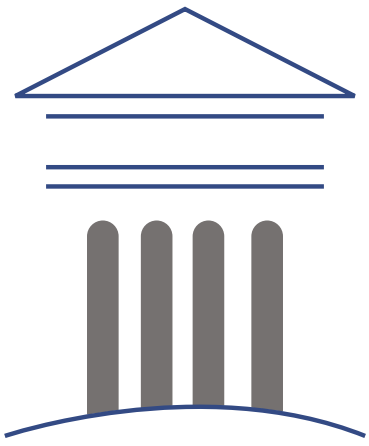
Gunstock Carving (#)
Lesson: 5663

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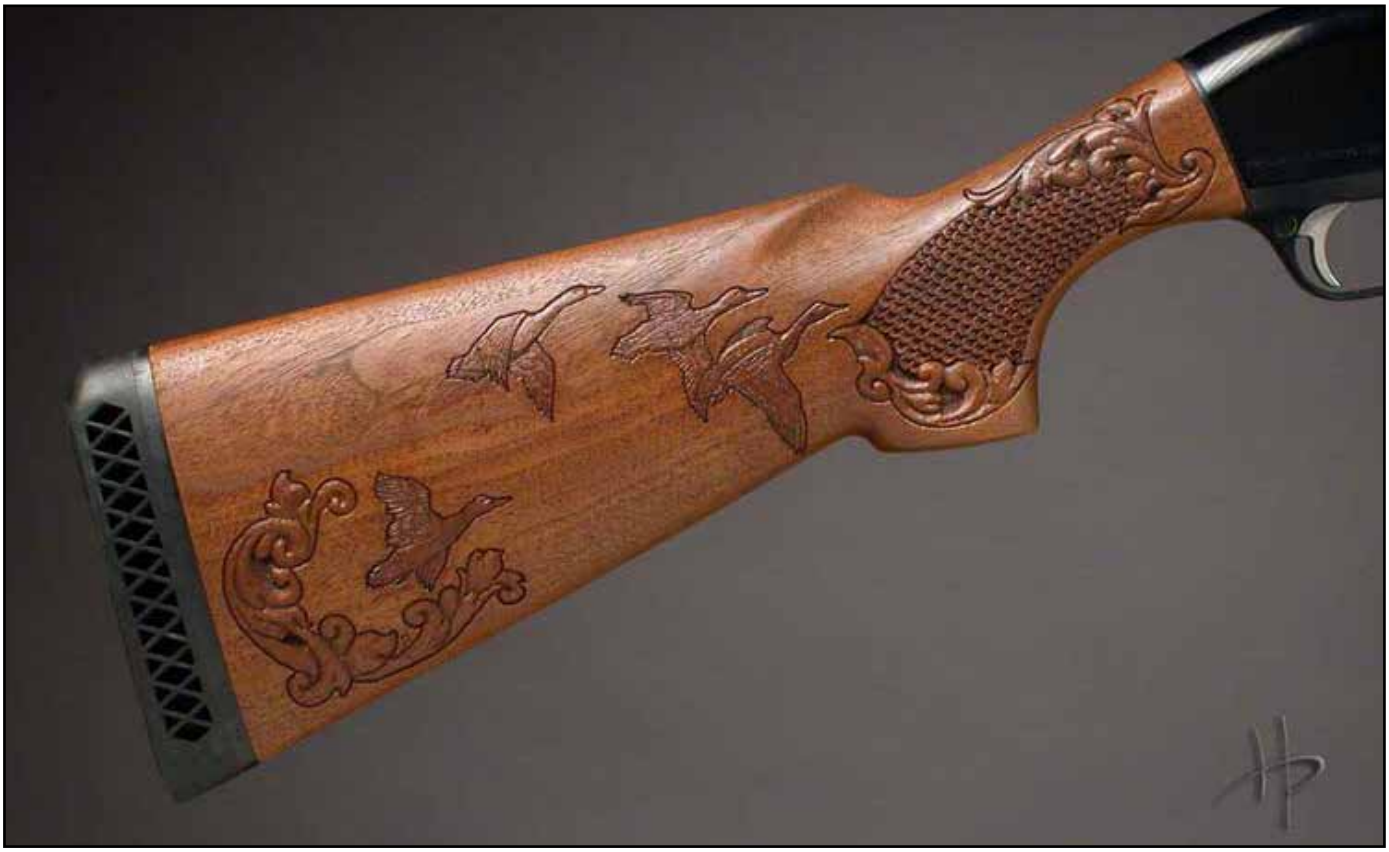


Figure 1: Beautiful Gunstock carving by Joe Cummings

Objectives

After completing this lesson, you should

1. Be familiar with the tools used to carve gunstocks.
2. Know the three styles of stock carving.
3. Understand how to obtain a good fit for an inlay.
4. Be familiar with the types of wood that produce a white or a yellow inlay.

