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BOOK NO. B539

WADKIN BURSGREEN

TEMPORARY INSTRUCTION MANUAL

SUPERSAW

UNIVERSAL RADIAL SAW

PLEASE INSERT SERIAL NUMBER OF MACHINE

MODIFICATIONS ARE MADE TO THESE BOOKS FROM TIME TO TIME AND IT IS IMPORTANT THEREFORE THAT ONLY THE BOOK SENT WITH THE MACHINE SHOULD BE USED AS A WORKING MANUAL

88

UNIVERSAL RADIAL SAW – TYPE SUPERSAW

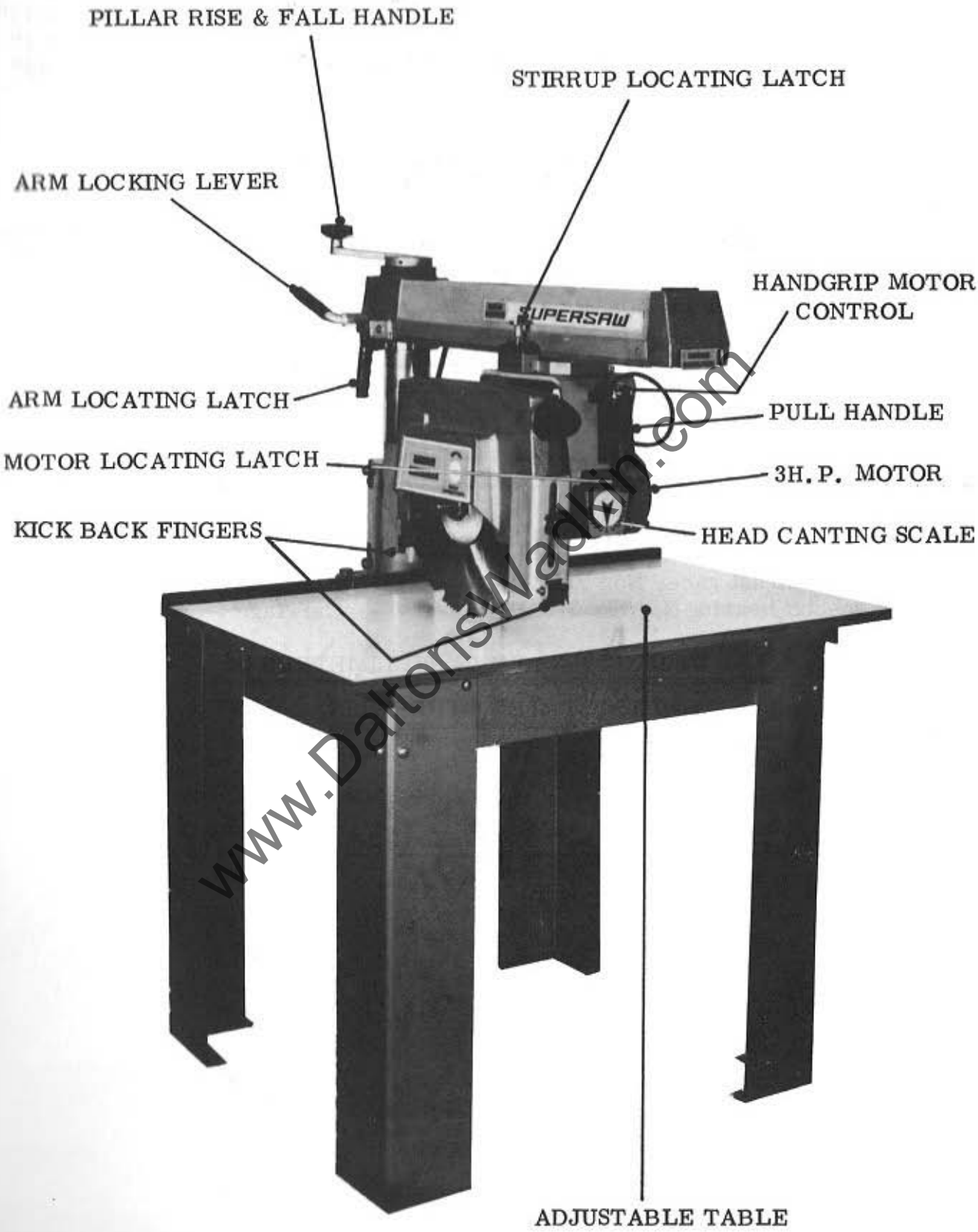


FIG. 1.

RIVING KNIFE FOR RIPPING RABBETS PERMANENTALY WITHIN SAWGUARD

PRINCIPLE DIMENSIONS AND CAPACITIES.

Max. depth of cut	115	4½"
Max. cross cut with arm at 90	420 x 25	16½" x 1"
	345 x 115	13½" x 4½"
Max. cross cut with arm at 45	320 x 25	12½" x 1"
	240 x 115	9½" x 4½"
Max. ripping capacity	750	29½"
Max. sawblade dia.	355	14"
Max. grooving width	32	1¼"
Diameter of saw spindle	25.4	1"
Horsepower of motor	2.2kw	3HP.
Speed of motor : 50 cycles	3,000rpm	3,000rpm
: 60 cycles	3,600rpm	3,600rpm
Size of table	1,000 x 500	40" x 20"
Height of table	810	32"
Maximum floor space	1,930 x 1,170	76" x 46"
Nett weight	168Kg	370lbs
Shipping dimensions	0.9m³	32ft³

Type of grease recommended	Castrol Spheerol AP 3
" " oil "	Castrol Magna ED

BEARINGS USED

2 - M.C. Hives thrust races No. 51102	Rise and fall screw
4 - Fafnir special bearing No. SD5649	Carriage

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE

PRINCIPAL DIMENSIONS AND CAPACITIES FOR 620 ARM

Max. depth of cut	115	4½ in
Max. cross cut with arm at 90	620 x 25	24.3/8 in x 1 in
	545 x 115	21.3/8 in x 4½ in
Max. cross cut with arm at 45	460 x 25	18.1/8 in x 1 in
	384 x 115	15.1/8 in x 4½ in
Max. ripping capacity	950	37.3/8 in
Max. sawblade diameter	355	14in
Max. grooving width	32	1¼ in
Diameter of saw spindle	25	1 in
Horsepower of motor	2.2kw	3 hp
Speed of motor : 50 cycles	3000 rev/min	3000 rev/min
: 60 cycles	3600 rev/min	3600 rev/min
Table size	1000 x 762	40 in x 30 in
Height of table	810	32 in
Max. floor space	2083 x 1372	82 in x 54 in
Net weight	172Kg	380lbs
Shipping dimensions	0.9m^3	32ft^3

INSTALLATION

Remove protective coating from bright parts by applying a cloth soaked in paraffin, turpentine or some other solvent.

When the machine is cased for export the legs are removed from the base. These items are packed individually in the case. Remove and assemble as shown in Fig. 1.

FOUNDATION

See Fig. 2 for bolt positions and clearance required. When installing, the machine must be levelled up by means of packing pieces under the feet. The machine table should be slightly high at the front end. This will ensure that the saw unit remains in the back position when not in use.

This does not affect the accuracy of the machine.

Foundation bolts are not supplied with the machine except by special order.

WIRING DETAILS

The motor and control gear have been wired in before despatch. All that is required is to connect the power supply to the starter.

Points to note when connecting to power supply :-

1. Check the voltage, phase and frequency correspond to those on the motor plate, also the correct coils and heaters are fitted to the starter.

2. It is important that the correct cable is used to give the correct voltage to the starter, as running on low voltage will damage the motor.

3. Check the main line fuses are of the correct capacity. See list below.

4. Connect the line leads to the appropriate terminals. See Fig. 3 for 3 phase supply

   For single phase supply with 2 overloads in circuit connect supply to L1, L3 and motor or load to A and C.
   For single phase supply with 3 overloads in circuit connect supply to L1 and L3 fit link between C and L2. Connect motor to A and B.

5. Check all connections are sound.

6. Check the rotation of the motor for correct direction. If this is incorrect for 3 phase supply reverse any two of the line lead connections.

VOLTAGE	PHASE	H.P.	S.W.G. TINNED COPPER WIRE	AMPS
220	3	3	21	29
380/420	3	3	24	17
550	3	3 & 5	23	20
220	3	5	17	65
380/420	3	5	22	24
200/220	1	3	17	65
230/250	1	3	18	45

