

# **SINGER**

245-4

# USE ONLY **SINGER**\* OILS and LUBRICANTS

*They insure freedom from lubricating trouble and  
give longer life to sewing equipment*

*The following are the correct lubricants for this machine:*

**TYPE B**—MANUFACTURING MACHINE OIL, HEAVY GRADE

*When a stainless oil is desired, use:*

**TYPE D**—MANUFACTURING MACHINE OIL, STAINLESS,  
HEAVY GRADE

**GEAR LUBRICANT**

This specially prepared grease is recommended for gear  
lubrication on manufacturing sewing machines.

## OTHER **SINGER** LUBRICANTS

**TYPE E**—STAINLESS THREAD LUBRICANT

For lubricating the needle thread of sewing machines for  
stitching fabrics or leather where a stainless thread lubri-  
cant is required.

**TYPE F**—MOTOR OIL

For oil lubricated motors and plain bearings in power  
tables and transmitters.

**NOTE:** All of the above oils are available in 1 quart,  
1 gallon and 5 gallon cans or in 55 gallon drums.

**BALL BEARING LUBRICANT**

This pure grease is specially designed for the lubrication  
of ball bearings and ball thrust bearings of motors and  
electric transmitters, ball bearing hangers of power tables,  
etc. Furnished in 1 lb. and 4 lb. tins.

19791

## INSTRUCTIONS

FOR USING AND ADJUSTING

# SINGER\*

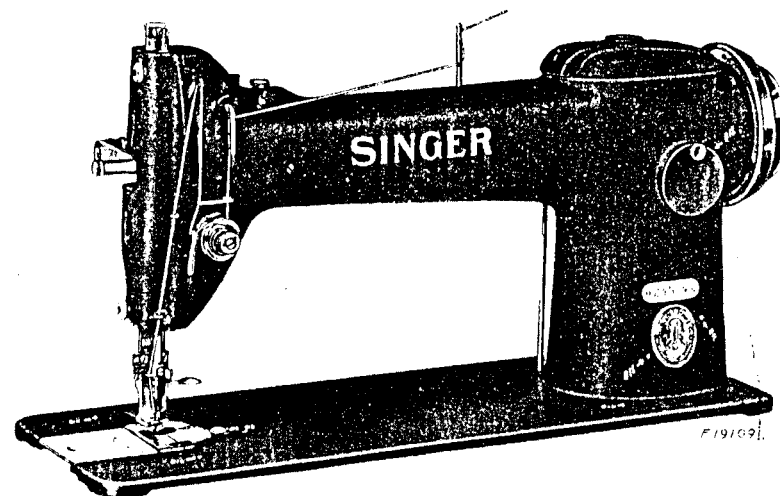
## SEWING MACHINE

### 245-4

GEAR DRIVEN ROTARY HOOK

SINGLE NEEDLE

LOCK STITCH



\*A TRADE MARK OF

THE SINGER MANUFACTURING COMPANY

## TO ALL WHOM IT MAY CONCERN:

The improper placing or renewal of the Trade Mark "SINGER" or any other of the Trade Marks of The Singer Manufacturing Company (all of which are duly Registered Trade Marks) on any machine that has been repaired, rebuilt, reconditioned, or altered in any way whatsoever outside a SINGER factory or an authorized SINGER agency is forbidden.

### THE IMPORTANCE OF USING **SINGER**\* PARTS AND NEEDLES IN **SINGER** MACHINES

The successful operation of SINGER machines can only be assured if SINGER parts and needles are used. Supplies are available at all SINGER Shops for the Manufacturing Trade, and mail orders will receive prompt attention.

SINGER Needles should be used  
in SINGER Machines.  
These Needles and their Containers  
are marked with the  
Company's Trade Mark "SIMANCO.\*" 1

Needles in Containers marked  
"FOR SINGER MACHINES"  
are NOT **SINGER** made needles. 2

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## DESCRIPTION

Machine 245-4 has one needle and a gear-driven rotary hook on a horizontal axis, and makes the lock stitch. It is equipped with a verticle trimmer and is used for stitching and trimming light, medium or heavy weight fabrics in one operation.

The machine can be furnished to trim from 1/16 to 1/4 inch from the line of stitching. Unless otherwise ordered, it will be furnished with a 1/8 inch cutting bar for 1/8 inch trimming margin. An extra 3/16 inch cutting bar and presser foot also are furnished. When a different width is ordered, the extra cutting bar will be one size larger, except when a 1/4 inch cutting bar is specified.

Maximum stitch length is 5-1/2 to the inch.

Needle bar stroke is 1-13/64 inch.

Presser bar lift is 5/16 inch.

The machine is equipped with a knee lifter.

## SPEED

3500 stitches per minute, depending upon the nature of the material being sewn. The machine should be run slower than the maximum speed until the parts which are in movable contact become glazed by their action upon each other.

## Hints for Perfect Operation

The machine pulley must always turn over toward the operator.

Do not run the machine with the presser foot resting on the feed without cloth under the presser foot.

Do not run the machine when both bobbin case and needle are threaded unless there is material under the presser foot.

Do not try to help the machine by pulling the fabric lest you bend the needle. The machine feeds the work without assistance.

The slide over the bobbin case should be kept closed when the machine is in operation.

Do not press on the knee lifter lever while the machine is in operation, as this might prevent the work from feeding properly.

NEVER TOUCH THE STITCH REGULATOR PLUNGER WHEN THE MACHINE IS RUNNING.

## LUBRICATION

Use "TYPE B" or "TYPE D" OIL, sold only by Singer Sewing Machine Company. For description of these oils, see inside front cover.

