SINGER
22W71,W72,W73,W74

USE ONLY

SINGER

"OIL FOR HIGH SPEED SEWING MACHINES
(Cloth and Leather)"
for general use
or
"STAINLESS OIL
FOR HIGH SPEED SEWING MACHINES"
where a stainless oil is desired.

These specially prepared oils are the result of extensive research. They insure freedom from lubricating trouble and give longer life to sewing machines.

THE IMPORTANCE OF USING SINGER NEEDLES FOR SEWING MACHINES

The best stitching results will be obtained by using the needles furnished by the Singer Sewing Machine Company.
Singer Needles can be purchased from any Singer Shop for the Manufacturing Trade.

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

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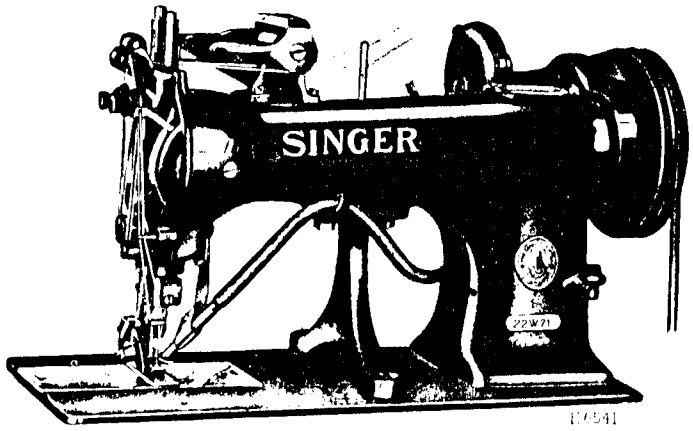
INSTRUCTIONS

FOR USING

SINGER SEWING MACHINES



22w71, 22w72, 22w73 AND 22w74

FOR

STITCHING AND PERFORATING
LEATHER SHOE TIPS, Etc.
AT ONE OPERATION

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.

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These Needles and their Containers are marked with the Company's Trade Mark "SIMANCO." 1

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DESCRIPTION

Machine 22w71 (with blower) has two needles and two sewing hooks and is designed for stitching and perforating leather shoe tips, vamps, etc., at one operation. It simultaneously makes two parallel lines of lock stitching and perforates a continuous design centrally between the two lines of stitching.

Unless otherwise ordered, Machine 22w71 will be fitted for perforating with a single round punch. For other perforating designs see Form 2026w.

The distance between the two lines of stitching may be from $\frac{1}{8}$" to $\frac{1}{4}$" in steps of $\frac{1}{32}$", as ordered. In $\frac{1}{8}$ inch gauge, only single punch perforations can be made, using Punch Holder complete 246502, 246504 or 246506, and on curves this machine is limited to a minimum radius of about one inch.

Imitation tip stitching is also successfully accomplished on the machine by placing a row of perforations between the two lines of stitching while sewing the shoe lining to the vamp. A single line of stitching with the row of perforations can also be made on the machine when desired, after removing one of the needles.

The machine can also be used for plain stitching only, the punch mechanism being driven by gears which can be thrown into or out of action by a conveniently located lever.

The punch mechanism can be instantly adjusted to perforate the leather once every two stitches or once every three stitches, as desired, enabling operators to produce different ornamental effects.

Another advantage of the punch mechanism is that it can be readily adjusted to perforate through one or more thicknesses of leather when more than one thickness is being sewn. This feature is especially appreciated when it is desired to perforate only the upper piece of leather when two or more pieces are being sewn together.

Machine 22w72 is the same as Machine 22w71 except that it is not equipped with a blower.

Machine 22w73 (with blower) differs from Machine 22w71 in being adjustable to perforate the leather once every four stitches or once every five stitches instead of every two or three stitches, and the distance between the two lines of stitching may be from $\frac{5}{32}$" to $\frac{1}{4}$", in steps of $\frac{1}{32}$", as ordered.

Unless otherwise ordered, Machine 22w73 will be fitted for perforating a design containing three round punches. For other perforating designs see Form 2026w.