Introduction

Stock carving, like metal engraving and etching, is a very specialized branch of gunsmithing. Stock carving is really an art that requires some natural talent, patience, much practice, and the desire to do only the best work. If you have had good results with stock checkering, you will probably do well with simple woodcarvings, like those used to enhance borders around your checkering patterns.

Some of your customers might want an elaborate game scene carved on the buttstock of a rifle or a shotgun, such as the one shown in Figure 1. Others might request simple chip patterns like the ones in Figure 2, on the next page. However, before attempting either, you should practice on scrap wood. Keep the first few practice carvings. After a few weeks, compare your most recent work with the designs that you did in the beginning. If you see great improvement between the two carvings, you are ready to carve a design on a buttstock.

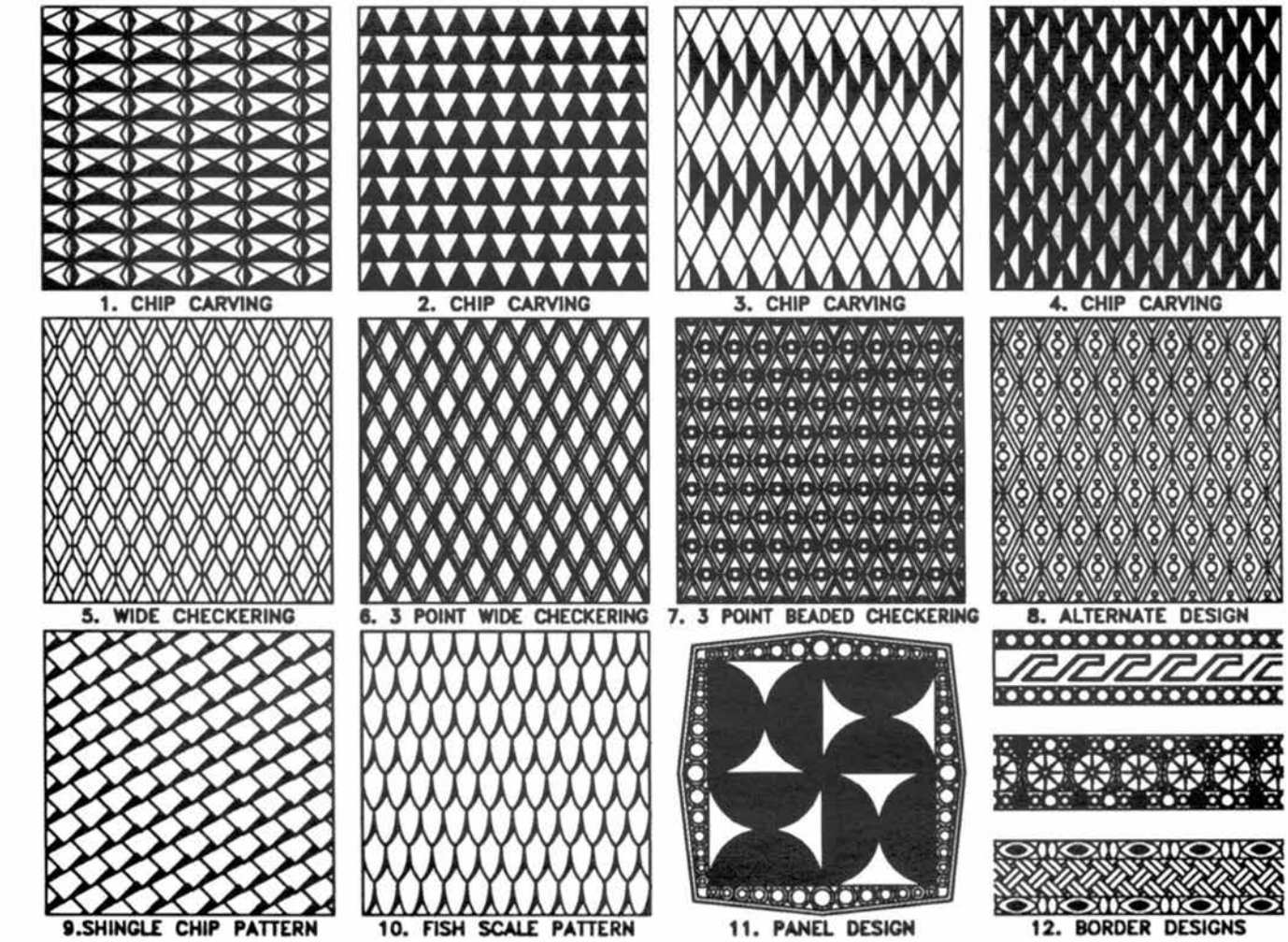


***Figure 2**: Design suggestions for carving or checkering stocks.*

Besides practicing on wood scraps, a good way to gain experience in woodcarving is to buy woodcarving kits, which are available in hobby supply catalogs or at a hobby shop. These kits contain all the necessary materials, complete instructions, and helpful hints for carving items such as wooden duck decoys and wooden statues.

Even you if decide not to carve gunstocks yourself, a basic knowledge of the procedure will enable you to evaluate the work of others and to talk intelligently about the subject. For example, if a customer wants a game scene carved into the rifle stock, you can find a professional stock carver to whom you can commission the work.

Woodcarving Essentials

First, you need a set of woodcarving tools—basically, chisels and gouges of different shapes and sizes. The number of tools required can vary from 5 to 50, depending upon the intricacy of the design. Chisels and gouges are available from $^{1}/_{16}$"-1" wide with curves, or sweeps, in graduated sizes.

However, the beginner does not need more than a few basic tools. It is better to learn how to use these tools before purchasing a full set of woodcarving tools, which can be expensive. You can purchase more tools as you gain greater skills. A good way to become familiar with the different types of tools is to study the tool descriptions in a woodcarving order catalog.



Figure 3: *Example of carved scrolls and Valencia tri-weave design by Jose Valencia on a Savage stock.*

Besides the tools themselves, you should have a set of fine honing stones to sharpen and maintain the chisels and gouges. Although most woodcarving tools are ground when first purchased, they might not be stropped, or sharpened. You will have to sharpen the edges on the tools yourself.

