

DELTA 8" JOINTER

Operating and Maintenance Instructions

The Delta 8" Jointer is ruggedly constructed, has a large working capacity and will do heavy duty work in sash, door and furniture factories, carpenter shops, pattern shops, lumber companies, schools, contractors, etc. Also, a great variety of work, other than straight surface jointing can be done. Examples of which are: cutting rabbets, tapers, bevels, chamfers, octagons, and other shapes.

The jointer is so named because of the type of work it is designed to do, namely, the jointing or planing of edges on materials so that they can be glued or joined together. The jointer is sometimes erroneously referred to as a planer, but the machine differs from a planer in that it is designed to work the edges of materials rather than plane surfaces.

Maximum depth of cut is $\frac{1}{2}$ ". The maximum width of cut is 8 inches. The overall length of the work table is 60 inches. The overall dimensions of the machine are: $24\frac{1}{4}$ inches wide, $60\frac{1}{4}$ inches long and 39 inches high.

IMPORTANT

Delta Jointers are carefully tested and inspected before shipment, and if properly used will give perfect results. However, certain adjustments are necessary in service, and if you are to receive the utmost from your machine, it is imperative that you read the following instructions carefully.

There is considerable risk in operating a jointer, consequently the operator can not be too careful. Under no conditions should an inexperienced operator attempt to operate the machine without first using scrap pieces to get the "Feel" of the machine.

MACHINE UNITS

The basic unit No. 37-301 consists of the following standard parts: cast iron stand, four high speed steel knives, two way tilting fence, $2\frac{1}{4}$ " O.D. arbor pulley, $5\frac{1}{4}$ " O.D. motor pulley $\frac{3}{4}$ " bore, V-belt 57" O.C., safety cutter-head guard, belt guard, chip chute, motor plate and motor cover, but without motor and switch.

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The motor, magnetic starter and electrical connections from the starter to the machine are available and can be purchased additional according to the customers choice.

Accessories which may be purchased as additional equipment are: knife grinding attachment with jointing provision including motor and grinding and jointing stones No. 37-306; safety type cutter head complete with bearings, housing and blades No. 37-305; V-belts $59\frac{3}{8}$ " outside circumference for use with 60 cycle 1750 rpm motors No. 49-140; $5\frac{1}{4}$ " outside diameter

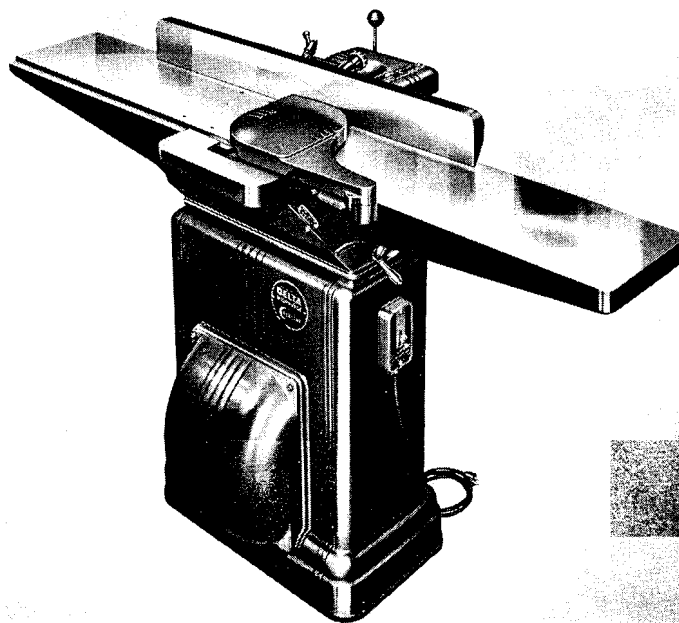


Fig. 1. 8" Jointer.

motor pulley No. 37-303 and V-belts 57 inch outside circumference No. 49-173; cast iron stand with belt guard, chip chute, motor plate and motor cover No. 37-302.

Refer to the photographs, drawings and table 1 to identify the parts mentioned in the following paragraphs.

ASSEMBLY

The following assembling suggestions are based on assumption that the machine and cast iron stand have been purchased as a unit. Remove the protective coating from the tables and cutter-head by peeling it off in sheets or strips, or if other rust preventative is used wipe off with cloth, using Naphtha or some other similar solvent.

Place jointer in a selected place in your shop, factory, or workroom and be sure to allow enough clearance in front of and behind the work tables for jointing long pieces. To install the motor remove the rear panel by removing four knurled nuts holding the panel in place, refer to Figure 2.

Place machine on base by matching two pads on one end and one pad on the other end. Use bolts to fasten the base and machine together.

MOUNTING MOTOR

When mounting the motor, we suggest that the wire be attached to the motor before bolting it to the base, as it will be much more convenient. Also be sure motor rotates right direction. Slots are cast in the motor base for various motors, and it is therefore

After installing motor, the pulley is attached to the motor and V-belt placed over pulley. It is important to have both pulleys lined up. This is done best and easiest by using a straight edge. To line up the pulleys you may either move motor in slots of motor base or move pulley on motor shaft.

After belts are properly adjusted, lock with jam nut, see Figure 2. Next connect the wires from motor to toggle switch, catalog No. 49-314 or to manual starter with overload and undervoltage protection. We recommend manual or magnetic starter for proper protection of motor.

When 25 cycle current only is available the speed of the motor recommended is 1450 rpm, and making the cutter head speed approximately 3400 rpm, using same V-pulleys as on the 50 and 60 cycle motors.

Before connecting the motor to the power line, be sure the electric current is of the same characteristics as stamped on the motor nameplate.

The No. 49-314 on-and-off toggle switch for single phase motors can be easily mounted on a rectangular hole in the right-hand panel when facing the jointer.

For three phase motors we recommend our No. 1320 3 phase manual starter for A.C. motors up to 2 hp and D.C. motors up to 1 hp. We also have No. 1321 3 phase



across the line magnetic starter, rating up to 2 hp, 440 v. 60 cycle only and No. 1329 3 phase across the line magnetic starter rating up to 2 hp 220 v., 60 cycle only.

CONSTRUCTION FEATURES

Although the machine is an 8" Jointer, the work that can be accomplished is equal to larger machines due to the long tables and extra long fence. The complete machine as shown Figure 1 is with cast iron stand, which is a substantial base for the machine and also houses the motor. A dust chute is fastened in the stand preventing the accumulation of dust or chips in the motor. The pulleys and belt are properly guarded for the safety of the operator.