Machine 22w74 is the same as Machine 22w73 except that it is not equipped with a blower.

Speed

The maximum speed recommended for Machines *22w71*, *22w72*, *22w73* and *22w74* is *2000* revolutions per minute. The machines should be run slower than the maximum speed until the parts which are in movable contact have become glazed by their action upon each other.

When the machines are in operation, the balance wheel should always turn over towards the operator.

Needles

Needles for Machines *22w71*, *22w72*, *22w73* and *22w74* are of Class and Variety 128 x 4, and are made in sizes 11, 12 and 13.

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 the letter x.

The following is an example of an intelligible order:

"100 No. 12, 128 x 4 Needles."

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

Thread

Left twist thread should be used in the needles. Either right or left twist can be used in the bobbins.

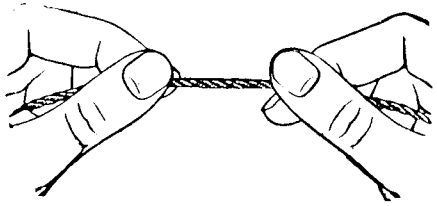

Fig. 2. How to Determine the Twist

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. The above illustration shows left twist.

To Remove the Bobbins

Draw the bed slides from over the bobbin cases, turn the balance wheel over toward you until the inside sewing hook points toward you, then insert the thumb nail in the notch in the side of the bobbin case cap, lift out the cap and remove the bobbin. The outside bobbin case cap is removed in the same way as the inside bobbin case cap.

To Wind the Bobbin

(See Fig. 3)

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.

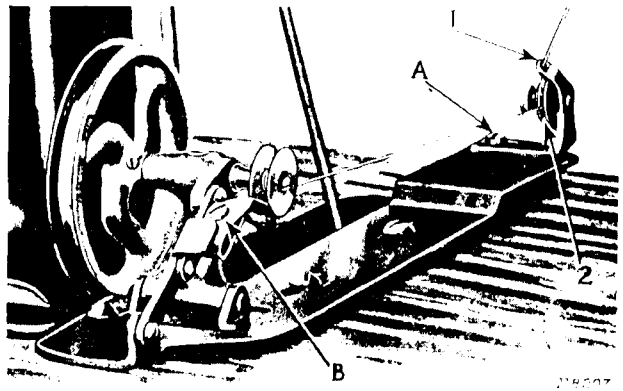

Fig. 3. Winding the Bobbin

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 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) inwardly. To wind less thread on the bobbin, turn this screw outwardly.

Bobbins can be wound while the machine is stitching.

To Thread the Bobbin Case Caps

(See Figs. 4 and 5)

Hold the cap in the left hand, place the bobbin with the thread drawing from the direction shown (see Figs. 4 and 5);

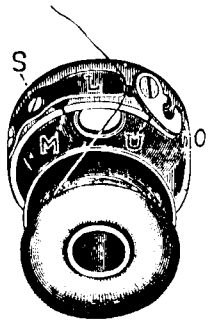

Fig. 4

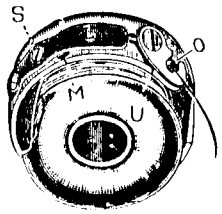

Fig. 5

draw the thread under tension spring (L) and through slot (M), back under tension spring (L) through slot (U) and out under thread guide (O). After threading, place the cap on the bobbin case base and push down the latch.

To Set the Needles

Turn the balance wheel over toward you until the needle bar moves up to its highest point; loosen the set screw in the needle holder and put the needles up into the holder as far as they will go, the inside needle or the one nearest the upright part of the arm having its long groove toward the left, and the outside needle or the one farthest from the upright part of the arm having its long groove toward the right, the eyes of both needles being directly in line with the bed of the machine, then tighten the set screws.

To Thread the Needles

For convenience in threading the needles, press down on the roller presser and swing it to the left, as shown in Fig. 6.

