SINGER
146-33

USE ONLY **SINGER*** OILS and LUBRICANTS

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

The following are the correct lubricants for this machine:

TYPE B — MANUFACTURING MACHINE OIL, HEAVY GRADE

When a stainless oil is desired, use:

TYPE D — MANUFACTURING MACHINE OIL, STAINLESS, HEAVY GRADE

OTHER **SINGER** LUBRICANTS

TYPE E — STAINLESS THREAD LUBRICANT

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

TYPE F — MOTOR OIL

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

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

GEAR LUBRICANT

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

BALL BEARING LUBRICANT

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

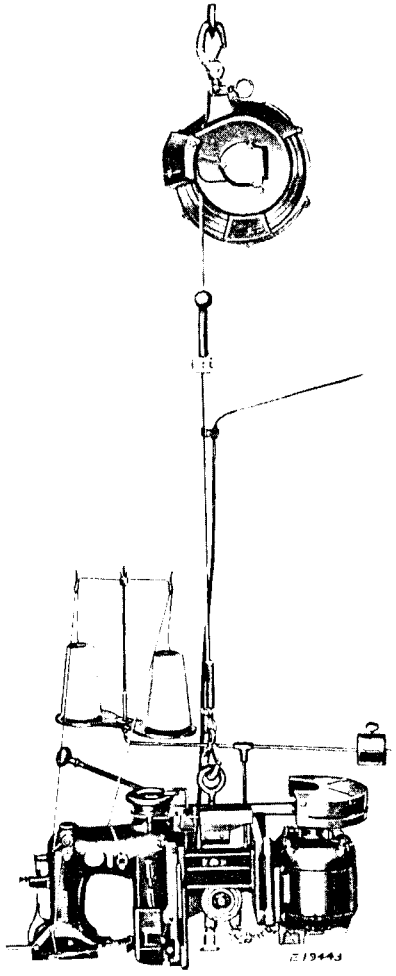
20436

INSTRUCTIONS

FOR INSTALLING, USING AND ADJUSTING

SINGER*

SEWING MACHINE 146-33



*A Trade Mark of

THE SINGER MANUFACTURING CO.

TO ALL WHOM IT MAY CONCERN:

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

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

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

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

INSTRUCTIONS FOR INSTALLING MACHINE 146-33

DESCRIPTION

Machine 146-33 includes **Machine Head 146-71** with an electric motor S384161 and a spring balancer #145058. It is used for closing bags of light, medium and heavy weight material, and the flexibility of the unit permits its use under special conditions where other equipment would be unsuitable.

The machine is suspended by a spring balancer to permit moving the machine head up or down, accommodating different heights of bags, with a minimum of effort. Safety locks protect the operator if the spring should break. The machine is controlled with one hand, and a conveniently located hand lever actuates the shears which cut the chain after the bag is closed.

LOCATION OF THE MACHINE

The location of the machine should be carefully selected, keeping in mind that convenience in handling the bags before and after sewing is important if maximum efficiency is to be obtained. It is also important that the machine be located so as to obtain a firm overhead support such as an "I" beam or floor stringer capable of supporting a live load of at least 500 pounds (225 kg.).

It is suggested that a careful study be made of each installation to insure the best results. In many cases, the machine may be operated in conjunction with a conveyor system or on an overhead track, thus eliminating extra handling.

INSTALLATION

Spring Balancer #145058 is designed to support a load of approximately 140 lbs. The spring balancer should be located not higher than about twelve feet above the floor or platform on which the bags are sewn. If the ceiling is higher, the balancer may be suspended by a strong cable or other arrangement. The hook may be locked to prevent swiveling by tightening the lock screw **E2, Fig. 3.**

Attach the safety cable, which is furnished complete with two clamps to eye **V2, Fig. 3,** and to a strong support such as a hook or eye bolt capable of holding the machine and balancer if the main support should fail.

TO ASSEMBLE THE MACHINE

See Fig. 2

The equipment includes the machine head, machine and motor bracket, auxiliary motor bracket, motor with dust proof switch and connections, thread unwinder and spring balancer.