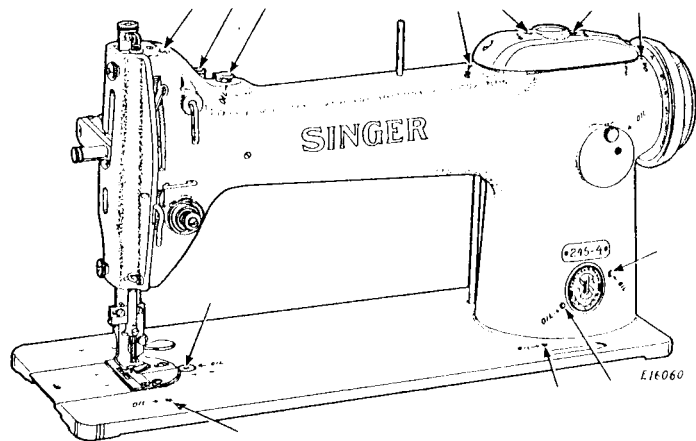


Fig.2. Front View of 245-4 Machine - Oiling Points

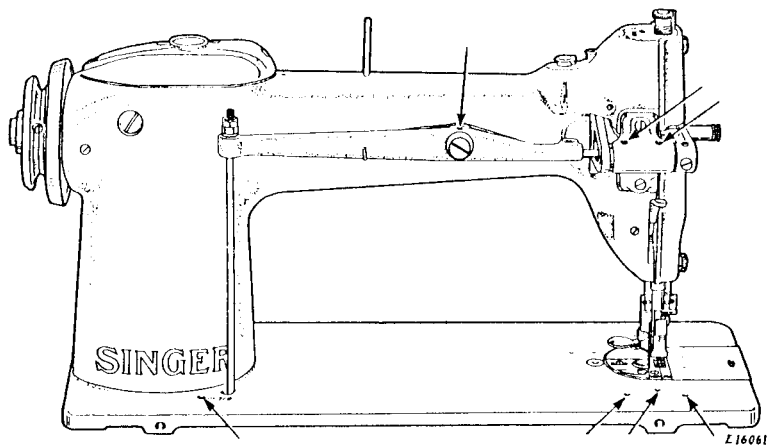


Fig.3. Rear View of 245-4 Machine - Oiling Points

Apply oil through all oil holes indicated by the unlettered arrows in Figs. 2, 3 and 8 and, when used continuously, the machine should be oiled at least four times daily.

Keep all wicking saturated with oil.

Use GEAR LUBRICANT sold only by Singer Sewing Machine Company. When the machines leave the factory, the gear cases are packed with sufficient GEAR LUBRICANT for approximately 160 hours of operation. Every 160 hours of operation thereafter, replenish the gear cases (B, Fig.4) and (F, Fig.5) with GEAR LUB-

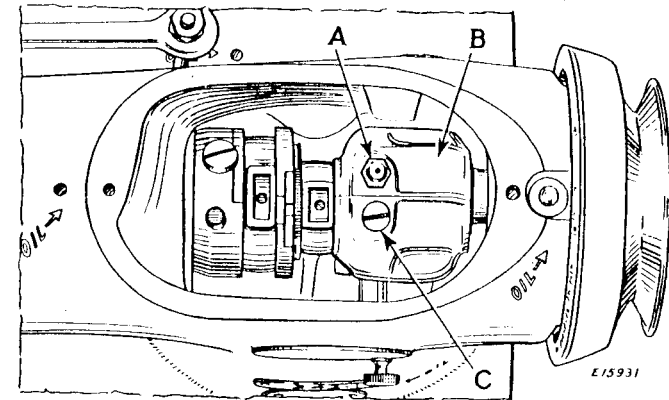


Fig.4. Top View, Arm Top Cover Removed. Upper Gear Case Lubrication

RICANT (marked for use with Class 245 Machines), using, for this purpose, SINGER Grease Gun 121587 (3 oz. capacity) or SINGER Grease Gun 121588 (1/2 lb. capacity). These grease guns are supplied on order at extra charge. Take out the two screws which fasten the arm top cover to the machine arm and remove the level hole screw (C, Fig.4). After making certain that the lubricant is issuing from the grease gun, apply lubricant through the grease fitting (A, Fig.4). Do not overfill the gear case, nor apply enough to cause it to emerge from the hole at (C). The quantity can be roughly checked by observation through the hole at (C). Replace screw (C) and arm top cover.

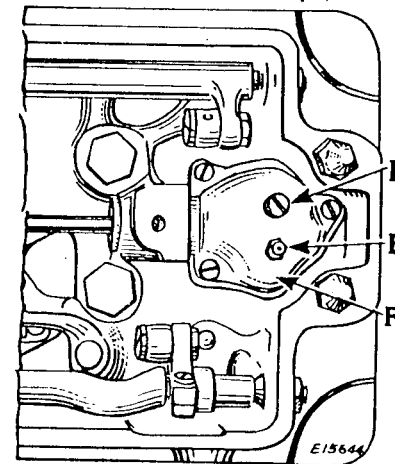


Fig.5. Lower Gear Case Lubrication.

Lay the machine back on its rear side and remove level hole screw (D, Fig.5) and apply lubricant through grease fitting (E, Fig.5) in the same manner and in the same quantity as for gear case (B, Fig.4).

**CAUTION:** To avoid overfilling the gear cases, do not turn the machine pulley while applying grease through these grease fittings.

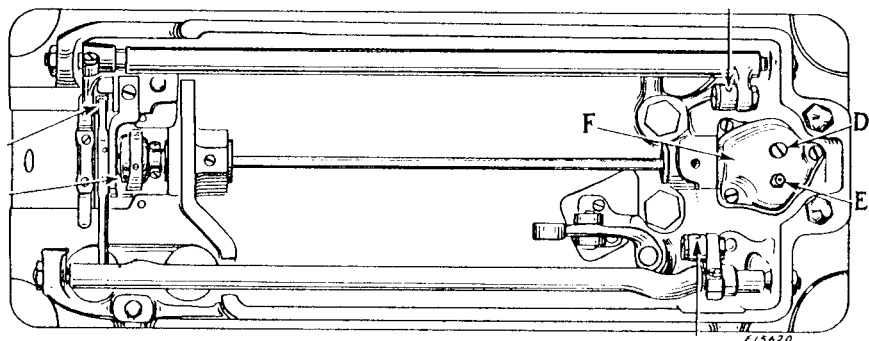


Fig.6. Oiling Points in Machine Bed.

At least four times each day apply ONE DROP of oil to the bobbin case holder bearing in the sewing hook race, as shown in Fig.7.

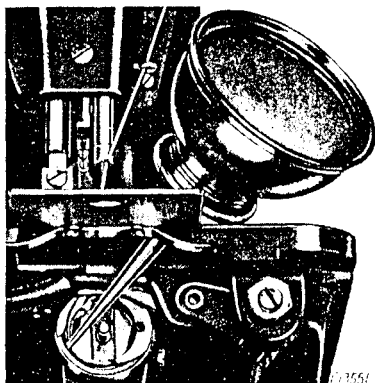


Fig.7. Oiling Point in Hook Race.

**CAUTION:** Never oil the sewing hook race through the needle hole in the throat plate, nor flood the hook with oil.

## Needles

Needles for Machine 245-4 are of Class and Variety 16 x 95 and are made in Sizes 8,9,10,11,12,13,14,15,16,17,18,19,20,21,22 and 23.

The above needles are regularly nickel finish but are available with chromium finish if ordered.

The size of the needle to be used is determined by the size of the thread which must pass freely through the eye of the needle. Rough or uneven thread, or thread which passes with difficulty through the eye of the needle, will interfere with the successful use of the machine.