The fence is adjustable across the full width of the table and tilts 45 degrees both right and left for accurate bevel jointing and can be locked at any desired position by means of a handle working through an eccentric shaft. The fence base has been designed to act as a rear knife guard by covering the part of the cutter-head that is not being utilized. See Figs. 4 and 5.

Both front and rear tables of the jointer are set on inclined planes. This provision makes adjustment of either table possible, as occasion demands. Turning the handwheel that controls the movement of the front table, slides it up or down the inclined ways and thus

regulates the depth of the cut. Adjustment of the rear table is for the purpose of bringing it into alignment with the knives, and for lowering it so that it is possible to cut a recess at some intermediate point parallel with the edge of the board, for example, a stop chamfer or a straight recess at some intermediate point. See Fig. 6.

REAR TABLE AND KNIFE ADJUSTMENT

Accurate cuts are possible only when the knives of the cutter head are parallel to the work tables and project equally from the cutter head. Upon receiving this jointer it is best to check this alignment.

To check this alignment proceed as follows: Raise the rear table by means of the hand-wheel assembly, on the left side of the base casting until it is exactly level with the steel knives of the cutter-head at their highest point of revolution. Place a steel straight edge on the rear table, extending over the cutter head as shown in Figure 7. Rotate the cutter-head by hand. The blades should just touch the straight edge. If a knife blade is too high or too low at either end, loosen the screws which lock it in position lightly, and shift the steel blade until it just touches the straight edge, then tighten it securely.

Raise or lower the rear table as required by turning hand-wheel. After it has been set at the correct height,

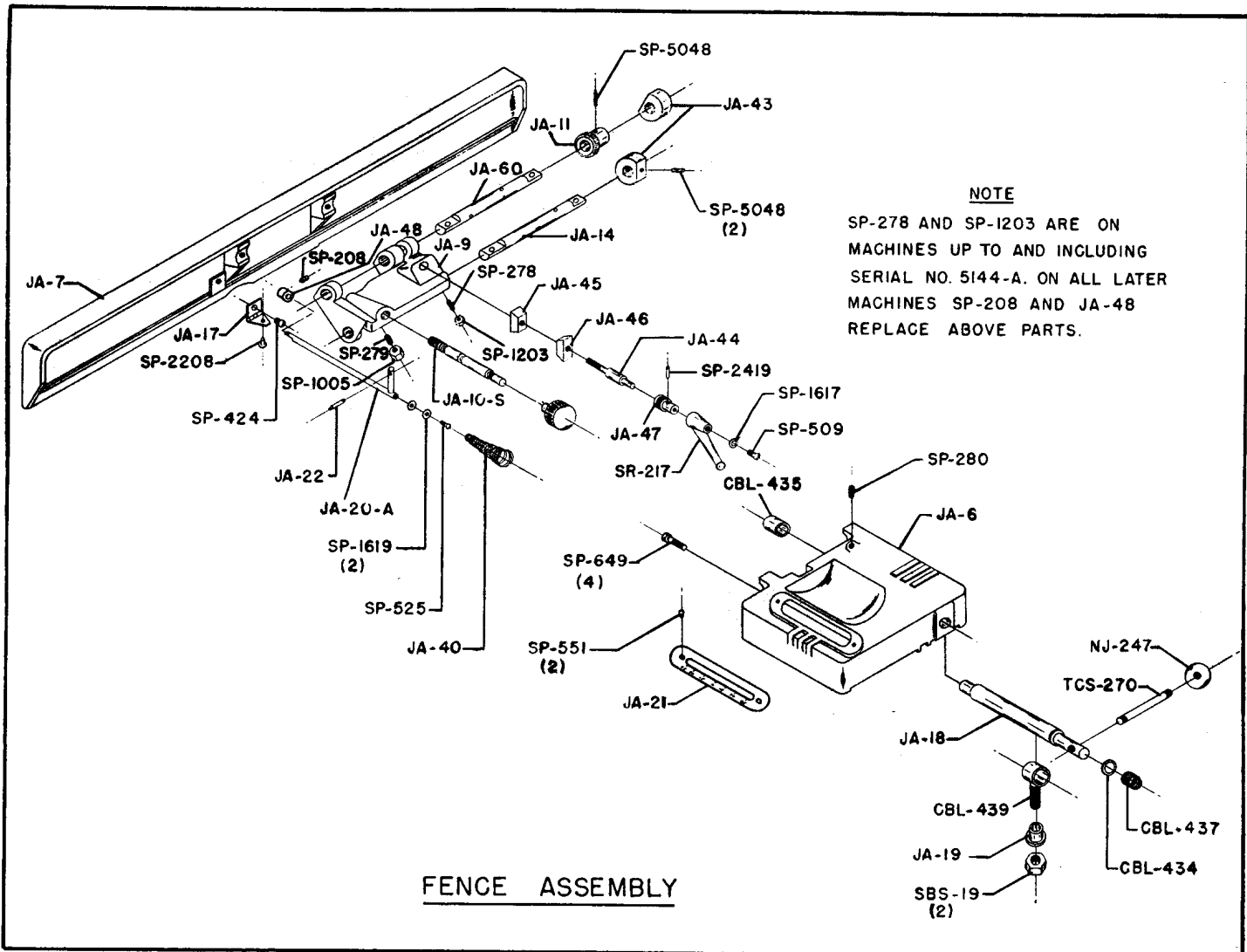


Figure 3.

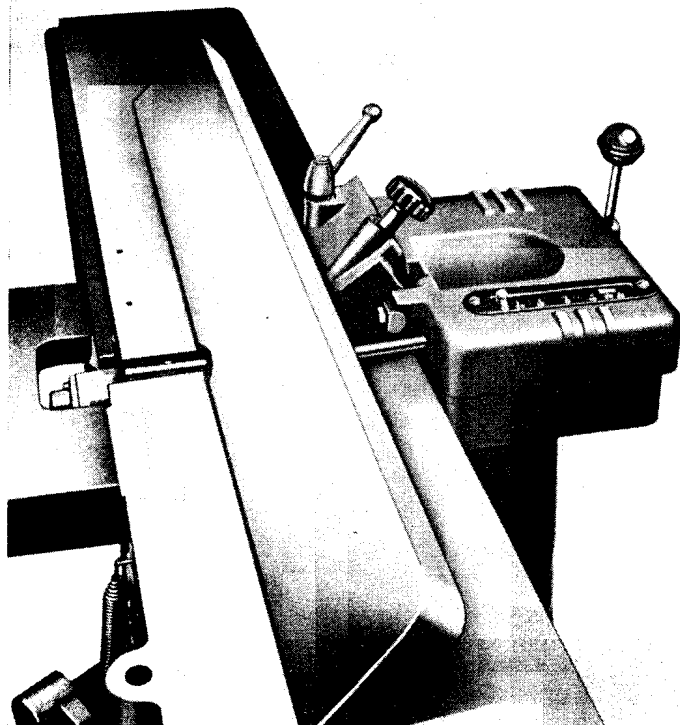


Fig. 4. Fence Tilted to the Right.

it should not be changed, except for special operations such as stop chamfering and after sharpening the knives.

