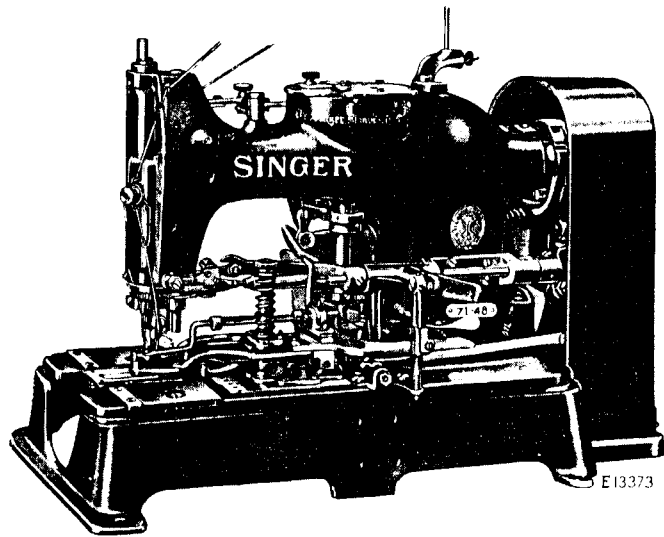


SINGER
71-46, 71-48 AND 71-52

1543w

INSTRUCTIONS
FOR USING AND ADJUSTING
SINGER SEWING MACHINES



MACHINE 71-48

71-46, 71-48 AND 71-52

THE SINGER MANUFACTURING CO.

To all whom it may concern:

The placing or renewal of the name "Singer" (Reg. U. S. Pat. Off.) or any of the trade marks of The Singer Manufacturing Company 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.

Purchasing of Parts and Needles

Supplies of parts and needles for Singer machines can be purchased at any Singer Shop for the Manufacturing Trade or ordered by mail. If orders are sent by mail, money or a post office order covering their value, including postage, should be enclosed and the order will then be promptly filled and forwarded by mail or express.

Genuine 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

DESCRIPTION

Machine 71-46 makes whip stitch top corded buttonholes from $\frac{3}{4}$ to $1\frac{1}{4}$ inches long with square bar at first end and taper bar at finishing end. The machine lays a cord on the top side under the overseaming stitches and cuts the bobbin thread and hole after stitching. When fitted with barring stop arm 23369 no bar is made at the first end of the buttonhole.

Machine 71-48 is especially designed for making whip stitch top corded buttonholes from $\frac{3}{4}$ to $\frac{3}{4}$ inch long in linen and cotton fabrics, knit goods, etc. The machine makes a square bar at the first end and a taper bar at the finishing end, lays a cord on the top side under the overseaming stitches and automatically cuts the needle and bobbin threads, cord and hole after stitching.

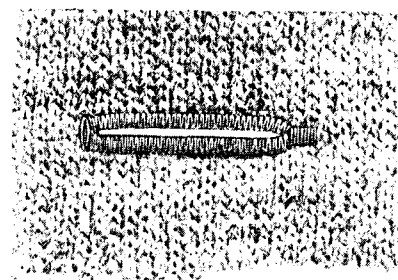


Fig. 2. Top Corded Buttonhole
Made on Machine No. 71-48

An important feature of this machine which is found useful when making buttonholes in sweater work and other elastic material, is a device which enables the operator to stitch the buttonholes once or twice over as desired.

Buttonholes $1\frac{1}{4}$ inches long can also be made on this machine by using clamp check No. 39922 in place of clamp check No. 39914 and using $1\frac{1}{4}$ inch knife No. 39907 and thread and cord (upper) cutting blade connecting rod No. 39859. When fitted with barring stop arm No. 23369 no bar is made at the first end of the buttonhole.

Machine 71-52 makes whip stitch top corded buttonholes from $\frac{3}{4}$ to $1\frac{1}{4}$ inches long with square bar at first end and taper bar at finishing end. The machine lays a cord on the top side under the overseaming stitches and cuts the hole after stitching. When fitted with barring stop arm 23369 no bar is made at the first end of the buttonhole.

Speed

The maximum speed recommended for Machines Nos. 71-46, 71-48 and 71-52 is 1600 stitches per minute.

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To Set Up Machines on Singer Universal Power Tables

The machine is usually set so that its face plate is toward the edge of the table nearest the operator, about midway between the leg sections.

Front Edge of Table

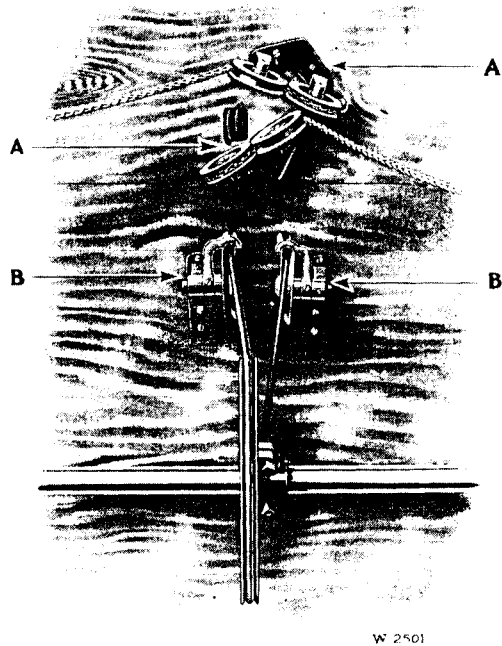


Fig. 3. Underside of Power Table showing Belt and Chain Guides

One hole should be bored for the chain to connect with the lever (F, Fig. 16) and another hole for the chain to connect with the starting lever (C, Fig. 18).

Two treadles are furnished with the machine, one for operating the clamp and one for starting the machine.

There are two treadle chain guides (A, Fig. 3), each consisting of a bracket and two pulleys. Fasten one of these guides to the underside of the table directly below the starting lever (C, Fig. 18) as shown in Fig. 3. Fasten the other guide to the underside of the table directly below the lever (F, Fig. 16) as shown in Fig. 3.

Pass the chain from the left treadle straight up and over the left pulley and under the right pulley of the treadle chain

guide which is nearest the operator, then up through the hole in the table under the lever (F, Fig. 16), to which it must be fastened.

Pass the chain from the treadle at the right straight up and over the right pulley and under the left pulley of the treadle chain guide which is farthest from the operator, then up through the hole in the table under the starting lever (C, Fig. 18) to which it must be fastened.

Two belt holes should be bored in the table directly below the machine driving pulley, and the two belt guides (B, Fig. 3) fastened to the underside of the table as shown in the above illustration. The machine belt should then be passed around the driving pulley of the machine, into the two belt guides and around the large pulley on the driving shaft below.

To Set Up Machines on Universal Power Table with Singer Electric Transmitter Motor

The instructions given on pages 4 and 5 should be followed with the exception that the belt is passed around the pulley of the motor, around the pulleys of the idler (H, Fig. 4) and around the driving pulley of the machine, the motor being located at the left of the machine, as shown in Fig. 4.

