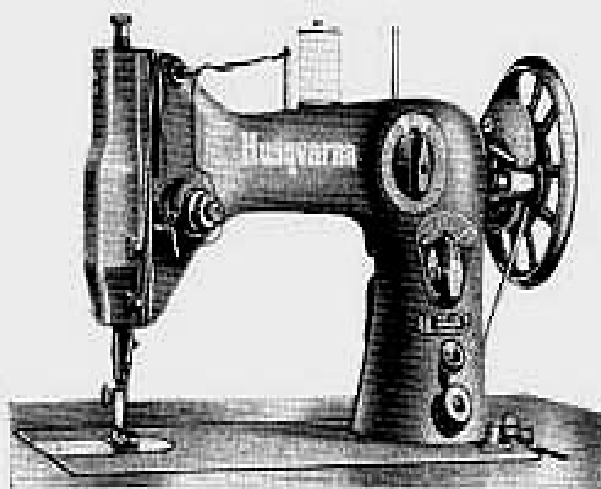


Instruction Book
for

Husqvarna

Universal Sewing Machines
Class 33

For clothing factories and
the sewing trade



Husqvarna Vapenfabriks Aktiebolag
Husqvarna Sweden

This Manual has been prepared for the purpose of teaching you how to use a Husqvarna Universal Sewing Machine, Class 33, and how it should be best tended and taken care of, also how the various attachments furnished with the machine, or others obtainable in the market, can be used to the best advantage.

It is a matter of extreme importance that you study carefully the instruction given here because the sewing machine will then be a source of usefulness and pleasure — a faithful and valuable assistant for many years.

Your sewing machine represents a capital investment which will yield a handsome return if properly tended. Neglect and careless handling will not only diminish this gain but will also contribute to shortening the life of the machine.

In short, start out by making yourself familiar with the operation of the machine and its facilities of employment by studying this Manual. It will pay you in a number of ways.

TO BE NOTED.

- 1** Start the seam in the cloth and not outside the edge, because the thread may then be pulled down into the hoop taker.
- 2** Never start up the machine with the needle threaded except with a piece of cloth beneath the presser foot.
- 3** Never let the balance wheel rotate in the wrong direction. The wheel shall always turn in the direction towards the person who is sewing.
- 4** Never pull out or cut off the thread when sewing without the take-up lever in its highest position.
- 5** Never pull the cloth with the intention of helping the machine to feed. The throat plate can easily be damaged at the needle hole or the needle broken if this is attempted.

THE THREAD, THE NEEDLE AND THE SHUTTLE COMBINE TO PRODUCE THE STITCHES.

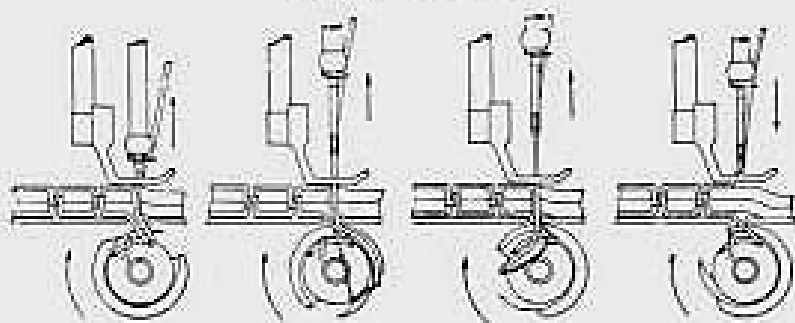


Fig. 1.

The seam sewn by a sewing machine consists of a series of tight interlacings of the upper and lower threads — the stitches. These are formed by the needle pushing the top thread through the cloth and further through the hole in the throat plate. Upon the needle having descended to its lowest point it rises again. On the side of the needle which is provided with a short groove the thread is prevented by the cloth pressure from taking part in the upward movement of the needle, and in this way forms a loop over the eye of the needle. The loop is of sufficient size to be caught and enlarged by the shuttle point, so that the thread can be conducted by the shuttle round the bobbin case holder together with the case and the shuttle. As soon as this has taken place the upper thread is tightened round the under thread and the stitch is formed.

For Class 33 is used needle system 16×231 or 1738, which is stated on the sign plate of the machine.

Both system and dimension number of the needle is usually stamped on the cylindrical head of the needle. On one side of the needle is a longitudinal recess or groove in which the thread passes during the reciprocating movement of the needle through the cloth. On the opposite side the groove is only at the eye. In consequence, the loop is formed on this side of the needle, being caught there by the shuttle point as described in the foregoing.

The needle bar shall be placed in the highest position when inserting the needle. Loosen the lower screw on the needle holder, then push up the needle head as high as it will go while keeping the long groove in the needle turned forward (thus towards the one who is sewing). Tighten the screw. In order to check that the needle has been correctly inserted, thread the needle and note that the thread when stretched is at right angles with the longitudinal centre line of the machine. If this is not so, loosen the set screw and turn the needle as required.

The insertion is done in the same way when needle holder for two needles is used.

CHOOSE THREAD TO SUIT THE CLOTH, AND NEEDLE TO SUIT THE THREAD.

The seam produced with the sewing machine should merge as much as possible with the fabric of the cloth. The thread, in consequence, must not be too thick to enable the upper thread to be concealed in the fabric at the junction of the upper and under threads. The under thread should preferably be one number finer than the upper thread, and in any case not thicker.

The size of the needle must be adapted to the thread used: it must not be too thick so as to leave marks in the cloth, nor be finer than to allow the thread to slip with ease through the eye.

NEEDLES AND THREAD. (Needles of System 16X231 or 1738.)

| Kind of fabric | No. and kind of thread | Needle No. |
|--|--------------------------------|------------|
| Very thin cloths, linen, silk or charmeuse | Cotton 100, 150 Silk 00—000 | 70 |
| Thin nainsook, muslin, fine linen, thin cotton cloth, knitted silk | Cotton 80—100 Silk 0 | 80 |
| Table cloth, sheeting, thin woollens | Cotton 60—80 Silk A and B | 90 |
| Heavier silks and satins, close-woven sheetings and woollens | Cotton 40—50 Silk C | 100 |
| Impregnated cloth and Khaki, and heavier coatings | Cotton 30—40 Silk C and D | 110 |
| Tickings and heavy fabrics | Cotton 24—30 Silk D and E | 120 |
| Extra heavy fabrics | Cotton 16—20 | 130 |

WINDING THE BOBBIN.

The bobbin can be wound either while the sewing is in progress or after releasing the balance wheel, which is done by backing off the knurled disc on the

right-hand side of the wheel in the direction towards the one sewing, with the grip shown by Fig. 2. In this position the balance wheel will no longer drive the sewing mechanism.



Fig. 2.

