



This Trade Mark Embossed in Brass
Is on the Arm of Every
Singer Sewing Machine

Adv. No. 1856
Supersedes Forms 8789 and 8822
July, 1923
PRINTED IN U. S. A.

Advanced Research

BOOK 17 COPY

ADJUSTERS MANUAL

FOR

101 CLASS MACHINES



SINGER SEWING MACHINE COMPANY

INCORPORATED

EDUCATIONAL DEPARTMENT

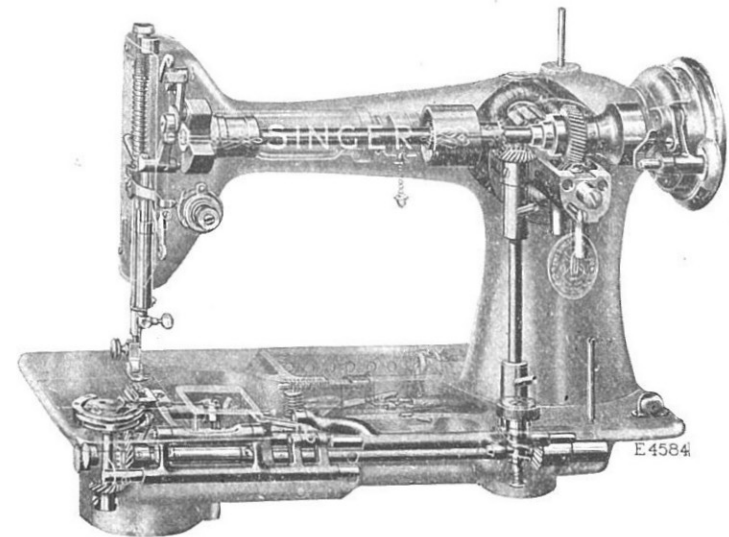
EXECUTIVE OFFICES, NEW YORK

Copyright, U. S. A., 1921, 1922 and 1923, by The Singer Manufacturing Co.
All Rights Reserved for all Countries

ADJUSTERS MANUAL

FOR

101 CLASS MACHINES



Front "X-ray" View of Machine No. 101-2

SINGER SEWING MACHINE COMPANY
EDUCATIONAL DEPARTMENT

INDEX

	PAGE
101-2 MACHINE	3-32
BOBBIN WINDER	
To ADJUST THE BOBBIN WINDER	27
To ADJUST THE BOBBIN WINDER TENSION BRACKET	26
CLOTH PLATE	
To REMOVE THE CLOTH PLATE	20
CLUTCH	
SLIPPING CLUTCH	18
To REMOVE THE CLUTCH	18-19
To REPLACE THE CLUTCH	19
CONTROLLER	
CONTROLLER FAILS TO VARY SPEED	11
CONTROLLER DOES NOT GIVE ENOUGH VARIATION OF SPEED	12
DEMONSTRATION OF MACHINE	6
FEEDING MECHANISM	
To RAISE OR LOWER THE FEED DOG	25
To TIME THE FEEDING MECHANISM	25
To REGULATE THE LENGTH OF STITCH	26
LUBRICATION	
To OIL THE MACHINE	28-29
To LUBRICATE THE MOTOR	29-31
To LUBRICATE THE BEVEL GEARS	31
MOTOR	
CIRCUITS ON WHICH MOTOR CAN BE OPERATED	4
POINTS TO DETERMINE BEFORE CONNECTING MOTOR TO CIRCUIT	4-5
To ADJUST MOTOR FOR ALTERNATING CURRENT OR DIRECT CURRENT	5
To MAKE THE ELECTRICAL CONNECTIONS	6-7
LOCATION OF MOTOR TROUBLES	8-10
MACHINE RUNS TOO SLOW	8-9
MACHINE RUNS TOO FAST	9-10
MOTOR FAILS TO RUN	10
To REMOVE AND DISASSEMBLE MOTOR	12-13
To REASSEMBLE AND REPLACE MOTOR	14-16
OPENING THE TABLE	3-4
OPERATION OF MACHINE	
To PLACE KNEE LEVER INTO POSITION FOR OPERATING	7
To START THE MACHINE	8
SINGERLIGHT	
SINGERLIGHT FAILS TO LIGHT	16
To REMOVE AND REPLACE THE BULB	16-17
SLIDE PLATE	
To REPLACE THE SLIDE PLATE	27
SPEED	8
STITCHING MECHANISM	
To TIME THE SEWING HOOK	20-22
To SET THE NEEDLE BAR AT THE CORRECT HEIGHT	23-24
To REMOVE AND REPLACE THE SEWING HOOK	24-25
101-1 MACHINE	33-35
101-10 MACHINE	36

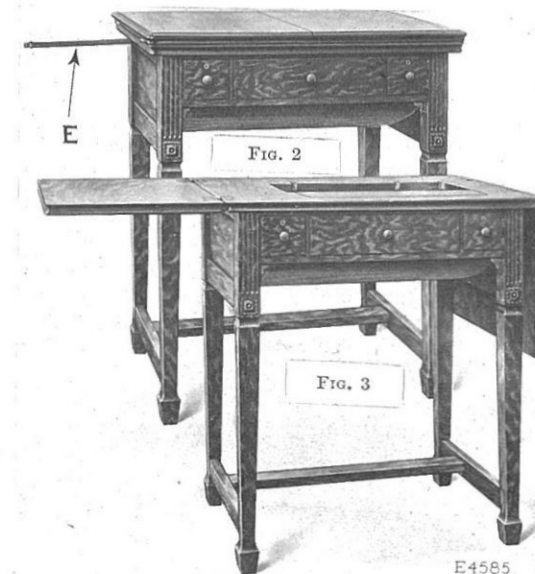
MACHINES OF CLASS 101 AND THEIR S. E. MOTORS

101-2 MACHINE

To Open the Table

SEE FIGS. 2, 3, 4 AND 8

Pull out the leaf supporter rod (E, Fig. 2) at the left of the table, and raise the two leaves at the top of the table, allowing



FIGS. 2 AND 3. To OPEN THE TABLE

the left leaf to rest on the supporter rod and the right leaf to hang loosely at the right of the table, as shown in Fig. 3.

With the right hand, raise the front hinged portion (F, Fig. 4) of the table, and at the same time, **place the left hand under**

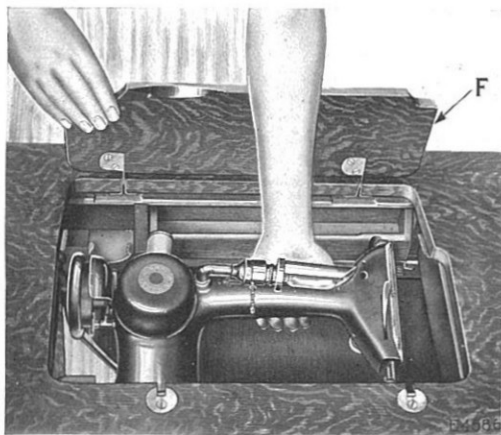


FIG. 4. RAISING MACHINE OUT OF TABLE

the front side of the arm of the machine, as shown in Fig. 4, being very careful not to touch the electric lamp or shade, and raise the sewing machine head, then replace the hinged portion of the table and lower the machine so that it rests on the table, as shown in Fig. 8, page 7.

Motor Can Be Operated on Either Alternating Current or Direct Current

The electric motor, which is built in Machine No. 101-2, can be operated on either alternating current or direct current, as desired. The standard windings of the motor are for 110 volts, and motors can also be furnished for any voltage between 100 and 250. See motor list in Electrical Primer, Adv. No. 1855.

Special motors for 32 volts direct current have also been developed and are available.

Points to Determine Before Connecting Motor to Electric Service Line

Obtain the following information from the Electric Light Company which supplies the electric current for the circuit to which the motor is to be connected:

1. Whether alternating current or direct current is used.
2. What is the voltage? This must not vary more than 10% from the voltage stamped on the name plate (B, Fig. 5, page 5) of the motor.

3. If the circuit is alternating current, what is the number of cycles? The number of cycles stamped on the name plate of the motor must correspond with that of the circuit to which the motor is to be connected.

4. The current and voltage of any circuit can generally be verified by looking at the name plate on electric meter installed by the local Electric Light Company.

