# SINGER
## 31-17,-18,-21

# USE ONLY SINGER OILS and LUBRICANTS

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

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**"Singer Oil for High Speed Sewing Machines"**
**(Cloth and Leather)**

For all manufacturing sewing machines except where a stainless oil is desired.

**"Singer Stainless Oil for High Speed Sewing Machines"**

For all manufacturing sewing machines where a stainless oil is desired.

**"Singer Motor Oil"**

For oil-lubricated motors, power tables, transmitters and machinery in general.

**"Singer Stainless Thread Lubricant"**

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

*NOTE: All of the above oils are available in 1 quart, 2 quart, 1 gallon and 5 gallon cans or in 55 gallon drums, and can also be supplied in customer's containers.*

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**"Singer Gear Lubricant"**

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

**"Singer 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.

*NOTE: The above greases are furnished in ¼ lb. tubes and 1 lb. and 4 lb. tins.*

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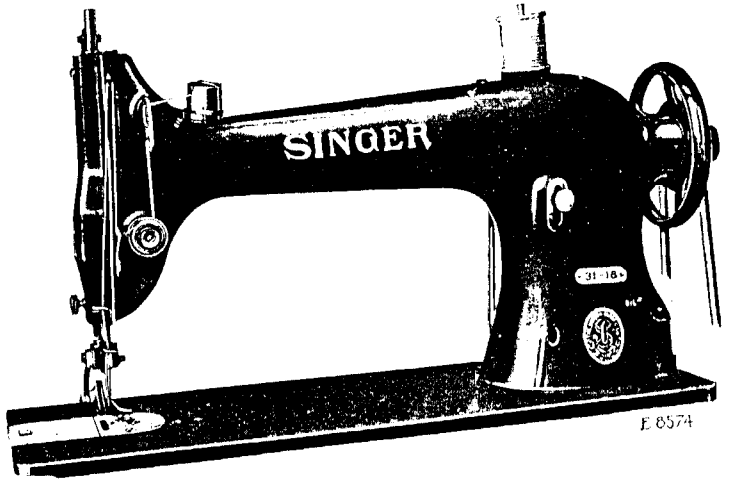
# INSTRUCTIONS

FOR USING AND ADJUSTING

# SINGER SEWING MACHINES




MACHINE 31-18

## 31-17, 31-18 AND 31-21

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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.

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## THE IMPORTANCE OF USING GENUINE SINGER PARTS AND NEEDLES IN SINGER MACHINES

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

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

**Machines 31-17, 31-18** and **31-21** have one needle and an oscillating shuttle and are designed for stitching shoes and other articles of leather. They are equipped with knee lifters and roller pressers and have oil cups for lubricating the thread. Machines 31-17 and 31-21 have a drop feed and Machine 31-18 has a wheel feed. These machines have a clear space of $10\frac{1}{4}$ inches at the right of the needle.

### Speed

The maximum speed recommended for Machines 31-17, 31-18 and 31-21 is 2000 stitches per minute, depending upon the nature of the material being sewn. 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 must always turn over toward the operator.

### Needles

Needles for Machines 31-17, 31-18 and 31-21 are of Class and Variety 16 x 6 and are made in sizes 11, 13, 14 and 16.

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*, and the *class* and *variety* numbers separated by the letter x.

The following is an example of an intelligible order:

"50 No. 14, 16 x 6 Needles."

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

## To Oil the Machine

To ensure easy running and prevent unnecessary wear of the parts which are in movable contact, the machine requires oiling

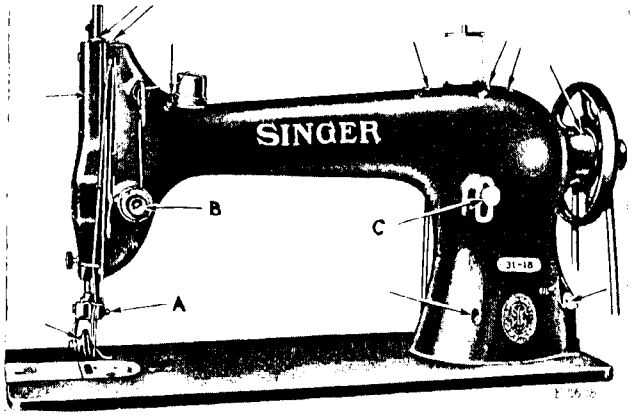


Fig. 2. Oiling Points at the Front of the Machine also Adjustments on the Machine

and when in continuous use, it should be oiled at least twice each day.