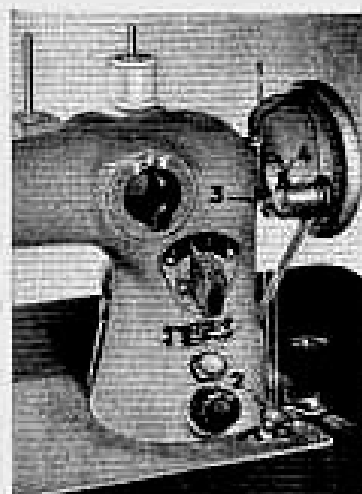


Fig. 3.

From the reel on the right-hand spool pin the thread is passed through thread guide (1) and down between tension discs (2) from left to right. Wind a few turns of the thread round the bobbin, insert the bobbin in the clamps of the bobbin winder shaft (3), and press the nickel-plated lever (4) above the bobbin downward until the rubber roller is in firm contact with the balance wheel rim. The winding can now be started. The bobbin is automatically disconnected as soon as the bobbin is filled.

In the event of the thread being wound more thickly towards one end of the bobbin than towards the other, this is adjusted by moving the thread tensioner attach-

ment (5) on the machine table in the direction where there is insufficient thread on the bobbin.

REMOVING THE BOBBIN FROM THE SHUTTLE.

Place the needle bar in its highest position and pull out the slide plate to the left of the lock plate.

The bobbin case is poked out with the left hand from underneath the table. Open the lock plate on the bobbin case as shown by Fig. 4 and take out the bobbin.

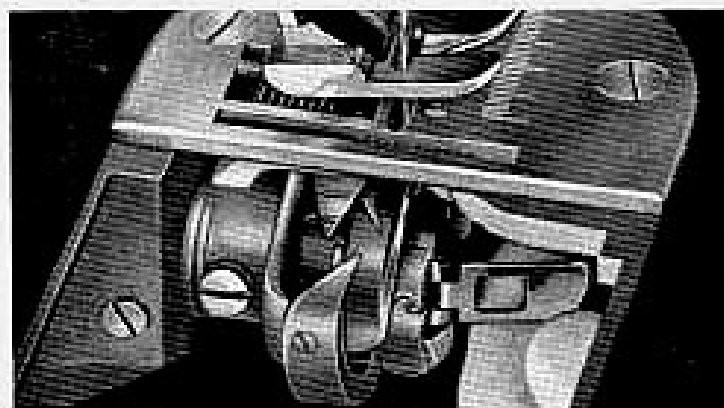


Fig. 4.

As long as the lock plate is kept open the bobbin is retained in the case, but will drop out when the plate is closed and the case held with the opening downward.

THREADING THE UNDER THREAD IN THE BOBBIN CASE.

Insert the bobbin in the case in such a position that the thread runs off the bobbin in the same direction



Fig. 5.

as shown by Fig. 5. Pull the thread into the slot in the case, underneath the tension spring (1) and past the small end of the spring which is curved down into the circular hole. Pull out the end of the thread about a finger length and place the bobbin case in the shuttle frame.

INSERTING THE BOBBIN CASE AND BOBBIN.

The same grips are used for inserting the bobbin case as are used for taking it out, the needle bar to be

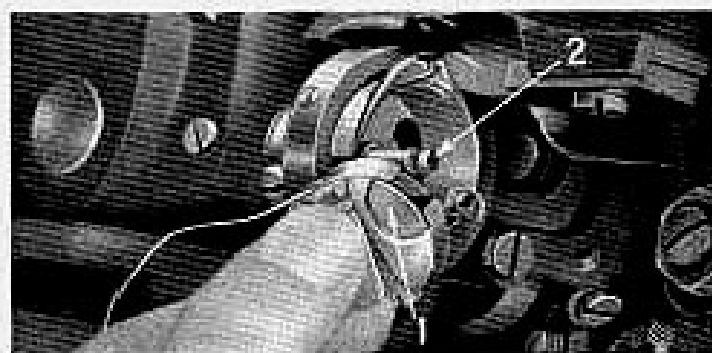


Fig. 6.

in its highest position and the slide plate beside the lock plate pulled out. The bobbin case is placed on the centre pin of the shuttle arm, with the semi-circular opening (1, Fig. 6) straight up. Press it in until the lock bolt engages the slot at the point of

the pin (2) and let go the lock plate, which then drops in place.

By pressing on the front of the bobbin case it can be ascertained whether the case is pushed in far enough. It is of the greatest importance that this control is not neglected.

CORRECT TENSION OF THE UNDER-THREAD.

The tension of the under-thread is adjusted with the thread tension spring on the outside of the bobbin case (1, Fig. 5). For altering the tension, use the small screw driver which is cautiously applied to screw (2) in the centre of the spring. Turning the screw driver clockwise will increase the tension of the under-thread, and in the opposite direction will reduce it. Usually $\frac{1}{4}$ to a $\frac{1}{2}$ turn is sufficient.

THREADING AND TENSION OF THE UPPER THREAD.

The take up lever (6) should be in its highest position when threading the upper thread. Pass the thread from the spool through the hole in the spool pin and the thread guide (2), down between the tension discs (3) in the tension device, and over the hook (4) of the thread regulating spring, underneath the thread guide (5) and further upward to the thread take up lever (6) which the thread shall pass from right to left, downward through thread guides (7) and into thread guide (8) in the needle holder. The thread is then threaded through the eye of the needle from the front, and is pulled out a finger length. Fig. 7 shows the machine equipped with two needles.

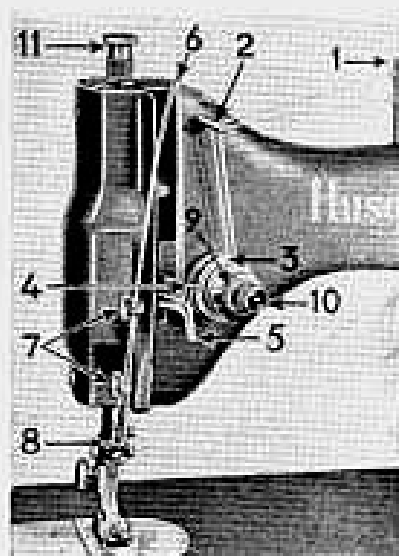


Fig. 7.

The tension of the upper thread is regulated by increasing or decreasing the pressure between the tension discs (3). To alter the tension, turn the nut 10 or wheel 9 in clockwise directions for more tension and in the opposite direction for less tension. There is no scale to go by but the correct tension of the thread must be judged from the appearance of the stitches. At the same time the red marks may serve as initial points when altering the tension.

It should be borne in mind that the tension of the thread is an important detail in sewing. Heavy or hard fabrics require strong tension on the upper thread to pull the under-thread into the cloth, whereas strong tension when sewing thin and loosely woven fabrics tends to wrinkle or may even cut the cloth. Contrariwise, too weak tension may cause

«flapping» seams when sewing thick cloth. The schematic illustrations below show the effect of correct and faulty tension of the thread.



Fig. 8.