To Adjust the Motor for Alternating Current or Direct Current

Remove the motor cover (C, Fig. 5) by turning it toward the balance wheel, and the windings of the motor are exposed.

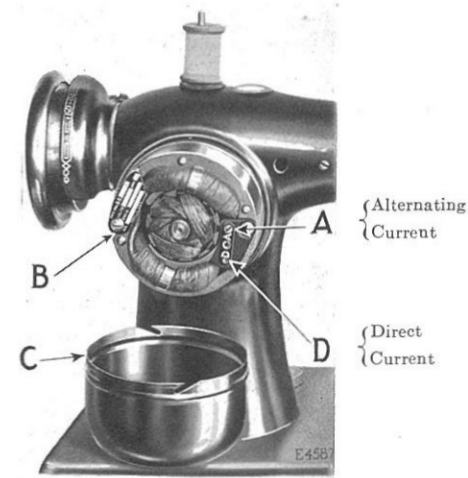


FIG. 5. ADJUSTMENT OF MOTOR

If the motor is to be operated on alternating current, the round-head brass screw in the terminal plate should be inserted in the top hole marked "A" in Fig. 5, and firmly tightened.

If the motor is to be used on direct current, the round-head brass screw should be inserted in the bottom hole marked "D" in Fig. 5, and firmly tightened.

When the screw has been tightened in the correct hole, replace the motor cover (C) having the two notches in the cover engage the pins at the top and bottom of the motor frame.

To Ensure Correct Demonstration of Machine

1. Never demonstrate the machine on a direct current circuit with the motor adjusted for alternating current, as this will give an excessively high speed, and would also be misleading to the customer.

2. For most efficient sewing speed the circuit voltage must not exceed, or be more than 10% less than name plate voltage of motor. A higher voltage will produce an excessive speed and will be injurious to motor, while a lower voltage will cause motor to operate at too slow a speed.

3. The sewing machine should be demonstrated on the same current and as near as possible at the same voltage as will be used by customer.

To Make the Electrical Connections

Attach the plug at one end of the long electric cord (H, Figs. 6 and 7) furnished with the machine, to the nearest electric light

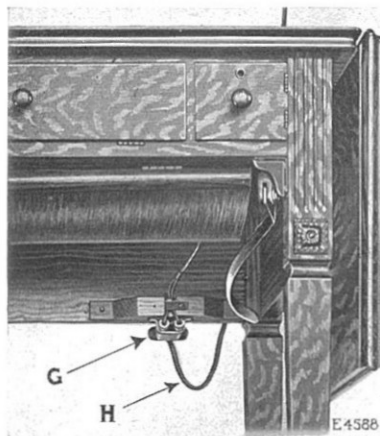


FIG. 6. ELECTRICAL CONNECTION
ALSO KNEE LEVER RAISED OUT OF OPERATION

socket and push the terminal block (G, Fig. 6) at the other end of the cord as far as it will go on the two connectors underneath the table, as shown in Fig. 6.

See that the two sockets (I and J, Fig. 7) at the ends of the two short electric cords of the stand are pushed as far as they

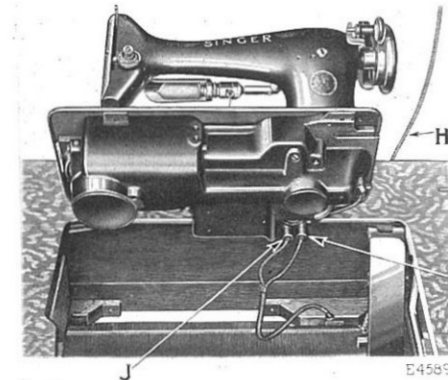


FIG. 7. ELECTRICAL CONNECTIONS

will go on the two connectors on the underside of the bed of the machine, as shown in Fig. 7.

To Place the Knee Lever into Position for Operating

Pull the knee lever down and forward (K, Fig. 8) to the position shown in Fig. 8.

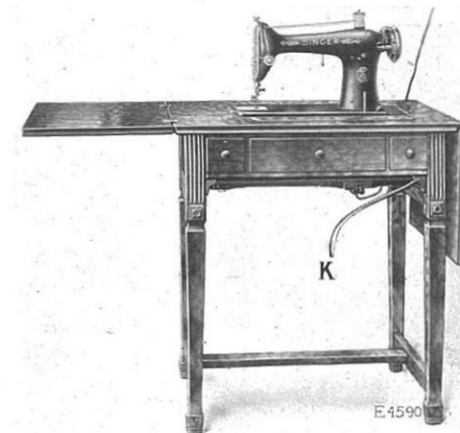


FIG. 8. KNEE LEVER LOWERED INTO POSITION FOR OPERATING

To Start the Machine

Turn on the electric current and press the knee lever (K, Fig. 8, page 7) to the right. As the pressure on the knee lever is increased, the speed of the machine is increased, the speed being controlled entirely by the amount of pressure on the knee lever.

Speed

The motor, at full speed, should drive the sewing machine at a speed of **not less than** 900 stitches per minute.

If the sewing machine has not been run for some time, the speed may be lower until the lubricant has thoroughly covered all of the bearings. Run the machine a few minutes with the presser foot raised, and without being threaded, and the machine will quickly attain its full speed, provided no other trouble exists.

If, after running the machine a few minutes, the speed is still below 900, it may be due to any one of the following reasons:

Location of Motor Troubles

Speed of Machine Too Slow

1. See if the round-head brass screw is in the correct hole in the terminal plate at the back of the motor. Operating the motor on alternating current with the screw in the hole marked "D" will cause the motor to run slow.

2. See that the round-head brass screw is firmly fastened in position (either at D or A). If this screw is loose, the motor will run slow. Be sure that the thread of the screw is not stripped, as this will make it impossible to tighten the screw firmly. In this case put in a new screw.

3. Ascertain if the voltage of the circuit corresponds with that stamped on the motor name plate. If the motor is run on a lower voltage than that stamped on the name plate, the speed of the motor will be too slow.

4. When the motor is used on alternating current, see if the number of cycles of the circuit corresponds with that stamped on the motor name plate. A 50 cycle motor will run slow on a 60 cycle circuit.

Speed of Machine Too Slow—Continued

5. Remove the cloth plate as instructed on page 20, and observe whether the contact finger (T3, Fig. 10, page 11) of the controller bears firmly on the contact buttons and that it makes a good connection with the contact button (V3, Fig. 10) when the knee lever is pressed as far to the right as it will go. If it does, the trouble is not in the controller.

6. See that the two sockets (I and J, Fig. 7, page 7) fit tightly on the two connectors on the underside of the bed of the machine, and that the terminal block (G, Fig. 6, page 6) fits tightly on the two connectors underneath the table. If the sockets or terminal block fit loosely, slightly spread apart the two prongs of each connector, so as to make them fit tightly in the sockets or terminal block.

7. Too much pressure on the presser foot will retard the speed of the machine. The pressure on the presser foot should be adjusted to be light as possible without interfering with the feeding of the material.

8. See that there is no carbon or grease on the commutator of the motor or that the commutator is not rough, causing the motor to run slow. (Instructions for disassembling the motor are given on pages 12 and 13). The carbon can be easily removed with a rubber eraser.

9. Binding gears may cause the motor to run slow. Loosen the screw (K3, Fig. 24, page 27) at the front of the upright part of the arm which holds the motor frame in the machine. With the knee lever held at full-speed position, turn the motor frame slightly in each direction and note whether there is any increase in speed. If there is, turn the motor frame to the point where the speed is highest, then firmly tighten the screw (K3).

10. If none of these remedies prove to be effective, return the machine to the factory.

Speed of Machine Too Fast

This may be due to the following:

1. See if the round-head brass screw is in the correct hole in the terminal plate at the back of the motor. Operating the motor on direct current with the screw in the hole marked "A" will cause the motor to run too fast.

2. Ascertain if the voltage of the circuit corresponds with that stamped on the motor name plate. If the motor is run on

Speed of Machine Too Fast—Continued

a higher voltage than that stamped on the name plate, the speed of the machine will be too fast.

3. When the motor is used on alternating current, see if the number of cycles of the circuit corresponds with that stamped on the motor name plate. A 60 cycle motor will run too fast on a 50 cycle circuit.