Oil should be applied to all oil holes marked "Oil" and to all other oiling places indicated by arrows in Figs. 2, 3 and 4.

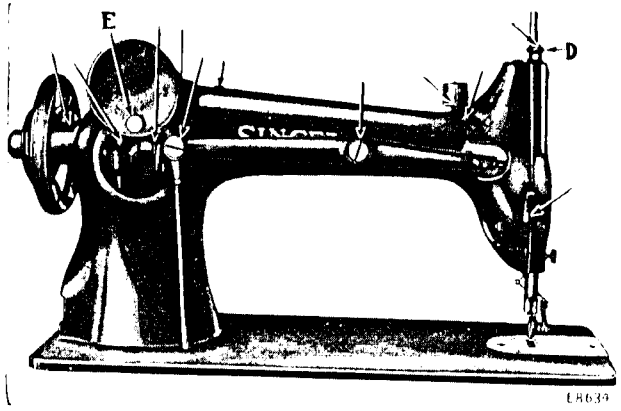


Fig. 3. Oiling Points at the Back of the Machine



Loosen the thumb screw (E, Fig. 3) in the round cover plate at the back of the machine, turn the cover plate up and oil the bearings which are thus uncovered, then replace the cover.

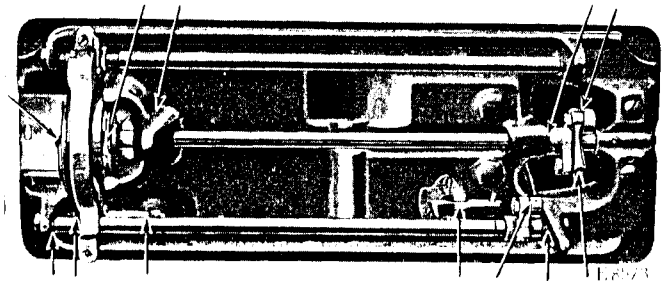

Fig. 4. Base of the Machine, Showing Oiling Points

Turn back the machine on its hinges and apply oil at the places shown by arrows in Fig. 4 and all other places where there are parts in movable contact, then bring the machine into place.

Oil should be regularly applied to the shuttle bearing in the shuttle race. Occasionally remove the face plate and apply oil to the bearings and parts which are in movable contact.

## Thread

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

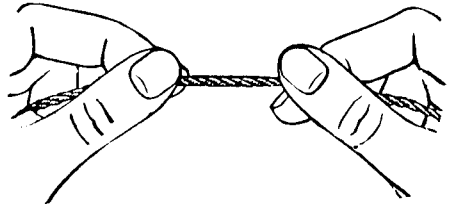

Fig. 5. How to Determine the Twist

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

## To Set the Needle

Turn the balance wheel over toward you until the needle bar moves up to its highest point; loosen the screw (A, Fig. 2, page 4) in the needle clamp and put the needle up into the clamp 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.

## To Thread the Needle

(See Fig. 6)

Pass the thread from the unwinder or the spool on the spool pin from right to left through slot (1), under spring (2) and out through

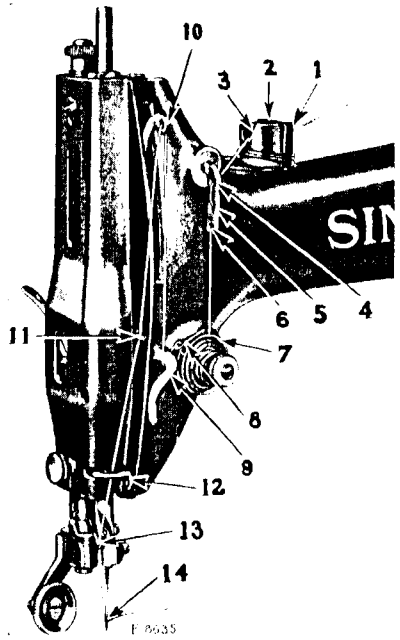


Fig. 6. Threading the Needle

slot (3) of the oil cup, from right to left through the top hole (4) of the thread retainer, from left to right through the centre hole (5) and back from right to left through the lower hole (6) of the thread retainer; then down, under from right to left between the tension discs (7), into the take-up spring (8), under the thread regulator (9), up and from right to left through the eye (10)



of the thread take-up lever, down into the thread guides (11) and (12) on the face plate, through the wire guide (13) on the needle clamp, and from left to right through the eye (14) of the needle. Draw about two inches of thread through the eye of the needle with which to commence sewing.

