Wadkin

Double End Tenoning Machines

TYPES W.F. and W.F./B.

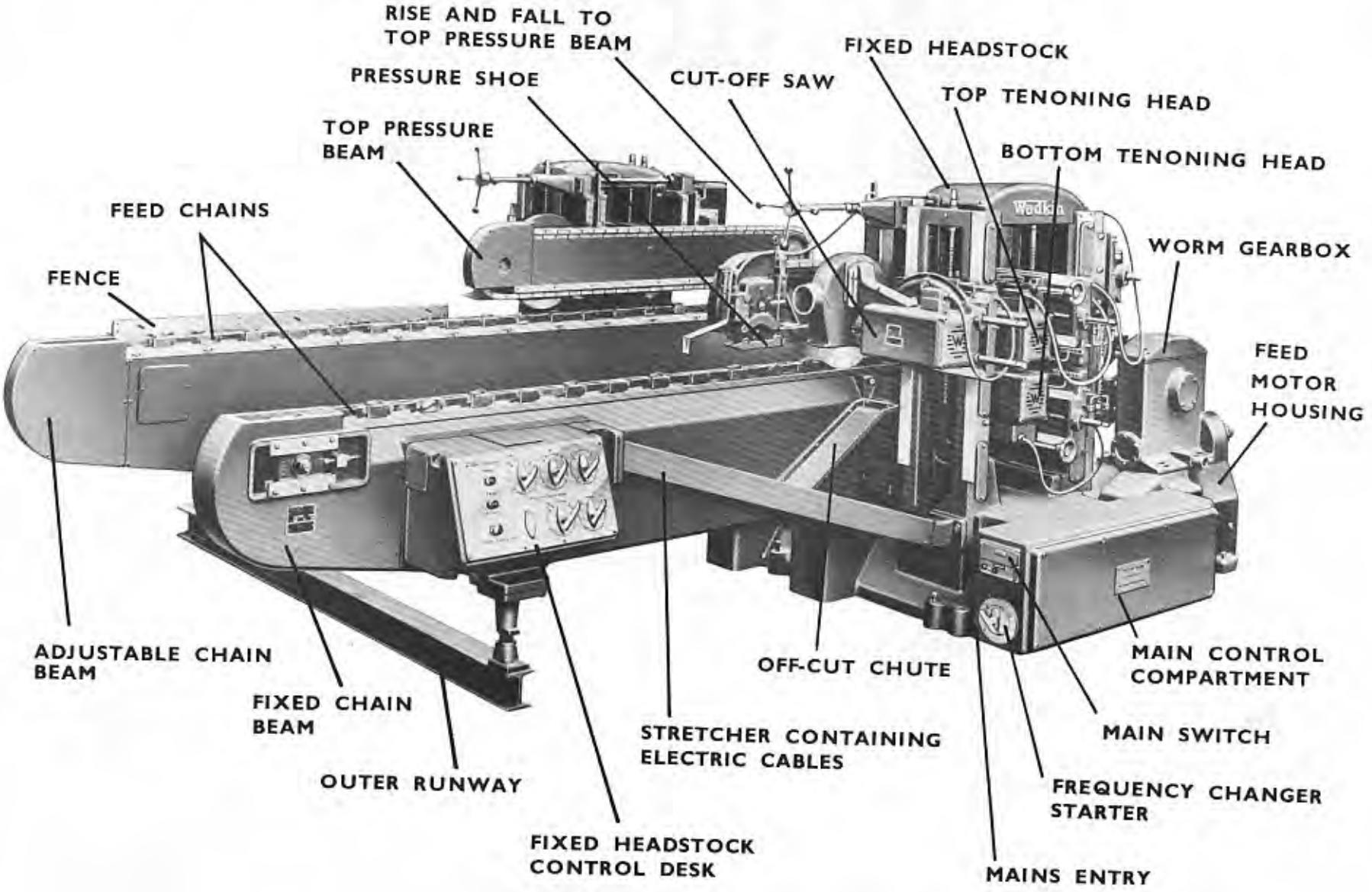
TYPE W.F. This machine is arranged to take cut-off saws, scoring saws, tenon heads, top and bottom scribers (cope heads).

TYPE W.F./B. Machine arranged as above with the addition of an overhead beam to carry adjustable trenching or gaining spindles.

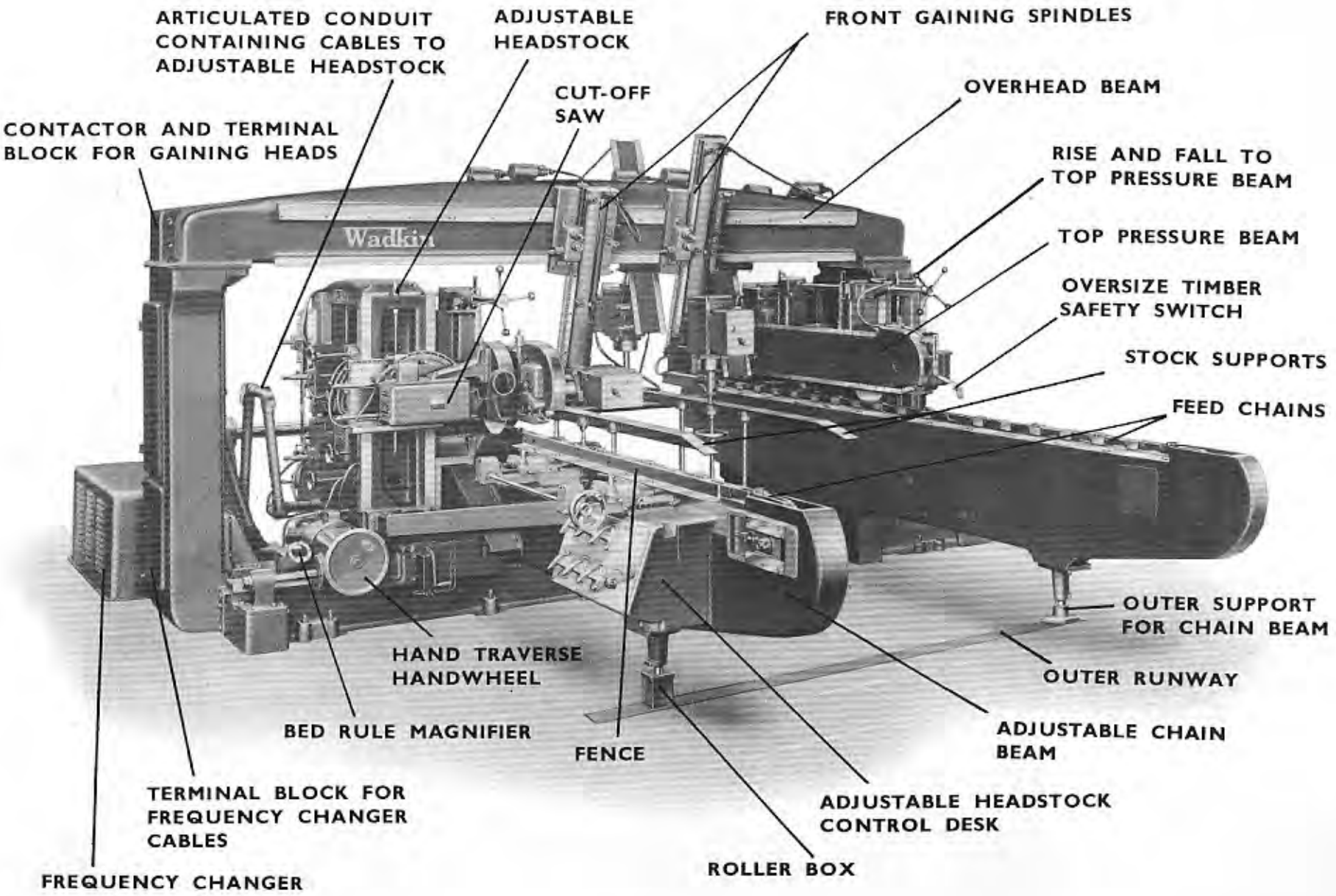
The machine is available in two sizes to take sections of 24" × 4½" or 60" × 4½".

Wadkin Ltd., Green Lane Works, Leicester Telephone: Leicester 0116 2769111
London Office : Brookfield House, 62-64 Brook Street, W.1

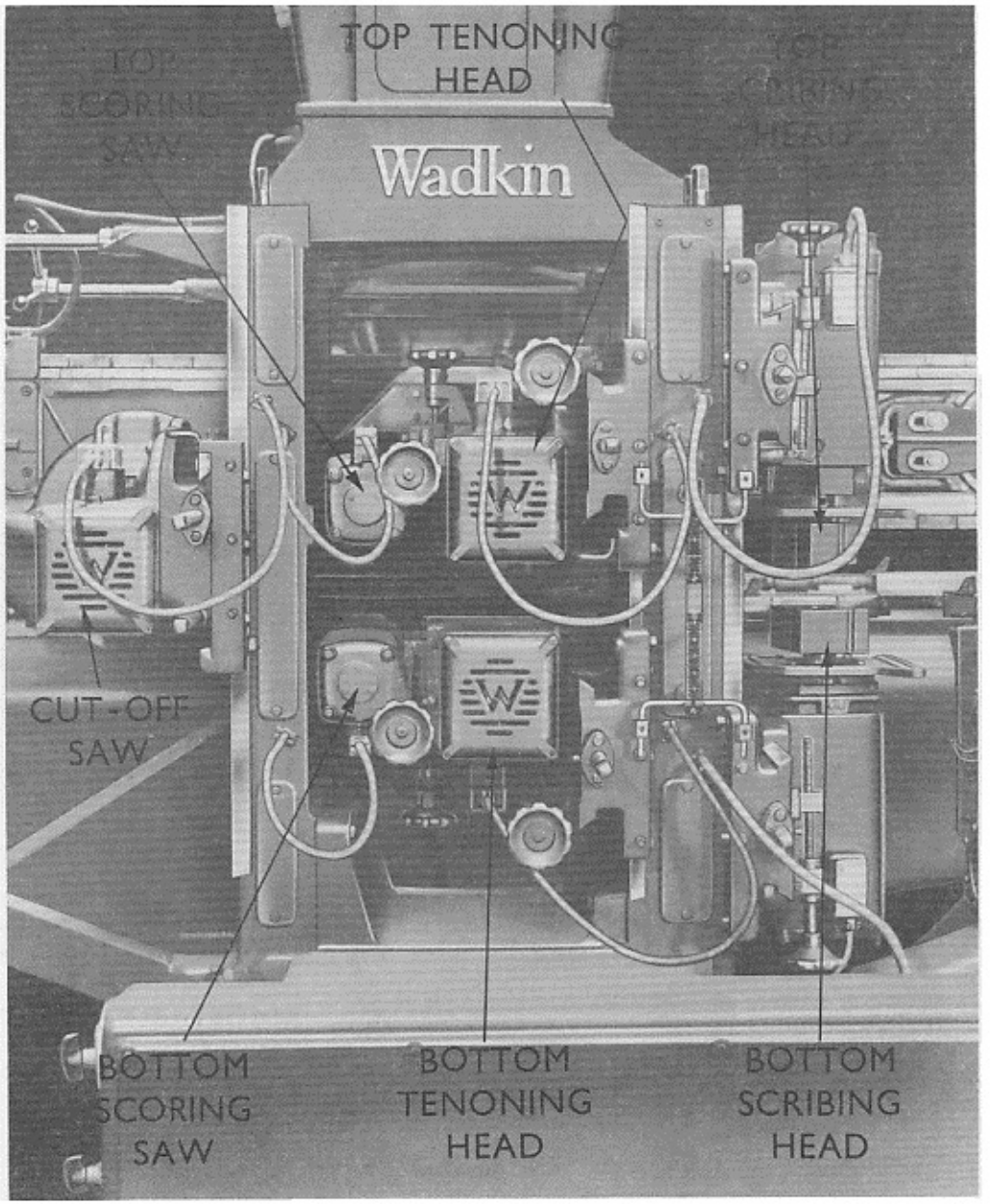
GENERAL VIEW OF 60" MACHINE TYPE W.F.



GENERAL VIEW OF 60" MACHINE TYPE W.F./B.



ARRANGEMENT OF CUTTER HEADS



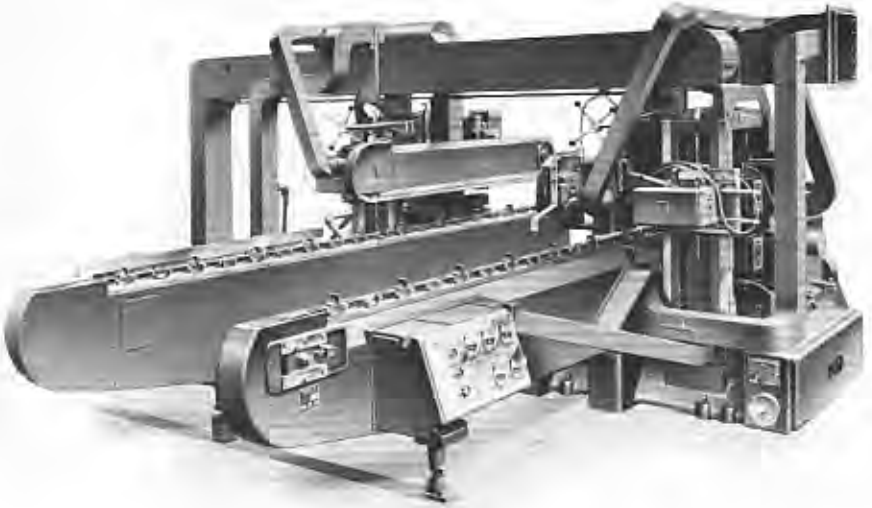
DIMENSIONS AND CAPACITIES TYPE W.F.

Maximum section of material	24″ × 4½″ or 6″ or 60″ × 4½″ or 6″
Maximum distance between saws	9′ 2½″
Maximum distance between shoulders of tenons	8′ 2″
Minimum distance between shoulders of tenons	6½″
Maximum length of tenon	6″
Diameter of cut-off saws (5 h.p. for 4½″ max. depth of timber)	14″ Part No. QS18
Diameter of cut-off saws (7½ h.p. for 6″ max. depth of timber)	18″ Part No. QS90
Cut-off saws cant	45° up or down
Minimum diameter of cutter track on tenoning heads	8½″
Maximum diameter of cutter track on tenoning heads	10″
Tenoning heads cant	10° up or down
Minimum diameter of cutter track on top scribers (copes)	8½″
Maximum diameter of cutter track on top scribers (grooving saws)	12″
Minimum diameter of cutter track on bottom scribers (copes)	9½″
Maximum diameter of cutter track on bottom scribers (grooving saws)	12″
Scribing (cope) heads cant	20° in, 10° out
Rates of feed in feet per minute	10 to 40 in 12 steps
Horse power and speed of motors :—	
All heads except ½ h.p. scoring saws and 7½ h.p. cut-off saws	5 h.p.
Speed of all heads	3000 r.p.m. 50 cycles, 3600 r.p.m. 60 cycles
Feed motor	3/·75 h.p., 2160/540 r.p.m.
Power traverse to headstock	2 h.p.
Note.—If frequency changer is used, scribers (copes) have additional speed of	6000 r.p.m.
Approximate nett weight in cwts., 24″ machine, type W.F.	188
Approximate nett weight in cwts., 60″ machine, type W.F.	191
Floor space, 24″ machine	15′ 9″ × 14′ 5″
Floor space, 60″ machine	15′ 9″ × 17′ 6″
Overall height of machine	6′ 0″

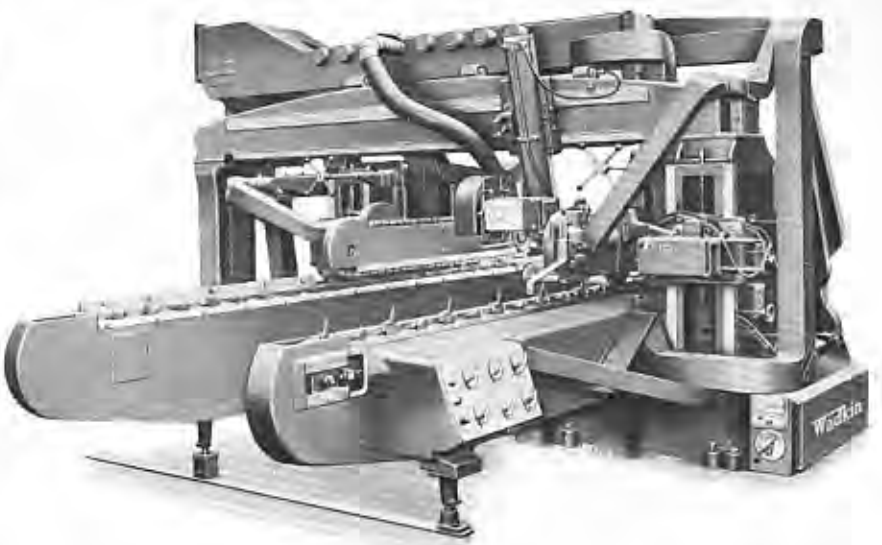
DIMENSIONS AND CAPACITIES TYPE W.F./B

with overhead beam and gaining spindles

Horse power of gaining heads	3 h.p.
Speed of gaining heads	3000 r.p.m. 50 cycles, 3600 r.p.m. 60 cycles
Note.—If frequency changer is used, gaining spindles have additional speed of	6000 r.p.m.
Gaining heads will cant	220°
Maximum diameter of cutter track on gaining spindles	11"
For all other dimensions and capacities see under W.F. type.	
Floor space, 24" machine	16' 1" × 14' 5"
Floor space, 60" machine	16' 1" × 17' 6"
Overall height with gaining units at the topmost position	9' 7"
Beam carries up to 6 gaining units (3 each side).	
Approximate nett weight in cwts. with 2 gaining units, 24" machines	216
Approximate nett weight in cwts. with 2 gaining units, 60" machines	220



W F



W F B

DUST EXHAUST SYSTEM

All cutter heads are fitted with an efficient exhaust hood for the speedy removal of chips and sawdust. The scribers (copes) are adjustable for length of tenon, the top tenon hood is adjustable with the pressure, and the bottom tenon hood is fixed. A complete set of trunking has been designed for these machines, as shown above, the whole system terminating in a single outlet for connecting to the main exhaust system. This trunking can be supplied to special order. The cut-off saw exhaust hood has a $4\frac{1}{2}$" dia. spigot for the outlet. The scribers (copes) have a rectangular outlet 5" wide × $3\frac{3}{8}$" deep. The top tenon and scoring saw outlet is 6" wide × 5" deep. The hood for the bottom tenon and scoring saw has an exhaust opening $8\frac{7}{8}$" deep × 6" wide with a facing $11\frac{5}{8}$" deep × $7\frac{1}{2}$" wide. Chutes are provided underneath the cut-off saws for removing the off-cuts.

W.F. In order to satisfactorily exhaust the connections a 17" diameter duct is required.
The total water gauge resistance of the equipment amounts to $3\frac{1}{4}$" at the recommended velocity of 3,500 ft./min., the capacity being 5,500 cubic feet air/min.

