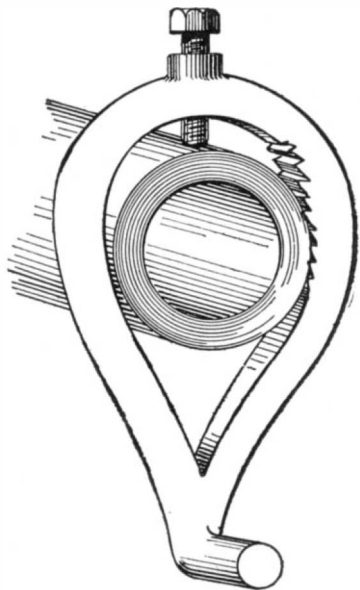


### Notched Lathe Dog

By William Grötzinger

AN ordinary lathe dog can easily be prevented from letting its work slip and causing trouble. The following method will prove good: Take a three-cornered file and file several deep notches into its inner face at

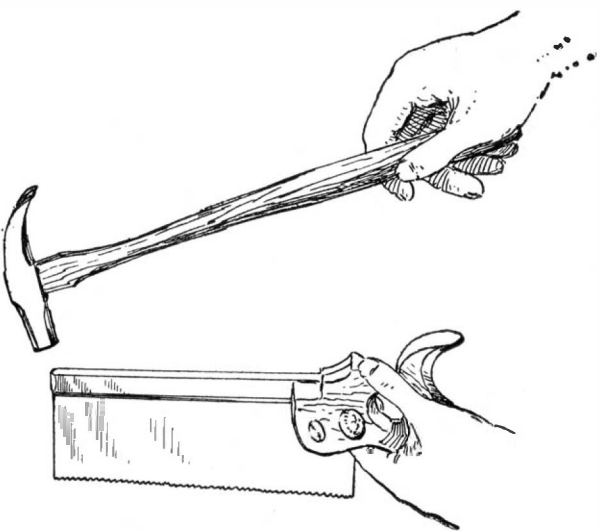


Non-slipping lathe dog.

one side. Now put the work and dog in place as illustrated, and the dog will grip it with astonishing firmness. Work as large as the dog will admit can now be turned without slipping.

### Straightening a Back Saw

AFTER the back saw has been set and filed quite a number of times it will become slack and kinky along the saw tooth edge. If the saw is properly con-



Straightening a back sa

structed, one tap of the hammer on the back at the extreme end, will straighten it instantly.—A. B.

### Chair Making One Hundred Years Ago

By Albert F. Bishop

QUITE frequently in occupying a very old chair it will sway from side to side quite easily, but still the parts will not separate. This is due to the construction, which is quite ingenious. The wood in shrinking grips tightly on the rounds. The uprights or legs marked A are of green wood. The rounds and curved



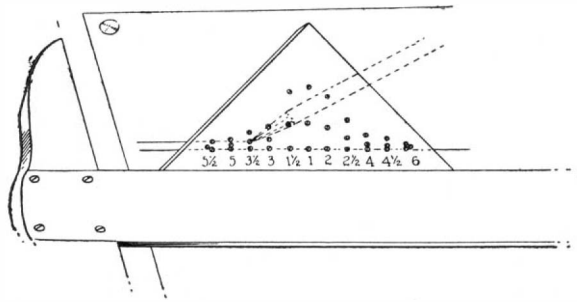
Chair construction of our great-grandfathers.

back connections marked B are thoroughly seasoned. You can readily see that when the green wood becomes seasoned it will shrink very tightly on the seasoned pieces, so much so that they very seldom come apart, although there is no glue used.

### Lettering Triangle

To the Editor of the WORKSHOP DEPARTMENT:

Referring to the different suggestions for making the guide lines for lettering drawings that have appeared from time to time in your columns, I wish to call attention to a very neat device stationers are selling over here. It consists of a triangle made of celluloid and provided with vertical rows each of three flaring holes. Placing the point of a lead pencil into one of the holes



Drawing guide lines for lettering.

of the row selected, the triangle is run along a ruler by means of the pencil point. Arrived at the end of the line thus drawn the pencil is placed into another hole of the row in question and a line drawn in the opposite direction. The operation is repeated once again and these lines will be found to be drawn exactly parallel and spaced correctly apart. The rows of holes are designated by the number of the round-writing pen best adapted for the size of letters in question.

Bonn, Germany.

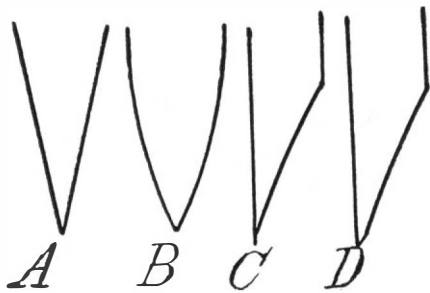
ED. C. MAGNUS.

### Sharpening Edge Tools

By W. D. Graves

THE essential feature of a good cutting edge is that its two sides shall form a sharply defined acute angle, which can only be attained by having such sides straight as shown, much magnified, at A in the drawing, rather than curved as shown at B. Where the novice usually fails in whetting an edge tool is in giving it a rocking motion, producing the rounded edge; and the principal element of skill in the operation lies in holding the blade and the stone at the same relative angle throughout. There are some apparent exceptions to this rule, as the common ax; but they are only apparent, not real. An ax used for chopping is better ground with the sides smoothly curved, but the sides of the extreme edge, if it is a good edge, must be straight. Of course these straight sides may be very short, only as long as they are made by the final "setting," or whetting, of the edge, but they are there.

