Relief Carving the Gunstock

By JOHN BIVINS

OF THE gunstocker's art, carved decoration is historically one of the most important artistic features used by the craftsman. Relief carving has fallen into disfavor in recent years, particularly since World War II, though as late as the early 1950's full relief-carved surrounds for checkering on pistol grips and forearms was still being regularly ordered from better carvers such as German-trained August Pachmayr and Reinhardt Fajen. American riflemen today prefer the relatively unadorned classic stock which has evolved in this country since the early 20th century; this form stresses purity and exactness of architecture, and is seldom embellished with anything more than fine, complex borderless checkering patterns. Europeans continue to order fine carving, however, often including extensive paneled game scenes in addition to foliate scrollwork, leafage, and other motifs. From the impact of American stock design on European stockers, however, it appears likely that the art will not long be practiced there on the scale which it is now. Too, carving is expensive work, though less so than engraving in most cases, and the basic cost of the guns themselves has caused many shooters ordering custom work to place more emphasis on technical aspects rather than decoration.

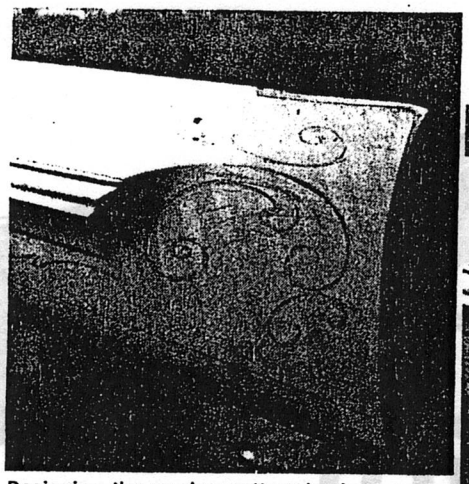
Unlike today, carving was basic to any fine arm in the seventeenth and eighteenth centuries, and it was considered a luxuriant extra touch well into this century, as one well might witness in the armsmaker's catalogues of seventy years ago. Relief carving attained its greatest artistic height in Paris during the seventeenth century, when the great baroque art of the French stockers literally influenced the hands of every stocker of merit from London to Tula in Russia. Published design books delineating carving and engraving constructions were inspired by the work of such Paris masters as Thuraine and Le Hollandois, and the larger European gunmaking establishments who could afford such expensive tomes purchased them for source material.

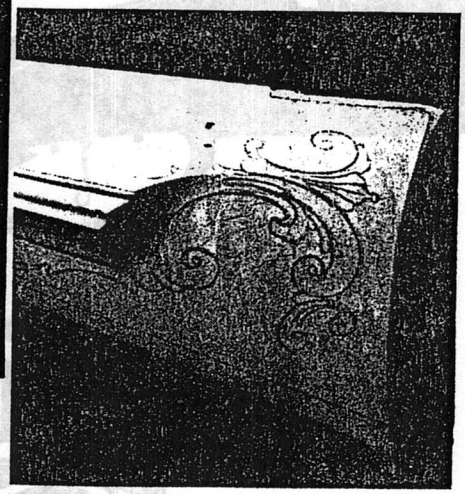
Relief carving reached a pinnacle of complexity during the rococo period, after 1720, when the stiff acanthus leaves and balanced symmetry of scrollwork of the baroque period gave way to a writhing, flowing assemblage of naturalistic floral motifs, ruffled and foliated scrolls, and stylized interpretations of sea-life, or *rocaille*, which lent its name to the art of the period. By the end of the 18th century, classical architecture had begun to cause a restrained, linear and formal influence upon carving, both on gunstocks, furniture, and building elements, though it was still France that proved the principal design center for the new classical taste. Boutet was the acknowledged master of the era in respect to gunstocks. After the first quarter of the 19th century, relief carving on gunstocks began to degenerate as a major artistic medium, and carvers began to revive in a rather florid manner motifs used in the two centuries past. The Victorian period, in fact, is singularly marked by an endless repetition of such revivals throughout the arts. The genius of the baroque and rococo periods has not been improved upon, and we can do no better today than to employ the art of these two great periods. . .if we are able.

The shooter of the 17th and 18th centuries was hardly satisfied with a gun that had no carving at all. It seems, in fact, that people of those times expected beauty in places where today we wouldn't take notice. Internal mainsprings of flintlocks, for instance, were often beautifully finished with filed decoration, even though the owner of the piece might not ever remove the lock himself. By the same token, even the meanest fowlers or rifles usually had some vestige of carved decoration, no matter how simple.

