

GETTING THE MOST OUT OF YOUR CIRCULAR SAW AND JOINTER

• A Complete Shop
Manual on Modern
Saw and Jointer
Practice

254



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GETTING THE MOST
OUT OF YOUR
**CIRCULAR SAW
AND JOINTER**

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SAM BROWN

A Complete Handbook Describing Circular Saw and
Jointer Operation in the Home Workshop with Over
Two Hundred Photographic Illustrations and Line Drawings.

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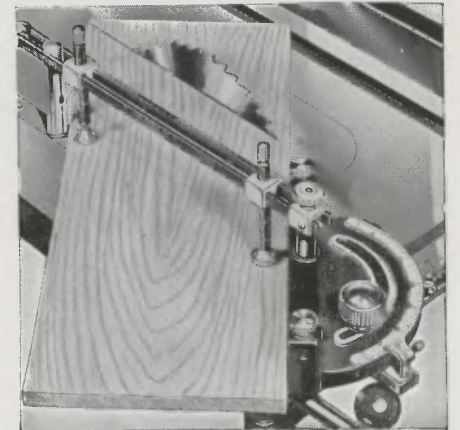
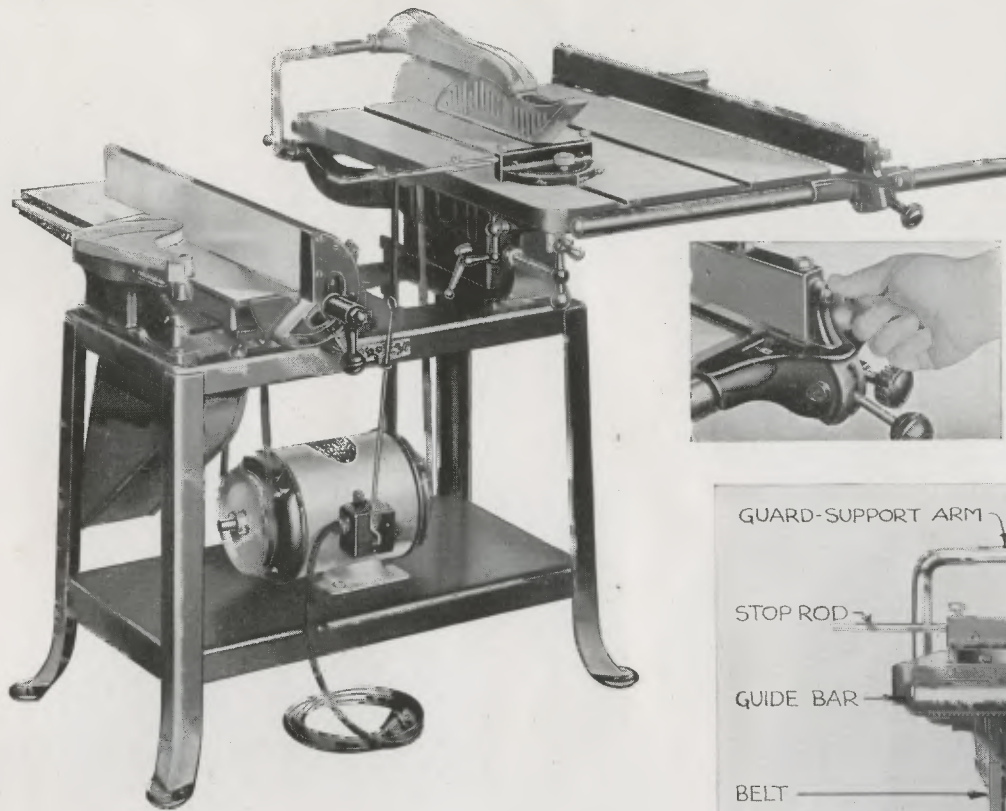
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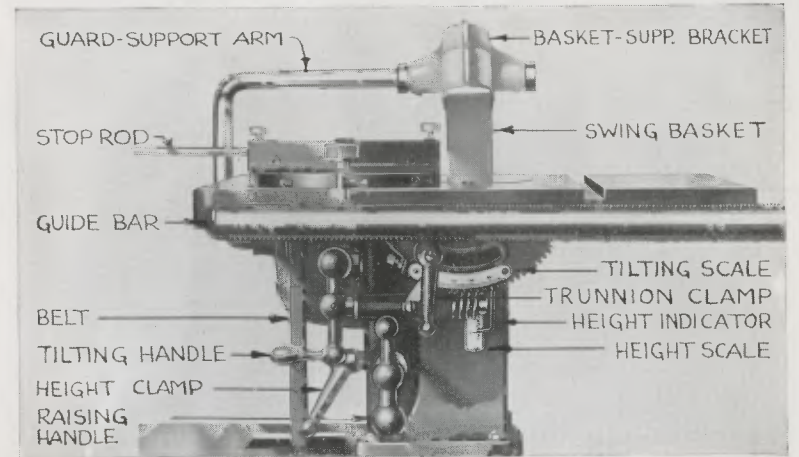
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The Circular Saw . . . Basic machine in the home or professional woodworking shop. The illustration shows a modern tilting-arbor circular saw with fully enclosed motor and extension tables.



