Before puting the spool **A** in the shuttle **B**, put the threa **c** through hole **e** from inside outwards, then under spring **f** (fig. 7). Out again through hole **g**, and thence from underneath upwards through the hole in the thread guide **h**, which is movable. You now put the spool in the shuttle so that it unwinds in the direction of the arrow in fig. 8.

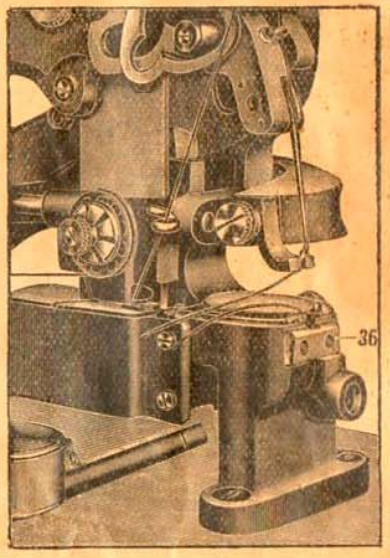

Fig. 9.

The thread guide **h** (fig. 6 and 8) is then pulled round towards the middle of the shuttle (fig. 8) and care should be taken to see that the thread guide is pushed right home into the groove left for the purpose on the edge of the shuttle. Then you pull out a short length of thread and adjust the tension.

After inserting the shuttle turn the stitching plate 21 (fig. 5) back in position and tighten it in position with the milled edge screw No. 22 placed at the side of the machine.

The thread guide **h** (fig. 8) must not on any account stand raised above the shuttle, otherwise the machine will not work well and breakages of thread are likely to occur.

For flat stitching use the flat stitching plate, in which case the shuttle thread will have to be pulled up and placed under the pressure foot in the direction shown in fig. 9. To do this you grip the operting lever with the right hand and hold loosely the end of the top thread. You then bring the lever forward and back making a complete movement.

You can then pull up the bottom thread with the top thread through the stitching hole when you put both together on the stitching plate towards the left (fig. 9).

Sewing.

Fig. 4 and 5.

The machine is now ready for sewing. The operating lever is pushed right back, which brings the needle to its highest position. The end of the top thread and the end of the shuttle thread are put under the presser foot 23. The shoe is held lightly with the left hand welt upwards, as in hand sewing and the channel, prepared in the manner previously described, is placed over the channel guide of the stitching plate: The lifting lever 24 (fig. 5) of the automatic pressure arm 34 situated at the right side of the machine is pushed back, when the presser foot 23 will hold the shoe on the channel guide.

The sewing is done by moving the operating lever in a regular movement completely forward and then completely backward. It should be noted that the movement of the lever every time it is moved forward strikes the stop and backward.

The shoe is carried along automatically by the needle and should be held loosely,, so that the needle does not find any resistance whilst carrying the work forward, otherwise the needle may bend or break.

If the machine is used in a cold room the pitched thread may possibly have got stiff, so that it is advisable to heat the shuttle carrier for the pitched thread to get soft and allow itself to be well pulled up into the work. For this purpose a small spirit lamp 27 is supplied with the machine. The lamp is lit and placed under the shuttle cavity as shown in fig. 4.

When the job is finished the operating lever is pushed right back and a few inches of upper thread are pulled out before same gets to the thread feeder, in order to avoid any pull on the needle. Then after the presser foot 23 (fig. 5) has been lifted up by means of the lifting lever 24 the shoe can be pulled out. Leave the ends of the thread on the machine sufficiently long to have the machine immediately ready for further sewing.

Care should be taken specially when working a hard and thick leather that the top thread goes through a thickish solution of gum tragacanth. If this is not done the tanning

acids adhere to the needle, which has then difficulty to get through the leather and may therefore easily break off.

Beginners are advised to practice sewing on bits of channelled leather before they start stitching on footwear inorder to get used to the movement. It is important to oil all parts exposed to friction frequently with a good quality sewing machine oil. It is also advisable to put a few drops of oil on the shuttle carrier when you work wtih the machine warmed up.

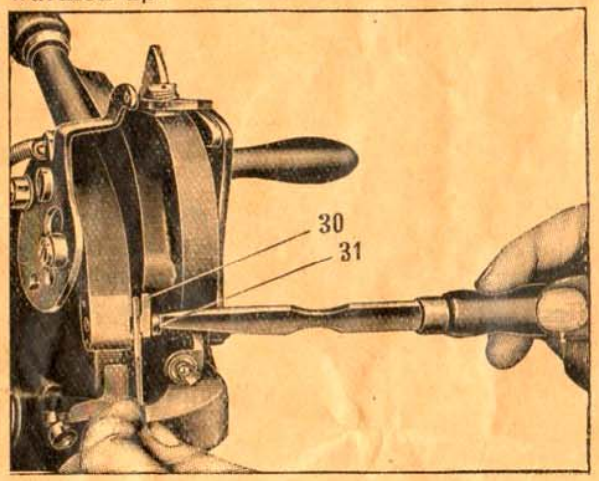

Fig. 10.