Fig. 9.



Fig. 10.

Fig. 8 shows appearance of the stitches at correct relation of the tension of upper and under thread.

Fig. 9 shows insufficient tension of the upper thread (too slack), or that the under thread has too strong tension (too tight).

Fig. 10 shows a contrary situation, the under-thread being so slack that it is pulled through the whole fabric and shows the knitting of stitches on the top side of the cloth.

PRESSER FOOT, THROAT PLATE AND CLOTH FEEDER.

The design of the presser foot varies according to the work to be done by the machine. The machine is fitted with a jointed foot, which is used for the ordinary kinds of sewing, such as hemming, straight seams and zigzag seams.

The different kinds of presser feet and attachments are described under the heading «How to use the

various devices». The rule applying to all kinds of presser feet is that the pressure of the foot on the material against the cloth feeder shall be adapted to the nature of the cloth. A hard cloth calls for harder pressure of the presser foot, and a loose woven or thin cloth needs less pressure for feeding the material. Thin and soft cloths may besides be damaged by the teeth of the feeder if the pressure is too hard.

The pressure of the presser foot is adjusted by tightening or loosening the grooved bush (11, Fig. 7) on the presser rod.

The throat plate is the part through which the needle moves up and down in the needle hole. Keep the needle hole edge smooth and polished so as not to damage either the needle or the thread. For this reason, never pull the cloth during the sewing, because this is liable to bend the needle and will damage the needle-hole edge in the throat plate. There are different types of throat plates with varying size and form of the needle hole; the standard throat plate of Class 33 machine has an oblong needle hole in line with the machine, which is intended both for straight and zigzag sewing.



Fig. 11.

For darning and certain kinds of embroidery the cloth feeder is placed out of function so that the work can be moved by hand in different

directions. To effect this, the cloth feeder is depressed by pushing down the button to the left on the

machine table (see Fig. 11). Pushing the button towards the right will again put the feeder in function.



Fig. 12.

LENGTH OF THE STITCHES.

The length of the stitches is altered with the wheel illustrated by Fig. 12, and the setting for a certain length of stitch is facilitated by the figures on the wheel.

FORWARD AND BACKWARD SEWING.

Sewing in one or the other direction is regulated with a button, Fig. 13. If this button is pressed



Fig. 13.

down to the bottom the machine will sew backward as long as the button is kept depressed. By pressing the button down aslant it will remain in depressed position, and the machine will sew backward until the button is released with an upward pressure, causing it to return to the original position. This rapid reversal to backward sewing is valuable, especially when the thread is to be fastened, but also for various kinds of sewing.

ZIGZAG SEWING.

By giving the needle a sidewise reciprocating motion while the material is fed straight in the machine a

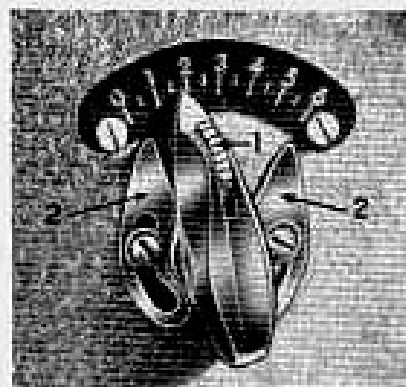


Fig. 14.

zigzag seam will be produced. The width of the zigzag seam can be set from 0 to 6 mm. The adjustment of the width of the seam is done by a pointer, Fig. 14, and is facilitated by the scale on which the pointer moves.

For special work such as sewing button holes, the work is made easier through the pointer being provided with a knurled catch (1). By depressing this catch the movement of the pointer can be limited by two adjustable stops (2). When the knurled catch is pulled out the pointer can be moved without hindrance of these stops, thereby allowing seams of other width to be sewn. This regulation can also be made while the machine is running.

STARTING POSITION FOR ZIGZAG SEWING.

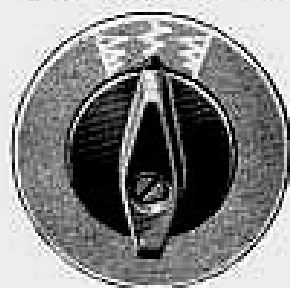


Fig. 15.

A zigzag seam can be sewn so that it will have a central, a right or a left starting position in relation to the hole in the throat plate. If the pointer is placed in the right-hand position for zigzag sewing, the machine will produce a zigzag seam to the left of the starting

point, and if the pointer is set to the left the seam will be on the right of the starting position. With the pointer placed in the central position the machine will produce a symmetrical zigzag seam. The different starting positions can be altered during the running of the machine.

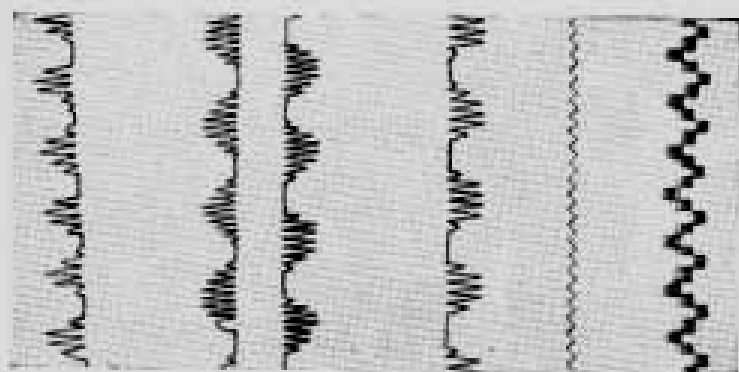


Fig. 16.

Examples of zigzag seams produced through varying the width of the seam and altering the starting positions.

TREADLING AND SEWING.

Although the most effective use of the machine is obtained with a motor, it is in order to give some pointers on using it as a treadle machine. It is necessary first to learn to control the movements of the treadle in order to sew an even seam, how to stop the machine, and how to start it running in the right direction in whatever position it may be. To acquire this proficiency beginners should disconnect the balance wheel (Fig. 2) and train treadling with merely

the wheel running. The feet shall be placed on the treadle so that they can easily accompany the mo-

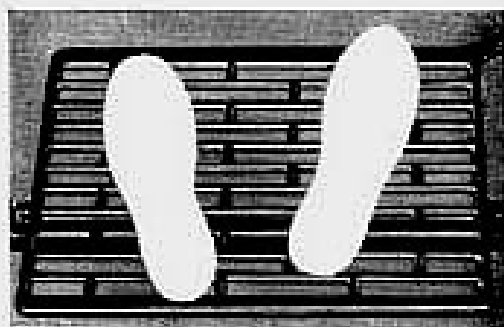


Fig. 17.

vements of the treadle with alternating toe and heel pressure. The training should be kept up long enough to make the learner feel that the machine can be kept running uniformly, and correct treadling technique has thus been acquired.