Orders for needles must specify the QUANTITY required, the SIZE NUMBER, also the CLASS and VARIETY NUMBERS separated by an x.

The following is an example of an intelligible order:

"100 No.16, 16 x 95 Needles"

The best stitching results will be obtained with needles sold only by Singer Sewing Machine Company.

## Thread

Left twist thread should be used in the needle. Either right or left twist thread can be used in the bobbin.

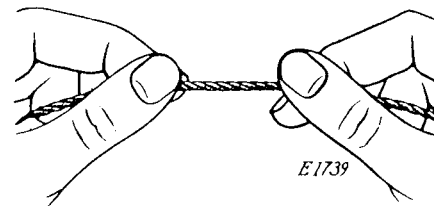


Fig.8. How to Determine the Twist

Hold the thread as shown above. Turn the thread over toward you between the thumb and forefinger of the right hand; if left twist, the strands will wind tighter; if right twist, the strands will unwind.

## Relative Sizes of Needles and Thread

The following sizes of needles and thread are recommended according to the class of work:

Sizes of Needles	Classes of Work	Sizes of Cotton, Linen, Silk or Nylon
14	Shirtings, Sheetings, Calicoes, Muslins, Silks, Dress Goods and all classes of general work.	60 to 80 Cotton A and B Silk or Nylon
16 and 17	All kinds of heavy Calicoes, light Woolen Goods, heavy Silk, Seaming, Stitching, etc.	40 to 60 Cotton C Silk or Nylon
18	Tickings, Upholstery, Woolen Goods, Trousers, Boys' Clothing, Cloaks, etc.	30 to 40 Cotton D Silk or Nylon
19	Heavy Woolens, Tickings, Bags, Heavy Coats, Trousers, Heavy Clothing, generally.	20 to 30 Cotton E Silk or Nylon 60 to 80 Linen
21	Bags, Coarse Cloths and Heavy Goods.	16 to 20 Cotton 40 to 60 Linen

## To Remove the Bobbin

Turn the machine pulley over toward you until the needle moves up to its highest position. Draw out the slide in the bed of the

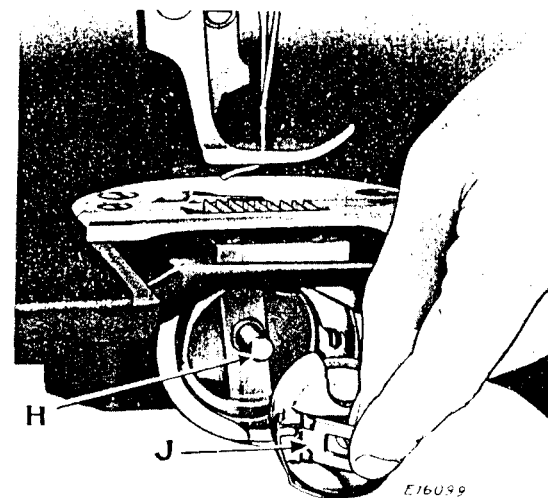


Fig. 9. Removing the Bobbin

machine, reach down with the thumb and forefinger of the left hand, open the bobbin case latch (J, Fig. 9) with the thumb and lift out the bobbin case. While the latch remains open, the bobbin is retained in the bobbin case. Release the latch, turn the open end of the bobbin case downward and the bobbin will drop out.

## To Wind the Bobbin

(See Fig. 10)

Fasten the bobbin winder to the table with its driving pulley in front of the machine belt, so that the pulley will drop away from the belt when sufficient thread has been wound upon the bobbin.

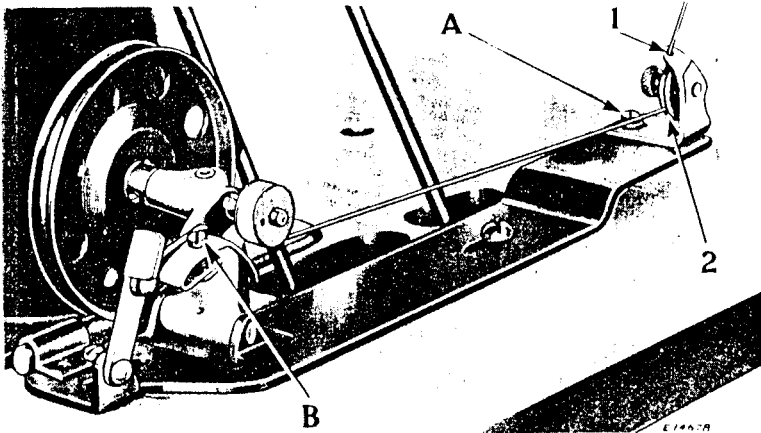


Fig. 10. Winding the Bobbin

Place the bobbin on the bobbin winder spindle and push it on as far as it will go.

Pass the thread down through the thread guide (1) in the tension bracket, around the back of, and between, the tension discs (2). Then wind the end of the thread around the bobbin a few times, push the bobbin winder pulley over against the machine belt and start the machine.

When sufficient thread has been wound upon the bobbin, the bobbin winder will stop automatically.

If the thread does not wind evenly on the bobbin, loosen the screw (A) in the tension bracket and move the bracket to the right or left as may be required, then tighten the screw.

The amount of thread wound on the bobbin is regulated by the screw (B). To wind more thread on the bobbin, turn the screw (B) inward. To wind less thread on the bobbin, turn this screw outward.

Bobbins can be wound while the machine is stitching.

## To Thread the Bobbin Case

Hold the bobbin between the thumb and forefinger of the right hand, as shown in Fig. 11, the thread drawing on the bottom from the left toward the right.

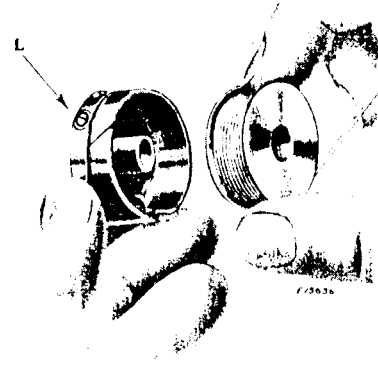


Fig. 11

With the left hand, hold the bobbin case as shown in Fig. 11, the slot in the edge being near the top, and place the bobbin into it.