Motor Fails to Run

This may be due to any one of the following reasons:

1. Loose or broken connections.
2. Observe carefully all plugs and connections and make sure that there are no broken wires and that all screwed connections are tight.
3. Electric current not turned on.
4. See that the voltage and number of cycles of the circuit corresponds with that stamped on the motor name plate.
5. Round-head brass screw in terminal plate hole (either A or D) not making good contact. The screw may be loose or the threads on the screw may be stripped.
6. Carbon brushes (W, Fig. 13, page 13) not making contact due to sticking in brush tubes or on account of grease on the commutator.
7. Controller circuit open. Note whether the contact finger (T3, Fig. 10, page 11) makes good contact on the various buttons of the controller.

Turn the balance wheel slowly over toward you by hand to ascertain if there is any excessive friction or binding in the machine.

Remove the motor from the machine, as instructed on pages 12 and 13, and see if armature turns over freely by running the finger over the spiral pinion (U, Fig. 12, page 12). If the armature turns stiffly, it should be adjusted to turn freely by following the instructions given on page 15.

Excessive friction in the motor may be due to any of the following reasons:

1. Spiral pinion (U, Fig. 12, page 12) on motor shaft not properly adjusted.
2. No lubricant in grease cups (Q, Fig. 11, page 12).
3. Lubricating wicks (P, Fig. 11, page 12) not touching motor shaft.
4. Brush tubes (V, Fig. 13, page 13) rubbing on commutator.
5. Armature striking field coils.

Controller Fails to Vary Speed

This may be caused by a short circuit in the controller connections (M or O3, Fig. 9). Examine these connections carefully for any defects.

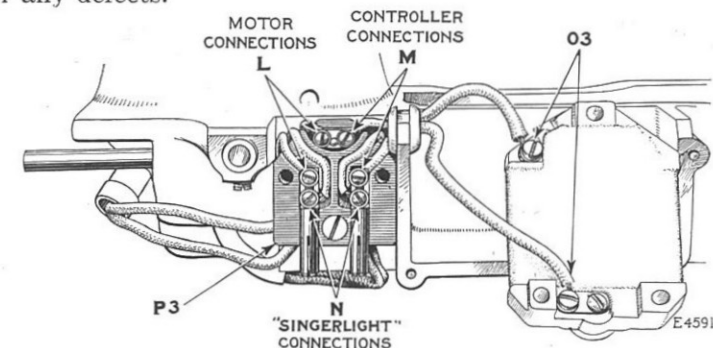


FIG. 9. SHOWING TERMINAL BLOCK AND CONTROLLER CONNECTIONS

To reach the controller connections (M) take out the two screws which fasten the cover to the terminal block (P3, Fig. 9) and remove the cover.

To reach the controller connections (O3) remove the cloth plate as instructed on page 20, then take out the headless screw (R3, Fig. 10), slide the connecting rod (Q3, Fig. 10) away from the controller box and lift out the driving lever and spring (S3, Fig. 10). Then take out the three screws which hold the controller resistance in place and lift out the controller resistance. When replacing the headless screw (R3) be sure to have the unthreaded hole in the end of the connecting rod (Q3) at the top.

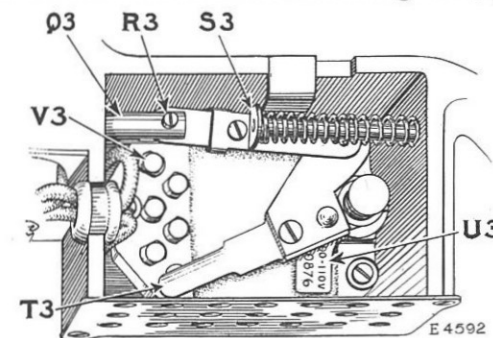


FIG. 10. SHOWING CONTROLLER RESISTANCE

Fig. 10 shows the normal position for the contact finger (T3) when the motor is at rest. While in this position, the contact finger rests on a dead contact button so that the electric current is not transmitted to the motor. To prevent short-circuiting of contact buttons by metal particles worn off by friction between contact finger and buttons, the spaces between the buttons should be brushed out occasionally.

Controller Does Not Give Enough Variation of Speed

See that the marking on the name plate of the controller resistance (U3, Fig. 10, page 11) corresponds with that on the motor name plate (B, Fig. 5, page 5). If both are marked the same, try another controller. If the second controller operates satisfactorily, return the first controller to the factory for inspection.

To Remove and Disassemble the Motor

Remove the motor cover (C, Fig. 5, page 5) from the motor frame, also remove the cloth plate from the machine as instructed

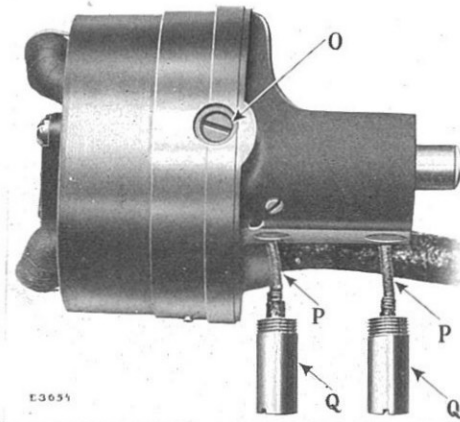


FIG. 11. VIEW OF MOTOR, SHOWING GREASE CUPS REMOVED

on page 20. Take out the two screws which fasten the cover to the terminal block (P3, Fig. 9, page 11) at the back of the machine and remove the cover. Loosen the two screws (L, Fig. 9) and disconnect the motor wires from the terminal block.* Then take out the large screw which fastens the terminal block (P3, Fig. 9)

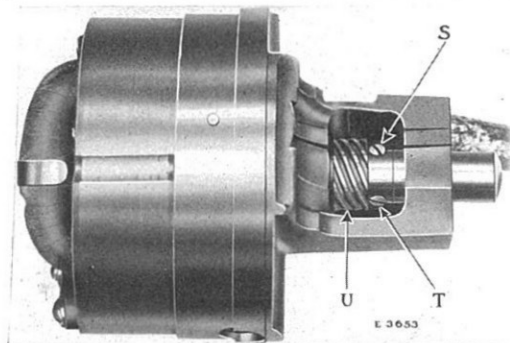


FIG. 12. VIEW OF MOTOR, SHOWING SPIRAL DRIVING PINION

To Remove and Disassemble the Motor—Continued

to the machine and slightly draw the terminal block away from the machine so that the motor wires can be withdrawn from the grooves in the terminal block. Take out the screw (K3, Fig. 24, page 27) which holds the motor frame in the machine and the large screw near it, which covers the end of the motor armature, then turn the motor frame slightly from side to side and at the same time pull it outward to remove it from the machine, drawing the insulating cable and two wires up through the hole in the bed.

Remove the two grease cups (Q, Fig. 11, page 12) to prevent the wicks (P, Fig. 11) being sheared off when replacing the armature in the motor frame.

Motors with *brushes at the sides, as shown at "W" in Fig. 13, have two screws (O, Fig. 11) and (A2, Fig. 14, page 14) one being

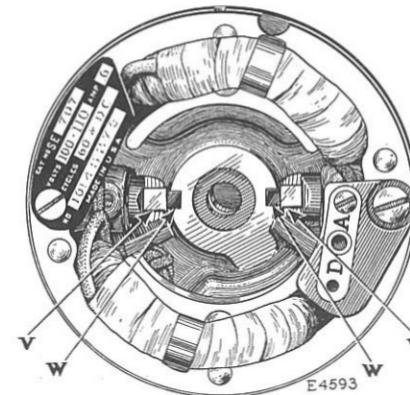


FIG. 13. INTERNAL VIEW OF MOTOR, SHOWING BRUSHES AT THE SIDES

in each side of the motor frame. Take out these two screws, being careful to see that the springs which are under the screws do not spring out, then turn the motor frame so that the springs and brushes will drop out of the screw holes.

Loosen the two set screws (S and T, Fig. 12) in the spiral pinion and withdraw the armature from the motor frame, being careful not to damage the wiring of the armature or the surface of the commutator.

By removing the armature from the motor frame, the spiral pinion (U, Fig. 12) is separated from the armature shaft so that it can be lifted out of the recess between the two motor bearings.

*When Class 101 Machine was first placed on the market, some of the motors were sent out with the brushes mounted parallel with the motor shaft. The brushes are now mounted at right angles to the shaft.