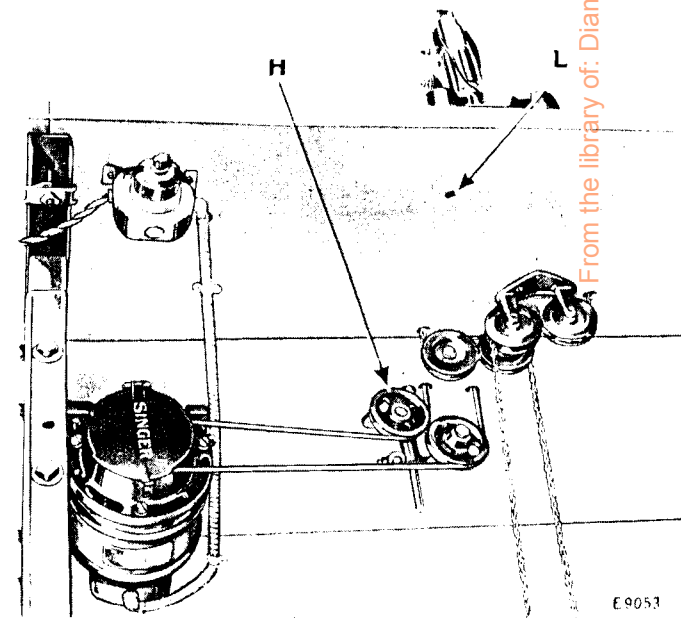


Fig. 4. Underside of Table, Showing Location of Idler, Treadle Chain Guides and Singer Electric Transmitter Motor for Individual Operation of Class 71- Machines

Needles

Needles for Machines Nos. 71-46, 71-48 and 71-52 are of Class and Variety 71x1, furnished in sizes 11, 13, 14, 16, 17, 18, 19, 21 and 22, and 71x5, furnished in sizes 16, 18, 19 and 21.

The size of the needle to be used should be determined by the size of the thread which must pass freely through the eye of the needle. If rough or uneven thread is used, or if it passes with difficulty through the eye of the needle, the successful use of the machine will be interfered with.

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:

"50 No. 16, 71x1 Needles."

The best results will be obtained by using the needles furnished by the Singer Sewing Machine Company.

Thread and Cord

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

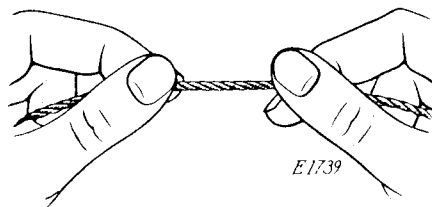


Fig. 5. How to Determine the Twist

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. Use the same size thread for the needle and the bobbin.

M. Pollack's No. 8 buttonhole cord is generally used. A similar cord can be used but such cord must not be any larger in diameter nor harder in finish to obtain the best results.

To Remove the Bobbin

Reach down under the bed of the machine with the thumb and forefinger of the left hand, open the bobbin case latch (B, Fig. 10) with the forefinger 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

Place the bobbin on the bobbin winder spindle and push it up closely against the shoulder, having the small pin in the spindle enter the slot in the bobbin.

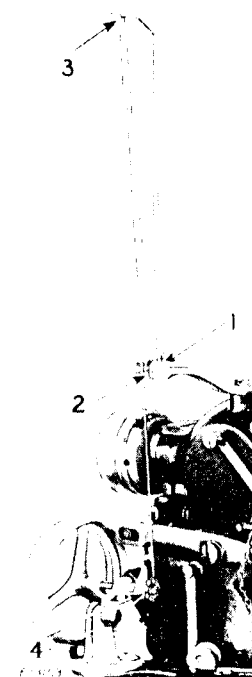


Fig. 6. Winding the Bobbin

Pass the thread from the unwinder, through the thread guide (1, Fig. 6) on the bobbin winder tension bracket attached to the top of the machine, under between the tension discs (2, Fig. 6), through the thread guide (3, Fig. 6), wind the end of the thread

around the bobbin (4, Fig. 6) a few times, then push the bobbin winder pulley against the moving belt. When sufficient thread has been wound upon the bobbin, the bobbin winder will stop automatically. Bobbins can be wound while the machine is stitching.

To Thread the Bobbin Case

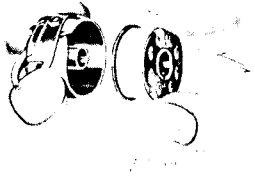


Fig. 7

Hold the bobbin between the thumb and forefinger of the right hand, the thread drawing on top from the left toward the right (see Fig. 7).

With the left hand hold the bobbin case as shown in Fig. 7, the slot in the edge being near the top, and place the bobbin into it.

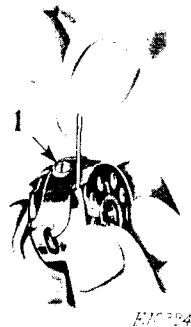


Fig. 8

Then pull the thread into the slot in the edge of the bobbin case (see Fig. 8), draw the thread down under the tension spring and into the delivery eye at the end of the tension spring (see Fig. 9).



Fig. 9

To Replace the Bobbin Case

After threading, take the bobbin case by the latch (B, Fig. 10) holding it between the thumb and forefinger of the left hand.

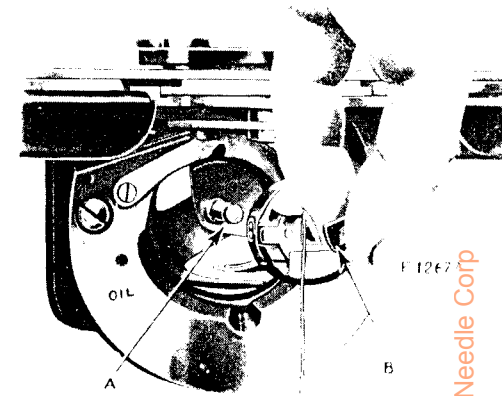


Fig. 10. Replacing the Bobbin Case

Place the bobbin case on the centre stud (A, Fig. 10) of the shuttle body with the position finger opposite the notch at the top of the shuttle race, release the latch and press the bobbin case back until the latch catches the groove near the end of the stud.

To Set the Needle

Loosen the set screw in the lower end of the needle bar and put the needle up into the bar as far as it will go with its long groove toward you and the eye directly in line with the arm of the machine, then tighten the set screw.

To Regulate the Tensions

The tension on the needle thread is regulated by the thumb nut (C, Fig. 14). To increase the tension, turn the thumb nut (C) over to the right. To decrease the tension, turn the thumb nut (C) over to the left. The tension on the needle thread should be set equal to the tension on the bobbin thread so as to draw the lock to about the centre of the material.

The tension on the bobbin thread is regulated by the screw (1, Fig. 8) in the bobbin case tension spring. To increase the tension, turn this screw over to the right. To decrease the tension, turn the screw over to the left.

The tension on the cord is regulated by the thumb nut (A, Fig. 16). To increase the tension, turn the thumb nut (A) over to the right. To decrease the tension, turn the thumb nut (A) over to the left. The tension on the cord should be sufficient to prevent overthrowing the cord at the point of the cord finger (7, Fig. 12).

To Thread the Needle (See Fig. 11)

Pass the thread from the thread unwinder into the lower hole in the upright rod above the machine, into the thread retainer

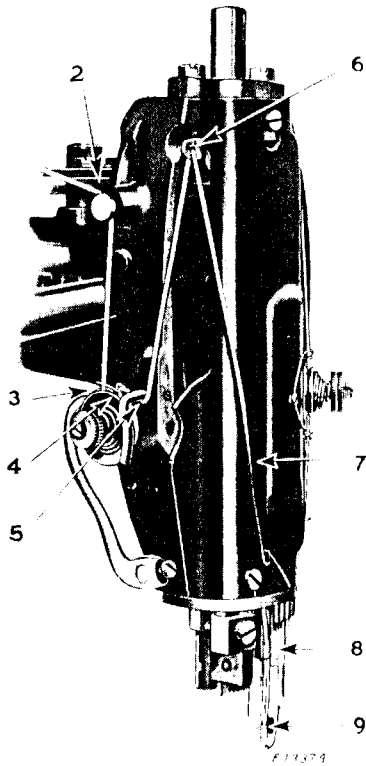


Fig. 11. Threading the Needle

guide (2), down and under from back to front between the tension discs (3), up into the thread take-up spring (4), under the tension thread guard (5), up and from back to front through the hole in the end of the thread take-up lever (6), into the slot in the face plate (7), into the hole in the lower end of the needle bar (8), and from front to back through the eye of the needle (9). Draw about two inches of thread through the eye of the needle with which to commence sewing.