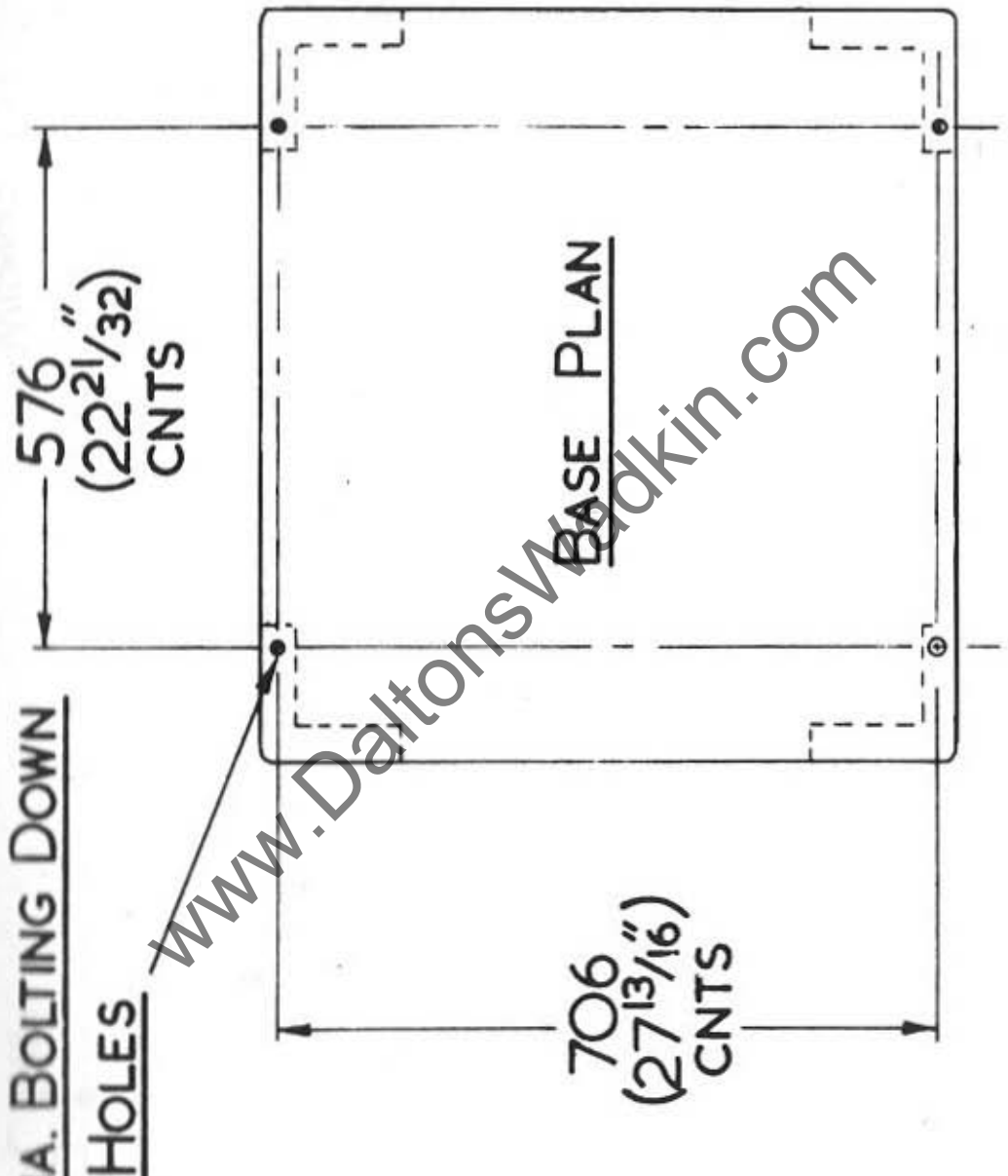
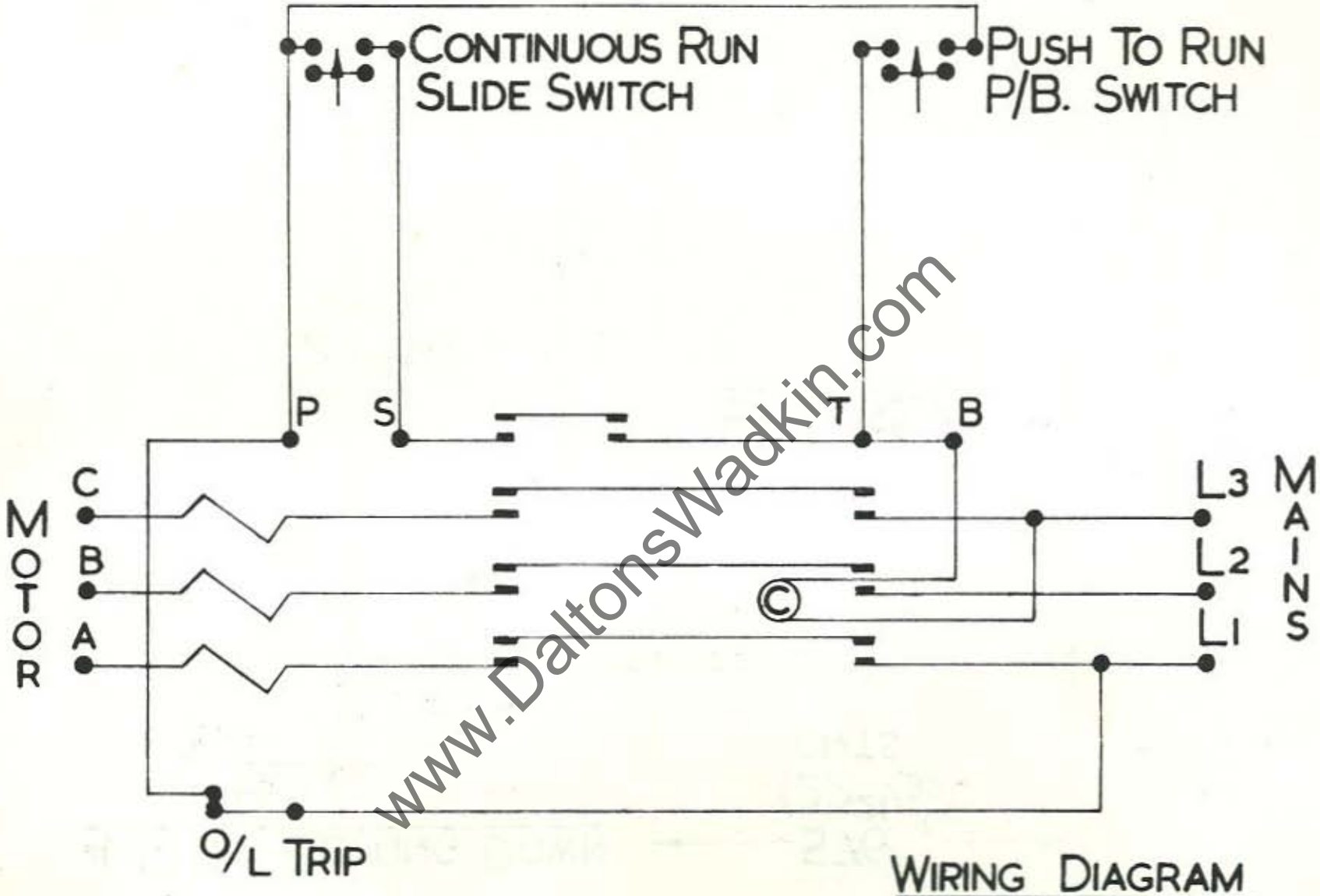


FIG. 2.



WIRING DIAGRAM

FIG. 3.

LUBRICATION

It is advisable to keep all bright parts covered with a thin film of oil to prevent rusting. See Fig. 4 for lubrication instructions.

The slide grooves and rollers should also be kept clear of any sawdust and chippings for ease of operation.

TYPE OF OIL RECOMMENDED	CASTROL MAGNA ED
TYPE OF GREASE RECOMMENDED	CASTROL SPHEEROL AP3

All adjustment and alignments listed below have been carefully set and checked and the whole machine thoroughly tested before despatch from the works.

Should any adjustment be necessary proceed in accordance with the relative instructions given.

LEVELLING TABLE

To check the table for alignment to the arm the undermentioned procedure should be followed :-

1. Remove sawguard and blade from motor.

2. Ensure the motor locating plunger "A" in Fig. 5 the stirrup locating latch "B" and the carriage locking screw "A" in Fig. 15 are securely locked.

3. Secure a small dia. rod between saw flanges as shown in Fig.5 then raise or lower the arm until the end of the rod almost touches table.

4. Lift arm locating latch "C"in Fig. 5 and swing arm to extreme ends of table checking that the clearance between the rod and table remains constant.

5. Should the table need adjustment, adjust table supports by loosening four hexagon head bolts and moving table up or down, whichever is required. When set tighten all bolts.

6. Re - check to ensure table is level.

SAW ALIGNMENTS

Saw square to table.

1. To check this alignment, place a steel square against the saw as shown in Fig. 6 . If adjustment is necessary disengage the motor locating plunger "A" in Fig. 6 , loosen motor pivot locking handle "B" and adjust sawblade until square. Lock in this position with handle "B": Loosen two hexagon head bolts "C" and adjust two socket head grubscrews "D" until locating plunger locates accurately in motor locating ring. When set relock hexagon head bolts "C" .
   Note:- Loosen two screws "E" and re-set pointer to zero. Re-lock screws

Line of travel to fence

2. To check this alignment place a pencil between the saw flanges as shown in Fig. 7 and scribe a line on the table. Check this is at 90 to the fence by means of a steel square. If adjustment is necessary, release arm locking lever "A" in Fig. 8 and disengage the pillar locating latch "B" adjust arm until square, lock in position by locking lever "A" then loosen socket head capscrew "C" on pillar locating ring "D" in Fig. 9. Revolve pillar locating ring "D" until latch "B" locates accurately in ring. When set, relock socket head capscrew "C".

Sawblade in relation to fence

3. To check this alignment place a steel rule or similar straight edge between the saw flanges and a steel square against the fence as shown in Fig. 10 . Rotate the steel rule from front to rear. If adjustment is necessary loosen stirrup locking handle "A" and disengage the stirrup locating plunger "B" , set stirrup correctly and relock in position by lever "A". Release two hexagon head bolts "C" and adjust two socket head grubscrews "D" until plunger "B" locates accurately in the stirrup. When set relock hexagon head bolts "C"

RIVING KNIFE ALIGNMENT

The riving knife should be central between the set of the saw. Should the riving knife be incorrectly positioned proceed as follows :-

1. Remove handwheel from stud "A" in Fig. 11 then remove handwheel "B". Remove front saw visor. Replace handwheel "B" which holds riving knife "C" in position.

2. Loosen two button head socket screws "D" then proceed to adjust riving knife "C" central to the saw by working in conjunction with the socket head adjusting screws "E" and the handwheel riving knife lock "B". Place a steel rule or some other straight edge along the riving knife and set central to the saw. With the riving knife in this position retighten the two button head socket screws "D".

3. Holding riving knife in position remove handwheel "B" and replace front saw visor. Secure saw visor in position by replacing handwheel on stud "A" and handwheel "B".
To check this setting feed a short piece of timber from the rear, along both sides of the riving knife. If the riving knife is correctly set, the blade should cut an equal shoulder as shown in Fig. 12 (A) not an unequal shoulder as shown in Fig. 12 (B).

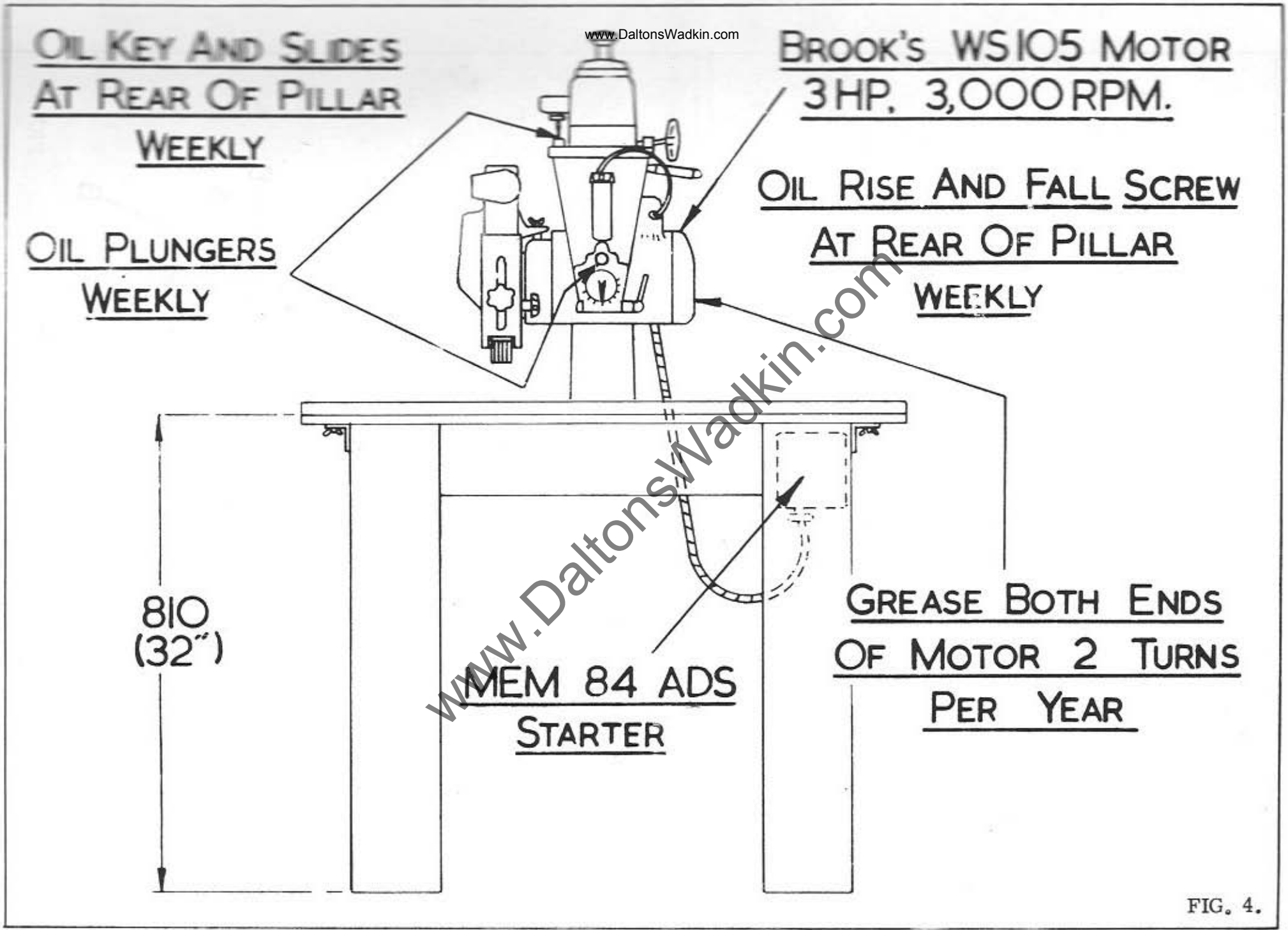


FIG. 4.

