Blade, Trigger, Tension Adjustment Wheel plus internal parts and three springs. The springs are all replaceable and the Gun comes with extra springs and instructions for replacing them. The Gun also comes with extra pick blades. Generally there are two types of pick blades with the Gun, a straight blade and an offset blade.

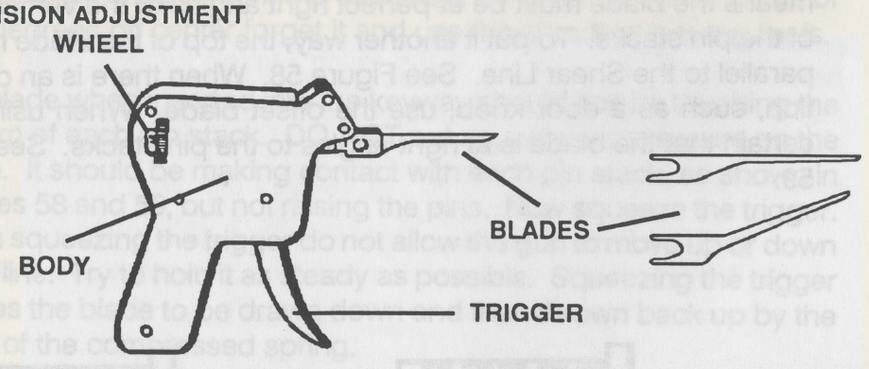



FIGURE 57

### THE THEORY OF OPERATION:

The Lock Pick Gun operates on the principle that when the blade strikes the Bottom Pins, the Top Pins will all jump above the shear line and the Bottom Pins will remain stationary for a fraction of a second

below the shear line. During that interval there is nothing is blocking the rotation of the Plug. It is at this time that turning force is applied to the Turning Tool to rotate the Plug. When a Cue Ballis hit, it stops dead momentarily as the ball it struck moves away from it. The same principle applies to the Lock Pick Gun. The theory of operation is quite simple, however, successful usage of the Lock Pick Gun requires a lot of practice and attention to detail.

The force with which the blade strikes the bottom of each Pin Stack is determined by the amount of tension set by the Tension Adjustment Wheel. The gun should be set to the lightest (least) tension possible to start and then adjusted as dictated by the amount of force the cylinder springs are placing on the Pin Stacks. The theory is that the stronger the springs are the greater the tension on the blade must be. I have personally found that I can achieve the best results through the use of minimum tension. Should I not be successful, I increase the tension gradually.

**OPERATION:**

Two different style of blades are furnished with the Lock Pick Gun, a straight blade and an offset blade (Figure 57). The offset blade is used in those instances where it is not possible to hold the gun so that the blade may be inserted straight into the keyway. To be effective the blade must strike all pin stacks at the same time which means the blade must be at perfect right angles to the vertical angle of the pin stacks. To put it another way, the top of the Blade must be parallel to the Shear Line. See Figure 58. When there is an obstruction, such as a door knob, use the offset blade. When using it be certain that the blade is at right angles to the pin stacks. See Figure 59.

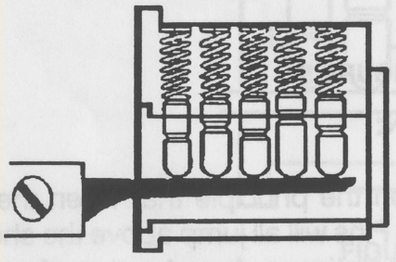


FIGURE 58

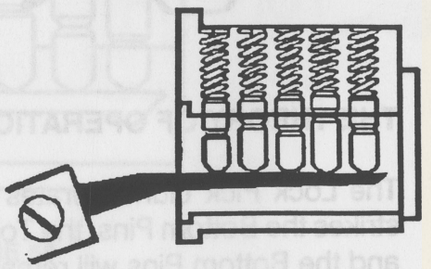


FIGURE 59

Lack of understanding of the part the Turning Tool plays in the successful neutralization of a cylinder using the Lock Pick Gun is one of the major reasons people fail with it. As with the other methods of picking a cylinder, the proper placement and use of the Turning Tool is essential. The instructions that come with the tool instruct one to use it at the bottom of the keyway. I seldom do. I use it at the top of the keyway just as I do for standard picking. I want to keep my center of rotation along the center line of the Plug. Using it at the top of the keyway seldom interferes with the operation of the Lock Pick Gun. The pick blade will never rise high enough to contact the Turning Tool if used properly. There is generally plenty of room between the face of the Plug and the first pin stack for the Turning Tool to grab hold. DO NOT let the tang of the Turning Tool touch the first pin stack. Apply only enough turning force on the tool to keep it from falling out of the keyway. Turning force is applied after the shear line has been created.

Before inserting the Lock Pick Gun into the keyway note the location of the bottom of the pin stacks and the configuration of the keyway. The Lock Pick Gun should not be tilted to one side or the other if at all possible. The blade should be directly below and on the center line of the pin stacks. If a keyway ward interferes with the proper placement of the blade, the gun can be slightly tilted to one side or the other,but very little. A glancing blow, which a tilted gun will deliver, will not produce the results a blow struck directly under the center line of the pin stack will. If the Gun must be tilted more than three or four degrees off center forget it and use the standard picking tools.

The blade when inserted into the keyway should just be touching the bottom of each pin stack. DO NOT put any upward pressure on the blade. It should be making contact with each pin stack, as shown in Figures 58 and 59, but not raising the pins. Now squeeze the trigger. When squeezing the trigger do not allow the gun to move up or down or off line. Try to hold it as steady as possible. Squeezing the trigger causes the blade to be drawn down and then thrown back up by the force of the compressed spring.

When the blade makes contact with the bottom of the pin stacks, the force of the blow will cause the Top Pins to jump up while the Bottom Pins momentarily remain stationary, the Cue Ball effect. **It is during this fraction of a second that there is nothing blocking the rotation of the Plug. See Figure 60. It is at this time that turning force is applied to the Turning Tool.** Up to this point enough turning force to prevent the Turning Tool from falling out of the keyway should be applied.

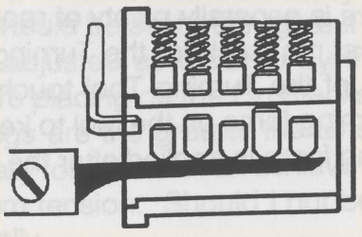


FIGURE 60

**Remember, apply turning force a fraction of a second after releasing the trigger.** All of the top pins may not be trapped above the shear line on the first pull of the trigger. When this is the case, without moving the gun pull the trigger a second time. Keep the blade on the same plane as before and maintain just enough turning force on your Turning Tool to keep the pins that are trapped above the shear line from falling. If too much turning force is used the pin or pins still below the shear line will not be able to move up. Never pull the trigger more than four times, it seldom accomplishes anything. Release the turning force and start again.

A good method of learning this technique is to put just two pins in a WEISER cylinder and practice until you can get them both on one stroke and then move on to three pins etc.

The time and effort you spend learning to use the Lock Pick gun and this technique will pay dividends. The proper use of the Lock Pick gun makes neutralization of Mushroom, Spool or Serrated Pins quite easy. Mushroom, Spool and Serrated Pins are the subject of the next chapter.

# CHAPTER THIRTEEN

## PICKING PICK DETERENT PINS

Over the years various attempts have been made to increase the security of the standard Pin Tumbler cylinder. The first of these was the introduction of the Paracentric type keyway by YALE. Paracentric keyway simply means that at least one of the keyway wards extends across the vertical centerline of the keyway. The current YALE 8 keyway is a paracentric keyway. Study this keyway and you will see that there is much less room to insert or maneuver a pick in. (Glossary 2). As picks became more refined and new picking techniques were developed the Paracentric keyway became less effective. YALE again attempted to enhance the security of the cylinder by introducing the Mushroom Pin. Corbin and Russwin followed a few years later with the Spool Pin. YALE later introduced what is now known as a Serrated Pin. LAB now produces this type pin. These pins for years have been labeled as "pick deterrent pins" and were very effective.. Once the theory of operation and the technique of neutralizing them is understood, both Mushroom and Spool type pins are much easier to neutralize.