For your first carving attempt, find a piece of scrap wood and practice the designs in Figure 3. First, layout the design on transfer paper and pencil it into the wood. If you are working on the fore-end, measure the rounded surface with a tape measure, both front and rear, in the space where the design will be. Then subtract the amount of space allotted for the border to find the amount of space left for the design.

Wood has a definite grain fiber, which can cause problems when carving. Even though the tools are sharp, they might not cut straight because of the direction of the grain. If you force the tools to cut the wood against the grain, you might chip the wood.

Let's assume that you have selected the design marked No. 1 in Figure 2 for your carving, which is like a checkering design. All the work for this design is done with thin flat chisels.

Notice while carving the pattern that the corner of your chisel does most of the work. Each chip should be a clean cut. To ensure this, the downward cuts should be made first to form the raised diagonal lines.

When you have successfully carved this pattern, go on to patterns 2, 3, and 4 in Figure 2. Try several of the patterns on different scrap gunstocks. If you want further information about woodcarving or wood-carving patterns, look for the following books available at a public library.

- *Sharpening Small Tools*, by Ian Bradley. Teaches the proper sharpening methods for metalworking tools, lathe bits, gravers, drills, reamers, file and tap/tap restoration, and ore. Discusses woodworking tools — planes, chisels, drills, and saws. Covers many different sharpening stone materials, grinding wheels, and wheel dressers, plus jigs to speed up operation while ensuring correct angles. Well-illustrated.
- *The Razor Edge Book of Sharpening*, by John Juranitch. Teaches beginners how to put the sharp edges on dull tools and how to restore old tools for years of service and wear. Discusses hones, sharpening angles, carbon versus stainless steel, etc.
- *Checkering & Carving of Gunstocks*, by Monty Kennedy. Extensively covers the subject of wood carving and checkering for utilitarian as well as decorative purposes. Contains over 300 technical illustrations.

SELF-TEST QUESTIONS

Please check your answers on page 13.

1. ***True or False*. In most cases, carving gunstocks requires natural talent, much practice, and a great deal of patience.**
2. **Should the beginner buy a complete set of woodcarving tools in every type and size available?**
3. ***True or False*. When using sharp cutting tools on a gunstock, you do not need to consider wood grain.**
4. **What are two general types of carvings usually carved on gunstocks?**

Practical Stock Carving

Though you can design your own patterns, there are several patterns available in old books and in the form of decals. These patterns let you start carving immediately since the designs are ready for you to copy or to paste on the stock. Unfortunately, pattern books and decals are no longer made so you will have to search auctions like E-bay to find old books and patterns like the ones shown in Figure 4.