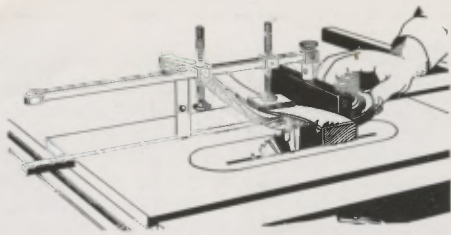
Above, a typical home or production shop unit, consisting of a 6 inch jointer and 10 inch circular saw mounted on a steel stand and powered with a 3/4 H. P. motor. Right, the essential parts of a 10-inch saw. Top, miter gage clamp attachment, one of the most useful of many circular saw accessories.



CHAPTER ONE

THE CIRCULAR SAW

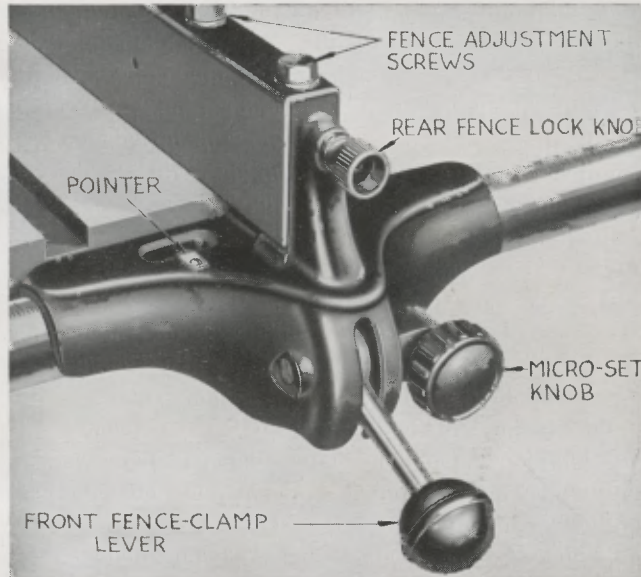
and its EQUIPMENT



Size.—The size of the circular saw is measured by the diameter of the saw blade which it will swing. Thus, a saw which swings an 8-inch diameter blade is called an 8-inch saw; a 10-inch blade, a 10-inch saw, etc. An 8-inch saw will not, of course, cut a full 4 inches deep since a certain amount of the blade is absorbed by the arbor mounting and the table. The average 8-inch saw has a capacity of about $2\frac{1}{4}$ inches, while a 10-inch saw will cut to a depth of $3\frac{1}{4}$ inches.

Construction. — The saw consists of a base casting in which is mounted the saw arbor, the arbor being carried on two ball bearings. One end of the arbor is fitted with a pulley, while the opposite end carries the saw blade or other cutter. Above the base is mounted the saw table. This is carried on two trunnions, with a suitable clamping device to hold the table rigid. The construction permits the table to be tilted; also, the table can be raised or lowered to expose any desired amount of blade. The table is fitted with a fence which can be set at any distance from the saw blade up to the capacity of the table. This fence is used as a guide when cutting boards lengthwise, the operation being called *ripping*. The table also has two grooves, these grooves permitting the use of a miter gage for sawing across the wood, the operation being called *crosscutting*; or, where the cut is not square across the board but on an angle, *mitering*.

The various essential parts of a circular saw are shown in the photos on this and the opposite page. The principal mechanisms are the tilting and raising units. There is a handle to tilt the saw table, a handle to clamp the table at any tilted position, and a scale to show the degree setting at any tilt. Likewise, there is a handle to raise or lower the saw table, a handle to lock the table at any height, and a scale to show the blade projection at any position. On the fence, there is a handle which clamps the fence at any position along the graduated guide bar. This locks the front of the

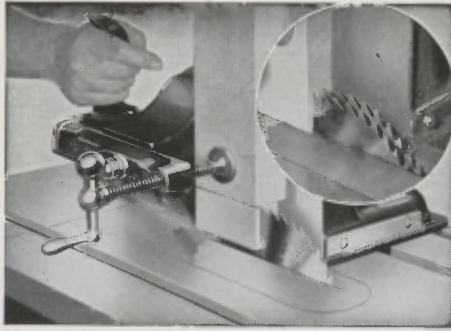


The fence of a 10-inch saw. Clamps are provided at both front and rear. Micro-set knob permits close adjustments.

fence only, a second clamp being provided to lock the rear of the fence to the rear guide bar. Most fences also have a micro-set adjustment, so that, after the first rough setting of the fence has been made, the micro-set knob can be engaged for finer adjustment.