To Thread the Cord Finger (See Fig. 12)

Pass the cord from the thread unwinder into the wire guide (1), down through the eyelet (2), at the left and between the

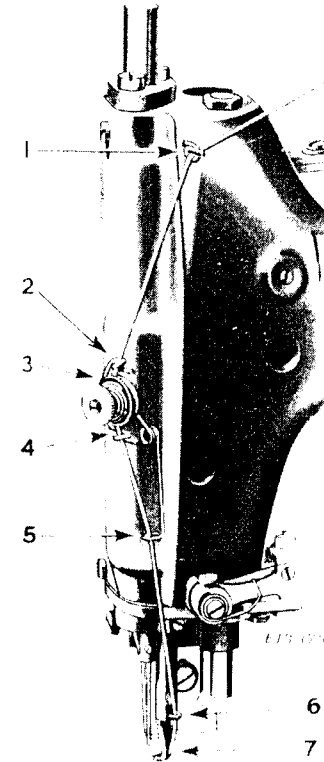


Fig. 12. Threading the Cord Finger

tension discs (3), through the eyelet (4) just below the discs, into the wire guide (5) and through the guide (6), then through the hole in the end of the cord finger (7). Draw about one inch of cord through the cord finger with which to commence sewing.

To Place the Fabric Under the Clamp and Start the Machine

Raise the clamp by depressing the left treadle and place the work under the clamp so that the position for the end of the buttonhole nearest you is under the needle, then let the clamp down and start the machine by depressing the treadle at the right.

To Stop the Machine While Stitching the Buttonhole

If the bobbin should become empty or the needle thread break while stitching, the machine can be stopped instantly by pressing inwardly on the lever (F, Fig. 14) under the left edge of the bed of the machine; this must not be done when the buttonhole is near completion, as the knife would descend upon the needle plate instead of in the slot.

In this case draw toward you the lever (B, Fig. 14) at the left side of the machine to throw the knife out of operation, and let the machine run until it stops automatically. Then move the clamp by means of the hand ratchet (D, Fig. 14) until the work comes directly under the needle at the point where the stitching was stopped, then start the machine and finish the buttonhole.

To Regulate the Length of Buttonhole

There is an opening in the bed of the machine covered by the slide (E, Fig. 14). Draw this slide to the left and

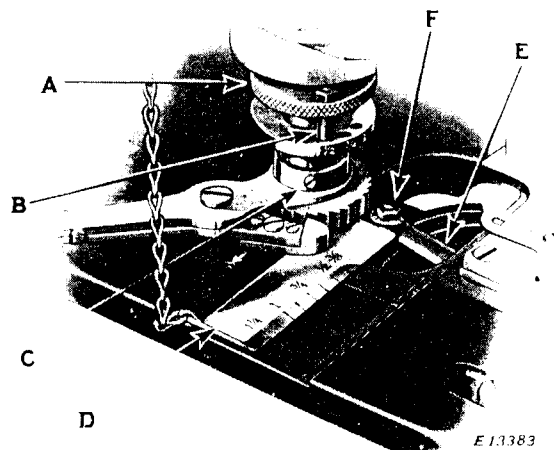


Fig. 13. Showing how to Regulate Length of Buttonhole
Also Adjustments on the Machine

- A. Knurled Adjusting Sleeve for timing cutting mechanism with length of buttonhole.
- B. Stud on Knurled Adjusting Sleeve A.
- C. Screw for permanently timing trimming mechanism.
- D. Gauge for setting length of buttonhole.
- E. Lever for regulating length of buttonhole.
- F. Nut for holding Lever F in position.

remove it from the machine. The gauge (D, Fig. 13), marked for different lengths of buttonholes, is furnished with the machine. Place this gauge in the slideway as shown in Fig. 13, having the number on the gauge for the desired length of buttonhole opposite the line in the slideway. Then loosen the nut (F, Fig. 13), and move the regulating lever (E, Fig. 13) against the downwardly projecting part of the gauge and tighten the nut (F).

After making the above adjustment the knurled adjusting sleeve (A, Fig. 13), must be adjusted as follows:

For buttonholes $\frac{3}{8}$ to $\frac{1}{2}$ inch long, lift the knurled adjusting sleeve and set the stud (B, Fig. 13), in the hole marked " $\frac{1}{2}$."

For buttonholes $\frac{1}{8}$, $\frac{5}{8}$ or $\frac{3}{4}$ inch long set the stud (B) in the hole marked " $\frac{3}{4}$."

For buttonholes $\frac{7}{8}$, 1, $1\frac{1}{8}$ or $1\frac{1}{4}$ inch long set the stud (B) in the hole marked "1."

If this adjustment is not properly made, the trimming mechanism will be out of time with the longitudinal feed of the clamp, causing the parts to become jammed and broken.

To Regulate the Distance Between Stitches

The distance between the stitches is regulated by the thumb nut (B, Fig. 18) which holds the end of the driving lever pitman in the slotted lever underneath the bed of the machine. To increase the distance between stitches, loosen the thumb nut (B) and move it to the left. To decrease the distance between the stitches, move the thumb nut to the right. When the desired distance between the stitches has been obtained, tighten the thumb nut.

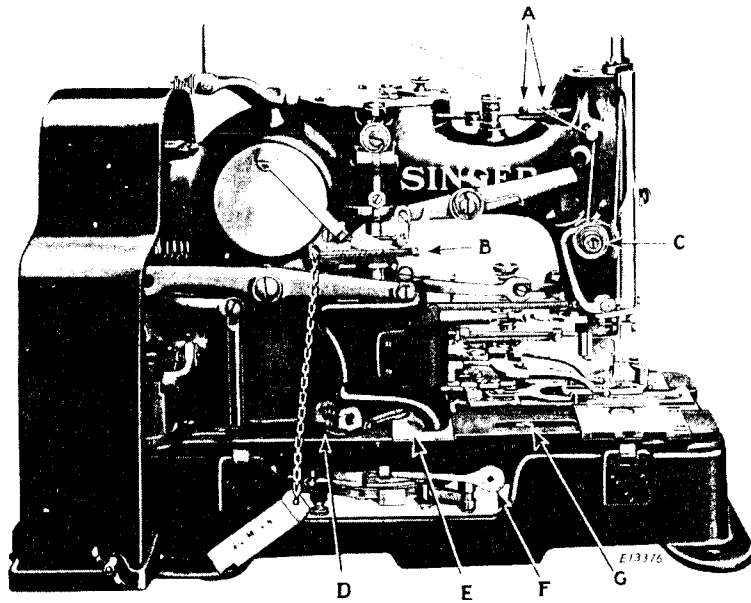


Fig. 14. Adjustments on the Machine

- A. Screws for aligning needle bar with knife.
- B. Lever for throwing knife out of operation.
- C. Thumb nut for regulating tension on needle thread.
- D. Hand ratchet lever for moving the clamp.
- E. Slide covering lever for regulating the length of buttonhole.
- F. Lever for stopping the machine.
- G. Screw for regulating the amount of cutting space.