If the rear table is too high, the result will be shown in Figure 8, the finished surface will be grooved. If the rear table is too low, the work will be gouged at the end of the cut as shown in Figure 10.

As a final check of the rear table adjustment, run a piece of wood slowly past the knives of the cutter head; it should rest firmly on both machined surfaces of the work tables and the machined surface of the guide fence as shown in Figure 11, with no open space under the finished cut.

CARE AND SHARPENING OF CUTTER HEAD KNIVES

The cutter head knives should not require an unreasonable amount of force to joint the stock, but should make a clean, smooth cut easily. After considerable amount of use the knives of the cutter head will be-

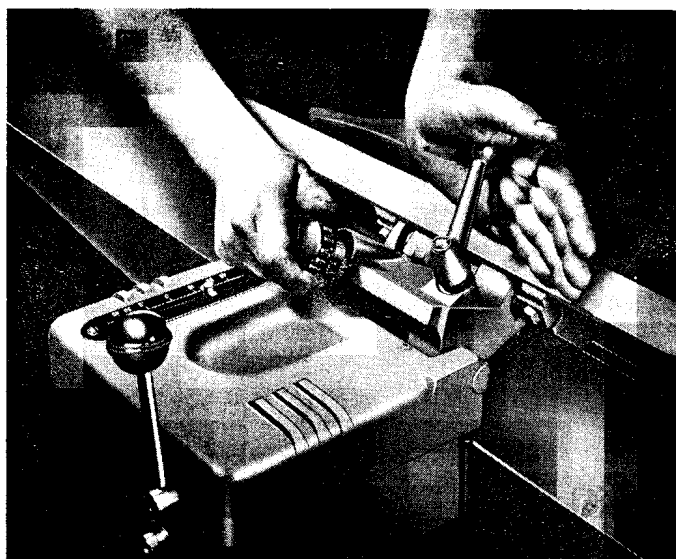


Fig. 5. Locking Fence.

come dull and will no longer cut smoothly, but rather will tend to gouge the stock. Continued operation of dull knives will result in a great strain on the jointer, the cutter-head assembly and will cause decreased production.

To avoid any possible damage and to obtain maximum performance, we suggest keeping the knives clean and sharp. If the knives do not cut easily they have become dull and should be resharpened. When gum and pitch collect on the knives, we suggest removing it by using Delta gum and pitch remover. Never scrape off the gum and pitch with a sharp tool, because when a blade is scratched it will collect gum and pitch that much faster.

Frequent sharpening of the knives gives maximum production and holds down the cost of operation. If the knives are left to become too dull, more material must be removed to bring them back into service, thus reducing blade life more than if they were sharpened more frequently.

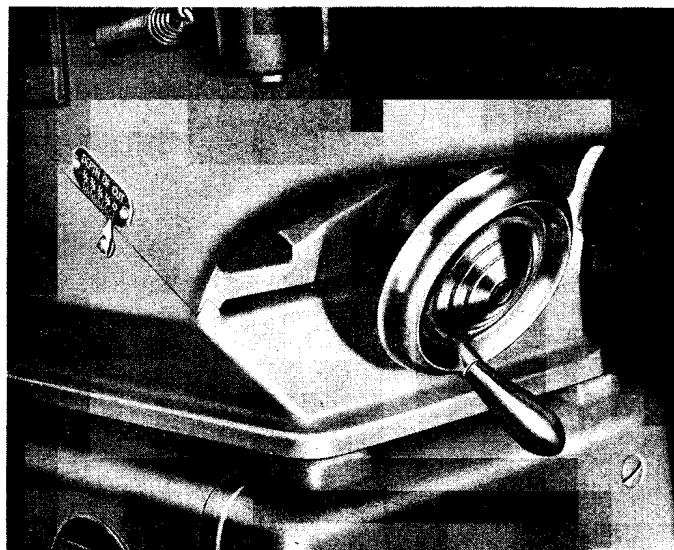


Fig. 6. Handwheel For Lowering or Raising Front Table.

WHETTING KNIVES

When the knives of the cutter head become slightly dull, we suggest the operator whet the knives. This operation will give the knives a sharp, clean edge to produce a nice smooth clean cut.

To whet the knives proceed as follows: Use a fine carborundum stone; cover it partly with paper, as shown in Figure 13, to avoid marring or marking the ground table surface. Lay the stone on the front work table, lower the table and turn the cutter head forward until the stone lies flat on the bevel of the knife as shown. Hold the cutter head from turning and whet the beveled edge of the knife, stroking lengthwise by sliding the stone back and forth across the work table until a fine wire edge is produced. This fine wire edge can be easily removed by honing. Be sure to whet each knife blade of the cutter head the same amount by taking the same number of strokes during each whetting operation.

JOINTING KNIVES

When the knives of the cutter head seem to gouge into the work rather than take a nice smooth cut easily, we suggest jointing the knives. This operation sharpens the knives and brings them to a true cutting circle while the cutter head is rotating at normal speed.

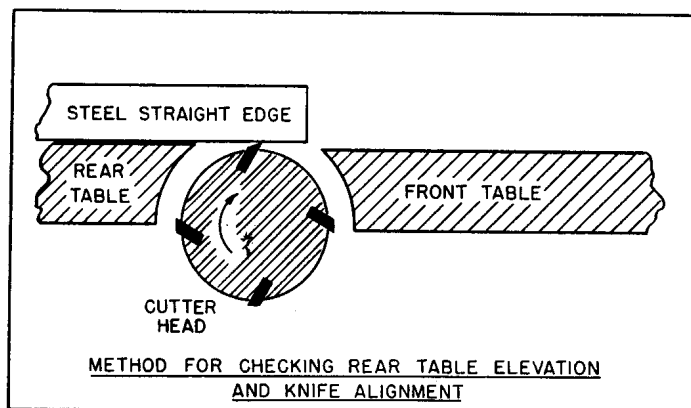


Figure 7.