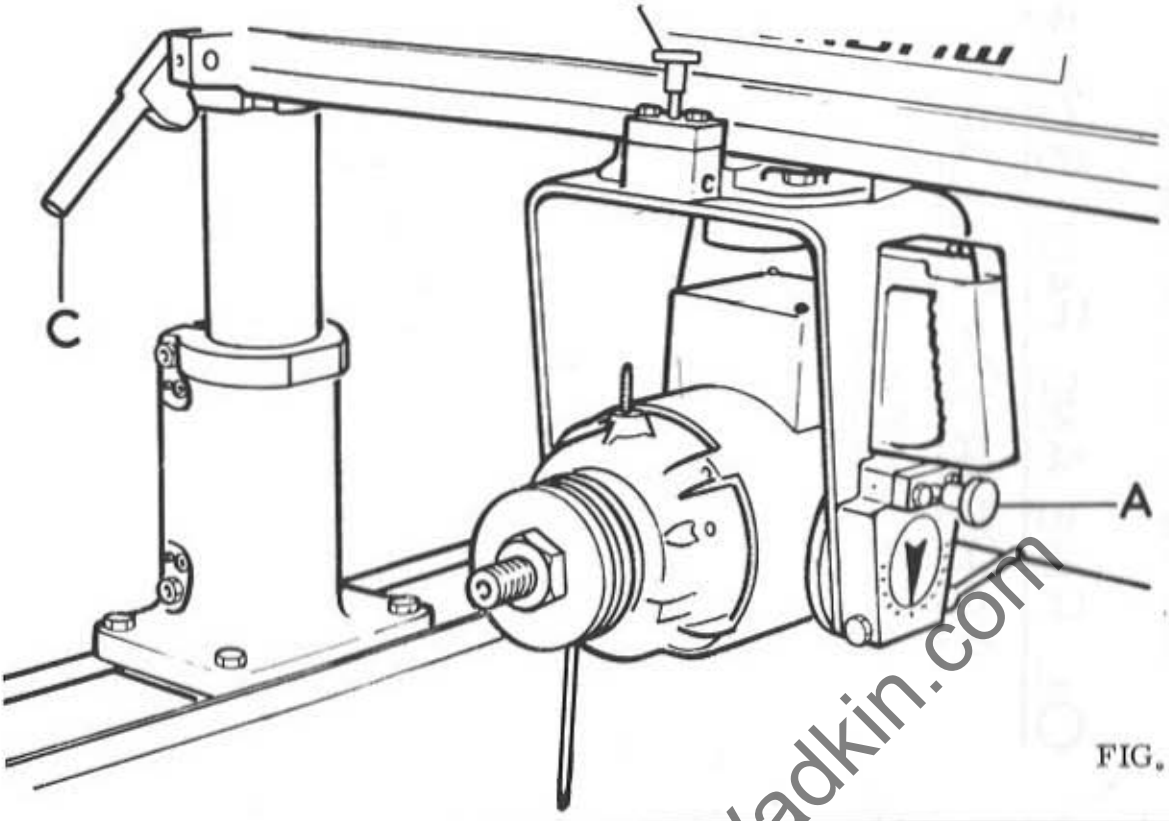


FIG. 5.

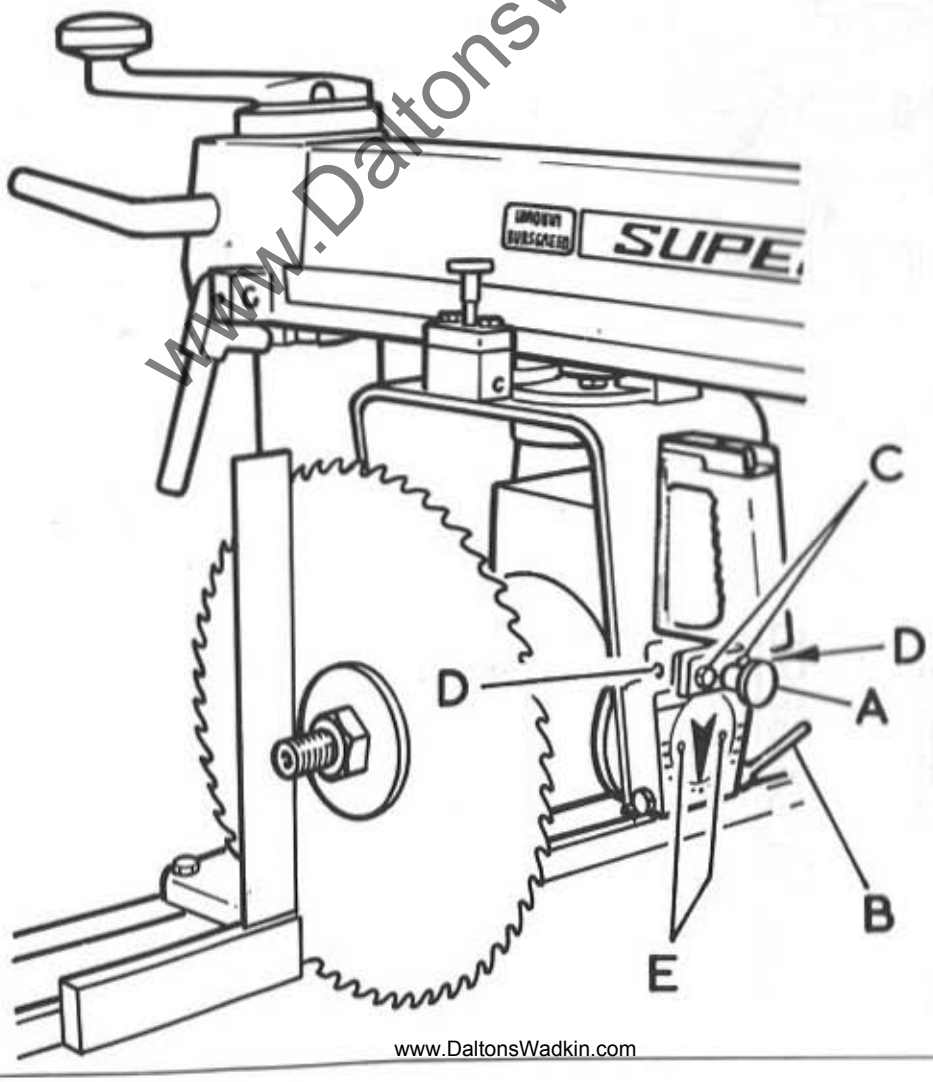


FIG. 6.

COLUMN ADJUSTMENTS

Movement in the arm may be traced to the pillar. To take up any play which may develop, loosen two locknuts "E" in Fig. 8 and adjust slot head grubscrews "F"
When set relock locknuts "E". After adjustment the pillar rise and fall should be checked to ensure the movement is not too tight.

SAW GUARD

The guard gives maximum protection for all operations. The guard is fitted with two anti - kick back devices, both front and rear as shown in Fig. 13 with a retractable riving knife, for crosscutting. The visors are adjustable throughout the full depth of cut of the machine.

An adjustable rubber dust exhaust is fitted to the guard to direct the sawdust away from the operator.

HOW TO ADJUST KICK BACK FINGERS

The anti - kick back fingers "A" in Fig. 13 are fitted to the front and rear saw visors.

To set kick back fingers correctly proceed as follows:-

1. Place the timber to be ripped, in kick back fingers as shown in Fig. 13

2. Loosen handwheel "B" on front visor then lower the fingers "A" until they come into contact with the timber. Move visor down a further 3mm (1/8") and hold in that position. Relock handwheel "B".

3. Set the rear saw visor kick back fingers using the same proceedure as for front saw visor only loosening the handwheel "C" then relocking when set.

4. To remove timber press the points of the kick back fingers and withdraw the timber.

   The timber can now be ripped without any danger of being kicked back at the operator.

RISE AND FALL OF THE ARM

The arm rise and fall is by means of the handle "C" in Fig. 8 . The handle turns a screw in a cast iron nut which is anchored to the base. Total travel of the arm is

SWIVEL OF THE ARM

The arm swings 45° each way to the fence with the principle angles located by a tapered latch "B" in Fig. 8 . The angles to the fence line are indicated by a pointer and scale on the arm top cap at "D".

A powerful lock is provided and can be applied by lever "A".

CARRIAGE AND MOTOR UNIT

The carriage is mounted on four sealed for life ball bearing rollers which run along a grooved track which is machined on the inner section of the arm. The carriage can be locked in any position along the arm by the carriage lock situated on the right of the carriage.

The stirrup is fastened to the carriage by a central pin which enables the motor to swivel through 360° . The principle angles are located by a tapered latch "A" in Fig. 14. The stirrup can be locked at any angle by the lever "B".

Should wear occur on the roller assembly, provision has been made to correct this. Two of the rollers revolve on concentric pins while the two on the locating latch side of the arm are fitted with eccentric pins.

To adjust rollers if necessary proceed as follows :-

1. Remove complete sawguard unit from saw by loosening wingnut at the rear of sawguard.

2. Remove saw from saw spindle by inserting the long arm hexagon wrench (supplied) into the spindle end then removing the left hand thread spindle locknut by means of the spanner (supplied).

3. Insert 10mm spanner into arpeture and loosen two hexagon locknuts "C" in Fig. 14 then loosen two socket head grubscrews "D" .

4. Adjust eccentric pins by means of a 5mm (8/16") allenkey through two holes "E" in underside of stirrup until rollers fit correctly in machined grooves.

5. When correctly adjusted reverse above proceedure taking care to ensure that the eccentric roller pins do not rotate when re - locking.

Note:- To check for correct adjustment, grip one roller between forefinger and thumb and move the unit along the arm. The grip should just prevent the roller from rotating.

THE MOTOR STIRRUP

The motor swivels within the stirrup through 90° . The principle angles are located by a tapered latch"B"in fig. 15 . The angle of cant is clearly shown on a graduated scale by the pointer "C"and the motor can be locked at any angle by the locking lever "D".

FITTING SAWBLADES

To fit sawblades the undermentioned procedure should be followed :-

1. Remove the sawguard complete from the motor.

2. Fit long arm hexagon wrench into spindle end and remove the spindle locknut, left hand thread, and remove front saw flange.