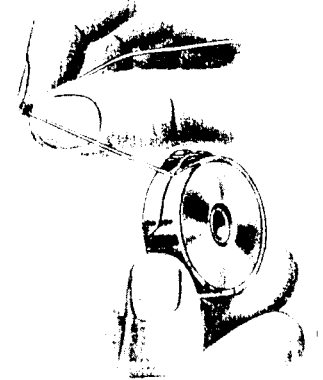


Fig. 13

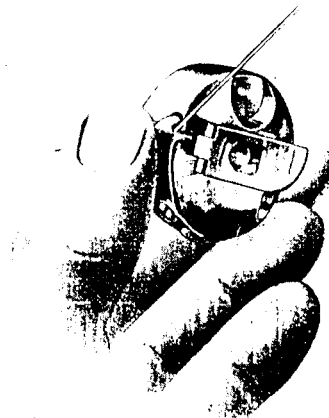


Fig. 12

Then pull the thread into the slot in the edge of the bobbin case as shown in Fig. 12, draw the thread under the tension spring and into the delivery eye at the end of the tension spring (see Fig. 13).

## To Replace the Bobbin Case

After threading, take the bobbin case by the latch and place the bobbin case on the center stud (H, Fig. 9) of the bobbin case holder;

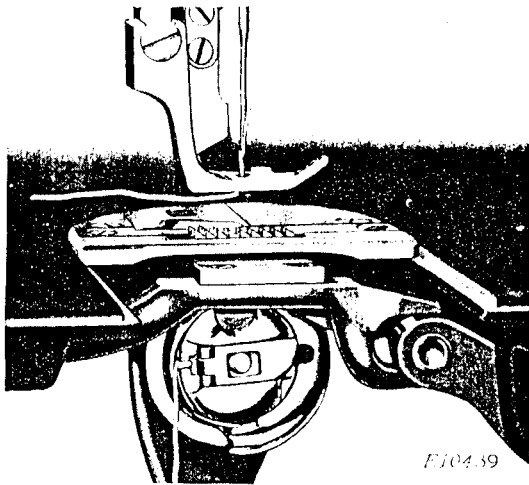


Fig. 14. Bobbin Case Threaded and Replaced

release the latch and press the bobbin case back until the latch catches the groove near the end of the stud (see Fig. 14). Allow about two inches of thread to hang free, and replace the slide in the bed of the machine.

## To Set the Needle

Turn the machine pulley over toward you until the needle bar moves up to its highest position; loosen the screw in the lower end of the needle bar and put the needle up into the bar as far as it will go, with the long groove of the needle toward the left and the eye of the needle directly in line with the arm of the machine, then tighten the screw.

## Upper Threading

Pass the thread from the unwinder, or from the pin on the top of the machine, from right to left through the top hole (1) in the

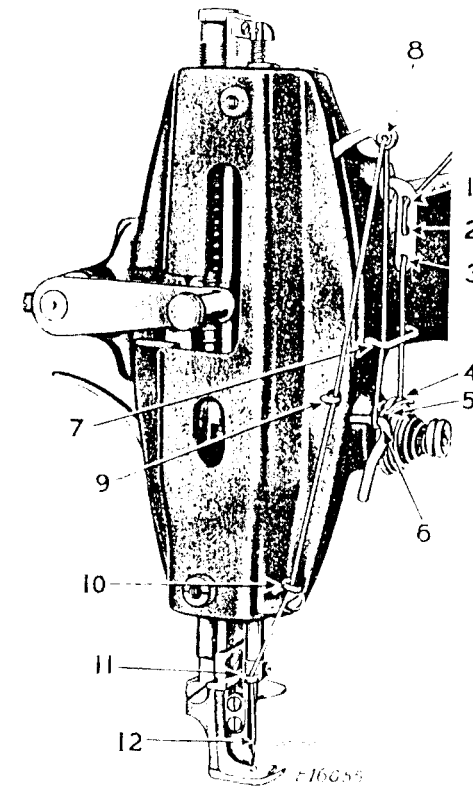


Fig. 15. Upper Threading

thread retainer, from left to right through the center hole (2) in the thread retainer, and from right to left through the bottom hole (3) in the thread retainer, down under and from right to left between the tension discs (4), into the thread take-up spring (5), under the slack thread regulator (6), up and back of the wire thread guide (7), up and from right to left through the hole in the end of the thread take-up lever (8), down through the thread guide (9), down through the thread eyelet (10), down through guide (11) on the needle clamp, and from left to right through the eye (12) of the needle. Draw about two inches of thread through the needle eye with which to commence sewing.



## To Prepare for Sewing

With the left hand, hold the end of the needle thread, leaving it slack from the hand to the needle, turn the machine pulley over

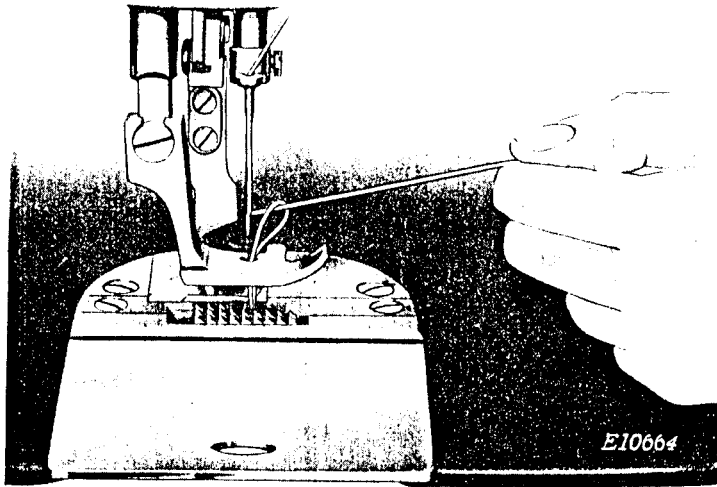


Fig. 16. Drawing Up the Bobbin Thread

toward you until the needle moves down and up again to its highest position, thus catching the bobbin thread; draw up the needle thread and the bobbin thread will come up with it through the hole in the throat plate (see Fig. 16). Lay both threads back under the presser foot.

## To Commence Sewing

Place the material beneath the presser foot, lower the presser foot and commence to sew, turning the machine pulley over toward you.

## To Remove the Work

Let the thread take-up lever rest at its highest position, raise the presser foot, draw the work back and cut the threads close to the goods.

## Tensions

For ordinary stitching, the needle and bobbin threads should be locked in the center of the thickness of the material, thus:



Fig. 17. Perfect Stitch

If the tension on the needle thread is too tight, or if that on the bobbin thread is too loose, the needle thread will lie straight along the upper surface of the material, thus:



Fig. 18. Tight Needle Thread Tension

If the tension on the bobbin thread is too tight, or if that on the needle thread is too loose, the bobbin thread will lie straight along the under side of the material, thus:



Fig. 19. Loose Needle Thread Tension

## To Regulate the Tensions

THE TENSION ON THE NEEDLE THREAD SHOULD BE REGULATED ONLY WHEN THE PRESSER FOOT IS DOWN. Having lowered the presser foot, turn the small thumb nut at the front of the tension discs over to the right to increase the tension. To decrease the tension, turn this thumb nut over to the left.