## To Remove the Bobbin

Turn the balance wheel over toward you until the needle reaches its highest point, and open the slide in the bed of the machine.

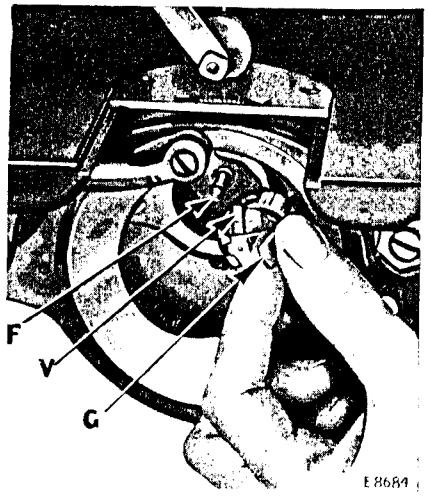


Fig. 7. Removing the Bobbin

With the left hand reach under the bed of the machine and with the thumb and forefinger open the bobbin case latch (G, Fig. 7) and lift out 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. 8)

Fasten the bobbin winder to the table with its driving pulley in front of the machine belt, so that the pulley will drop away

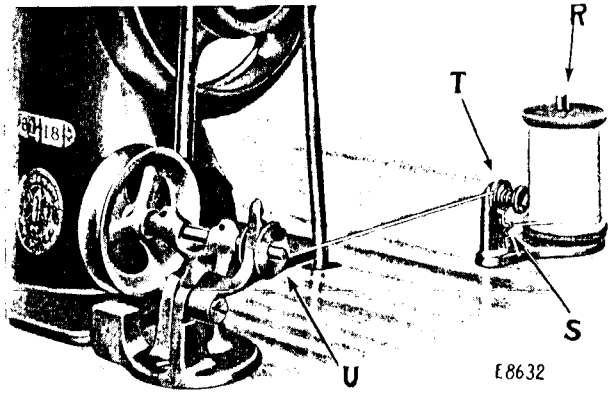


Fig. 8. Winding the Bobbin

from the belt when sufficient thread has been wound upon the bobbin. Fasten the spool holder to the table directly in line with the bobbin winder spindle as shown in Fig. 8.

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

Place a spool of thread on the spool stand pin (R). Pass the thread forward through the thread guide (S) in the tension bracket, up around and between the tension discs (T). Then wind the end of the thread around the bobbin (U) 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 in the spool holder and move the tension bracket to the right or left as may be required, then tighten the screw.

Bobbins can be wound while the machine is stitching.



## To Thread the Bobbin Case

Fig. 9

Hold the bobbin between the thumb and forefinger of the right hand, as shown in Fig. 9, the thread drawing on the top from the left toward the right.

With the left hand hold the bobbin case as shown in Fig. 9, the slot in the edge being near the top and place the bobbin into it.

Fig. 10

Fig. 11

Then pull the thread into the slot in the edge of the bobbin case as shown in Fig. 10; draw the thread under the tension spring and into the hook at the end of the tension spring. (See Fig. 11.)

## To Replace the Bobbin Case

After threading, take the bobbin case by the latch, holding it between the thumb and forefinger of the left hand; place the bobbin case on the centre stud (F, Fig. 7) of the shuttle body with the position finger (V, Fig. 7) 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. Allow about two inches of thread to hang free.

## 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 balance wheel over

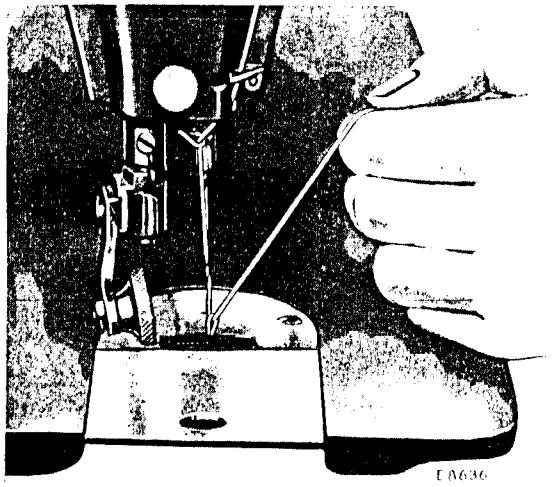

Fig. 12. Drawing Up the Bobbin Thread

toward you until the needle moves down and up again to its highest point, 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. 12). Lay both threads back under the roller presser.

