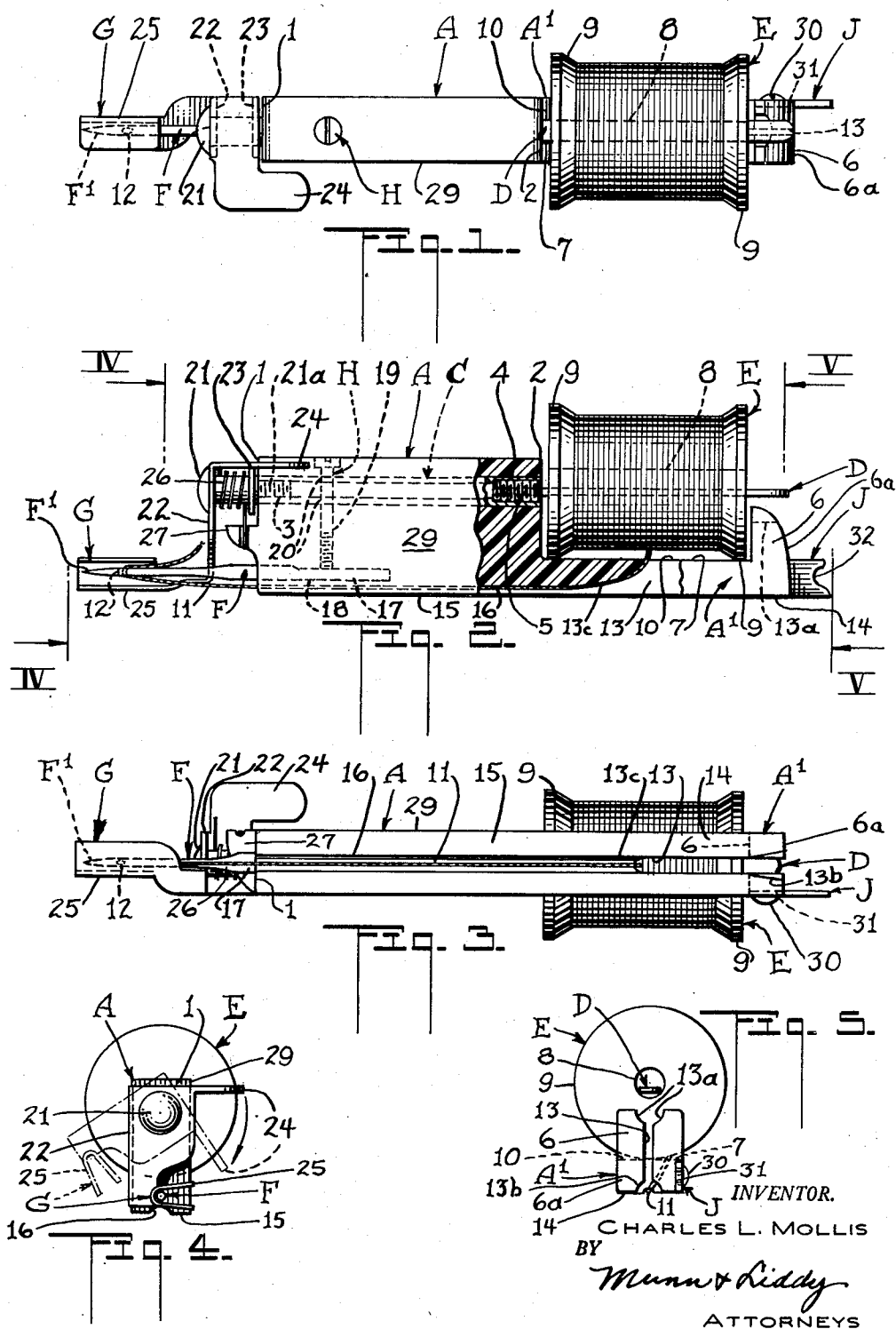


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NEEDLE GUARD FOR PORTABLE SEWING MACHINES

2 Sheets-Sheet 1



Sept. 28, 1954

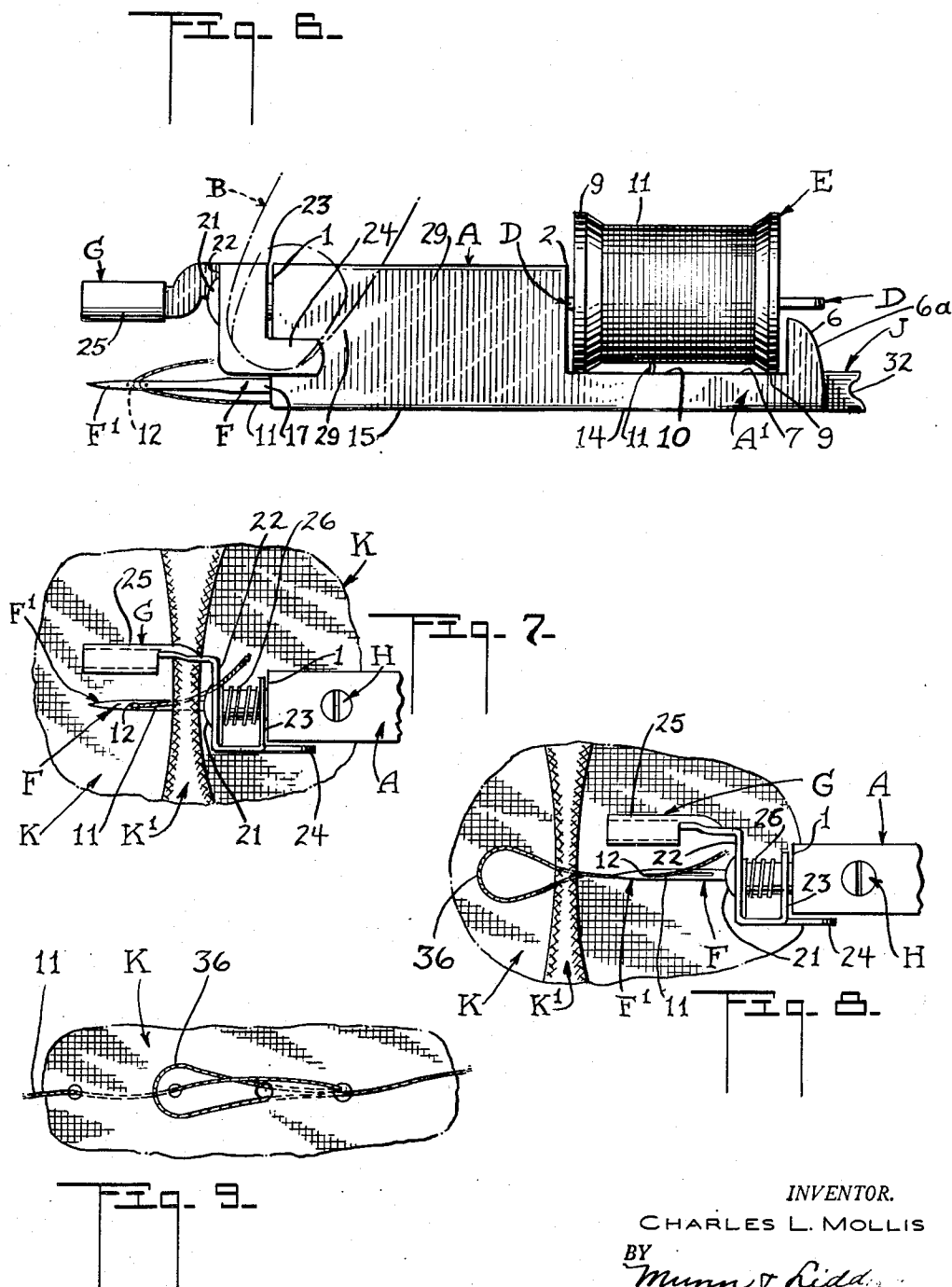
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NEEDLE GUARD FOR PORTABLE SEWING MACHINES

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2 Sheets-Sheet 2



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NEEDLE GUARD FOR PORTABLE
SEWING MACHINES

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2 Claims. (Cl. 112—261)

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An object of my invention is to provide an invisible chainstitch garment sewing device which is an improvement over the form of the device shown in my patent, No. 2,558,873, issued July 3, 1951. In the patent I show what I term, a looper, for aiding in forming loops in the thread during the forming of the chain stitching in the cloth. Although such a looper is desirable, it is not essential and so I omit it in the present improved device.