The tension on the bobbin thread is regulated by the large screw (L, Fig. 11) in the tension spring on the outside of the bobbin case. To increase the tension, turn this screw over to the right. To decrease the tension, turn this screw over to the left.

When the tension on the bobbin thread has been once properly adjusted, it is seldom necessary to change it, as a correct stitch can be usually be obtained by varying the tension on the needle thread.

## To Regulate the Pressure on the Material

The pressure on the material is regulated by the thumb screw (M, Fig. 20). To increase the pressure, turn this thumb screw over

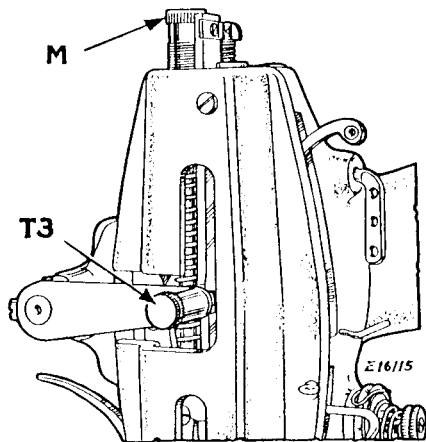


Fig. 20. Regulating Pressure on the Material

to the right. To decrease the pressure, turn this thumb screw over to the left.

## To Regulate Length of Stitch

To change stitch length, press the plunger (N, Fig. 21) and turn the machine pulley slowly, by hand, until the plunger drops into a

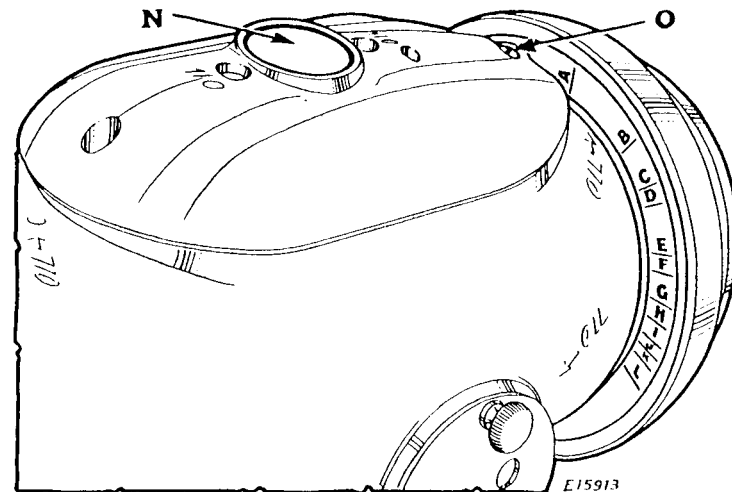


Fig. 21. Stitch Regulator

notch in the feed eccentric. Then turn the machine pulley forward or backward to increase or decrease the length of stitch which is indicated by the letters on the indicator plate being opposite the screw at (O).

The indicator plate is lettered from "A" to "L" inclusive. The stitches are longer as the letter "A" is approached, and shorter as the setting approaches the letter "L".

When the desired setting is obtained, release the plunger.

**CAUTION** - Never press the plunger (N) while the machine is running.

## To Adjust the Trimmer

The knife (Q3, Fig. 22) should be set so that its cutting edge presses against the edge of the throat plate cutting bar to ensure making a shear cut.

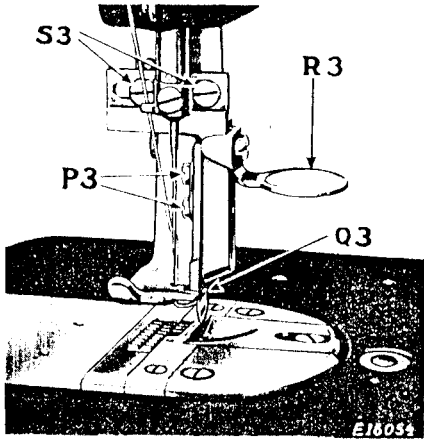


Fig. 22. Adjustments on Trimmer

The sidewise adjustment of the knife is made by loosening the two screws (S3, Fig. 22) and moving the knife holder to the right or left, as may be required, after which the two screws (S3) should be securely tightened.

To adjust the knife to the correct height, turn the balance wheel over toward you until the knife is at its lowest position, then loosen the two screws (P3, Fig. 22) and move the knife

up or down on the knife holder, so that the cutting edge of the knife just passes the edge of the throat plate cutting bar, after which securely tighten the two screws (P3).

Care must be taken to keep the knife sharp.

## To Disengage the Trimmer

To disengage the trimmer, pull out the plunger (T3, Fig. 20, page 15) and raise the handle (R3, Fig. 22) as far as it will go. To re-engage the trimmer, press down the handle (R3).

## To Change the Trimming Margin

The distance from the trimmed edge to the line of stitching is determined by the throat plate cutting bar used, each throat plate cutting bar being made for but one trimming margin.

The trimming margin is measured from the center of the needle hole to the cutting edge of the throat plate cutting bar.

To change from one trimming margin to another, it is only necessary to change the throat plate cutting bar and presser foot and adjust the upper knife.

## To Sharpen the Knife

When it is necessary to resharpen the knife, loosen the two screws which fasten the knife to the knife holder and remove the knife. Knife Grinder Machine 701-8 should be used to sharpen the knife. As one grinder can be used for several machines, it should be ordered separately.

# INSTRUCTIONS FOR ADJUSTERS AND MECHANICS

## To Set the Needle Bar at the Correct Height

See that the needle is pushed up into the needle bar as far as it will go, then remove the face plate.

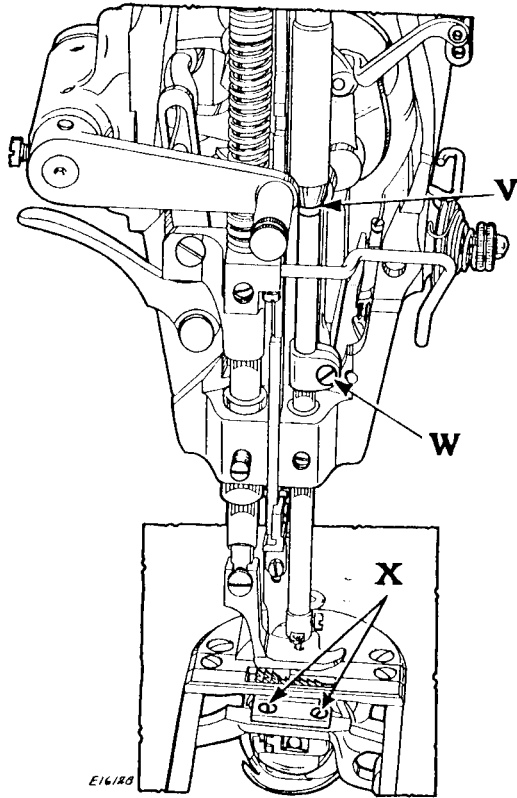


Fig. 25.