The proper "thickness" of the edge, i. e., the degree of acuteness of the angle formed by the two sides, depends wholly upon the nature of the tool and the work it is intended to perform. A "thin" edge will, of course, cut more easily, but it will also break and become dulled more quickly; so the proper angle must be determined, by observation and experiment, for each tool and purpose. The conservative beginner will aim to err in the way of making the edge too thick; then as he finds it amply strong to do the work without breaking or nicking he will make it a little thinner, and so proceed till he learns the most effective and



Various forms of cutting edges.

economical angle. An edge which would be sufficiently enduring on soft pine would become almost immediately blunted on lignum vitae; while, for use on any given wood, differently tempered tools require sharpening at different angles in order to give the best results.

As most wood-cutting tools are sharpened like a chisel this form of edge may perhaps best be used in illustrating the method of sharpening all. If the tool is very dull the work of sharpening is expedited by first grinding it on a stone or wheel of a grit too coarse to make the final cutting edge; taking care to have it symmetrical and either straight or of the curve of the grinding wheel, as shown at C. This method of making the sides inwardly curved—or "hollow grinding"—which is carried to its extreme in razors, lessens the work of whetting, but tends to make the edge weak and incapable of withstanding hard usage.

On the grindstone or abrasive wheel the tool is brought to an edge somewhat more acute than is desired for the finished one; but, owing to the coarse-

ness of the abrasive used, it is too rough for keen cutting. The final edge is "set" by rubbing with or on a flat finishing stone of finer grit, making a new and sharply defined bevel as shown, magnified, at D.

All cutting edges are somewhat serrated, some being finished on a stone so coarse that the serrations may be seen with the naked eye, as that of the common scythe. Such edges are made to cut by a sliding action, like a saw; and, for that matter, even a razor will cut much more readily if given a slight endwise motion.

### Strap Hinges vs. T-Hinges

By G. W. D.

IN deciding whether to use strap or T-hinges one should keep in mind the fact that, when the two are of the same nominal size—as six-inch or five-inch—and of about the same cost, the T-hinge is about twice as strong as the other. A thing is only as strong

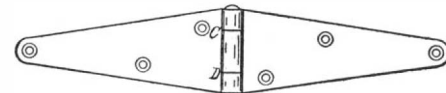


Fig. 1.—Strap hinge.

as its weakest part, and the weakest part of such hinges is the joint, or that part of the flap which bends around the pivot. Both strap and T-hinges usually fail through the straightening out or breaking of this part; and, as will be seen by reference to the accompanying

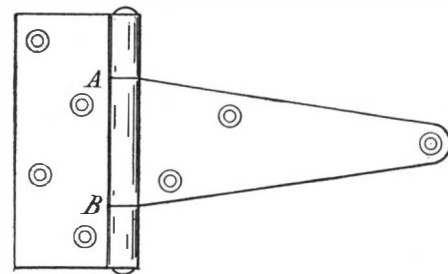


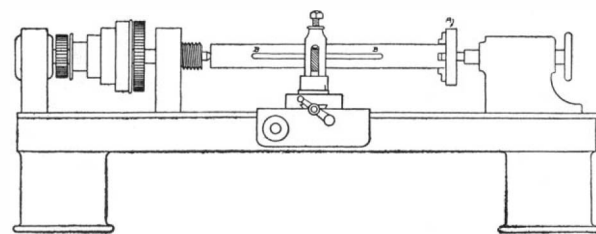
Fig. 2.—T hinge.

sketch, this part is twice as wide in the T form as in the strap. In the T-hinge it is of the whole width of the strap, as at A B, while in the strap hinge it can be of only half that width, as C D.

### Cutting Keyways With a Lathe

By H. D. Chapman

A METHOD of cutting keyways with a lathe is pictured in the accompanying drawing. A plug center is made to screw in the lathe chuck, as shown at A. The center is then placed in the tail stock of the lathe. The shaft is then placed on the center and the other



Cutting keyways with a lathe.

end in the chuck, thus holding the shaft rigid while the keyseat is being cut. A hole is drilled at either end of the keyseat B B. This gives the tool clearance while it is being machined. The lathe is geared up to a high pitch, the tool is set in the tool post, the lathe is started up, and the feed is then thrown in, thus feeding the carriage along the work. Of course a special tool is required to suit the keyseat. A keyseat can be cut in a lathe just as well as it could be in a shaper.

### Making a Socket Wrench

MOST mechanics will not take the trouble to cut out a socket wrench, but this is easy enough when done according to the drawing. It is laid out on the steel for drilling. Six small holes should be drilled if the socket is to be a hexagon. These holes

### Method of cutting out a socket wrench.

will cut out the corners. Then one large hole is drilled in the center which will cut out nearly all the stock and should cut two thirds of its way into the small holes. Then there is but little chipping to be done after this operation; simply two small fragments, which are indicated at A.