Away from the gunmaker centers, carving often became mannerist art, reflecting untutored folk-art woven throughout a general design influence from the cities. The carving on American longrifles is an example of this, for it seldom attains the technical excellence,

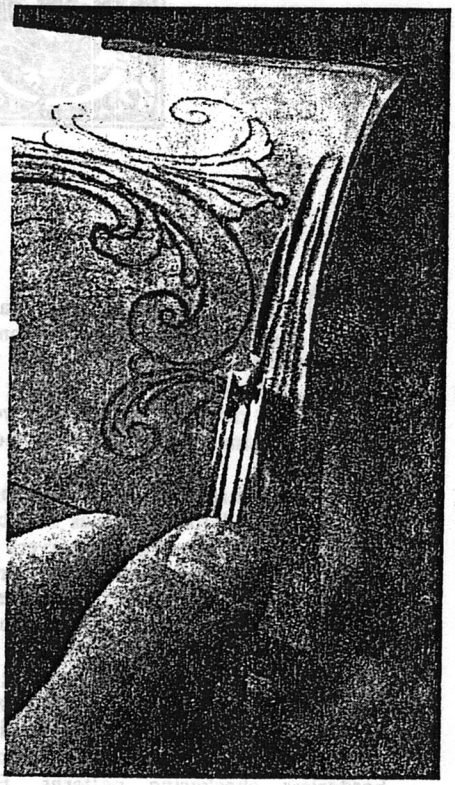
for instance, of the very complex relief-carving on 18th-century furniture. American gunstock carving is interesting in its very naivete, however, for in it we find an often brilliant mixture of both baroque and rococo, modified by the experience and education of the carver himself. In order to study the greatest technical ability in gunstock carving, though, we must turn in most cases to fine-quality European guns, whose often exquisite work was more often than not the hand of a specialist carver. Such specialists in this country worked for cabinet makers in Philadelphia or Boston, however, and not for gunstockers in Allentown or Lancaster.





Designing the carving pattern begins with constructing the basic "skeleton" of the scrollwork, which must have good flow and spatial balance before the final details are added to the pattern. Each detail is drawn complete, though some of the design may be cut away during relieving or modeling.

I won't discuss scene carving here for two reasons: it is not much used in this country, and when it is, it must be executed by a carver who is also an anatomical artist, or the work is usually a failure. Fine scrollwork can be carried out by anyone who is skilled with their hands and can draw a bit; the major point of understanding is to be able to visualize a harmonious, flowing continuum of design with each element relating to the next and contributing to the whole with meaning. The easiest method to obtain this understanding of design-flow is to study and draw carved designs executed by early masters on gunstocks, furniture, or any other medium. . .including relief plaster work and even tombstones. Good sources today abound in the republished French design books, monographs on furniture of the rococo period, and books on the longrifle. The student should set his sights high, however, and in studying the work of American gunsmiths, pay particular attention to the finer carvers such as Eister, Noll, and John Brooks. . . all of whom are represented in Kindig's *Thoughts On The Kentucky Rifle.*



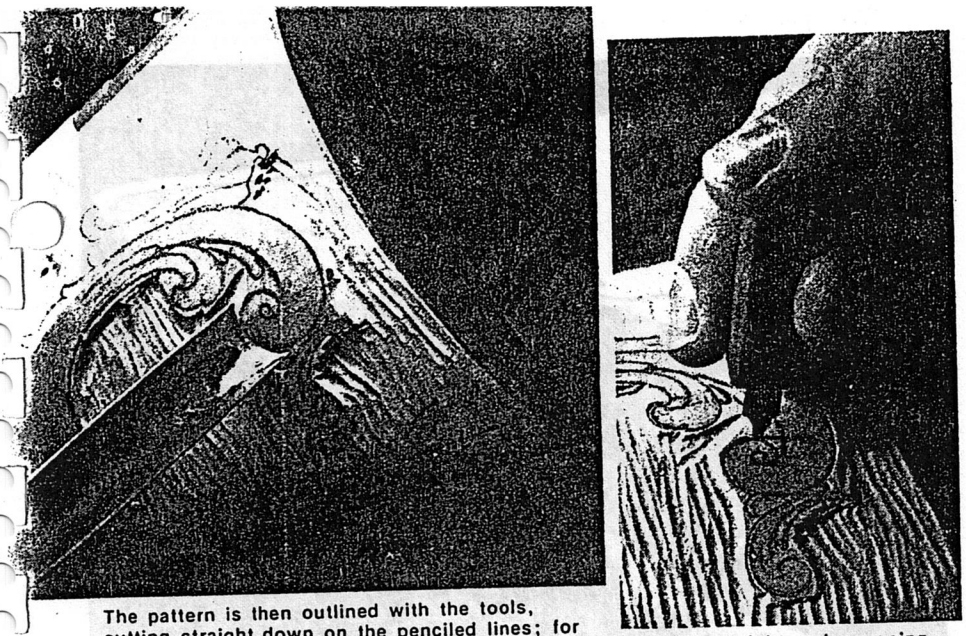
Rough relieving of the ground is best done with gouges, cutting across the grain nearly full depth, to within 1/16-inch of the penciled pattern.