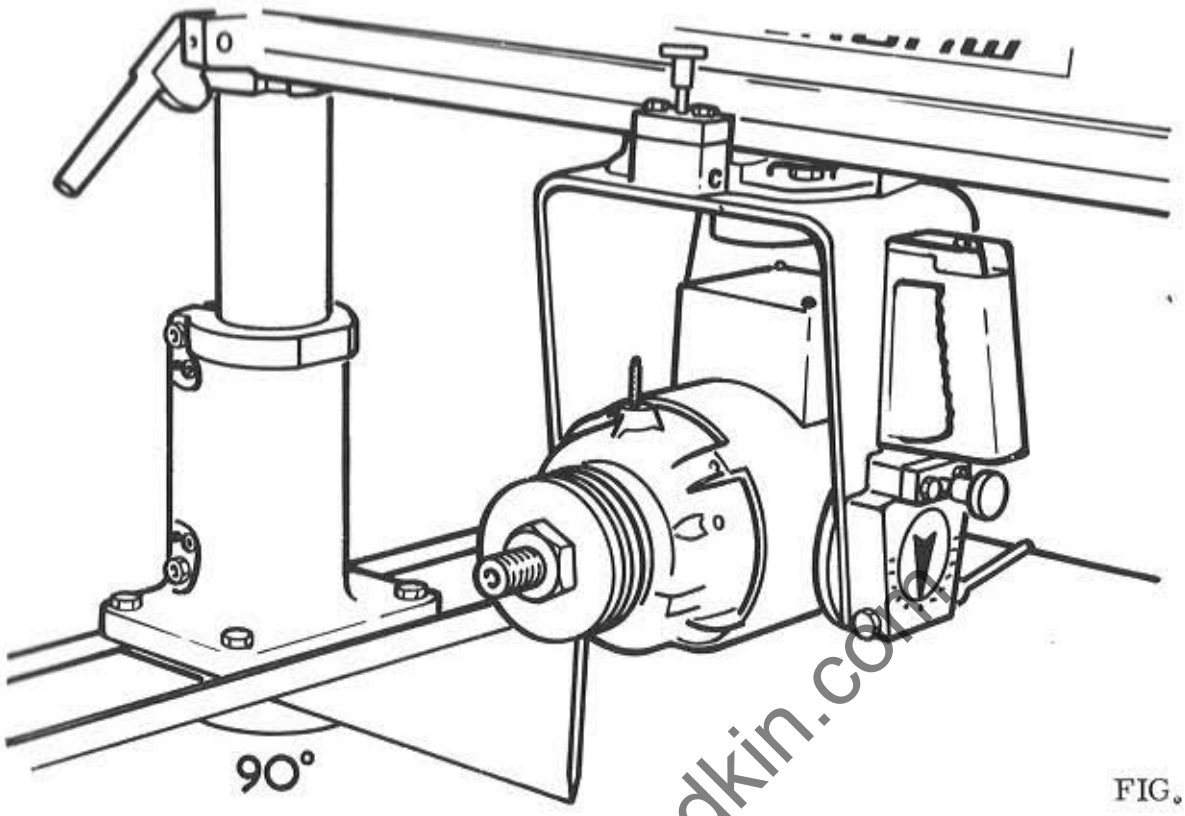


FIG. 7.

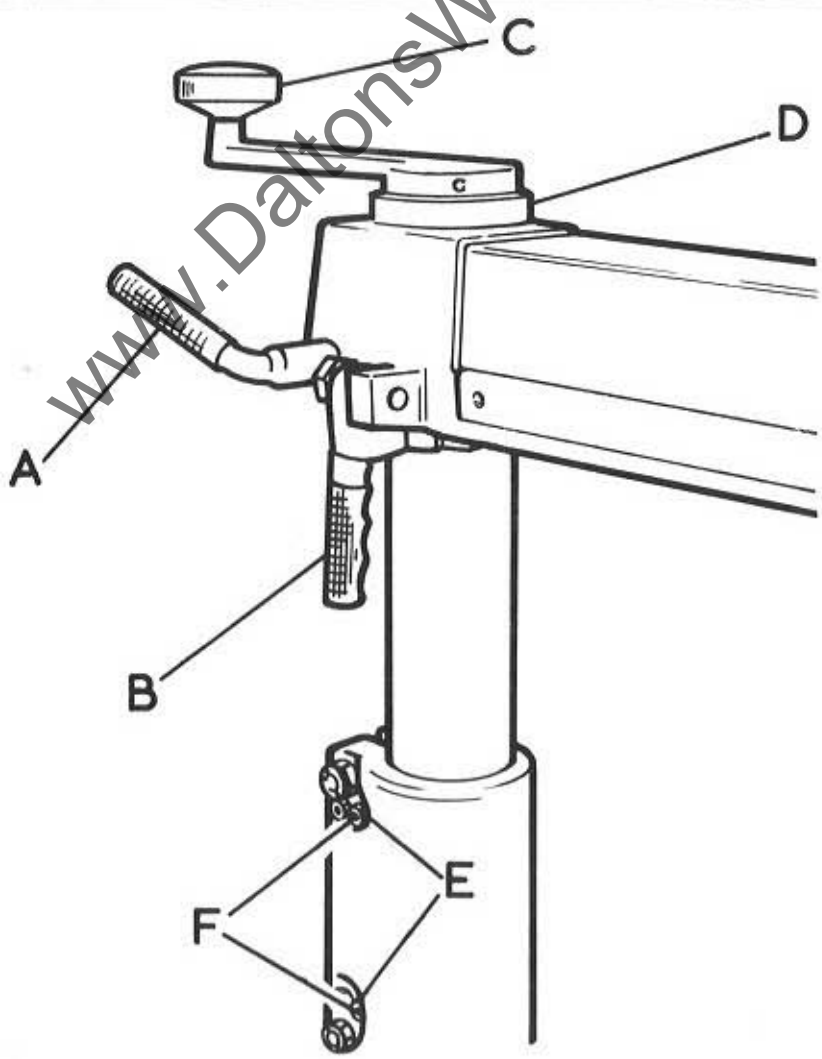


FIG. 8.

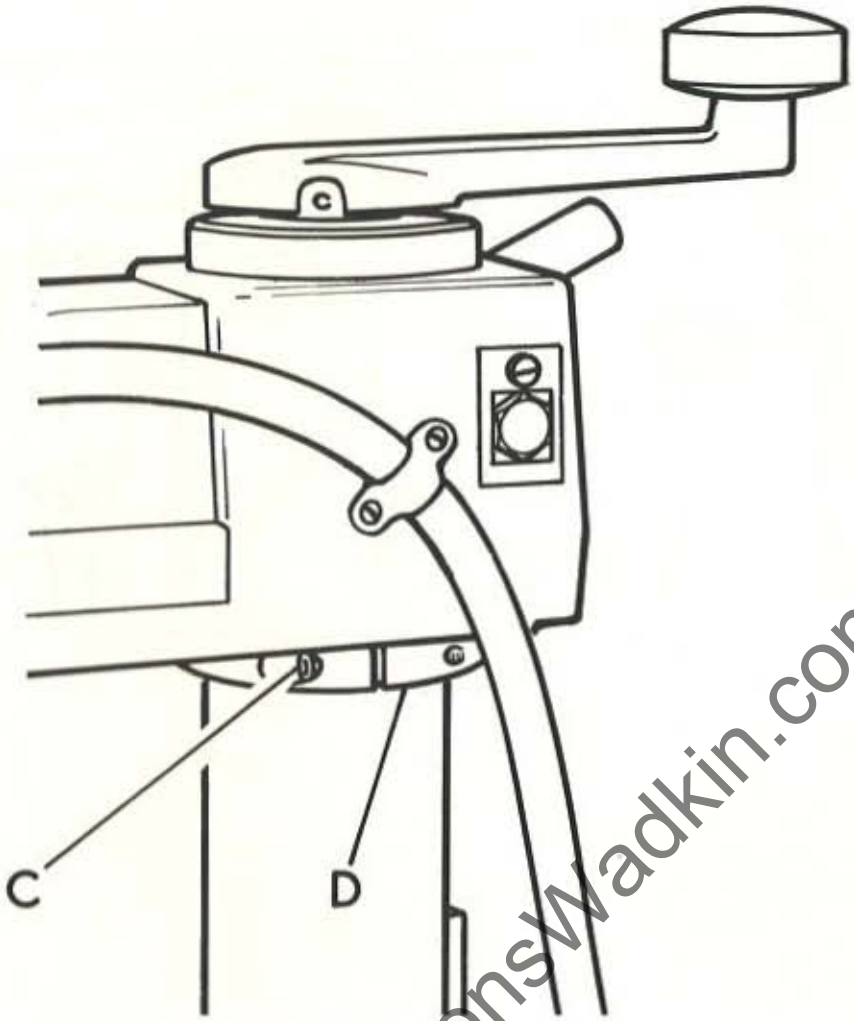


FIG. 9.

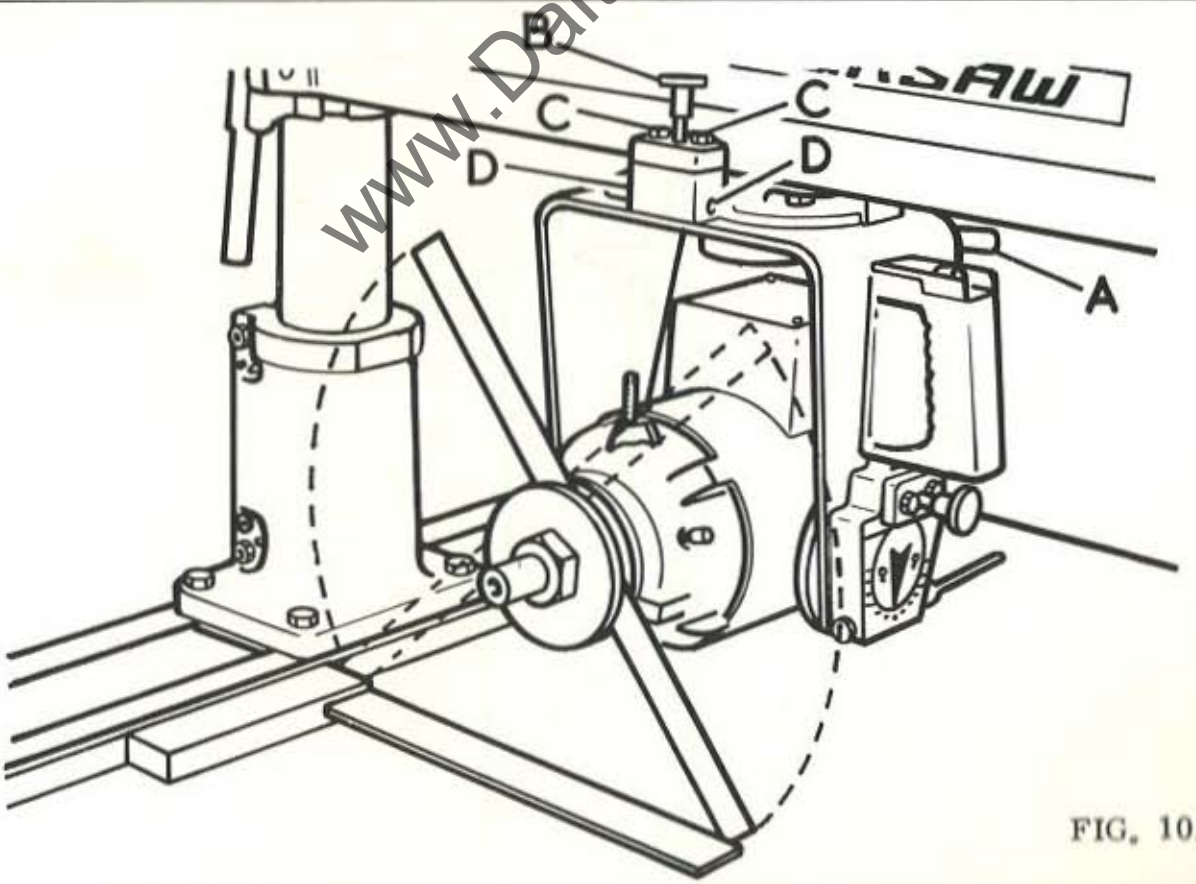


FIG. 10.