First, choose a pattern from a book or a catalog of decals. Secure it to the stock with transparent tape if the pattern is drawn or traced from a book. If you use a decal, soak it in water for a few seconds, then apply it directly to the wood as in Figure 5. Once the pattern is in place, cut the lines about $^{1}/_{16}$" deep with an X-Acto knife or a 60˚ veiner tool (Figure 6). This separates the design from the background.

Next, use a $^{3}/_{8}$" gouge to cut the background from the design. Cut up to the outer lines that were made with the X-Acto knife, as shown in Figure 7, on page 8. To cut the background enough, you will have to go over it at least twice. Then go over the outlines again before deepening the background. The object is to have the pattern — such as the running deer — high enough above the background to give it the proper relief.

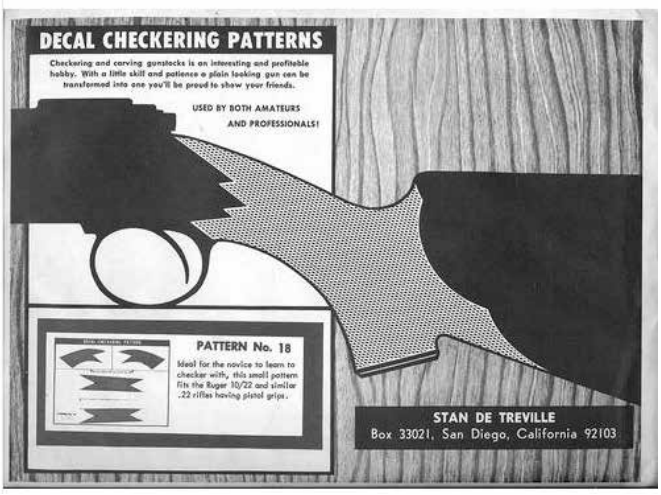


Figure 4: *Stan de Treville used to offer a variety of carving patterns. They are easy to apply and let you start carving immediately, however they may be hard to find as they are no longer printed.*

The next step requires slow and careful work. You must determine where to take out wood and how much to carve away. Do not to take out too much wood; you can always cut more, but you cannot replace the wood once it is removed. When you are satisfied with the carving, the next step is to clean your work and finish the stock.

To finish woodcarvings, you need some small jeweler's files and some nail files or emery boards. With these, file or sand out the tool marks on the entire carving, including the background. Then sand the design several times, each time using a finer grade of sandpaper. Some carvers use a sanding disk in their Moto-Tool for most of the background sanding. This can save a lot of time, but be very careful that you do not sand away part of the carving.

Leave the background smooth, following the general contour of the stock. You can have a partially stippled background, as shown in Figure 8 and Figure 9, on page 9. A stippled background is made by tapping the background at random with a nail, center punch, nail set, or similar sharp object. This creates a soft shadow effect.

Once you have completed the pattern, the entire design must be finished. Methods vary with different stockers, but many prefer Dem-Bart Continental-Style Stock and Checkering Oil . This finish is very thin and will cover the design without gumming. After the finish dries, use a toothbrush to shine the carving.

TYPES OF CARVINGS

In general, stock carving techniques can be classified into three distinctive types: single-line, low-relief, and high-relief.

The single-line carving is used almost exclusively for checkering borders and for designs such as fleur-de-lis and other intricate patterns. Single-line carving is the normal cut for layout work. Low-relief carving is a three-dimensional design that is below the surface of the gunstock, which gives an illusion of raised carving. High-relief carving is raised above the stock surface. For high-relief carving, extra wood must be left on the stock during the shaping process.

In high-relief work, it is important to have detailed sketches from various angles so that you can see which sections project furthest from the stock, which is where extra wood will be needed. This is especially important for a pattern in which several figures or objects are in perspective, each receding further into the stock. Detailed sketches allow you to determine the



Figure 5: *Above: A running-deer decal in place on a gunstock with all the tools used to finish the design. Below: Woodworking kits come with various various types of finishing tools included. It is best to buy only the tools you need to begin with.*