W.F/B. The total water gauge resistance of the equipment amounts to $3\frac{1}{2}$" at the recommended velocities and the volume of air to be extracted varies according to the number of gaining heads to be accommodated and as shown in the following schedule:—

NUMBER OF GAINING HEADS	RECOMMENDED MAIN DUCT DIA	RECOMMENDED VELOCITY	TOTAL CUBIC FT. AIR/MIN.
Up to 2	18"	3500 ft./min.	6200
3 and 4	19"	3500 ft./min.	6900
5 and 6	20"	3500 ft./min.	7650

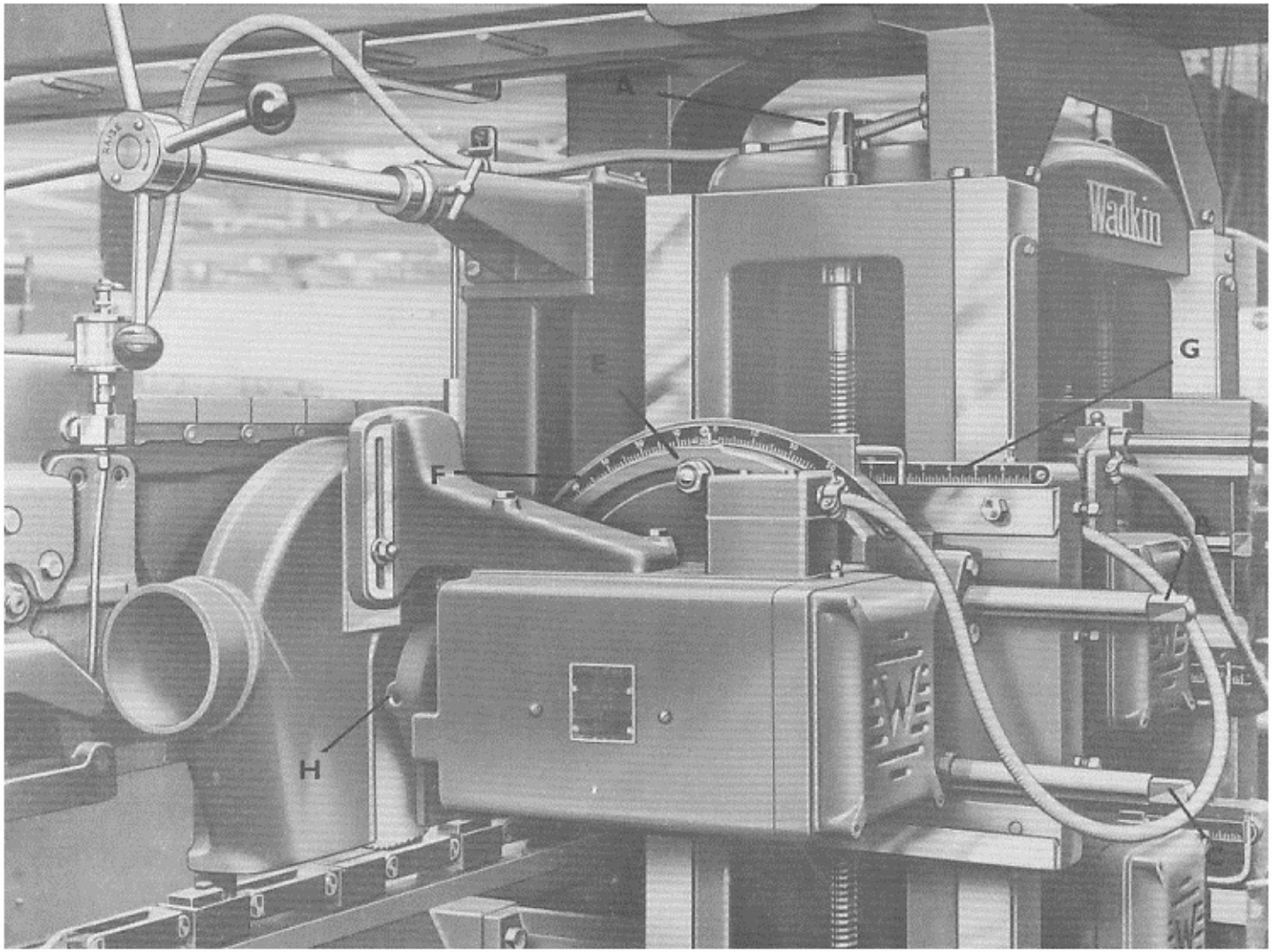


Fig. 1.

HEADSTOCK ADJUSTMENTS

NOTE.—The method of adjusting and operating the cutterheads on both fixed and adjustable headstocks is identical, and the following instructions refer to both.

CUT-OFF SAW

The cut-off saw is shown in Fig. 1. The top shaft 'A' is rotated by using the ratchet spanner supplied and applying it to the square on the end of the shaft. This will raise or lower the complete saw carriage. This movement enables saws to be used above or below the timber level. Shaft 'B' is rotated to move the spindle unit in a horizontal direction, either towards the timber or away from it. The third shaft 'C' operates the canting motion to enable the saw to cant 45° up or down. The whole saw carriage is locked from vertical movement by locking up the nut 'W', Fig. 3, situated on the vee strip on the back slide. The nut 'E', Fig. 1, locks the spindle canting movement. When the saw is canted at 45° an extra tapped hole is provided, visible through the radial slot. This is provided as an extra lock to the saw unit and should be fitted with a $\frac{5}{8}$" Whitworth × $1\frac{3}{4}$" long hexagon head set screw and washer.

The nut for locking the horizontal movement is situated in the centre of the vee strip on the intermediate slide.

A graduated scale is fitted to give a direct angular reading of the saw carriage as shown at 'F', Fig. 1.

A rule for measuring the horizontal distance between the outer edge of the feed chain and the saw is fitted as shown at 'G', Fig. 1.

The saw is mounted direct on the spindle as shown in Fig. 2. It is driven by the driving pin and supported by 4" dia. saw collars ; the saw and collars are locked up against the spindle shoulder with two hexagon locknuts. Tommy bar holes are provided on the spindle shank and through the front end cover 'H', Fig. 1, to facilitate holding the spindle when locking or unlocking the hexagon nuts. By removing the centre saw collar, hogging saws can be fitted for reducing the cut off portion of stock to sawdust or refuse.

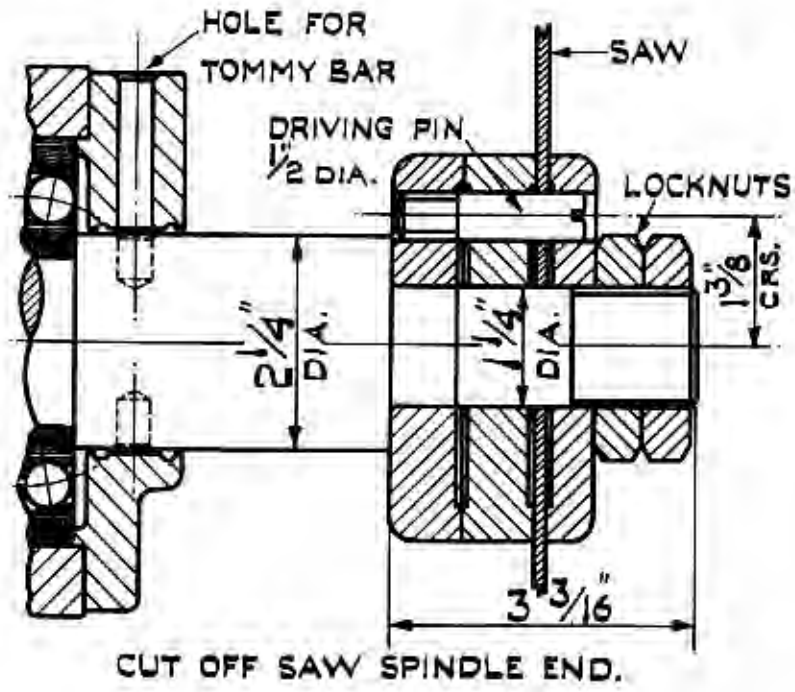


Fig. 2

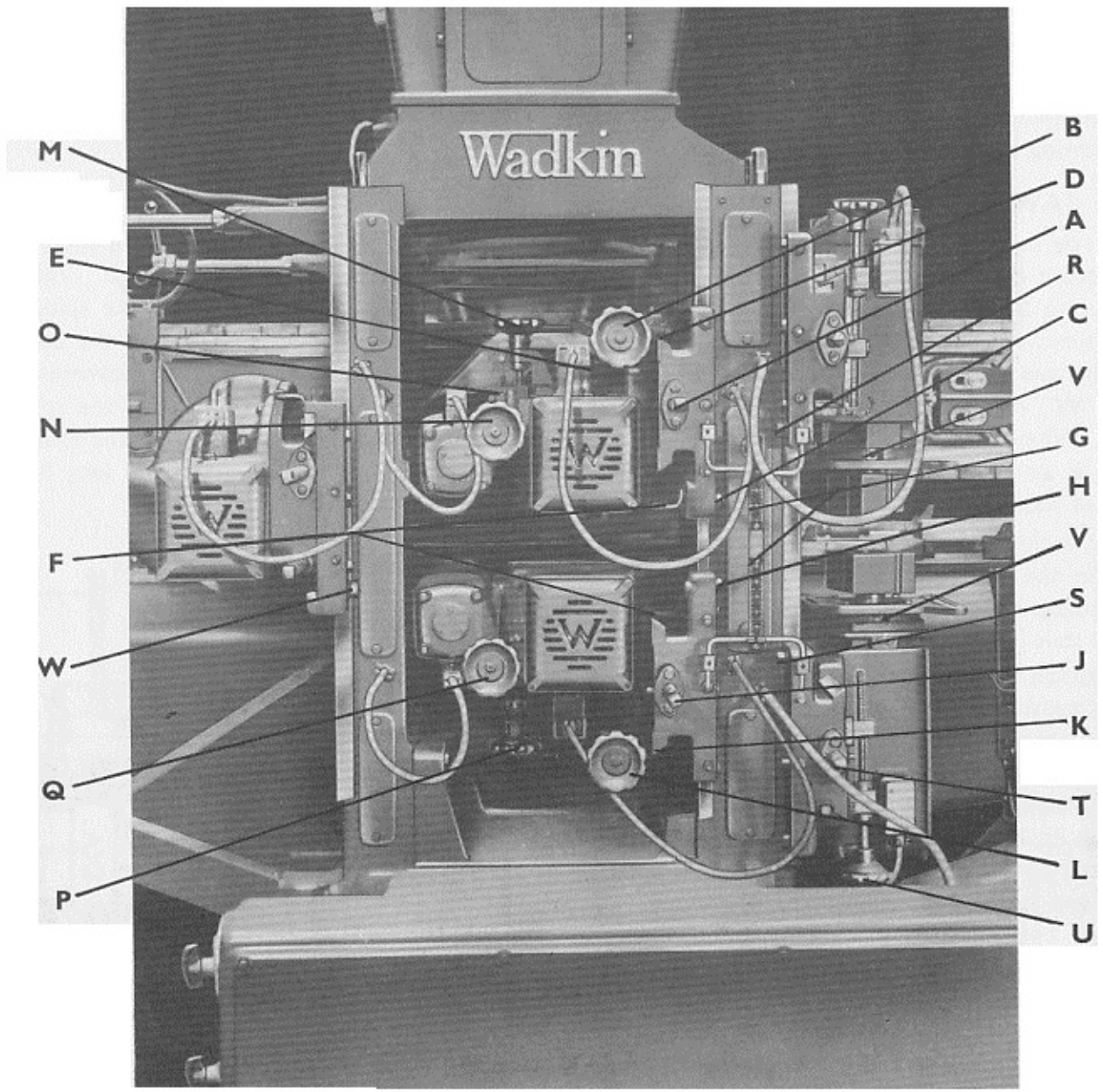


Fig. 3

HEADSTOCK ADJUSTMENTS *(Continued)*

TOP TENONING HEAD

The top tenoning head carriage is moved vertically by rotating the shaft 'A', Fig. 6, with the ratchet spanner. Horizontal adjustment towards or away from the timber is provided by rotating shaft 'A', Fig. 3. The handwheel 'B', Fig. 3, operates the canting motion to enable the tenon head to cant 10° up or down. The top tenoning head carriage is locked from vertical adjustment by the nut 'C', Fig. 3, whilst the nut 'D', Fig. 3, locks the horizontal movement. The canting movement is locked by the two long nuts 'E', Fig. 3. Rules are provided on all tenoning heads for setting the heads horizontally, as shown at 'F', Fig. 3, and also setting the heads vertically as shown at 'G', Fig. 3. The vertical rules indicate the distance from the cutting edge of the tenon block to the top of the feed chain. A graduated scale is fitted to each tenon head to give a direct angular reading for the canting motion. On each tenoning head, between the two long nuts for locking the canting movement, is a $\frac{1}{2}$" dia. dowel pin attached to the motor frame with a short length of chain. This is to positively locate the tenon head in a horizontal position and, when working with the tenoning heads horizontal, should always be in position. Before canting the tenon heads this dowel pin should be withdrawn from the dowel hole.

BOTTOM TENONING HEAD

The bottom tenoning head carriage is mounted on the same vertical column as the top head, the shaft 'B', Fig. 6, controlling the rise and fall movement. The locking nut for this movement is at 'H', Fig. 3. The horizontal adjustment is obtained by rotating shaft 'J', Fig. 3, with the locking nut on the underside of the tenon slide as shown at 'K', Fig. 3. The handwheel 'L', Fig. 3, operates the canting motion whilst the two long nuts form the lock as for the top tenoning head. References to rules and the locating dowel pin mentioned above for top tenoning head are also applicable to bottom tenoning head.

SPINDLE ENDS *(Tenoning Heads)*

The method of mounting the cutter blocks is shown in Fig. 4. The blocks are driven with the key and locked in position with the hexagon nut. A special box spanner for locking this nut is supplied with this machine. A tommy bar hole through the front bearing end cap and into the shoulder of the spindle enables the spindle to be held when locking the nut.

HEADSTOCK ADJUSTMENTS *(Continued)*

TOP SCORING SAW

The top scoring saw is carried on a slideway fixed to the top tenoning head and will therefore move up and down and in and out with the adjustment to the tenoning head as shown in Fig. 3. Further independent vertical adjustment to the scoring saw is obtained by rotating the handwheel 'M', Fig. 3. The hexagon nut at the top of the vee strip on the scoring saw slide locks the saw in its vertical position. Independent cross adjustment to the saw is obtained by rotating handwheel 'N', Fig. 3, and this motion is locked by the hexagon nut on the vee strip of the intermediate slide shown at 'O', Fig. 3.

BOTTOM SCORING SAW

The bottom scoring saw is in all respects mounted and operated similar to the top scoring saw. Its main adjustments are taken from the bottom tenoning head, with further vertical adjustments to the saw obtained by rotating handwheel 'P', Fig. 3. Cross adjustment is provided by rotating handwheel 'Q', Fig. 3. Locking arrangements are similar to those on the top scoring saw.

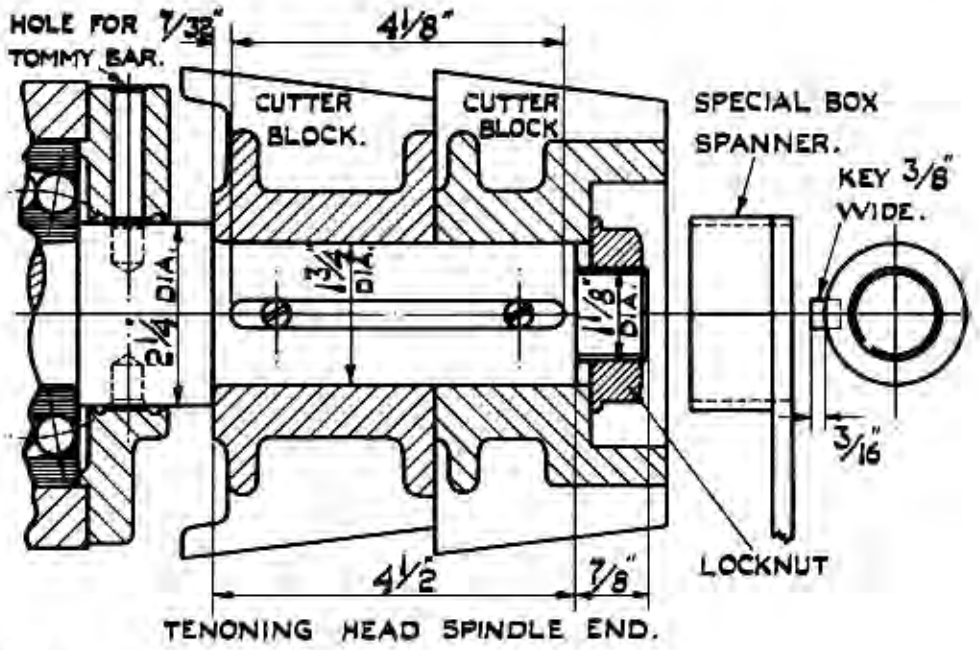
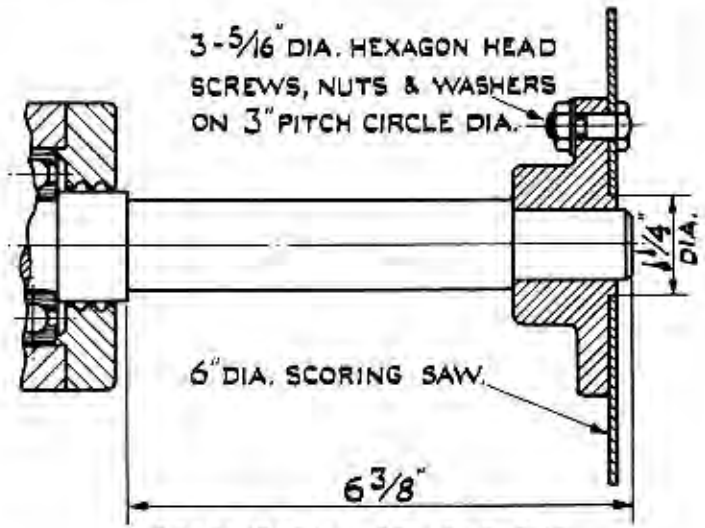


Fig. 4.

HEADSTOCK ADJUSTMENTS *(Continued)*

SPINDLE ENDS *(Scoring Saws)*

The saw is mounted direct on the spindle as shown in Fig. 5. It is driven by the three hexagon head screws which hold the saw to the $3\frac{3}{4}$" dia. flange at the back of the saw. The flange is shrunk on the spindle end.



SCORING SAW SPINDLE END.

Fig. 5.

TOP SCRIBING HEAD *(Cope)*

The top scribing head is illustrated in Fig. 6. Vertical movement to the head is obtained by rotating shaft 'C', Fig. 6, the lock for this vertical movement being the nut 'R', Fig. 3. Handwheel 'D', Fig. 6, operates the canting motion to enable the head to cant 20° in or 10° out. The canting movement is locked by the long nut 'E', Fig. 6. Horizontal movement towards and away from the timber is provided by rotating shaft 'F', Fig. 6. To lock the horizontal movement is a nut on the vee strip at the back of the intermediate slide. Rules are provided for setting all scriber heads vertically as shown at 'G', Fig. 3. The vertical rules indicate the distance from the end of the scriber cutter block to the top of the feed chain. A graduated scale is fitted to each scriber head to give a direct angular reading for the canting motion. On each scriber head is a $\frac{1}{2}$" dia. dowel pin attached to the motor frame with a short length of chain as shown at 'G', Fig. 6. This is to positively locate the scriber head in a vertical position, and when working with the scribing head vertical, should always be in position. Before canting the scribing head, this dowel pin should be withdrawn from from the dowel hole.

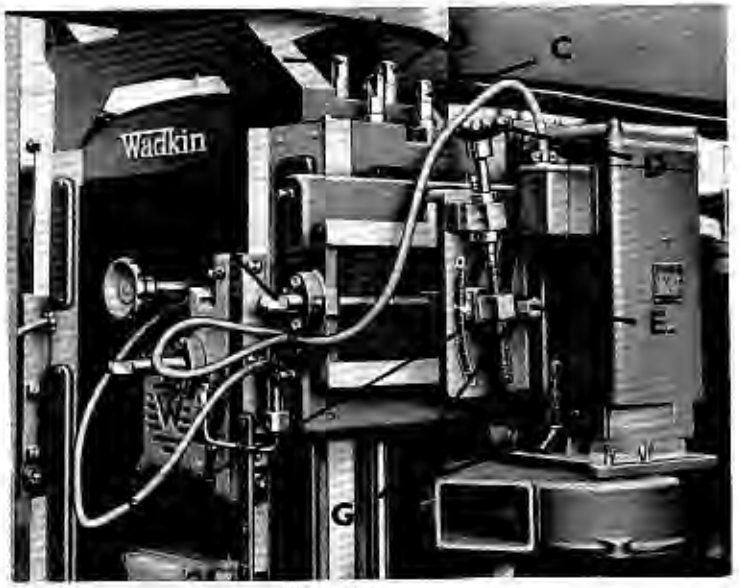


Fig. 6.

HEADSTOCK ADJUSTMENTS *(Continued)*

BOTTOM SCRIBER HEAD *(Cope)*

The bottom scriber head carriage is mounted on the same vertical column as the top head, the shaft 'H', Fig. 6, controlling the rise and fall movement. The locking nut for this movement is shown at 'S', Fig. 3. The horizontal adjustment is by shaft 'T', Fig. 3, with the locking nut on the vee strip at the back of the intermediate slide. The handwheel 'U', Fig. 3, operates the canting motion whilst the long hexagon nut forms the lock as on the top scribing head. References to rules and the locating dowel pin mentioned previously for top scribing head are also applicable to bottom scribing head.

SPINDLE ENDS *(Scribing Heads)*

The scribing cutterblocks are mounted direct on the cutter spindle as shown in Fig. 7, and driven with the $\frac{3}{8}$" square key. They are locked in position with the locknut. The block is recessed to take the nut and a special box spanner is provided with the machine for locking this nut. A tommy bar hole through the front bearing end cap and into the shoulder of the spindle enables the spindle to be held when locking the nut. Access to the tommy bar hole is through the cut out portion in the scriber exhaust hood slide plate as shown at 'V', Fig. 3.

