July 3, 1951 C. L. MOLLIS 2,558,873

STITCHING DEVICE

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Fig. 1.

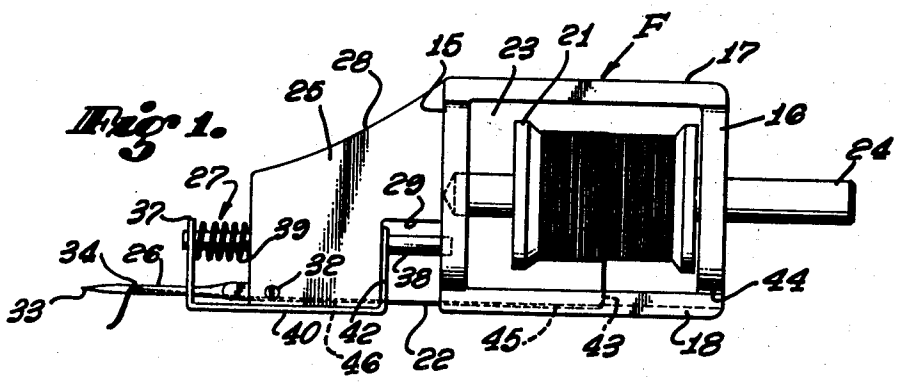



Fig. 2.

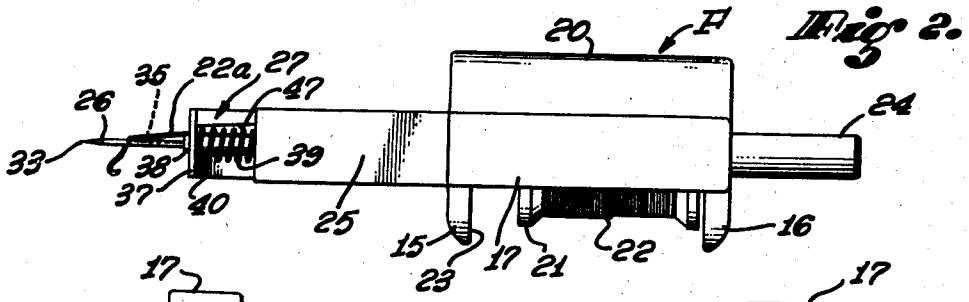



Fig. 3.

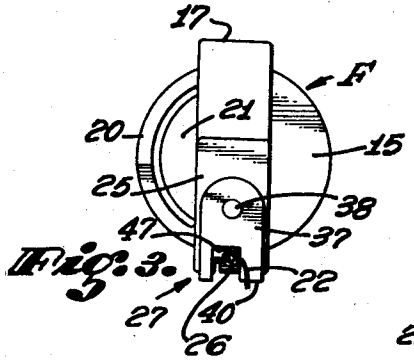



Fig. 4.

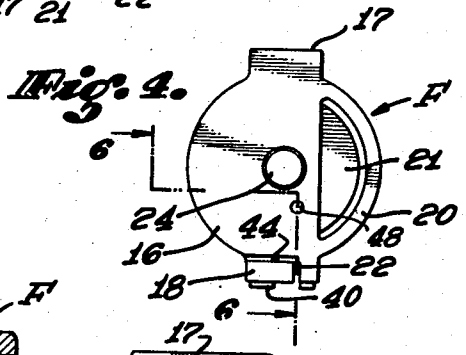



Fig. 5.

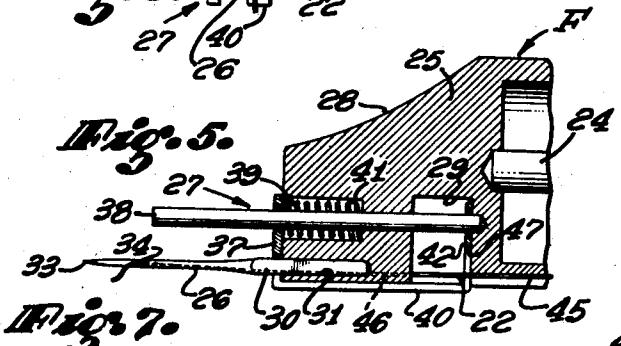



Fig. 6.