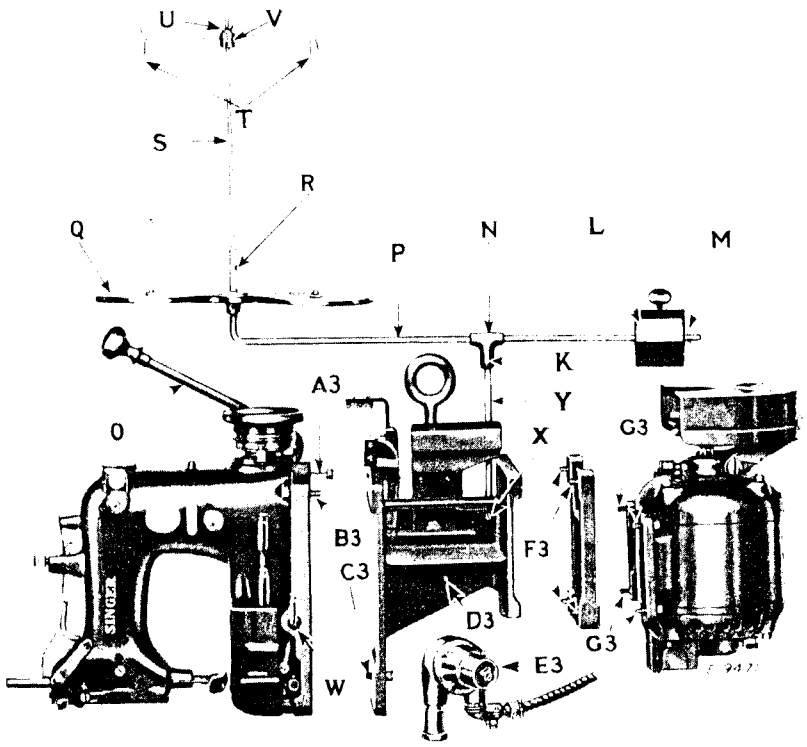

Fig. 2. Showing Relative Position of Parts Before Assembling

After the spring balancer has been secured as instructed on page 3, the sewing unit is assembled as follows:

Insert the bolt **A3** in the machine base as shown in **Fig. 2,** and have this bolt enter the slot in the bracket. Fasten the machine to the bracket by means of the three bolts **A3, B3** and **C3.**

Using Motor S384161, attach auxiliary motor bracket 69394 to the motor bracket by means of the four screws **F3.** Then fasten the motor to the auxiliary bracket by means of the four bolts **G3.** After the motor is in position, connect the leather driving belt around the machine and motor pulleys. If the belt is too long, cut a little off one end before joining.

Attach the switch box **E3** to the motor bracket at **D3.**

TO ASSEMBLE THE THREAD UNWINDER

See Fig. 2

Insert the extension **Y** in the bracket and secure it by tightening the set screw **X** against the flat on the extension. Fasten the coupling **N** to the top of the extension **Y** by means of the screw **K.** Insert the rod **P** through the coupling and fasten by means of the set screw in the top of the coupling. Slide the equalizer **L** on the rod and insert the cotter pin at **M.** Place the spool rest **Q** over the rod **P** and fasten by tightening the set screw. The rod **S** is inserted in the rod **P** and fastened by the screw **R.** Place the two thread guides **T** over the collar at the top of the rod and secure them by means of the position cup **V** and the wing nut **U.** Fasten the cutting lever **O** to the rear of the machine with two screws.

NOTE: The oil tube, included in the package containing the accessories, should be screwed into the hole W of the machine and positioned the same as the other oil tubes.

TO ADJUST THE TENSION OF THE SPRING BALANCER

See Fig. 3

The balancer should be adjusted so that the machine will remain at the height of the largest as well as the smallest bags to be sewn.