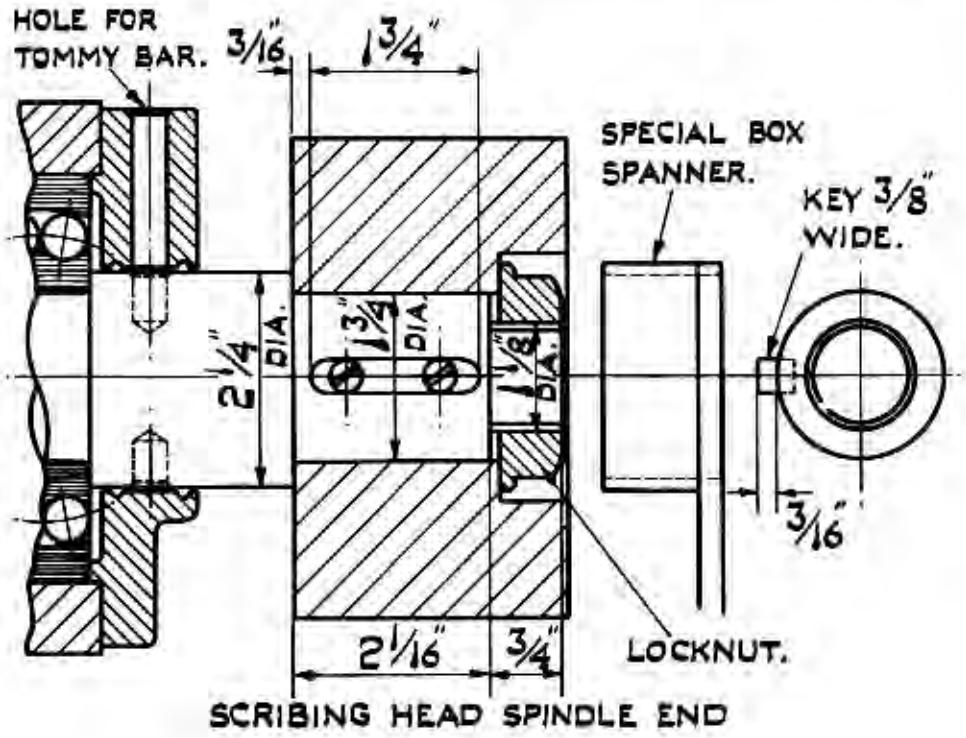


Fig. 7.

HEADSTOCK ADJUSTMENTS *(Continued)*

GAINING HEADS *(on W.F./B. type machine)*

The method of adjusting and operating the gaining heads on both front and rear beams is identical, and the following instructions refer to all gaining heads.

The illustration, Fig. 8, shows a gaining head on the front beam and one on the rear beam. The gaining head is moved vertically by turning shaft 'A' with the aid of the ratchet spanner. The nut 'B' locks this vertical movement. Horizontal adjustment along the beam is obtained by rotating shaft 'C'. The lock for horizontal adjustment is the hexagon nut on the vee strip of the gaining head back slide. The shaft for operating the canting motion is shown on the rear gaining head at 'D', Fig. 8, whilst the lock for the canting motion is the hexagon nut on the sleeve immediately above it as shown at 'E'.

The adjustment for the pressures on the gaining heads are as follows : To adjust vertically, slacken off the two hexagon nuts on the trunnions, shown at 'F', adjust pressures vertically and retighten the two nuts. To cant the pressures to bring them perpendicular to the timber when doing canted work, slacken off the two hexagon nuts 'G', cant the pressures and retighten the two nuts. To remove the pressure completely, slacken nut 'H' and slide the complete pressure assembly off its barrel.

The spring clip 'J' is to hold the cable plug when head is not in use, see Fig. 9. When the gaining heads are not in use, they should be placed in such a position on the beam so as not to interfere with the normal working of the machine. The best position is at the left hand end of the overhead beam looking from the feeding-in end of the machine.

To get the heads into position, remove all cutterblocks from the gaining spindle. Remove the pressure assembly by slackening nut 'H', Fig. 8, and withdrawing pressures off the barrel. Cant the head round until the spindle is pointing vertically upwards, then raise the complete head vertically until the whole unit has a clear track to pass along the overhead beam. Traverse the head along the overhead beam to the left hand end as explained above. The gaining head in this position is shown in Fig. 9.

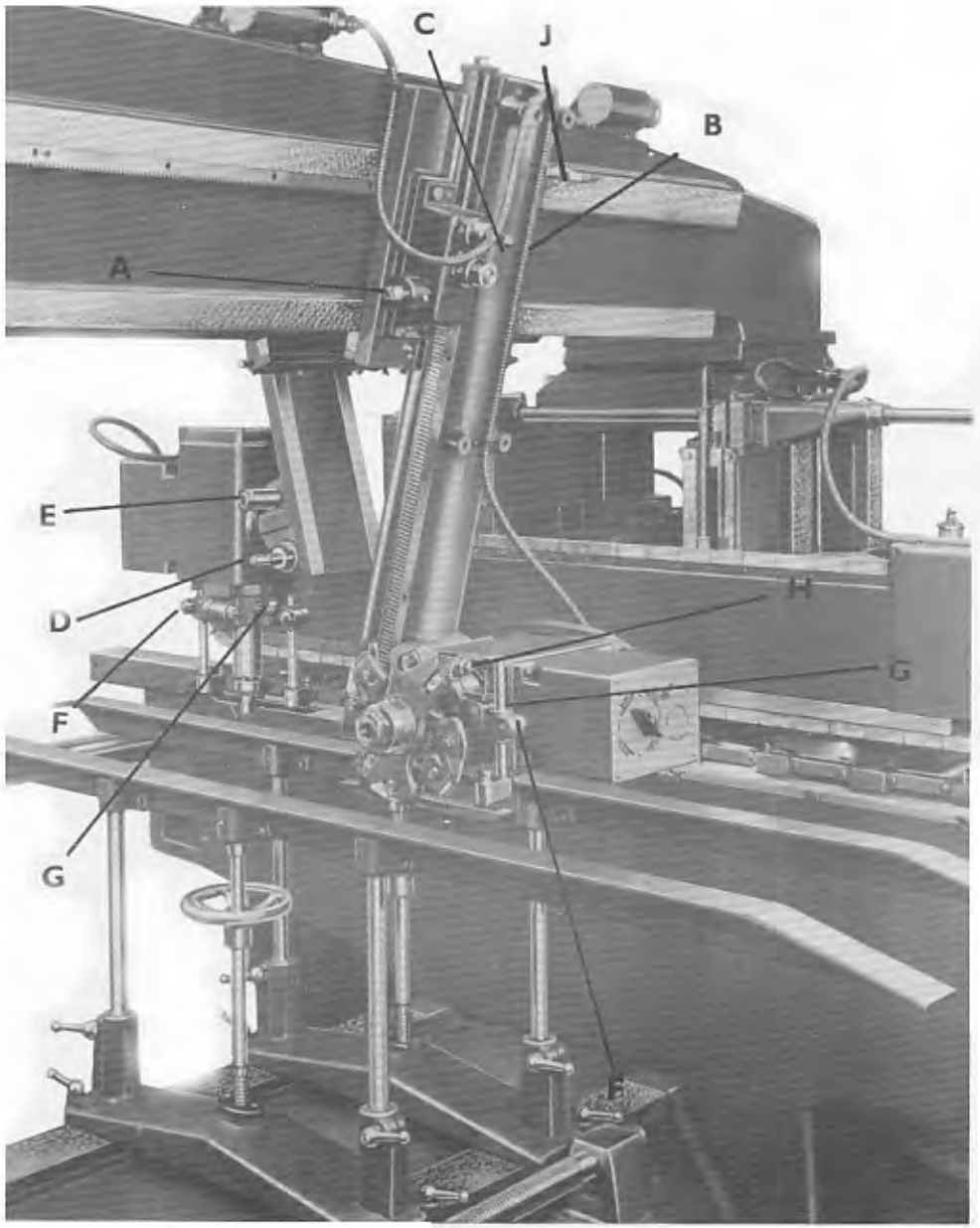
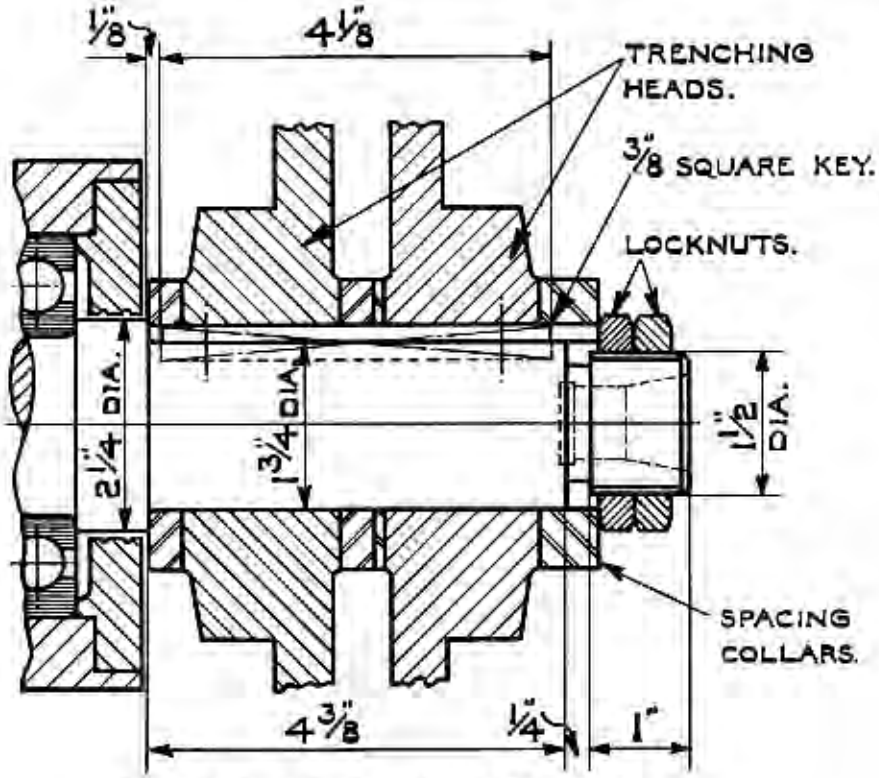


Fig. 8.

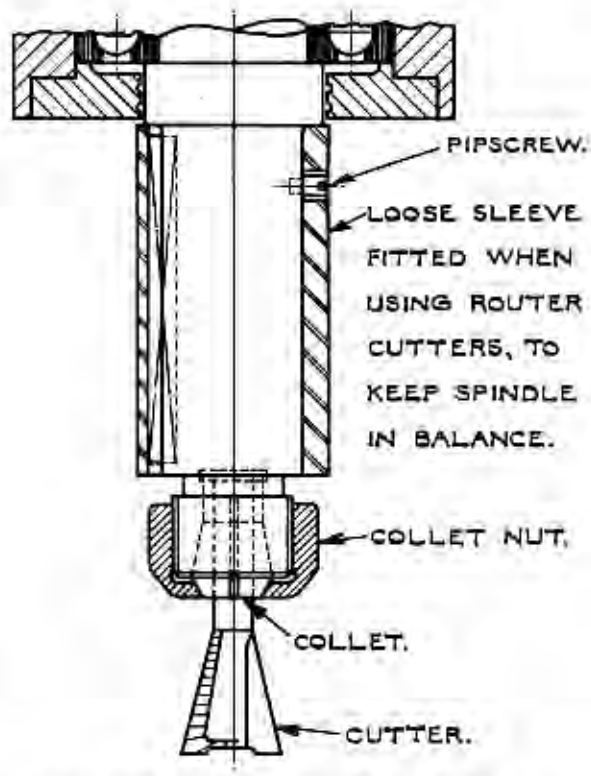
Fig. 9.

HEADSTOCK ADJUSTMENTS *(Continued)*



GAINING HEAD SPINDLE END ARRANGED FOR TRENCHING.

Fig. 10.



GAINING HEAD SPINDLE END ARRANGED FOR ROUTER CUTTERS.

Fig. 11.

SPINDLE ENDS *(Gaining Heads)*

The spindle fitted with trenching heads is shown in Fig. 10. The trenching heads are mounted direct on the cutter spindle, the width of cut being determined by the thickness of the spacing collars between the two heads. Further collars are added to the spindle, as shown in Fig. 10, to enable the heads to be locked up to the shoulder on the spindle by means of the two hexagon locknuts. The necessary spacing collars are supplied with the trenching heads. When the spindles are required to be used vertically, the arrangement is as shown in Fig. 11. The loose

HEADSTOCK ADJUSTMENTS *(Continued)*

sleeve provided with each gaining head should be placed in position on the spindle and held by the pipscrew near the shoulder end of the spindle. Each sleeve and spindle is stamped with a number so that each sleeve can be placed on its respective spindle. The fitting of the sleeve, when running the spindle vertical, is to preserve the balance of the spindle. If the sleeve is not fitted, the projecting $\frac{3}{8}$" square key will form an out-of-balance mass and cause the spindle to vibrate in its mounting which will in turn lead to faulty work. The collet is placed in position in the tapered recess in the spindle end and the collet nut screwed on to the thread. Place the cutter shank in the collet and tighten up the collet nut. Two special spanners are provided, one to fit the flats on the collet nut and the other to fit the flats on the spindle end immediately above the threaded portion. By holding the spindle firmly with one spanner, the collet nut can be tightened up with the other.

The pressures on the gaining head when arranged for use with trenching heads should be as shown in Fig. 12. When the pressures are required for use with the spindles vertical, the pressure shoe is arranged to clear the cutter as shown in Fig. 13. The maximum diameter of cutter that will clear the pressure shoe with the spindle vertical is 2".

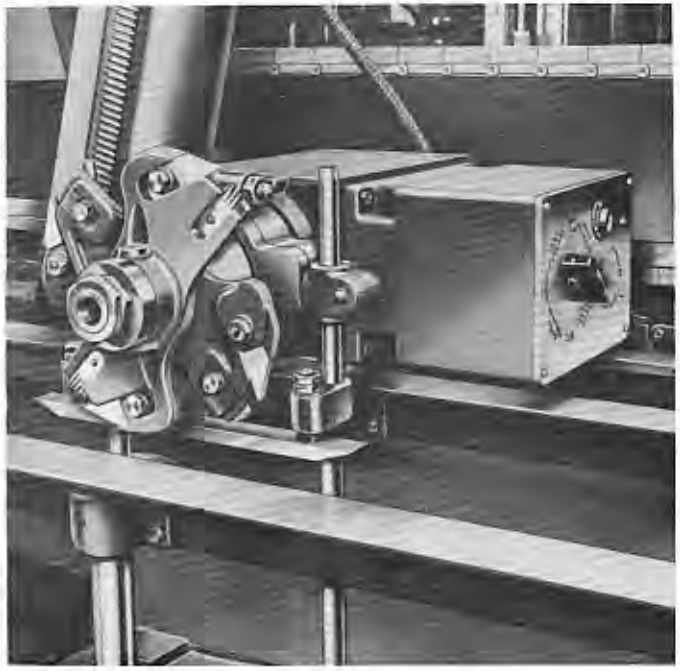


Fig. 12.

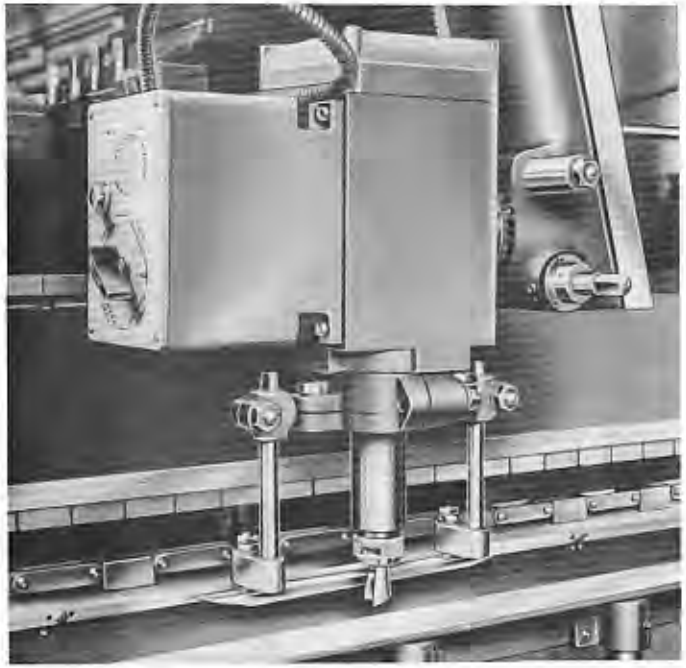


Fig. 13.

PRESSURES

METHOD OF OPERATING

The caterpillar type top pressure is generally illustrated on pages 2 and 3, and the method of operating is identical on both fixed and adjustable headstocks. The pressure beam is mounted on two vertical slides on the headstock columns. They are operated by totally-enclosed spiral gears and screws, actuated by the capstan handwheel shown on page 2. A scale and pointer fitted to the beam and slide indicates the vertical setting. The beams adjust up to 10" above the feed chain to give easy access to the cutterheads when setting up. At the feeding-in end of each pressure beam a spring-loaded pressure shoe is fitted, Fig. 14, to bring the work in contact with the feed chain dogs and to control the work before engaging the pressure beam chain.

Fig. 14.

OVERSIZE STOCK LIMIT SWITCH

The oversize stock limit switch is a safety switch fitted at the feeding-in end of the pressure beam on the fixed headstock shown in Fig. 14.

The end plate of the switch operating arm should be set $\frac{1}{4}$" above the thickness of timber to be worked. Thus any variation of more than $\frac{1}{4}$" in the thickness of timber will operate the switch, which switches off, and power brakes the feed chain and prevents the piece jamming between the feed chain and pressures.

FENCE

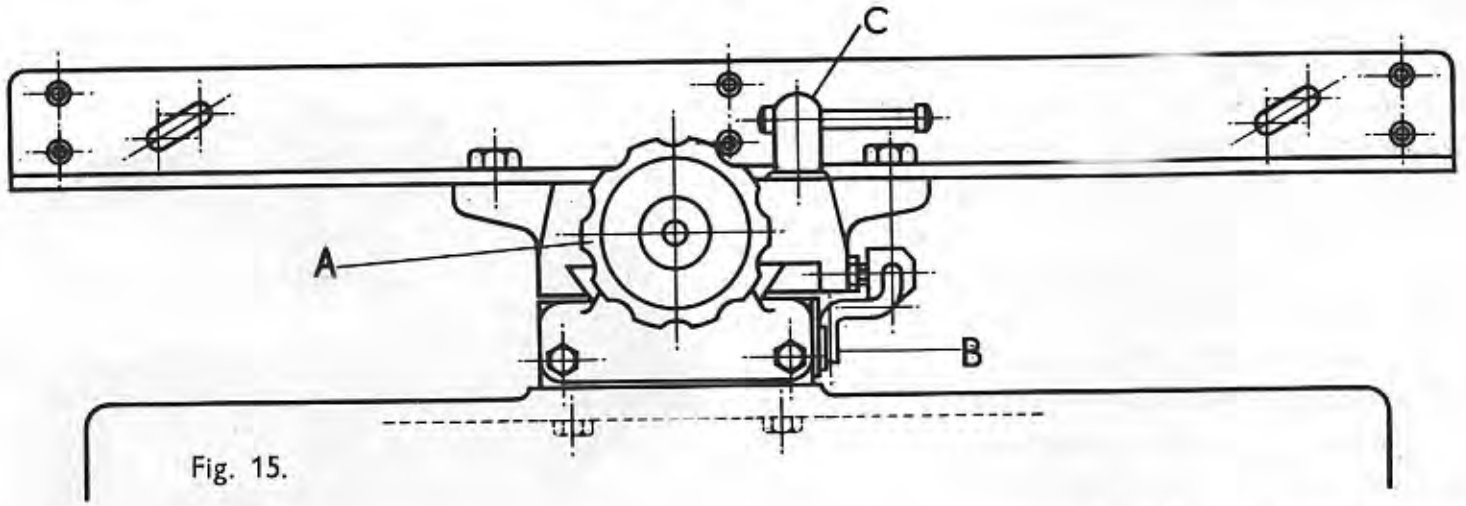


Fig. 15.