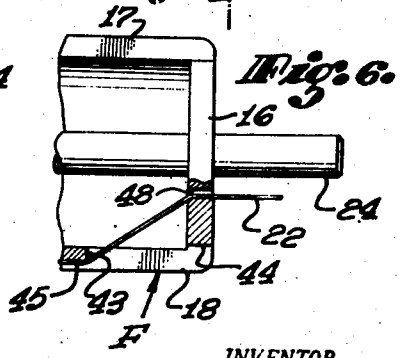
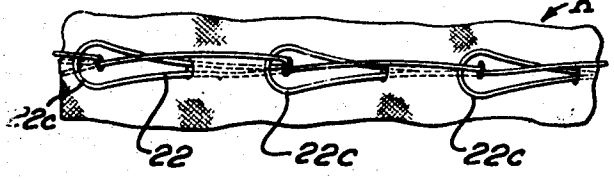



Fig. 7.




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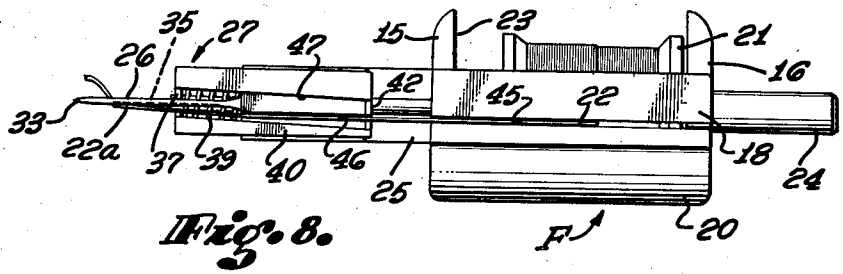



Fig. 8.

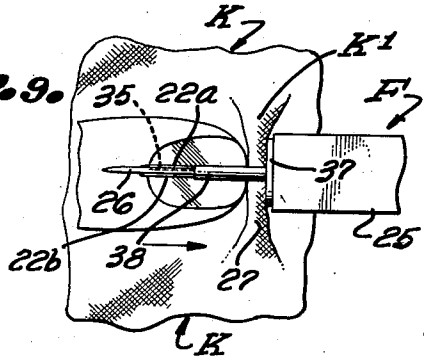



Fig. 9.

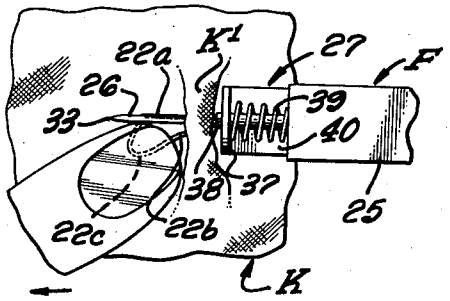



Fig. 10.

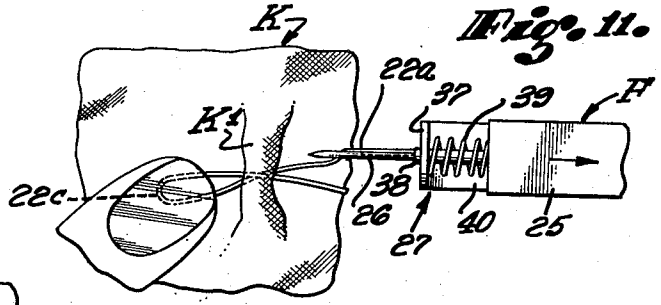



Fig. 11.

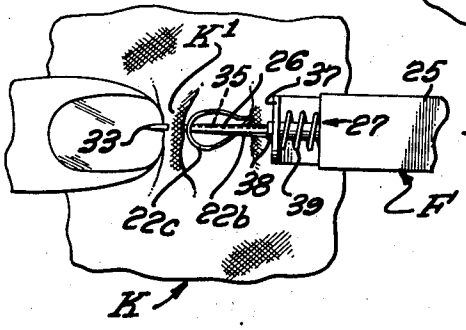



Fig. 12.

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Fig. 13.