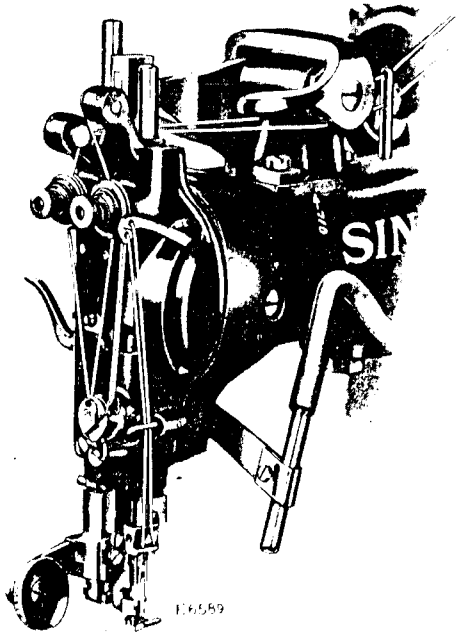

Fig. 6. Threading the Needles

To thread the inside needle or the one nearest the upright part of the arm, pass the thread from the unwinder from right to left through the lower hole in the thread guide pin on top of the machine, through the front hole in the switch lever bracket on top of the machine, through the front wire thread guide at the top of the machine, over between the discs of the front thread retainer, down, around the front side, between the front tension discs, under and up over the notch in the thread controller, from back to front through the upper hole in the thread take up lever, down through the thread guide at the front of the machine, through the hole at the right in the needle holder and from left to right through the inside needle.

To thread the outside needle or the one farthest from the upright part of the arm, pass the thread from the unwinder from right to left through the upper hole in the thread guide pin on

top of the machine, through the rear hole in the switch lever bracket on top of the machine, over between the discs of the rear thread retainer, down, around the rear side, between the rear tension discs, under and up over the notch in the thread controller, from back to front through the lower hole in the thread take-up lever, down through the thread guide at the front of the machine, through the hole at the left in the needle holder and from right to left through the outside needle.

To Prepare for Sewing

With the left hand hold the ends of the needle threads, leaving them slack from the hand to the needles. Turn the balance wheel over toward you until the needles move down and up again to their highest point, thus catching the bobbin threads; draw up the needle threads and the bobbin threads will come up with them through the holes in the throat plate. Lay the threads back under the roller presser and close the slides.

To Commence to Sew

Place the material beneath the roller presser, lower the roller presser and commence to sew, turning the balance wheel over toward you.

To Remove the Work

Have the thread take-up lever at its highest point, raise the roller presser, draw the work back and cut the threads close to the material. Lay the ends of the threads back under the roller presser.

Tensions

The needle and bobbin threads should be locked in the centre of the thickness of the material, thus:

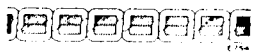

Fig. 7. Perfect Stitch

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:

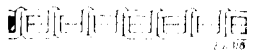

Fig. 8. Tight Needle Thread Tension

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:

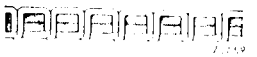

Fig. 9. Loose Needle Thread Tension

To Regulate the Tensions

The tensions on the needle threads are regulated by the thumb nuts at the front of the tension discs at the left of the machine. To increase the tension, turn these thumb nuts over toward you. To decrease the tension, turn these thumb nuts over from you.

The tensions on the bobbin threads are regulated by means of the screw nearest the centre of the tension spring on the outside of each bobbin case. To increase the tension, turn this screw over to the right. To decrease the tension, turn this screw over to the left.

To Set the Punches in the Punch Holder

Loosen the two screws (E and F, Fig. 10) and remove the punch holder from the machine. Drive the old punches from