To Reassemble and Replace the Motor

Place the spiral pinion (U, Fig. 12) in the recess between the two bearings in the motor frame, being careful to have the teeth of the spiral pinion toward the armature. Then gently replace the armature in the motor frame, passing the armature shaft through the hole in the spiral pinion (U). Push the armature into the motor frame as far as it will go, then push the spiral pinion against the inner bearing (Z, Fig. 14) in the motor frame, being careful to see that there is no grease or dirt between the pinion and bearing.

Fasten the spiral pinion to the armature shaft by means of the two set screws (S and T, Fig. 12, page 12) tightening first the set screw which bears against the flat part of the shaft. To determine the flat part of the shaft for the spiral pinion set screw, turn the armature shaft until the small flat mill on its end is in line with the set screw in the spiral pinion, then tighten the set screw.

It will be noticed that there is a bronze painted mark and an aluminum painted mark on the outside of the motor frame casting, and that one of the brushes has a small bronze painted mark on one of its sides, and the other brush an aluminum painted mark. When replacing the brushes, care must be taken to insert the brush which is marked with bronze into the screw hole in the side of the motor marked with bronze, inserting the unmarked end of the brush in first with the marked side of the brush facing toward the marking on the motor frame.

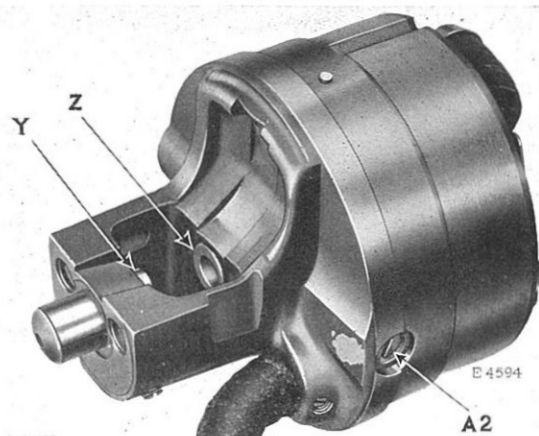


FIG. 14. VIEW OF MOTOR SHOWING CLEARANCE BETWEEN BEARINGS FOR SPIRAL DRIVING PINION

To Reassemble and Replace the Motor—Continued

The brush marked with the aluminum must be inserted into the screw hole in the side of the motor frame marked with aluminum, the unmarked end of the brush being inserted first with the marked side of the brush facing toward the marking on the motor frame. This will ensure a perfect contact of the brushes against the commutator surface of the motor. Having inserted the brushes and springs into the brush tubes (V, Fig. 13, page 13) replace the screws (O, Fig. 11, page 12) and (A2, Fig. 14, page 14) and turn each screw inwardly until the top of its head is flush with the top edge of the fibre tube.

See if motor armature turns over freely by running the finger over the spiral pinion (U, Fig. 12, page 12). If it turns stiffly, the spiral pinion may be set too tight against the inner bearing (Z, Fig. 14). In this case, insert a piece of heavy wire through the small hole in centre of the end of the outer bearing (Y, Fig. 14) and gently tap the wire until the armature turns freely without end play. The clearance for the spiral pinion (U) between the two motor bearings (Y and Z, Fig. 14) must be only sufficient to allow the spiral pinion to rotate without friction. Too much clearance will cause the armature to vibrate when running, making the motor noisy. If there is too much clearance, gently tap the end of the outer bearing (Y, Fig. 14) toward the spiral pinion.

Fill the two grease cups (Q, Fig. 11, page 12) with Singer Motor Lubricant. See that the two felt wicks (P, Fig. 11) are not twisted or bent, as the ends of the wicks must press positively against the motor shaft to ensure proper lubrication. Replace the grease cups in the motor frame, being careful to insert the wicks into the holes in the motor bearings. Then thoroughly grease the spiral pinion (U, Fig. 12, page 12) with Singer Motor Lubricant.

To replace the motor, pass the two wires and insulating cable of the motor down inside of the arm and through the hole in the bed. (A piece of wire with a hook at one end may be inserted from below to draw the wires and cable down through the hole in the bed). While drawing the wires and cable through the hole in the bed, gently insert the motor into the machine, and turn it slightly from side to side until the spiral pinion meshes with the gear on the arm shaft and the motor will slip into position. Replace the screw (K3, Fig. 24, page 27) which fastens the motor frame in the machine, but do not tighten it. Place the two motor wires into the grooves at the back and front of the terminal block (P3, Fig. 9, page 11) and fasten the ends of the wires to the terminal block by means of the two screws (L, Fig. 9), then fasten the terminal block to the machine by means of the large screw,

To Reassemble and Replace the Motor—*Continued*

being careful to see that the fibre insulator is placed between the terminal block and the machine. Then replace the terminal block cover.

With the knee lever held at full speed position, turn the motor frame slightly in each direction until the point where the speed is highest is reached, then firmly tighten the screw (K3, Fig. 24), thus fastening the motor frame securely in position. Then replace the motor cover and the screw in the front end of the armature shaft.

Singerlight Fails to Light

This may be due to any one of the following reasons:

1. Electric current not turned on.
2. Singerlight pull socket not turned on.
3. Loose or broken connections. See that the two screws (N, Fig. 9, page 11) which fasten the Singerlight wires to the terminal block are firmly tightened.
4. The electric light bulb may be broken or burnt out.

To Remove and Replace the Bulb

To remove the bulb, hold the Singerlight socket (Fig. 15) tightly with one hand and with the other hand turn the shade halfway

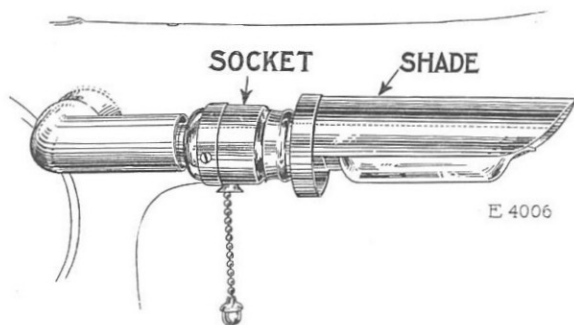


FIG. 15

around until the pin for the shade (Fig. 16) is in the slot of the shade, then gently slip the shade off and allow it to hang free as shown in Fig. 16.

Do not attempt to unscrew the bulb. It is of the bayonet and socket type and does not unscrew. Press the bulb into the

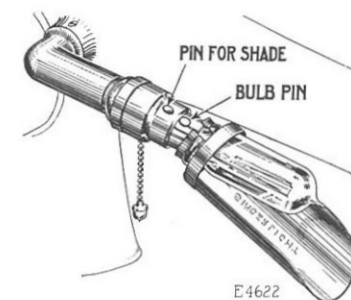


FIG. 16

socket and at the same time turn it away from the machine until the bulb pin is out of the notch in the socket, then withdraw the bulb and shade.

To insert a new bulb, pass the bulb through the collar of the shade with the frosted side of the bulb down and the slot of the shade upward. Hold the socket tightly with one hand and at the same time with the other hand press the bulb into the socket with the bulb pin in the slot and turn it towards the machine until this pin is in the notch. Then slip the shade over the socket, having the pin for the shade in the slot of the shade. When the pin is opposite the groove of the shade, turn the shade halfway around or until it is at the top as shown in Fig. 15.

In those cases where the voltage is in excess of 110 volts, a special adapter in the form of a resistance unit is provided which will permit of a standard 110 volt Singerlight being used with the outfit. See page 32.

Slipping Clutch

To determine whether the clutch is slipping, remove the motor cover and press the knee lever to full speed position. If the armature rotates while the sewing machine remains idle, the clutch is slipping.

This may be due to any one of the following reasons:

1. Worn clutch roller (C2, Fig. 17).
2. Weakened or broken clutch spring (D2, Fig. 17). (The clutch spring should be strong enough to force the clutch roller against the bearing surface of the clutch gear).
3. Clutch roller and spring clogged with heavy grease or dirt.

Instructions for removing the clutch from the machine are as follows:

To Remove the Clutch from the Machine

Remove the motor from the machine as instructed on page 12.