Mushroom and Spool Pins are generally used as Top Pins. Generally no more than two or three are used in a cylinder, though more have been used. If more than three are used difficulty may be encountered in inserting and extracting the key due to the construction of these pins. Figure 61. If all Mushroom or Spool Pins are used in place of standard Top Pins, the keyway will be off center and considerable difficulty encountered in inserting the key.

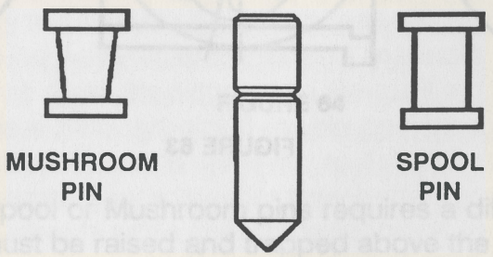



FIGURE 61

## THEORY OF OPERATION:

Figure 62 shows a cylinder pinned with three standard Top Pins and Two Spool Top Pins. The front view shows the keyway in its proper alignment. The keyway is held in this position by the standard Top Pins. The Spool Pins are inactive at this time.

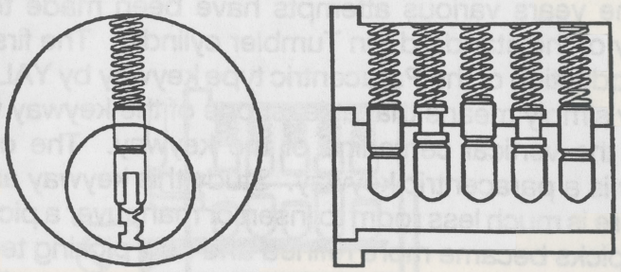


FIGURE 62

Figure 63 shows the cylinder after the standard Top Pins have been neutralized. Note the Top Pins are now trapped above the shear line and it is the two Spool Pins that are now blocking the rotation of the Plug. Note also that the keyway at this time is about 6 to 8 degrees off the vertical center line. This is what is known as the "Spool or Mushroom" position. The same identical conditions exist with the Mushroom pins. The only difference in the two type pins is in their shape. They both perform the same function and operate in the same manner. In effect the Spool and Mushroom pins at this stage are creating a false shear line.

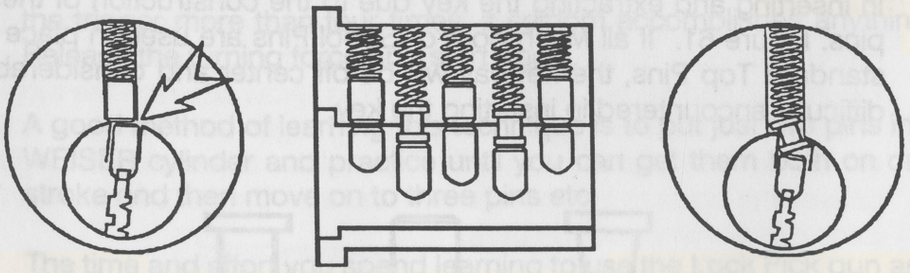


FIGURE 63

## PICKING MUSHROOM AND SPOOL PINS:

How do we know if a cylinder contains Mushroom Pins? One sure way of determining this is that during the picking process the Plug will rotate about 6 to 8 degrees off the center-line of the keyway and will not rotate any further. If when picking a cylinder this should occur, turn the Plug back to the fully locked position. Once you determine that their are Spool or Mushroom Pins in a cylinder, your next step should be to locate their position. As always, the first step in picking any cylinder should be to count the number of pins in the cylinder and determine the condition of the cylinder and it is even more important when attempting to pick Mushroom or Spool Pins. This knowledge will help us determine just where each of the Spool or Mushroom pins are located.

In a cylinder containing Spool or Mushroom pins, the standard Top Pins always pick first. Also they will pick in sequence. Pick them as you would any standard cylinder. Pick these pins first and keep track of their positions. If you were picking the cylinder shown in Figure 62 and 63, the sequence could theoretically be 1, 5 and 3. You will know when you have picked all of the standard Top pins because the Plug will rotate 6 to 8 degrees to the "Spool or Mushroom" position (Figure 64). Knowing the sequence in which the standard pins pick reveals the position and number of Spool or Mushroom Pins in the cylinder. In this instance the Pick Deterrent pins must be in the second and fourth positions.

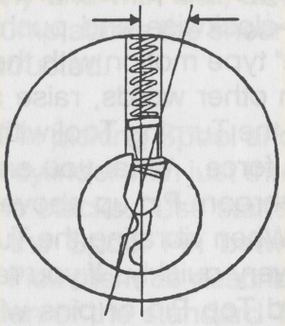


FIGURE 64

Picking the Spool or Mushroom pins requires a different technique. These pins must be raised and trapped above the shear line and at the same time the standard Top Pins must be prevented from falling

back into the Plug. Mastering the technique of accomplishing this requires lots of patience and practice but is well worth the time spent.

Mushroom and Spool pins do not pick in sequence, either of the two pins shown could be picked first. When an upward force is applied on the bottom of the pin stack that has a Mushroom or Spool Top pin, the Bottom Pin pushes the Spool or Mushroom upward aligning it with the vertical centerline of the pin chamber. In other words the Plug is rotated to the left, counter-clockwise. See Figure 65. As the pick applies upward pressure on the pin stack, the force of the

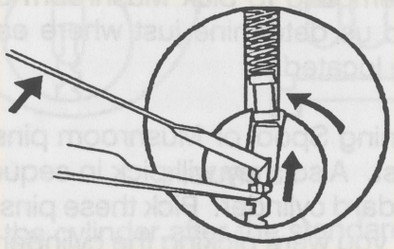


FIGURE 65

counter-clockwise rotation is felt on the Turning Tool. It is at this point that the standard Top Pins are most likely to drop back into the Plug unless extreme care is taken.

As the pin stack is raised, do not let up your turning force on the Turning Tool. The lifting of the pin stack by the Pick is causing the plug to rotate counter-clockwise and pushing against the Turning Tool. Using a "rocking" type motion with the Turning Tool and Pick, raise the pin stack. In other words, raise and lower the pin stack quickly while vibrating the Turning Tool with the tip of the finger that is applying the turning force. What you are doing is attempting to work the Spool or Mushroom Pin up above the Shear Line where it will become trapped. When vibrating the Turning Tool, release and applying turning force very quickly. If you release your turning force too much, the standard Top Pin or pins will drop back across the shear line and the Plug will once again return to its normal position, keyway straight up and down. If this happens attempt to find the standard top pin that fell, or start over again. Starting over should be no problem if you started your picking process properly by determining the sequence and position of each of the standard Top Pins. After you have picked the first Mushroom Pin move on to the next one and repeat the procedure.

Another method that will often open cylinders with Spool or Mushroom Pins is raking. Use a exaggerated type rake such as the LPT-004, Figure 66, if you can get it in the keyway, and use a very fast in and out raking motion. If the LPT-004 is too large, try a rake such as the LPT-005 or LPT-006.. This raking action is often effective against cylinders where the Spool or Mushroom Pins are very similar in length. When using this procedure use a light turning force as always.