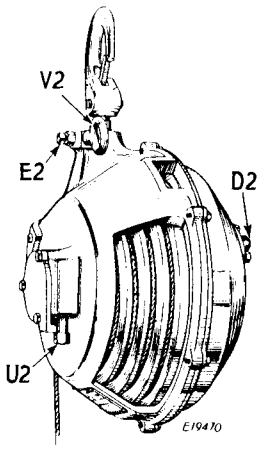

Fig. 3.

The machine may be raised or lowered by turning the worm shaft **U2** to the right for more spring tension or to the left for less tension, using the wrench furnished. This should be done with the machine suspended on the cable. Release the friction brake by turning the screw **D2** to the left, then adjust the spring until the machine is suspended about midway between the upper and lower positions desired. Then tighten the brake by means of screw **D2** until the machine will remain in both the upper and lower positions. The friction brake is designed to hold the machine at any level, within a maximum range of 24 inches, without the necessity of adjusting the spring tension.

TO LUBRICATE THE SPRING BALANCER

The springs and the oil-retaining ball bearings of the drum are greased at the factory, and require no further lubrication for some time. A few drops of oil should occasionally be applied to the cable grooves of the drum.

TO ADJUST THE SAFETY LOCKS ON THE SPRING BALANCER

The balancer is equipped with safety locks to prevent the machine from falling if a spring should break. Since they are actuated by the expansion of the spring, these locks would also operate if the spring were unwound too far with no load on the cable. If this should occur, the locks may usually be released by winding the spring up to its full tension and then alternately applying and releasing the load until the drum turns.

TO REMOVE THE COVER AND TO INSPECT THE MAIN SPRINGS

See Fig. 3

Before attempting to remove the cover, unwind the worm shaft **U2** until all tension is off the springs and the worm shaft can be moved endwise with the fingers. Also take out the friction brake screw **D2.** Then remove the bolts around the rim which hold the cover on. Next remove the cable drum cover which is held by four screws.

NOTE: The main springs are prevented from expanding by keeper-rings and should always be handled in these rings.

Inspect the action of the four-fingered drum cam **S2, Fig. 4,** in the balancer cover, with the spring pressure on the plunger **R2, Fig. 4.** Before replacing the main springs, see that the drum is turned so that the cable is completely wound up. Replace the springs, making sure they are both wound in the right direction. Then replace the drum cover. Turn the drum cam so that the spring plunger **R2** is in the notch of the cam **S2.** Replace the cover so that the first and second cam fingers straddle the drum finger **T2, Fig. 4,** and replace the cover bolts. Wind the spring to full tension to release the safety locks. Replace the friction brake plunger spring and screw **D2** and adjust the spring balancer tension, as instructed on page 6.

TO OVERCOME ACCIDENTAL LOCKING OF SPRING BALANCER

See Fig. 4

The spring balancer is provided with an automatic stop to prevent the cable from unwinding all the way from the drum, and also with a spring

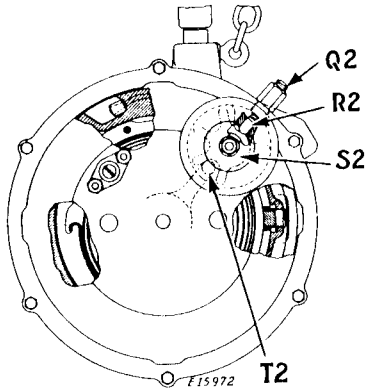

Fig. 4. Spring Balancer Adjustments

plunger **R2** which enters a notch in the drum cam **S2** when the cable is wound all the way up, designed to hold the machine up out of the way when not in use. If the screw **Q2** back of this plunger spring is tightened too much in an attempt to hold the machine in a raised position considerably above its average sewing position, the pressure may be sufficient to force the plunger into the cam **S2** at some intermediate point and cause the drum to lock.

It is therefore recommended that the spring tension on this plunger should never be tightened beyond its original setting.