The techniques which we will use here are basic to relief carving on any wooden surface, and may be used to execute carved decoration on a sporter stock as well as they may be used on a longrifle. The basic architecture of a longrifle, however, lends itself most readily to carving designs, since carving must appear to be a harmonious part of the stock design itself, not just some fussy appendage tacked on "for pretty." The curves of a sporter stock are more difficult to relate to a general carving pattern. In either event, a gunstock is far better left void of any decoration unless the work is carefully thought out and executed with precision, since the finest job of inletting and stock shaping in the world can be destroyed with mediocre carving. Carving is an art which one should feel committed to, not something which is done because there is a space to be filled.

Whatever the type of gunstock, only certain hardwoods are really suitable for carving. For sporter stocks — or flintlock jaeger rifle stocks for that matter — the classic choice is always *juglans regia,* or one of the many forms of European walnut. This wood is dense, relatively hard, and, most importantly, has pores that are short in length. American walnut, or *juglans nigra,* by contrast, has long fibers with coarse pores, and is too brash or "broomy" for much detail, unless it has a good deal of figure. Figured wood always has the densest cell structure, and provides the best carving surface. Cherry suffers the same coarseness as black walnut, though an especially dense piece from a hillside-grown tree may take carving fairly well. Claro walnut, though not as hard as European, should take detail well if there is fairly abundant figure in the stock, just as black walnut does. All of the walnuts, and cherry, are more difficult to handle in finishing, however, since the grain tends to raise prominently. Sharp edges in carved detail can be lost by this if care is not taken.

Possibly the best gunstock wood for detailed carving is sugar maple, due to the natural denseness and lack of porosity of the wood. The best stocks for carving must be hard enough so that they can't be dented appreciably with a fingernail, especially if fiddleback figure is present. Soft maple with a great deal of figure is quite difficult to carve well due to pieces of wood splitting out of the less-dense sections of the figure. The best maple often has a dark color with a pinkish cast, and a carving tool leaves a shiny cut in it, just as in European walnut of good quality. One good test of the carving quality of a stock blank is to make a cross-grained cut with a small gouge or parting tool, and note whether the tool cut is clean. If the tool tears the wood appreciably, you will experience difficulty in both cleaning up the carving ground and in modeling the carving with gouges.

Tools are basic to carving, and if you are serious about carving, this is no place to save money. Poorly ground and tempered tools might teach you some new vocabulary, but they won't help you do the job well. Thirty years ago quite a number of firms were in business which



The pattern is then outlined with the tools, cutting straight down on the penciled lines; for preciseness, using gouges for radiused cuts, flat chisels for straight and sweeping lines, and a small 1mm chisel for the smaller radiused cuts which can't be done with a gouge.

made fine carving chisels, such as Addis in England, but many of these have either gone out of business or shifted production to other lines due to flagging demand. I have tried a number of both domestic and foreign brands of tools, and have found that the best quality commercial tools available here are those of David Strassman & Co., made in Wupperthal, Germany, and sold by Frank Mittermeier, Inc. (3577 E. Tremont Ave., Bronx, N.Y. 10465). A very close second are the fine Swiss tools sold by Woodcraft Supply Corp. (313 Montvale Ave., Woburn, Mass. 01801). No other tools I have tried that are readily available have been able to withstand normal use. A flat chisel, for instance, ground with a 20-degree bevel, must be able to withstand being driven straight down in hard wood without developing a chipped or bent edge from either too little or too much temperature in drawing the blade. In purchasing carving tools, buy the larger professional size. They cost more, but you are making a lifetime investment.

Except for gouges, which few carvers ever have enough of, a basic set of carving tools need not ruin your bank account. Three sizes of No. 1, or flat chisels, are a good start, in 2, 4, and 6mm widths. A 3mm swept 60-degree parting tool (or V-gouge, if your prefer) is needed, and a minimum of four sizes of straight No. 9 gouges: 2, 4, 6 and 10mm widths. Two No. 8 gouges, in 4 and 6mm, would be useful. Gouges are made in a host of radii, as you will note in the catalogues. One No. 5 quarter-round gouge in 8mm width should also be in a starter set of carving tools. For cutting around radii for which you have no gouge to fit, you should make yourself a tiny, flat, thin chisel with a 1mm blade, a tool useful also for inlaying silver wire, but that's another story.