A further object of my invention is to provide a device of the type described in which a needle guard is pivoted to the device and is held open while stitching and closes directly the guard is released. The guard prevents pricking of one's fingers when the device is not in use, and protecting the point of the needle from damage as from a fall or from contact with other objects.

A further object of my invention is to provide a device of the type described in which the thread carrying spool is mounted on a resilient support that causes the spool to frictionally contact the device and be prevented from freely rotating. The operator can increase the friction to the desired extent and thus determine the tension exerted on the thread during the stitching operation. The device is provided with a notched thread cutter at the rear of the device.

The device is simple in construction and is durable and efficient for the purpose intended.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming a part of this application, in which:

Figure 1 is a top plan view of the stitching device;

Figure 2 is a side elevation of Figure 1, portions being shown in section for clarity purposes;

Figure 3 is a bottom plan view of the device;

Figure 4 is a front elevation;

Figure 5 is a rear elevation;

Figure 6 is a side elevation and illustrates how the guard may be swung out of the way;

Figure 7 is a top plan view of the forward end of the device and illustrates the needle guard swung into open position and the needle piercing a temporary fold in the cloth;

Figure 8 is a view similar to Figure 7 and shows the step of forming a loop in the thread on one side of the cloth fold and withdrawing the needle from the other side; and

Figure 9 illustrates the loop stitches which may be formed with the device.

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While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the appended claims without departing from the spirit and scope of the invention.

In carrying out my invention, I provide an elongated frame indicated generally at A and this frame is of a size as to be readily held in by the hand, the thumb of the hand being indicated at B in Figure 6. The frame is relatively narrow in width and it is provided with a rearwardly-extending base portion A1 that is integral with the frame, see Figures 2 and 6.

Referring to Figure 2, it will be seen that the frame A has a tubular member C mounted therein and extending from the front end 1 of the frame to the rear end 2 thereof. The tubular member is internally threaded at its ends as indicated at 3 and 4. A threaded plug 5 is screwed into the threaded end 4 of the tubular member C and the plug 5 carries a flexible journal D that extends parallel with the axis of the tubular member C. Figures 1, 2 and 5 show the journal as comprising a flat strip of steel or other type of resilient material.

The base portion A1 extends rearwardly from the rear end 2 of the frame A and this base portion is provided with an integral projection 6 that cooperates with the rear end 2 of the frame to provide a spool-receiving recess 7. The flexibility of the journal D permits it to be flexed for receiving a spool E. The spool has a bore 8 for receiving the flexible journal and the free end of the journal enters the spool bore 8. The journal will flex for permitting the spool to be passed over the projection 6. As soon as the spool registers with the recess 7, the flexible journal D will move it into the position shown in Figure 2 and will cause the spool periphery 9 to frictionally engage with the surface 10 of the base portion A1 that forms a part of the recess 7. This structure causes the spool to be frictionally contacted by the surface 10 at all times and therefore the thread 11 fed from the spool will be under continuous tension. I will explain hereinafter how this tension can be increased if desired.

I provide novel threading and guide means for the thread 11 so that this thread will be guided to the eye 12 of a needle, indicated generally at F. In Figures 3 and 5, I show the rear portion of the base A1 provided with a medial slot 13 that extends longitudinally from the rear edge 6a of the projection 6, forwardly throughout substantially one-half the length of the base portion A1. The slot 13 extends upwardly into the pro-

section 6 and the sides of the slots are flared outwardly at 13a, see Figure 5, for providing a thread-receiving entrance recess. Furthermore, the portion of the slot 13 disposed near the bottom 14 of the base A1 has its sides flared outwardly as indicated at 13b in Figure 5. The purpose of this construction is to permit the thread 11 from the spool E to be moved into the slot 13 readily. The thread is first passed into the flared slot sides 13a and is moved down through the slot 13 and then forwardly to the front end of the slot.

The under side 15 of the frame A is a continuation of the under side 14 of the base A1. The under side 15 has a thread receiving groove 16 therein, see Figure 3, and this groove extends from the forward end of the slot 13. In fact, the forward wall of the slot 13 is curved as at 13c, see Figure 2, so that the thread 11 in passing from the spool E, will move along this curved portion 13c and enter the groove 15 without any interference or sharp turns.