If the drum locks when there is no reason to believe that the main spring has been unwound, release the pressure on the plunger spring **R2** by turning out the screw **Q2.** Do not attempt to force the machine up or down as this may wedge the plunger against the cam or force the drum out of time with the cam. Then the cover will have to be removed and the main springs inspected, as instructed on page 6.

INSTRUCTIONS FOR USING COMPLETE OUTFIT—MACHINE 146-33

To Operate the Complete Outfit Machine 146-33

See Fig. 5

The motor is started by turning the switch **E3, Fig. 2,** on the machine bracket to the "ON" position. When the bag to be closed is brought into position under the machine head, grasp the control handle **B2** with the right hand, wrapping the fingers around the belt shifter lever **A2,** and swing the machine to the edge of the bag away from you, holding the top of the bag with the left hand, ready to be fed under the presser foot. The machine is started by drawing up the belt shifter lever **A2** with the fingers of the right hand, which shifts the belt from the loose pulley to the balance wheel of the machine.

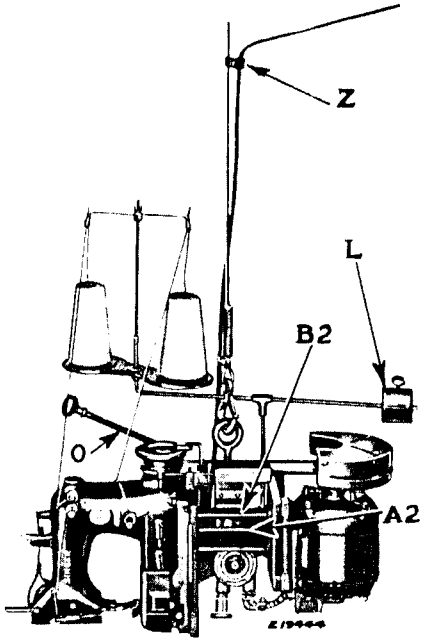

Fig. 5. Machine 146-33 Ready for Operation

As soon as the edge of the bag has passed under the presser foot, the left hand is moved to the other edge of the bag, while the machine sews across the bag in a natural manner. Permit the machine to "chain off" about two inches beyond the edge of the bag, then stop the machine and, while still holding the unit toward you, press the chain cutting lever **O** to the right and upward to cut the chain of thread between the bag and the heel of the presser foot.

The bag is now closed and the machine is ready for the next bag.

INSTRUCTIONS FOR USING MACHINE HEAD 146-71

DESCRIPTION

Machine head 146-71 has one needle and one looper and makes the two thread chain stitch. With a maximum work clearance, under the presser foot, of 7/16 inch, the machine makes three to six stitches to the inch. It is fitted with chain cutting shears and is designed for operation with the balance wheel at the top.

TO OIL THE MACHINE

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

To insure easy running and prevent unnecessary wear of the machine, all parts which are in movable contact require oiling and, when in continuous use, the machine should be oiled frequently. Oil should be applied to all oil holes and reservoirs.

SPEED

The maximum speed recommended for Machine head 146-71 is 2000 stitches per minute, depending upon the nature of the material, the thread being used and the length of stitch.

NEEDLES AND THREAD

The needles for Machine head 146-71 are of Class and Variety 124x2 and are made in sizes 25, 26, 27, 28, 29, 30 and 31.

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, it will interfere with the successful use of the machine.

Orders for needles must specify the **quantity** required, the **size** number, also the **class** and **variety** numbers separated by an **x.** The following is an example of an intelligible order:

"100 No. 27 124x2 Needles"

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

Either right or left twist thread can be used in the needle and the looper.

TO SET THE NEEDLE

To set the needle, loosen the clamping nut at the lower end of the needle bar and put the needle up into the bar as far as it will go with the long groove toward you; then securely tighten the clamping nut.