Loosen the screw (N2, Fig. 17) in the stop motion thumb nut (M2, Fig. 17) at the right of the balance wheel and unscrew the

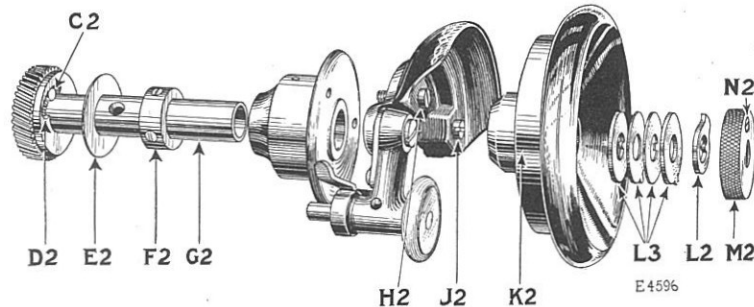


FIG. 17. VIEW OF PARTS REMOVED FROM THE MACHINE
SHOWING CLUTCH ROLLER AND CLUTCH SPRING

thumb nut (M2). Then remove the washer (L2, Fig. 17), the four washers L3, loosen the two set screws in the hub of the balance wheel and remove the balance wheel. Take out the two screws (H2 and J2, Fig. 17) which fasten the bobbin winder bracket and belt cover to the machine, and slide the bracket off the arm shaft, being careful not to spring the arm shaft. Withdraw the bushing (G2, Fig. 17)

To Remove the Clutch from the Machine—Continued

upon which the gear clutch is mounted, then loosen the two set screws in the collar (F2, Fig. 17, page 18) and slide the collar and washer (E2, Fig. 17) away from the gear clutch. Remove the roller (C2, Fig. 17) and spring (D2, Fig. 17) and thoroughly clean the spring and roller bearing in the gear clutch.

To Replace the Clutch in the Machine

Replace the spring and roller in the bearing in the gear clutch, being careful to see that the spring bears evenly against the roller. Place the washer (E2, Fig. 17) as closely as possible to the gear clutch without causing the gear to bind, then fasten the collar against the washer (E2) by means of the two set screws.

Replace the bushing (G2, Fig. 17) on the arm shaft. Then replace the bobbin winder bracket and belt cover and firmly fasten it by means of the two screws (H2 and J2, Fig. 17). Replace the balance wheel and before tightening it, slip washers (L3, Fig. 17) over the end of the arm shaft in the following order: first, the thick washer with inside key in keyway of arm shaft; second, the thin washer with outside key in keyway of balance wheel; third, the thin washer with inside key in keyway of arm shaft; fourth, the thick washer with outside key in keyway of balance wheel. Next slip washer (L2, Fig. 17) over the end of arm shaft with the key in the keyway of the shaft. Then replace the stop motion thumb nut (M2, Fig. 17) and screw it on the shaft as far as it will go, after which tighten the screw (N2, Fig. 17) in the stop motion thumb nut. See that the screw (N2) does not bear on the projection on the outside of the washer (L2), also that there is sufficient clearance between the projection and the screw to release the balance wheel, or to lock it by means of the stop motion thumb nut. If the screw (N2) bears on the projection, or there is not sufficient clearance, loosen the screw (N2), remove the stop motion thumb nut and reverse the position of the washer (L2) on the shaft, then replace the stop motion thumb nut and firmly tighten the screw (N2).

The balance wheel should now be fastened in position by means of the two set screws in its hub. See whether bushing runs free on shaft; if not, the two balance wheel set screws are too tight. The balance wheel hub should be adjusted as closely as possible to the face of the arm shaft bushing without binding.

Then replace the motor in the machine as instructed on pages 15 and 16.

To Remove the Cloth Plate

Raise the needle to its highest point, also raise the presser foot. Unscrew the bobbin winder spool pin and take out the four screws which hold the cloth plate to the bed of the machine, then raise the cloth plate clear of the stitch regulator and draw it to the left under the presser foot to remove it from the machine.

To Time the Sewing Hook

Remove the cloth plate as instructed above, then remove the presser foot, throat plate, feed dog and face plate. Also take out

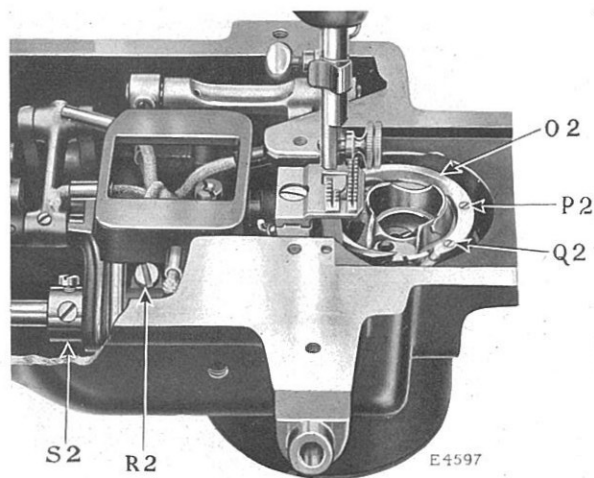


FIG. 18. VIEW OF MACHINE SHOWING ROTATING HOOK SECTION (O2)
ALSO ADJUSTING SCREW (R2) FOR RAISING AND LOWERING
FEED DOG AND ECCENTRIC (S2) FOR TIMING
FEEDING MECHANISM

the two screws (P2 and Q2, Fig. 18) and remove the rotating hook section (O2, Fig. 18) then lift out the bobbin case. This will give a clear view of the point of the hook and the needle for the purpose of timing.

To Time the Sewing Hook—Continued

Turn the balance wheel over toward you until the needle bar connecting stud (U2, Fig. 19) which has upon it two timing marks,

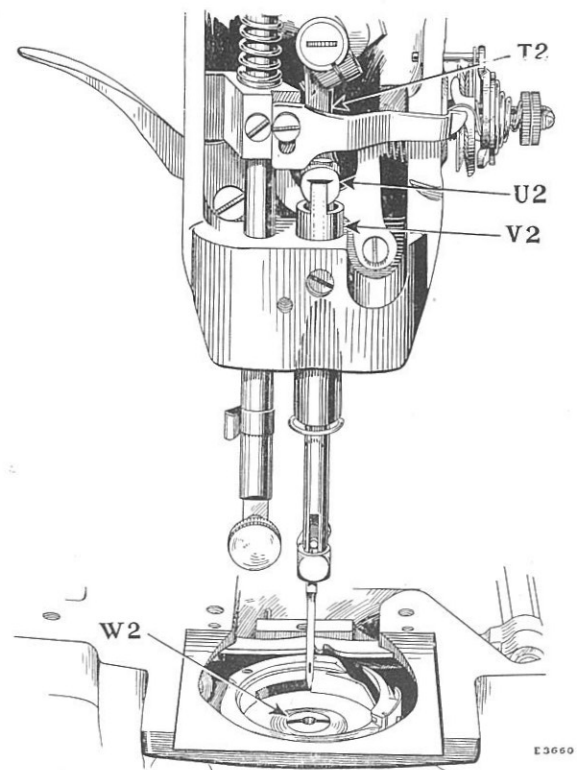


FIG. 19. SHOWING CORRECT ADJUSTMENT OF TIMING GAUGE

moves down to its lowest point. When the stud is in this position, the upper mark should be centred on the top of the finger of the timing gauge (V2, Fig. 19) which is fitted around the needle bar bushing. In some cases it may be necessary to raise or lower the timing gauge to bring the top of its finger on a line with the upper mark on the stud when the stud is at its lowest point, as shown in Fig. 19.

Then turn the balance wheel over toward you until the lower mark on the needle bar connecting stud (U2, Fig. 20) is centred

To Time the Sewing Hook—Continued

on the top of the finger of the timing gauge (V2, Fig. 20) when the needle bar is on its upward stroke. When the needle bar is

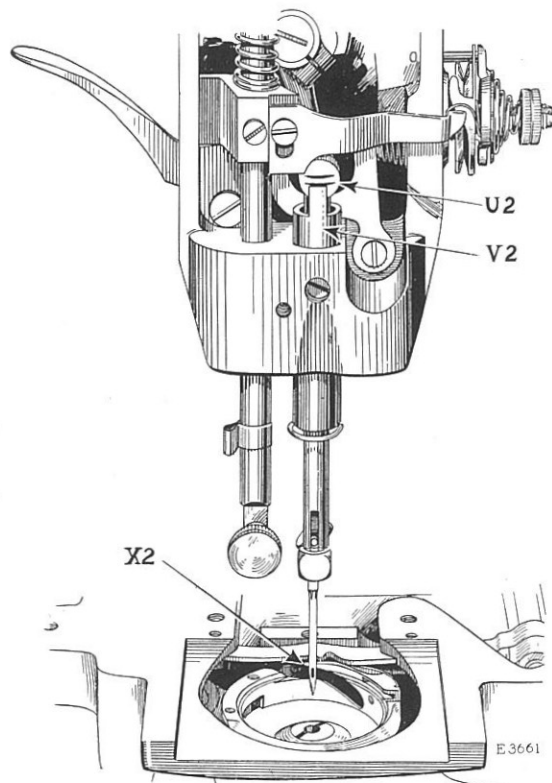


FIG. 20. SHOWING NEEDLE AND HOOK CORRECTLY TIMED

in this position, the point of the hook should be just visible at the left of the needle, as shown at "X2" in Fig. 20, if the hook is correctly timed.