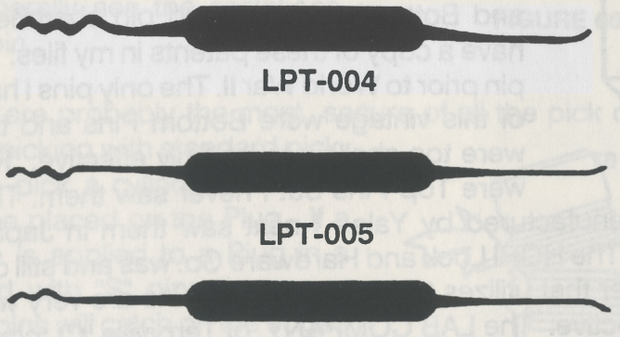



FIGURE 66

Another tool that is very effective in neutralizing these pins is the Lock Pick Gun (Chapter Twelve). When using the Lock Pick Gun, the locking feature of the Spool and Mushroom Pins never comes into play. If used properly and with skill, all the Top Pins, including the Pick Deterrent pins jump above the shear line simultaneously leaving the shear line unobstructed.

To develop your skill in picking Spool and Mushroom pins start with a Corbin or Russwin cylinder with just three pin stacks. Use a Spool pin for just one of the stacks. Use standard Top Pins for the other two stacks. Place the Spool Pin between the two stacks using standard Top Pins. Pick them as described above, determining the sequence and location of the standard Top Pins and then pick the Mushroom Pin. Spend as much time on this as necessary to acquire the technique of picking the Spool or Mushroom pin. When you are satisfied you understand the procedure place a fourth pin stack in the cylinder and use a Spool Top Pin with this stack. Place your Spool pins in the second and fourth positions. Again practice as long as necessary to master the technique of picking these pins.

## PICKING SERRATED ("S") PINS:

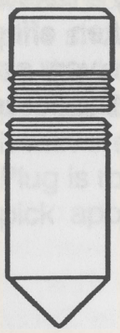


FIGURE 67

The Serrated Pin shown in Figure 67 is one of the better pick deterrent pins. The serrated or as it is now called, "S" pin is nothing new. The first record of it is contained in a patent filed by Linus Yale Jr. and dated June 27, 1865. This patent was reissued April 2, 1878 and clearly shows a drawing of the serrated pin (Top and Bottom) and serrated pin chambers as well. I have a copy of these patents in my files. I first saw this pin prior to World War II. The only pins I have ever seen of this vintage were Bottom Pins and the serrations were too shallow to be truly effective. Perhaps there were Top Pins but I never saw them. The pins I saw were manufactured by Yale. I next saw them in Japan in the late 1950's. The HORI Lock and Hardware Co. was and still does produce a cylinder that utilizes the "S" pin. Their pins are very well made and very effective. The LAB COMPANY, of Terryville, Ct. now is manufacturing them in the U.S. and marketing them to Locksmiths.

The "S" pin has it limitations however,in that it loses its effectiveness when used in a system calling for multiple master pins or master pins of less than .125 thousandths of an inch. It is not practical to serrate a pin of less than this length therefore there are no serrated Master Pins of less than .125". This means that standard Master Pins must be used in conjunction with the "S" pins in systems calling for master keying. Using more than three standard master pins in a cylinder utilizing "S" pins drastically reduces the effectiveness of the "S" pin. It is generally used in keyed alike cylinders where Master Keying is not required and greater security is desired than the standard pin tumbler residential and commercial cylinders provide. A cylinder must be pinned with both Top and Bottom "S" pins for maximum utilization of its security feature. Remember, it is the Top Pins that are across the shear line, blocking the rotation of the Plug when it is in the Locked condition.

When used properly in a cylinder it is practically impossible to pick with standard picking tools, however is easily neutralized by a skilled Locksmith who possesses the proper skills and knowledge.

## THEORY OF OPERATION:

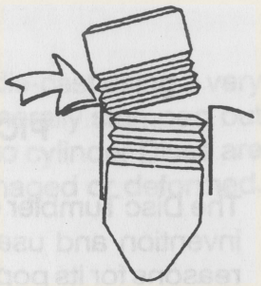


FIGURE 68

The "S" pins differ from Spool or Mushroom Pins in that all pins in the cylinder can be and should be "S" pins. It is often possible to see if a cylinder is pinned with "S" pins by looking in the keyway. If the first or second bottom pin is one of the smaller pins (0 thru 4) you can generally see the serrations around the pin.

The "S" pins are probably the most secure of all the pick deterrent pins against picking with standard picking tools. To pick a cylinder a turning force must be placed on the Plug. If a turning force is applied to a Plug in a cylinder fitted with "S" pins the serrations on the pins will catch on the edges of the chambers in the Plug and Shell as shown in Figure 68. The pins can not be raised when turning force is put on the Plug. Figure 69 shows a plug with pin chambers that have been threaded with a tap to further enhance its security. Any binding force placed on this Plug would cause the serrations on the pins to mesh with those in the pin chambers and effectively immobilize the pins. A 6-32 Tap is used to thread the chambers.

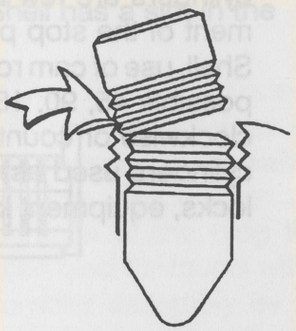


FIGURE 69

As secure as these pins are against standard picking procedures and tools they are very easily neutralized by the Lock Pick Gun. As with Spool or Mushroom Pins, the "S" pins never come into play when the Lock Pick Gun is used properly as outlined in Chapter Twelve.

Another method of neutralizing these pins is by impressioning a key to fit the cylinder. Impression these cylinders just as you would any standard cylinder. They mark very clearly, even on a nickel silver blank. When you bind the "S" pins and "bump" with your key blank, the pins remain stationary because of the serrations and cause the key to mark clearly. When you bind standard pins and bump them the pins move leaving less of a mark. The "S" pins impression very easily.

# CHAPTER FOURTEEN

## PICKING DISC (WAFER) TUMBLERS

The Disc Tumbler cylinder (also called Wafer Tumbler) is an American invention and used for a multitude of purposes. One of the major reasons for its popularity is its cost, which is very cheap in comparison with Pin Tumbler cylinders. Figure 70 shows a typical Disc Tumbler type cylinder. There is another reason you will find it used in place of pin tumblers and that is the many different camming functions it can be obtained in. The camming functions available in pin tumbler cylinders are few in comparison to Disc Tumbler cylinders. Placement of the stop pin on the cam, size of the slot on the back of the Shell, use of cam rotation limiters placed on the back of the Plug make possible 45, 90, 180 and 360 degree rotation of the Plug in either a clockwise or counterclockwise direction. You will find Disc Tumbler cylinders used as drawer locks, auto locks, cabinet locks, tool box locks, equipment locks, etc.

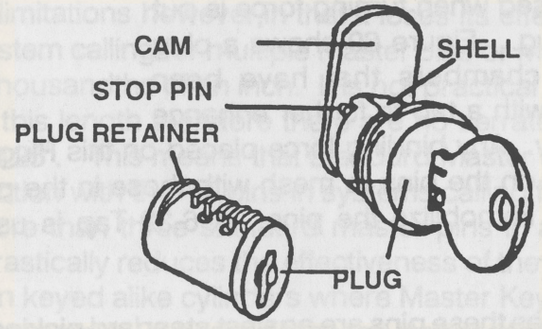



FIGURE 70

Most Disc Tumbler cylinders are what is known as Single sided, that is there is a single set of 4, 5 or more discs and they protrude from only one side of the Plug. The cylinder shown in Figure 70 is a single sided Disc Tumbler cylinder. There are also double sided Disc Tumbler cylinders. This type cylinder has discs protruding from both sides of the Plug.