To joint the knives proceed as follows: Use a fine carborundum stone; cover it partly with paper, as shown in Figure 14, to avoid marring or marking the ground table surface. Lay the stone on the rear table after adjusting rear table to the highest point of the cutting circle. Start the machine and slowly move the stone forward until it projects over the revolving knives. Then move it across the work table lengthwise of the knives so they are sharpened their entire length. Keep the stone flat on the table. If the knives do not touch the stone at all points across their entire length, lower the rear work table one or two thousandths of an inch by turning the proper handwheel and repeat the operation if necessary. If a fine wire edge appears on the knives of the cutter head, this wire edge can be removed by honing. When the knives have been jointed properly and carefully each knife of the cutter head will take a nice smooth clean cut.

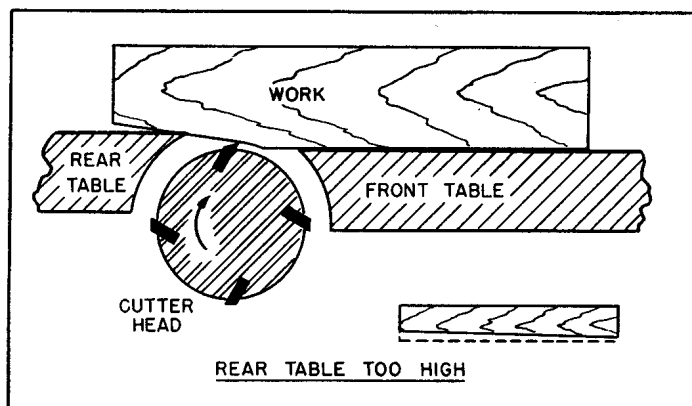


Figure 8.

SETTING KNIVES

If the knives are removed from the head for any reason care must be used in resetting them. Place a knife in its groove so that the rear edge of the bevel on the knife projects $1/16$ " beyond the surface of the cutter head. Slip the knife lock bar into place and tighten the lock screws lightly. Place a knife setting bar made from a piece of hardwood jointed perfectly straight on one edge on the rear table. The knife is then set so that when the head revolved carefully backward, it will just touch the bar without moving it. This should be checked at each end of the knife. Tighten the screws, then set the other knives in turn. Go over the lock screws again to make sure they are tight, then joint the knives lightly as previously described. Do not hurry these operations, for upon their accuracy depends the quality of the work the machine will do.

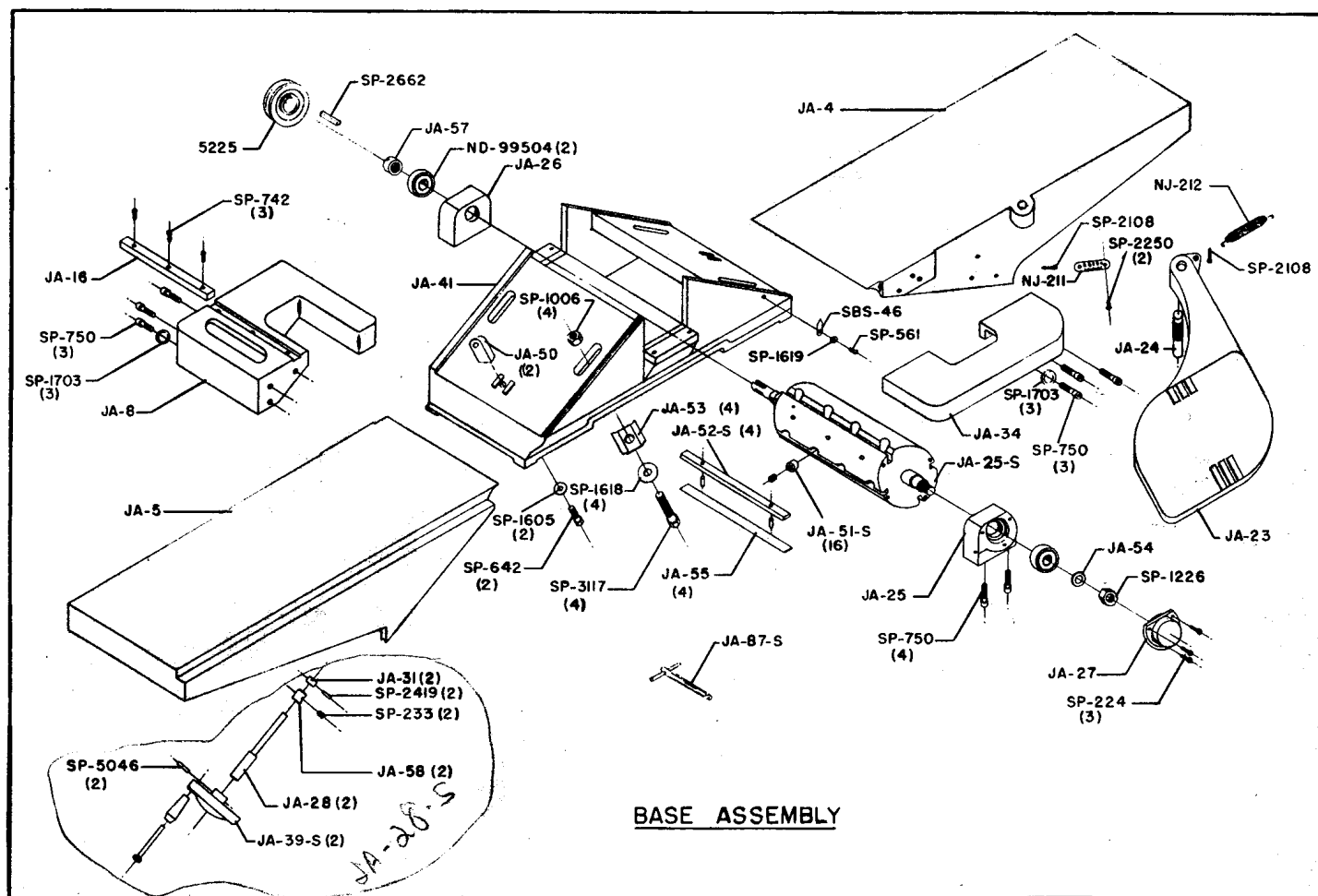


Figure 9.