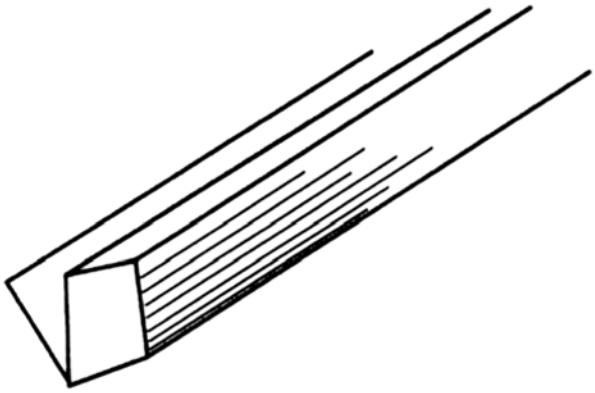


***Figure 6**: A 60° veiner tool may be used to cut the outline of the carving pattern. This operation parts the design from the background.*

amount of relief for each figure. For carving high-relief patterns, make sure the blank is thick enough for the design and is planed smooth so that the drawing can easily be transferred to the wood.

Once the patterns are transferred to the stock blank, use a V-tool (veiner tool) to cut around the extreme outline of the drawing. Then, with chisels and gouges, work down the wood adjacent to the design to roughly carve to the necessary depth and to the proper shape of the stock.

At this stage you should not be concerned with making a finished carving. Do not try to carve any of the details of the design yet. Remember, you are only getting rid of surplus wood; only be concerned with establishing the mass or substance of the figures as they relate to each other. Leave the subject(s) a little higher than the pattern specifies and be sure to hold the proper balance and relation that the pattern sections have with each other.



***Figure 7**: A 3/8" wide gouge is used to cut the background away from a running-deer design; all cuts are first made with a sharp knife or else 60° veiner tool.*

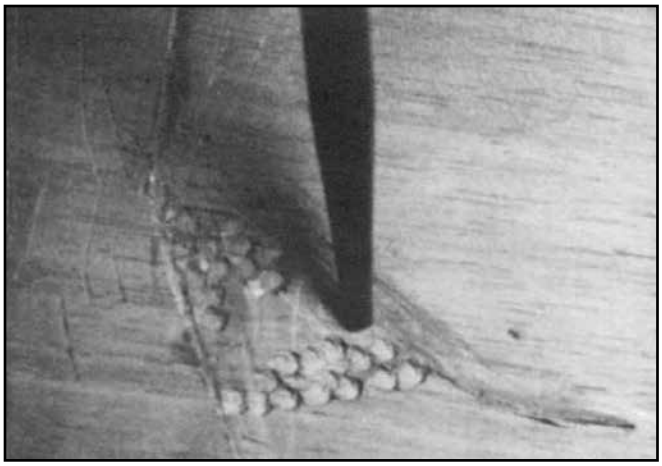


***Figure 8**: A nail set being used to stipple in certain areas of the background.*

If you become confused or one part of the work seems difficult, stop immediately. Try working on another section of the design or perhaps on the other side of the gunstock to avoid getting frustrated. It is easier to make mistakes when you are tired or frustrated. You might be tired after working on the stock for a long period of time. If so, stop working on the project for a while and resume when you are rested.

The most interesting and complicated part of the work is refining the work to its ultimate shape. This is a slow process and should be an overall task; do not finish each part separately. Rather, work on the entire design. Check your drawings frequently during this process.

Hint: To get a different perspective of the design, rest the stock on a table or bench. With your back toward the stock, hold a mirror over your shoulder so that you can see the design. Are there places that need to be cut more? Are all of the figures in proper perspective? By using this technique, you can see which places in the design need to be adjusted.

The rest of the stock can now be smoothed with a wood rasp and coarse sandpaper, followed with fine abrasive paper. For smoothing delicate parts of the carvings, use riffler files. Riffler files are small filing tools to use in areas that might be difficult to reach. They are available in a variety of shapes and sizes. Some of the projecting parts that contain fine detail will be smoothed down by sanding or rubbing. However, this gives the carving a smooth, used look that adds to the design.

For a final finish, Dem-Bart Finish is probably the easiest to use and provides excellent results. Before applying any finish, the wood should be whiskered and sanded. You might want to apply a wood sealer as well as the finish.

NOTE: The beginner should not attempt a high-relief carving design on any gunstock without much practice. The best means of gaining experience is to purchase several old, broken gunstocks and practice on them. Gun shops probably have several old gunstocks that they will sell to you for a low price or give them to you free of charge.