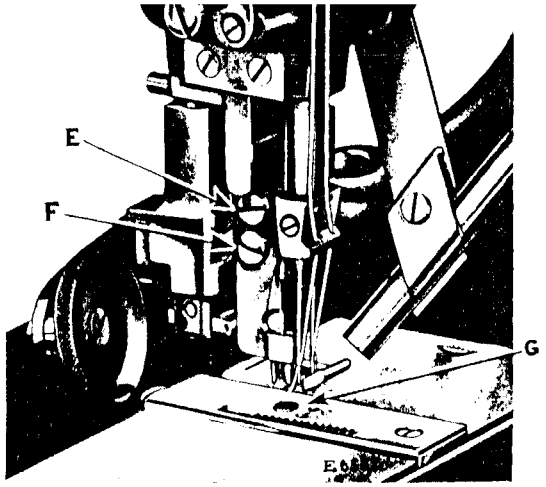

Fig. 10. Showing Two Screws Which Hold Punch Holder in Position on Punch Bar

the punch holder, using the knock-out punch furnished with the machine for the purpose. See that the holes for the punches in the punch holder are perfectly clean, then with light blows drive the new punches into the holder, placing a brass bar over the punch to prevent injury to the cutting edge. Be sure that the punches are properly seated in the punch holder before fastening the holder in the machine. When setting three punches in the punch holder, it is very important to have the three punches extend an equal distance out of the punch holder.

To Throw the Punch Mechanism In and Out of Action

To throw the punch mechanism into action, push down the switch handle (X, Fig. 16).

To throw the punch mechanism out of action, press the switch handle (X, Fig. 16) away from you, thus moving the punch driving roller out of the cam path.

To Adjust the Punch to Perforate Centrally Between the Lines of Stitching

In case the punch is not perforating the leather centrally between the lines of stitching, loosen the screw (T, Fig. 13) and move the punch holder bracket to the right or left as may be required to bring the punch centrally between the two needles, then securely tighten the screw (T).

To Change the Time of Punching on Machines 22w71 and 22w72

To change the punch mechanism from perforating the leather once every two stitches to once every three stitches, or vice versa,

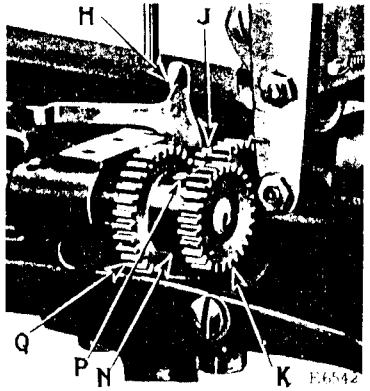

Fig. 11. Punch Mechanism Adjusted for Perforating Leather Once Every Two Stitches on Machines 22w71 and 22w72 or Once Every Five Stitches on Machines 22w73 and 22w74

Loosen the set screw (P, Fig. 11) in the sliding gear carrier (N, Fig. 11). Turn down the locking finger (H, Fig. 11) as shown in Fig. 11 and turn the balance wheel over toward you until the locking finger (H) drops into the slot in the hub of the intermediate gear (J). (This locks the punch driving cam at a point when the punch is about to descend.)

Move the sliding gears (K and Q, Fig. 11) to a neutral position, and turn the balance wheel over toward you until the needle bar is just commencing its downward stroke.

To perforate the leather once every two stitches, move the sliding gear (Q, Fig. 11) into mesh with the intermediate gear (J, Fig. 11) as shown in Fig. 11.

To perforate the leather once every three stitches, move the sliding gear (K, Fig. 12) into mesh with the intermediate gear

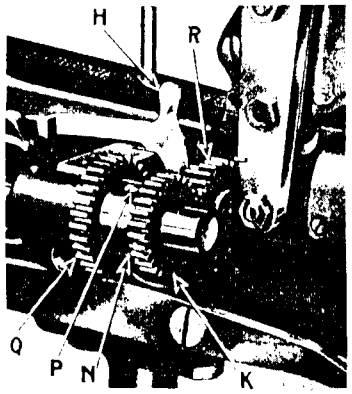

Fig. 12. Punch Mechanism Adjusted for Perforating Leather Once Every Three Stitches on Machines 22w71 and 22w72 or Once Every Four Stitches on Machines 22w73 and 22w74

(R, Fig. 12) as shown in Fig. 12. When the gears are correctly set, securely tighten the set screw (P, Fig. 12) in the sliding gear carrier, then lift the locking finger (H, Fig. 12) out of the slot in the hub of the intermediate gear and turn it back as far as it will go, as shown at Z, in Fig. 17. The machine is then ready to operate.