## To Commence Sewing

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

Let the thread take-up lever rest at its highest point, raise the roller presser and 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 centre of the thickness of the material, thus:

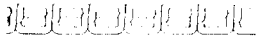

Fig. 13. Perfect Stitch

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:

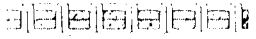

Fig. 14. Tight Needle Thread Tension

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 surface of the material, thus:

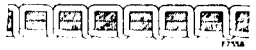

Fig. 15. Loose Needle Thread Tension

## To Regulate the Tensions

The tension on the needle thread should be regulated only when the roller presser is down. Having lowered the roller presser, turn the thumb nut (B, Fig. 2) 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 screw (1, Fig. 10) 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 the 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 usually be obtained by varying the tension on the needle thread.

### To Regulate the Length of Stitch

The length of stitch is regulated by the thumb screw (C, Fig. 2, page 4) in the slot on the front of the upright part of the arm. To lengthen the stitch, loosen this thumb screw and move it downwardly. To shorten the stitch, loosen this thumb screw and move it upwardly. When the desired length of stitch has been obtained, tighten the thumb screw (C).

### To Regulate the Pressure on the Material

The pressure on the material is regulated by the thumb screw (D, Fig. 3, page 4). To increase the pressure, turn this thumb screw over to the right. To decrease the pressure, turn this thumb screw over to the left.

### To Ensure Perfect Action of the Machine

The balance wheel must always turn over toward the operator.

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

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

Do not try to help the machine by pulling the work 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.

# INSTRUCTIONS
## FOR
## ADJUSTERS AND MACHINISTS

### To Set the Needle Bar at the Correct Height

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

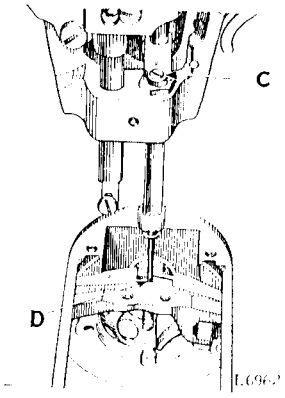


Fig. 16

Turn the balance wheel over toward you until the point of the shuttle is at the centre of the needle as shown at (D) in the illustration above, then the eye of the needle should be about $\frac{1}{16}$ inch below the point of the shuttle.

If the needle bar is not set at the correct height, loosen the needle bar clamping screw (C, Fig. 16) and raise or lower the needle bar as required, then securely tighten the clamping screw (C, Fig. 16).

### To Remove the Feed Assembly of Machine 31-18

Take out the screw (Y, Fig. 17) and loosen lock nut (W, Fig. 17). Turn the centre screw (Q, Fig. 17) to the left until the feed assembly including the long rock shaft can be lifted out of the machine.

When replacing the feed assembly, make sure that the other end of the long rock shaft is in place on its position screw, and

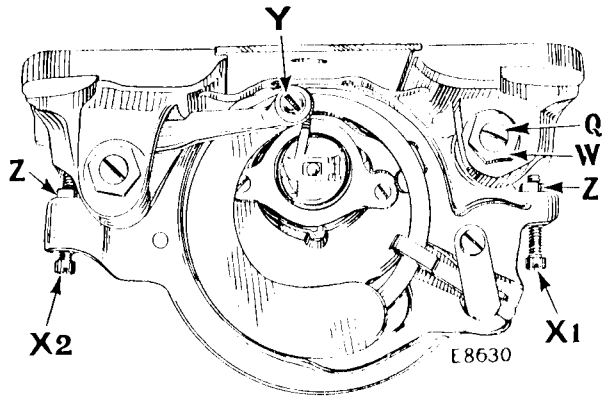


FIG 17. ADJUSTMENT FOR RAISING AND LOWERING THE FEED WHEEL (MACHINE 31-18)

fasten by turning screw (Q, Fig. 17) to the right as far as it will go. Tighten the lock nut (W, Fig. 17) and replace screw (Y, Fig. 17).

### To Remove and Replace the Shuttle Race

NOTE: On Machine 31-18 it is necessary to remove the feed assembly, as instructed above, before removing the shuttle race.