### Needle Bar Set at Correct Height

ing the upper timing mark with the lower end of the needle bar bushing, turn the machine pulley to bring the hook point to the center of the needle, loosen screw (W) and move the needle bar up or down to bring the top of the needle eye 1/32 inch below the point of the hook, then securely tighten screw (W). Loosen the needle bar bushing set screw at the top of the machine arm and, while the hook point is at the center of the needle and 1/32 inch above the top of the needle eye, move the needle bar bushing up or down to bring its lower end exactly even with the LOWER TIMING MARK on the needle bar, then securely tighten the needle bar bushing set screw.

The needle bar which is in the machine when shipped from the factory, has two timing marks near its upper end. Rotate the machine pulley until the needle bar moves down to its lowest position. The UPPER TIMING MARK on the needle bar should then be centered with the lower end of the needle bar bushing, as shown at (V) in Fig. 25. In case the needle bar is not set at the correct height, loosen screw (W, Fig. 25) and move the needle bar up or down until the UPPER TIMING MARK is centered with the lower end of the needle bar bushing, as shown at (V), then securely tighten screw (W).

In the event that the setting of the needle bar bushing has been disturbed, thus making it impossible to set the needle bar for correct height by center-

## To Time the Sewing Hook

Remove presser foot, slide plate, throat plate and bobbin case. Take out the two screws (X, Fig. 25), and remove feed dog.

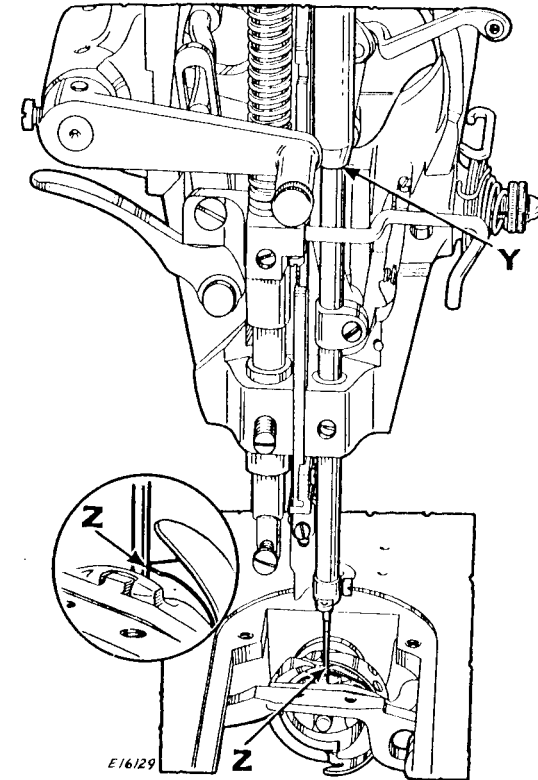


Fig. 26. Needle and Sewing Hook Correctly Timed

To determine that the hook is correctly timed, place a new needle in the machine, then turn the balance wheel over toward you until the LOWER TIMING MARK on the needle bar is centered with the lower end of the needle bar bushing as shown at (Y, Fig. 26) when the needle bar is on its upward stroke. With the needle bar in this position, the point of the hook should be at the center of the needle as shown at (Z, Fig. 26). The inset in circle at the left of Fig. 26 plainly shows this position of the hook point relative to the needle.

In case the hook is not correctly timed, loosen the three screws (E2, Fig. 27) in the hub of the hook. These three screws can be reached from the top of the machine bed through the opening left by the re-

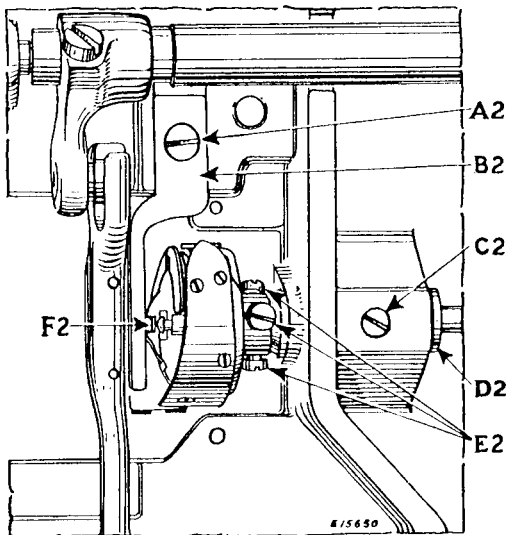


Fig. 27. View of Underside of Machine Showing Bobbin Case Holder Position Bracket and Adjustments on Machine

moval of the throat plate, although, for purposes of illustration, the screws are shown only in the view of the underside of the machine in Fig. 27. Rotating the machine pulley of the machine will bring these screws, one at a time, directly under the throat plate opening where they can be easily reached with a screwdriver from the top of the machine bed.

After loosening the three screws (E2) turn the hook on its shaft to bring the point of the hook at the center of the needle as shown at (Z, Fig. 28), then tighten the three screws (E2).

The hook should be set as close as possible to the needle without touching. If the hook is too close to the needle or too far away from it, loosen the three screws (E2) and the bushing screw (C2, Fig. 27) and drive the bushing (D2, Fig. 27) in or out, as may be required, until the hook just clears the needle, being very careful not to damage the bushing, then securely tighten the bushing screw (C2) and the three screws (E2).

## To Remove and Replace the Sewing Hook

Remove the needle, slide plate and bobbin case. Take out the screw (A2, Fig. 27) and remove the bobbin case holder position bracket

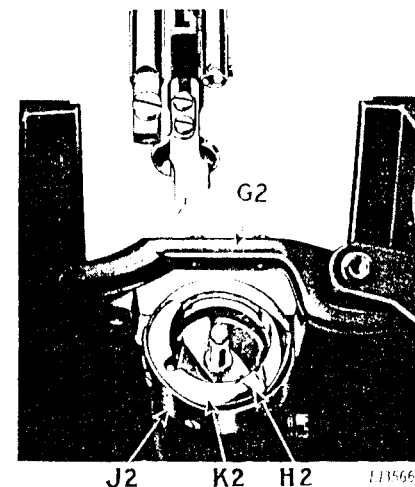


Fig. 28. Showing Correct Position of Thread Guard and Bobbin Case Holder for Removal of Sewing Hook

(B2, Fig. 27). Loosen the three set screws (E2, Fig. 27) in the hub of the hook, then turn the machine pulley over toward you until the feed bar (G2, Fig. 28) is raised to its highest position. Turn the sewing hook until the thread guard (J2, Fig. 28) is at the bottom, as shown in Fig. 28, and turn the bobbin case holder (K2, Fig. 28) until it is in position shown in Fig. 28. The sewing hook can then be removed from the hook shaft.