Common disc tumbler cylinders offer a very limited amount of security. There are a few that offer a greater degree of security, such as the DUO, ABLOY etc. Because they are considered Security cylinders they will not be discussed here.

## CONSTRUCTION

The Plug and Shell of Disc Tumbler cylinders are die-cast using a very inexpensive type of pot metal. The Discs are generally stamped out of a very thin and cheap brass however some auto cylinder Discs are made of steel. These brass discs are easily damaged or deformed. The cam is generally made of steel.

## OPERATION

The operation of the single sided Disc Tumbler cylinder is shown clearly in Figure 71. The cylinder is in the LOCKED condition. The Discs in the Plug protrude above the surface of the Plug on one side only pushed up as shown by the spring. The Shell has a slot in the top and bottom as shown in Figure 71.

FIGURE 71

To neutralize this cylinder the Discs must be drawn fully into the Plug and not protrude from either side. An improperly cut key can cause the discs to extend below the surface of the Plug and into the slot in the Shell preventing the Plug from rotating. A properly cut key will draw each of the Discs fully into the Plug removing the obstruction that prevented the Plug from rotating. See Figure 72.

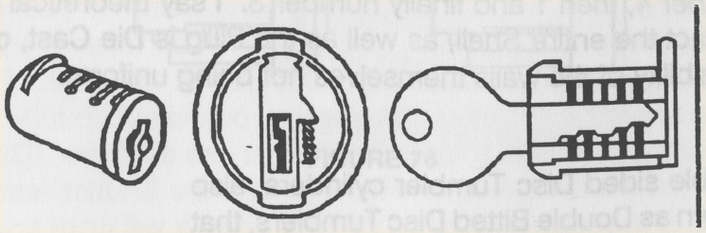


FIGURE 72

## THEORY OF PICKING

As with Pin Tumbler cylinders, Disc Tumblers can be picked because of the tolerances between the various parts. Compared with Pin Tumblers, the tolerances are much greater, generally making them much easier to pick. The same principles of picking we learned earlier apply to picking Disc Tumblers. Because the discs are stamped out, the tolerances vary from disc to disc. When picking, one disc will bind before the others. This will be the disc that is the widest or contacts the wall of the slot in the shell first. As each disc is picked another will make contact with the wall and bind until all discs are neutralized. See Figure 73.

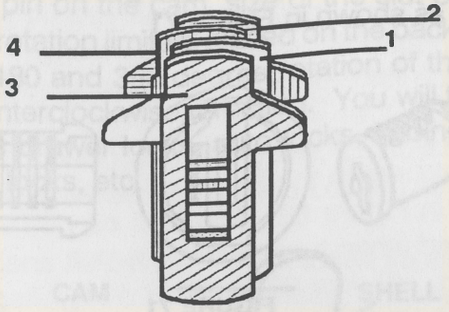
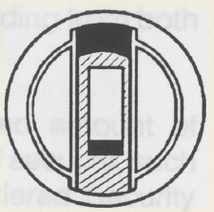



FIGURE 73

Disc Tumblers also pick in sequence just as Pin Tumblers do. The first tumbler that contacts the wall of the slot in the direction of rotation will pick first. The theoretical sequence of the four tumblers shown in Figure 73 is 2, 4, 1 and 3. The number two disc picks first, then the number 4, then 1 and finally number 3. I say theoretical because of the fact the entire Shell, as well as the Plug is Die Cast, creating the possibility of the walls themselves not being uniform.

Double sided Disc Tumbler cylinders, also known as Double Bitted Disc Tumblers, that is cylinders with two sets of discs operate and are neutralized in the same manner. Each set of discs protrudes from the opposite sides of the Plug and prevent the Plug from rotating. See Figure 74. Each set of discs extends out of the Plug because of



the spring pressure placed on them. (The springs are not shown in this illustration. Each disc has its own spring. The discs in these cylinders also will pick in sequence. The binding disc can be in either the upper or lower set. Figure 75 shows the Double Sided Disc Tumbler cylinder in the locked and unlocked positions.

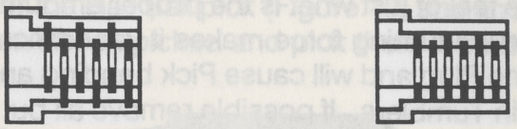


FIGURE 75

Figure 76 shows another type of Double Bitted Disc Tumbler cylinder. This one is made by the Chicago Lock Co. There are eleven discs in this type cylinder and they use one hairpin type spring to force each of the individual discs out and across the shear line. Once again all discs must be withdrawn within the circumference of the plug to neutralize the cylinder. This type of cylinder can also be found with a locking bar held against the back of the tumbler assembly by a strong spring. When the key is inserted and creates a proper shear line, the tip of the key pushes against the locking bar disengaging it, allowing the Plug to rotate. This is an additional feature that must be dealt with during the picking process.

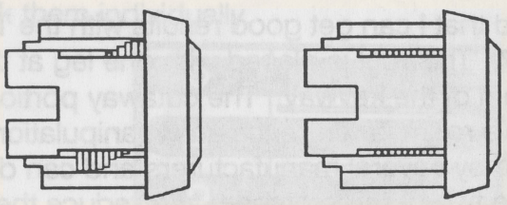


FIGURE 76

## PICKING DISC TUMBLERS

Disc Tumblers are generally much easier to pick than Pin Tumblers. The same picking procedures are used. Turning force here is just as important as it was with Pin Tumblers. Only enough turning pressure to bind a single Disc should be used. When learning to pick these, pick them one Disc at a time. Picking them one at a time will help to give you the feel of just what is the proper amount of turning force to use. Too much turning force makes it very difficult to push the disc down into the Plug and will cause Pick bending and breakage just as it will with Pin Tumblers. If possible remove all but two or three of the discs and practice picking them until you have learned exactly what it feels like when a Disc is properly bound and will pick without putting undue strain on your Pick.

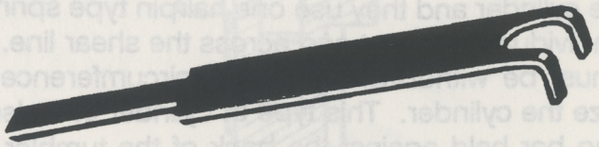
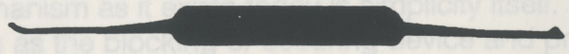


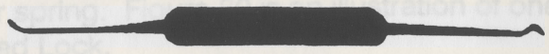
FIGURE 77

I have found that I can get good results with the Turning Tool shown in Figure 77. This tool is placed with one leg at the top and one leg at the bottom of the keyway. The cutaway portion between the legs leaves ample room for entrance and manipulation of your pick. This tool is made by several manufacturers and can differ in width so it is wise to have two or three of them and reduce the width of each with a file to fit in different types of keyways you may encounter. This tool is excellent for those Auto cylinders that use a Shutter (Dust Cover) on the face of the cylinder. The legs hold the Shutter retracted and allow you room enough to insert your pick. It will work on both Disc and Pin Tumbler Auto cylinders. If the cylinder turns clockwise to pick, place the tool so the handle is to the left of the keyway and on the right if the cylinder picks counter-clockwise. Remember, the Turning Tool is just as important when used to neutralize Disc Tumblers as it was with Pin Tumblers and should be used with the same finesse.

As we stated earlier, Disk Tumbler cylinders are generally easier to pick than Pin Tumblers and most of them, especially the Single Sided ones will rake open. Use the lightest turning force you can that will bind and hold the disc while drawing your Rake back and forth in the keyway. Start at the face of the cylinder and move your Rake up and down as you move it in and out of the keyway. If you have not picked all the discs after three or four passes with your rake, take either a Half Diamond or the Half Ball pick (Figure 78) and find the one or two discs that haven't been picked and pick them individually.