TO THREAD THE NEEDLE

See Fig. 6

Pass the thread from the unwinder through the tension thread guide **1**, to the right between the tension discs **2**, up and over the thread nipper **3**,

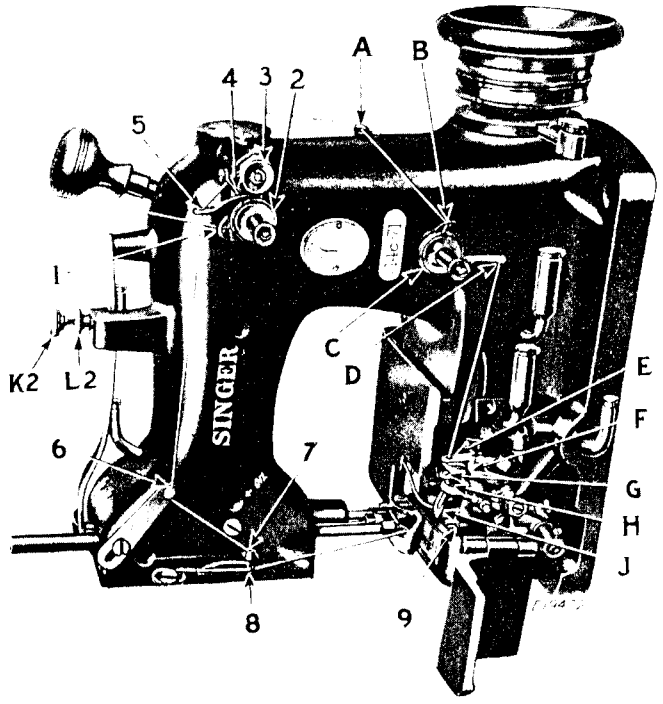

Fig. 6. Needle and Looper Threading

under the wire guide **4**, down through the thread guide **5**, the thread controller **6**, and the take-up eyelet **7**, into the controller wire **8**, and from front to back through the eye **9** of the needle. Draw about two inches of thread through the eye of the needle with which to commence sewing.

TO THREAD THE LOOPER

See Fig. 6

Lead the thread from the unwinder down through the eyelet **A**, through the tension thread guide **B**, down to the left between the tension discs **C**, to the right and down through the thread guide **D**, through the eyelet **E**, to the right or back of the thread take-up **F**, and down through eyelet **G**, then through the hole **H** in the heel of the looper and from front to back through the eye **J** near the point of the looper. Draw about two inches of thread through the eye of the looper with which to commence sewing.

TO REGULATE THE PRESSURE ON THE MATERIAL

See Fig. 6

The pressure of the presser foot on the material is regulated by means of the thumb screw **K2** at the top of the machine.

To increase the pressure, loosen the lock nut **L2** and turn the thumb screw **K2** downward. To decrease the pressure, turn the thumb screw **K2** upward. When the desired pressure is obtained, securely tighten the lock nut **L2**.

The pressure should be sufficient to carry the material and the chain along smoothly. Too much pressure will cause the chain to cut, too little pressure will cause the machine to chain off imperfectly.

TO REGULATE THE TENSIONS

The tensions are regulated by the thumb nuts at the front of the tension discs. To increase the tensions, turn the thumb nuts clockwise. To decrease the tensions, turn the thumb nuts counterclockwise. The needle thread requires sufficient tension to set the stitch properly in the goods. The looper thread requires less tension, in fact, only enough to prevent excessive amounts of thread being pulled off by the action of the looper.

TO REGULATE THE LENGTH OF STITCH

To regulate the length of stitch, loosen the nut on the feed connection at the rear of the machine. To increase the length of stitch, move the feed connection in the slot toward the base of the machine. To decrease the length of stitch move the feed connection toward the arm of the machine. When the desired length of stitch is obtained, securely tighten the nut.