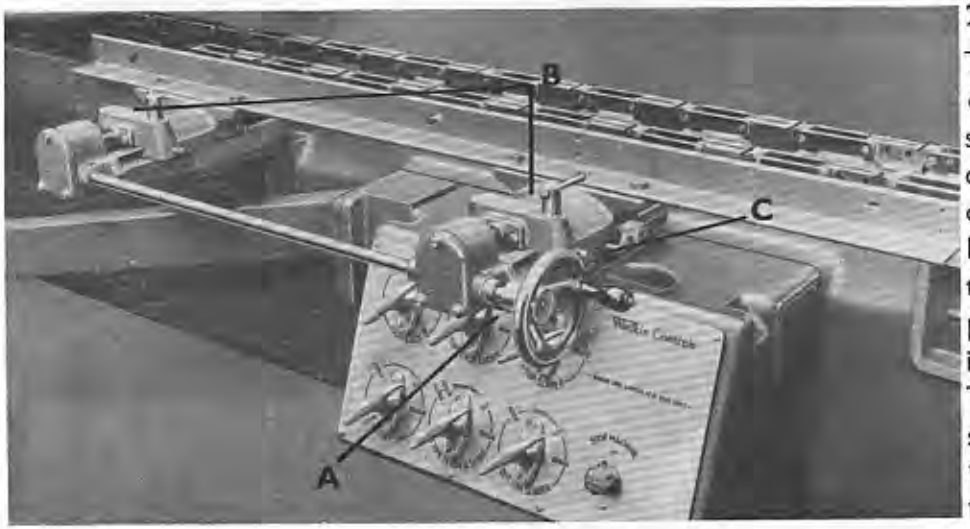


Fig. 16.

METHOD OF OPERATING ON 24″ MACHINE

The fence is fitted on the adjustable chain beam at the feeding-in end, the slide base being fitted on top of the control desk. Cross adjustment is obtained by rotating handwheel 'A', Fig. 15, the distance from the edge of the feed chain being indicated by the pointer and rule 'B', Fig. 15. The fence is locked in position with handle 'C'. The fence plate is drilled and countersunk to take No. 10 woodscrews when wood packing pieces are required. The two slots in the fence plate are for fitting a core gauge when required. A core gauge is required to gauge from the end of the core of veneered pieces, when sizing material, where the veneer is overhanging.

FENCE *(Continued)*

METHOD OF OPERATING ON 60" MACHINE

A long fence is provided on the 60" machine and is fitted on two slides, one being mounted on top of the control desk, and the other on a supporting bracket attached to the chain beam as shown in Fig. 16. Handwheel 'A', Fig. 14, operates both slides simultaneously through spiral gears and screws thus keeping the fence in alignment when adjusting. A handle 'B' on each slide locks the fence in position, distance from the edge of the feed chain to the fence plate being indicated by pointer and rule 'C', Fig. 16. The fence plate is drilled and countersunk for No. 10 woodscrews to enable wood packing pieces to be fitted. The three slots in the fence plate are for fitting a core gauge when required as described under "method of operating on 24" machine".

FEED CHAIN OPERATION

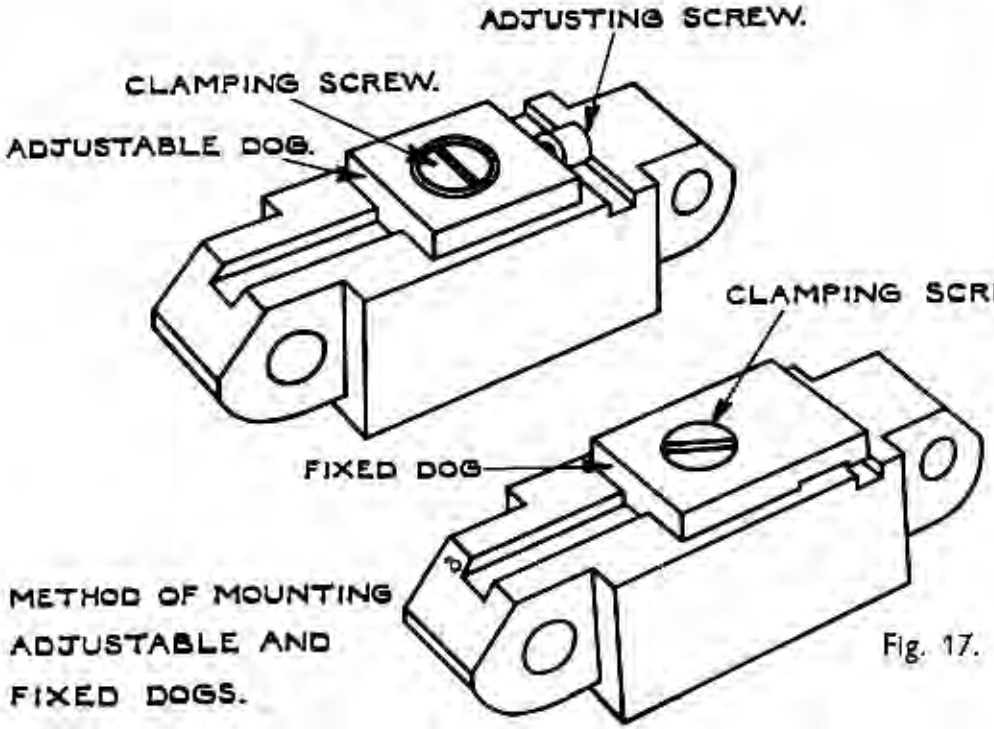


Fig. 17.

The complete range of feed dogs for both chains is shown on page 41; one set consists of 18 fixed and 18 adjustable feed dogs at 16" pitch, 10 disappearing dogs at 5' 4" pitch for 24" machine, or 22 fixed and 22 adjustable feed dogs at 16" pitch, 12 disappearing dogs at 5' 4" pitch for a 60" machine. With the exception of the $\frac{5}{16}$" and $\frac{9}{16}$" dogs, all other sizes are arranged to take backing pieces and are drilled accordingly. After selecting and assembling the feed dogs, Fig. 17, they should be tested for alignment by placing a square on the fence and checking that the dogs on the

FEED CHAIN OPERATION *(Continued)*

fixed chain beam are directly opposite and in line with the dogs on the adjustable beam. Adjustment can be obtained with the adjusting screw on the adjustable chain feed dogs.

When setting up it is often found desirable to move the feed chain without the power motion, and to facilitate this, a special cranked handle box spanner is provided with the machine to fit on the square worm shaft extension. This shaft is shrouded and a compression spring is fitted so that to use the hand traverse the handle must be inserted in the shroud and held against the spring, Fig. 18. The handle should be turned in an anti-clockwise direction to advance the feed chains.

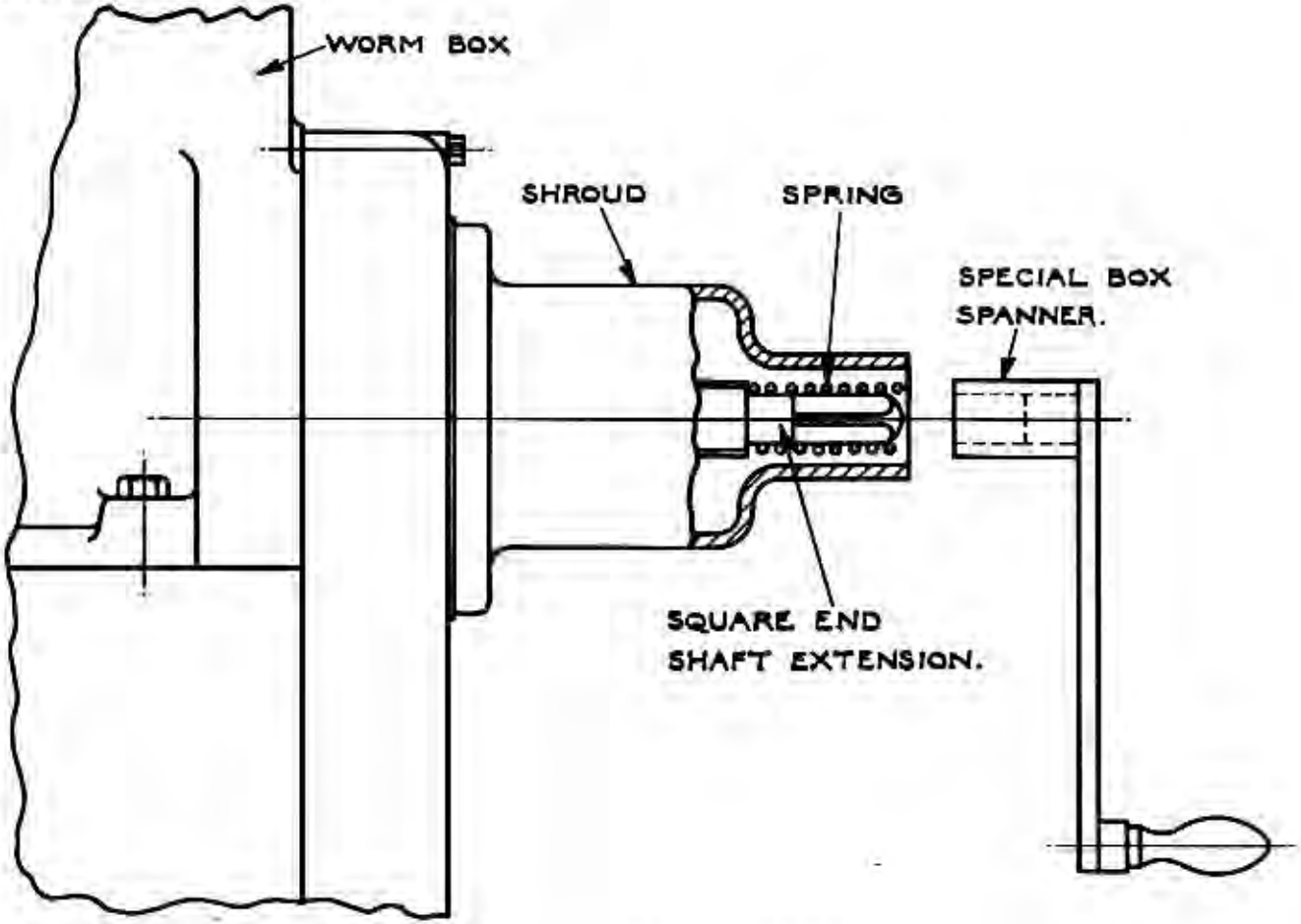


Fig. 18. METHOD OF HAND TRAVERSING FEED CHAIN.

OPERATING TRAVERSE MOTION TO ADJUSTABLE BEAM

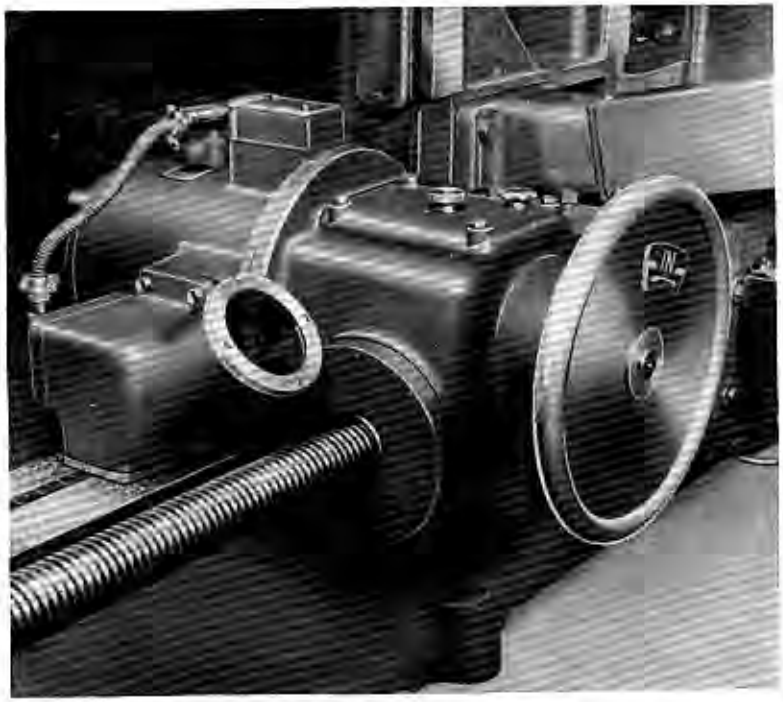


Fig. 19

The power traverse motion to the adjustable beam is obtained through a 2 h.p. motor mounted on the headstock as shown in Fig. 19. The actual control for adjusting in or out is by a rotary switch mounted on the control desk, Fig. 24. For fine adjustment, however, the carriage can be moved by hand by rotating the handwheel on the front of the traverse unit. One complete revolution of the traverse handwheel gives approximately $\frac{3}{64}$" horizontal movement either in or out to the adjustable beam. As stated at the control desk the headstock should be traversed manually above 94" and below 8". This will ensure that the beams are not jammed together under power when traversing inwards and that the traverse unit will not foul the end bearing of the traverse screw when traversing outwards. The rule which is set into the bed slide, is magnified and illuminated at the cursor line and can be read through the magnifier from both operating positions, that is when traversing the beam under power from the switch on the control desk, and also when making fine adjustment with the handwheel.

Before moving the adjustable beam, give the hand pump four or five movements of the handle—this provides a film of oil to the bearing surfaces and reduces the effort needed to move the headstock.

OPERATING INSTRUCTIONS FOR ELECTRIC CONTROLS

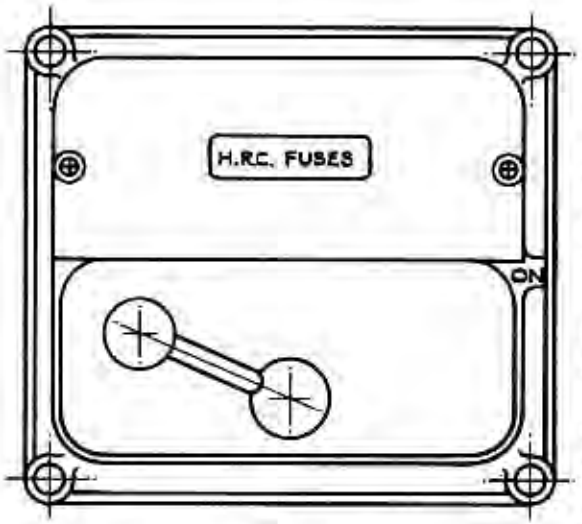


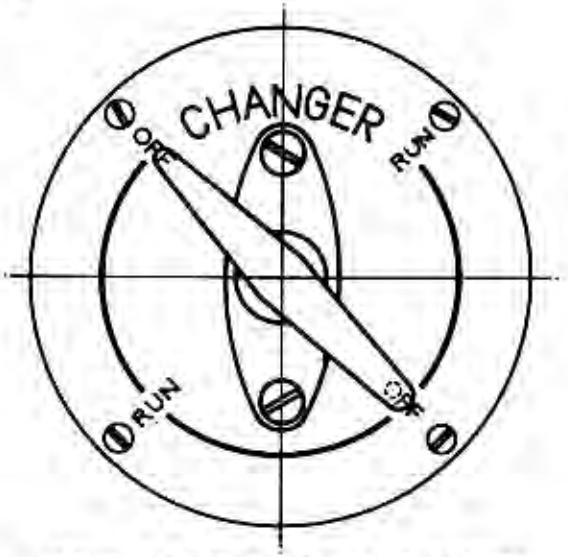
Fig. 20. MAIN SWITCH.

TO SWITCH ON MAIN SUPPLY

Move the main switch handle, Fig. 20, to the 'ON' position. This switch is situated at the front end of the main control compartment on the fixed headstock end of the bed, illustrated on page 2. With this switch in the 'ON' position and all the other switches in the 'OFF' position and with the master stop buttons not locked off, the main contactor shown in the diagram on page 2 will automatically close and the machine is ready to operate.

When leaving the machine or setting up, or before exposing live terminals, always move this switch to the 'OFF' position.

Access to main fuses is gained by removing the cover above the switch handle when visual indication shows a blown fuse.



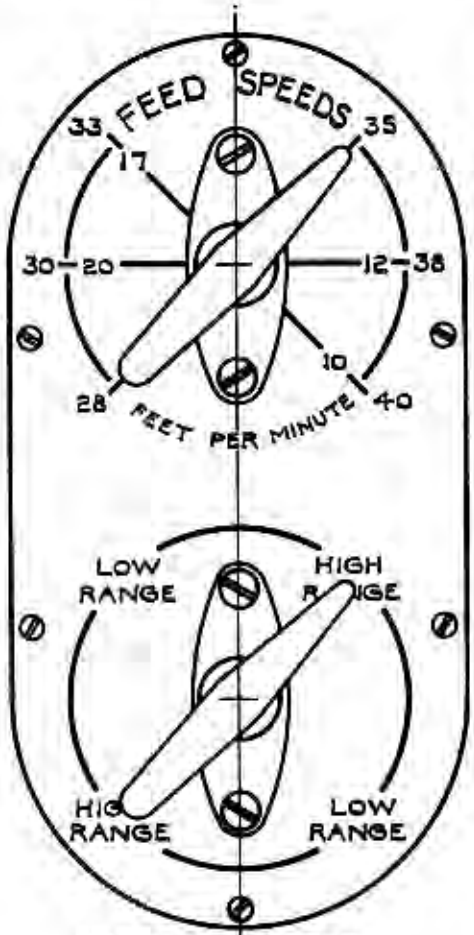
FREQUENCY CHANGER STARTER.

Fig. 21.

TO SWITCH ON HIGH FREQUENCY SUPPLY

After having switched on the main supply as above, move the handle immediately below the main switch from the 'OFF' to the 'RUN' position. This will start up the frequency changer set, where provided, which enables the scribers (copeheads) and gaining heads to run at 6000 r.p.m. as required.

OPERATING INSTRUCTIONS FOR ELECTRIC CONTROLS *(Continued)*



FEED SELECTOR SWITCH PANEL.

Fig. 22

TO SELECT FEED SPEEDS

The feed selector switches are mounted at the opposite end of the main control compartment to the main switch. The feed speeds are engraved as shown in Fig. 22, and range from 10 to 40 feet per minute. By setting the bottom switch at 'LOW RANGE', any of the speeds tabulated on the inner circle of figures on the top switch can be selected by turning the top switch to the desired feed speed position. If the bottom switch is set to the 'HIGH RANGE' position, speeds indicated by the outer circle of figures can be obtained, e.g., in Fig. 22, the switches are set to give a feed speed of 35 feet per minute.

The feed speeds can be altered when the machine is running if found necessary.

CONTROL OF FIXED HEADSTOCK

The fixed headstock control desk is situated on the end of the beam at the feeding-in end, and is engraved as shown in Fig. 23. If the scribers (copes) or gaining heads are to be run at 6000 r.p.m. the frequency changer should be first switched on as instructed on page 24. The switches on the fixed headstock desk controlling the cutterheads can now be started in any order.

CUT-OFF SAW

The cut-off saw is the top left hand switch and has two positions for running the saw above or below the track. The rotation of the saw is clockwise when cutting above the track and anti-clockwise when cutting below, looking at the non-driving end of the saw motor. The saw is started when the switch is at the 'ABOVE' or 'BELOW' position and will coast to rest when the switch is returned to the 'OFF' position. To brake the saw spindle the switch is turned to the BRAKE position and should be held there until the spindle has stopped ; the switch should then be released **immediately** when it automatically returns to the 'OFF' position. It should be noted that only **ONE** switch at a time should be braked.

OPERATING INSTRUCTIONS FOR ELECTRIC CONTROLS *(Continued)*

GAINING HEAD

The gaining head control is from the bottom left hand switch. The speed and direction of rotation of the gaining heads is selected by the switches on the gaining heads (see instructions under 'GAINING HEADS', page 28). When these have been selected, the switch on the control desk, Fig. 23, should be turned to the 'ON' position when all the gaining heads plugged in will start together and will coast to rest when the switch is returned to the 'OFF' position. To brake the gaining heads the switch is turned to the 'BRAKE' position. This will brake all the gaining heads simultaneously and immediately they stop the switch handle should be released when it will automatically return to the 'OFF' position.

TOP AND BOTTOM TENON HEADS AND SCORING SAWS

The top and bottom heads and scoring saws control is from the two centre switches. If the tenon heads only are required to run, the switches should be turned to the 'TENON ONLY' position. The 'TENON AND SCORE' positions start both the tenon head and the scoring saw attached to that particular head. As on the other heads they coast to rest if the switch is returned to the 'OFF' and are braked with the switch at 'BRAKE', and when the spindles have stopped and the switch is released it automatically returns to the 'OFF' position.