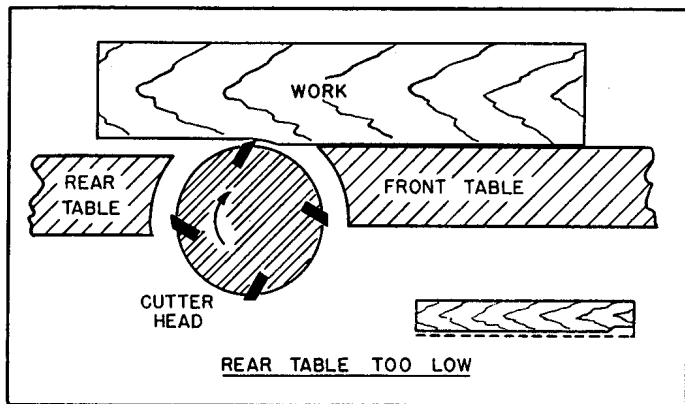


Figure 10.

The cutting circle of the cutter head on this machine is 3" and all adjustments referred to above are based on this dimension.

The speed of this head with the four knives furnishes a smooth finish with maximum knife cuts per inch.

The depth of the cut pointer, if out of adjustment should be set by making a cut of exactly $\frac{1}{8}$ " and then set the pointer to this mark on the scale.

LUBRICATION

The cutter head runs in grease-sealed ball bearings which are lubricated for the life of the bearings. Occa-

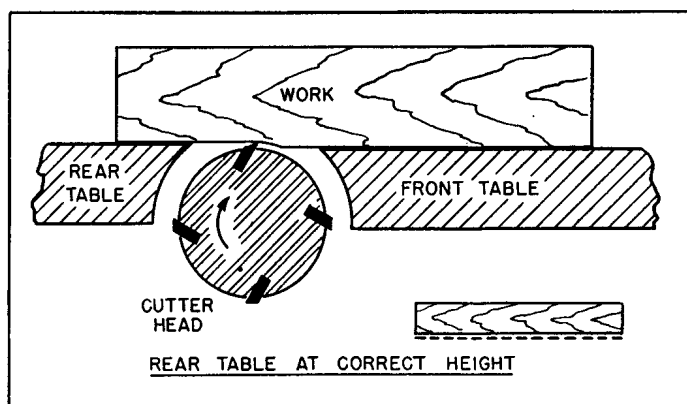


Figure 11.

sionally a drop of oil should be placed on ways of base and on raising screws, assuring easy movement.

HOW TO USE THE JOINTER

Surfacing

Surfacing and edging stock are the most common operations performed with a jointer. In preparation for the performance of these operations one must learn to estimate the depth of cut that can safely be taken and how to set the machine for such. Operation of a jointer involves considerable risk, yet if one strictly observes the following there is not much danger of an accident:

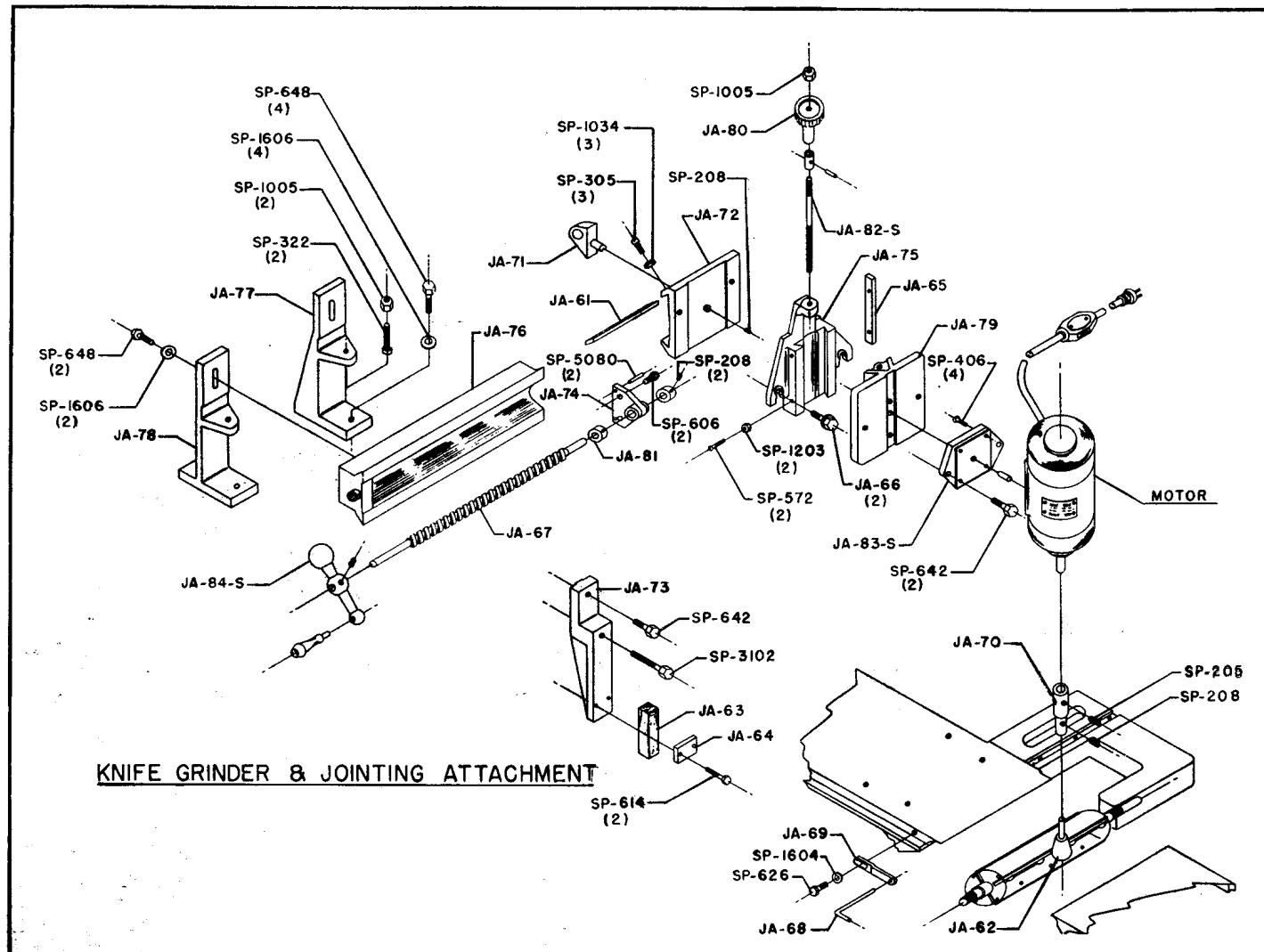


Figure 12.