Table Extensions.—The average 8-inch saw has a table measuring about 15 by 18 inches. Provisions are usually made so that the operator may increase the length of this table by adding a sub table to the front of the original table. Working space is thereby gained in front of the blade where it is most needed. Further capacity across the table is gained by using longer guide bars so that the fence can be set farther from the blade.

Power and Speed.—An 8-inch circular saw requires a $\frac{1}{2}$ H. P. motor for average work, although $\frac{1}{3}$ H. P. will suffice if only thin stock is to be cut. A saw of this size is made to operate at a speed of about 3,400 R. P. M., giving a cutting speed of 7,100 feet per minute. A 10-inch saw requires at least $\frac{1}{2}$ H. P. and preferably $\frac{3}{4}$ H. P. if the full $3\frac{1}{4}$ inch capacity of the saw is to be used. This saw runs at about 3,100



Tenon cutting with single or double saw is made easy with the tenoning jig.

R. P. M., which gives a cutting speed of 8,100 F. P. M. It is a mistake to run any saw faster or slower than the manufacturer recommends. Saw blades are tensioned to run at a certain speed, and they give the best results at this speed. A blade running too fast will generate heat, also it will show a tendency to run out or weave the moment the teeth become even slightly dull.

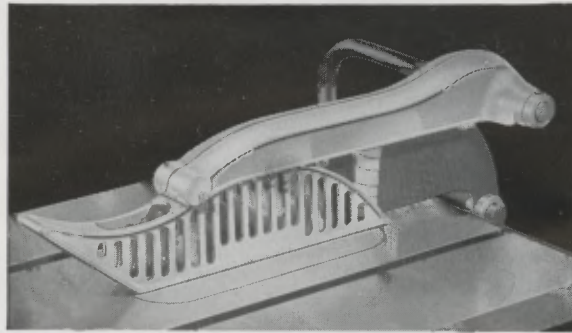
The Tenoning Jig.—The tenoning jig is a circular saw accessory designed for holding work securely in an upright position so that end cuts, such as tenons, can be made safely and accurately. When tenoning with such a jig, two saws are often used. These are separated to the required width by means of a metal collar so that when the cut is made, the tenon will be of the right thickness. Metal spacing collars purchased for this purpose are usually ground a trifle undersize in thickness so that they can be shimmed up with paper washers to secure a loose, press or drive fit as required. The tenoning jig is adjustable and will take stock up to about $2\frac{3}{4}$ inches thick, any width within the capacity of the saw. The base plate on which the jig is carried takes $\frac{1}{4}$ inch from the cutting capacity of the saw, so that an 8-inch blade will cut to a maximum depth of 2 inches, and a 10-inch blade to a maximum depth of 3 inches.

Guard.—The average saw guard consists of a metal basket which fits over the projecting portion of the saw. It is made so that it will tilt readily as the work is fed into the saw blade; also, it is provided with a suitable mounting so that it can be readily swung out of the way when not in use.

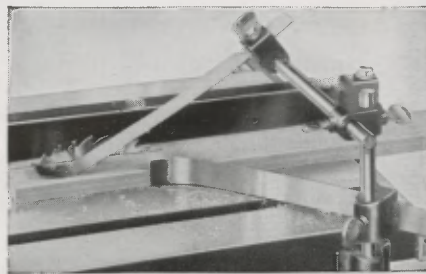
Splitter. — A splitter is a metal plate mounted directly behind the saw blade. Its

purpose is to hold the saw kerf open so that the wood will not close behind the saw blade. The splitter is usually mounted on the same bracket which holds the saw guard, and it can be used alone or with the guard as required. A feature of some splitters is a holddown device, this consisting of a number of metal fingers which grip the work so that it cannot be kicked back.

Holddowns.—A holddown is any device whose function is to hold work in against the fence or down on the table. Wood springs are commonly used. The manu-



Protection without interference with the work is offered by this saw guard.



Above, holddown fingers on the splitter. Left, a typical form of saw holddown.