To Regulate the Width of Bight

The width of bight is regulated by the thumb screw (B, Fig. 15) which holds a movable stud in a slotted link at the top of the machine. To increase the width of bight, loosen the thumb screw (B) and move the stud to the left in the slot. To decrease the width of bight, move the stud to the right in the slot. When the desired width of bight is obtained, tighten the thumb screw.

To Regulate the Cutting Space

The amount of cutting space between the lines of stitching is regulated by the screw (G, Fig. 14) in the slot in the bed of the machine. To make the cutting space wider, loosen this screw and move it backward in the slot. To make the cutting space narrower, move the screw toward you in the slot, then tighten the screw.

When making buttonholes in linen and cotton fabrics, the needle should descend in the centre of the cutting space while for other goods it is necessary to make the cutting space wider by setting the needle slightly outside of the centre. To position the needle correctly, use the following instructions for aligning the needle bar.

To Align the Needle Bar with the Knife

The needle bar frame pitman is adjustable by means of the two screws (A, Fig. 14), loosen these screws and move the needle bar frame until the needle and knife are in exact alignment when the machine is automatically stopped.

Should the knife cut too closely to the left-hand side of the buttonhole, the needle bar frame pitman should be adjusted so as to throw the needle slightly more to the left. In case the knife is cutting too closely to the right hand side of the buttonhole, the needle bar frame pitman should be adjusted to throw the needle slightly more to the right.

To Adjust the Knife Slit in the Needle Plate

Before making the following adjustment be sure that the needle in the machine is straight.

When the knife descends to cut the buttonhole it must enter exactly in the centre of the slit in the needle plate. In case the knife does not enter in the centre of the slit, loosen the thumb screw (A, Fig. 18) under the bed of the machine and move the needle plate until the knife is in the centre of the slit, then tighten the thumb screw.

To Regulate the Number of Barring Stitches at the First End of the Buttonhole

The plate at the top of the machine is marked with figures corresponding with the range of the number of barring stitches

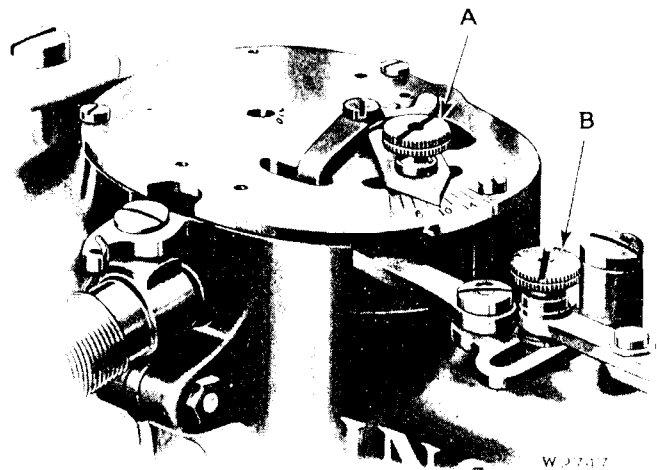


Fig. 15. Barring Stitch Regulator
Also Adjustments on the Machine

- A. Thumb screw for regulating the number of barring stitches.
- B. Thumb screw for regulating the width of bight.

that the machine will make. The pointer on this plate shows the number of barring stitches that the machine is ready to make. To change the number of barring stitches, loosen the thumb screw (A, Fig. 15) and move the pointer until it points to the number corresponding with the desired number of barring stitches, then tighten the thumb screw.

To Oil the Machine

To ensure easy running and prevent unnecessary wear of the parts which are in movable contact, the machine must be oiled regularly. Oil should be applied at the places shown by arrows in Figs. 16, 17 and 18.

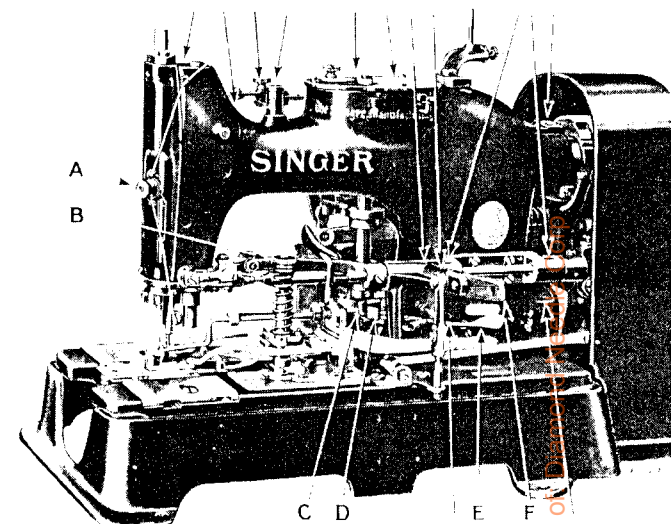


Fig. 16. Oiling Points at the Right of the Machine
Also Adjustments on the Machine

- A. Thumb nut for regulating tension on the cord.
- B. Thumb nut for regulating pressure on the clamp.
- C. Cutting blade connecting rod.
- D. Slide wheel for engaging cutting blade connecting rod C.
- E. Pawl for operating trimming device at first or second stitch rotation of buttonhole.
- F. Lever for raising the clamp.

The ball bearing loose pulley on the machine requires lubrication but once each year, using Singer Ball Bearing Lubricant for best results. Loosen the wing nut at the bottom and back of the hinged splash guard, turn the guard back and apply oil at the place shown in Fig. 17.

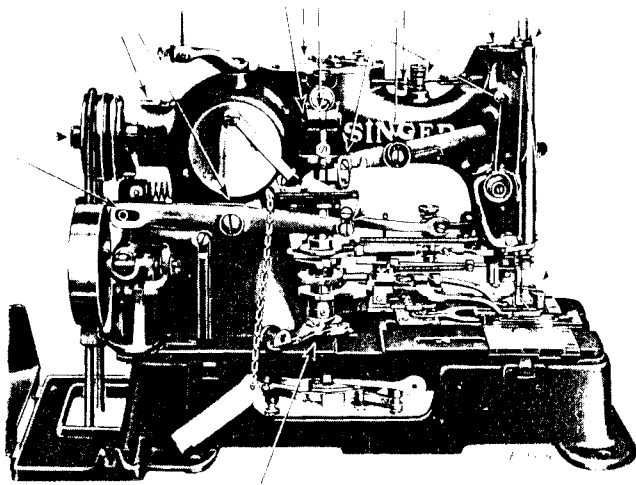


Fig. 17. Oiling Points at the Left of the Machine

To reach the parts underneath the bed plate, the machine should be turned over on its hinges, and to do this the belt must be thrown off the pulley of the machine. The points to be oiled are shown in Fig. 18. Oil the shuttle bearing through the two oil holes in the shuttle race (Fig. 20) each time a bobbin is replaced.