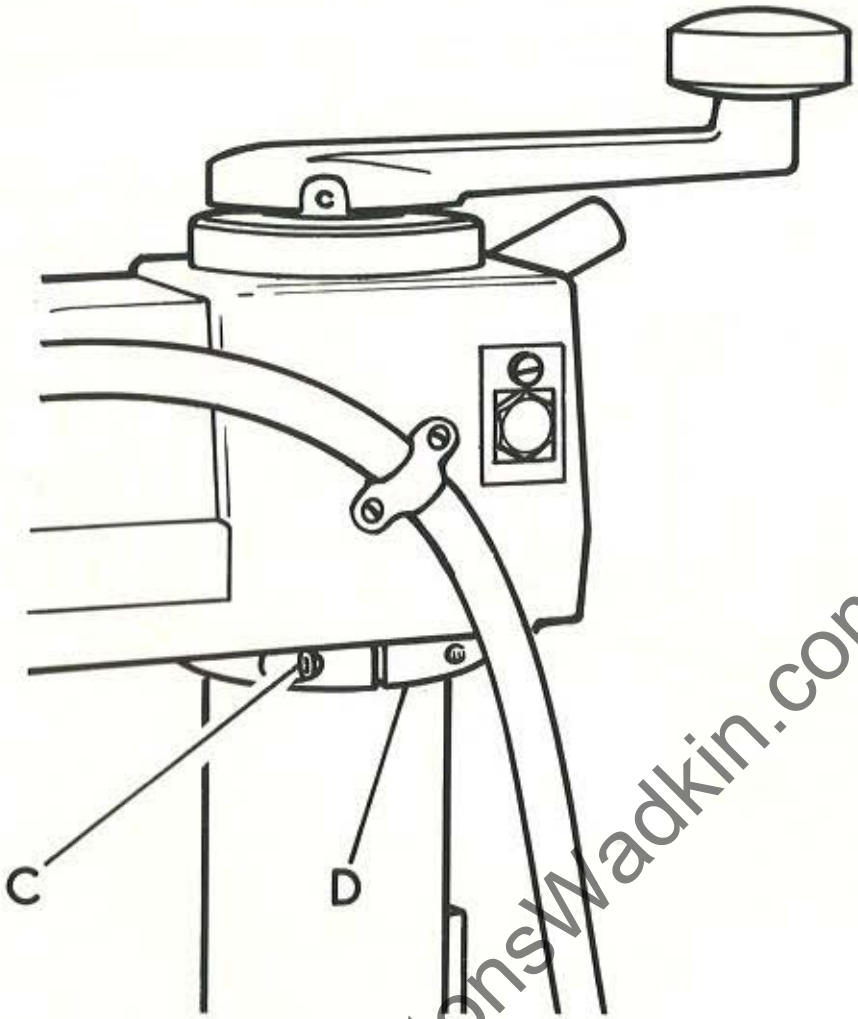


FIG. 9.

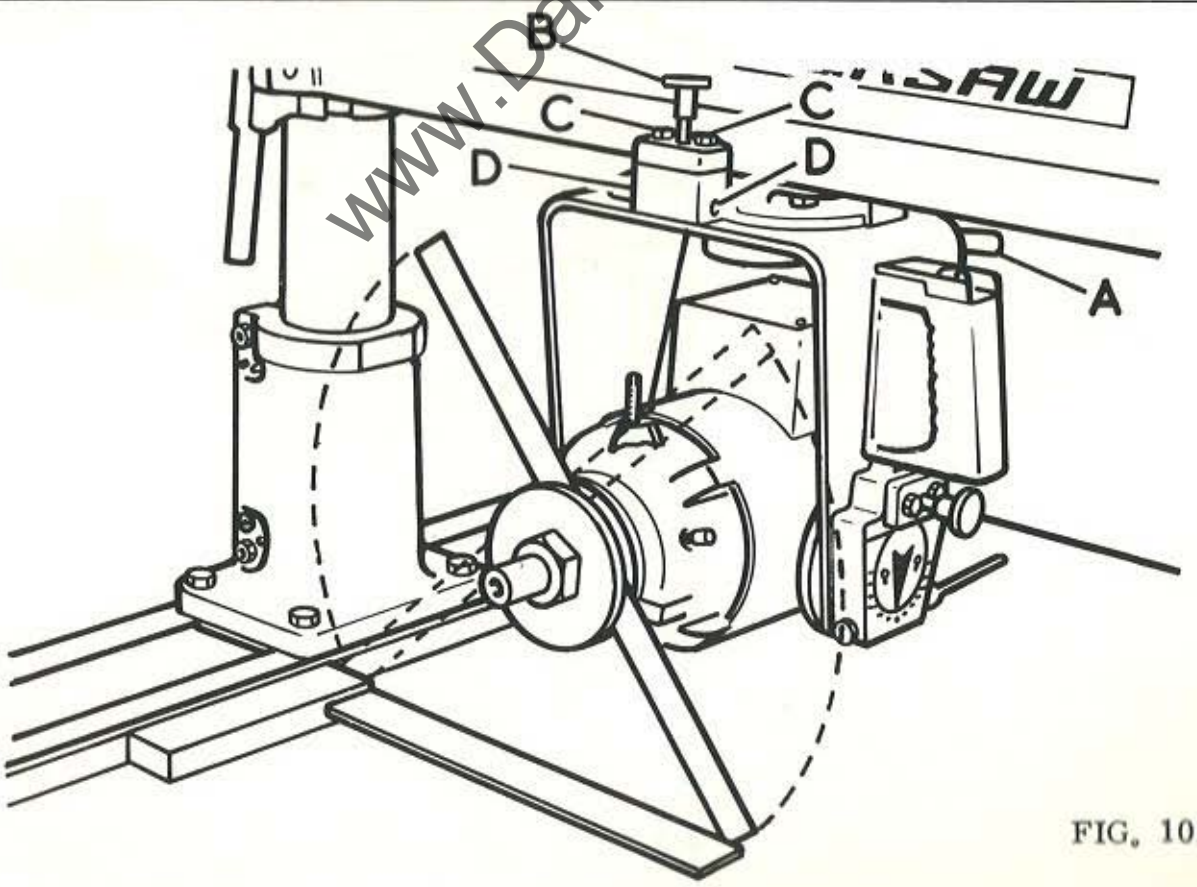


FIG. 10.

3. Fit saw to spindle taking care to ensure the teeth are pointing in the correct direction, also the saw flanges and saw are clean and free from any dirt or sawdust.

4. Replace saw spindle nut and sawguard.

HOW TO FIT DADO

A dado head is made up of two outside saws and 5 inner cutters. Various combinations of saw and cutters are used to cut grooves from 3mm to 25mm (1/8" to 1") wide. Inner cutters are heavily swaged and must be arranged so that the heavy portion falls in the gullets of the outside saw as shown on Fig. 16(A), Fig. 16(C) shows how the saws and cutters overlap "A" being the saw and "B" being the inside cutter. A 6mm ($\frac{1}{4}$") groove is cut by using the two outside saws fitting the ground teeth directly opposite as shown in Fig. 16(C) in order to allow clearance for the slight set of the saw teeth.

The dado is secured on the spindle between the standard saw flanges as shown in Fig. 17. To fit dado head remove the sawguard and front saw flange, also remove the driving peg from the rear saw flange. Fit the outer saws and required inner cutters onto the spindle and lock in position, then replace sawguard.

HOW TO FIT MOULDING CUTTERBLOCKS

The cutterblocks are mounted on the end of the spindle as shown in Fig. 18.

To mount cutterblocks remove the sawguard and saw flanges. Fit the 28.5mm (1.1/8") long distance piece supplied onto the spindle then the cutterblock. The special locknut and spanner, type QT.37, should be used to lock the block in position.

The special guard can be supplied for use with these blocks.

HOW TO FIT SANDING BOBBINS

The sanding bobbins consist of four rubber sections each 12.5mm ($\frac{1}{2}$") thick mounted on a sleeve flange at each end.

Before mounting the bobbins onto the spindle, the sawguard and saw flanges should be removed and the bobbins fit onto spindle as shown in Fig. 19 and locked onto the spindle with the standard arbor nut, left hand thread.

SAW MAINTENANCE

Efficient operation of a circular saw depends on true running of the saw spindle and the collars being perfectly square on the faces with the axis of the spindle, it must run at the correct peripheral speed to ensure straight cutting. The Bursgreen Supersaw embodies all these requirements and provided the saw is maintained in a sharp condition with the teeth correctly sharpened and set, efficient service will be given.

Before putting a new saw to use, it is essential that it is "ranged down" on the teeth to ensure each tooth is cutting and to maintain true running.

RANGING

Ranging down should be done on a new saw or any saw after the 4th or 5th re-sharpening.

Feed a square edged abrasive block, in wooden holder, lightly against the saw teeth whilst running. The saw should then be removed and the tops of the teeth filed to remove the ranging marks on the points.

SAW SHARPENING

Do not run a saw blunt, remove and re-sharpen.

Hold a saw rigid in a vice as shown in Fig. 20 or a simple saw vice as shown in Fig. 21 which can be readily made and proceed to sharpen saw.

With rip saw teeth, chisel edges and square faces are needed see Fig. 22 . Sharpen by giving each tooth an equal number of strokes with a flat faced saw file with rounded edges. At the same time file the gullet, taking care to keep the gullet well rounded.

With a crosscut saw, saw points are needed with back and front bevels, as shown in Fig. 23 .

In the course of repeated filing the teeth loose the original shape and the gullets shallow. To restore the shape of each tooth, essential for satisfactory performance, it is necessary to grind the saw on a saw sharpening machine. These machines are usually of the automatic type and feeds each tooth, giving equal spacing or pitch.

SETTING

The amount of set to the teeth should be sufficient to give clearance to the body of the saw so that there is freedom from friction between saw and timber. It is generally accepted that the teeth are "spring set" i.e. the tips of alternative teeth are bent to the right and left as shown in Fig. 24. For good sawing the amount of set on each side of the saw must be identical otherwise the saw will run to one side. To check the set, cut into a piece of wood a few inches when a small even triangle should be seen, Fig. 25.

The exact amount of set each side varies with the timber being cut, usually .03mm to .04mm (.10" to .015").

For clean cutting, just sufficient set should be allowed to prevent bending and heating. More set is required for wet, woolly timber than for dry, close grained timber and the amount of set is greater for crosscutting saws than those for ripping.