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INSTRUCTIONS FOR ADJUSTERS AND MECHANICS

TO SET THE NEEDLE BAR AT THE CORRECT HEIGHT

See Fig. 7

Loosen the clamping screw **P2** and the take-up set screw **N2** and move the needle bar up or down until the eye of the looper and the eye of the needle

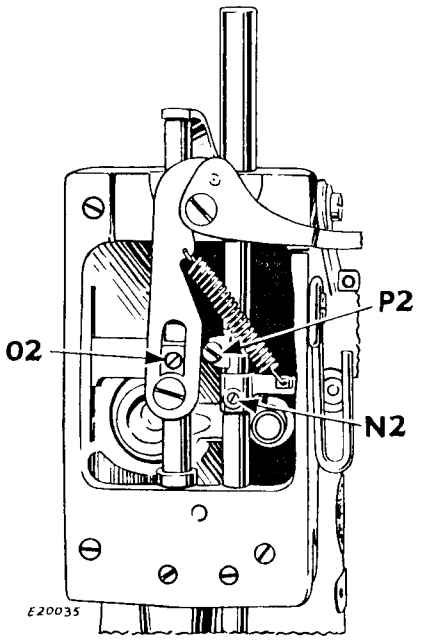

Fig. 7. Needle Bar Adjustments

are in line when they pass each other on the upward stroke of the needle bar. Then tighten the clamping screw **P2.** Set the take-up so that it contacts the needle bar stud and is centered in the take-up slot, then securely tighten the screw **N2.**

TO SET THE PRESSER FOOT AT THE CORRECT HEIGHT

See Fig. 7

Lower the presser foot so that it rests on the throat plate. Remove the face plate, loosen screw **O2** and raise or lower the presser bar lifting bracket until the presser foot is $\frac{7}{16}$ inch above the throat plate. Tighten the screw **O2.**

TO SET THE LOOPER THREAD CONTROLLER

See Fig. 8

The function of the looper thread controller **J2** is to keep the thread under control during the backward movement of the looper, preventing the

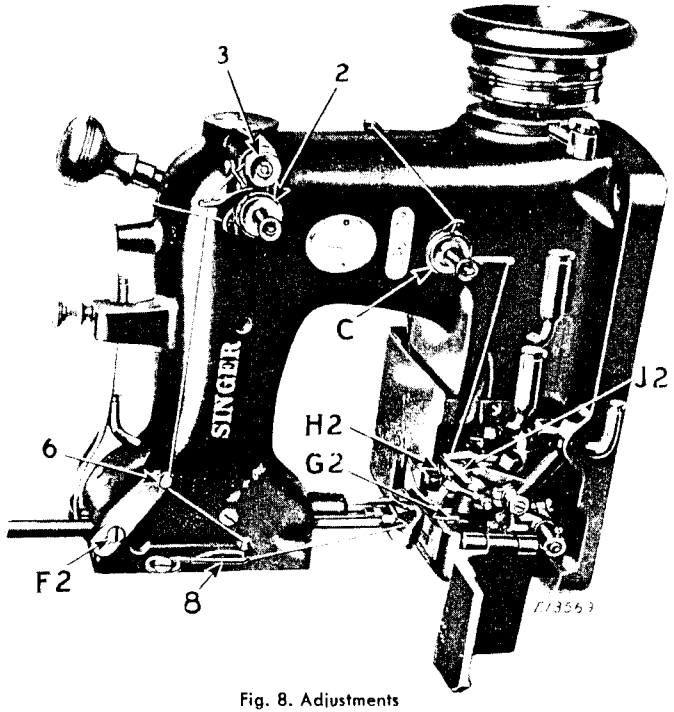

Fig. 8. Adjustments

skipping of stitches as well as providing a correct amount of thread to set the stitch.

To set the looper thread controller, loosen the screw **H2** which holds the controller in position and move the controller backward or forward, as required. The looper thread controller may be aided when making different lengths of stitches by increasing or decreasing the tension **C.** For short stitches, increase the tension. For long stitches, decrease the tension.

TO ADJUST THE NEEDLE GUARD

The needle guard **G2, Fig. 8,** may be adjusted slightly to accommodate the diameter of the needle in use.

TO ADJUST THE NEEDLE THREAD CONTROLLER

See Fig. 8

The purpose of the needle thread controller **6** is to regulate the amount of thread drawn through the tension at the finish of the upward stroke of the needle bar.