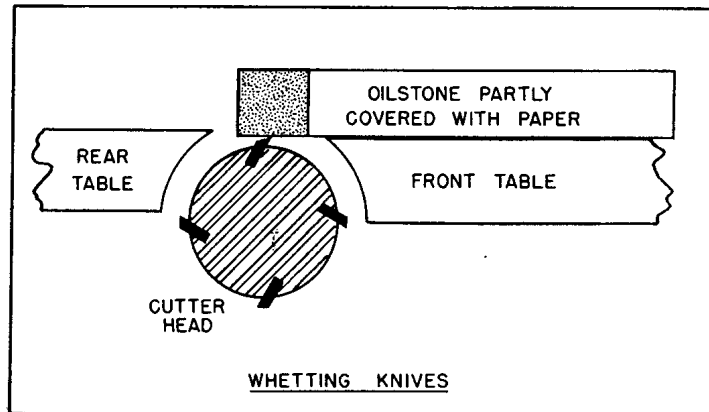


Figure 13.

1. Always keep your hands on top of the work.
2. Always hold the work firmly on the table or against the fence.
3. Always turn the concave side of stock toward the table and cut with the grain, not against it.
4. Never run a piece of stock shorter than 12 inches across the jointer.
5. Do not operate the jointer unless the guard is in place and working.
6. Do not use the jointer when the knives are dull.
7. Never attempt to run a piece of wood across the jointer until the machine is running at full speed.
8. Set the fence at right angles to the table. Test with a square.

Stand slightly back of the cutter head, with your left foot forward and the right foot about eighteen inches to the rear of the left.

Place the left hand about six, or eight inches from the front end of the board and the right hand toward the rear. Holding the stock down firmly move it forward against the knives. Do not move the position of your feet, but as the stock advances move the body forward.

When the fore end of the stock has passed over the cutter head hold it down firmly on the rear table then push the work gradually forward changing the position of the hands as necessary, but not the position of the body, except on rare occasions, such as when jointing a very long piece of stock.

If the stock is not held down on the rear table after passing over the cutter head, the machine will not produce a true surface. Observance of this feature is extremely important as it is the principal reason why some operators have so much difficulty in getting a true surface when using a jointer.

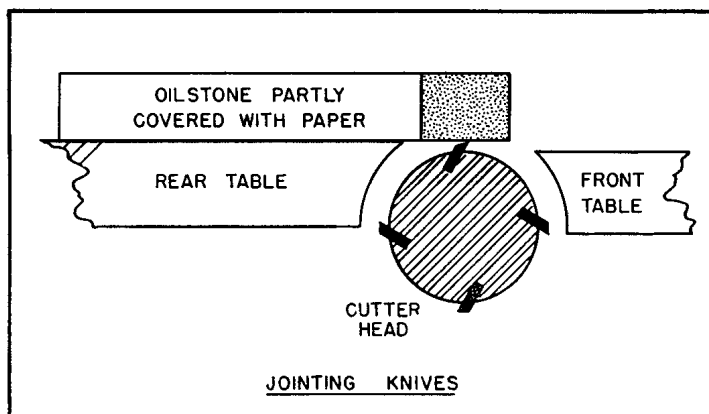


Figure 14.

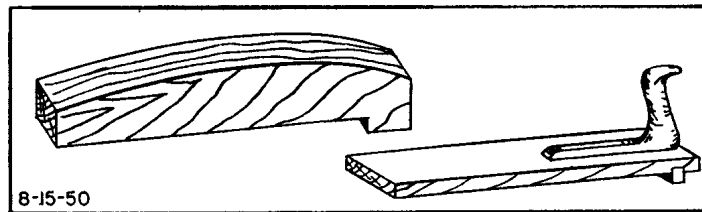


Figure 15.

If the cut is not deep enough or is too deep, adjust the machine before taking further cuts.

JOINTING AN EDGE

Edge jointing is a very common operation which is easily done on the jointer. Set the guide fence so its machined surface is at right angles to the machined surfaces of the front and rear work tables. Adjust the depth of cut by lowering the front work table the minimum amount required to obtain a straight edge. Hold the best face of the piece firmly against the fence throughout the entire cut.

JOINTING WARPED PIECES

If the stock to be jointed is dished or warped, take several light cuts until the surface is flat. Never force the stock down against the tables to eliminate the warping during a jointing operation; after the excessive pressure is released the material will spring back to its original warped shape and remain warped after the cut is completed.

JOINTING SHORT OR THIN STOCK

Jointing short or thin stock on a jointer can be hazardous unless done in the proper manner. We suggest the operator use a push block for this operation to eliminate any possible danger to his hands. Two types of push blocks are shown in Figure 15. They can be easily made from scrap material.

In performing this operation, we suggest taking light cuts only to reduce vibration. Excessive vibration may cause the stock to work sideways, so the push block no longer holds it flat against the surface of the work table, which will result in removing more stock from one part of the surface than another. Place the push block squarely on top of the stock with the heel of the push block against the end of the stock. Be sure to hold the push block against the stock throughout the entire operation.

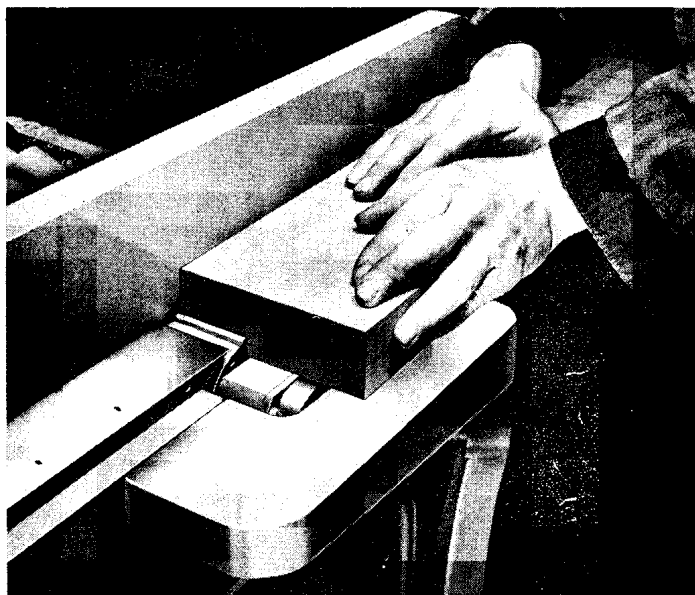


Fig. 16. Rabbitting.