MACHINE SETTING

We can supply a small machine for efficiently setting the teeth as illustrated in Fig. 26 and will deal with saws 202mm to 910 mm (8" to 36") diameter. The micrometer dial indicates accurate reading of the amount of set in thousandths of an inch.

HAND SETTING

Where the number of saws does not warrant a machine being installed the saws are set by hand using a tool as shown in Fig. 27. This tool is provided with six notches to take saws 8 to 14 guage thick. For this process of setting, the saw is securely clamped in a vice.

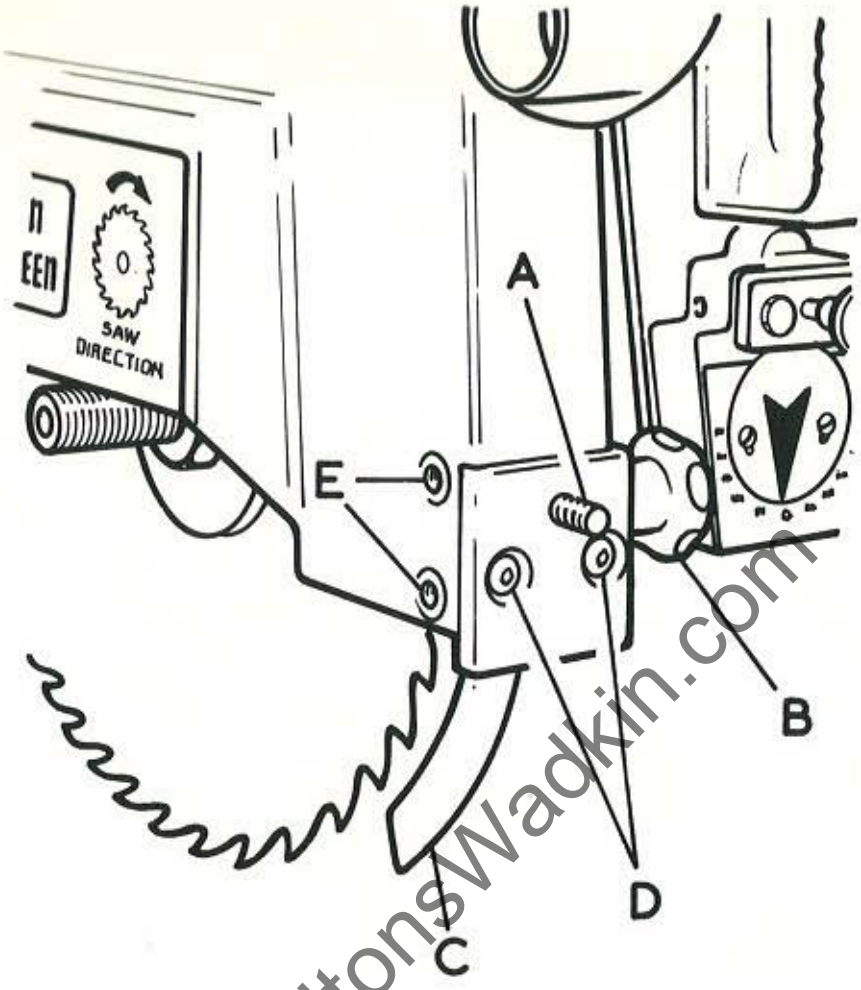


FIG. 11.

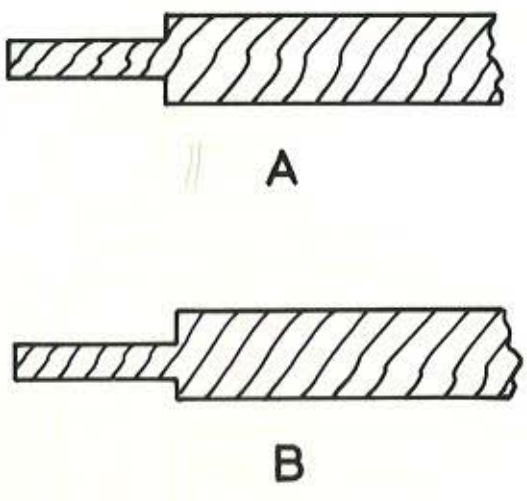


FIG. 12.

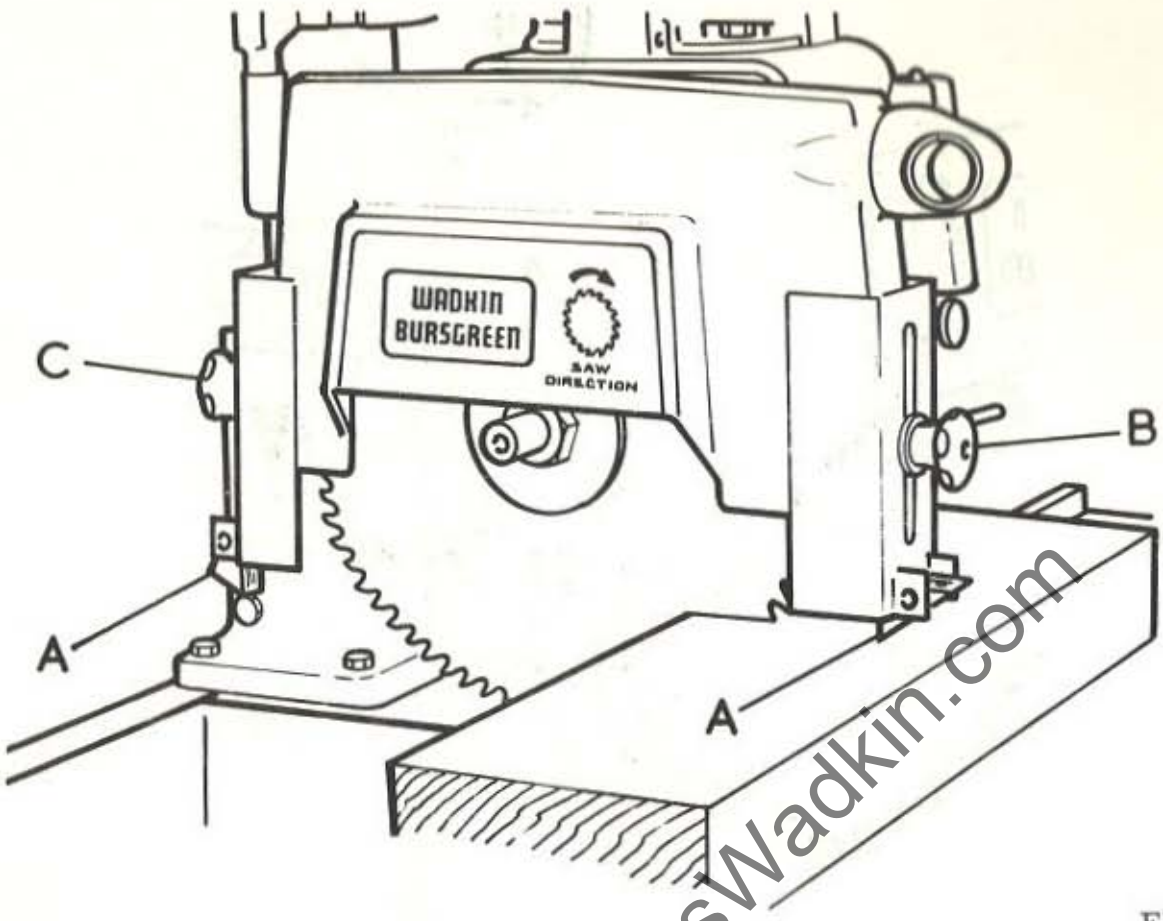


FIG. 13.

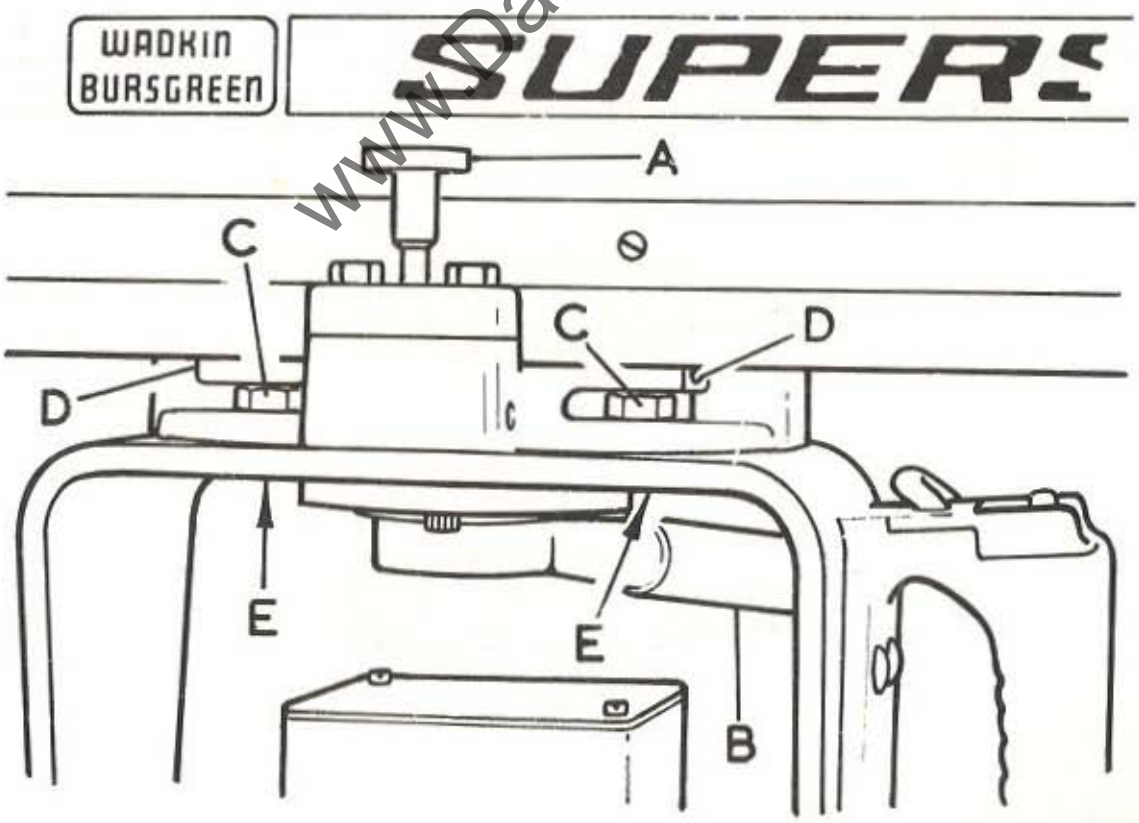


FIG. 14.