Before starting actual sewing it may be suitable, in case of beginners, to practise on a piece of cloth but without thread and needle in the machine. The material is placed under the presser foot, which is let down cautiously, and the machine is started by pulling the balance wheel towards you with the hand on the rim and then continuing by treadling. The cloth is now turned to the right and left, which will soon bring about required proficiency in guiding the cloth in any desired direction.

Before threading, see that the thread take-up lever (6, Fig. 7) is in its highest position, then thread the needle and hold the free end of the upper thread loosely in the left hand while the balance wheel is

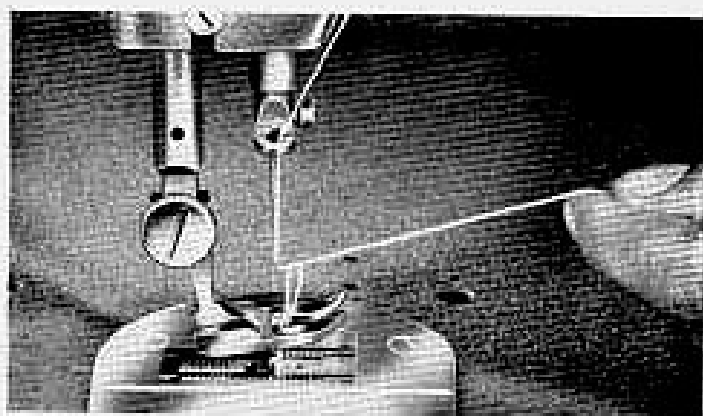


Fig. 18.

turned towards you with the right hand until the needle has been down and has come up again. The underthread has then been fetched up by the upper thread. Place the cloth under the presser foot, the needle is let down into the cloth, the upper and under threads are laid towards the back, the presser foot is let down, and the sewing can commence.

Always start the seam in the cloth, and not outside of it, because the thread may then be dragged down into the loop taker and be torn off. This may also occur if the machine is started running in the wrong direction.

When the seam has been finished, and the cloth shall be pulled out of the machine, it should be done with the needle bar and the take up lever in their highest position. The cloth should be pulled out towards the left.

Never let the machine run with the presser foot let down without first placing cloth underneath it.

REGULATION WITH THE KNEE.

For embroidering, in particular, is used a lever A, placed at the back of the top of the machine, which instantaneously can transfer the movement of the

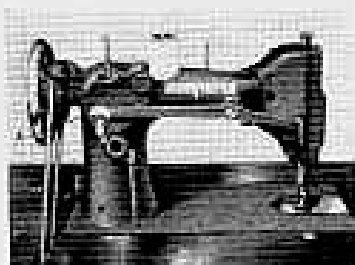
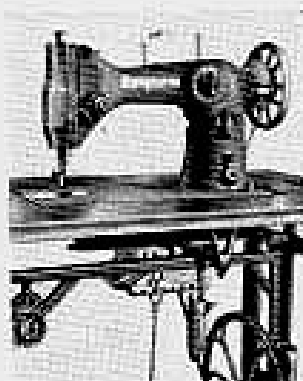
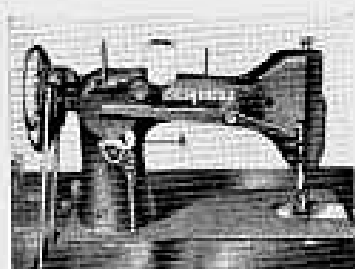


Fig. 19—21.

knee lifter from the presser foot to the zigzag pointer. The knee lifter serves to regulate the width of the zigzag seam, leaving both hands free to guide the material in desired directions.

OILING AND CLEANING THE MACHINE.

In order to ensure that the sewing machine runs lightly, uniformly and silently, and to prevent unnecessary wear, it should be carefully lubricated in all places where there are moving parts.

The machine is designed with oil ducts leading to all places which require regular oiling from easily accessible oil holes at the top of the machine. The ma-

chine is lubricated partly from these oil holes, and partly in the bearings which are accessible when the machine is tilted up and the bottom plate removed as well as the arm-plate on the back of the machine.

The loop taker should be oiled daily to make the machine work reliably and increase the life of the loop taker itself. For doing this, turn the balance wheel until the loop taker is in the position where the bearing flange 1 on the bobbin case holder can be conveniently moistened with oil. (Fig. 22).



Fig. 22.

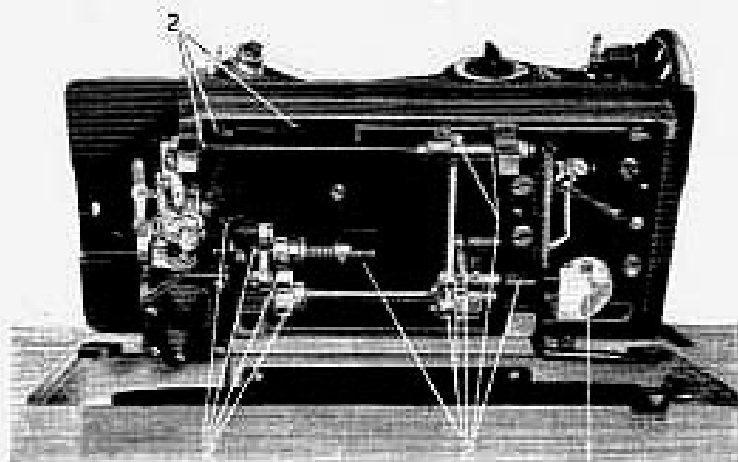


Fig. 23.

Drip in only one drop of oil each time; too much oil is liable to soil the cloth.

In the same position as for lubricating the loop taker, oil the mechanism for feeding the cloth, but only twice a week at continuous sewing (2, Fig. 23).

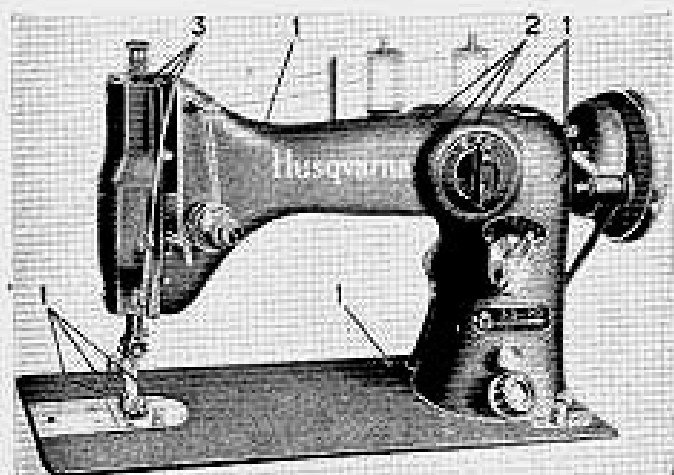


Fig. 24.