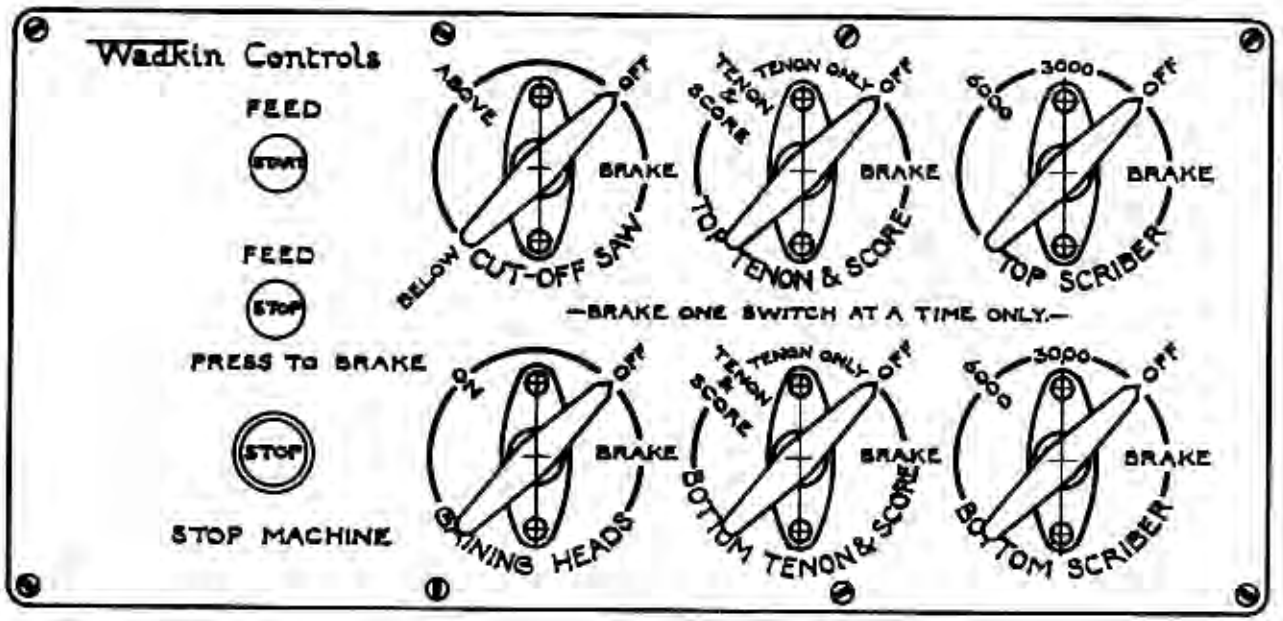


Fig. 23. CONTROL DESK – FIXED HEADSTOCK.

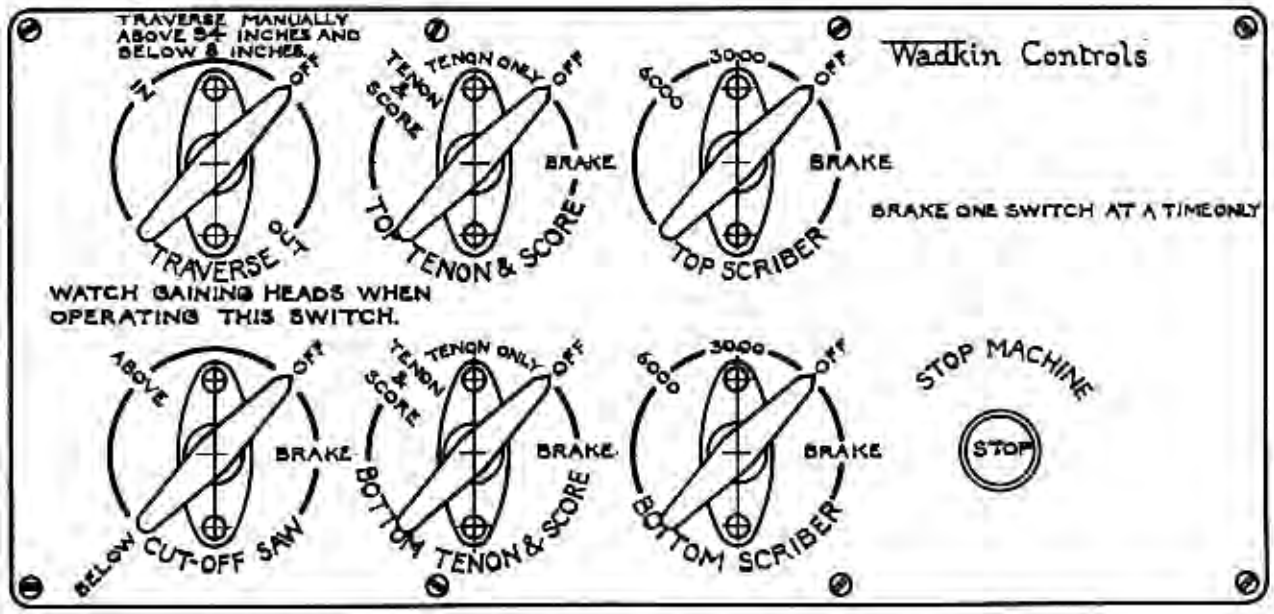
OPERATING INSTRUCTIONS FOR ELECTRIC CONTROLS *(Continued)*

TOP SCRIBER AND BOTTOM SCRIBER *(Cope Heads)*

The top scriber and bottom scriber control is from the two right hand switches. The 3000 r.p.m. (3600 for 60 cycles) speed is obtained when the switch is turned to this figure and speeded up to 6000 r.p.m., when moved in an anti-clockwise direction to 6000. Braking is as for the other heads.

FEED CONTROL

The feed control is from the top green button marked 'START FEED' and the centre red button marked 'STOP FEED'. These two are for controlling the feed chains. If the 'STOP FEED' button is pressed lightly in the normal manner the feed chains will just coast to rest. However, if the button is pressed right home, this brings in the brake to the feed chain and thus stops the feed chain instantaneously.



CONTROL DESK – ADJUSTABLE HEADSTOCK.

Fig. 24.

OPERATING INSTRUCTIONS FOR ELECTRIC CONTROLS *(Continued)*

MASTER STOP

The master stop is the mushroom head red button marked 'STOP MACHINE' and when operated, stops all electrically driven units on the machine. This button is fitted with a lock, and should be pushed in and half-turned to lock the button in the 'OFF' position. This renders all controls inoperative and is used when leaving the machine or attending to cutterblocks.

CONTROL OF ADJUSTABLE HEADSTOCK

The adjustable headstock control desk is situated at the end of the beam at the feeding-in end, and is engraved as shown in Fig. 24. The method of operating the cutter head switches is exactly the same as the fixed headstock switches.

TRAVERSE

The traverse in and out is from the top left hand control by moving the switch to either 'IN' or 'OUT' positions. The traverse must be operated manually above 94" and below 8". In the case of machines with gaining spindles care must be taken to ensure heads are clear before traversing moving headstock.

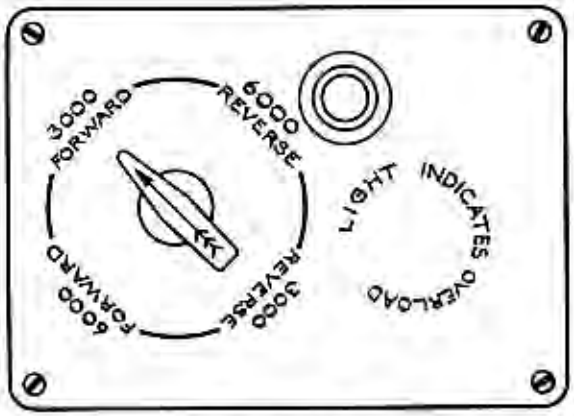
GAINING HEADS

After positioning the gaining heads on the slides as described under 'HEADSTOCK ADJUSTMENTS' the plug on the end of the cable on the gaining head should be plugged in to any convenient outlet on the top of the overhead beam. This connects the head to the electric supply. If the head is not required to be used unplug and clip in position on the gaining head slide as shown in Fig. 9. This disconnects the head from the electric supply.
The gaining head switch panel is engraved as shown in Fig. 25, and is situated on the front of each gaining head unit. The rotary switch is to select the speed and direction of rotation, the control being situated on the fixed headstock control desk, see Fig. 23, and appropriate instructions. The word 'FORWARD' indicates that the direction of rotation is clockwise looking at the non-driving end of the motor when the spindle is pointing vertically downwards. 'REVERSE' indicates that the direction of rotation is anti-clockwise. Normally the gaining heads should be run so that the cutters are running with the feed, that is cutters cutting downwards. When using spindles vertically, direction of rotation will depend upon whether the cutters being used are right hand or left hand cutters. Usually they are right hand cutters, therefore direction of rotation required for these is 'FORWARD'. In the case of the gaining heads an overload causes the red light to indicate, and care must then be taken that this head does not overheat.

OPERATING INSTRUCTIONS FOR ELECTRIC CONTROLS *(Continued)*

OPERATING THE LIMIT SWITCH

To warn against power traversing the headstock too far along the bed, a limit switch is fitted on the saddle. The roller on the switch engages with a cam plate at the end of the bed, Fig. 26, and automatically stops the machine. The cam plate, as shown, is mounted on two studs and may be adjusted vertically or horizontally. This plate is set before despatch and only requires further adjustment if not working correctly. It should be noted that the limit switch is set to operate at 94" traverse, and when operated stops the whole machine. Any further traverse adjustment up to the maximum of 98" should be made by hand adjustment. After the limit switch has tripped and stopped the machine, the machine can be restarted in the normal manner after returning all switches to the 'OFF' position in order to permit operation of the machine with the moving headstock fully extended up to the limit of traverse.



GAINING HEAD SWITCH PANEL.

Fig. 25.

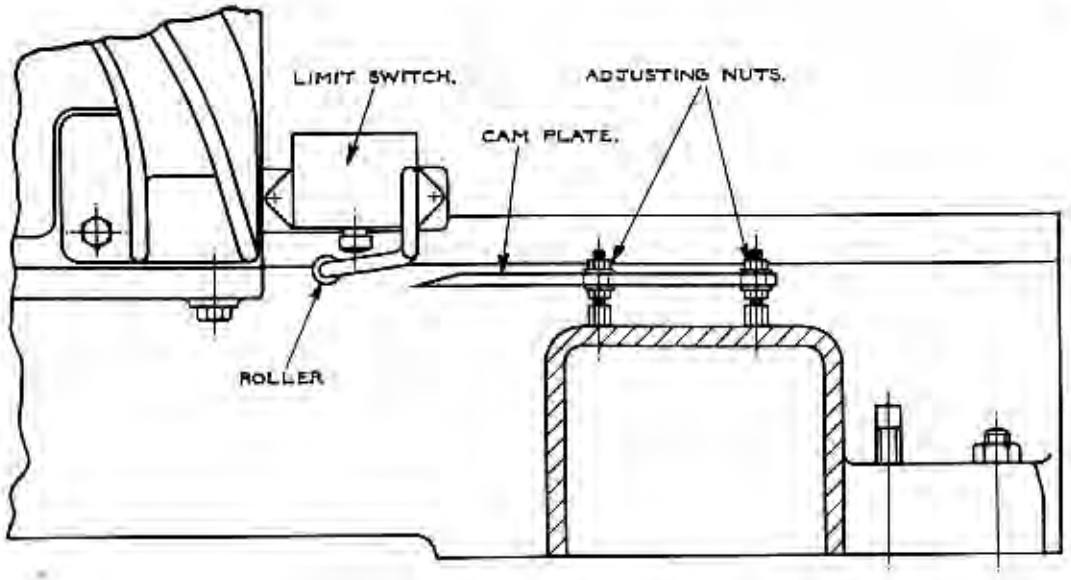


Fig. 26.

BEARING LIST

MAKER'S NUMBER	SIZE BORE × O/D × WIDTH	NUMBER PER MACHINE	WHERE USED ON MACHINE
SKF 0·8 Thrust Washer.	1" × 1 25/32" × 5/8"	14	Raising screws for all cutter heads and top pressures.
SKF RM14 Double Row Self-aligning Ball Bearing.	1¾" × 4¼" × 1 1/16"	10	Driving end of 5 h.p. cut-off saws, tenon and scribing heads.
SKF RM9 Double Row Self-aligning Ball Bearing.	1⅛" × 2 13/16" × 13/16"	10	Non-driving end of 5 h.p. cut-off saws, tenon and scribing heads.
SKF RM16 Double Row Self-aligning Ball Bearing.	2" × 4½" × 1 1/16"	2	Driving end of 7½ h.p. cut-off saw.
SKF RM10 Double Row Self-aligning Ball Bearing.	1¼" × 3⅛" × 7/8"	2	Non-driving end of 7½ h.p. cut-off saw.
SKF RLS9 Deep Groove Single Row Ball Bearing.	1⅛" × 2½" × 5/8"	4	Driving end of scoring saw.
SKF RLS5 Deep Groove Single Row Ball Bearing.	5/8" × 1 9/16" × 7/16"	4	Non-driving end of scoring saw.
SKF RLS15 Deep Groove Single Row Ball Bearing.	1⅞" × 4" × 13/16"	1 per head	Driving end of gaining head.
SKF RMS9 Deep Groove Single Row Ball Bearing.	1⅛" × 2 13/16" × 13/16"	1 per head	Non-driving end of gaining head.
Ransome and Marles LDJ35 Double Row Ball Journal.	35 mm. × 72 mm. × 23 mm.	4	Top pressure chain wheels.
Ransome and Marles LJT 1¼ Single Row Double Purpose Ball Bearing. Pre-selected bearings specially paired up for mounting back to back.	1¼" × 2¾" × 11/16"	2 pairs	Feed chain idler sprockets.
Ransome and Marles LJT 1¾ Single Row Double Purpose Ball Bearing.	1¾" × 3¾" × 13/16"	2	Wormshaft for traverse.
SKF RL8 Double Row Self-aligning Ball Bearing.	1" × 2¼" × 5/8"	1	Non-driving end of traverse motor.
Ransome and Marles MJT2½ Single Row Double Purpose Ball Bearing.	2½" × 5½" × 1¼"	3	2—combined worm-wheel and nut for traverse. 1—worm-wheel end of feed shaft.

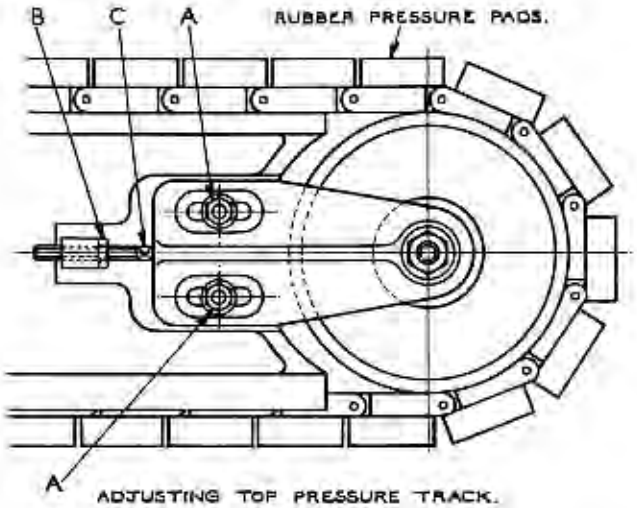
BEARING LIST

MAKER'S NUMBER	SIZE BORE × O/D × WIDTH	NUMBER PER MACHINE	WHERE USED ON MACHNE
Ransome and Marles MJT1¾ Single Row Double Purpose Ball Bearing.	1¾″ × 4¼″ × 1 1/16″	2	Worm shaft for feed.
Ransome and Marles MJT2¼ Single Row Double Purpose Ball Bearing.	2¼″ × 5″ × 1¼″	1	Worm-wheel end of feed shaft.
SKF RLS16 Deep Groove Single Row Ball Bearing.	2″ × 4″ × 13/16″	1	Outer support end of feed shaft.
Hoffman MS13V, Ball Bearing.	1½″ × 3¾″ × 15/16″	1	Driving end of MZ4826 frequency changer.
Hoffman MS12½V, Ball Bearing.	1⅜″ × 3½″ × ⅞″	1	Tail end of MZ4826 frequency changer.
Hoffman RMS12½, Roller Bearing.	1⅜″ × 3½″ × ⅞″	1	Driving end of frequency changer driving motor, K4120.
Hoffman MS12½, Ball Bearing.	1⅜″ × 3½″ × ⅞″	1	Tail end of frequency changer driving motor, K4120.
Hoffman MS11, Roller Bearing.	1¼″ × 3⅛″ × ⅞″	1	Driving end of CMT3519 feed motor.
Hoffman MS8, Ball Bearing.	1¼″ × 3⅛″ × ⅞″	1	Tail end of CMT3519 feed motor.

ADJUSTMENTS AND GENERAL MECHANICAL MAINTENANCE

ADJUSTING TOP PRESSURE TRACK

The method of tensioning the top caterpillar track is shown in Fig. 27. The bracket holding the chain wheel moves on a check strip on the beam. The clamping nuts 'A' should first be slackened and then the locknut on the adjusting screw 'B' should be unlocked. By turning the screw 'C' the bracket can be moved either in or out. When the required adjustment has been made, the locknut 'B' should be locked up against the square face and the clamping nuts 'A' re-locked. The rubber pressure pads are held in position with two screws and special washers and are easily detachable. Care must be taken always to replace the special washers.

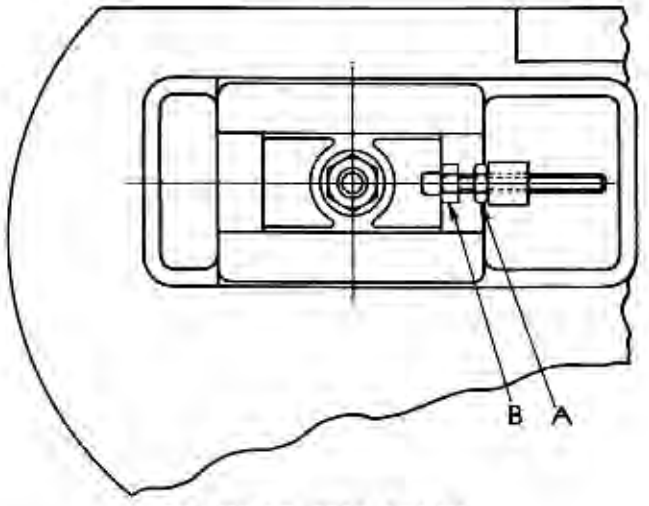


ADJUSTING TOP PRESSURE TRACK.

Fig. 27.

ADJUSTING FEED CHAINS

Adjustment for both feed chains is provided at the feeding-in end of the beams as shown in Fig. 28. The idler chain sprockets are supported in bearing blocks and these blocks move between the slideways and are held in position by lip plates. To tension the chain, the locknut 'A' should be slackened off and the screw 'B' turned until the required tension has been obtained. Both chains should be adjusted an equal amount and aligned as described on page 21. After adjustment has been made the sheet iron covers should be removed to ensure that the feed dogs are clearing all points.



ADJUSTING FEED CHAINS.

Fig. 28.

ADJUSTMENTS AND GENERAL MECHANICAL MAINTENANCE

(Continued)

ADJUSTING FEED CHAIN SLIPPING CLUTCH

The drive to the chain is transmitted via the rear feed shaft. The power from the motor being taken by three A42 vee ropes, through the friction clutch to the worm shaft and worm-wheel which drives the feed shaft. The clutch is held in position by a square section spring. Should any overloading occur whilst feeding the timber, the clutch is arranged to slip and disengage the drive. The position of the slipping clutch mechanism is shown in Fig. 29, with the cover removed to show the vee belt drive from the feed motor. The clutch is adjusted before despatch, but should any adjustment be necessary the following procedure should be adopted :—

The shroud shown in Fig. 16 should first be removed—this will expose the spring and locknuts. Slacken off the hexagon locknut 'A', Fig. 29. Insert a tommy bar into a hole in the circular locknut 'B' and rotate this locknut the desired amount clockwise to tighten the clutch and anti-clockwise to slacken the clutch. One or two turns should be sufficient. Re-lock the hexagon locknut 'A' up to the circular locknut 'B' and replace shroud.

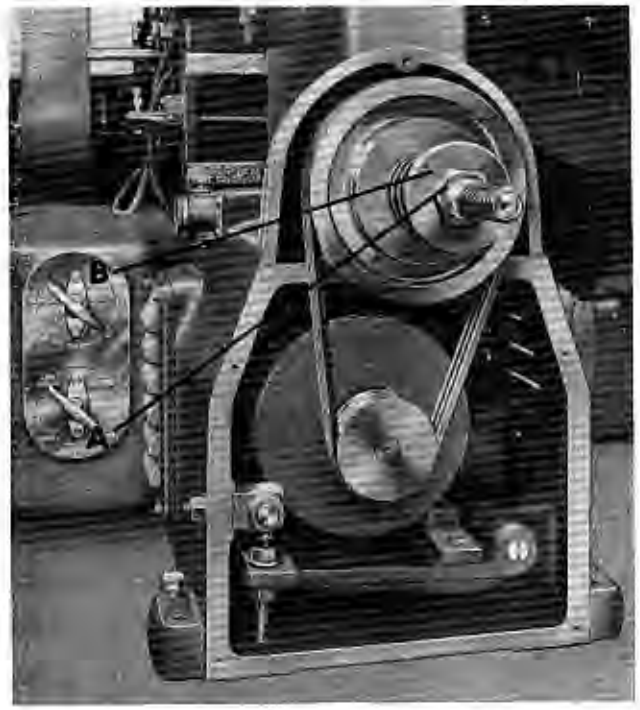
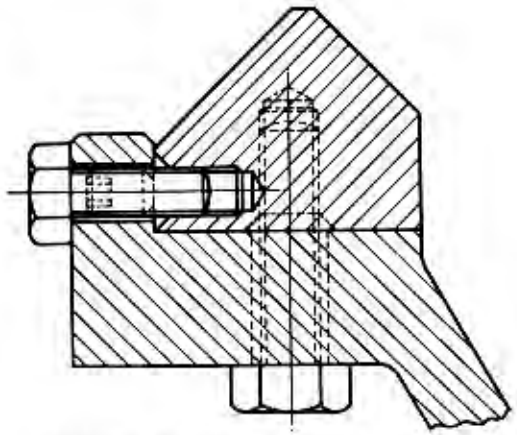


Fig. 29.