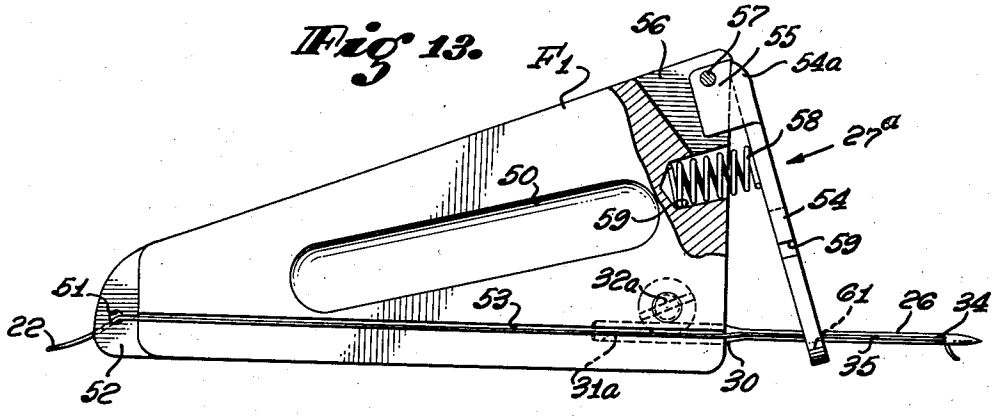
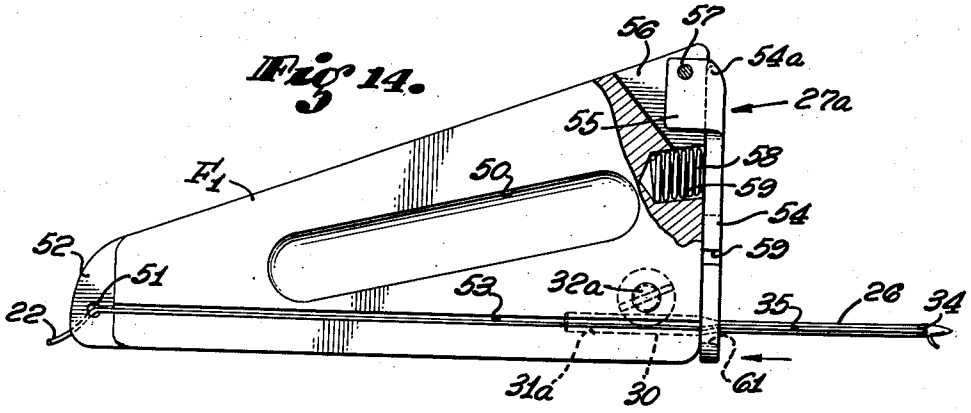



Fig. 14.



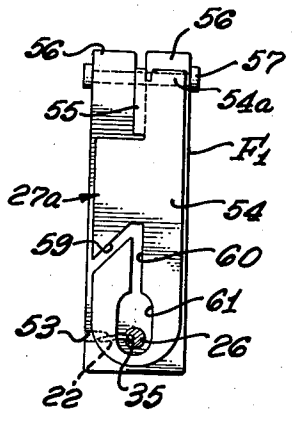




Fig. 15.

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# UNITED STATES PATENT OFFICE

2,558,873

## STITCHING DEVICE

Charles L. Mollis, Los Angeles, Calif.

Application November 26, 1947, Serial No. 788,181

13 Claims. (Cl. 112—169)

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My invention relates to hand-operated stitching devices of the character embodied in my Patent No. 2,091,828, issued August 31, 1937, and it has for a purpose to structurally and functionally simplify such devices, so as to reduce the manufacturing cost thereof, and the number of manual manipulations necessary to form stitches thereby making it more practical in use than prior devices.

It is also a purpose of my invention to provide a stitching device which embodies a thread looper and which utilizes the conventional sewing machine needle formed along one side with a groove for receiving a length of thread from which the stitches are formed, and in such manner that a length of the thread at the other side of the needle, is caused by the looper to produce a loop which can be grasped by the finger of the operator to allow the needle to be extended therethrough and then through the cloth or other fabric in the formation of a loop or chain stitch as in basting, felling or the like.

I will describe only two forms of stitching devices each embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawings:

Fig. 1 is a view showing in side elevation one form of stitching device embodying my invention.

Fig. 2 is a top plan view of the device.

Fig. 3 is a front end elevational view of the device.

Fig. 4 is a rear end elevational view of the device.