To Change the Time of Punching on Machines 22w73 and 22w74

To change the punch mechanism from perforating the leather once every four stitches to once every five stitches, or vice versa. Loosen the set screw (P, Fig. 11) in the sliding gear carrier (N, Fig. 11). Turn down the locking finger (H, Fig. 11) as shown in Fig. 11, and turn the balance wheel over toward you until the locking finger drops into the slot in the hub of the intermediate gear (J). (This locks the punch driving cam at a point when the punch bar is about to descend.)

Move the sliding gears (K and Q, Fig. 11) to a neutral position, and turn the balance wheel over toward you until the needle bar is just commencing its downward stroke.

To perforate the leather once every four stitches, move the sliding gear (K, Fig. 12) into mesh with the intermediate gear (R, Fig. 12) as shown in Fig. 12.

To perforate the leather once every five stitches, move the sliding gear (Q, Fig. 11) into mesh with the intermediate gear (J, Fig. 11) as shown in Fig. 11. When the gears are correctly set, securely tighten the set screw (P, Fig. 11) in the sliding gear carrier, then lift the locking finger (H, Fig. 11) out of the slot in the hub of the intermediate gear and turn it back as far as it will go, as shown at Z, in Fig. 17. The machine is then ready to operate.

To Adjust the Punch to Perforate One or More Thicknesses of Leather

The depth of perforation made by the punch is determined by the height of the punch holder on the punch bar.

To increase the depth of perforation or to perforate more than one thickness of leather, loosen the two screws (E and F, Fig. 10) which hold the punch holder in position on the punch bar. Then loosen the pinch screw (V, Fig. 13) and turn the adjusting thumb screw (W, Fig. 13) downwardly, thus lowering the punch holder on the punch bar. To decrease the depth of perforation or to perforate only one thickness of leather, turn the adjusting screw (W) upwardly and raise the punch holder. When the punch holder is set at the height necessary for making the desired depth of perforation, securely tighten the three screws (E, F and V).

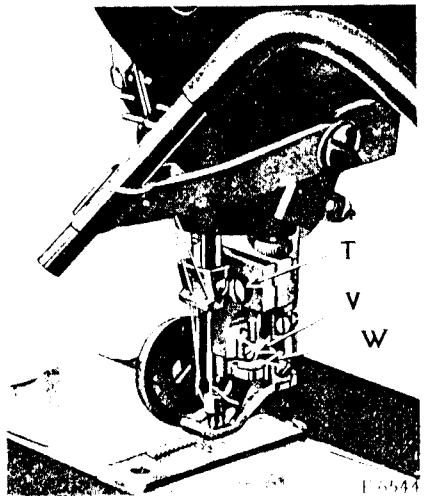

Fig. 13. Showing Adjustment for Regulating Depth of Perforation

When stitching two pieces of material together and perforating only the upper piece, care should be taken to adjust the punch holder so that the punch does not descend too far below the upper piece. Only a slight impression of the punch should show on the under piece of material.

When perforating only the upper piece of two pieces of material, great care must be taken not to allow the punch to descend on the brass block when the work has passed out of the machine.

To Regulate the Pressure of the Punch on the Punch Block

When punching on the brass punch block (G, Fig. 10), the pressure on the punch must be only sufficient to show a slight impression of the punch on the cutting surface of the block. If the pressure on the punch is too heavy, it will dull the punch and cause excessive wear on the block and the punch mechanism. If the punch does not cut the material cleanly, do not try to remedy the trouble by increasing the pressure on the punch, but remove the punch holder from the machine and sharpen the punch as instructed below.

To Sharpen the Punch

When the punches are shipped from the factory, they are sharpened only for cutting on the brass block, where the perforations go clear through the material.

Important. When it is desired to perforate only one piece of material when stitching two or more pieces together, the cutting edge of the punch must be sharpened to a keener edge than is necessary when punching on the brass block. If the punch is not sharp enough, it will not pick out the punchings.