HALF DIAMOND



HALF BALL

**FIGURE 78**

Another method of picking Disc Tumblers is to use either the Half Diamond or Half Ball to rake with. Use a little heavier turning force and insert your Turning Tool all the way into the keyway and then draw it forward rather fast. Repeat this a couple of times. If you haven't picked it yet, use the same pick to find the disc or discs not picked and pick them individually.

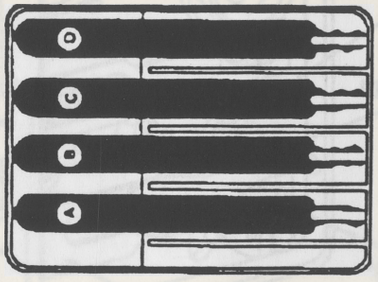



**FIGURE 79**

Double Bitted Disc Tumbler cylinders are picked in the same ways. When you rake them, rake first one side and then the other. Remember the binding discs can be on either side. I have found I obtain better results raking with the Half Ball or Half Diamond. Double Sided

Disc Tumblers are generally more difficult to pick than Single Sided. Another type of picking tool that can be used to pick Double Sided Disc Tumblers is shown in Figure 79. No Turning Tool is necessary with these picks. Just apply a light turning force while working the pick in and out of the keyway. Again, rock the pick up and down as you insert and retract it.

# CHAPTER FIFTEEN

## PICKING WARDED LOCKS

### CONSTRUCTION AND OPERATION

The Warded Lock is perhaps the oldest of the true locking devices still in existence. It dates back to the early Romans. The principle of the mechanism as it exists today is simplicity itself. A moveable "lever", acts as the blocking or securing device and prevents the locking device, the "bolt", from moving. When the deadbolt is extended, a portion of the lever tumbler rests behind a raised portion of the deadbolt tailpiece. The lever tumbler is held in this position by the lever spring. Figure 80 is an illustration of one type of Mortised Warded Lock.

To retract the deadbolt, the lever must be lifted to a height that will allow the raised portion of the deadbolt tailpiece to pass the portion of the lever tumbler that acts as a blocker.

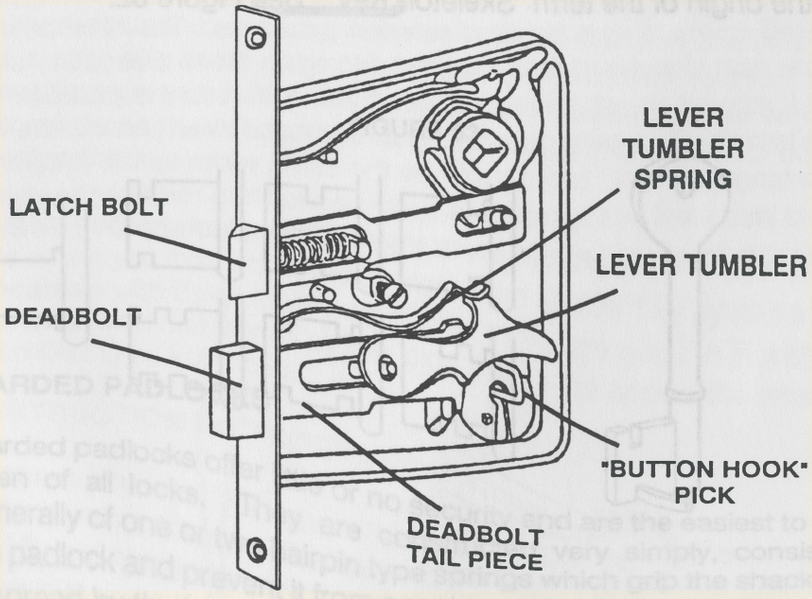



FIGURE 80

A limited degree of security was provided by "wards" (obstructions) placed in the keyway or on the inside cover of the lock. To pass through the keyway, the metal had to be removed from the key in those places that would contact the wards built into the lock. Keys not so prepared would not enter the keyway. See Figure 81. The key was also cut to by pass wards built into the cover or body of the lock.

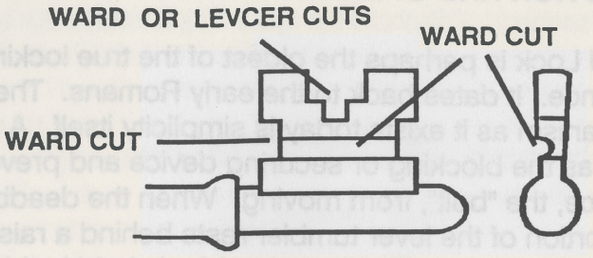



FIGURE 81

An early attempt to master key this type of lock amounted to placing the Wards in different places in a calculated pattern. The number of keys that would operate the an individual lock ran from five to seven or eight. The key that would operate all of the locks was cut to by pass all of the possible Wards in the various sets of locks. This was the origin of the term "Skeleton Key". See Figure 82.

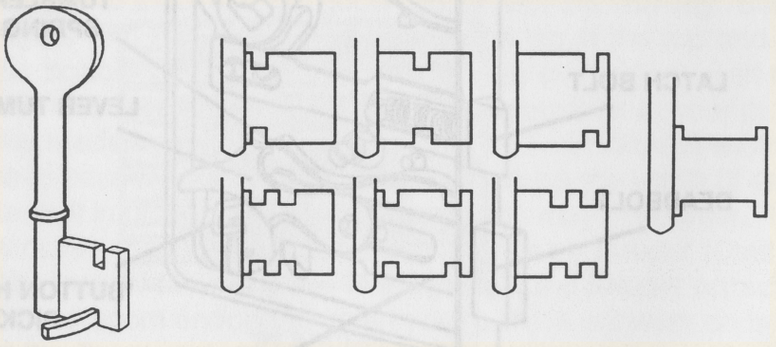


FIGURE 82

## PICKING THE MORTISE WARDED LOCK

Picking the Mortise Warded Lock is extremely simple. Old timers developed and used what is known as a "Button Hook" pick. It was called a Button Hook because of its resemblance to an instrument used in the 1890's to "button up" the ladies high top shoes which were the fashion of the times. It can be made of a piece of heavy piano wire. The springs can be fairly strong in these locks. Figure 80 shows the tip of one of these tools being used to raise the tumbler. Your tool should be the same size as the keyway so as to raise the tumbler to the proper height. Their is no restriction on how high you can raise the lever to allow the deadbolt to be retracted or extended. Figure 82 is an example of this "Button Hook" pick. Figure 80 also shows the Button Hook Pick coming through the keyhole and raising the lever. Also, you can use the same picks you would use for neutralizing Lever Tumbler locks. Anything you can get into the keyway to raise the lever and then slide the deadbolt to the rear can be used.