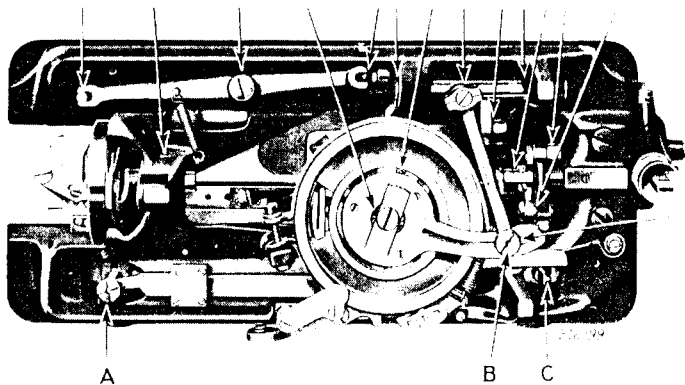


Fig. 18. Oiling Points in the Base of the Machine
Also Adjustments on the Machine

- A. Thumb screw for bringing slit in needle plate under knife.
- B. Thumb nut for regulating distance between stitches.
- C. Lever for starting the machine.

INSTRUCTIONS FOR ADJUSTERS AND MACHINISTS

To Set the Needle Bar at the Correct Height

Turn the driving pulley of the machine until the needle bar moves down to its lowest point. When the needle bar is in this

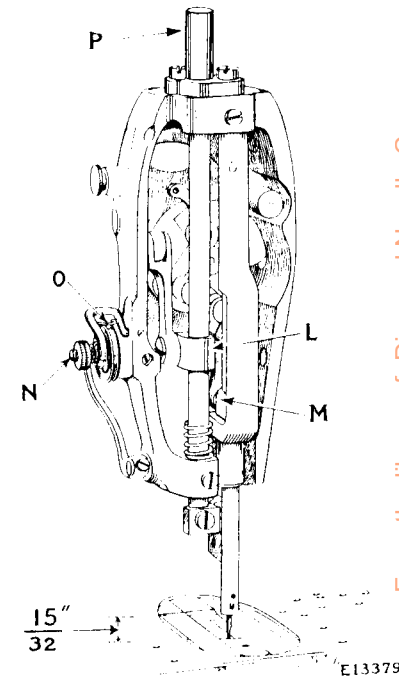


Fig. 19. Showing Correct Height of Needle Bar

position, the bottom end of the needle bar should be about $\frac{15}{32}$ inch above the top surface of the needle plate, as shown in Fig. 19. In case the needle bar is not set at the correct height, loosen the screw which holds the needle bar to the connecting stud (M, Fig. 19). (This screw can be reached when the needle bar is at its lowest point by inserting a screwdriver through the hole provided for the purpose in the arm.) After loosening the screw, move the needle bar up or down in the connecting stud until it is at the correct height, as instructed above, then securely tighten the screw in the needle bar connecting stud.

To Time the Shuttle

Turn the driving pulley of the machine until the needle bar on its left hand throw has moved down to its lowest point and

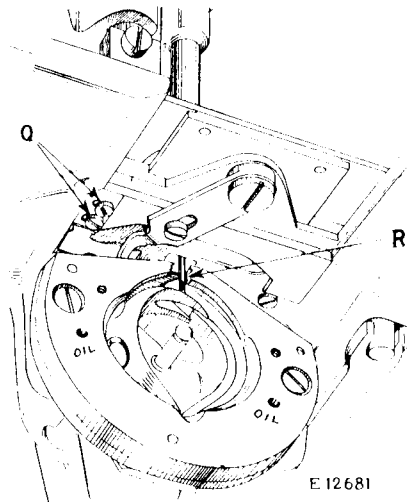


Fig. 20. Showing Shuttle Correctly Timed

has risen about one tenth of an inch. When the needle bar is in this position, the point of the shuttle should be at the centre of the needle and the eye of the needle should be about $\frac{1}{16}$ inch below the point of the shuttle, as shown at R, in Fig. 20. The correct timing of the shuttle is obtained by tightening the upper screw (S, Fig. 21) in the shuttle crank against the flat part of the shuttle shaft.

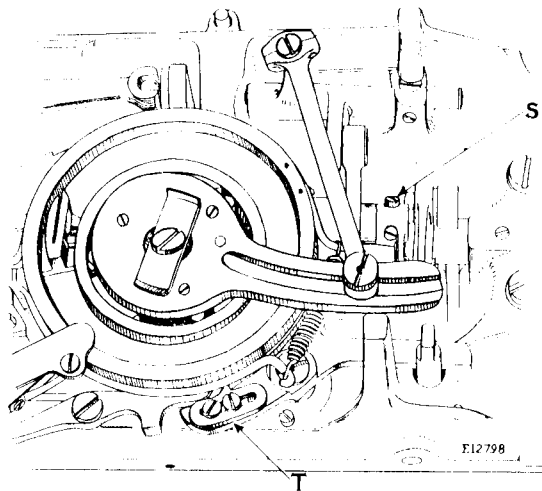


Fig. 21. Showing Shuttle Crank and Feed Wheel Tripping Point

To Adjust the Thread Retainer

The thread retainer (XX, Fig. 29) should be adjusted to produce a very light tension on the thread. The tension should only be heavy enough to hold the thread take-up spring forward. To adjust the thread retainer, loosen the screw at its side and move the thread retainer up or down, as required, then securely tighten the set screw.

To Adjust the Thread Take-up Spring

The tension on the thread take-up spring (O, Fig. 19) should be just sufficient to take up the slack of the needle thread until the eye of the needle reaches the goods in its descent. The tension on the thread take-up spring is regulated by turning the tension stud (N, Fig. 19) over to the right to increase the tension, or over to the left to decrease the tension.

To Set the Knife Bar

Draw the starting lever (EE, Fig. 23) forward out of engagement with the stop cam, hold the knife lever (H, Fig. 14) down so that the stud in the rear end of the knife bar driving lever (J, Fig. 14) is held against the top end of the slot in the connecting link, as shown at (I, Fig. 14). Loosen the screw in the knife bar clamp (L, Fig. 19) and adjust the knife bar so that there is a clearance of approximately $\frac{1}{16}$ inch between the top of the knife bar and the inside of the top of the knife bar stop (P, Fig. 19), then tighten the screw in the knife bar clamp.

To Time the Feed Wheel Tripping Lever Point

The feed wheel tripping lever point (T, Fig. 21) should be set so that the clamp slide finishes its movement to the right before the knife descends to cut the buttonhole. In case the clamp slide does not finish its movement to the right at the correct time, loosen the two set screws which hold the point (T) in position and move the point forward to cause the clamp slide to stop its movement to the right earlier, or backward to stop later. When the feed wheel tripping lever point is correctly timed, securely tighten its two set screws.

To Replace the Knife

Take out the screw (H, Fig. 22) in the knife holder and remove the old knife. Place the new knife in the holder and push

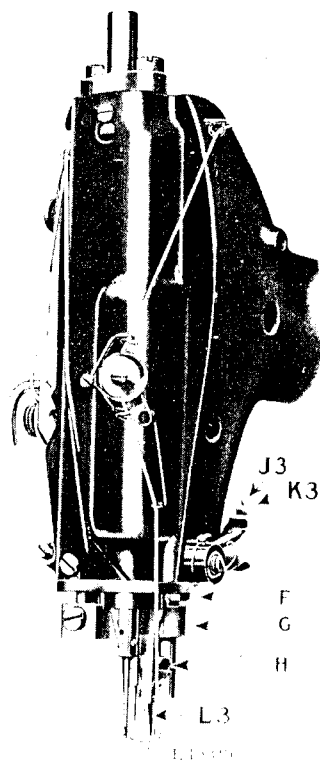


Fig. 22. Showing Correct Adjustment of the Knife Holder

it up as far as it will go, then fasten it with the screw. If the knife does not make a full cut it should be set lower, but not low enough to strike the shuttle; the knife should be kept sharp to ensure clean buttonholes (see Instructions for using the Knife Grinder on pages 34 and 35).