***Figure 9**: Carved Remington 700 30-06 Springfield rifle.*

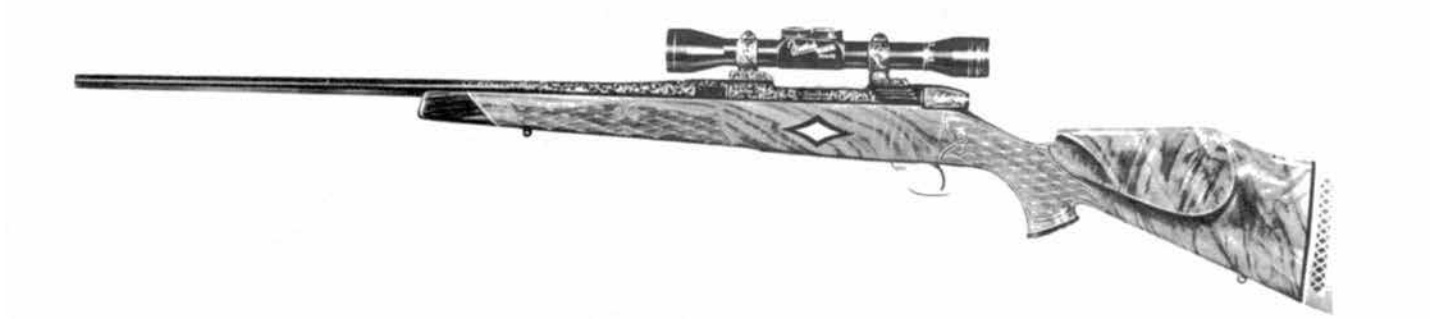


Figure 10: *Model 98 Mauserin 7 x 57 mm stocked by Wallace with straight-grained American walnut: inlayed with shell flamed maple and finished bright with linseed oil.*

INLAYS FOR GUNSTOCKS

Inlays for gunstocks, like the one in Figure 10, are used frequently, either to hide imperfections in the stock or simply to comply with the specifications of the customer.

Inlays have been used for many years. In the 1940s, when Roy Weatherby brought out his fine line of custom rifles, gun enthusiasts began to seriously consider elaborate inlays. Early Weatherby rifles had stocks built from California mesquite wood, as shown in Figure 11, elaborately inlaid with ebony, Osage orange, and even ivory. Following Weatherby, other custom gunsmiths began to customize rifles with inlays.

Inlays are no different than any other decorative feature of firearms. The workmanship and design distinguish a firearm from others similar to it.

TOOLS FOR INLAYS

The tools used for inletting a stock are a sharp, pointed knife (such as an X-Acto) and chisels of various shapes which are used to get into the sharp corners and points. You also need a jeweler's saw, a coping saw, or a power jigsaw to cut the inlay. Some precut inlays are available on the market and require no cutting to the inlay at all; it just has to be inletted into the gunstock.

One of the most important things to remember in getting a good fit on inlays is to put a slight taper on the edges of the inlay before trying to inlet it — about 2°-3° taper.

For most jobs, an inlay should not be more than $^1/_8$" thick (extremely curved surfaces might require a thicker inlay). Do not set an inlay flush with the surface of the stock. Leave the inlay a little high. After the glue dries, file the inlay flush with the adjoining area.

NOTE: This method is not suited for metal inlays of any kind. Metal inlays should be preshaped to fit the surface and then set flush; filing is not necessary.

While inlays can be used to cover a flaw in a stock, the flaw must be located in a place suitable for the inlay. If a flaw cannot be covered with an inlay, it should be corrected by another method, such as inserting a piece of matching wood in the spot.

The pattern or trend of inlay designs in recent years has been mostly variations of diamonds—from fancy triple diamonds or multiple-inset diamonds to very simple diamond-shaped patterns. However, for some exquisitely designed stocks, such as the Winslow models, animal figures shaped from ivory and exotic woods have been used for inlays.

While there are many places on a gunstock where inlays might look good, those that fit into the checkering pattern on the stock are the best to use from a design standpoint. Other



Figure 11*: Early Weatherby rifles were elaborately inlaid. These rifles are still eagerly sought by shooters who want the finest arms available.*