Use an oil stone to sharpen the punch, and always sharpen the punches **after** they are inserted in the punch holder. If the punches are sharpened before they are put into the holder, the cutting edges may be broken when the punches are being driven into the holder.

Adjustment of Blower Pipe Outlet

The outlet or nozzle of blower pipe should be set so that a full flow of air will discharge directly on the point where the punches come in contact with the work and at the same time be positioned as close as possible to this point without coming in contact with needle holder as shown in Fig. 10.

The nozzle can be raised out of the way as shown in Fig. 13 when threading the needles or adjusting the punch and returned instantly to operative position before beginning to sew.

To Regulate the Length of Stitch

The length of stitch is regulated by the lever (Y, Fig. 16) at the right of the machine. To increase the length of stitch, move this lever downwardly. To shorten the stitch, move this lever upwardly.

When perforating a three hole design on Machines 22w71 and 22w72, there should be a space of 1½ stitches between the centre

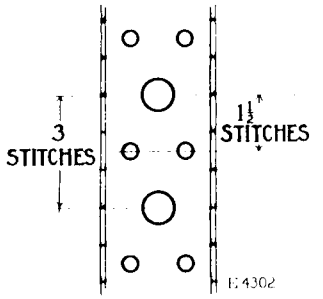

Fig. 14. Diagram Showing Correct Number of Stitches Between Holes in Three Hole Perforating Design Made on Machines 22w71 and 22w72

of the large hole and the centre of the two small holes, as shown in Fig. 14. This will make a space of three stitches from centre of one large hole to the centre of the next large hole. For example, when the machine is set to make 16 stitches to an inch, the distance between the centre of the large hole and the centre of the two small holes will be $\frac{3}{16}$ inch, and the distance from the centre of one large hole to the centre of the next large hole will be $\frac{3}{16}$ inch.

A change in the length of stitch will make a corresponding change in the distance between the holes in the design.

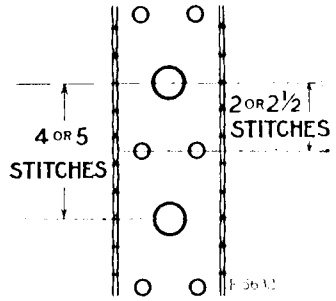

Fig. 15. Diagram Showing Correct Number of Stitches Between Holes in Three Hole Perforating Design Made on Machines 22w73 and 22w74

When perforating a three hole design once every four stitches on Machines 22w73 and 22w74, there should be a space of two stitches between the centre of the large hole and the centre of the two small holes, as shown in Fig. 15. This will make a space of four stitches from the centre of one large hole to the centre of the next large hole.

A change in the length of stitch will make a corresponding change in the distance between the holes in the design.

When perforating a three hole design once every five stitches on Machines 22w73 and 22w74, there should be a space of 2½ stitches between the centre of the large hole and the centre of the two small holes, as shown in Fig. 15. This will make a space of five stitches from the centre of one large hole to the centre of the next large hole.

A change in the length of stitch will make a corresponding change in the distance between the holes in the design.

To Replace the Punch Block

The punch block (G, Fig. 10) may become so worn as to interfere with the clean perforating of the material, and when this occurs a new punch block should be placed in the machine.

Remove the throat plate and drive the old brass punch block out of the throat plate from the underside, using the knock-out punch furnished with the machine. It will be noticed that one end of the punch block is chamfered on the under side. Insert this end of the punch block into the throat plate first, and drive the block into place, being careful not to damage the cutting surface of the block, then fasten the throat plate in position in the machine.

To Regulate the Pressure of the Roller Presser on the Material

The pressure of the roller presser on the material should be only heavy enough to enable the feed to move the work along evenly and to prevent the material from rising with the needles.

To increase the pressure, turn the thumb screw (A1, Fig. 17) at the top of the machine, over to the right or downwardly. To decrease the pressure, turn this thumb screw upwardly.

The roller presser should be set close enough to the left or outside needle to steady the needles and prevent them from staggering, and far enough back to prevent stretching the material which is being sewn.