Most of the carving knives on the market aren't especially useful in regard to shape. The spear-shaped pen blade of a quality pocket knife serves very well for the fast removal of carving ground. Pick a knife with a pen blade about 1 3/4 inches in length, and with a coarse stone, remove all of the edge from the blade except for 3/8-inch at the tip. This tip edge should be stoned with a very shallow angle to the cutting edge; the rest of the edge is left blunted since the thumb of your left hand is frequently used to stop the travel of the blade at that point.

Stones are critical to proper use of carving tools. Needed are a four or six inch soft Arkansas, a hard Arkansas of the same size, and an India combination stone with a coarse grit on one side for shaping the bevel on new tools. Also needed is a hard Arkansas tapered point slip for honing the inside of gouges, and an Arkansas knife stone for use inside the parting tool. Stones should be kept in a covered box to keep dirt and sawdust off their surfaces, and they should be used with a good quality non-gumming honing oil, such as A.G. Russell's. There is not enough space here to discuss the sharpening and honing of carving tools;

The remaining ground is then broken up with chisel cuts at right angles to the pattern, allowing the knife blade to easily cut away the remaining fillet. Note the position of the fingers on the tools, where with the knife, the thumb is used continuously to position, guide, and brake the tool.

an excellent illustrated guide to the process may be found on page 10 of the Mittermeier catalog. Bevels on carving tools must be kept quite shallow, from 10 to 20 degrees angle depending upon the work. All of your tools must be kept *razor* sharp at all times.

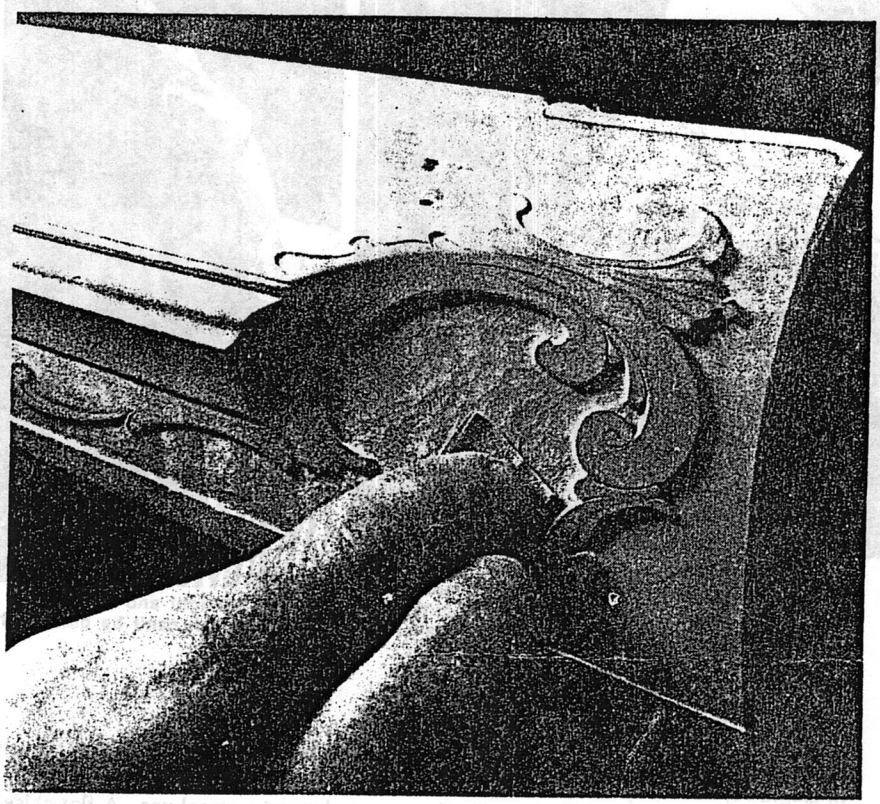
A carving mallet is useful, but is not necessarily used continuously. Of the lignum vitae types, buy the lightest one you can find; the heavier ones are really for sculptors. I find that I more often than not have picked up my small rawhide mallet when the tool needs driving.

A toothbrush with stiff bristles — as stiff as you can find — serves very well to polish your carving after it is modeled, and will also clean away stray scraps of fiber that seem to cling tenaciously in various nooks and crannies.