Turn the balance wheel over toward you until the needle bar moves up to its highest point. Take out the two screws (E, Fig. 18) which hold the shuttle race in position and remove the shuttle race. Then remove the shuttle from the shuttle race.

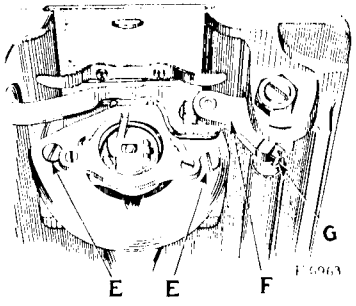


FIG. 18. ADJUSTMENT FOR RAISING AND LOWERING THE FEED DOG (MACHINES 31-17 AND 31-21)

When replacing the shuttle race, have the needle bar at its highest point and turn the shuttle in the race so that it correctly engages the shuttle driver, then securely fasten the shuttle race in position by means of the two screws (E, Fig. 18).



### To Raise or Lower the Feed Wheel (Machine 31-18)

The feed wheel should be set so that slightly more than the full depth of the teeth projects through the slot in the throat plate. To raise or lower the feed wheel, loosen the lock nuts (Z, Fig. 17) and turn the screws (X1 and X2) to the left a few turns. Lower the roller presser to put some pressure on the feed wheel; then turn screw (X1) to the right until the feed wheel is at the proper height. Turn screw (X2) until it touches the bed of the machine, and securely tighten lock nuts (Z, Fig. 17).

### To Raise or Lower the Feed Dog (Machines 31-17 and 31-21)

The feed lifting rock shaft crank (F, Fig. 18) should be set so that when it raises the feed bar to its highest point, slightly less than the full depth of the teeth project through the slots in the throat plate. To raise or lower the feed dog, loosen the clamping screw (G, Fig. 18) and move the feed lifting rock shaft crank (F) until the feed dog is set at the required height, then securely tighten the clamping screw (G).

### To Time the Feeding Mechanism

The feeding mechanism should be timed so that the feed wheel finishes its feeding movement (away from the operator) when the

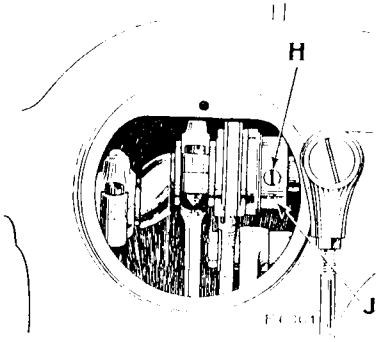


FIG. 19. ADJUSTMENT FOR TIMING FEEDING MECHANISM

thread take-up lever (10, Fig. 6, page 6) is at its highest point. The feed should always finish its feeding movement before the needle reaches the goods on its downward stroke.

When it is necessary to time the feeding mechanism, press the stitch regulator (C, Fig. 2, page 4) down to its lowest point for the longest stitch and turn up the round cover plate at the back of the machine. Loosen the feed eccentric set screw (H, Fig. 19) and turn the feed eccentric (J, Fig. 19) until the feed is correctly timed as instructed above, then securely tighten the set screw (H).

## To Adjust the Thread Take-up Spring

The thread take-up spring (M, Fig. 20) should be set so that when the eye of the needle reaches the goods on the downward

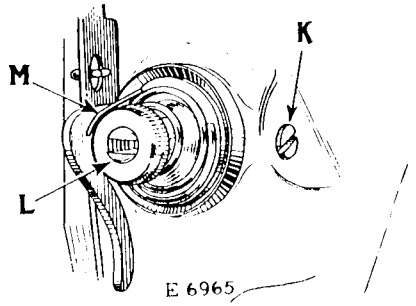


Fig. 20. Adjustment of Thread Take-up Spring

stroke of the needle bar, the spring will be through acting and will rest against the stop on the thread take-up spring regulator. If the thread take-up spring is not correctly set, loosen the set screw (K, Fig. 20) in the arm of the machine, and turn the tension stud (L, Fig. 20) to the right for more movement of the spring or to the left for less movement. When the spring is correctly set, securely tighten the set screw (K).

The tension on the thread take-up spring 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.

To increase the tension on the thread take-up spring (M), loosen the tension screw stud (L) and force the take-up spring from the recess in the regulator to the right between the regulator and the tension discs until the required tension is obtained, then securely tighten the tension screw stud and force the spring back into its position in the regulator recess. To decrease the tension, force the spring to the left between the regulator and the tension discs.