It is best now to describe the forward end of the device and set forth how a needle guard, indicated generally at G in Figures 1 and 2, normally protects the pointed end F1 of the needle. The shank 17 of the needle is received in a bore 18 provided in the forward end of the frame A, see Figure 2. A set screw H, see Figures 1 and 2, is received in a bore 19, and also the end of the bore is threaded so that the set screw may be tightened down against the shank 17 for holding the needle in place. The set screw 19 also passes through aligned openings 20 in the tube C for holding the latter against longitudinal movement in the frame A. It will be seen from this construction that the needle is held rigidly in place and yet the needle may be removed when desired. The thread 11 passes forwardly from the front end of the groove 16 and is passed through the eye 12 of the needle as shown in Figure 2.

I provide the needle guard G for the purpose of protecting the pointed end of the needle when he device is not in use. The guard is of the shape shown in Figures 1 to 4, inclusive, and it is pivotally mounted on a pin 21 that projects forwardly from the front end 1 of the frame A. Figure 2 shows how the pin 21 has a threaded portion 21a that is removably received in the threaded portion 3 of the tube C and in this way the pin is anchored to the frame A. The needle guard G has a normally downwardly-extending portion 22, see Figure 2, and this is rotatably mounted on the pin 21. The needle guard also has a projection 23 that parallels the downwardly-extending portion 22 and is spaced therefrom. The projection 23 is rotatably mounted on the pivot pin 21. Figure 1 shows both the downwardly-extending portion 22 and the projection 23 of the needle guard, and further illustrates an integral handle portion 24 that normally projects to one side of the frame A.

The lower end of the downwardly-extending portion 22 is bent at right angles so as to project forwardly and then the forward portion is formed into a U-shaped needle receiving sheath indicated generally at 25. A torsional spring 26 is mounted on the pivot pin 21 and has one end bearing against the needle guard and its other end bearing against a projection 27 that extends forwardly from the front end 1 of the frame A. The torsional spring urges the needle guard into the position shown by the full lines in Figures 1 to 4, inclusive, and therefore the

sheath 25 will normally protect the pointed end F1 of the needle.

In Figures 4 and 6, I show how the needle guard can be swung into a position for exposing the pointed end of the needle. The thumb B of the hand (not shown) that grips the device, rests on the handle 24 and the operator by merely depressing the handle 24 by means of the thumb will swing the needle guard about the pivot point 21 from the full to the dot dash line position shown in Figure 4. If desired, the handle 24 may be moved until it comes into contact with the side wall 29 of the frame A. The operator in using the device keeps his thumb pressing against the handle 24 so that the sheath 25 will be held clear of the needle, see Figure 6. As soon as the thumb of the operator is released from the handle 24, the torsional spring 26 will immediately swing the needle guard into its normal position where the sheath 25 will protect the pointed end of the needle.

I provide a thread cutter J at the rear of the base A1, see Figures 1, 2, 3 and 5. The cutter is preferably made from a flat piece of metal and it is held to the base by a screw 30 or other suitable fastening means. Figure 5 shows the base as having a recess 31 for receiving the cutter and this will prevent the cutter from moving into angular positions with respect to the base. The cutter has a recess 32 that has a sharpened edge for the purpose of severing the thread in the customary manner.

As stated in the earlier part of this specification, the flexible journal D will hold the rims 9 of the spool E in frictional contact with the surface 10 of the base A1 and therefore the spool is prevented from rotating freely, and instead a tension is placed upon the thread 11 as it is fed from the spool due to the frictional contact of the spool with the base A1. I have constructed the device to permit the tension on the spool to be increased if desired. In Figure 6, I show how the guard G is held in open position by the thumb B. The index finger, not shown, bears against the opposite side of the frame. The last two fingers of the same hand, not shown, bear against the surface 14 of the base A1. If the operator wishes to increase the tension on the thread 11, all he needs to do is to move the last two fingers of the hand that holds the device, inwardly, and this will press the periphery 9 of the spool E against the palm, not shown, of the hand. The friction on the spool is increased and likewise the tension on the thread 11. Such a frictional pressure on the spool can be regulated so that the operator can exert the desired tension on the thread.

From the foregoing description of the various parts of the device, the operation may be readily understood.