To Oil the Machine

To ensure easy running and prevent unnecessary wear of the parts which are in movable contact, the machine requires oiling, and when in continuous use, it should be oiled at least once each day.

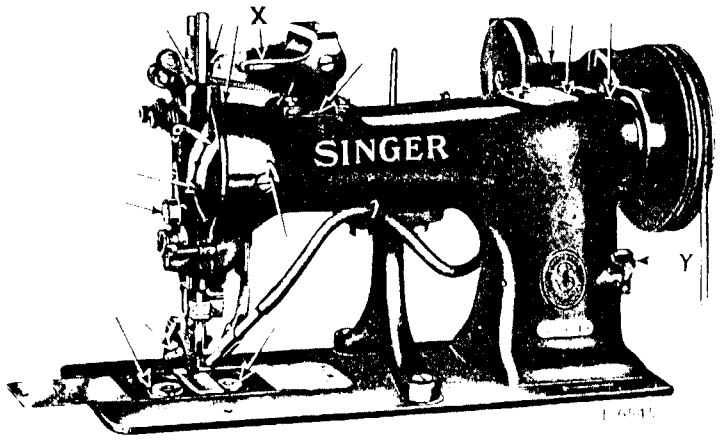

Fig. 16. Oiling Points at the Front of the Machine

Oil should be applied at the places designated by arrows as shown in Figs. 16, 17 and 18. Swing back the cover which is on top of the machine at the right, and oil the bearings which are thus uncovered, then replace the cover.

Oil the bobbin case bearings in the hook races each time a bobbin is replaced.

Turn the machine back on its hinges and apply oil at the places designated by arrows as shown in Fig. 18, and all other places where there are parts in movable contact, then bring the machine forward into place.

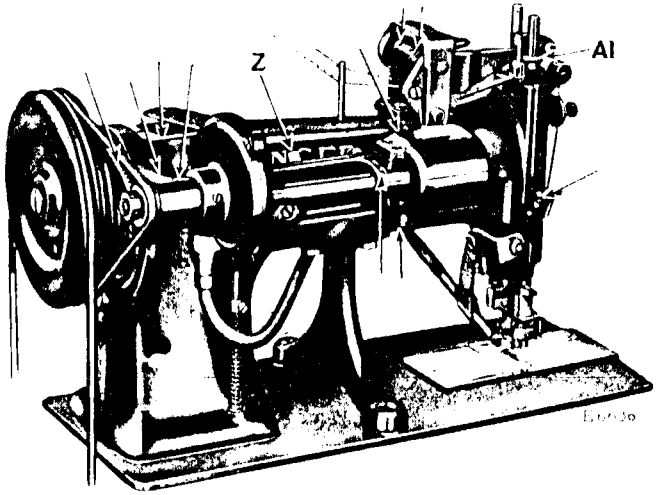

Fig. 17. Oiling Points at the Back of the Machine

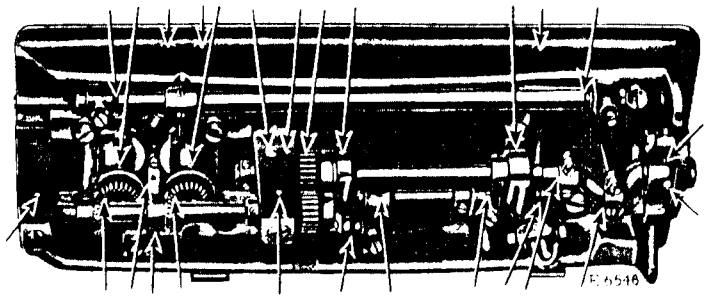

Fig. 18. Base of Machine, Showing Oiling Points

INSTRUCTIONS
FOR
ADJUSTERS AND MACHINISTS

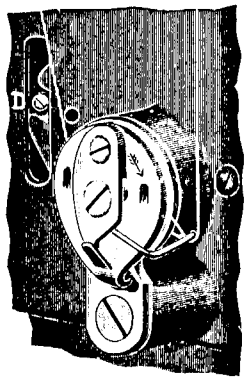

Fig. 19

THREAD CONTROLLER

(Controls both threads as one)

The function of the thread controller spring is to hold back the slack of the upper thread until the eye of the needle reaches the goods in its descent.