ALIGNMENT OF FEED CHAIN RAILS

The inverted vee-shaped phosphor bronze rails for the feed chains are mounted on a facing running the length of the chain beam, and bolted in position as shown in Fig. 30. Provision is made at various points along the rail for setting the rails in alignment with the heads and parallel to each other. The setting of the rails in



SECTION THROUGH FEED CHAIN RAIL.

Fig. 30.

alignment must be carried out very accurately using precision measuring instruments. The rails are set on the machine correctly before despatch and should not normally need adjusting. If at any time the rails are found to be out of alignment, it is advised that Wadkin Ltd. be consulted for further information on this matter.

METHOD OF REMOVING TRAVERSE SCREW

Should it be found necessary to remove the main traverse screw from the bed this can be done as follows, with the main switch 'OFF'.

First remove the two screws in the rear cover of the magnifier and withdraw the bulb. Then remove the terminal block cover of the traverse motor and disconnect the line terminals. The traverse unit is now free from electrical connections.

Remove the square head dowel pins and the four cap screws in each of the traverse screw end brackets. Next remove the square head dowel, two hexagon head screws and the four cap screws which hold the traverse unit to the saddle.

The complete unit is now free and resting on the traverse screw end brackets.

To remove the complete unit, including screw and end brackets from the machine, slide the complete unit in a direction away from the fixed headstock until the traverse screw end brackets slide off their seatings. The whole traverse unit can now be dropped down and threaded from the underside of the saddle and so clear of the machine.

LUBRICATION

HEADSTOCK MOTORS (*Cut-off Saws, Scoring Saws, Tenon Heads and Scribing Heads*)

The headstock motor bearings are lubricated by grease only. It is recommended that only WADKIN special ball bearing grease is used. The bearings should be given three depressions of the grease gun every three months. It is essential that the specified amount of grease is delivered to the bearings at regular intervals to ensure the true running of the spindle.

Use WADKIN GREASE GRADE L6.

The two grease lubrication points on the cut-off saw motor are shown at 'A', Fig. 31.

Two similar points are on each of the other cutterhead motors, some of which will be on the underside of the motor frames for reasons of accessibility.

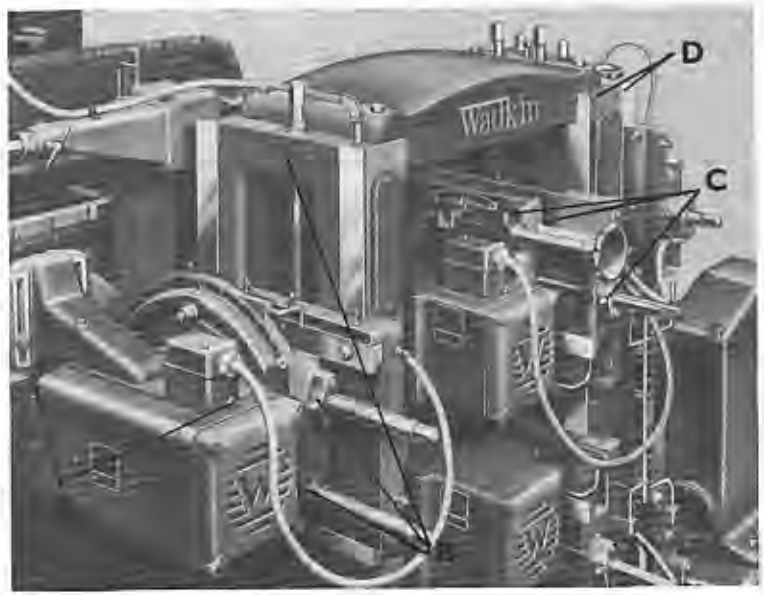


Fig. 31.

The three points 'B', Fig. 31, on the cut-off saw unit are oiling points and should be given three depressions of the oil gun weekly. The three points 'C' on the tenon head, Fig. 31, are oiling points for the horizontal adjusting screw, the bearing for the canting screw and the pivot for the bearing. These should also be given three depressions of the oil gun weekly. Three similar points to these will be found on each tenon and scribing head and should be oiled similarly. 'D' indicates the position of the oil nipples for the raising screw bearings. Two more oil nipples will be found on the inside face of the beam, making four points in all. These points should be given three or four depressions of the oil gun weekly. Use WADKIN OIL GRADE L4. A slight film of oil applied with an oil can on the slide faces of all the heads will result in smooth operation. Also oil should be applied to the main rise and fall screws and to the horizontal and canting adjustment screws.

All the greasing and oiling points referred to above are applicable to both fixed and adjustable headstocks.

LUBRICATION *(Continued)*

GAINING HEADS

The gaining head motor is lubricated by grease and the bearings should be given three depressions of the grease gun every three months at the points indicated at 'A', Fig. 32. The remainder of the points 'B' are oiling points and should be given three depressions of the oil gun weekly.
Use WADKIN GREASE, GRADE L6 and OIL, GRADE L4. A slight film of oil should be applied to the horizontal and vertical slide faces to ensure easy operation.

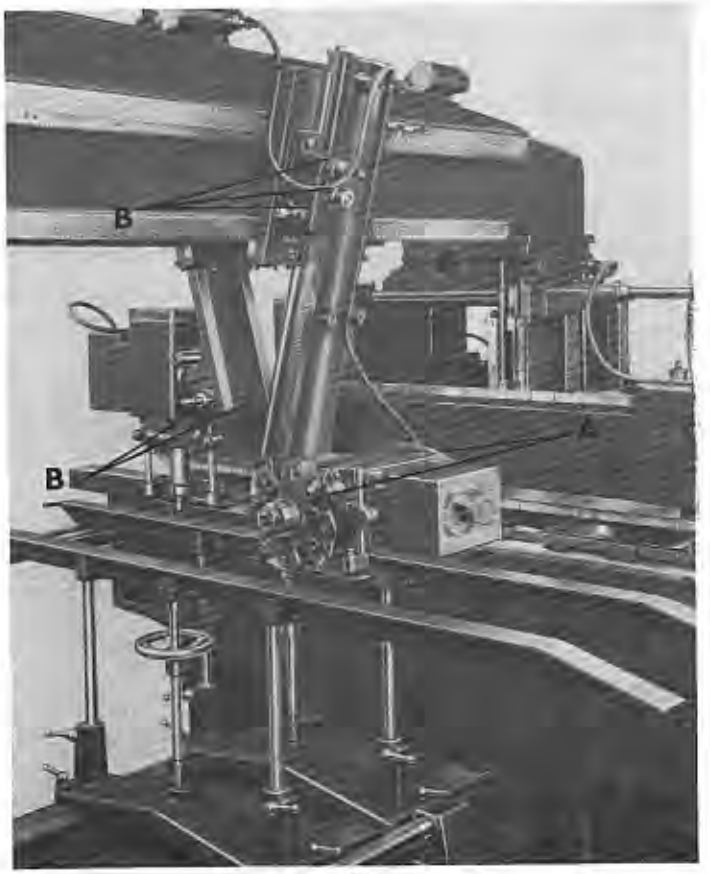


Fig. 32.

TRAVERSE MOTION

The bed slides of the traverse motion are lubricated by the hand-operated oil pump mounted on the front of the saddle, Fig. 33. Pipes are taken from this pump to the slides on the saddle. The pump should be kept filled with WADKIN GRADE 4 OIL and the oil level in the tank checked daily. As previously noted under 'OPERATING TRAVERSE MOTION TO ADJUSTABLE BEAM' this pump should be operated four or five times before headstock is traversed. The traverse screw, worm and worm-wheel and bearings in the traverse unit are lubricated by oil in a sump in the worm-wheel housing, Fig. 33. This sump should be filled up to the level of the notch on the dipstick with WADKIN HEAVY GEAR OIL, GRADE L2. Filler plug, drain plug and dipstick are indicated in Fig. 33. Check oil level each month and top up the supply if necessary. The end bearing of the traverse motor is lubricated by a grease nipple 'A', Fig. 33, which should be given three depressions of the grease gun every six months.

LUBRICATION *(Continued)*

FEED SHAFT BEARING BRACKET

The feed shaft support bracket houses a ball bearing for supporting the end of the shaft. The bearing is lubricated with a grease nipple on the cover 'B', Fig. 33. Three depressions of the grease gun every three months are required at this point, using WADKIN GREASE, GRADE L6.

WORM BOX LUBRICATION

The oil filter fitted on the worm box is combined with the sight glass and an oil drain plug, as shown in Fig. 29. The oil used in the worm box should be WADKIN HEAVY GEAR OIL, GRADE L2. Check the oil level each month and top up the supply if necessary. The oil level should be about three-quarters of the way up the sight glass.

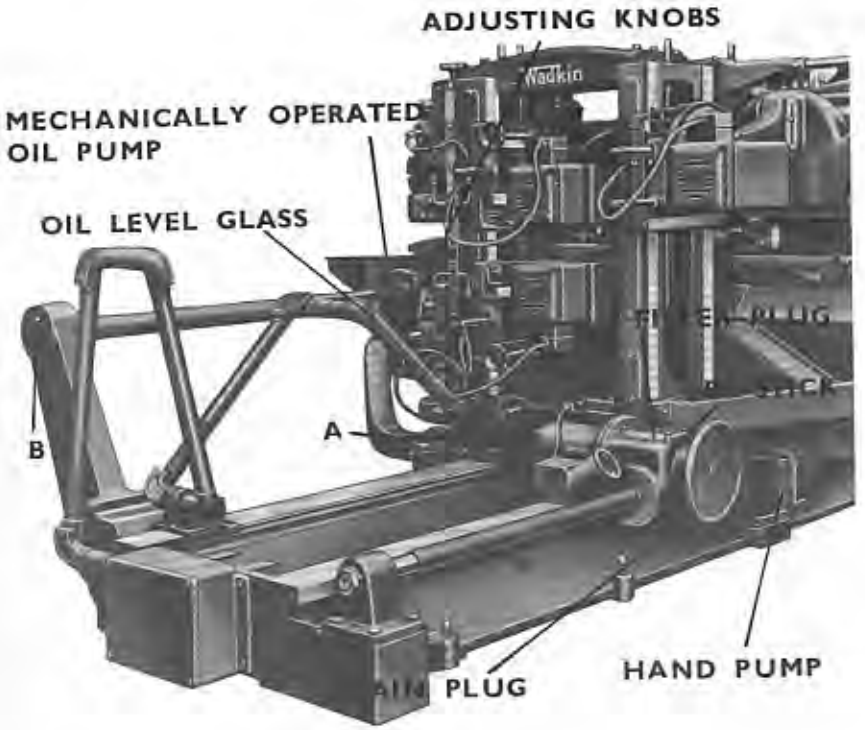


Fig. 33.

FEED MOTOR LUBRICATION

Accessibility to the front bearing of the feed motor for lubrication purposes is obtained by removing the cover, as shown in Fig. 29. To lubricate the rear bearing, the louvred cover must be removed. Take out the screw plugs in the bearing end caps and give three depressions of the grease gun every three months using WADKIN GREASE, GRADE L6. Replace screwed plugs in end caps and replace covers.

FEED CHAINS

Each feed chain is automatically lubricated by a mechanical oil pump, driven from the main feed shaft. A pipe is taken from the pump to lubricate the feed shaft bearing. Two more pipes are taken to lubricate the chainway. A felt wiper is fitted in each beam, as shown at 'A', Fig. 34, which takes the fourth pipe from the oil pump to feed the felt pad. The wiper is kept in contact with the chain by a spring-loaded plunger and the initial

FEED CHAINS—*continued*

positioning of the bracket is obtained by releasing the nuts 'B' and sliding the bracket up or down in the slots provided. Should it be found necessary to replace the felt pad, it should be soaked in oil before fitting.

Although a mechanical pump supplies the various points with oil automatically, it should be remembered that this pump can only function when the pump tank has sufficient supply. The oil level shown on the glass should be checked daily, and the tank re-filled with WADKIN OIL, GRADE L4. The supply to the four oil pipes must be regulated by adjusting the knurled knobs on the top of the pump. These knobs are engraved showing the direction of rotation for increasing the oil supply. As a general guide the supply to the felt pad and the chainways can be cut down to just below half pressure. The remaining pipe to the feed shaft bearing should be delivering full pressure.

TOP PRESSURES

The chainwheels on the top pressure are mounted on ball bearings and are grease lubricated. The nipples are on the inside of the beam 'C', as shown in Fig. 34. Three depressions of the grease gun are required every three months, using WADKIN GREASE, GRADE L6. The underside of the track slideway is oil lubricated, a pipe being taken from a drip feed oiler to the slide. The drip feed oiler should be filled with WADKIN OIL, GRADE L4, daily and the flow should be checked at the sight glass underneath the oiler. A little powdered graphite spread along the top and bottom slideways will greatly increase the efficiency of this pressure.

The spiral gearboxes for the rise and fall motion of the top pressure are oil lubricated. The rear spiral gearbox has three oiling points and the front one has two. An oiling point is also provided for the handwheel shaft bearing shown at 'D', Fig. 34. All these points should be given three depressions of the oil gun each week, using WADKIN OIL, GRADE L4. Oil should be applied occasionally to the raising screws and the faces of the vertical slides to ensure easy operation.

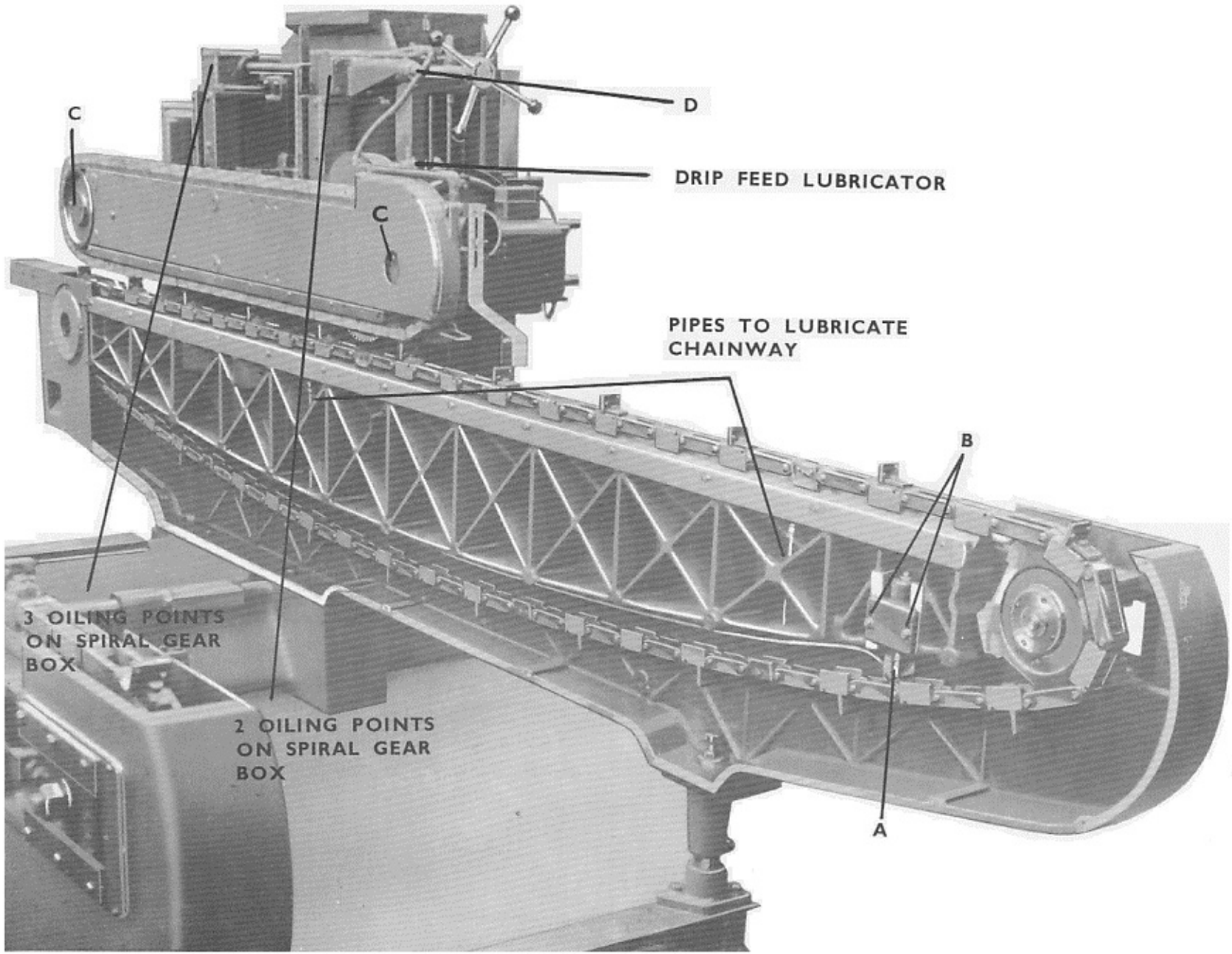

C
D
DRIP FEED LUBRICATOR
C
PIPES TO LUBRICATE CHAINWAY
B
3 OILING POINTS ON SPIRAL GEAR BOX
2 OILING POINTS ON SPIRAL GEAR BOX
A

Fig. 34.

LUBRICATION *(Continued)*

LUBRICATION OF ROLLER BOX

On the 60" machine the adjustable chain beam is supported by a roller box mounted on a bracket attached to the beam, as can be seen in illustration on page 3. This roller moves along a steel joist set in the floor. The roller box bearing is grease lubricated by a nipple on the roller spindle, and requires two depressions of the grease gun each week using WADKIN GREASE, GRADE L6.

GENERAL CLEANLINESS OF THE MACHINE

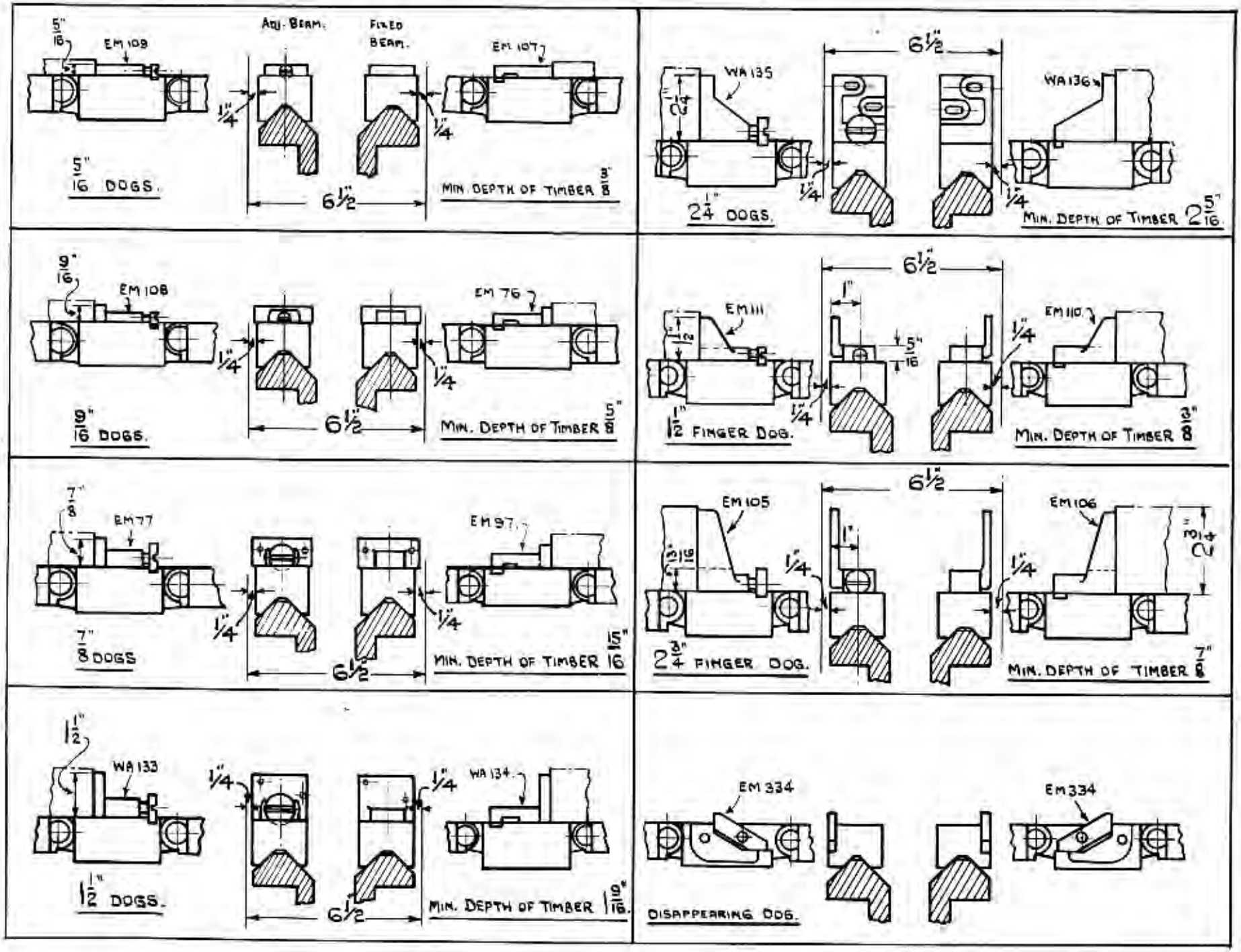
A WADKIN portable blower should be used to clean the machine from accumulation of chips and sawdust every day. Particular attention should be given to keeping the feed chains as clean as possible. The sheet iron covers on the inside of the chain beams should be removed each week and the sawdust blown out. The caterpillar top pressure needs attention daily, blowing out the chips and sawdust that will be found clogging the end guards.
Any excess oil on the machine will tend to collect dust and all oil pipes should be checked for excessive pressures if this trouble is found.
On the 60" machine the roller box for the outer support should be examined monthly ; the covers on the bearing box should be removed and all dust blown out.