Fig. 5 is a fragmentary vertical sectional view of the device showing the thread looper in retracted position.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 4, and showing how the thread is extended to the device from a source of thread supply exteriorly of the device.

Fig. 7 is a plan view of the loop stitches which may be formed by my device.

Fig. 8 is a bottom plan view of the device.

Fig. 9 is a fragmentary plan view of the device showing the needle extended through the cloth to be stitched, and the looper retracted by the thumb or finger of the user.

Fig. 10 is a view similar to Fig. 9, showing the looper in advanced position after it has been relieved of pressure by the thumb or finger of the user, but with the digit gripping the thread loop.

Fig. 11 is a view similar to Fig. 10, showing with the needle retracted from the cloth and ready for

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advancement to extend the needle through the thread loop.

Fig. 12 is a view similar to Fig. 11, showing the needle extended through the thread loop and through the cloth to complete one cycle of operation in the formation of one stitch, and with the user's digit again in position to start the formation of another stitch.

Fig. 13 is a view showing in side elevation and partly in section, another form of stitching device embodying my invention and showing the thread looper thereof in advanced position.

Fig. 14 is a view similar to Fig. 13 showing the thread looper in retracted position.

Fig. 15 is a front elevational view of the device as it appears in Fig. 14.

Having specific reference to the drawings, my invention in the embodiment shown in Figs. 1 to 5, comprises a support or frame designated generally at F, which is made up of a front head 15 and a rear head 16 bridged by an upper strip 17 and a lower strip 18, with the strips spanned at one side of the frame by a wall 20 curved to accommodate a spool 21 of thread 22 between the heads which is insertable into the frame through the open side 23 thereof. The spool is rotatable on a spindle 24 which is extended axially through the rear head 16 and into the front head 15 where it is removably secured by a frictional fit.

Projecting centrally forward from the head 15 and preferably integral therewith, is an extension 25 for supporting a needle 26 and providing a mounting for a thread looper generally indicated at 27. The extension 25 may have a downwardly inclined upper edge 28 to give a tapered form to the extension so that it can be readily held between the thumb and index finger of the user, and a recess 29 at its lower right hand corner to accommodate and permit movement of certain parts of the looper 27.

The needle 26 is of the conventional type used in sewing machines, in that it has a non-circular shank 30 at one end extending into a suitable socket 31 in the forward end of the extension 25, and secured therein by a set screw 32 threaded in the extension. The leading end of the needle is pointed as at 33, while adjacent the pointed end an eye 34 is formed in the needle. As shown best in Figures 2 and 3, the shaft of the needle along one side and leading rearwardly from the eye, is formed with a groove 35 of sufficient depth to accommodate a portion of the thread 22, as will be more fully described hereinafter.

The thread looper 27 of my device broadly consists of a head 37 straddling the needle 26, and

movable in either direction therealong to occupy, at the leading end of the extension **25**, an advanced position as shown in Fig. 1 or a retracted position as shown in Fig. 5; a supporting and guiding member **38** for the head **37**; and spring means **39** for urging the head to advanced position.

In the present instance, the forward upstanding end of a U-shaped yoke **40** is employed as the head **37**, while the member **38** comprises a rod passing through the extension **25**, across the recess **29** and into the front head **15** where it is secured by a frictional fit. The spring means **39** comprises a coiled expansible spring received in a pocket **41** in the forward end of the extension **25**, surrounding the rod **38**, and bearing against the head **37** to urge it to the advanced position to which it is definitely limited by the rear vertical portion **42** of the yoke. This yoke portion **42** is slidable on the rod **38** to abut the forward wall of the recess **29**, and thus define the advanced position of the head **37**, while the rear wall thereof defines the retracted position of the head.

The thread **22** on the spool is extended therefrom into a slot in the lower strip **18** the forward and rearward ends of which are indicated at **43** and **44**, and forwardly along a groove **45** to and along a groove **46** (see Fig. 8). From the latter groove the thread extends along the grooved side of the needle and finally through the eye **34** to the other side of the needle. That the thread may follow the course described the grooves **45** and **46** must be of a depth corresponding to the level of the needle as held in the extension **25**, and the bottom and end portions of the yoke must be slotted as at **47**. The slotting of the head **37** accommodates the needle **26**, and thus the head straddles the needle (see Fig. 3).