Of all your tools, lighting is perhaps the most important. If you can't see the work properly, you won't be able to finish it well. A close friend recently brought one of his completed rifles to my shop. The rifle had extremely well-drawn and followed carving, but around the work small flakes of wood were missing. I asked my friend how he had overlooked the numerous tiny flaws, and he didn't know. . .until he admitted that the only light over his bench was a big fluorescent fixture. Fluorescent light is an excellent fill light, but what is needed in carving, just as with checkering, is a certain amount of *shade*, which fluorescent doesn't provide. I have an eight-foot fluorescent fixture over my bench, attached with a cord to the wall on the far side to angle the back side of the reflector up, bouncing light off the wall and keeping it out of my eyes. My "working" light is a 150-watt incandescent bulb mounted in an articulated-arm fixture, situated where I can throw light on the work from any angle desired. For best visibility, the carving surface should be in slight shadow at all times. . .not in direct light. This is vital to both modeling the work and to avoiding those "hickies."

Before starting a carving job, the stock should be fully shaped to final form and sanded with at least 220 grit garnet paper. Before carving a stock, I generally raise the grain three times or more on the entire stock to bring out the heavy rasp cuts and other tool marks buried in the wood. . .to do this after carving is to invite damage to your carved detail.

I prefer to simply sketch off the carving pattern right on the gunstock. Paper is fine for practice sketching, but is flat and won't tell you how the pattern will fit the curved surfaces and general architecture of the stock. A pattern may be transferred from paper with carbon paper, but that really doesn't work too well. Sketch it freehand, and if it doesn't suit you, "erase" it with sandpaper. To achieve good balance and flow from one section of the stock to another, it is best to draw out all of the carving which you plan to use on the stock, including both straight and curved moldings, and while doing this step back frequently and take a longer view of the piece. On a longrifle, lock moldings are also drawn at this point. Many beginning carvers make an attempt to shape these moldings and finials while shaping the stock, but they must not be cut until the stock is finish-shaped for best results.



After the ground is cut as smoothly as possible with light cuts of the knife, and the entire surface is level, the remaining tool cuts are removed with 150, then 220 and 280 garnet paper. The ground must be free of tool cuts.

Good relief carving is seldom more than 3/32-inch in height, unless there is a great deal of overlapping elements, so there is little need to leave a lot of extra wood in areas which you want to carve. I generally leave no more than 1/16-inch standing above the buttplate on the cheek side of a stock; the natural angle of the stock gives you a bit more as you progress toward the cheekpiece. The section of the stock from the tang through the length of the wrist is treated as one piece of carving on a longrifle, so no extra wood is needed there. The entire surface is relieved.

In sketching a pattern, first establish the basic "skeleton" of the scrollwork to insure proper flow of the overall design. If your primary lines aren't correct to begin with, penciling in the balance of the detail won't make the pattern appear natural on the stock. When the basic lines satisfy you, draw in all of the detail you will be using, even though some of it will be cut away during groundwork and modeling, and will have to be re-drawn later. A centerline is often needed on carving that must align with linear points, such as the axis between the point of the comb and the center of the breech tang.

Before making cuts for scrollwork, I often cut in all of the butt and lock moldings, though I don't relieve them at this point. Straight-line butt moldings are easily cut with a 60-degree "long jointer" single checkering tool; after making a light incised line, run the point of a thin-bladed knife down the groove to cut to full depth. Curved lock moldings are most easily cut with the parting tool, though take care in places where the tool must cut across the grain.

The preferred technique for relieving the carving pattern begins before a tool even touches the pattern itself. Called "bosting in" by English carvers, the process simply involves hogging wood away from around the design. It is best done with gouges and cuts running across the grain to avoid slips and splits. The knuckles of the left hand should be rested against the stock to help act as a brake for the tool, and at times a very slight twisting motion of the right hand will speed the cut. Make these relieving cuts to within 1/16-1/8-inch of the penciled pattern, but take care not to run over. Making these cuts before the actual pattern is cut in will relieve some of the

pressure of the carving tools as they cut down.

The "secret" of precise and crisp carving is that the entire pattern must be "stabbed" in — chisels and gouges cutting straight down around the penciled lines. Carving may in fact be quickly outlined with a parting tool, but the resulting beveled cuts on every element rob the carving of the hard shadow-lines needed to provide sharp definition of the work. Use the parting tool for incised scrollwork and for outlining moldings, but limit its use in outlining scrolls that are to be relieved.