LUBRICATION EQUIVALENTS

If it is desired to use lubricants other than WADKIN types, the equivalents are listed below :—

WADKIN OIL, GRADE L2	Equivalents :	Vacuum Oil Co. "Gargoyle", DTE-BB. Shell "Vitrea" Oil, 69.
WADKIN OIL, GRADE L4		Vacuum Oil Co. "Vactra" Oil (heavy medium). Shell "Vitrea" Oil, 33.
WADKIN BALL BEARING GREASE, L6		Vacuum Oil Co. "Gargoyle", BRB3. Shell "Nerita" Grease, 3 (V.W.).

RANGE OF FEED DOGS FOR DOUBLE END TENONER



ELECTRICAL INSTRUCTIONS

INSTALLATION

The whole of the cabling between the motors and the control gear is carried out by WADKIN LTD., but it is necessary to make certain disconnections in order that the machine can be dismantled for despatch. To put the machine into service it is necessary to remake the connections which have been broken for transit, and bring the line cables to the machine, the entrance is shown on page 2. This should be done as follows :—

1. Re-place the harness in the stretchers, see pages 2 and 3, and re-connect at terminal blocks and overload coils, the corresponding colours and markings.
2. If frequency changer is included, the cables should be re-connected at terminal block situated as indicated on page 3.
3. Re-connect the feed motor terminals to the corresponding marked cables.
4. If the machine is fitted with gaining heads, re-connect the cables to the terminal block situated as indicated on page 3.
5. Re-connect the cables to the corresponding marked terminals of the oversize stock limit switch, see Fig. 14.
6. Connect the machine solidly to earth.
7. Connect the incoming supply lines to the main switch. 50 amp. cables are required for a 400 volt, 3 phase, 50 cycle machine. Check any one cutterhead for correct direction of rotation, and if necessary, interchange any two line leads to correct rotation. All other movements will then be correct.
8. The machine is now ready to start, providing that the rust preventing grease has been removed, and oil levels and lubrication has been checked.

Operation instructions are on page 24.

FAILURE TO START

1. Electric supply is not available at machine.
2. Fuses have blown or are not fitted. The main fuses supplied with the machine are incorporated with the main switch, Fig. 20. Access to the fuses is obtained by removing the cover above the switch handle.

ELECTRICAL INSTRUCTIONS *(Continued)*

FAILURE TO START—*continued*

3. The main switch, Fig. 20, has not been closed.
4. One or both of the master stop buttons are locked off.
5. All switches are not in the 'OFF' position. After the machine has been stopped by pressing the master stop button, it cannot be re-started until all the switches, except the main isolating switch, have been moved to the 'OFF' position.
6. Imperfect connection causing faulty contact. Check re-connections, and if necessary at other points.

SHUT DOWN DURING OPERATION AND FAILURE TO RE-START

Main fuses or control circuit fuses have blown. The main fuses are fitted at the main switch and the control circuit fuses are fitted in the main control compartment, see page 2.

FEED FAILURES

1. Overloads have tripped. These will reset automatically after a short time and the feed can be restarted in the usual manner. It should be noted that overload on the headstocks or the frequency changer would trip the feed only, in order to remove the overload. The reason for this is that if both the headstocks and the feed are tripped simultaneously the headstocks will stop quicker than the feed with consequent jamming of the stock into stationary cutters.
2. Incorrect feed speeds will result if the feed speed selector switch handle does not register directly along the line of the desired speed.
3. Incorrect feed speeds, lack of torque, and high secondary currents will result if the brushgear is not secure or incorrectly set, see Fig. 35 for correct setting.

SCRIBER HEADSTOCKS (Copes) AND GAIN HEADS *(High Frequency Machine only)*

If all scribing headstocks (copes) and gain heads fail to attain full speed on the high frequency supply interchange any two leads of the excitation winding on the frequency changer.

ELECTRICAL INSTRUCTIONS *(Continued)*

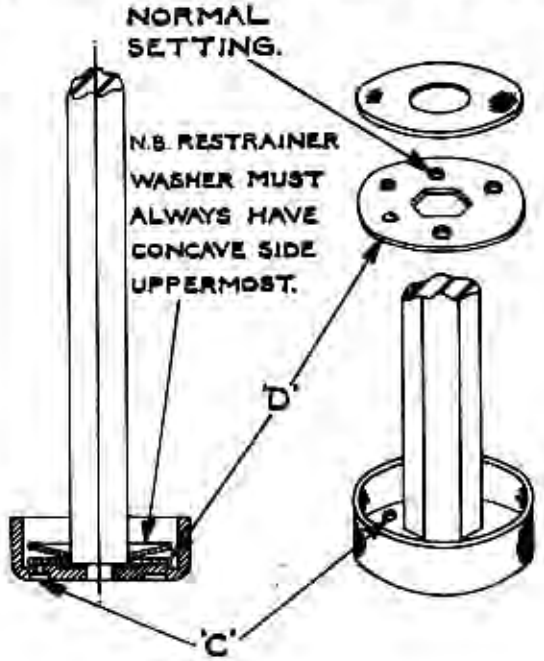
ELECTRICAL MAINTENANCE

The machine does not require regular electrical maintenance apart from blowing down motors and checking earth connection. Control gear, etc., should not be opened up unless a fault occurs which will probably be a very rare occurrence. Do not file switchgear or rotary switch contacts and do not change them because they look burnt unless they are definitely faulting. In the case of high frequency machines inspect thebrushes on the slip rings of the changer occasionally.

OVERLOAD RELAY

The overload relays are situated in the following positions and clearly marked. Fixed head in the fixed beam desk, Fig. 36. Moving heads in the moving beam control desk. The arrangement is the same as the fixed head control desk. Feed motor, feed brake, frequency changer in the main control compartment, Fig. 37. Gaining heads in the speed selector box which is situated on the front of the gaining head, Fig. 8.

See that the overload time lag dash pots are quite clean and then fill to within $\frac{1}{2}$" of the top with special oil supplied with machine. To obtain correct overload protection, adjust the dash pots so that their top edges are in line with the calibration marks nearest to $1\frac{1}{4}$ times the full load current of the motor concerned. The overloads are despatched with the time lags set at the centre position, see sketch 'D', but if the nature of the load necessitates a longer time lag the setting is adjustable by altering the position of washer 'D', relative to fixed hole 'C'. The five holes in washer 'D' are of varying sizes so that five settings are available.



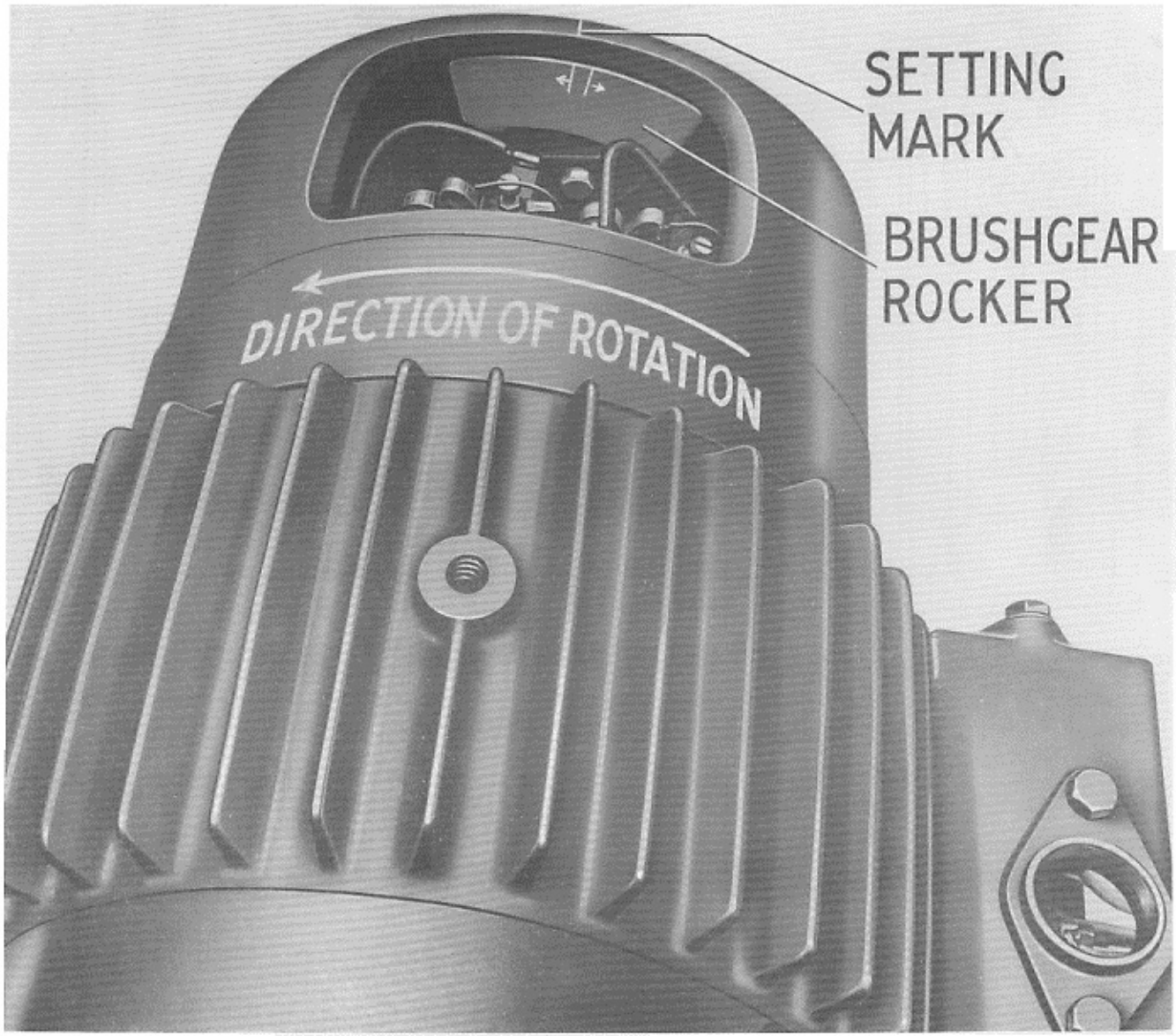
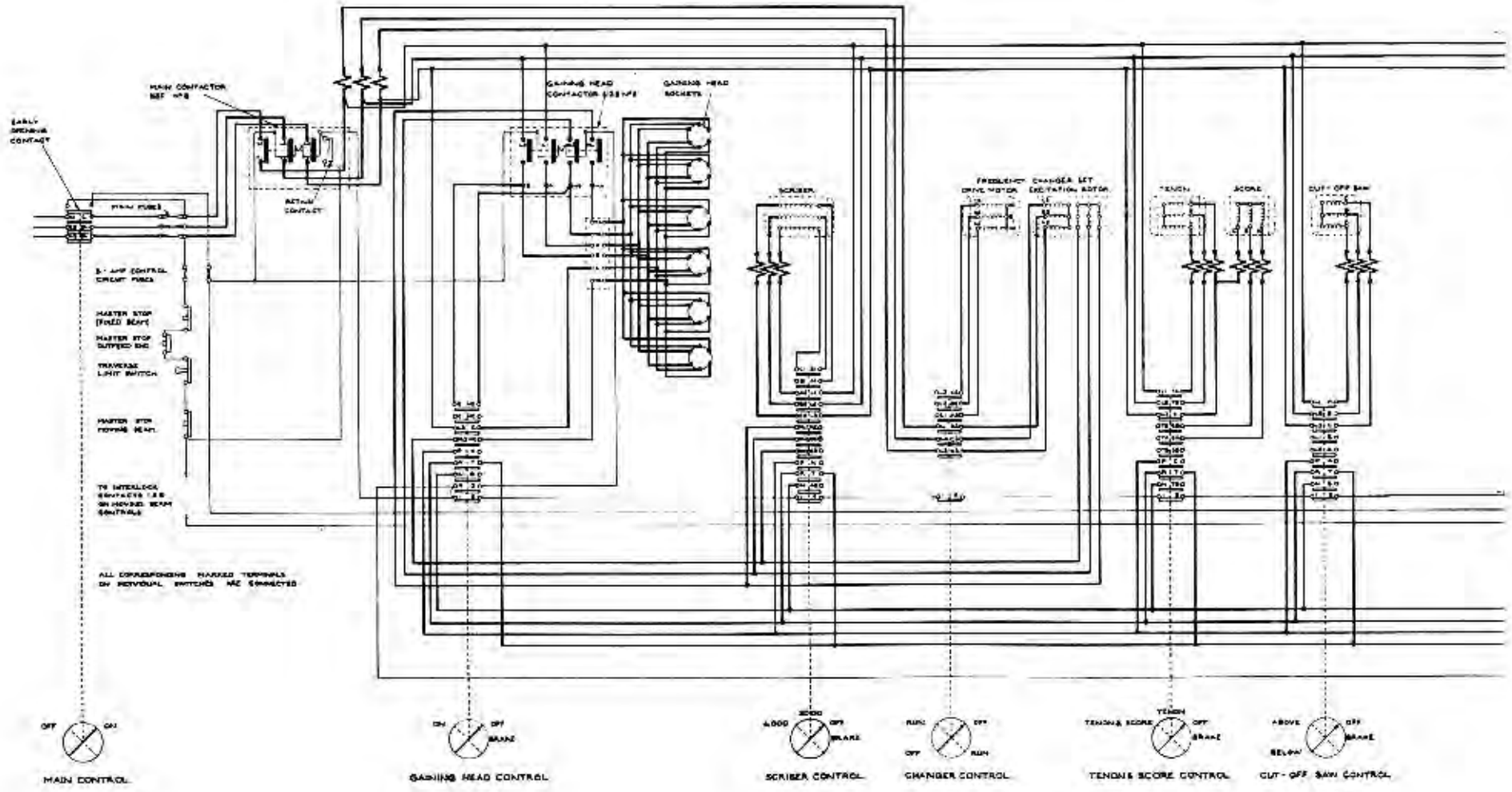
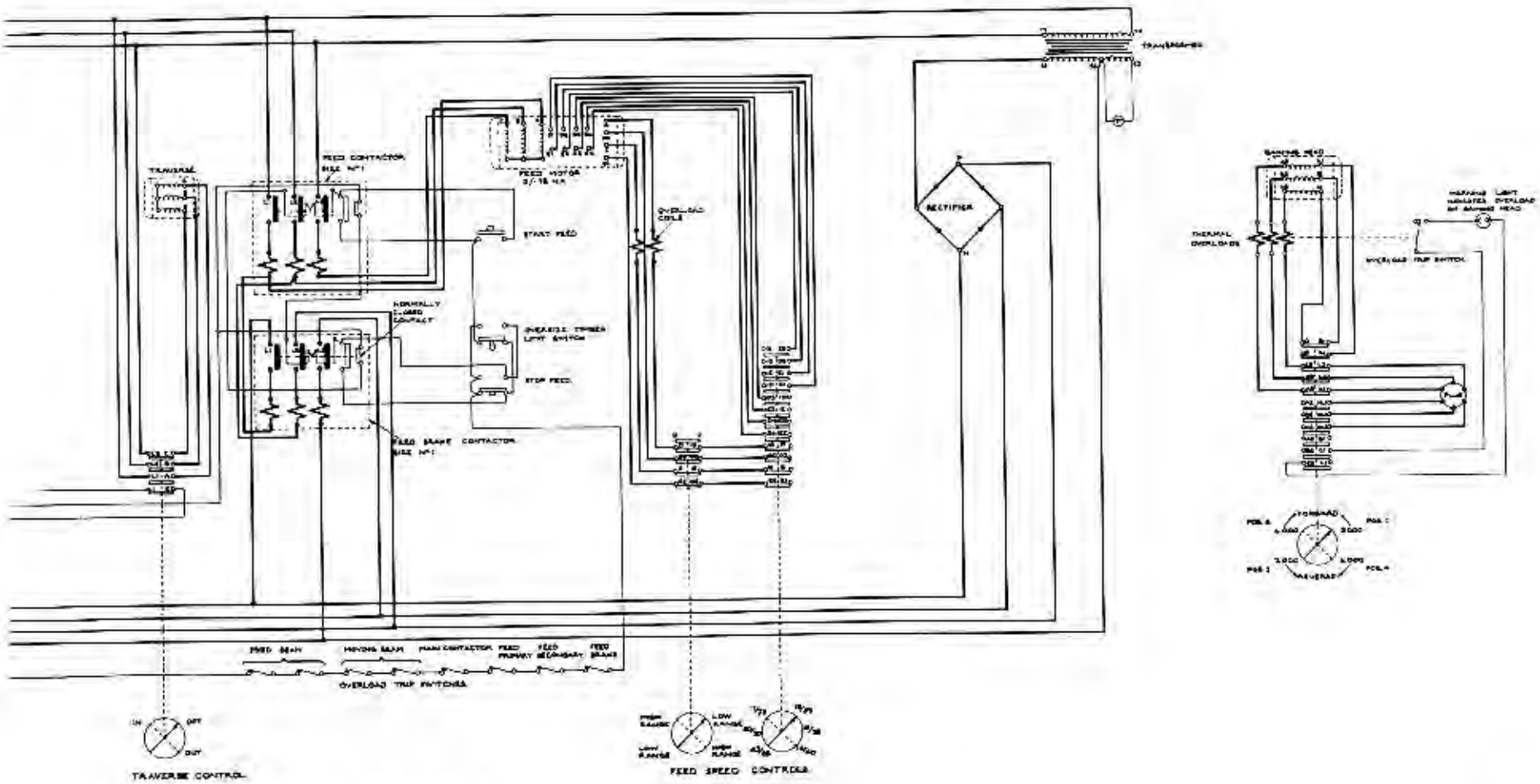


Fig. 35.