In describing the operation of my device reference will be had to Figs. 9 to 12. With the frame F held in one hand of the user so that the thumb and forefinger can grasp opposite sides of the extension **25**, the needle and thread are extended through the cloth K, as shown in Fig. 9, with the thumb or forefiinger of the other hand, depending upon whether the cloth is held in the other hand or laid flat on a table, held on the cloth beneath the needle point to act as an abutment. Thus as the needle is passed through the cloth, and the thumb held against movement, the cloth is caused to fold upwardly as at K1, and against the head **37**, and by continued forward movement of the needle the head is moved rearwardly along the needle to retracted position thereby compressing the spring **39**. During such movement of the head **37**, the length of thread **22***a* at the grooved side of the needle is drawn into the groove, while the length of thread **22***b* at the other side of the needle is drawn rearwardly through the fold and against the needle, and, in consequence, the thread is fed from the spool **21** through the needle eye.

The next step in the operation of the device is shown in Fig. 10, wherein the digit is lifted from the cloth relieving the head **37** of any rearward pressure, thus allowing the spring **39** to expand and thrust the head and the cloth fold K1 forwardly along the needle. Since the thread length **22***a* is within the groove **35** it will not be drawn forwardly as the cloth is thrust forwardly, but will remain extended along the needle. However, the thread length **22***b* under the forward thrust of the cloth will be drawn forwardly to form a loop **22***c* between the cloth



fold K1 and the needle eye, and at the same side of the needle and flat against the cloth.

This operation is immediately followed by the user placing his digit on and holding the loop **22***c* against the cloth, while the needle is withdrawn from the cloth as shown in Fig. 11 to be extended through the loop and then through the cloth as shown in Fig. 12, thereby completing the formation of one loop stitch. Incident to this last operation, the digit is removed from the loop and replaced on the cloth in advance of the needle so as to cause the cloth to fold under forward movement of the needle and thus cause the latter to pass the thread through the cloth leaving the parts of the device in position for the formation of a second stitch.

From the foregoing mode of operation of my device, it is manifest that to form loop or chain stitches requires only simple manipulations of the device performable by even the layman, and thus rendering the device extremely practical for the skilled as well as the unskilled user.

Fig. 6 illustrates how the device may be used where the source of thread supply is not contained on the spool as carried in the frame, but at some point remote from the device. In this case the thread is extended from the supply source through an opening **48** in the rear head **16**, whence it passes downwardly to the slot **43**, and then to the needle in the same manner as from the spool.

Referring now to Figs. 13 to 15 I have here shown another form of stitching device embodying my invention which, while operable by the user in the same manner as described and illustrated in connection with the first form of my device, is structurally simplified to reduce its cost of manufacture and facilitate handling and manipulation.

The instant device comprises a frame F1 of triangular form and having finger receiving grooves **50** in its opposite sides so that in use it may be gripped at these points. The source of thread supply is not carried by the frame but is remote therefrom, the thread **22** being extended through an opening **51** in a lip **52** on the small end of the frame, and then laterally into a groove **53** in one side of the frame. From the groove the thread is extended again laterally into and along the groove **35** of the needle **26** and finally through the eye **34**.

The needle shank **30** is secured by a countersunk set screw **32***a* in a socket **31***a* in the frame so that the needle proper projects from the forward or wide end of the frame at the lower corner thereof.

The thread looper indicated at **27***a* comprises an arm **54** having an ear **55** on its upper end positioned between a pair of ears **56** formed on the frame F1 by slotting its upper corner. Through all three ears extends a pin **57** to form a pivot for the ear **55** and thus pivotally support the arm **54** on the frame.

A coiled expansible spring **58** is fitted in a recess **59** in the frame to bear against the inner side of the arm **54** and thus urge the latter to the extended position shown in Fig. 13, and which position is defined by the upper end **54***a* of the arm abutting the corner of the frame F1.

As best shown in Fig. 15, the arm **54** is formed with an inclined slot **59** leading inwardly from one vertical edge of the arm and upwardly to the upper end of a vertical slot **60**. The lower end of the slot **60** communicates with an opening **61** through which the needle **26** extends, and this

opening is vertically elongated to allow of movement of the arm 54 without striking the needle.