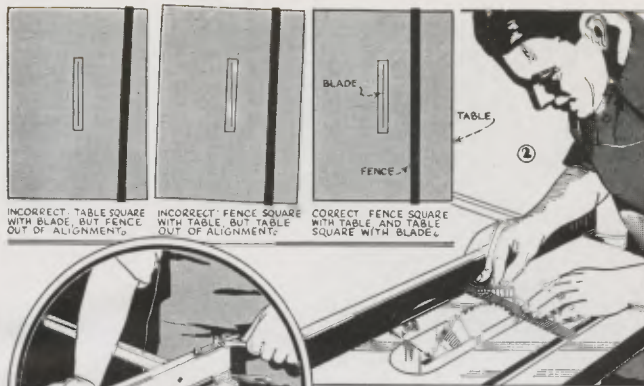
factured device usually consists of metal springs, with suitable clamps for fitting to the saw table, as can be seen in the center photo.

Miter Gage Clamp Attachment. — The miter gage clamp attachment is a holddown which not only holds but clamps the work securely in place. This device in use is shown on page 4. As can be seen, the attachment consists of a clamp bar which is fitted to the miter gage. Sliding on the clamp bar are two clamp screws, which may be set at any point along the bar to suit the work. When tightened down against the work, gage and work are made practically one solid piece, so that there is not the slightest possibility of the work creeping away from or into the blade.

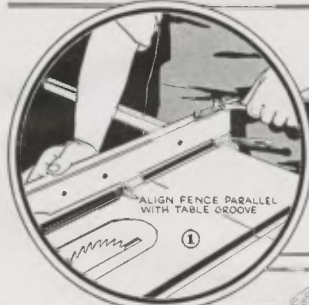
Saw Adjustments.—In order to do accurate work, the circular saw must be properly adjusted. These adjustments are concerned

with the relation between the saw blade, the saw table and the fence. The fence must be square with the table, and the table must be square with the blade. The manner of making this adjustment on a typical 8-inch saw is shown in the diagram at the top of the page. While mechanical features may vary slightly, the same adjustment is made in much the same manner on any kind of saw. The fence is first aligned square with the table, as shown in Fig. 1. The fence should then be square with the blade when checked in the manner shown in Fig. 2. If it is not, the table must be adjusted, Figs. 3 and 4, or, if the table cannot be adjusted, the fence should be adjusted square with the blade.

Other adjustments consist of setting the various scales so that they will read properly. The table should be checked square with the blade, as shown in Fig. 5, after which the pointer on the tilt scale should be set at zero. The depth-of-cut pointer should be set so that it will show the exact projection of the blade. The pointer on the fence is set by running the fence over until it lightly touches the blade, as shown in Fig. 6,



INCORRECT: TABLE SQUARE WITH BLADE, BUT FENCE OUT OF ALIGNMENT. INCORRECT: FENCE SQUARE WITH TABLE, BUT TABLE OUT OF ALIGNMENT. CORRECT: FENCE SQUARE WITH TABLE, AND TABLE SQUARE WITH BLADE.

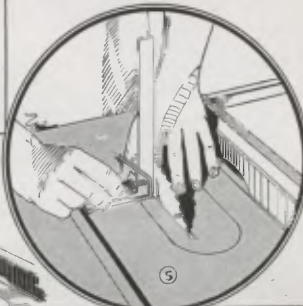


1. ALIGN FENCE PARALLEL WITH TABLE GROOVE.

1. Fence should parallel grooves in table. Loosen fence bolts and adjust.
2. With fence in place, measure distance from any selected saw tooth to fence. Turn blade back and recheck on line "A," measuring from the same tooth. If in error . . .
3. Loosen the three cap screws holding the rear trunnion.
4. Gently tap saw table with mallet to align. Tighten bolts and recheck.



4. REAR TRUNNION 10" 8" 600 CIRCULAR SAW



5. Check squareness of blade and make any necessary adjustment at stop screw. Repeat operation at 45° position. Check depth gage and angle gage, adjusting pointers to show proper reading.

Proper adjustment of the saw blade in relation to the fence and table is necessary for good work.

and then setting the pointer to zero on the graduated front bar. The miter gage is likewise checked for squareness, as shown in Fig. 7. Lock the gage at the "square" position indicated by the try square, and then make a trial cut on a fairly wide board. Check the board with the square, and if it is accurate, set the pointer on the miter gage to the 90-degree mark on the scale. If the miter gage is fitted with automatic stop links, adjust these to the right settings.

Installation. — The circular saw can be mounted on a bench or on a suitable steel stand, the steel stand mounting being preferable. The saw is often mounted on the same stand with the jointer, as shown on