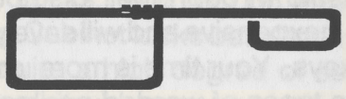
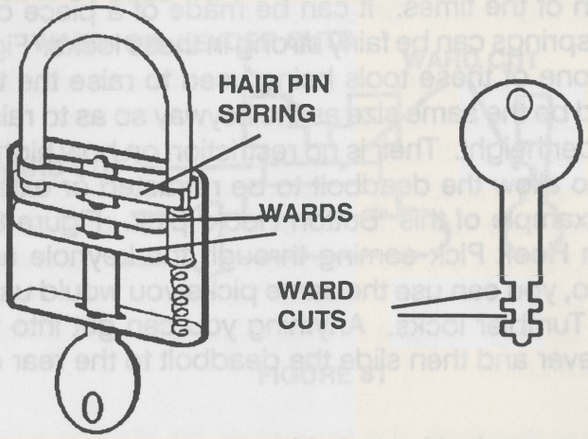


FIGURE 83

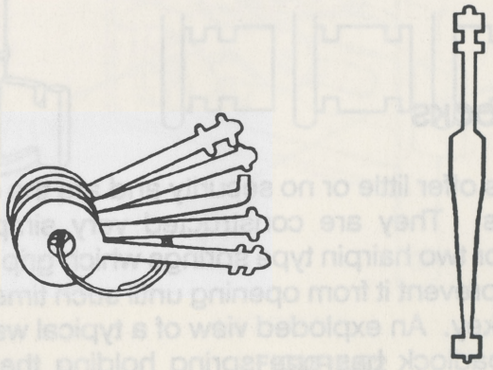
## WARDED PADLOCKS

Warded padlocks offer little or no security and are the easiest to pick open of all locks. They are constructed very simply, consisting generally of one or two hairpin type springs which grip the shackle of the padlock and prevent it from opening until such time as the spring is spread by the key. An exploded view of a typical warded padlock is shown. This padlock has one spring holding the shackle. To

operate this lock the key must be cut to by pass the two ward plates. With the ward cuts properly cut the key can be turned and will spread the spring which has been sitting in a recess in the shackle. When the spring releases the shackle, the shackle spring forces the shackle up and out of the case.




To open this type warded padlock all you need is a tool that will by pass the wards and spread the shackle. A set of keys is manufactured by HPC and sold through their distributors that does the job quite well. They are inexpensive and will save you the time and trouble of making by pass keys. Your time is more costly than the keys. The set will open various types of warded padlocks. The "L" tool shown in the next chapter can also be used to open these locks. Merely pull out lightly on the shackle and insert your tool into the padlock. You can identify the spring quite easily as opposed to an immovable ward. The tang on the "L" tool should be the same width as the proper key. If it is less it will not spread the spring enough to release the shackle. A simple little tool I made many years ago is also shown below.



# CHAPTER SIXTEEN

## PICKING LEVER LOCKS

The Lever Lock was the natural outgrowth of the Warded Locks. Two or more levers were added to the Warded Lock and a specific location for each gate was created through which the projection, the FENCE, had to pass before the lock could be opened.These locks have been in existence for at least 300 years. Some of them are very elaborate and with very complicated mechanisms and offer a great deal of security against picking. Very few are found in use today in the U.S. Those that are in use here are generally found in the older areas of the U.S. and are in the Mortise Lock configuration on older homes. A great many of them can be found throughout New England. The next greatest use of the Lever type of lock in this country is the Lever Type Cabinet and Locker Lock. There are still many of these in use around the world. Europe, the Far and Middle East still use many of the various type Lever Locks. Not only do they use them for Commercial, Residential and Cabinet locks but also in Safes, strong boxes etc. anywhere they require a high degree of security. Lever Locks offer a great deal of security when serrated faces on the levers are used along with false gates and other mechanisms to hide and protect the true gates. A small book could be written on the various types of these locks and the tools and techniques required to neutralize them.

The main reason the Lever Lock gave way to the Pin Tumbler Lock in this country is that large and complicated Master Key systems are not possible with these locks to the extent they are with Pin Tumblers and a large and cumbersome key didn't have the appeal the smaller pin tumbler type key does.

### CONSTRUCTION AND OPERATION

The construction of the Lever Tumbler Lock can range from very simple to very complex. The type of Mortised Lever Locks found in the U.S. are generally very simple and constructed of casted iron bodies with machined and stamped brass levers and other parts.

The operational principle of the Lock is quite simple. One or more levers block the movement of the bolt. Before the Bolt can be moved, a lever or set of levers must be raised to a point where the obstruction that has been blocking the lever is removed from the bolts path. Figure 84 shows the Bolt and a single Lever of a Cabinet type Lever Lock and the names for each of the parts of the Lever and Bolt.

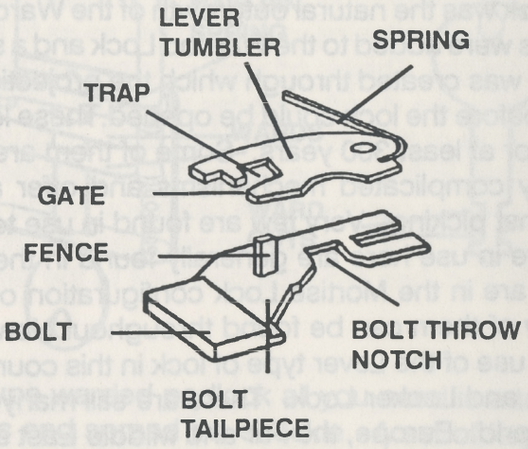



FIGURE 84

Figures 85, 86 and 87 show the operational principle of the Lever Tumbler locking mechanism. Figure 85 shows the Bolt fully retracted in the unlocked position. The Fence, which is attached to the Lever is positioned in the "Trap" preventing the Bolt from being "thrown". The illustration shows only one lever. In reality there will be from three to six levers in the average Cabinet or Locker Lock and three to five in common Mortise Residential Locks used in this country.

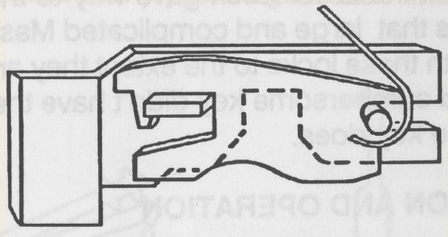


FIGURE 85

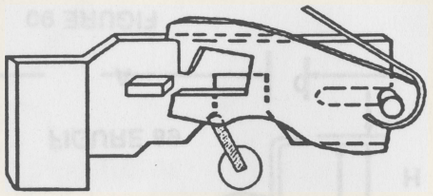


FIGURE 86

Figure 86 shows the Lever raised by the key to a point that has allowed the Fence to pass through the gate. The key that operates the lock is cut in the position that contacts a certain lever to a depth that will raise that particular lever to a height that will align the gate with the Fence and the part of the key known as the bolt throw portion has pushed the Bolt forward to a point where it has cleared the gate. At this point the Bolt is thrown as far as it will go. As the key is turned to complete its rotation the Lever will drop as shown in Figure 87. The Bolt is now deadlocked in the extended position.

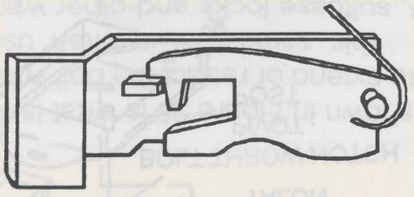


FIGURE 87

Figure 88 is an exploded view of a common Lever Tumbler Cabinet Lock. Only one lever of the stack is shown. The Trunion shown is one of two types in common usage. The one shown has a Talon which makes contact with the bolt throw notch of the Bolt and extends or retracts the Bolt when the Levers are raised to the proper height to allow the Fence to pass through the Gate. The other type Trunion has no Talon. It is used basically to stabilize and align the Key in the

Lock case. A portion of the Key, known as the Bolt Throw Notch is used to extend or retract the Bolt.

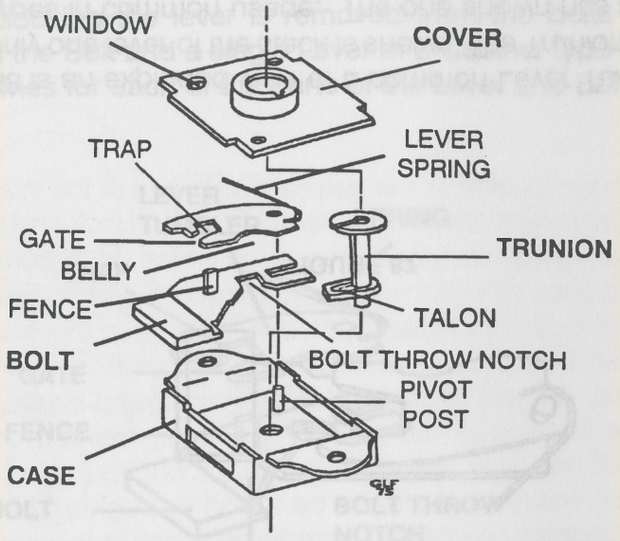



FIGURE 88

Figure 89 is an illustration of a Flat Steel key used with Lever Tumbler Cabinet and Locker Locks. This same type key is sometimes used for small simple warded locks.