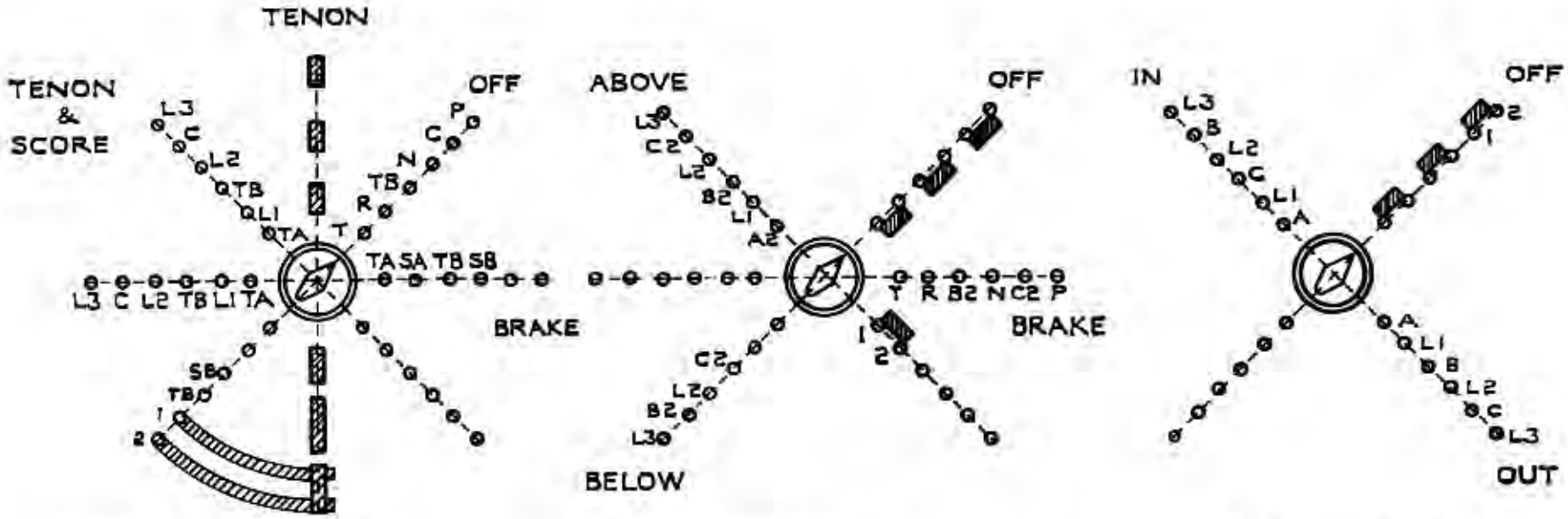


SCHEMATIC DIAGRA



M WF/B (STANDARD)

D.885



TENON AND SCORE

'OFF' CONNECTS	1	TO 2
'TENON'	L1	TO TA
	L2	TO TB
	L3	TO C
'TENON & SCORE'		
CONNECTS	L1	TO TA
	L2	TO TB
	L3	TO C
	TA	TO SA
	TB	TO SB
'BRAKE'		
CONNECTS	T	TO R
	TB	TO N
	C	TO P
	TB	TO SB
	1	TO 2

CUT OFF SAW

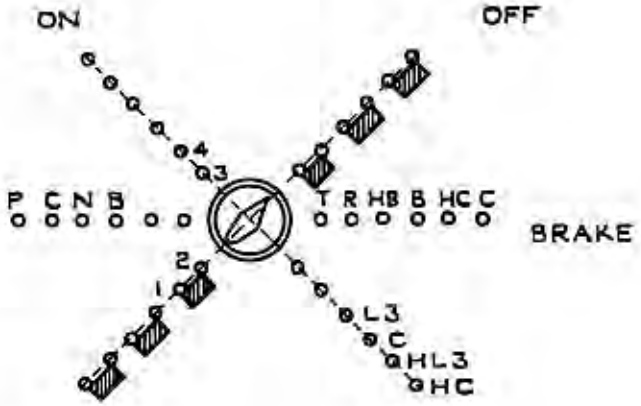
'OFF' CONNECTS	1	TO 2
'ABOVE'		
CONNECTS	L1	TO A2
	L2	TO B2
	L3	TO C2
'BELOW'		
CONNECTS	L1	TO A2
	L2	TO C2
	L3	TO B2
'BRAKE'		
CONNECTS	T	TO R
	B2	TO N
	C2	TO P

TRAVERSE

'OFF' CONNECTS	1	TO 2
'IN' CONNECTS	L1	TO A
	L2	TO C
	L3	TO B
'OUT' CONNECTS	L1	TO A
	L2	TO B
	L3	TO C

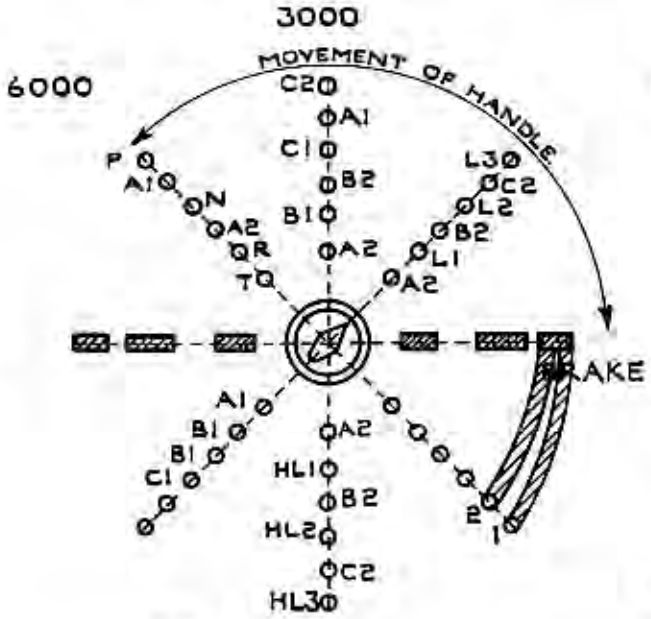
DEVELOPED CONTROL DIAGRAM DOUBLE END TENONER

TYPE WF & WF/B.



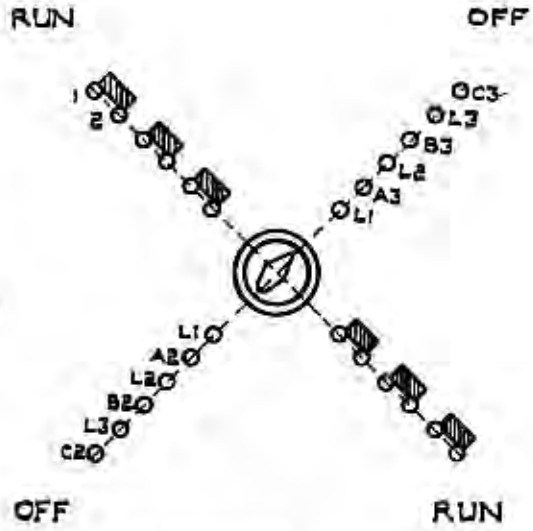
START GAIN

'OFF' CONNECTS	1 TO 2
'ON' CONNECTS	3 TO 4
	L3 TO C
	HL3 TO HC
'BRAKE' CONNECTS	T TO R
	HB TO B
	HC TO C
	P TO C
	N TO B



SCRIBER

'OFF' CONNECTS	1 TO 2
'3000' CONNECTS	L1 TO A2
	L2 TO B2
	L3 TO C2
	A1 TO B1
	B1 TO C1
'6000' CONNECTS	HL1 TO A2
	HL2 TO B2
	HL3 TO C2
	C2 TO A1
	B2 TO C1
	A2 TO B1
'BRAKE' CONNECTS	T TO R
	A2 TO N
	A1 TO P
	1 TO 2

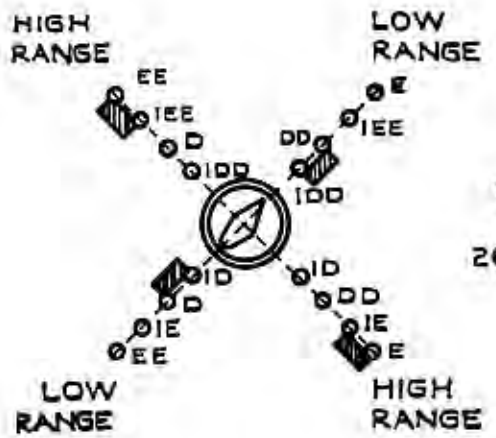


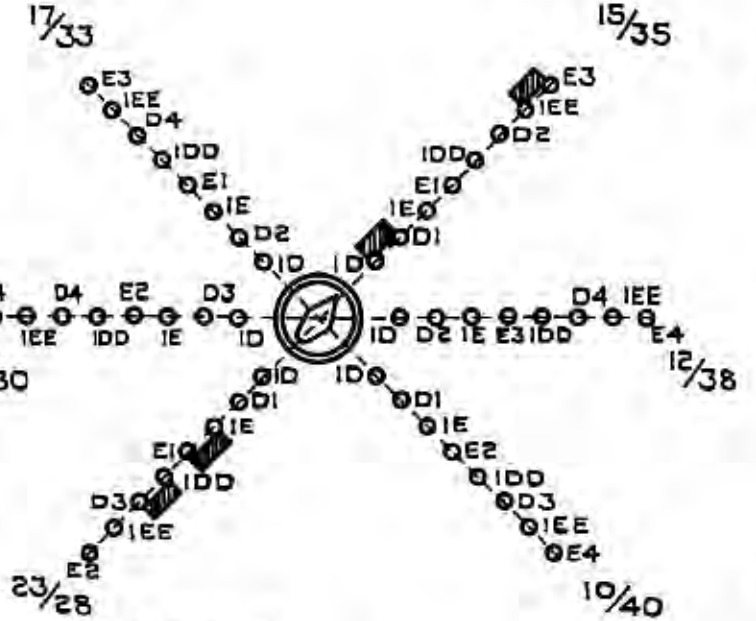
CHANGER

'OFF' CONNECTS	1 TO 2.
'RUN' CONNECTS	L1 TO A2
	L2 TO B2
	L3 TO C2
	L1 TO A3
	L2 TO B3
	L3 TO C3

DEVELOPED CONTROL DIAGRAM DOUBLE END TENONER

TYPE WF & WF/B.





GAINING HEAD REVERSE.

POS. 1. CONNECTS	L1	TO	A2
	L2	TO	B2
	L3	TO	C2
	A1	TO	B1
	C1	TO	B1
POS. 2. CONNECTS	HL1	TO	A2
	HL2	TO	B2
	HL2	TO	C2
	B1	TO	A2
	C1	TO	B2
	A1	TO	C2
POS. 3. CONNECTS	L1	TO	B2
	L2	TO	A2
	L3	TO	C2
	A1	TO	B1
	C1	TO	B1
POS. 4. CONNECTS	HL1	TO	B2
	HL2	TO	A2
	HL3	TO	C2
	B1	TO	A2
	C1	TO	B2
	A1	TO	C2

FEED SPEED CONTROLS.

'LOW RANGE' CONNECTS

IDD	TO	DD
IEE	TO	EE
ID	TO	D
IE	TO	E

'HIGH RANGE' CONNECTS

IDD	TO	D
IEE	TO	E
ID	TO	DD
IE	TO	EE

10/40 FT/MIN CONNECTS

ID	TO	D1
IEE	TO	E4
IDD	TO	D4
IE	TO	E1

12/38 FT/MIN CONNECTS

ID	TO	D2
IEE	TO	E4
IDD	TO	D4
IE	TO	E2

15/35 FT/MIN CONNECTS

ID	TO	D1
IEE	TO	E3
IDD	TO	D3
IE	TO	E1

17/33 FT/MIN CONNECTS

ID	TO	D2
IEE	TO	E3
IDD	TO	D3
IE	TO	E2

20/30 FT/MIN CONNECTS

ID	TO	D3
IEE	TO	E4
IDD	TO	D4
IE	TO	E3

23/28 FT/MIN CONNECTS

ID	TO	D1
IEE	TO	E2
IDD	TO	D2
IE	TO	E1

DEVELOPED CONTROL DIAGRAM DOUBLE END TENONER

TYPE WF & WF/B.

GENERAL

Users are recommended to display in appropriate position in maintenance departments Wadkin Electrical Maintenance Instruction Card No. 356, which is issued gratis on application. This deals with general installation maintenance.

ELECTRICAL SPARES

BRUSHES

Frequency changer, MZ.4826	Part No. SK.78/396
Feed motor, CMT.3519	Part No. SK.26/161

CONTACTS AND SPRINGS FOR ROTARY SWITCHES

Fixed contacts	Part No. SK.24747
Moving contacts (roller)	Part No. SK.22205
Moving contact spring	Part No. SK.20764

CONTACTOR SPARES

Main, and gaining head contactor, size No. 2

Operating coil (400/440 volts, 3 phase, 50 cycles)	Cat. No. MS.250/3
Fixed and moving contacts (per pole set)	Cat. No. MSA.580

Feed contactors, size No. 1.

Operating coil (400/440 volts, 3 phase, 50 cycles)	Cat. No. MS.150/3
Fixed and moving contacts (per pole set)	Cat. No. MSA.567

FUSES AND RECTIFIER

Main fuses (50 amp.)	Part No. 15947
Rectifier	Part No. PB.112-8-1W

SD 5564

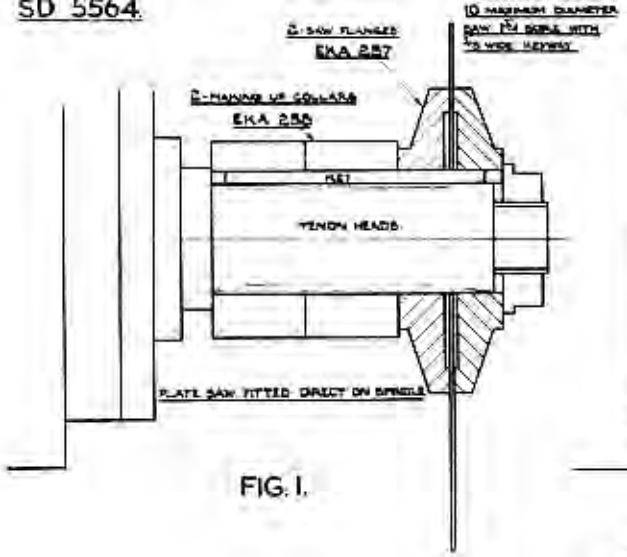


FIG. 1.

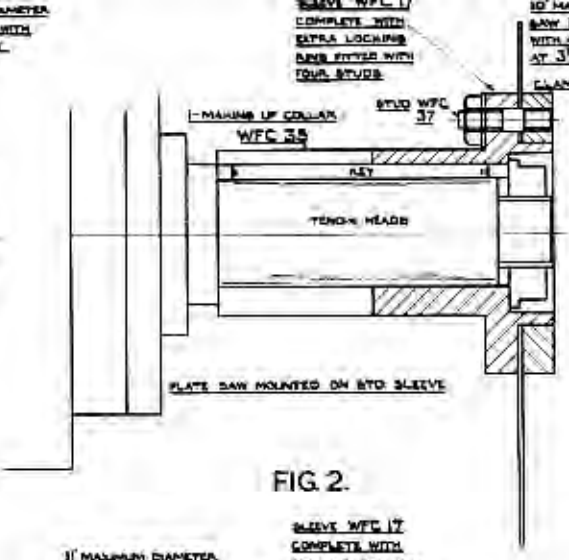


FIG. 2.

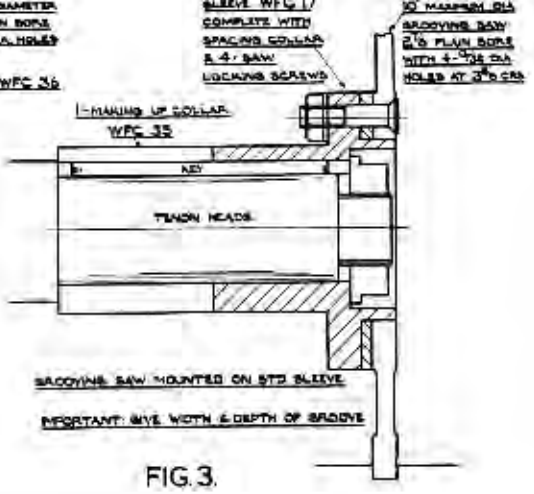
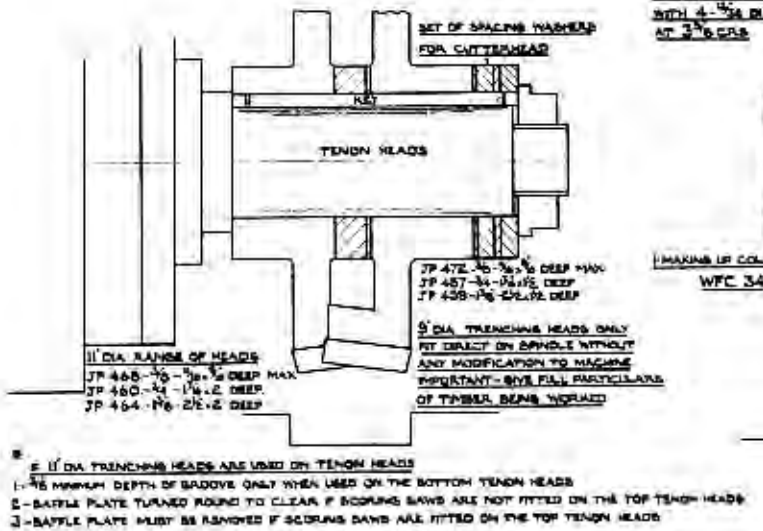


FIG. 3.



* & 11" DIA TRENCHING HEADS ARE USED ON TENON HEADS
1 - 5/16 MINIMUM DEPTH OF GROOVE ONLY WHEN USED ON THE BOTTOM TENON HEADS
2 - BAFFLE PLATE TURNED ROUND TO CLEAR IF SCORING SAWS ARE NOT FITTED ON THE TOP TENON HEADS
3 - BAFFLE PLATE MUST BE REMOVED IF SCORING SAWS ARE FITTED ON THE TOP TENON HEADS

FIG. 4.

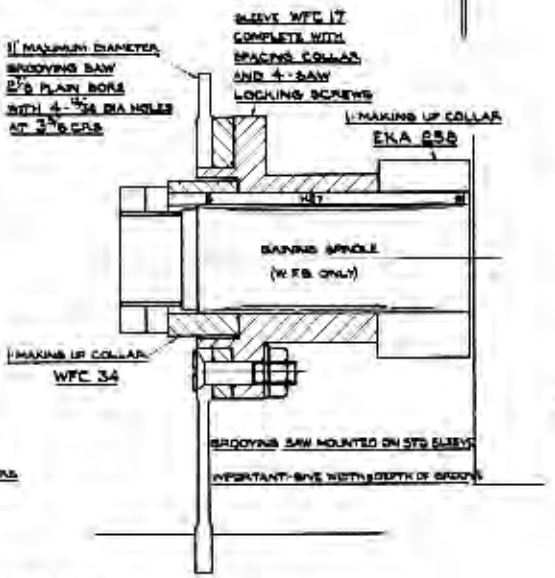


FIG. 5.

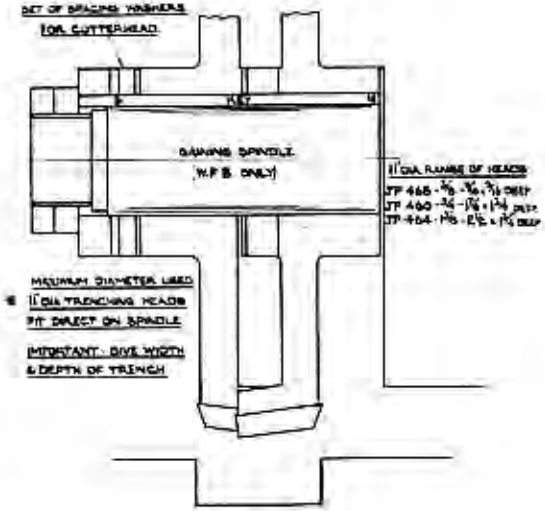


FIG. 6.

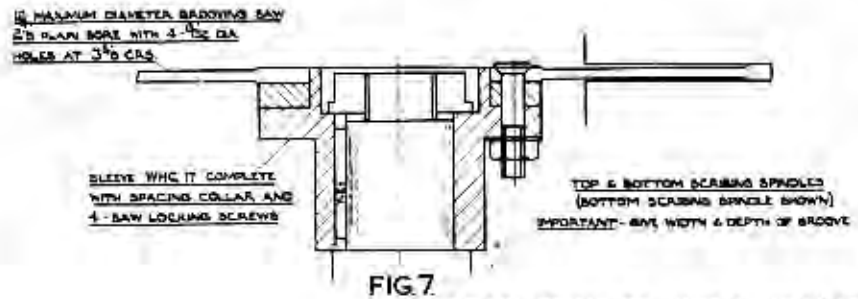


FIG. 7.

NOTE - ALL SPINDLES 1¼ DIA WITH ⅜ WIDE KEY

1. ONLY ONE SPINDLE OF EACH TYPE SHOWN.
2. PLEASE STATE SPECIFICALLY WHAT SPINDLES THE SAW IS BEING USED ON
   LOOKING FROM THE FEEDING-IN-END OF MACHINE.
3. ADVISABLE TO SEND SKETCH OF TIMBER WITH ALL DETAILS.
4. DUE TO SLEEVE WFC 17 BEING SUITABLE FOR SEVERAL SPINDLES, WHERE POSSIBLE THE SAWS
   FOR GROOVING WILL BE DRILLED AND SUNK TO RUN IN BOTH DIRECTIONS.
5. 9" DIA TRENCHING HEADS CAN BE USED ONLY ON THE TENON SPINDLES.

6. DEPTH OF GROOVE PERMISSABLE ON TENON HEADS IS GOVERNED PRIMARILY WITH TIMBER & POSITION OF GROOVE.
   FIGURES GIVEN ARE FOR A GUIDE ONLY & MAY BE FOUND CAN BE INCREASED IN ACTUAL PRACTICE.

METHOD OF FITTING SAWS & TRENCHING HEADS ON DOUBLE END TENONERS TYPE WF & WFB