When the machine has been tilted back, oil the bearing places of the machine main shafts (lever shafts, vertical shaft and loop taker shaft) at 1, Fig. 24. This should be done daily when the machine is in continuous use. At the same time, oil the shaft for the zigzag movement and other parts of this mechanism at holes 2. After the bottom plate has been taken off, oil the needle bar at 1, Fig. 25, needle-bar connecting rod at 2, and take-up lever at 3. This should be done daily at continuous sewing.

Occasionally, the zigzag joint 4, needle bar 5, and presser foot at 6 should be oiled.

The housing of the bevel gears at 1 (Fig. 23 and 26) should be filled once a year with grease.

The oiling need not take place as often where the movement is smaller, for example, at the knee mechanism.

Use none but high-grade sewing machine oil, free from acid. The use of vegetable oils such as cooking oil, castor oil etc, is not permissible, as they turn gummy and are hard to dissolve. Before oiling, test the action of the oil can on a piece of cloth. At a light pressure it should let out a drop at the time, which is sufficient for each oiling place.

The oiling should be done in a certain order as otherwise there is a risk of some place being skipped.

The teeth of the cloth feeder are gradually filled with fibres and lint from the cloth, preventing the feeder from functioning properly. Clean out the feeder with the brush furnished with the machine.

The thread may happen to stick in the bearing grooves for the bobbin case holder in the loop taker, causing the machine to appear to be stuck. The loop taker will usually be released through the thread

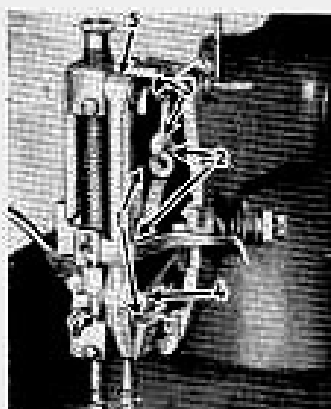


Fig. 25.

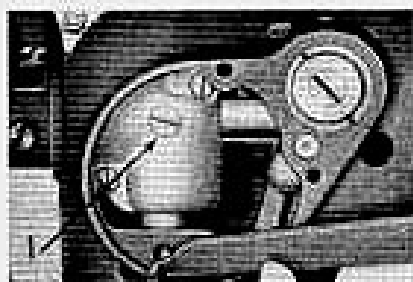


Fig. 26.

being cut off when the balance wheel is rocked back and forth with force a couple of times. If the machine cannot be released in this way and the machine started afresh, it will be necessary to dismantle the loop taker and remove the lint, a work which requires rather great experience and caution. Protect the different parts well from damage and replace them correctly. The work is done as follows, but it is always best to entrust it to the representative on the spot or the depot repairer.

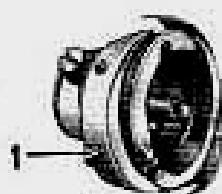


Fig. 27.



Fig. 28.

Unscrew and remove the screw in the bearing bar 1 (Fig. 27). Clean the bar and the bearing flange on the loop taker which acts against it. Screw back the bearing bar. Be careful not to damage the slot in the small screw heads (1, Fig. 28). If the loop taker is stuck in such a position that the said screws are inaccessible, the bobbin-case lever must be first removed by loosening its fastening screw. Then grasp the bobbin-case holder at the point and take it out with caution. The loop taker can now be turned to one side so that the

screws on the bearing bar are accessible. Note that the lever of the bobbin-case holder must not be forced out of its position, because the bridge of the holder is thin and very much hardened, and in consequence brittle. When inserting the said lever make sure that its flange is not in contact with

the bridge but leaves enough place for the thread to pass.

ADJUSTMENT AND LUBRICATION OF THE STAND.

If play is observed in any of the connecting-rod bearings it shall be adjusted as follows:

In case of the upper connecting-rod bearing, loosen the nut on the connecting rod, and then slacken the rod which serves as stop screw for the bearing sleeve slightly. Screw up one of the bearing sleeves lightly against the balls, and first screw up the rod and then the nut tightly.

For adjusting the lower connecting-rod bearing, loosen the nut on the underside of the treadle, and screw up the inner ball holder with a screwdriver enough to remove the play but still allowing the bearing to run lightly. The ball holder must be retained in its position with the screwdriver while the stop nut is tightened. The treadle and flywheel should be oiled in the places marked with arrows, which applies also to the upper and lower bearings of the connecting rod.

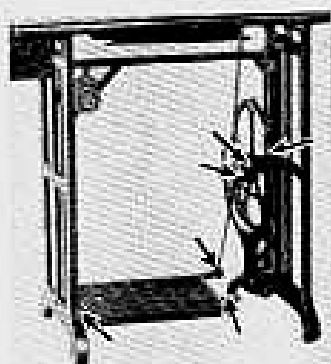


Fig. 29.

After cleaning and oiling it may be suitable to run the machine rapidly a few moments, and then wipe off any excess oil, in that way putting the machines in order for continued sewing.

CAUSES OF MINOR FAULTS AND HOW THEY SHOULD BE REPAIRED

If it is found that the machine does not work satisfactorily it is useful to know where the most common causes of faults shall be looked for, and how they should be attended to. By studying this list of faults you can no doubt in most cases remedy the faults yourself.

If this is not the case, we advise you to apply to one of our authorized representatives. We caution you most decidedly against leaving such work to an ordinary sewing machine repairer as he may not have sufficient familiarity with the machine and has no responsibility for this particular machine. Moreover, his charges will as a rule be very high both for the work and the parts. It should also be borne in mind that our guarantee is invalid if others than our repairers and authorized representatives carry out any repairs or adjustment on the machine.

If the machine has to be sent away for repairs or inspection, take off the top part from the table and pack it carefully in a box, in such a way that it will not be damaged during the transport. When using straw or excelsior for the packing, the machine must first be well wrapped in paper. If possible append specimens of the sewing which show the faulty operation of the machine. This will facilitate quicker remedying of the fault.

When ordering parts or accessories, the damaged part should be sent in or information given of the

name of the part, the factory number of the machine and its class designation. The latter data are stamped on the front of the machine top part, above the stitch adjuster. Our representatives have as a rule the most usual spare parts on hand, or will procure them on application.

HEAVY RUNNING OF THE MACHINE.

1. Belt too tight. Stretch it or procure a new one if too short.
2. Machine lubricated with bad or unsuitable oil which has gummed. Dissolve the gummed oil by pouring a few drops of kerosene in each oil hole and treadle the machine round a few turns. Then lubricate with good sewing machine oil. If this is not sufficient the machine will have to be sent for cleaning.
3. Winding appliance not released but keeps running while sewing.
4. Thread caught in some way or other.
5. Bearings of the treadle or driving wheel tightened too much and must be slackened somewhat with a spanner.

THE WINDING OF THE BOBBIN IS IRREGULAR.

1. The thread has run out of the tension discs.
2. Fastening of the tension discs has shifted out of its proper position. Adjust according to directions on page 6.

MACHINE NOT FEEDING THE CLOTH.