To Time the Knife

The knife tripping collar (V, Fig. 23) 23467 should be timed to trip the catch (U, Fig. 23) 23464 just before the machine makes the second bar so that when the bar is finished the knife will cut the buttonhole. In case the knife tripping collar (V) is not correctly timed, loosen the two set screws which hold the collar on the upright shaft and turn the collar to the required position, then securely tighten the two set screws in the collar.

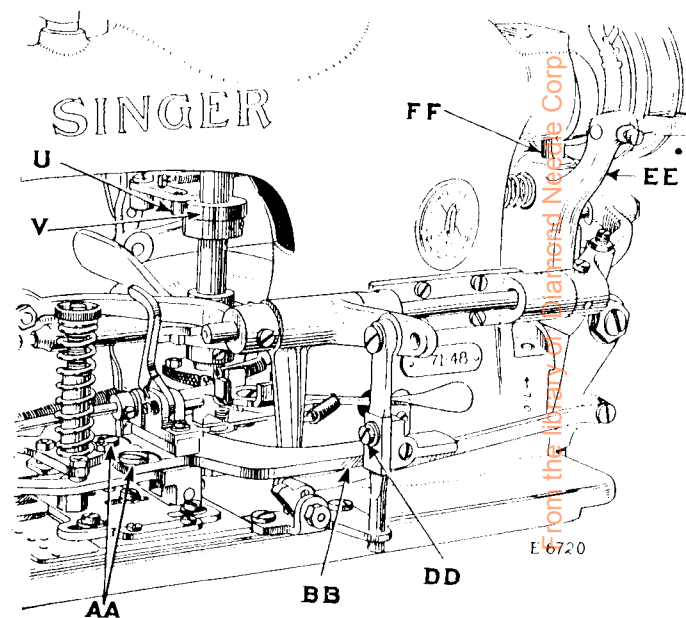


Fig. 23. Showing Knife Tripping Mechanism

To Time the Upper Thread Trimmer

The upper thread trimmer should be timed to cut the thread immediately after the buttonhole has been cut. In case the upper thread trimmer is not in correct time, turn the driving sulley of the machine until the stop cam interlocking rod rides

on the highest point of the stop cam (GG, Fig. 24). When in this position, the lock pin (HH, Fig. 24) 40052 should be $\frac{1}{16}$

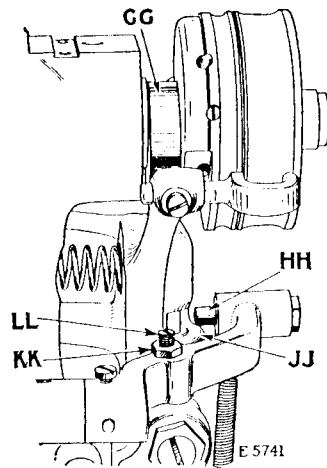


Fig. 24. Adjustments for Timing
Upper Thread Trimmer

inch above the stop cam interlocking rod guide (JJ, Fig. 24) 23514 as shown in Fig. 24. If it is not, loosen the lock nut (KK, Fig. 24) in the tension releaser lever and turn the adjusting screw (LL, Fig. 24) in or out, as may be required, then securely tighten the lock nut (KK).

To Remove and Replace the Upper Thread Trimmer

Remove the screw (OO, Fig. 25) from the connecting rod and take out the two clamp arm screws (MM, Fig. 25), then remove the clamp check from the machine. Remove the screw (RR, Fig. 26) from the underside of the clamp check which holds the clamping and trimming blades in position and remove the blades.

When replacing the blades, place the clamping blade (PP, Fig. 26) in position first next to the clamp check then put on the trimming blade (QQ, Fig. 26) and securely fasten both blades in position by means of the screw (RR), being careful to set the clamping blade about $\frac{1}{16}$ inch in advance of the trimming blade

as shown in Fig. 26. Then fasten the clamp check to the machine by means of the three screws (OO and MM, Fig. 25).

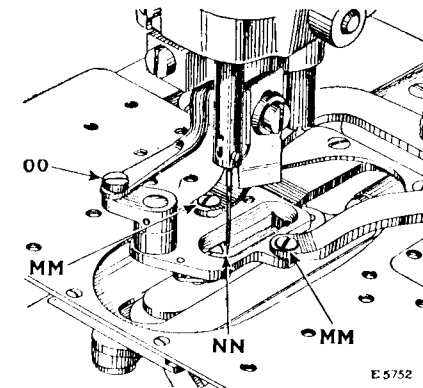


Fig. 25. Adjustments for Setting
Upper Thread Trimmer

When the clamp check is in position on the machine, the back edge of the trimming blade should be flush with the front edge of the opening in the clamp check. The trimming blade can be set in this position by loosening the two screws (AA, Fig. 23), and moving the clamp arm forward or backward, as may be required, after which securely tighten the two screws (AA).

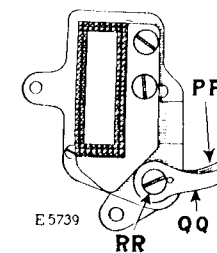


Fig. 26. Showing Upper Thread Trimming
and Clamping Blades

When the trimming blade is being moved into cutting position, it must clear the needle by $\frac{1}{32}$ inch as shown at NN in Fig. 25, when the needle is on the outside throw on the finishing side

of the buttonhole. This clearance is obtained by loosening the two screws (AA, Fig. 23) and moving the clamp lifting arm (Y, Fig. 23) 39724, forward for more clearance or backward for less clearance, after which securely tighten the two set screws (AA).

To Remove and Replace Under Thread Trimmer

Turn the machine over on its hinges and remove the two screws (Q, Fig. 20) which hold the under thread trimming blade in position on the underside of the bed, then remove the trimming blade. Place the new trimming blade in position with its cutting edge between the under thread pull-off finger and the needle plate as shown in Fig. 20, and replace the two screws. Lower the trimming blade as far as it will go and adjust it straight then securely fasten it in position by means of the two screws (Q).

To Remove and Replace Stop Cam Springs

In case the stop cam springs, which are enclosed in the tight pulley, should become broken, they can be removed and new springs inserted in their place as follows:

To remove the broken springs, see that the machine is in the regular stopping position. Remove the large screw at the end of the arm shaft and take off the loose pulley. Remove the taper head screws from the spring cover and withdraw the cover from the tight pulley, then remove the broken springs.

To place new springs into position, insert the long spring first in the tight pulley. To facilitate the replacing of the short spring, the use of special wrench 39978 (SS, Fig. 27) is recommended. This wrench will be furnished, on order, at an additional charge. Apply the wrench to the tight pulley as shown in Fig. 27, having the stud on the wrench enter the hole in the pulley. Then pull back the pulley with the wrench as far as it will go, thus compressing the long spring so that the short spring can be readily placed into position in the pulley, then remove the wrench.

After the springs are replaced, thoroughly grease them with Singer High Speed Lubricant. This will lengthen the life of the springs. Then replace the spring cover with its position pins in the holes, and securely fasten the spring cover in place by means of the taper head screws. Replace the loose pulley and securely tighten the large screw at the end of the shaft.