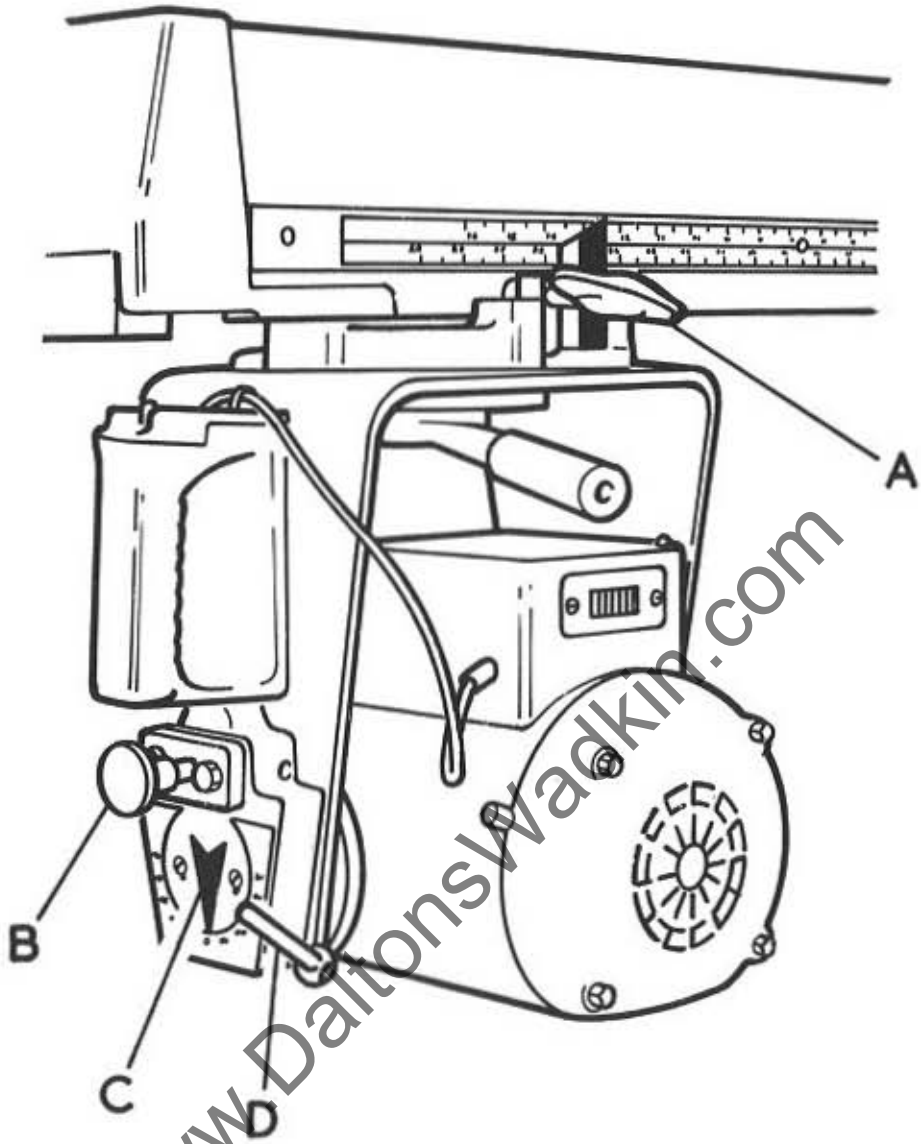


FIG. 15.

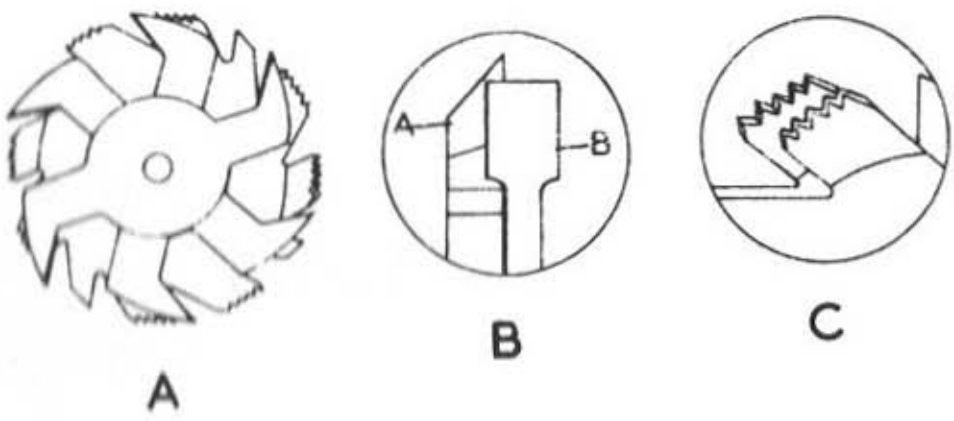


FIG. 16.

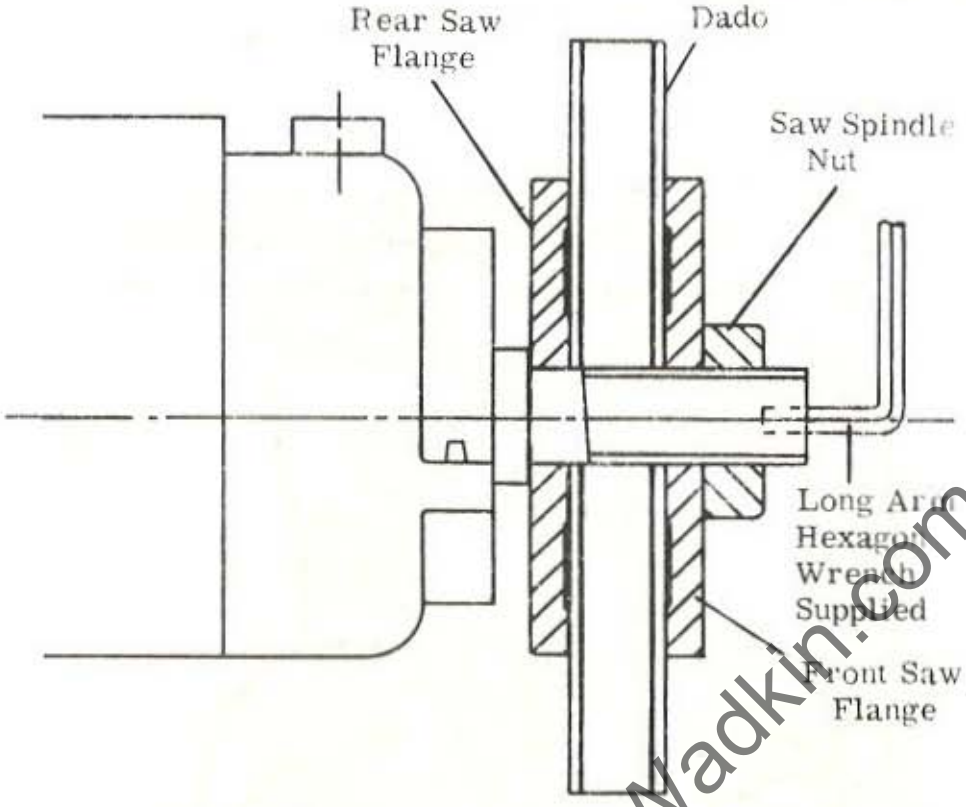


FIG. 17.

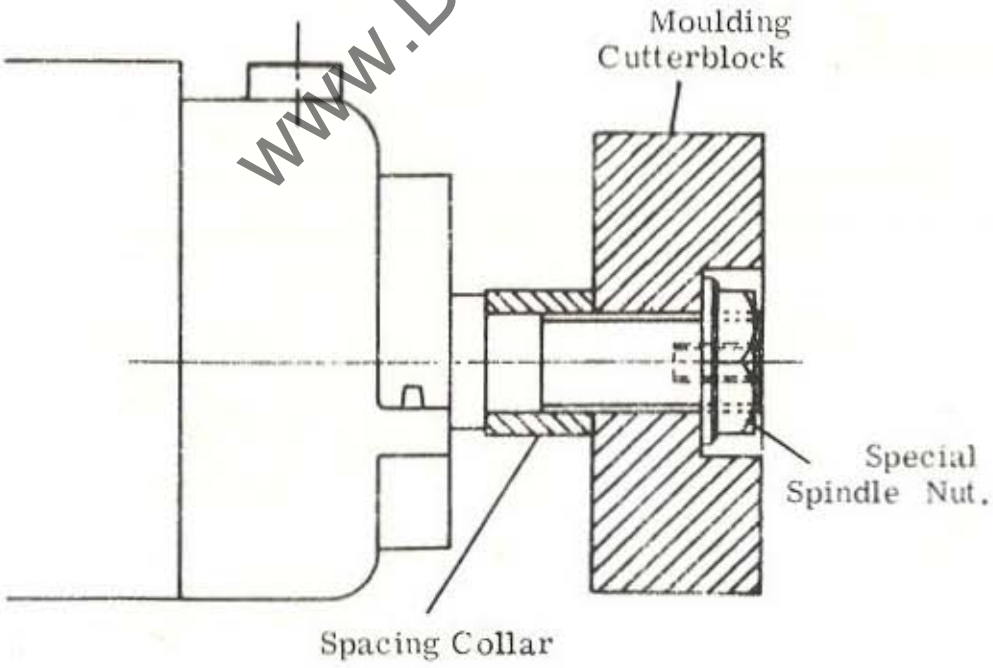


FIG. 18.

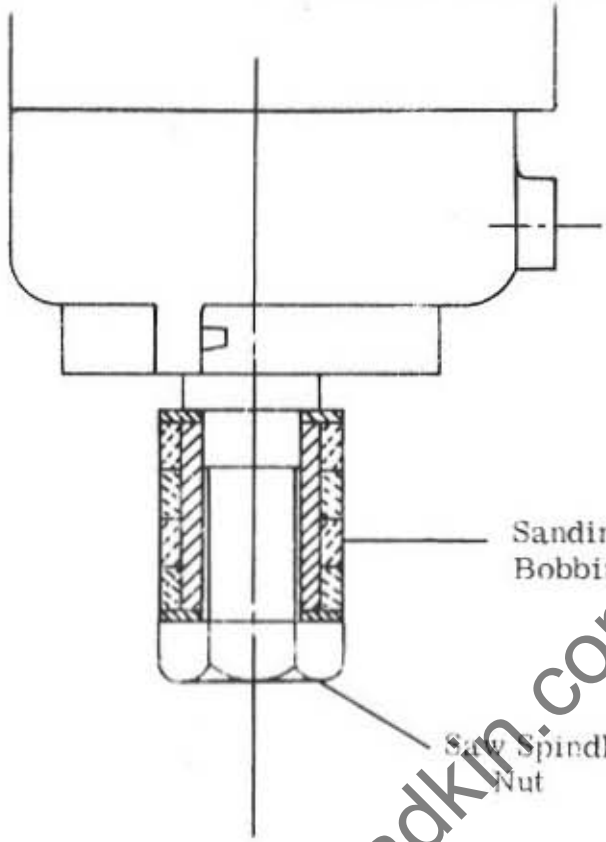


FIG. 19.