In case the hook is not correctly timed, tip the machine back on its hinges and remove the large circular cover plate at the left on the underside of the bed, then loosen the two set screws (Z2 and A3, Fig. 21, page 23) in the large gear (Y2, Fig. 21) at the end of the rotating shaft, and turn the hook until its point is just visible at the left of the needle as shown at "X2" in Fig. 20.

To Time the Sewing Hook—Continued

then firmly tighten the two set screws (Z2 and A3, Fig. 21) in the large gear, being careful to see that the gear is pushed against the

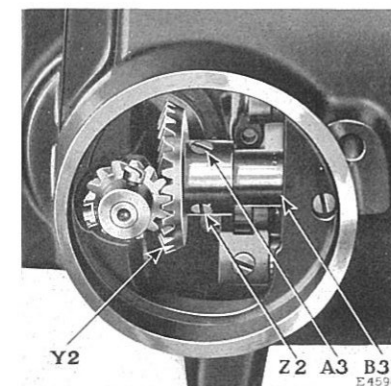


FIG. 21. SHOWING GEAR ADJUSTMENT FOR CHANGING TIME OF HOOK

bushing (B3, Fig. 21) after the end play has been taken up in the rotating shaft. This will ensure quiet running gears. Access to the rotating shaft, for taking up the end play, is obtained by removing the small circular cover plate at the right on the underside of the bed, so that the shaft can be moved to the left by hand. When the hook has been correctly timed, replace the two circular cover plates.

IMPORTANT: With the exception of the bevel gear (Y2, Fig. 21) and the spiral driving gears of the motor and clutch, **great care must be taken not to disturb or change the adjustment of any of the other gears in the machine**, as they are carefully ground and positioned to gauge at the factory and do not require any adjustment.

To Set the Needle Bar at the Correct Height

See that the needle is pushed up into the needle bar as far as it will go.

Turn the balance wheel over toward you until the lower timing mark on the needle bar connecting stud (U2, Fig. 20, page 22)

To Set the Needle Bar at the Correct Height—*Continued*

is centred on the top of the finger of the timing gauge (V2, Fig. 20) on the upward stroke of the needle bar. When the needle bar connecting stud (U2) is in this position, the needle bar should be set so that the top of the eye of the needle will be about $\frac{1}{16}$ inch below the point of the hook as shown at "X2" in Fig. 20.

In case the needle bar is not set at the correct height, loosen the screw in the lower end of the needle bar connecting link (T2, Fig. 19, page 21). (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 needle bar connecting stud (U2, Fig. 20) until it is at the correct height, as instructed above, then firmly tighten the screw in the needle bar connecting link.

To Remove and Replace the Sewing Hook

To remove the hook, take out the centre screw (W2, Fig. 19, page 21) which holds the hook to the hook shaft and lift out the hook.

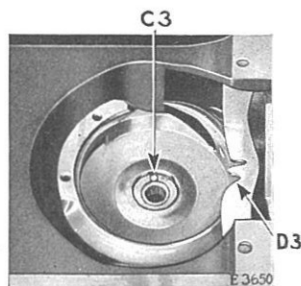


FIG. 22. SHOWING POSITION PIN IN NOTCH IN HOOK

When replacing the hook on the hook shaft, be sure that there is no dirt between the hook and shaft; also see that the small position pin (C3, Fig. 22) at the top of the hook shaft, enters the notch in the side of the shaft opening in the hook, then press down on the hook and fasten it firmly in position with the screw (W2, Fig. 19).

To Remove and Replace the Sewing Hook—*Continued*

When replacing the bobbin case in the hook, have the position finger on the bobbin case enter the front notch (D3, Fig. 22, page 24) in the position plate, then replace the rotating hook section (O2, Fig. 18, page 20) and fasten it firmly with the two screws (P2 and Q2, Fig. 18).

To Raise or Lower the Feed Dog

The feed dog should be set so that when it is raised to its highest point by the feed lifting rock shaft, the top of the feed points will be about $\frac{3}{64}$ inch above the top surface of the throat plate. At this height, slightly less than the full depth of the teeth will project through the feed dog slots in the throat plate.

When it is necessary to raise or lower the feed dog, remove the cloth plate, as instructed on page 20. Loosen the clamping screw (R2, Fig. 18, page 20) in the feed lifting rock shaft (back) and raise or lower the feed dog until it is at the correct height as instructed above, then firmly tighten the clamping screw (R2).

To Time the Feeding Mechanism

The feeding mechanism should be timed so that the feed dog will begin its forward movement (away from the operator) when the needle bar commences its downward stroke.

When it is necessary to time the feeding mechanism, remove the cloth plate as instructed on page 20. Then turn the feed regulating disc (F3, Fig. 23, page 26) over to the right as far as it will go, so that the numeral 6 will be at the front.

Loosen the two set screws in the feed eccentric (S2, Fig. 18, page 20) allowing one of the screws to bind slightly on the shaft, then turn the feed eccentric forward or backward, as may be required, until the feed dog is in time with the needle bar as instructed above. When the feeding mechanism is correctly timed, firmly tighten the two set screws in the feed eccentric (S2).

To Regulate the Length of Stitch

The length of stitch is regulated by the feed regulating disc (F3, Fig. 23) located on the bed of the machine at the right.

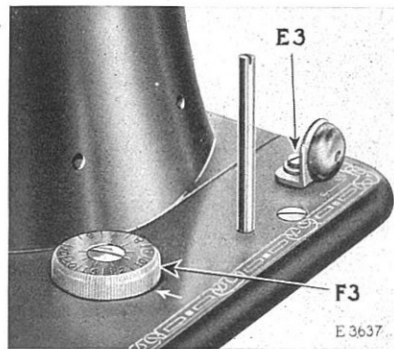


FIG. 23. SHOWING STITCH REGULATOR
ALSO ADJUSTMENT OF BOBBIN WINDER TENSION BRACKET

This disc is marked with arbitrary numbers ranging from 6 to 30, which indicate the various lengths of stitches that the machine will make, No. 6 being the longest stitch and No. 30 the shortest stitch. (The numerals do not denote the number of stitches to the inch). The length of stitch that the machine is ready to make is indicated by the number nearest the arrow marked on the cloth plate of the machine.

To increase the length of stitch, turn the feed regulating disc (F3) over to the right until the number of the desired length of stitch is nearest to the point of the arrow.

To shorten the stitch, turn the feed regulating disc over to the left until the number of the desired length of stitch is nearest the point of the arrow.

To Adjust the Bobbin Winder Tension Bracket

If the thread does not wind evenly on the bobbin, loosen the screw (E3, Fig. 23) which holds the bobbin winder tension bracket on the cloth plate and move the bracket to the right or left as may be required, then firmly tighten the screw.

To Adjust the Bobbin Winder

If the pressure of the bobbin winder pulley against the hub of the balance wheel is insufficient for winding the bobbin, loosen

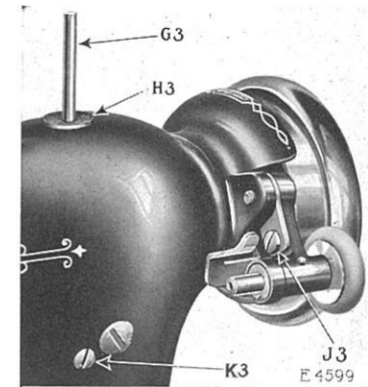


FIG. 24. ADJUSTMENT OF BOBBIN WINDER

the adjusting screw (J3, Fig. 24) and press down on the bobbin winder until the pulley is in contact with the hub of the balance wheel, then tighten the adjusting screw (J3). The pressure of the bobbin winder pulley against the hub of the balance wheel should be just sufficient to cause the bobbin winder pulley to rotate. Too much pressure will prevent the bobbin winder pulley rotating.