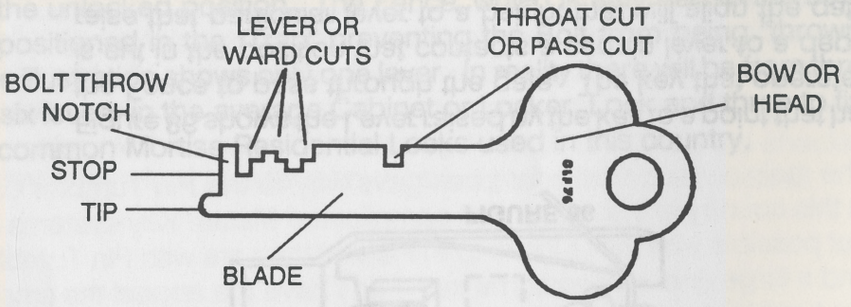



FIGURE 89

## THE TOOLS TO USE

The Lever Cabinet type lock can have from three to eight levers in the stack. YALE Lever Locker Locks which are still in use have six levers. The tools used to neutralize these locks are not that different from those used to open Pin Tumbler cylinders. I have on occasion opened the smaller type of these locks with the same tools.

The type of Turning Tool used will depend on the type of Trunion used in the lock. If the lock uses the type of Trunion shown in Figure 88, the same type Turning tool can be used as is used in picking Pin Tumbler cylinders. The Talon on the end of the Trunion moves the bolt.

The tool shown in Figure 90 is what is known as an "L" tool and can be used to extend or retract the bolt when the Trunion does not have a Talon. This same tool is often used to open simple warded padlocks, suitcase locks and other warded locks. This tool should be made by the individual Locksmith and in several different sizes to accommodate different locks and situations. I have a variety of these each with different dimensions. The one I used most often to pick Lever Cabinet and Locker Locks had the following dimensions: A = 3 1/4": B = 2": C = 3/8": D = 1/4": E = .095": F = .065: G = .085": H = .060". The tool was made from Piano Wire of .095" diameter (about 30 years ago). Notice that the tool has been filed down to .065" of an inch at dimension F.

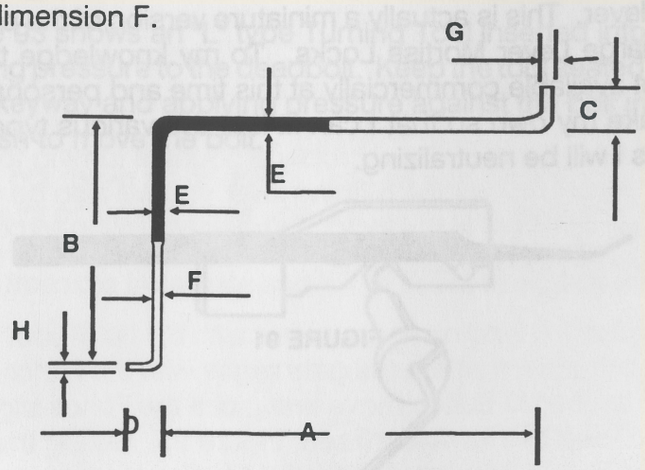



FIGURE 90

The two ends of the tool differ so as to accommodate various sizes of keyways and thicknesses of bolts. Also note that the tool has been filed to a flat in the area of the tool shown white. The long end of the

tool has been filed to a flat of .050" of an inch. The short end to a flat of .040". The two ends of the tool shown as dimensions C and D should be the same dimension as the height of the key blank used to operate the lock. Remember this tool replaces the Bolt throw portion of the key when picking the lock so it must cover the same radius the key does.

I have made a series of these tools of different sizes from large for Mortise Locks to very small for lever type Suitcase Locks. Fit them to the items they are to be used on. Remember the tang must be the same length as the keyway height. The dimension G and H should be the same width as the portion of the key used to throw the bolt.

To pick the Lever Cabinet and Locker Locks you will need a pick very similar to the hook pick used to pick Pin Tumbler cylinders. The difference in the two picks will be the strength of the material used to make the pick and the depth and shape of the hook which should be quite deep for picking this type of lever lock. Also the width of the Tip is critical because it must contact only one lever at a time. Too wide a tip will contact two or more levers and frustrate your efforts. Figure 91 is an illustration of a pick I have used with success.

Notice the angle of the hook of this pick. When the pick is placed under a lever and the handle lowered from a horizontal plane, the pick will be pointing straight up and will raise the lever without touching an adjacent lever. This is actually a miniature version of the pick used to pick the large Lever Mortise Locks. To my knowledge this type of pick is not available commercially at this time and personally I would rather make my own so that I can fit it to the various types of locks and levers I will be neutralizing.

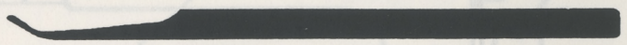


**FIGURE 91**

## PICKING LEVER CABINET AND LOCKER LOCKS

The first step in picking the Lever Tumbler Cabinet or Locker Lock is to determine if the Trunion has a Talon. Insert a standard Turning Tool into the keyway. With the keyway straight up and down and the Turning Tool insert the tool as shown, (Figure 92). If the Bolt extends from the Left side of the lock case and the Turning Tool when rotated clockwise turns less than 225 degrees, (the 2 o'clock position), it indicates the Trunion does have a Talon and the standard Turning Tool can be used. The exact reverse of this also applies. If it rotates 360 degrees you will need to change to an "L" type Turning Tool because the Trunion of the lock does not have a Talon as described earlier.

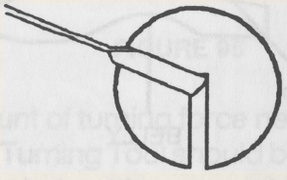


**Figure 92**

Figure 93 shows an "L" type Turning Tool inserted into the lock and applying pressure to the deadbolt. Keep the tool seated in the bottom of the keyway and applying pressure against the bolt in the direction you wish to move the bolt.

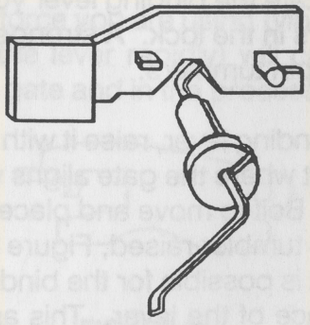


**FIGURE 93**

Lever Tumblers can be picked for the same reasons Pin Tumblers can be picked, Tolerances. As shown in Figure 94, the distance from the Pivot post to the face of the Lever that contacts the Fence will be slightly different in each tumbler in the stack. The lever that is the longest will contact the Fence and bind before the others in the stack. You can feel this just as you can a binding Pin Tumbler.