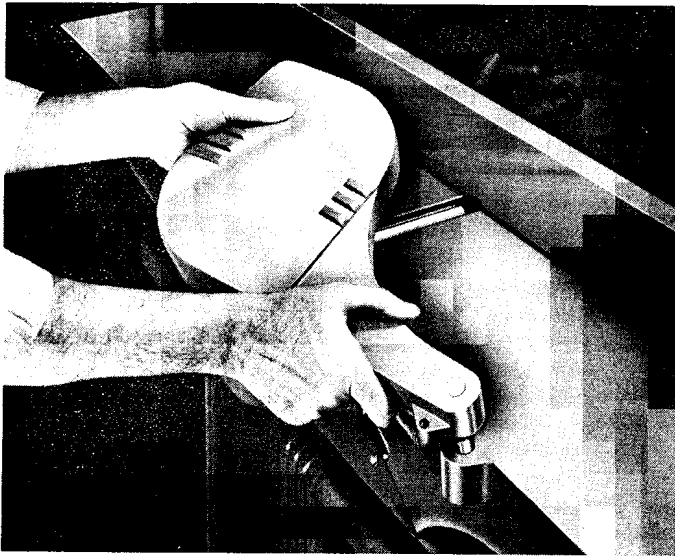


Fig. 17. Removing Knife Blade Guard.

A good method in preventing tearing at the ends of the stock is taking a short light cut a few inches long at one end and then turn the piece end for end and take the entire cut across the width of the stock. Be sure before performing this operation that the guide fence and the work tables are exactly at right angles to one another.

RABBETING

The jointer is provided with a rabbeting arm and ledge by means of which rabbets can be cut to $\frac{1}{2}$ " deep and 8 inches wide, and for this operation the front safety knife blade guard must be removed. See Figures 16 and 17.

Set the guide fence to control the width of the rabbet, measuring from the end of the knives to the machined face of the guide fence. Lower the front work table by means of the hand wheel until the depth of cut is equal to the desired depth of the rabbet needed. Feed the work slowly, holding the stock firmly against the guide fence and work tables, pushing it steadily forward when making a deep rabbet cut, to avoid splitting the stock. We suggest taking several passes at increasing depths for wide cuts. When rabbeting the ends of narrow stock always use a push block.

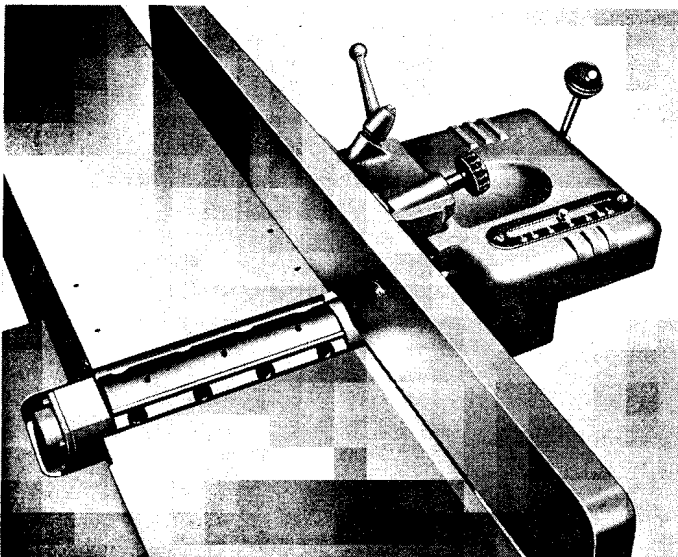


Fig. 18. View Showing Front Table, Rear Table and Fence.

BEVELING

Bevels are easily cut on the stock by tilting the guide fence in the desired direction. To cut a bevel, lock the fence at the required angle holding the stock firmly against the guide fence and work table and pushing it steadily across the revolving knives of the cutter head. If a large bevel is needed several passes of the work across the knives may be necessary.

When the angle is small there is little difference whether the fence is tilted to the right or left. However, at greater angles, approaching 45 degrees it becomes increasingly difficult to hold the work properly when the guide fence is tilted to the right. The advantage of the double tilting fence is appreciated under such conditions. When the guide fence is tilted to the left, this forms a V-shape with the work tables, and the work is pressed into the V-pocket while passing it across the revolving knives. We suggest the operator always tilt the fence to the left whenever possible. If the bevel is laid out on the piece in such a direction that this involves cutting against the grain, it will be better to tilt the fence to the right for the operation.

Be sure to keep the stock firmly against the guide fence and the work tables throughout the entire cut, making it in one steady continuous motion and the operator keeping his fingers as far away as possible from the revolving knives of the cutter head.

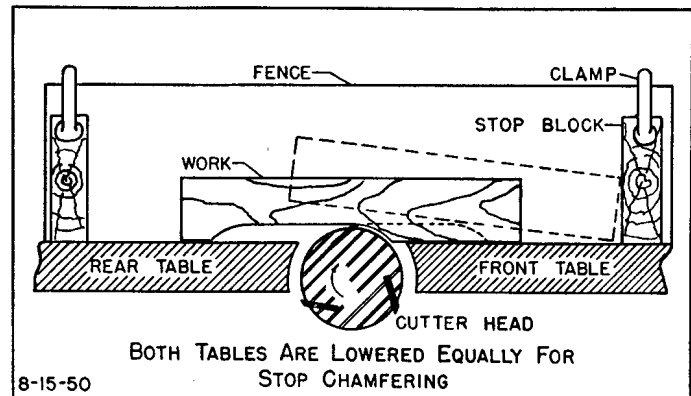


Figure 19.

STOP CHAMFERING

Stop chamfering is easily done on jointer. The front and the rear table must be lowered and set at the same level for the operation. The depth of the chamfer is determined by the amount the front and rear tables are lowered.

Clamp a stop block to the front end of the guide fence at a position where the cut will start at the beginning of the chamfer, which prevents the stock from kicking back toward the operator.

Clamp a stop block at the rear end of the guide fence to control the desired length of cut. The stop blocks should be clamped to the guide fence at their predetermined positions before starting the machine.