The device utilizes the conventional sewing machine needle formed along one side with a groove for receiving a length of the thread 11 from which the stitches are formed. The stitching device is designed to form a chain stitch as in basting, felling or the like and as shown in Figure 9. In using the device, the frame A is held in one hand (either right or left) of the user and the guard G is operated with the thumb B. The loop 36, see Figure 8, is formed on the top of the needle to enable the operator to sew from right to left as well as from left to right, thus making the device usable to a left-handed sewer as well as to a right-handed sewer.

The flexible journal D yieldingly holds the

spool periphery 9 against the surface 10 for creating a tension on the thread 11 as it unwinds from the spool. In addition, the spool E is exposed and enables the operator to apply more friction on the spool, if and when needed, by simply raising the rear end of the device in Figure 6 with the aid of the fourth and fifth fingers. This will lift the spool E up to touch the palm and increase the friction on the spool to the desired extent. The spool E is held in place with the flat or round spring wire D so that it will yield when the spool is pushed on or pulled off from the device. When the device is not used, the needle point shielding means G, protects the needle point to prevent finger pricking or scratching during the handling of the device.

The device operates on a stitch making principle differing from other devices. These other devices may be useful to leather, canvas or said sewers, but they are impractical to the tailor and the seamstress for whom the present device is designed. In Figure 7, I indicate the first step of the stitching method which is to force the needle F into the cloth K and then out from the cloth to form a stitch of the desired length, the cloth forming a temporary fold K1 during this movement. The operator then starts to withdraw the needle F from the temporary garment fold K1, as shown in Figure 8, and during this movement, the thumb of the free hand is used for pressing the loop 36 down upon the cloth to prevent the loop from being retracted through the cloth during the withdrawal of the needle. The device is now moved so that the needle F will enter the loop 36 formed by the thread 11, and the thumb that holds the loop may have the portion pressing against the loop, rocked back slightly to give space for the needle to enter the loop. The needle in entering the loop is forced through the cloth again to form the next stitch, a second temporary fold K1 being formed to permit the second stitch to be made.

The method is repeated for each stitch. The folds K1 will remain in the cloth only as long as they are necessary in forming the stitches. In Figure 9, the temporary folds K1 have disappeared from the cloth and one complete chain stitch has been indicated. The loop 36 is still shown loose for the purpose of clarity. In actual practice, the chain stitch will be pulled tight and the loop 36 will be contracted to a point where a single line of stitching will result. The length of the stitching can be determined by the distance between the temporary folds K1. It will be clear that the stitching can extend in any desired direction. The stitching may be done over the edge of the work to form stitches called overedging, overcasting or binding. Other types of stitching which may be accomplished with the device are called hemming, or felling and long stitches called basting.

After the desired length of stitching has been completed, the device is reversed and the thread cutting end is moved for causing the thread cutter J to receive the loop in the recess 32. Further movement of the cutter J will sever the thread at the loop. The loop 36 is held by the thumb during the cutting operation.

I claim:

1. In a portable stitching device, a frame, a needle projecting from one end of said frame and affixed to said frame, a pin fixed to said frame and extending parallel to said needle, said pin being positioned above said needle, a needle guard having a downwardly extending portion pivotally mounted on said pin, said guard having a projecting member parallel with said portion, said projecting member being spaced from said portion and pivotally mounted on said pin, the lower end of the downwardly extending portion being bent to extent parallel to said needle and having a forward portion formed into a V-shaped needle receiving sheath normally receiving said needle and projecting outwardly of said one end of said frame beyond the pointed end of said needle, a handle connected to said guard and projecting outwardly of said frame, a spring connected to said guard and said frame and urging said sheath to normally receive said needle, said handle being operable to uncover said needle.

2. In a portable stitching device, a frame, a needle fixedly connected to said frame and projecting from one end thereof, said needle having a pointed end positioned outwardly of said frame, a pin connected to said frame and extending parallel to said needle, a needle guard pivotally mounted on said pin and pivotal about an axis parallel to said needle, said guard having a portion extending downwardly from said pin, the lower end of the downwardly extending portion being bent to extend parallel to said needle and having a forward portion formed into a V-shaped needle receiving sheath normally receiving said needle and projecting outwardly of said frame beyond the pointed end of said needle, a handle connected to said guard and projecting outwardly of said frame laterally of said pin, a spring connected to said guard and said frame and urging said sheath to normally receive said needle, said handle being operable to rotate said guard on said pin thereby uncovering said needle point.

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