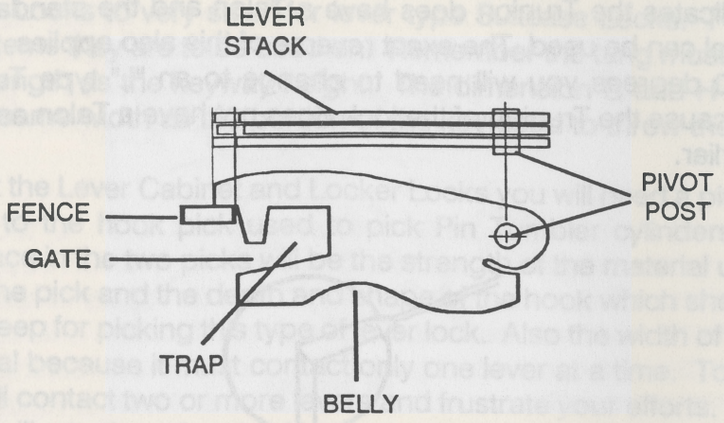



**FIGURE 94**

Just as with Pin Tumblers, the amount of Turning Pressure used is critical. The strength and condition of the lever springs will dictate the amount of turning pressure to use. To determine which of the levers is binding, apply a turning pressure and raise each lever one at a time. Levers that are not binding will raise easily. The binding lever will resist but can be raised if the proper amount of turning force is being applied. As you locate the binding lever you will also be determining the number of levers in the lock. A stronger turning force is required to pick levers than pin tumblers.

After locating the binding lever, raise it with the tip of your pick. When it is raised to a point where the gate aligns with the Fence, the turning force will cause the Bolt to move and place the Fence slightly into the Gate and keep this tumbler raised, Figure 95. During the process of raising the levers, it is possible for the binding lever to change due to the angle on the face of the lever. This angle is necessary to allow the lever to pivot upward. A different lever may suddenly become the binding lever. By maintaining a constant force against the bolt with your Turning Tool you can hold the previous lever at the height where

the new lever started binding. In reality both levers are now binding. Continue picking the lever with the tightest bind. During this process each of the levers will eventually enter the gate and the bolt can be retracted.

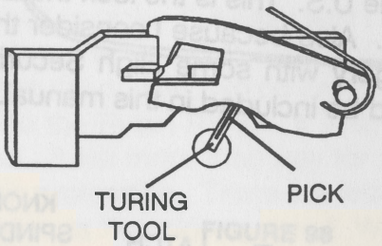



FIGURE 95

Because of the amount of turning force needed to bind and raise the levers, your pick and Turning Tool should be made of a stronger stock than those used for pin tumblers as stated earlier. Also the levers used in Cabinet and Locker Locks are quite thin so the tip of your pick must be quite small. Generally these levers will be .025" of an inch or less in thickness.

Occasionally you may find a lever Cabinet or Locker Lock with a face similar to the one shown in Figure 96. This is used to deter picking these levers. It serves as a false gate and can cause the fence to hang up. You can generally identify it because the lever will "freeze up" and not move up or down. Just as with Mushroom Pins, varying the amount of turning force you are using (vibrating the Turning Tool, raising and lowering the lever rapidly) will cause the Fence to disengage from the false gate and in the process slightly enter the gate.

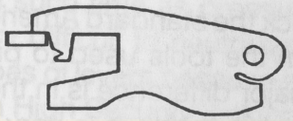


FIGURE 96

## PICKING LEVER MORTISE LOCKS

A great many versions of the Mortise Lever Lock exists in the world. The type of levers and security devices associated with them are many, so many in fact it is not practical to try and cover them in this manual. Therefore, the only lever lock covered here other than the Cabinet and Locker Lock will be the common Mortise Lock still in use in some parts of the U.S. This is the lock the Locksmith will be most likely to encounter. Also because I consider the better Lever Locks in the same category with some High Security cylinders I do not believe they should be included in this manual.

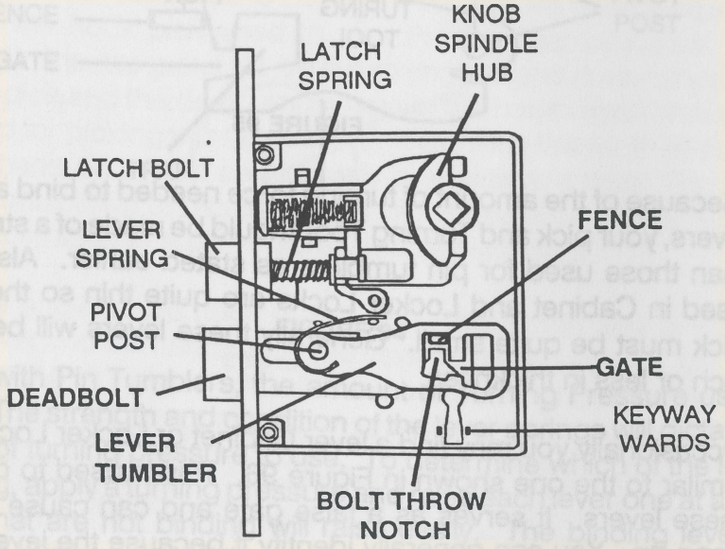



FIGURE 97

The tools used to pick the standard American type Mortise Lever Lock differ very little from the tools used to pick the Cabinet and Locker Locks. The only major difference is in the size of the tool. Figure 98 shows a type of pick I used. It is very little different than the pick shown in Figure 91, however, the pick shown in Figure 98 is made of much heavier stock. Because the better Lever Locks around the world use much heavier springs, this pick is made from piano wire that is .090 thickness (30 years ago). Also note that the curved end has been filed to a .035" thickness. The opposite end has also been

filed to a .065" thickness. This end can be used as a probe or an "L" tool when the need be. The tip of the pick that makes contact with the lever has been filed down to .065" of an inch. It may be necessary to make it even smaller depending on the type and size of levers encountered.

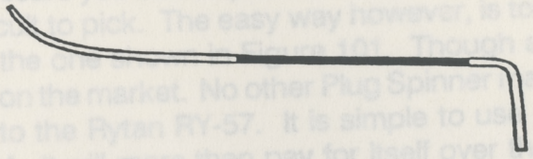


FIGURE 98

The type of levers used in these common Mortise Locks differs from those used in the smaller Cabinet and lever locks. Notice that all the action, movement of the Fence, takes place in an "H" shaped cut out in the lever. The better grade lever locks have serrations on the face of the lever that the Fence contacts and in some instances serrations also on the fence. Putting turning pressure on these levers causes them to hang up, making picking very difficult.

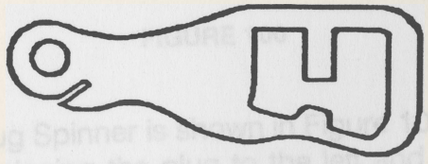


FIGURE 99

You will find some levers that have false gates in the face to trap the fence during a picking attempt. These gates are very shallow and will freeze the lever until such time as pressure is released on the bolt. These levers are very difficult to neutralize. This manual will not go into picking these types of levers because as stated earlier, the author considers these as a High Security locking devices.

## NOTES

# CHAPTER SEVENTEEN

## PLUG SPINNERS

Occasionally you will pick a pin tumbler cylinder in the wrong direction. When this occurs you can re-pick it in the proper direction if the lock is not to difficult to pick. The easy way however, is to use a Plug Spinner such as the one shown in Figure 101. Though a bit expensive, it is the best on the market. No other Plug Spinner manufactured can come close to the Rytan RY-57. It is simple to use and if used properly fail proof. It will more than pay for itself over the course of your career in this profession. There are less expensive ones made but I consider them as "knuckle busters". With practice they will do the job most of the time, however, the Rytan RY-57 requires no practice to use successfully. (This is not a commercial, I just happen to believe in it and personally use it.)

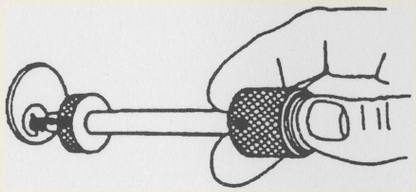


FIGURE 100

Another type of Plug Spinner is shown in Figure 102. There are two of these, one for spinning the plug to the left and one to the right. They are available from your Locksmith Distributor.Both types of Plug Spinners come with directions for proper use.

FIGURE 101

## NOTES

NOTES

## NOTES