Gouges should be used as much as possible to make radiused cuts, such as the volute of a scroll. Angle the gouge away from the work so that the bevel is as perpendicular to the stock surface as possible, and tap the tool in with a mallet. Cuts much deeper than 1/16-inch are impractical since bevels tend to wedge and compress the wood, and may cause a fracture, particularly in curly maple. For long curves and straight lines, cut straight down with the flat chisels, always keeping the bevel facing away from the line being cut. Too much pressure on a flat chisel will leave nicks in the edges of the carving from the corners of the back of the blade; this may be remedied a bit by simply stoning away those back corners somewhat.

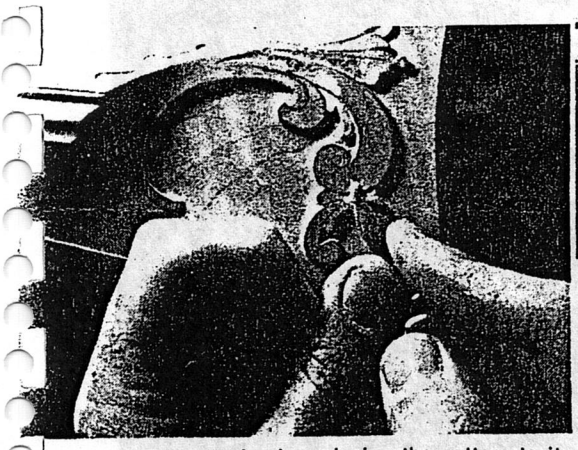
For cutting radii for which you have no gouge to fit, the small 1mm chisel mentioned earlier is the ticket. One may be made simply enough out of an old X-acto blade or any suitable piece of steel that is no more than 1/16-inch thick. This tool may be tapped in, or, if you prefer to push it down, make the handle long enough so that it may be grasped with the entire hand. I use both a small and large-handled version of this small-bladed chisel. Bevels are stoned equally from both sides of the blade, and the corners of the blade are relieved with the stone on both sides.

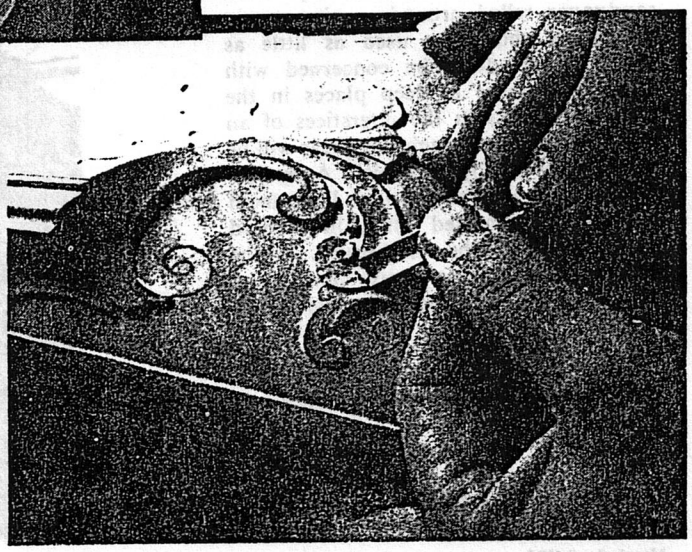
To make the chore of removing the rest of the ground around the carving a quicker one, cut straight down with a 4mm flat chisel at right angles to the pattern, all the way around. If you space these shallow cuts closely, the knife will cause small pieces of wood to break away easily around the carving.

Finish cuts on the ground are done largely with the knife, aided by both flat chisels and the quarter-round gouge. Some carvers prefer skew chisels for this work, but I have never found them particularly adaptable to my work methods. In using the knife, take care that the point does not stab the edges of the carving, and use your left thumb as a stop to prevent excessive travel. The blade is pushed with the index finger of the right hand or with the thumb of the left; a small bit of tape wound around the knife blade where these fingers contact makes the work more comfortable. Make light, shearing cuts, and continue cutting until the pattern is raised to the height desired, and all gouge cuts are removed. It is paramount that the ground be level from one section of the carving to another, so that the carving actually has the appearance of having been applied to the surface. If you should break out small chips with either knife or chisel, work the surfaces down with the cutting tools. Sandpaper simply won't remove such "walloons." If you should loosen a big chip. . .well, go sit out on the porch with a good glass of cold white wine for awhile, and then come back and re-draw the damned thing so you can cut away the break.