Slide Plate

When it is necessary to replace a slide plate in a cloth plate, this can be done by removing the cloth plate from the machine and slipping the slide plate into the slideway from the throat plate end, or, if desired, the slide plate can be replaced with the cloth plate attached to the machine by holding the slide plate at an angle of 45 degrees across the slide opening and slipping one end of the spring under one side of the slideway, then tipping the slide plate and slipping the other end of the spring under the opposite side of the slideway and swinging the slide plate around straight so that it will drop into position.

LUBRICATION OF MACHINE 101-2

To Oil the Machine

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

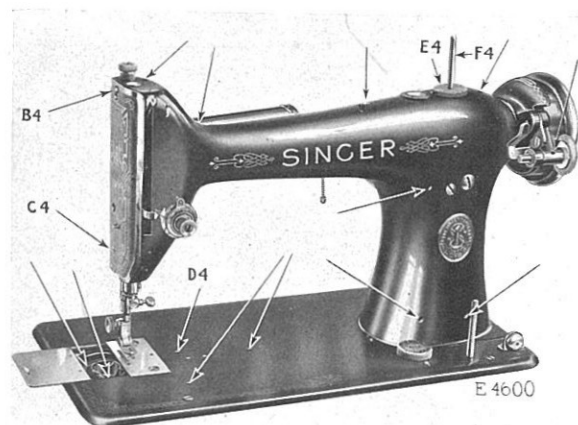


FIG. 25. FRONT VIEW, SHOWING OILING POINTS

and if used continuously, it should be oiled each day. With moderate use, an occasional oiling is sufficient. Oil should be applied at each of the places shown by arrows in Figs. 25, 26 and 27. One drop of oil at each point is sufficient, with the exception of the oil hole (D4, Fig. 25) into which hole about 12 drops of oil should be poured each time the machine is oiled. Oil holes are provided in the machine for bearings which cannot be directly reached.

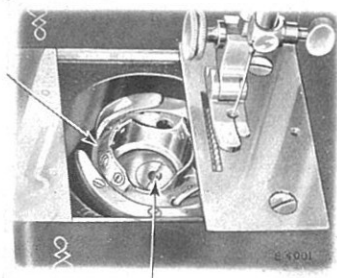


FIG. 26. VIEW OF SEWING HOOK SHOWING OILING POINTS

To oil the hook mechanism, draw to the left the slide in the bed of the machine and after removing the lint and dust which may have accumulated around the sewing hook, take out the bobbin and apply a drop of oil to the oil hole and bobbin case bearing, as indicated by arrows in Fig. 26, then replace the bobbin and slide plate.

To oil movable parts in the head of the machine, take out the screw (C4, Fig. 25) near the lower end of the face plate and loosen

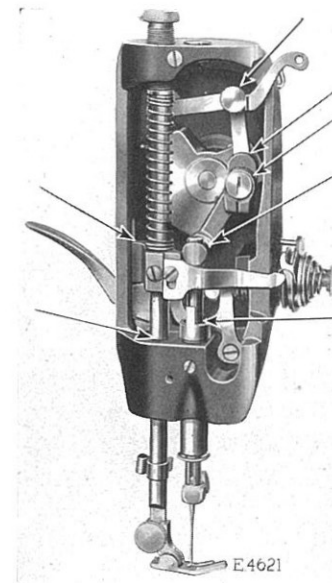


FIG. 27. END VIEW, SHOWING OILING POINTS

the screw (B4, Fig. 25) near the upper end of the face plate, then raise the plate and slip it off over the head of the screw (B4). Put one drop of oil into each of the holes and joints thus uncovered as shown in Fig. 27.

To Lubricate the Motor

A tube of Singer Motor Lubricant is furnished with the machine for lubricating the gears of the motor. Occasionally remove the felt washer (E4, Fig. 25) and unscrew the spool pin (F4, Fig. 25) then insert the tip of this tube into the spool pin hole and force a small quantity of the lubricant through the hole to lubricate the gears, then replace the spool pin and felt washer. **Under no circumstances should oil be used at this hole, but only the lubricant.**

1. When the machine is shipped from the factory, the two motor grease cups (QQ, Fig. 11, page 12) are filled with sufficient lubricant for approximately one year's use, under ordinary circumstances.

2. At least once a year thereafter, these grease cups should be removed and refilled with the Singer Motor Lubricant, furnished with the machine. To do this, the motor must be removed from the machine.

3. To remove the motor:

- (a) Remove the motor cover (C, Fig. 5, page 5).
- (b) Remove the two screws (K3, Fig. 24, page 27) which hold the motor.
- (c) Withdraw the entire motor (See Fig. 11, page 12) from the machine by turning it slightly from side to side and at the same time pulling it toward you. The motor should only be withdrawn far enough to expose the two grease cups (QQ, Fig. 11). **Do not disconnect any of the electric wiring of the machine or the motor.**
- (d) Unscrew the two grease cups (QQ, Fig. 11).
- (e) Fill the grease cups with Singer Motor Lubricant (**not oil**) without removing the wicks from the grease cups.
- (f) Fill the well in which the spiral pinion (U, Fig. 12, page 12) revolves, with Singer Motor Lubricant (**not oil**).
- (g) Apply Singer Lubricant to the teeth of the two bevel gears (Y3, Fig. 28) next to the spiral gears. The greasing

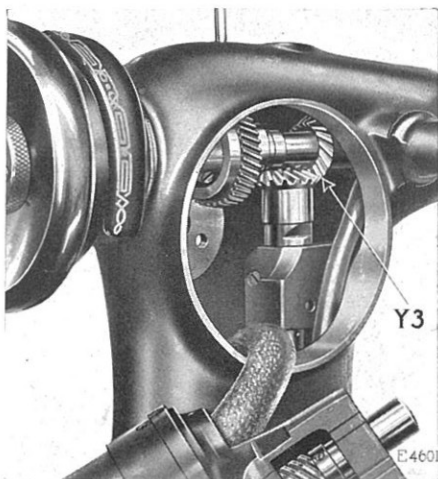


FIG. 28. BACK VIEW, SHOWING BEVEL GEARS IN ARM OF MACHINE

of these two bevel gears should be done at the same time the motor cups are refilled, inasmuch as they can only be reached when the motor has been withdrawn from the sewing machine head.

- (h) Replace the grease cups, being sure that the wicks (PP, Fig. 11, page 12) enter the small holes which lead to the armature shaft.
- (i) Replace the motor in the machine.
- (j) Replace the screws (K3, Fig. 24). The final position of the motor has an important bearing on the free running of the machine, and it may be necessary to slightly shift the motor to the left or right before the final tightening of the screws (K3).

To Lubricate the Bevel Gears

1. There are three sets of bevel gears in the machine, as shown at (Y3, Fig. 28) and (Z3 and A4, Fig. 29). These bevel gears

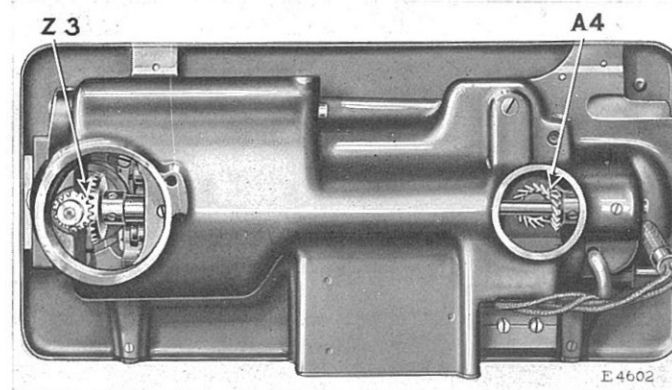


FIG. 29. BASE VIEW, SHOWING BEVEL GEARS IN BED OF MACHINE

should be greased once a year—preferable at the time of greasing the motor, or whenever they become dry, as indicated by a grinding sound.