1. Make sure that the stitch adjuster does not stand on zero. See page 13 "Length of the stitches".

2. See that the cloth feeder plate is not depressed.
3. Too light pressure of the presser foot. Increase the pressure by screwing in the bush at the top of the presser rod. (No. 11, p. 12.)

SEWING MACHINE MECHANISM STOPS ROTATING IN THE MIDDLE OF THE SEWING.

1. Clutch plate (see p. 6, Fig. 2) not screwed tightly enough.
2. Belt too slack. Shorten the belt slightly. Keep the belt free from oil.

UPPER THREAD FAILS TO CATCH LOWER THREAD.

1. The needle is turned the wrong way. The side of the needle with the short groove shall be turned towards the loop taker. See page 4.

BREAKING OF THE UPPER THREAD.

1. Needle incorrectly inserted. The short groove in the needle shall be turned towards the loop taker. See page 4.
2. The upper thread is wrongly threaded. See page 9.
3. Too great tension of the thread. See page 10.
4. Needle bent, point upset, or otherwise damaged. Change needle.
5. Point of the loop taker damaged. If only slightly damaged, the point can be reground, but if more seriously damaged the loop taker has to be exchanged.

6. Needle hole in the throat plate damaged so that so-called «burs» have been formed. Have the throat plate repaired or, if badly damaged, get a new one.
7. Thread too coarse in relation to the needle. See page 5.

BREAKING OF THE UNDER-THREAD.

1. Thread tension spring in the bobbin case tensioned too hard. See page 9.
2. Needle hole in the throat plate damaged, so that so-called «burs» have been formed. Have the throat plate repaired or, if badly damaged, put in a new one.
3. Bad (brittle) thread. Good thread must be strong, and free from knots or bulges, to enable it to withstand ordinary thread tension.

UPPER THREAD FORMS LOOPS ON THE UNDERSIDE OF THE CLOTH.

1. The upper thread is wrongly threaded.
2. The release plate is hung up.
3. Dirt between the tension discs.
4. Upper thread too slack. See page 10.

UNDER-THREAD FORMS LOOPS ON THE UPPER SIDE OF THE CLOTH.

1. Under-thread too slack or the upper thread too stretched. See page 10.

UNDER-THREAD CANNOT BE TENSIONED ENOUGH.

1. Dirt underneath the tension spring in the bobbin case. Clean the spring.

2. Tension spring damaged. A new one must be put in.

SKIPPED STITCHES.

1. Needle not properly fastened.
2. Needle incorrectly inserted. See page 4.
3. Needle bent or point damaged. Put in a new needle.
4. Needle and thread do not correspond. See needle and thread table, page 5.
5. Knots or bulges in the thread. Use only first class thread.
6. Presser foot pressure does not act. For regulating presser foot pressure, see page 12.
7. Dirt in the upper-thread or under-thread tension mechanism. These must be cleaned.

UGLY STITCHES — BAD-LOOKING SEAM.

1. Thread wound unevenly on the bobbin. See page 5.
2. Too hard or too slack threads. The under-thread should always have slightly less tension than the upper thread. See page 10.
3. Faulty thickness ratio between the upper and lower threads. The under-thread should never be coarser than the upper thread but rather slightly finer. Page 4.
4. Thread too coarse in relation to the cloth sewn. See page 4.
5. Needle too thin or too thick in relation to the cloth. See page 5.

6. Needle point damaged or needle damaged in some other respect. Put in a new needle. Never try to file the damaged point of a needle.
7. Lint and dirt between the upper-thread tension discs or underneath the tension spring in the bobbin case. Remove the lint and dirt, and clean.

FLUCTUATING TENSION.

1. The winding of the bobbin has been irregular, and the bobbin should be changed.
2. Poor quality of thread.

STITCHES OF DIFFERENT LENGTH.

1. The feed plate is clogged by dirt. Clean it out.
2. Worn teeth in the feed plate. Change the cloth feeder.
3. Too weak presser-foot pressure. See page 12.

THE CLOTH TENDS TO WRINKLE.

1. Tension of the upper thread too hard, or both threads may be too much tensioned in relation to the cloth. See page 10.
2. Presser-foot pressure too strong. See page 12.

THE SEAM DOES NOT HOLD THE CLOTH TIGHTLY TOGETHER.

1. Both threads too slack in relation to the cloth. See page 10.

THE CLOTH IS CHEWED UP.

1. Too hard pressure on the presser foot. See page 12.

NEEDLE STRIKES AGAINST THE THROAT PLATE OR BREAKS OFF.

1. The needle has become bent which may be due to pulling the cloth while sewing. Put in a new needle. Never pull the cloth while you are sewing.
-

The machine is provided with devices and accessories according to list on page 41. Any other devices or appliances mentioned in the following can be procured through our representatives at extra cost.

DIFFERENT KINDS OF SEAMS AND HOW TO USE THE VARIOUS DEVICES.

STRAIGHT SEAMS.

The machine works like an ordinary straight-sewing machine when the width of the seam is set on 0.

STAGGERED SEAMS.

The zigzag seam is quite serviceable at sewing together clipped or cut edges of cloth such as for seams in dresses and blouses, leg seams of men's or boy's trousers, etc. The width of the seam has to be adapted to the roughness and tight wave of the cloth. The thread tension must also be adjusted according to the nature of the material. Too hard a tension will contribute to rolling up the edges. Fig. 30 shows the appearance of this kind of seam.

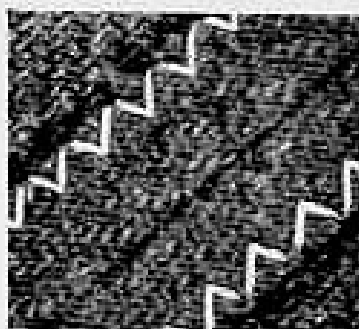


Fig. 30.

HEMMING WITH HEM-FOLDER.

The insertion of the edge of the cloth in the hemmer is facilitated by clipping off the corner a fraction. Insert the cloth edge in the hemmer so far that the needle can enter the cloth. Check during the hem-

ming that the fabric completely fills the hemmer opening. If the edge shows a tendency to slide out



Fig. 31.

of the hemmer opening, hold the cloth more to the right; if too much cloth is being fed into the hemmer, doubling over the hem and making it hard, guide the cloth towards the left.

ROLLED HEM.

For this work is used hemmer No S 15132, Fig. 31. This kind of hem is used quite commonly for hemming thin materials, using for this purpose zigzag seam of 2 mm width. As little cloth as possible should be fed into the hemmer, in order to obtain a narrow and attractive hem.

MUSSEL SEAMS.

Mussel seams are produced with the aid of hemmer No S 15134, Fig. 32, primarily used for thin fabrics,



Fig. 32.

silks, charmeuse, etc. The width of the hem is about 4 mm and the seam so broad that the needle in the one side position will be a fraction beyond the inner edge of the hem. The thread tension should be adjusted in relation to the thickness and hardness of the material, in order to bring out the mussels attractively.