The needle thread controller **6** may be raised or lowered for various lengths of stitch. For the shortest stitch, the controller should be at its highest position. For the longest stitch, it should be at its lowest position.

To make this adjustment, loosen the screw **F2** and raise or lower the controller as required, then tighten the screw.

Since the function of the thread controller wire **8** is to assist in drawing up the thread, it should be set so that when the thread starts to become taut between the controllers **6** and **8** on the downward stroke of the needle bar, the needle thread around the looper should be just slipping off the point of the looper so that there is no strain on the needle thread.

TO ADJUST THE NEEDLE THREAD NIPPER

See Fig. 8

The nipper **3** is provided to assist the tension **2** in holding the thread when the stitch is being set. This nipper is correctly adjusted when the machine leaves the factory, and no further adjustment is necessary. However, if for any reason the nipper is removed from the machine and replaced, the nipper cam on the end of the rock shaft should be set so that the nipper will close just before the eye of the needle enters the goods. It should then release the thread on the up stroke of the needle bar, while the material, being fed forward, starts to draw the thread.

TO SET THE FEED DOG AT THE CORRECT HEIGHT

The feed dog is usually set so that when it is raised to its highest position by the feed lifting eccentric, the full depth of the teeth project above the throat plate. For some thicknesses of material, it may be necessary to change the height of the feed dog. To do this, remove the presser foot and throat plate and turn the balance wheel until the screw which holds the feed dog in position is visible through the hole in the side of the cloth plate, below the slide. Insert a screwdriver through this hole, remove the screw and take out the feed dog, to expose the small stop screw beneath the feed dog.

To raise the feed dog, turn up this stop screw; to lower the feed dog, turn down the stop screw. When the desired height has been obtained, replace the feed dog. Then make certain that it rests securely on the stop screw and replace and tighten the feed dog screw.

TO CENTRALIZE THE FEED DOG

The feed dog should be set so that its movement is equi-distant from the front and rear ends of the throat plate slot.

The feed dog may be moved toward the front or rear after loosening the screws **W2, Fig. 9.** Securely tighten the screws W2 when the correct position of the feed dog is obtained.

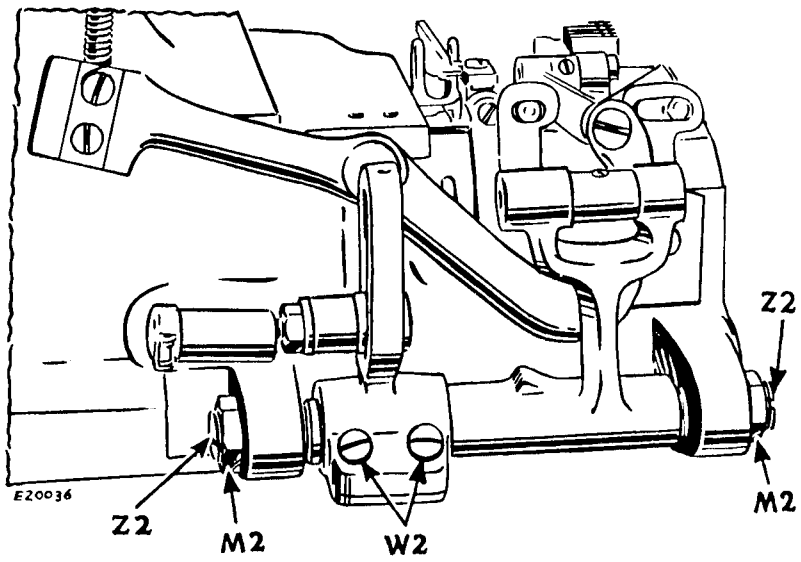

Fig. 9. Locating the Feed Dog

TO ADJUST THE SIDEWISE POSITION OF THE FEED DOG

To set the sidewise position of the feed dog, loosen the lock nuts **M2, Fig. 9,** and turn the center screws **Z2, Fig. 9,** as required, then securely tighten the lock nuts **M2.**