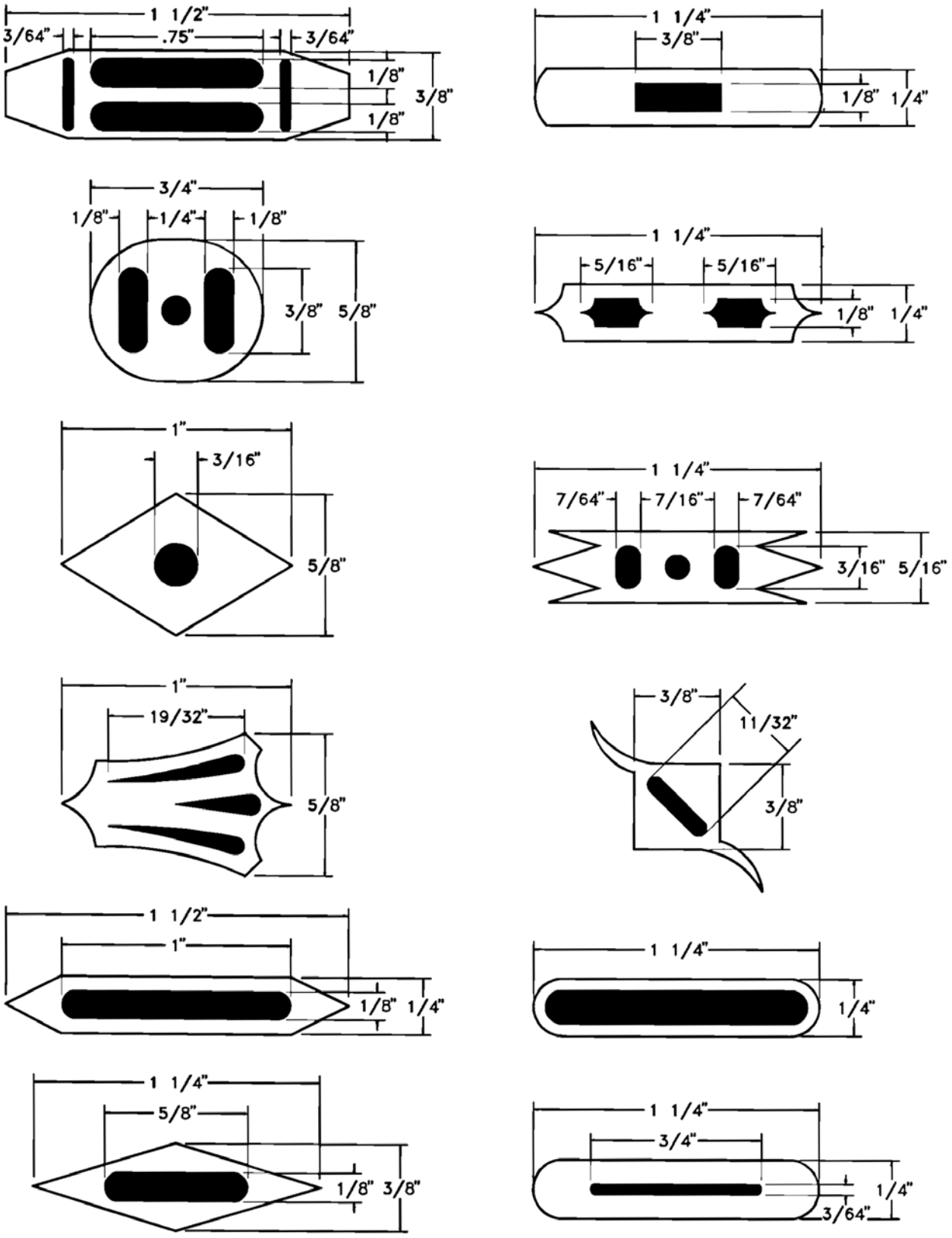


***Figure 12**: Several types of inlays suitable for gunstocks.*

suitable areas for inlays are all along each side of the magazine or under the fore-end and in the off side (opposite side of the cheekpiece) of the buttstock. An inlay can also be fitted at the rear tang.

These suggestions do not imply that you must place an inlay at each of these locations. On the contrary, two inlays should be sufficient on any rifle.

Inlay materials vary, but many experts recommend inlaying wood into wood. The following list contains some types of wood available for inlays on gunstocks:

Wood	Color
Ebony	Black
Holly	White
Vermillion	Red
Amaranth	Purple
Osage orange	Bright Yellow

You can combine various woods to form a combination of patterns and colors.

Inlays are often found in sets of three. The large inlay in each set is usually installed in the buttstock, with the smaller inlay positioned on each side of the fore-end, and the monogram plate under the fore-end. Any combination of sets can be used.

The inlays shown in Figure 12 are made of exotic contrasting woods. The shaded areas indicate where the darker toned woods are used. The center section of the monogram inlay is either gold or silver.

SELF-TEST QUESTIONS

Please check your answers on page 13.