Relative Sizes of Needles and Threads

the following table will shew:

Size of Needle	8	Size of Thread	8 or 12	}	supplied ou
„ „ „	7	„ „ „	7 „ 16	}	request only
„ „ „	6	„ „ „	6 „ 20		
„ „ „	5	„ „ „	5 „ 30		
„ „ „	4	„ „ „	4 „ 30		

The size of thread must always correspond to that of needle. Il is advisable, according to the material being worked on, to use thread of the same size at that of needle or one whole size smaller, but not 2 sizes, else the needle will make a hole too large for the thread to fill. The same size should bc used for needle thread and under thread.

Flax-fibre linen thread, six strands, right-hand twist, is alone suitable. This may be obtained from the makers of the machine. The above sizes are in stock in self colour, cohite, brown and black.

Putting in a new needle.

Loosen the screw 31 at the side of the needle holder (fig. 10) and take the old needle out. Then take the new needle with the left hand and put in the hole of the needle holder in such a way that the recess in the needle is on the right. You then tighten up the screw 31 with the right hand. the while pressing the needle arm firmly against the machine with the left hand, which latter takes up the pressure of the screwdriver. You see to it that the projecting portion of the little cover 30 plate fits tightly in the recess of the needle.

When the needle is fastened you put a piece of leather under the presser foot and stitch the needle through once by bringing the operating lever up to a vertical position, but before the presser foot lifts itself. You then look under the front covering plate 36 to see if the needle is hard against the right side of the needle channel. If not, change the needle or file the cut of the point correspondingly. **Needles which do not stand absolutely perpendicular do not produce the longest stitch.** One can only sew with a properly fitted and keen edged needle.

For a different size of needle the front cover plate 36 (see fig. 11) requires to be changed, needles 7 and 8 requiring a smooth cover plate without catch and stamped No, 8, 8, while needles 4, 5, 6 require a cover plate having a catch and stamped No. 5, 6. This exchange of cover plates is most important, there being otherwise the risk of skip stitches or of constant breaking of needles.

Taking the shuttle out of the machine.

The stitching plate 21 (fig. 11) is pushed round to the right after you have loosened milled edge screw 22. when the shuttle will be free. You lift the shuttle by means of a knife or screw driver placed under the thread guide and take it out.

Taking the spool out of the shuttle.

The thread guide **h** (fig. 6 and 11) is lifted and turned half way round. To do this insert the small screw driver in the slit of the screw shown underneath the shuttle. Press forward to release the thread guide from the notch in the shuttle and then give the screw driver half a turn so that

guide h takes the position shown in figure 6. Then turn the shuttle upside down and the spool will fall out. Should the spool stick in the shuttle owing to a deposid of pitch, help it out by pushing the small screw driver throug the holes left at the back of the shuttle. Then clean the pitch from both shuttle and spool.

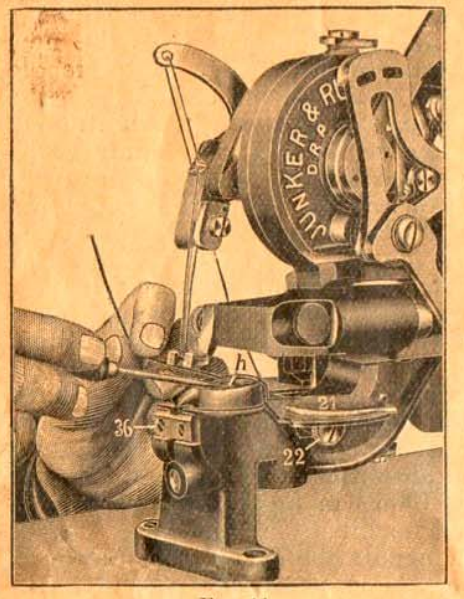

Fig. 11.

The filling of the spool, the threading, placing in the spool and closing the shuttle with the thread guide (where you have to see that thread unwinds from the spool in the opposite direction to the point of the shuttle) have already been explained under the heading shuttle thread.

Tensions and their regulation.

The quality of the stitch depends on the tension on the upper thread which therefore requires attention. This tension should be regulated in such a way that both threads are pulled in evently, so that the loop comes in the middle of the leather. The stitch must look the same on both sides to be perfect.

If whilst stitching the top thread or the shuttle thread are not pulled in sharp, or if knots or loops occur, this can easily be remedied by adjusting the tension on the top thread, which is done by screwing tighter or unscrewing the screw 32 of the tension wheel 10 (fig. 4). When you turn the tension and if you screw in the opposite direction you loosen it.

Length of stitch.