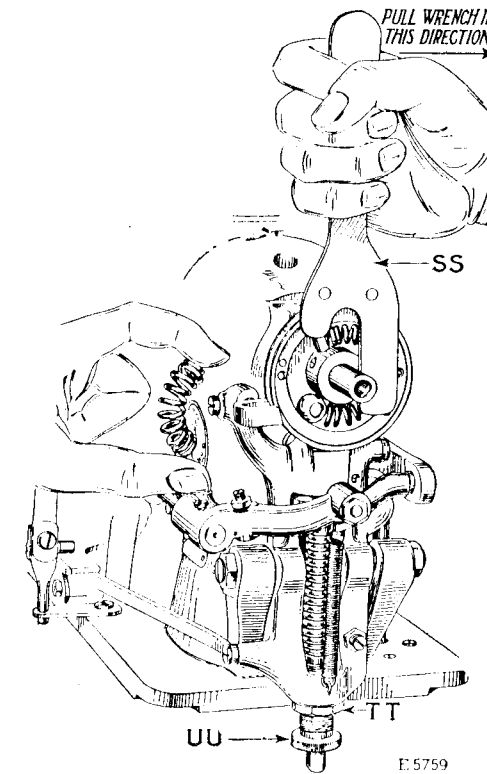


Fig. 27. Replacing Stop Cam Springs

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To Regulate the Tension on the Stop Motion Interlocking Rod

The tension on the stop motion interlocking rod (FF, Fig. 23) should only be sufficient to prevent this rod from jumping out of the notch in the stop cam when it stops the machine.

When making buttonholes in heavy fabrics, it may be necessary to lighten the tension on the interlocking rod. To do this, loosen the lock nut (TT, Fig. 27) and turn down the screw (UU, Fig. 27) until the desired tension is obtained, then securely tighten the lock nut.

When making buttonholes in light weight fabrics, it may be necessary to increase the tension on the interlocking rod (FF, Fig. 23), by turning up the screw (UU, Fig. 27) until the desired tension is obtained.

To Adjust the Clamp Lifting Arm Connection

The clamp lifting arm connection roller should be adjusted so that it just clears the clamp arm (BB, Fig. 23) when the clamp check is resting on the needle plate. The roller can be raised or lowered, as required, after loosening the screw (DD, Fig. 23) on the clamp lifting arm connection. When the roller is set at the correct height, securely tighten the screw (DD).

To Set the Barring Cam

In case it is necessary to set the barring cam (WW, Fig. 28), the correct position of this cam can be ascertained by having the mark on the side of the cam in line with the mark on the upright shaft.

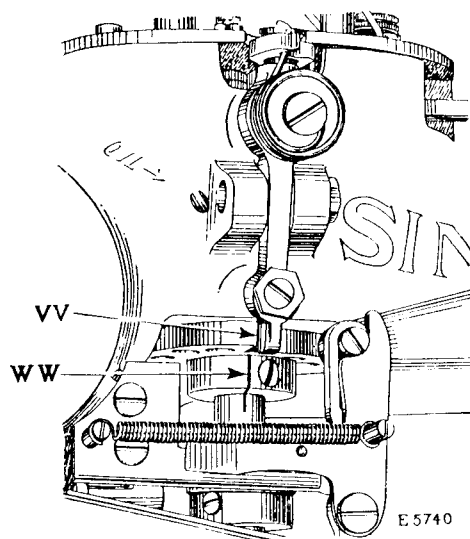


Fig. 28. Showing Timing Marks on Barring Cam and Upright Shaft

To Time and Adjust the Bar Tripping Mechanism

The number of barring stitches can be varied from 2 to 18 at the will of the operator.

To adjust and time the bar tripping mechanism, set the barring stitch indicator (C3, Fig. 29) at the numeral 6 as shown in Fig. 29, then pull the starting lever (EE, Fig. 23) forward and turn the machine driving pulley over to the left by hand until the needle bar frame regulator (B3, Fig. 29) reaches the end of its front throw, then ratchet the machine by means of the hand ratchet (D, Fig. 14) until the barring lever (VV, Fig. 28) drops into the barring cam (WW, Fig. 28).

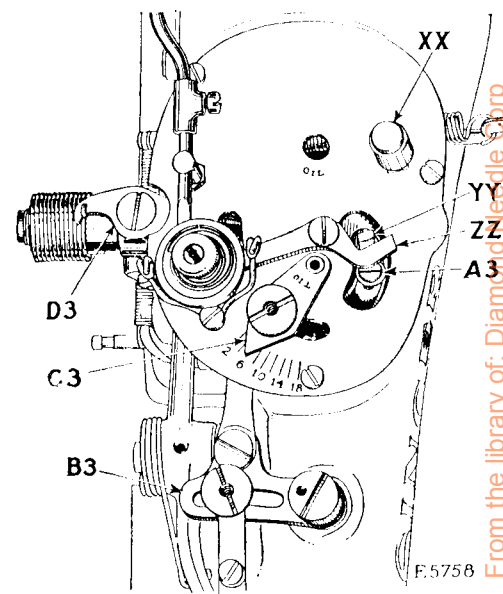


Fig. 29. Showing Adjustments for Timing Bar Tripping Mechanism

Starting from this position, turn the driving pulley over to the left and the machine should make five barring stitches. After making the fifth barring stitch, continue to turn the driving pulley slowly until the needle bar frame regulator (B3, Fig. 29) moves forward about two-thirds of its total forward travel. When in this position, the barring ratchet wheel tripping point (YY, Fig. 29) 23367 should come into contact with the barring tripping lever (ZZ, Fig. 29) 23370 and carry this lever forward, causing it to trip the barring lever catch (D3, Fig. 29) 23564,

thus disengaging the barring mechanism. The needle bar frame regulator (B3) should then finish the other one-third of its forward travel.

In case the tripping point (YY) does not trip the barring tripping lever (ZZ) at the correct time, as instructed above, loosen the screw (A3, Fig. 29) and move the tripping point (YY) forward or backward, as may be required, then securely tighten the screw (A3).

To Time the Feed Eccentric

The feed eccentric (E3, Fig. 30) must be timed so that the work clamp will start its feeding movement when the point of

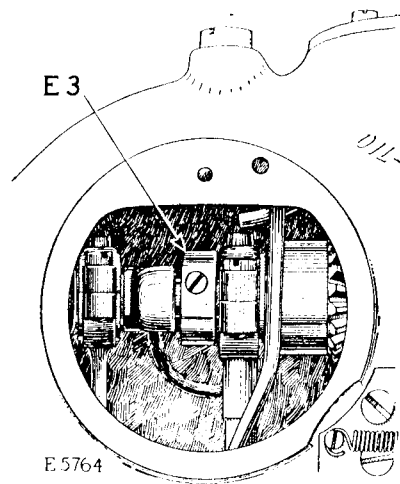


Fig. 30. Showing Feed Eccentric

the needle is $\frac{1}{8}$ inch above the needle plate, on the upward stroke of the needle bar. If the clamp starts its feeding movement too early, loosen the screw in the feed eccentric (E3) and turn the eccentric downwardly. If the clamp starts to feed too late, turn the eccentric upwardly. When the feed eccentric is correctly timed, securely tighten its set screw.