When placing a new sewing hook on the shaft, have the thread guard (J2) of the hook at the bottom and the bobbin case holder (K2) turned to the position shown in Fig. 28, so that the hook will clear the feed bar (G2).

When the hook is in position on the shaft, turn the bobbin case holder (K2, Fig. 28) until the notch (H2, Fig. 28) is at the top, then replace the bobbin case holder position bracket (B2, Fig. 27) being careful to see that the position stud (F2, Fig. 27) enters the notch at the top of the bobbin case holder, as shown in Fig. 27, then securely

fasten the position bracket by means of the screw (A2, Fig. 27). Replace the needle and time the sewing hook as instructed in pages 23 and 24. When tightening the three screws (E2, Fig. 27) in the hub of the hook, draw the hook shaft toward the needle bar end of the machine and press the hook toward the machine pulley to take up the end play in the shaft. Then replace the bobbin case and slide plate.

### To Remove and Replace the Sewing Hook Shaft

Remove the sewing hook as instructed on page 25. Take out the three screws (L2, Fig. 29) and remove the cover of the gear case (K), then wipe the grease from the gears.

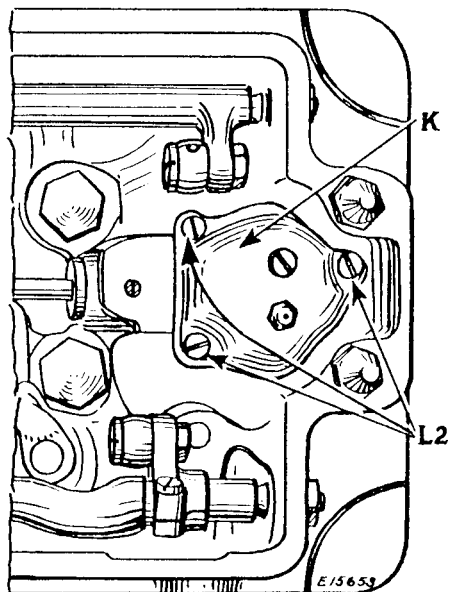


Fig. 29. Removing Lower Gear Case Cover for Hook Shaft Removal

NOTE - It is good practice to mark these gears, before removal of the hook shaft, to insure that, in case the gear (O2, Fig. 30) becomes displaced, it can be given its original meshing with the gear (N2, Fig. 30) on the upright arm shaft.

Loosen the two set screws in the gear (O2) and, while holding the gears in mesh, withdraw the hook shaft (M2) from the sewing hook end of the machine, as indicated in Fig. 30. Then while still holding the gears (O2) and (N2) in mesh, insert the replacement shaft through the

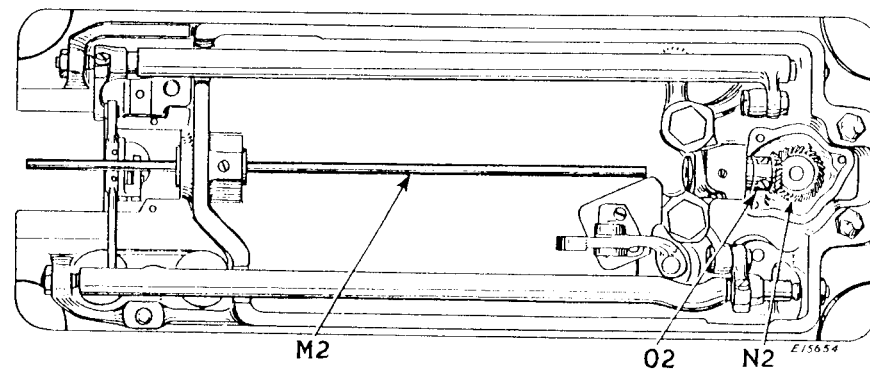


Fig. 30. Removing and Replacing Sewing Hook Shaft

front (left hand) bearing, the rear (right hand) bearing and through the gear (O2). When inserting the replacement shaft, have the end with the flat portion to the right so that one of the two screws in the gear (O2) will bear against it when tightened. The shaft should be set so that its left hand end is flush with the front (left hand) side of the body of the sewing hook.

When the shaft is correctly positioned, securely tighten the two set screws in the gear (O2), making sure that one of these two screws bears against the flat portion on the shaft. Time the sewing hook as instructed on pages 23 and 24.

Replace the gear case cover and fasten it in place with the three screws (L2, Fig. 29).

## To Remove and Replace Needle Bar Link and Thread Take-up

Remove face plate, needle, needle clamp, needle bar and presser foot. Take out the screw (Q2, Fig. 33) to disconnect the knife bar lifting spring guide and guide spring (N3, Fig. 33) from the upper end of the knife bar, and remove the spring guide and spring (N3).

Loosen screw (W2, Fig. 31) and remove the foot lifting lever pin (T2, Fig. 31) from the foot lifting lever. Take out the two screws (P2, Fig. 31) and remove the assembly of parts consisting of the knife bar driving crank bracket (S2, Fig. 31), knife bar driving crank (Y2, Fig. 31) and knife bar crank (R2, Fig. 31).

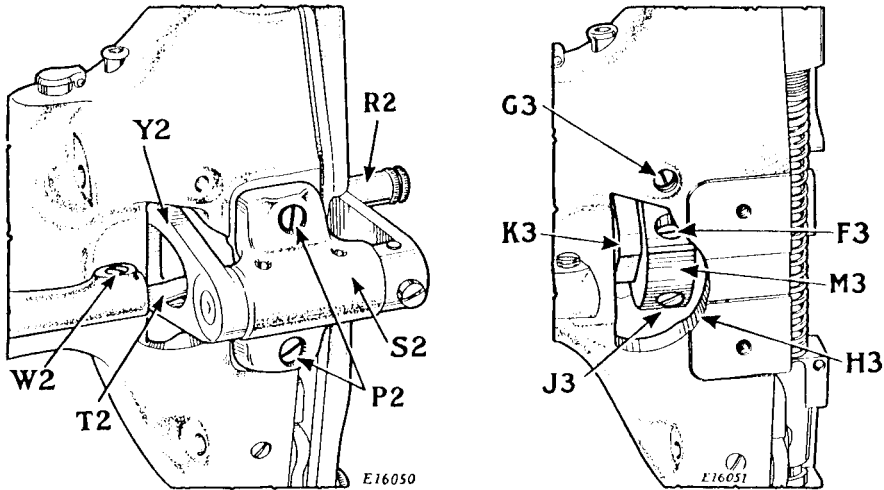


Fig. 31. Removing Knife Bar Crank Assembly

Fig. 32. Removing Needle Bar Link and Thread Take-up

Remove presser bar thumb screw, presser bar spring, presser bar, presser bar slide bracket and presser bar lifting and releasing lever bracket. Be careful not to lose the small washer which is positioned at the upper end of the presser bar spring. Then take out the knife bar. **NOTE** - Should only the knife bar require replacement, it can be removed from the machine after the removal of only the presser bar.