2. The method of greasing the upper set of bevel gears (Y3, Fig. 28), i.e., those which are located in close proximity to the motor itself, has been explained under the heading "To Lubricate the Motor."

3. The two lower sets of bevel gears (Z3 and A4, Fig. 29) are exposed by removing the two round sheet metal covers located in the bottom of the machine, as shown in Fig. 7, page 7. This can be done with a small screw driver.

4. Singer Lubricant should be applied to the teeth of these two sets of gears in the same manner as described for the upper bevel gears in paragraph 3 (g), page 30, under the heading "To Lubricate the Motor."

5. Replace the sheet metal covers.

ATTACHING RESISTANCE UNIT FOR SINGERLIGHT TO MACHINE 101-2

When Machine 101-2 is furnished for operation on a voltage of more than 110 volts, a resistance unit is provided with the Singerlight. If this resistance is not connected as shown in Fig. 31 the Singerlight cannot be used.

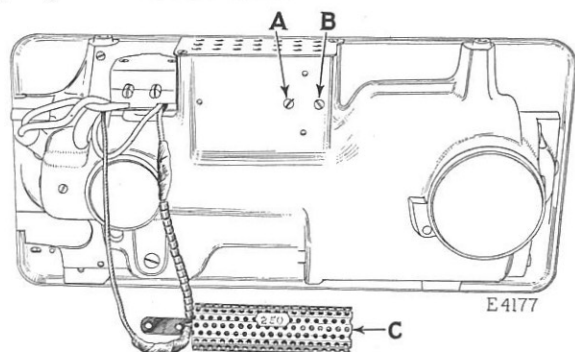


FIG. 30. RESISTANCE UNIT FOR SINGERLIGHT
READY FOR ATTACHING TO BASE OF MACHINE 101-2

To Attach the Resistance Unit

Having removed the machine from the box, remove the felt wrapper which covers the resistance unit (C, Fig. 30.)

Remove the two screws (A and B, Fig. 30) and securely fasten the resistance unit (C) into position on the underside of the

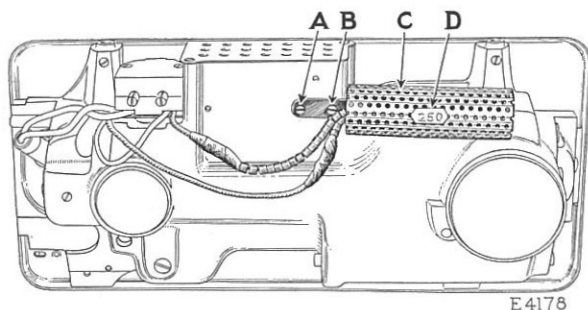


FIG. 31. RESISTANCE UNIT FOR SINGERLIGHT
FASTENED INTO POSITION ON BASE OF MACHINE 101-2

machine base by means of the two screws (A and B), having the voltage plate (D) as shown in Fig. 31.

101-1 MACHINE

The 101-1 Machine is identical with the 101-2 Machine except as follows:

Knee Lever. The knee lever on the 101-1 machine is on the left side as shown at H in Fig. 32.

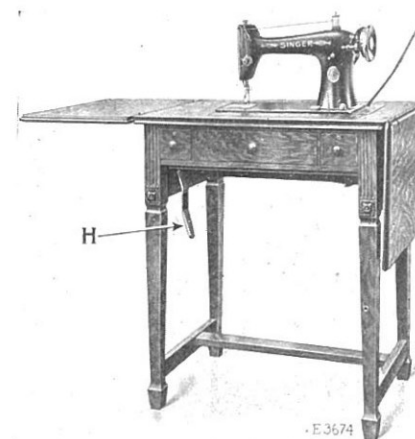


FIG. 32. KNEE LEVER LOWERED INTO POSITION
FOR OPERATING

Electrical Connections. The cord for connecting the machine to the electric light socket passes through the lifter plate as shown at E in Fig. 33 and plugs F and G connect to the motor circuit when inserted in the sockets located in the table.

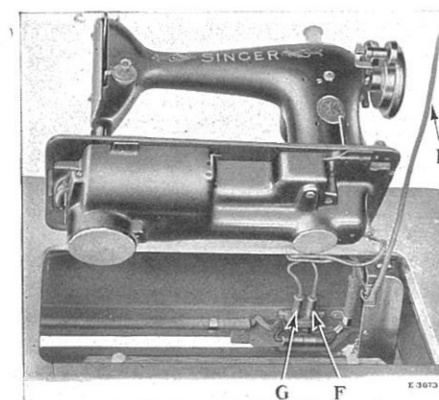


FIG. 33. ELECTRICAL CONNECTIONS

Speed Controller. The speed control box (rheostat) is located at the left side of the table directly back of knee lever H (Fig. 32) and is connected to plugs F and G (Fig. 33) by the wires running to the left in Fig. 33. If the controller fails to vary the speed, examine connections J and K (Fig. 34) for any defects, which would cause a short circuit.

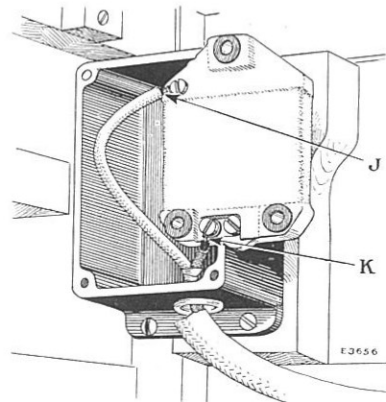


FIG. 34. SHOWING CONTROLLER CONNECTIONS

If the controller does not give five distinct speeds, examine the marking on the resistance unit N (Fig. 35) and make sure that it corresponds to that on the motor nameplate B (Fig. 20, page 25). If both are marked the same remove the resistance unit and insert a new one. If the machine then operates at all speeds, return the first resistance unit to the factory for inspection.

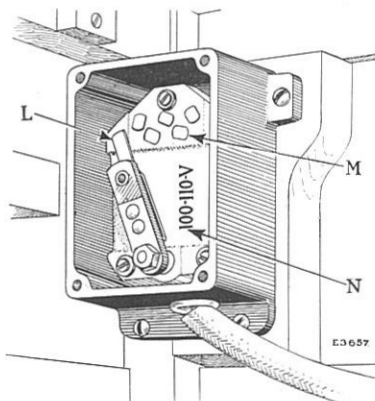


FIG. 35. SHOWING CONTROLLER RESISTANCE

If the machine continues to run after pressure has been taken from the knee control lever, the fibre portion of the control contact lever (C) may be binding. This occasionally happens owing to the humidity in the atmosphere which sometimes causes the fibre portion of the control contact lever (C) to swell and consequently bind. Note the following remedy:

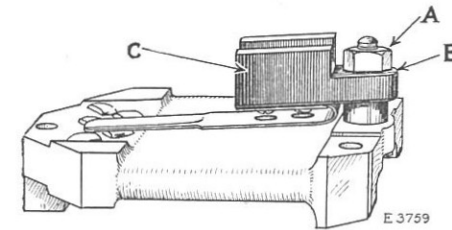


FIG. 36. SPEED CONTROLLER WITH FIBRE BLOCK

Unscrew the nut (A) which holds the contact lever (C) on the pivot stud, take off the contact lever and scrape about the thickness of an ordinary piece of paper off the upper surface (B) of the fibre, being careful to scrape the surface evenly so as to keep it flat. The control contact lever will then swing freely on the pivot stud.

Balance Wheel. Some of the first 101-1 machines shipped had balance wheels with short hubs. If these are removed for any reason, in reassembling them be sure to locate them so that the bobbin winder pulley will bear about $\frac{1}{16}$ inch from the left hand edge of the pulley bearing K2 (Fig. 17, page 18).

Singerlight. No Singerlight was furnished with 101-1 machines, but these are now available with special adaptor by means of which they may be attached to the back of the arm.

101-10 MACHINE

The 101-10 machine is identical with the 101-2 machine as regards sewing mechanism and electrical equipment, the only differences being as follows:

Aluminum Parts. In order to reduce the weight of the 101-2 head to make it available as a portable machine, aluminum instead of iron is used for the arm and bed, cloth plate, knee lever, arm shaft bushing and bobbin winder bracket. All other parts are identical with the 101-2 machine.

Woodwork. Instead of cabinet table No. 19, the 101-10 machine is mounted in a deluxe portable base and cover, C. W. 203.