When once correctly adjusted to thin material, the stop is automatically adapted for varying thicknesses by the rise and fall of the presser bar.

To change the stop for more controller action on the thread, loosen screw (D, see Fig. 19) which projects through the slot in the face plate, and set it lower, and for less action set it higher.

It may be found advisable to increase the tension of the spring for coarse thread, or lessen it for fine.

To vary the tension of the controller spring, remove the face plate and loosen the small set screw at the right of the controller (see Fig. 19) which sets the thread controller stud, then from the inside turn the stud forward or backward as required, by using a screwdriver in the slot of the screw which holds the thread controller stop and retighten the set screw.

In any case when an unusually light tension is used, the tension on the controller spring should be correspondingly light. The coils of the controller should be oiled occasionally.

To Place a New Thread Controller in Position. Remove the entire thread controller by taking out the largest screw (see Fig. 19) and release the spring by removing the middle screw. (Be careful not to lose the small roller.) Place the new spring, the roller and screw in their positions. Next put the entire thread controller on the face plate, taking care to slide the little tail, on the coil of the spring, into the notch in the stud over which the coil slides.

Oil the small roller occasionally.

To Raise or Lower the Feed Dog

Tip the machine back and turn the balance wheel toward you until the feed dog is at its highest position. Loosen pinch screw in the feed cam fork lever on the short feed lifting rock shaft and move the rock shaft up or down until the feed dog is at the desired height, and retighten the pinch screw.

If the feed dog strikes the throat plate, loosen the set screws of the feed bar rock shaft crank at the left hand end of the rock shaft, then set the feed bar so that the feed dog will not strike when the longest stitch is taken, and retighten the set screws.

To Set the Needle Bar

The needle bar which is in the machine when shipped from the factory, has upon it (about two inches from the bottom) two lines $\frac{3}{32}$ inch apart. When the needle bar is at its lowest point set it so that its highest mark is even with the underside of the arm head.

To Set a New Needle Bar which has no Mark. Set the needle bar so that when it rises $\frac{3}{32}$ inch from its lowest position, the point of the hook will be at the centre of the needle and about $\frac{1}{16}$ inch above the eye.

To Adjust the Hook to and from the Needle

If the hook runs too far from or too near the needle, loosen the hook saddle screws just enough to permit the saddle to be driven with light blows to the position desired and retighten the hook saddle screws.

To Adjust the Hook

To See if a Hook is in Correct Time. Remove the bed slides and throat plate and turn the balance wheel toward you until the needle bar has passed its lowest position and risen so that the lower mark on it is even with the underside of the arm head. If in correct time, the point of each hook will be at the centre of the needle and $\frac{1}{16}$ inch above the eye; if not, loosen the screws in the bevel gear on the shaft under the hook and turn the gear forward or backward slightly until the hook is in time as instructed above, then retighten the screws. On very heavy work it may be necessary to set the needle bar a little lower and the hooks slightly slower than the above rule.

To Remove the Hooks from the Machine

Remove the hook gib screw at the heel of the hook and move the gib aside (see Fig. 20) to allow the base of the bobbin case

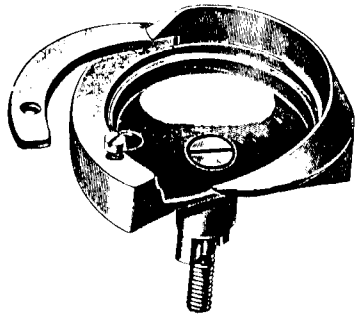

Fig. 20

to be taken out, after which remove the screw, shown in the illustration, from the centre of the hook. Tapping the hook lightly on the bottom of its rim will force it from its socket. Do not try to pry it out, as prying may bend the shank of the hook. In replacing the hook, be sure that the prongs of the shank properly enter the slot at the bottom of the socket, otherwise the hook will be out of time.