Turn the machine pulley to bring the needle bar connecting link (Z2, Fig. 33) down to its lowest position, loosen the needle bar bushing set screw (V2, Fig. 33) and remove this bushing by driving it downward.

Through the opening (H3, Fig. 32) at the rear side of the machine head, loosen, first, position screw (F3, Fig. 32), then loosen set screw (J3, Fig. 32) in the needle bar crank; also loosen set screw (G3, Fig. 32) which holds the thread take-up link hinge stud. The complete take-up assembly, including the needle bar connecting link and stud, can then be removed from the face of the machine. The needle bar connecting link (Z2, Fig. 33) can be removed separately after removal of the needle bar and the hinge screw (left hand thread) (U2, Fig. 33).

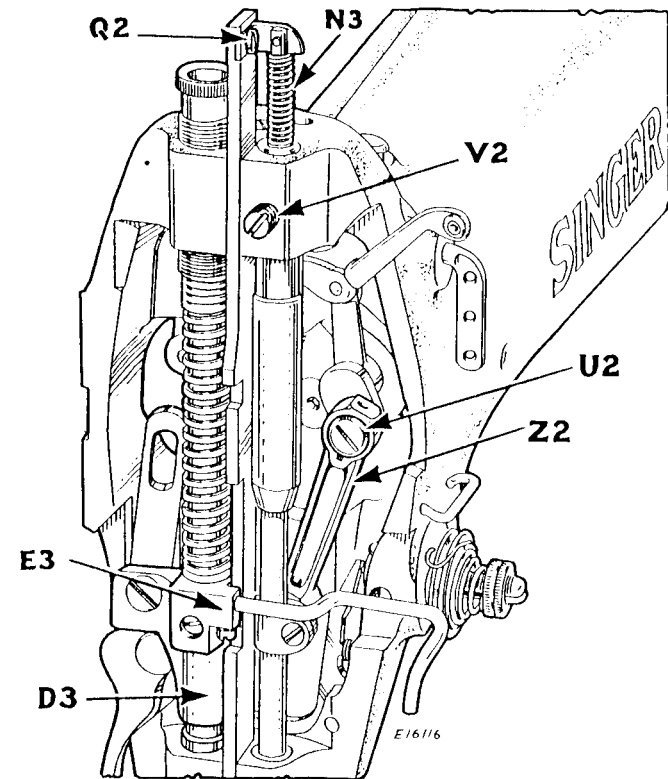


Fig. 33. Showing Parts in Correct Positions in Face of Machine

To replace, reverse the foregoing operations for removal, first firmly tightening position screw (F3) and then tightening the set screw (J3). Make certain that the slide block (W3, Fig. 34, page 30) is on the end of the needle bar connecting link stud, and that this slide block is in its slideway in the face of the machine, as shown in Fig. 34, with the oil hole (X2, Fig. 34) facing outward, also that the presser bar

slide bracket (E3, Fig. 33) rests upon the presser bar lifting and releasing lever bracket (D3, Fig. 33) and that these two parts are replaced in the positions shown in Fig. 33, and that the lug (O3, Fig. 34), on the end of the tension releasing lever, is above the corresponding lug or extension (not shown in these illustrations) at the lower end and rear side of the presser bar lifting and releasing lever bracket (D3, Fig. 33); also make sure that the small washer is on the upper end of the presser bar spring before inserting the presser bar thumb screw.

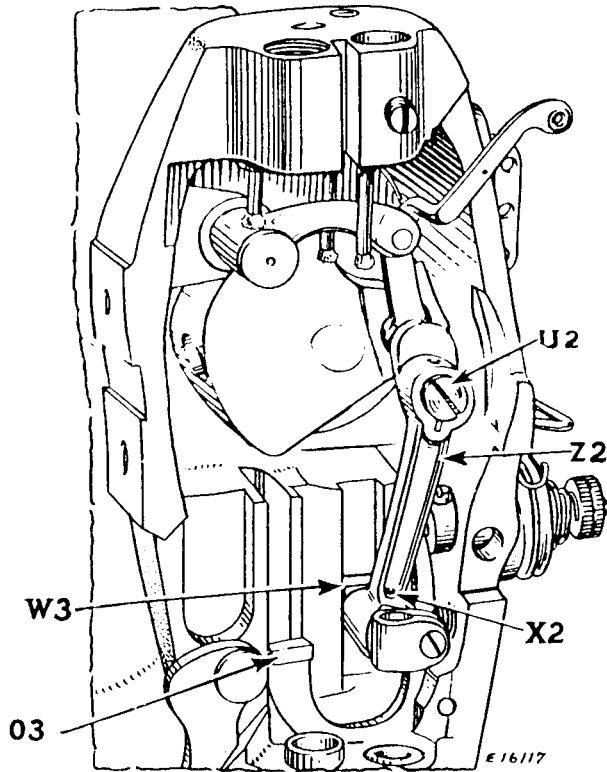


Fig. 34. Removing Needle Bar Connecting Link and Thread Take-up  
(Presser Bar, Needle Bar and Knife Bar Already Removed)

When replacing the assembly of parts consisting of the knife bar crank (R2), bracket (S2) and driving crank (Y2), place the forked end of the driving crank (Y2) over the block (K3, Fig. 32, page 28) which is located immediately back of the needle bar crank (M3, Fig. 32).

Set the needle bar and the needle bar bushing as instructed on page 22. Adjust the trimmer as instructed on page 17.

## Timing of the Feeding Mechanism

When the machine leaves the factory, the feed and feed lifting eccentrics are correctly set by having the timing screws in the eccentrics enter the grooves in the arm shaft. If, for any reason, it may be necessary to alter the timing of the feed eccentric, the timing screw should be removed and the eccentric locked in the desired position by means of the set screws only.