HEMMER FOR ZIGZAG HEMMING.

For this purpose is used hemmer No S 15138, Fig. 33, and a width of seam of about 2 mm. By using thread of different colour a handsome decorative effect will incidentally be obtained. The hemmer can also be used for straight seam hemming.

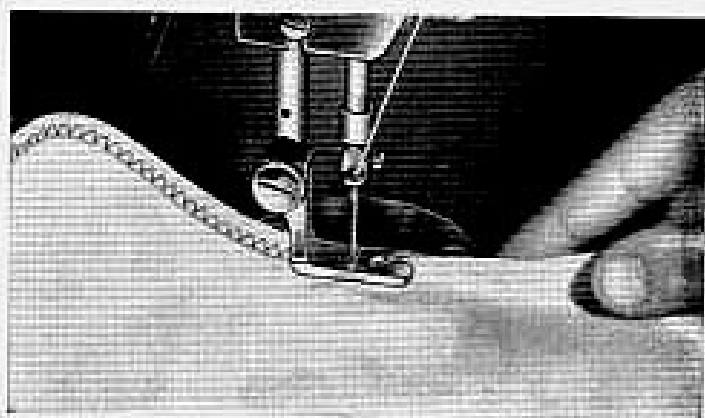


Fig. 33.

HEM SEAMS.

For this work, as shown by Fig. 34, is to be used an ordinary hemmer. For the first seam, the pieces of cloth to be sewn together are placed on top of one another, so that the edge of the underneath cloth will lie about 3 mm outside that of the top cloth. The projecting edge of the cloth is then inserted in

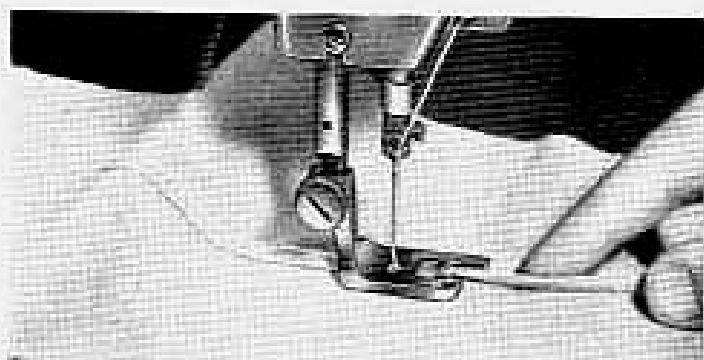


Fig. 34.

the hemmer opening, whereupon the work can proceed as in ordinary hemming.

When the first seam has been finished, spread out and stretch the cloth well. The edge produced in sewing the first seam is entered into the hemmer in the same direction of sewing as of the first seam, and is then stitched down.

STRAIGHT-GUIDE PRESSER FOOT.

This narrow or plain presser foot is used for sewing straight or staggered seams where these shall be absolutely parallel with each other, as in stitching, quilting or the like (Fig. 35). It is also used for sewing a seam parallel with the edge of the material; for instance, in sewing tucks of different width, etc.

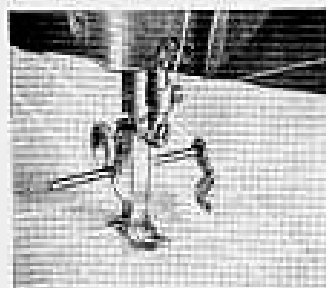


Fig. 35.

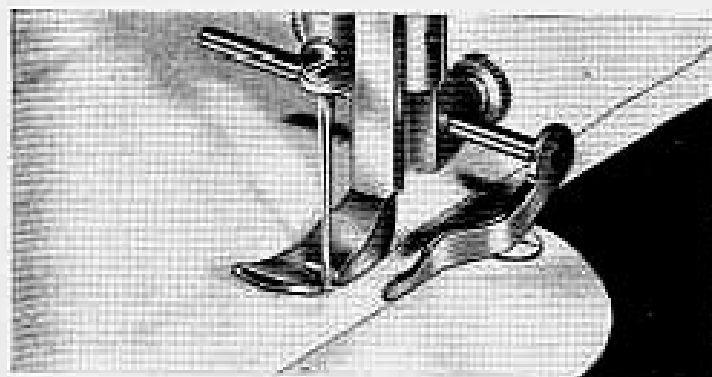


Fig. 36.

The guide should be screwed fast with the screw at the back of the presser foot, at the desired distance from the needle to the edge of the cloth (Fig. 36), or from the previously sewn seam.

SEWING ON BUTTONS.

A presser foot as shown by Fig. 37 is used for this purpose. After the cloth feeder has been depressed, place the cloth or garment with the button underneath the cross-opening in the presser foot, and adjust the zigzag width so that it corresponds with the spacing of the holes in the button. Then start up the machine and sew in the button. The left-hand starting position for zigzag seam sewing is used. To secure the sewing, place the machine for straight seam sewing and sew a couple of stitches. Release the work and cut off the thread.



Fig. 37.

SEWING BUTTON HOLES.

Very short stitches are used for sewing button holes. Left-hand starting position for zigzag sewing should be used, and a width of seam of about 2 mm is usually sufficient in linen and cotton materials.

Exchange the presser foot for the button hole attachment, Fig. 38. This attachment is provided with a movable pointer which should be set for the wanted length of the button hole. If a thread is to be inserted in the seam, insert this through hole 1. When



Fig. 38.

making a button hole with insertion thread, the sewing must be started from the inside of the garment and continued toward the edge, as the insertion thread will then pass round the end of the button hole where the strain is the greatest. The sewing is commenced at the left side of the button hole and continued the fixed length. When the machine is stopped

the needle should be at the right. Swing the garment round the needle and alter the zigzag width to slightly more than the double, $4\frac{1}{2}$ mm, and sew 4 or 5 stitches which constitute the braid. Return the width to 2 mm and sew the other side of the button hole. When arriving at the other end of the hole, alter the zigzag sewing again to $4\frac{1}{2}$ mm and sew the other braid with 4 or 5 stitches. For altering the width of seam, use the adjustable stops; 2, Fig. 14. The button hole is next cut open with the button hole knife against the wood block.

TWO-NEEDLE ATTACHMENT.

The attachment for two needle is chiefly used for certain decorative seams, such as seams with ruffling or gathers between the rows of stitches, narrow folds, glove seams, etc. The spacing of the needles is adjustable by means of screw 1, Fig. 39. When the screw is turned to the right the space is increased, and reduced at turning to the left.

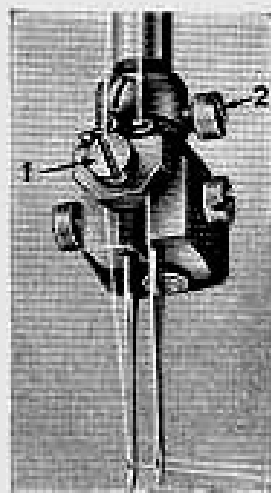


Fig. 39.