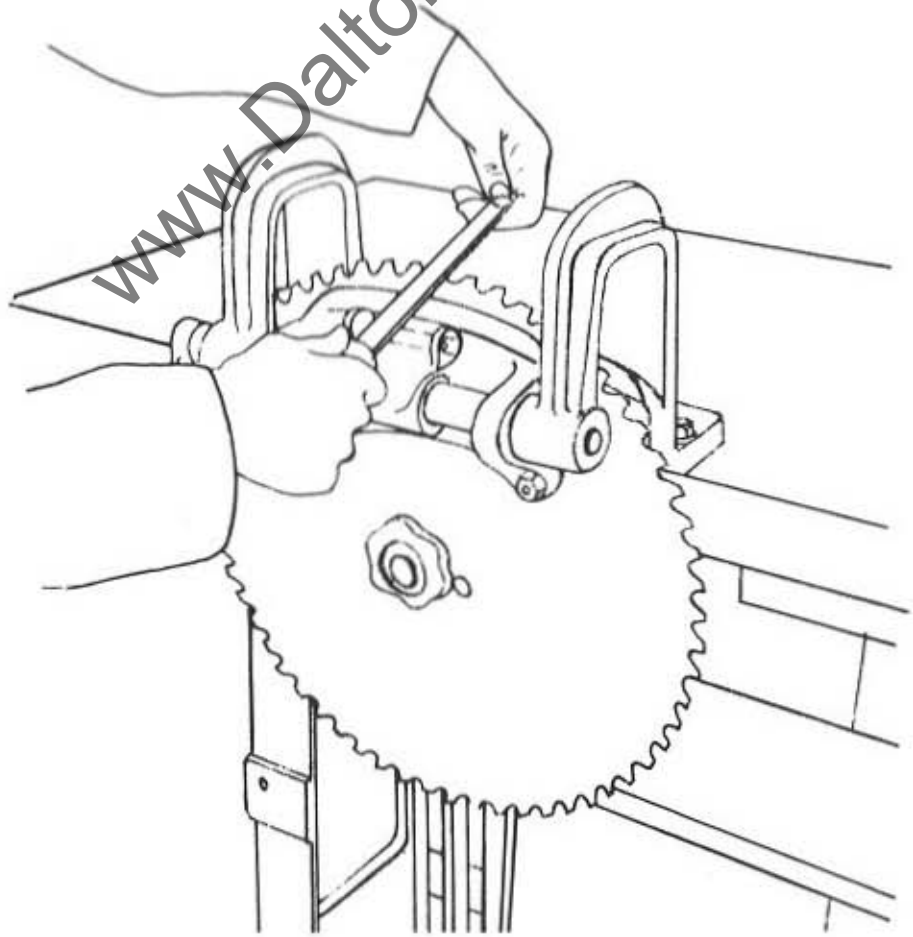


FIG. 20.

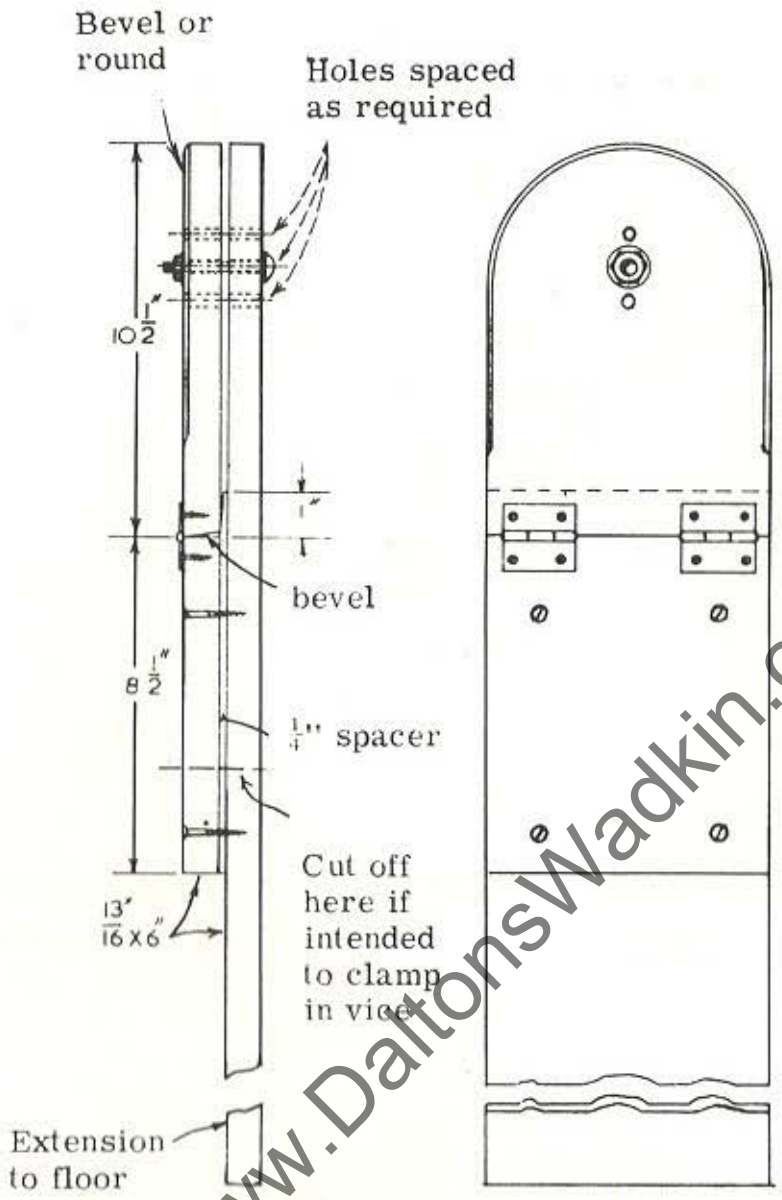
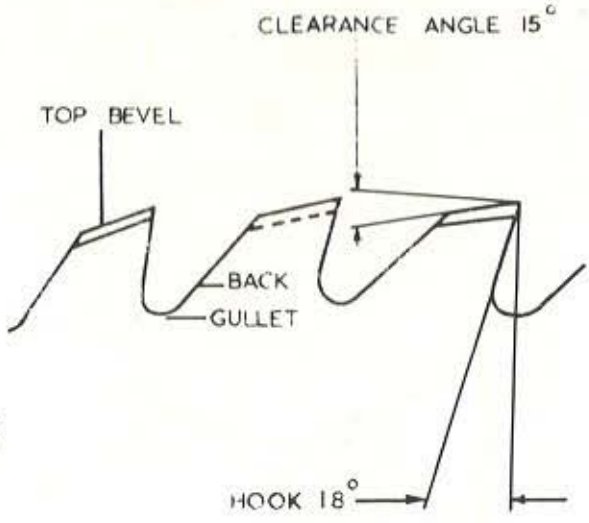


FIG. 21.



RIP SAW

FIG. 22.

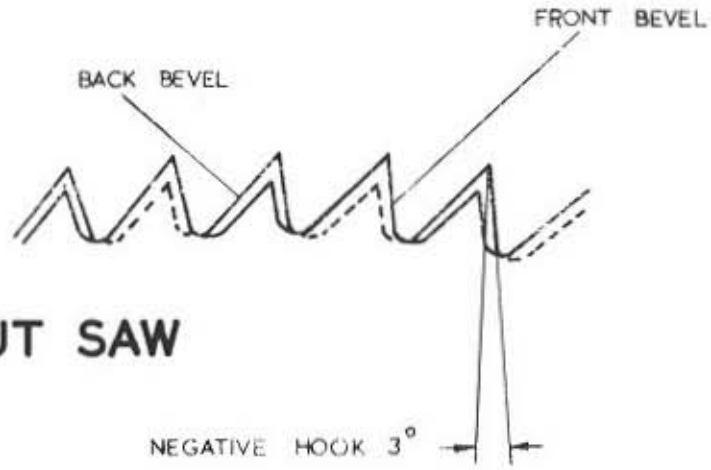


FIG. 23.

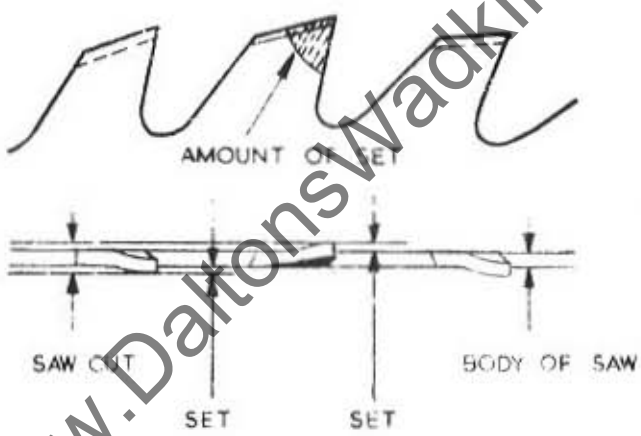


FIG. 24.

FIG. 25.

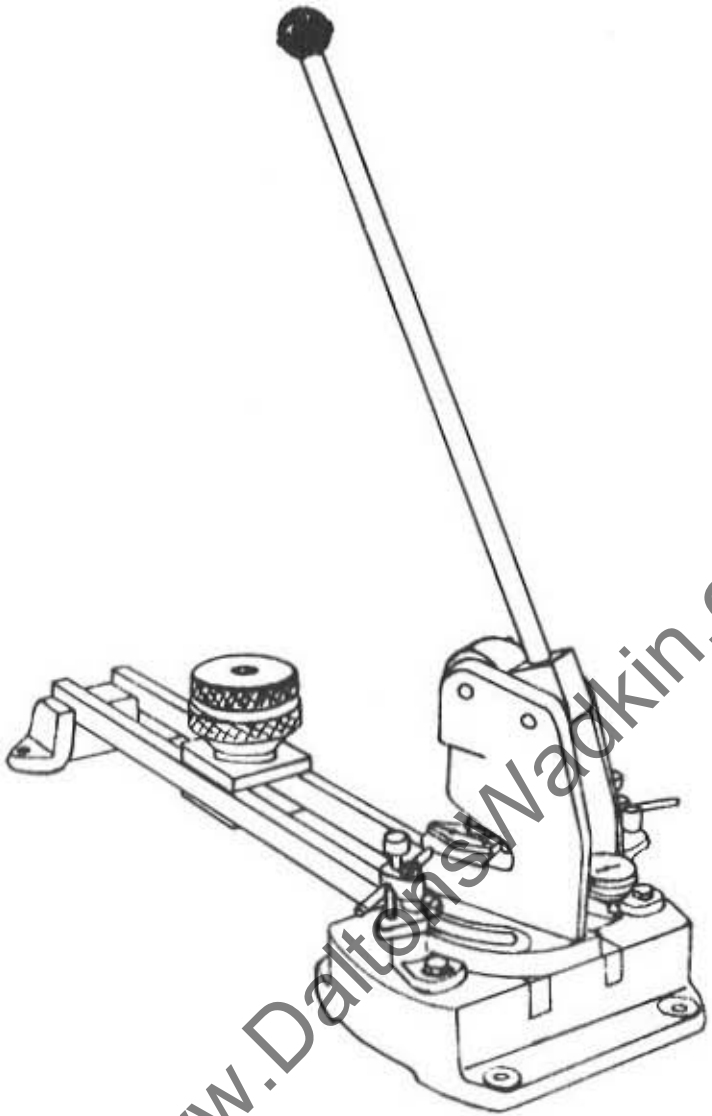


FIG. 26.

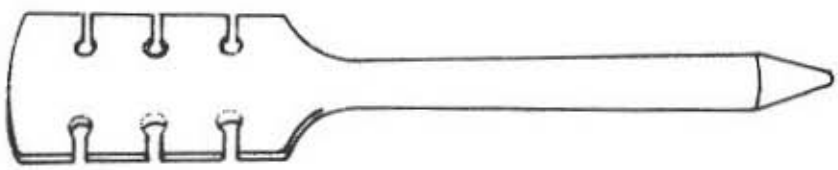


FIG. 27.