The stitch can be lengthened up to a maximum of $^{1}/_{6}$" by means of the stitch regulator 25 (fig. 4). To increase the length of the stitch, you turn screw 25, after loosening set screw 26, in the direction of the clock hands. For a shorter stitch you screw in the opposite direction. After adjustment stitch you screw in the opposite direction of stitch, set screw 26 must be screwed to the desired length of stitch, set screw 26 must be screwed tight, otherwise the screw may loosen whilst stitching and the length of the stitch may alter.

Faults and their remedy.

Before despatch every machine is thoroughly tested. Should it happen that it does not stitch correctly the cause will mostly be found in faulty. The following lines will be of assistance.

Faulty feeding of the work, stitch not long enough.

Take out altogether by unscrewing the stitch regulator 25 and examine the end. Should same be very much flattened by use exchange for a new screw. Examine the presser foot to see if same lifts sufficiently to allow the work to go freely forward. Does it not do so, you will have to renew either the holder (part No. 339 of catalogue) or the cog segment of the segment lever (part No. 334 of catalogue).
It will howewer be found that the fault mostly resides in the needle not coming down hard against the rhigt side of the needle channel.

The causes of the upper thread breaking may be,

1. That the eye of the needle is sharp and cuts the thread.
2. That the needle is not put right or put in too deep.
3. That the tension on the thread is too strong.
4. That the thread is uneven or knotty.
5. That the thread is not properly threaded on the machine or got tangled somewhere.
6. That the point of the shuttle may have been damaged by the needle (which occurs mainly if the movement backwards of the operating lever is not finished before the lever is pulled forward again).

The point of the shuttle will then be roughened or notched and cut the thread. In this case polish the shuttle or change it.

7. That the needle thread is stiff and brittle. instead of supple, in consequence of sewing without the use of tragacanth.

That the needle and thread do not fit one another. Test this. Take out the needle and push it through a piece of leather. The thread must now allow itself to be pulled readily through the long groove in the needle. Should the thread fit tight then the thread is too coarse for the needle and you will have to take a stronger needle or finer thread.

Soft and badly prepared thread make poor work, use only good thread.

Loops or missed stitches occur.

1. When the tension has been faulty threaded or not threaded at all.
2. When the thread is not threaded properly in the shuttle, so that the shuttle tension is too loose.
3. When the needle is not put in properly or is put in too deep.
4. When the machine is not oiled or is greasy and therefore works heavily.

Stitch is to loose.

1. Tighten first the tension on the needle thread with screw 32 (fig. 4).
2. Try tightening the tension on the shuttle thread by means of spring f (fig. 7).

If the upper stitch is good, whilst the shuttle thread lies flat on the leather,
then the tension on the upper thread is insufficient.

If the lower stitch is good, whilst the shuttle thread lies flat on the leather,
then the tension on the upper thread is too tight or on the lower one too loose.

Breakage of the needle is mostly due to the following causes:

1. That the needle is bent and strikes on the side of the hole in the stitching plate.
2. That hard substances in the shoe (e. g. nails) come under the needle.
3. That the shoe is pushed or pulled whilst being stitched (beginners) do this unconsciously).

4. That the presser foot is not screwed sufficiently tight and moves whilst the stitching is being done.
5. That no tragacanth has been used and consequently tannic acid is deposited ont he needle.

Loops or skips stitches occur.

1. When the shuttle point is damged.
2. When the tension contrivance is improperly threaded or not threaded at all.
3. When the shuttle is improperly threaded and hence the under tension is not strong enough.
4. When the needle is set ivrongly or inserted too far.
5. When an unsuitable front cover plate is used (needles 4, 5 and 6 require the cover plate marked 5 and 6 No. 55 109; needles 7 and 8 require the cover plate marked 7 and 8 No. 55 025).
6. When the machine is insufficiently oiled or is clogged and consequently corks heavily.

The operating lever sticks fast.

If the operating lever cannot get both ways to its extreme positions something will have clogged the rack controlling the movement of the shuttle carrier. In this case lay the machine flat on its side, remove the screw under the shuttle and shuttle box and thoroughly clean and oil the small cog wheel under the shuttle carrier, also the whole cavity as well as the cogs of the rack which operates ont he cog wheel of the shuttle carrier. When you put the shuttle carrier back see to it that is goes back in the proper position.

Same should be so that when the operating lever is perpendicular on the top of the machine the right edge of the shuttle carrier is flush with the left side of the needle channel. Before taking the part out of the machine, examine its position attentively or mark it with pencil or chalk, so as to put it back in the same position.

Should you notice with every stitch the machine getting heavier to work, this will be due to the upper thread having split and causing a pad, which gets bigger and ultimately will prevent the thread from going through and break if you force the operating lever. In this case cut out the damaged thread and thread the needle again. This can only occur if the needle eye is rough or sharp or if the thread is uneven or knotty.