EXCHANGE OF NEEDLE HEADS.

Loosen the set screw 2, Fig. 39, on the right-hand side, pull the needle head downward and remove it from the needle bar. Push the new needle head on the needle bar, making sure that it is pushed in as far as it will go, and so that the set screw enters its slot 2. Then screw in the screw tightly.

THREADING THE MACHINE WHEN TWO NEEDLES ARE FITTED.

The threads are passed through separate pairs of tension discs and separate holes in the take-up. The threading in other respects takes place in the same way as in case of a single needle.

RUFFLER PLATE.

This particular attachment is used for sewing seams without cord insertion, narrow folds, etc., and is provided with an adjustable so-called ruffler or gatherer; 1, Fig. 40. By turning the lever 2, Fig. 40,

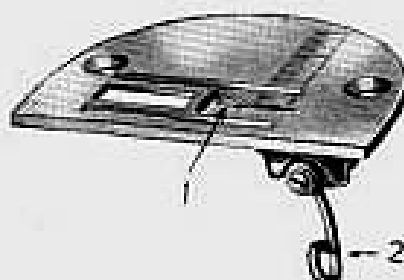


Fig. 40.

the ruffler can be guided upward through the stitch plate or downward, according to the nature of the material or the wanted height of the seam. In gathering thicker fabrics, on coats, etc., use the presser foot with one slot. The ruffler and needle spacing must naturally be altered as wanted and as most suitable for the material worked on.

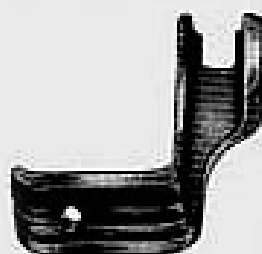


Fig. 41.

For «straw» folds in thinner fabrics should be used the ruffler presser foot with five slots, Fig. 41. These five slots serve for one thing as a track for the already sewn fold, and for another as a guide or rule for spacing the folds in one and the same group exactly alike.

If «straw» folds shall be more widely spaced, use

the quilting guide, which is fastened in the presser foot and can be set for desired spacing.

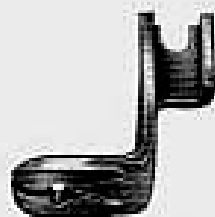


Fig. 42.

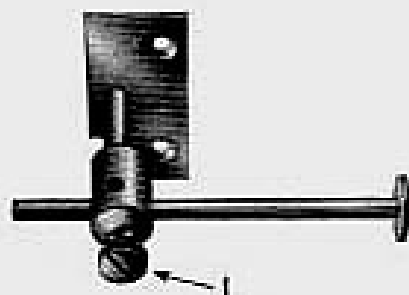


Fig. 43.

To sew raised double seams in figures or «straw» pleats in curves, use the ruffler presser foot, Fig. 42. It has recesses on the underside which facilitate the turning of the work, and prevents the finished fold from being flattened out. For sewing seams with a cord inside, use presser foot, Fig. 41. The cord or twine is placed on the cord-reel stand, Fig. 43, underneath the machine table. To put on the reel, loosen screw 1 and pull out the shaft, and after pushing the reel on the shaft, replace the shaft in the stand and tighten the set screw. Make sure that the reel rotates lightly. The cord is conducted from the reel through the hole in the bobbin case holder lever, the cord hole in the throat plate, and is then laid under the presser foot. After the under thread has been picked up in the usual way, all the threads are laid backward under the presser foot together with the cloth, and the sewing can be started.

STANDARD EQUIPMENT OF CLASS 33 SEWING MACHINE.

| No. | Name | Number |
|---------|---|--------|
| S-15338 | Boxes for attachments | 2 |
| S-15036 | Bottle of sewing-machine oil | 1 |
| S-15132 | Hemmer for 2-mm rolled hem | 1 |
| S-15134 | Hemmer for 3-mm mussel-seam hem | 1 |
| S-15138 | Hemmer for 4-mm zigzag-seam hem | 1 |
| S-15173 | Button-hole attachment, compl. | 1 |
| S-15178 | Button-hole knife, compl. w. 10, 13 and 19 mm blades | 1 |
| S-15179 | Button-hole knife blade, 10 mm | 1 |
| S-15180 | Button-hole knife blade, 13 mm | 1 |
| S-15181 | Button-hole knife blade, 19 mm | 1 |
| S-15010 | Brush | 1 |
| 16×231 | Needles No. 80, 90 and 100 | 6 |
| S-15038 | Oil can | 1 |
| S-15159 | Presser foot with zigzag slots and guide .. | 1 |
| S-15165 | Presser foot for straight sewing | 1 |
| S-15172 | Presser foot for sewing on buttons | 1 |
| S-15166 | Presser foot with joint, for zigzag sewing | 1 |
| S-15169 | Presser foot with joint and hole for cord | 1 |
| 3038 | Awl | 1 |
| 3045 | Screwdriver, big | 1 |
| 3046 | Screwdriver, small | 1 |
| S-10743 | Bobbin | 5 |
| S-10972 | Throat plate for straight sewing | 1 |
| S-15186 | Wood block | 1 |
| 4018 | Quilting guide | 1 |
| | Manual | |

DOUBLE-STITCH EQUIPMENT FOR CLASS 33.

| No. | Name | Number |
|---------|--|--------|
| S-15348 | Needle head for two needles, compl. | 1 |
| S-15168 | Presser foot, fixed, for zigzag sewing, with two cord holes | 1 |
| S-15187 | Presser foot for narrow, curved and raised seams | 1 |
| S-15189 | Presser foot with five slots, for medium heavy cloth | 1 |
| S-15190 | Presser foot with one slot, for heavy cloth | 1 |
| S-15191 | Cord-reel stand, compl. | 1 |
| S-15345 | Throat plate for raised seams | 1 |
| S-15359 | Presser foot with five slots, for thin cloth | 1 |

SPECIAL ATTACHMENT FOR CLASS 33.

| No. | Name |
|---------|------------------------------------|
| S-15115 | Hemmer for 2-mm hem, straight seam |
| S-15118 | Hemmer for 3-mm hem, " |
| S-15124 | Hemmer for 6-mm hem, " |
| S-15130 | Hemmer for 10-mm hem, " |
| S-15136 | Hemmer for 3-mm hem, zigzag seam |
| S-10975 | Throat plate, zigzag sewing |
| S-15202 | Throat plate for 3.5-mm cord hole |
| S-15209 | Die for 3.5-mm cord hole |
| S-15205 | Throat plate for 5-mm cord hole |
| S-15210 | Die for 5-mm cord hole |
| S-15207 | Throat plate for 6-mm cord hole |
| S-15211 | Die for 6-mm cord hole |
| S-15212 | Thread reel bracket, double |
| S-10978 | Cloth feeder with coarse teeth |