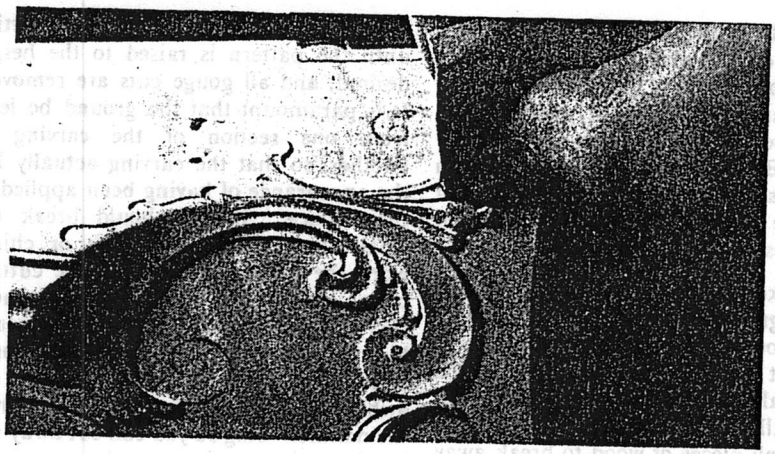
Your ground should show only the light chip-cuts of the knife blade at this point. I prefer to relieve all the carving on the gunstock before proceeding further, though one section at a time may be finished if preferred. The next procedure is to finish the ground. Start first with 150-grit garnet paper; anything finer will not serve to grind away surface irregularities. Sanding with the grain, level the entire ground. Hard-to-reach places may be sanded by folding the paper tightly several times and sanding with the edge of this "bundle," or, if you wish, glue the paper to some heavy veneer and cut it up with shears into shapes that you need, as my friend Bob Watts does. After leveling the surface with 150, switch to 220 and then 280 to make the surface as perfect as you possibly can. Finishing the ground before modeling the carving is necessary in order to avoid rounding edges which should remain sharp.

Now comes the fun part. . .modeling the design. Good carving is never flat, but is hollowed in such a way that the full three-dimensional qualities of your design are brought out. Good modeling should almost give the feeling that you can reach around *behind* a scroll or leaf. A study of the way a leaf twists in nature, showing





Modeling begins by reducing the pattern to its various flat planes and overlapping surfaces and continues with various sizes of gouges to sink the flutes and hollows, taking care that the tools are kept razor-sharp to avoid tearing the wood.



The carving is finished with small folded pieces of 220 and 280, wrapping the sandpaper around a pin punch to polish fluting. Great care must be taken not to round edges which should be left sharp.

part of its bottom side, is helpful in understanding such an impression. In modeling, it's essential that the tools be kept as sharp as possible, since sandpaper cannot be used to finish every surface of carving without softening the design. With hard, dense wood and sharp tools, you will have a smooth cut in any event.

Begin your modeling by using the knife and chisels to bring out the different flat planes and surfaces of the design, and then proceed with the gouges to cut the hollows, always taking light cuts and paying particular attention to the grain structure. There is one direction in which the tool always cuts best, and take care that you are following that direction, even if you must change the direction of the tool several times while fluting a scroll or leaf. Don't hesitate to add a small hollow even to the outside of a scroll, for such techniques lend sharpness to the carving.

Edges which must be rounded may be done with either the knife or flat chisel; don't rely on sandpaper to do this, or your scrollwork will end up looking like a pile of bleached cow bones. When the modeling is completed, *carefully* clean up your surfaces with folded bits of 220 and 280 paper, taking pains to preserve the integrity of each sharp line. Flutes and hollows may be cleaned up with sandpaper rolled around a pin punch. Sandpaper should be used as little as possible, and don't be concerned with small tool marks in deep places in the carving, such as in the interstices of an acanthus leaf, since such tiny areas will be filled somewhat by the finish. Accessible surfaces, however, should look like carved marble, and finished off with a hard scrubbing with the toothbrush. The brush often loosens stray fibers and reveals places that need further finish work.

Early carvers used a good bit of chip-carved gougework to add detail and add a further impression of depth. Drive a small gouge straight down, and then make an angling cut to remove the sliver. Don't overdo this, or you will cheapen the overall pattern. Incised-scrolled volutes which you have re-penciled onto the stock, must now be cut with gouges and knife. On this particular pattern, shown in the accompanying photos, I employed silver wire at these points rather than making an incised cut, in order to follow a customer's wishes. Wire may often be used to enhance carving, and we'll discuss techniques of inlaying it in a later issue.