To Time the Cord Finger

The cord rotating tripping cam (P3, Fig. 31) should be timed so that it actuates the cord finger (L3, Fig. 22) at the second

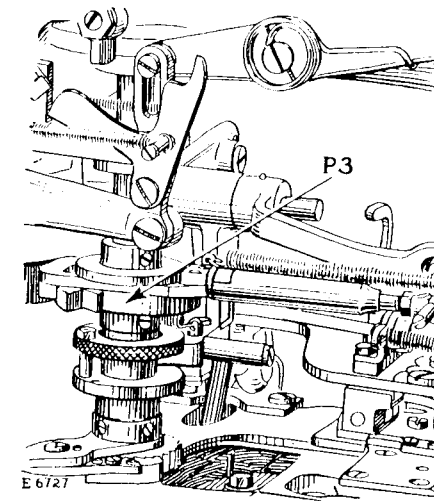


Fig. 31. Adjustment for Timing Cord Finger

crosswise stitch of the side movement of the work clamp at the first bar. The machine should then make one or two stitches after which the barring lever (VV, Fig. 28) should drop into position in the barring cam (WW, Fig. 28). When the bar is finished and three or four stitches have been made in the second side of the buttonhole, the cord rotating tripping cam (P3), should actuate the cord finger (L3) again, and at the completion of the buttonhole, the cord finger (L3) should return to its regular starting position at the right of the needle as shown in Fig. 22.

To time the cord rotating tripping cam (P3), loosen the two set screws in the cam and turn the cam on the upright shaft until it is correctly timed as instructed above, then securely tighten the two set screws in the cam.

To Adjust the Cord Finger Tripping Latch

The cord finger tripping latch (M3, Fig. 32) should be adjusted (with the machine in running position) so that it holds

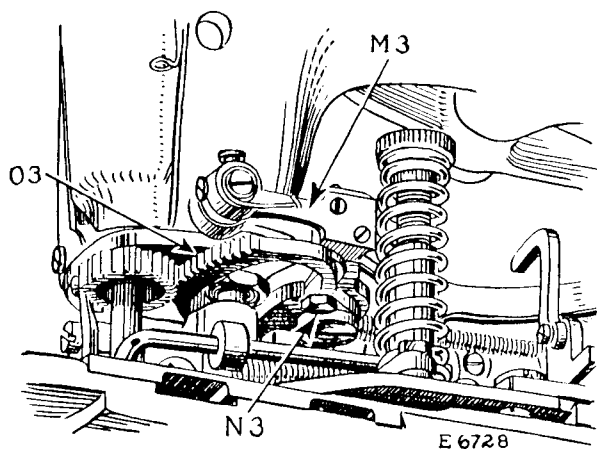


Fig. 32 Adjustment of Cord Finger Tripping Latch

the cord rotating sector (O3, Fig. 32) in position while stitching the second side of the buttonhole. To make this adjustment, loosen the lock nut (K3, Fig. 22) and turn the screw (J3, Fig. 22) as required, after which securely tighten the lock nut (K3).

The adjustable catch which is located on the underside of the cord rotating sector as shown at N3 in Fig. 32, should be set so that it will permit the cord finger tripping latch (M3) to drop freely into the adjustable catch on the cord rotating sector (O3) to hold it in position.

To Assemble the Feed Clutch

Should it be necessary to disassemble the feed clutch, first remove each roller, spring and spring guide pin individually before removing the clutch roller carrier from clutch disc.

To assemble, insert clutch roller springs 255096 and spring guide pins 255097 to the clutch roller carrier 249549 (a small amount of grease applied to these springs and pins will assist in holding them in place). Assemble the roller carrier over the hub of the feed wheel.

CAUTION: Roller carrier 249549 must be assembled in position shown in illustration or clutch will not feed in the proper direction.

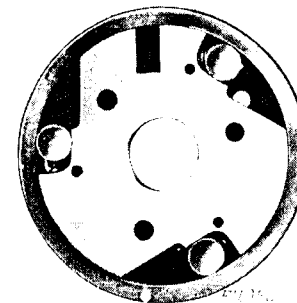


Fig. 33. Clutch Roller Carrier Assembly

With a small screw driver, push back the guide pins and slip the rollers 201897 into place, insert the oiling felt 249550 in the slot in the roller carrier and saturate it with oil. Attach feed wheel driving lever 249551 to the roller carrier with the three screws 185u, insert the felt washer 249558 and attach the driving lever plate 249557 to the feed wheel shaft with screw 52c. Be sure to tighten this screw as tight as possible.

INSTRUCTIONS

FOR USING

KNIFE GRINDER No. 39898

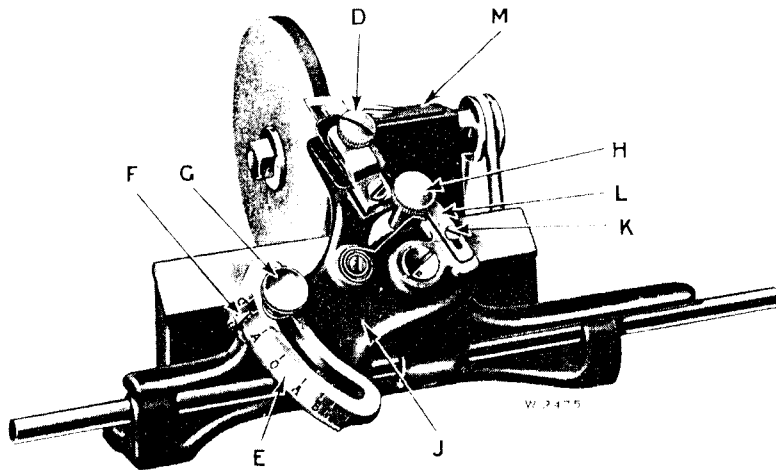


Fig. 34. Knife Grinder No. 39898

The grinder should be set to turn away from the knife at a speed of about 2500 revolutions per minute. Clamp the knife in the holder as shown in the illustration and firmly tighten the clamping screw "D." To set the knife at the correct angle on the grinder, refer to the list on the following page to ascertain which of the letters "A," "B" or "C" on the turret "E" is to be brought into line with the pointer "F," the cutting edge of the knife being horizontal, then tighten the screw "G."

Start the grinder and turn the adjusting screw "H" to adjust the cutting edge of the knife so that it will barely graze the wheel while moving the sliding bracket "J" once to the right and left. **The least possible amount ground off is usually sufficient.** If more than a slight amount of the edge is ground off at one movement the temper of the knife may be drawn until it is too soft for use.

Having sharpened one side of the knife, set knife stop "L" against lower end of knife and securely tighten screw "K." Withdraw the knife and replace it with the unsharpened side downward, then retighten the screw "D." It will then be necessary to change the position of the turret "E" to suit the angle of the reversed knife. If the turret has been set at "A" it should be moved to the other "A"; if at "B" to the other "B"; and if at "C" to the other "C." When the turret is moved to the correct position it should be securely fastened by the screw "G." Care should be taken to see that the knife is held securely against the stop and the turret properly set, thus assuring the proper bevel, equally made on both sides, with the cutting edge central.

When the knife has been ground it should be rubbed a little on an oil stone.

To oil the grinder push aside the cover "M" and put oil in the two oil holes thus uncovered.

Chart Showing Position of Turret When Grinding Various Knives

NO. OF KNIFE	LENGTH IN.	POSITION OF TURRET	NO. OF KNIFE	LENGTH IN.	POSITION OF TURRET	NO. OF KNIFE	LENGTH IN.	POSITION OF TURRET
39799	$\frac{3}{8}$	B	39841	$\frac{1}{8}$	B	39830	1	A
39840	$\frac{7}{8}$	B	39829	$\frac{3}{4}$	B	39843	$1\frac{1}{8}$	A
39800	$\frac{1}{2}$	B	39842	$\frac{1}{8}$	A	39826	$1\frac{1}{8}$	A
39831	$\frac{9}{16}$	B	39795	$\frac{7}{8}$	A	39907	$1\frac{1}{4}$	A
39801	$\frac{5}{8}$	B	39839	$\frac{1}{2}$	A			

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