5. **Name two tools that are used to cut the guidelines on a woodcarving pattern.**
6. **When cutting down the background on a carving design, what is the minimum number of times it should be gone over?**
7. ***True or False*. Stock carving backgrounds should always be smooth, never stippled.**
8. **During the carving process, if you become confused about one part, what should you do?**

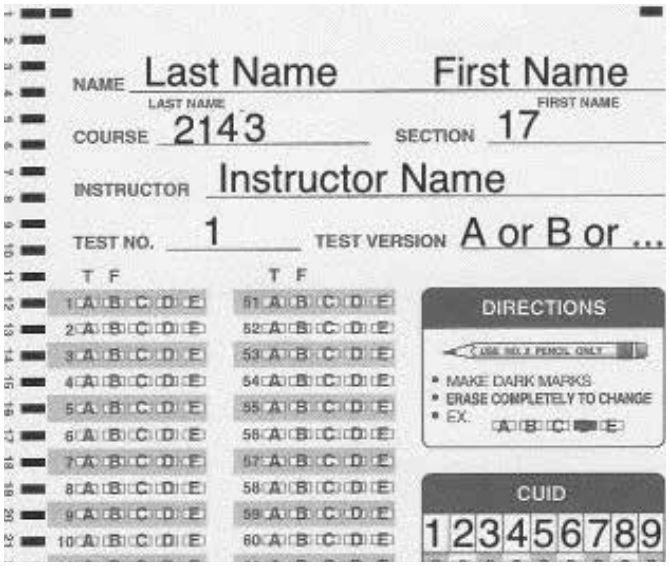
Answers to Self-Test Questions

1. True.
2. No. A beginner should start with a small set and learn to use these before purchasing others.
3. False.
4. Game scenes on the buttstock and checkering patterns for borders around.
5. X-Acto knife or 60˚ veiner tool.
6. Two times.
7. False.
8. Stop immediately and try another section of the design.

Lesson Questions

THIS IS LESSON NUMBER 5663.

Make sure you print your name, student number, and lesson number in the space provided on the Lesson Answer Form. Be sure to fill in the circles beneath your student number and lesson number.



REMINDER: A properly completed Lesson Answer Form allows us to evaluate your answers and send the results and additional study material to you. Do not hold your Lesson Answer Forms to send several at one time. You may run out of study material if you do not send your answers for evaluation promptly.

You may also complete your exam online at www.sdi.edu, click on the *online exams* tab.

1. **Before attempting a gunstock carving on a rifle or a shotgun, which of the following should you do?**
   a. Buy all the woodcarving tools you can find.
   b. Practice many hours on scrap wood and damaged stocks.
   c. Coat your stock with linseed oil.
   d. Apply beeswax to the area to be carved.

2. **Which sizes of chisels and gouges are mostly used to carve gunstocks?**
   a. $^{1}/_{16}$-1 inches.
   b. 1-2 inches.
   c. 3-4 inches.
   d. 5-6 inches.

3. **After purchasing new woodcarving tools, what usually must be done to them before they can be used on a carving design?**
   a. They must be stropped.
   b. They must be heavily oiled.
   c. They must be degreased.
   d. They must be coated with a bluing solution.

4. **Ready-made carving patterns are available in several books which allow you to start carving sooner than you would if you were creating your own patterns. What is another popular and inexpensive type of carving pattern that is already laid out?**
   a. Metal templates.
   b. Laser printed.
   c. Electronically generated.
   d. Decals.

5. **When cutting the basic outline for a carving pattern, what type of veining tool should be used?**
   a. 25° cutter.
   b. 35° cutter.
   c. 60° cutter.
   d. 65° cutter.

6. **What are the three distinctive types of woodcarvings?**
   a. Medium-relief, low-relief, and lower-relief.
   b. Single-line, low-relief, and high-relief.
   c. Medium-relief, high-relief, and higher-relief.
   d. Single-line, two-line, and three-line.

7. **Which of the following types of carvings should the beginner not try?**
   a. Single-line.
   b. Two-line.
   c. Low-relief.
   d. High-relief.

8. **What is one way that helps to get a good fit when inletting an inlay into a gunstock?**
   a. Taper the edges of the inlay about 2-3 degrees.
   b. Make the hole larger than necessary, then fill it in with plastic wood.
   c. Make the inlay hole deeper than necessary, then sand the stock down to match the inlay.
   d. Pound the inlay into the wood with a ball-peen hammer.

9. **What is the color of holly wood?**
   a. Black.
   b. White.
   c. Red.
   d. Bright yellow.

10. **What is the color of Osage orange wood?**
   a. Dark orange.
   b. Bright yellow.
   c. Purple.
   d. White.