To start the cut, place one end of the stock against the stop block on the front of the guide fence and the front table surface, then carefully lower the other end, keeping the stock against the guide fence. Hold the stock firmly against the guide fence and the work tables, moving it forward steadily until it strikes the stop at the rear of the guide fence and then carefully raise the rear end of the stock to remove it. Roughness caused by cutting against the grain at the end of the chamfer may be smoothed by sanding, or the cut may be run half way and reversed. The true stop chamfer is a bevel cut, and is made with the fence tilted to the

required angle. The method is, however, as shown in Figure 19, for a square cut.

TAPER CUTTING

Taper cutting the edge of the stock is easily accomplished on a jointer if properly done and is one of the most useful jointer operations. The taper can be cut the full length of the stock or the taper can be cut only on a portion of the length of the stock. Tapering can be used on a wide variety of work, such as tapering the legs of furniture.

To cut a straight taper on all sides of the stock, reduce it to the largest required rectangle. Layout the taper required on one end of the stock and square a line around the entire piece at a point where the taper is to begin. Measure the amount of stock to be removed from one side of the material. Lower the front work table of the jointer a distance equal to the amount of stock to be removed at the small end of the taper. Remove the front safety knife guard for this operation.

Instead of laying the piece on the front table, place the end of the untapered section on the rear table with the limiting line of the taper about one inch back of the revolving knives of the cutter head. Do this very slowly and carefully as the knives will take a "bite" from the surface of the work, with a tendency to kick-back toward the operator unless held firmly. Hold the stock down firmly against the front work table and guide fence with fingers always on top of the stock, then move the work slowly and steadily forward against the revolving knives. See Figure 20.

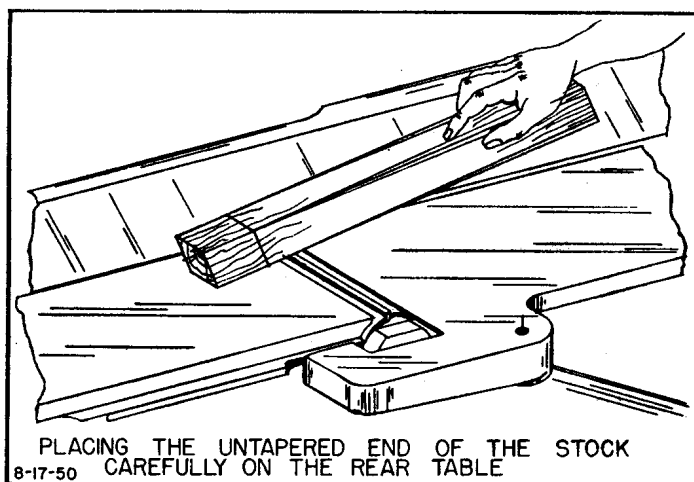


Figure 20.

To cut a stop taper on all sides of the stock, reduce it to the largest required rectangle. Lay off the length of taper required on the stock by squaring lines around the piece on both ends of the stock. Measure the amount of stock to be removed at the point where the taper will be the deepest. Lower the front work table a distance equal to the desired depth of cut. Remove the front safety knife guard for this operation. See Figure 21.

Clamp a stop block to the guide fence at the front end so the limiting mark at the starting point of the taper will fall on the revolving knives at the start position and this stop block will prevent the stock from kicking back toward the operator at the start of the cut. Clamp a stop block at the rear end of the guide fence to control the desired length of cut. These stop blocks should be clamped to the guide fence at their pre-determined positions before starting the machine.

To start the cut, place the section to be tapered against the front stop block, and very carefully lower the untapered section until it rests firmly against the rear work table. Be sure to grip the stock firmly when lowering it into the revolving knives of the cutter head. Hold the stock down firmly against the front work table with the fingers of the operator always on top of the stock, then move the work slowly and steadily forward against the revolving knives.

The object is to plane off all the stock in front of the knives, to increasing depth, leaving a tapered surface.

The ridge left by the knives when starting the taper may be removed by taking a very light cut with the front table raised to its usual operating position.

Be sure to exercise extreme care when lifting the piece from the machine after completing the cut for successive operations, or, better still, at the end of each cut we suggest turning the machine off before lifting the stock from it.

KNIFE GRINDING AND JOINTING ATTACHMENT

To produce quality work efficiently, jointer knives must be kept in good cutting order. This may mean merely whetting with an oilstone. When the knives become so dull that whetting is ineffective or will require considerable time and effort, they should be put in condition by grinding. The most satisfactory and effective way of grinding jointer knives is with a grinder attachment. Grinding is accomplished by a grinding stone that travels lengthwise of the knives while mounted in position in the cutter head.

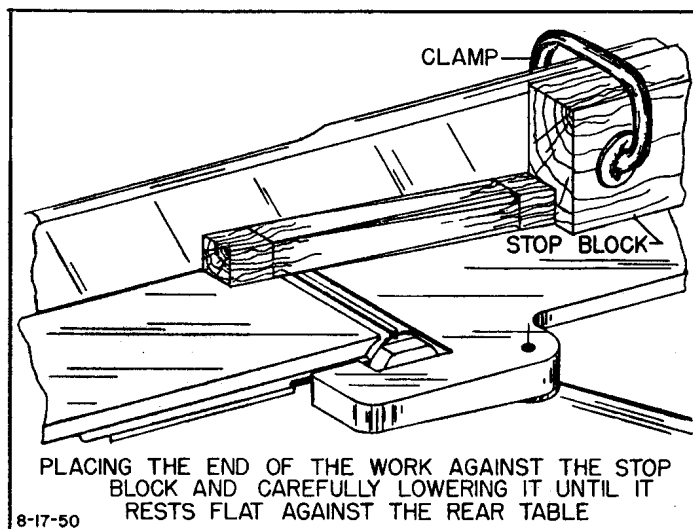


Figure 21.

The table is tapped to receive this attachment. In setting it up, it is imperative that the rail is parallel to the rear table to within .001" therefore, this should be checked before grinding.

The indexing of the head is done by placing the pin provided, through the stop bar into the end of the head. The proper grinding angle can be obtained by adjusting the stop bar to the desired position.

If the jointing and grinding operation are to be performed in one setting, the jointing operation should be done first. To do this, attach the jointing stone holder and jointing stone to the grinder attachment. Next start the cutter head motor, so that the cutter head will revolve at its normal rate of speed. By means of the hand wheel on the vertical slide, adjust the