With walnut, or a softer grade of maple, it's well to raise the grain around the carving by dampening and heating before applying finish. Do not, however, dampen the carving itself unless you want to spend a good deal of time re-defining the carving. In finishing, I prefer to use either a methanol or toluene-based NGR (non-grain-raising) stain on maple, such as "Artistain," a Sherwin-Williams product, or one of the spirit stains marketed by Albert Constantine of New York. Water-based stains, particularly those containing either nitric or chromic acid, cause unnecessary work in re-polishing or even re-cutting the carving. NGR stains, however, despite their name, do raise the grain. When you have acquired the desired color, allow the stock to dry and then re-polish the carving with folded bits of 280 paper.

In using either a drying oil (linseed or tung) or one of the resin finishes, it's imperative not to load the carving with finish. Apply one heavy coat and allow it to soak in and dry. Resand your entire stock lightly with 280 and 320 paper, touching up the carving where needed, before applying more finish. After the

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Detail may be added with restrained use of gouge-work, which lends depth to the carving.

Gunstock Carving

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first coat of finish, don't allow oil to collect in the carving cuts, or the resulting glitter in those places when dry will give a garish appearance to the work. The ground immediately surrounding the carving should be dull, with the highlights of the carving finished. Fluting of scrolls and leaves should not be filled with finish, either; if you put on too much, brush it out with a soft toothbrush. Walnut is more of a problem in finishing than maple, since the pores of the wood must be filled. Filler or sealer, however, must not be applied to the carving — you must take care to work around your designs, or the carving will be plugged, and detail lost. After the first coat of finish is applied, steel-wooling carving does no harm if the stock is of maple, but with walnut it's best to stick with 400 and 600 grit wet-or-dry paper in reducing the finish, to avoid pulling out sealer or snagging long fibers in the carving. Avoid the use of powdered pumice or rottenstone around the carving, since it will show white in places where it can't be brushed out. For those who prefer an antiqued look to a longrifle stock, you may moisten the stock very lightly with boiled linseed oil and then dust the carving with bone black (available from Brownell's). Take an old T-shirt and rub the carving down hard; this will leave the dusty black "patina" in the low areas of the carving. This is not a suitable process for walnut unless you have a very dark piece of wood to begin with.

Though relief carving is always at home on a flintlock longrifle, it is equally attractive on many other types of fine gunstocks, if used with taste and restraint. Carving is a dying trade today; even in Oberammergau, Germany, a world center of fine wooden sculpture, artisans are leaving their tools for less artistic but more lucrative work. It hardly seems appropriate that shifting trends in firearms fashion should allow the art to pass in this country. So buy yourself a set of tools, and give yourself and this ancient craft a boost.

John Bivins

FBW Trigger Guard

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tang, filed the nail head thinner to allow the hammer to be fully cocked, and polished the guard. With the guard in place, I then used small carving chisels to notch the stock, as the stock would actually hold the guard in place.

Now the finger lever had to be altered. Removing everything from the lever, I heated the rear part where it turns down to form the S curve, to red hot and bent it to about the same curve in the opposite direction. The finger levers of the FBW actions are made of a very tough steel, and it cannot be bent cold. It also takes more than a 6-bit hacksaw blade to saw it in two. I then cut the lever off as indicated in the drawing and filed metal from the rear of the finger lever base so it would swing past the front of the new guard. This done, I filed the inside of the cut-off piece of the finger lever flat where it would contact the guard and heated and bent it as necessary to fit the guard.

Welding the finger lever back together was the next step. With the receiver held upside-down in a vise, and with the finger lever base in place on its screw, I put a strip of .03-inch thick metal between the receiver and the rear part of the base to hold the lever base from closing fully.

I then clamped the reshaped lever to the new trigger guard, got everything aligned right, and "tacked" the two pieces of the finger lever together. Then I removed the tacked together finger lever from the receiver and finished welding it. After dressing the welded area down, the lever was put into place, and with the stock also in place, I decided where to cut off the end of the S hook, sawed it off, and rounded up the end with a file. The next step was to grind and/or file the inside of the finger lever to match the curved surface of the new trigger guard. I did this with an elliptical rotary file held in a drill press, with the lever bolted to a piece of two-by-four so I could manage the filing. With the drill press running at low speed and the press adjusted and locked to bring the file even with the lever, the inside of the lever was easily dished out so that the lever would closely fit against the trigger guard. The last step was polishing and blueing the reshaped finger lever and new trigger guard.

Although it involved considerable work, I like this new finger lever and separate trigger guard arrangement on my Model J FBW rifle. The lever is still more than ample in length to easily open and close the action, yet being shorter it does not need so much swinging room below the rifle. When swung open it still has a nice surface for "thumping" with the palm if this is needed to extract a stubborn case, and there is nothing on the pistol grip to cramp the fingers when shooting the rifle.

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