The slots 59 and 60 and the opening 61 afford means by which the thread 22 from the groove 53 can be extended to and through the eye 34, of the needle, and held within the needle groove 35 during use of the device.

The use of my device can be readily understood from the description of the use of my first device, as it is apparent that the looper arm 54 is moved to occupy the retracted position shown in Fig. 14 as does the looper head 37 in the first device, when the needle 26 is advanced through the cloth with the thumb held in the position shown in Fig. 9. Conversely, when the cloth is released and the arm 54 relieved of rearward pressure, it will under the action of the spring 56, be advanced along the needle to form the thread loop 22c (Fig. 10).

Although I have herein shown and described only two forms of stitching devices each embodying my invention, it is to be understood that various changes and modifications may be made therein without departing from the spirit of my invention and the spirit and scope of the appended claims.

I claim:

1. A stitching device comprising a frame, a needle attached to said frame, said needle having a groove along one side and an eye adjacent its point; said frame having means for guiding a thread from a source of supply to feed thread through the needle groove and eye under a force exerted through the thread alone during the formation of the successive stitches; a thread looper including a head extending transversely of said needle between its ends, and mounted on said frame for movement lengthwise of the needle under a force exerted through a fabric penetrated by said needle; and yieldable means for urging said head to a forward position on said needle and toward said eye upon the removal of said force exerted through a penetrated fabric, whereupon the length of thread along said needle exterior of said groove is formed into a loop adapted to be retained by the user upon the needle being withdrawn.

2. A stitching device, including: a thread supporting frame; a needle fixed in said frame, said needle having a groove in one side thereof in which the thread from which the stitches are formed is adapted to be received, an eye adjacent the point thereof through which the thread from said groove is extended to the other side of the needle; a thread looper mounted on said frame for movement lengthwise of said needle, and having a part straddling the needle; and yieldable means for urging said part to a foremost forward position on said needle which forward position is rearwardly of the point sufficiently to enable said point to extend through a loop of thread without displacement of said part.

3. A stitching device, including: a frame having means for supporting a spool of thread therein for rotation about a fixed axis; a needle fixed in said frame, said needle having a groove in one side thereof, and an eye adjacent the point thereof; means on said frame for guiding the thread from said spool into and along the groove in said needle, and so that the thread can be extended through said eye; a thread looper having a fabric-contacting head mounted on said frame; and means for yieldably urging said looper head to an extreme advanced position along said needle in which it is spaced from said frame and in which it is to the rear of said point a sufficient distance to enable said point to extend through a loop of thread past said eye without displacement of said part.



4. A stitching device, including: a frame having means for supporting a spool of thread therein for free rotation about a fixed axis under a force exerted through the thread; an extension at one end of said frame; a needle fixed in and projecting from said extension, said needle having a groove in one side thereof, and an eye adjacent the point thereof; means on said frame and said extension for guiding the thread from said spool to the groove in said needle so that it can be extended along the groove and through said eye; a thread looper having a fabric-contacting head mounted on said extension for movement along said needle within a range within the length of said needle; and means for yieldably urging said looper head to an extreme forward position relative to said needle such that it is spaced from said extension and is positioned rearwardly of the point of said needle a sufficient distance to enable said point to penetrate a loop of thread without displacement of said head.

5. A stitching device, including: a frame having an extension; a needle fixed in said extension and projecting therefrom, said needle having an eye adjacent the point thereof, and a groove in one side thereof; coacting means on said frame and extension for guiding a thread from the frame parallel to said needle so that the thread can be extended along said groove and through said eye; a thread looper including a rod fixed in said extension, a yoke slidable on said rod and having a head portion straddling said needle, and a spring on said extension engaging said yoke for urging the latter to a forward position on said needle.

6. A stitching device as embodied in claim 5, wherein the yoke is of U-form, with the parallel portions thereof slidably mounted on said rod and one of said portions slotted to straddle said needle.

7. A stitching device, including: a frame having an extension at one end thereof of substantially L-form; means in said frame supporting a spool of thread therein for free rotation about an axis longitudinally of the frame; a needle fixed in and projecting from one end of said extension, said needle having an eye adjacent its pointed end, and a groove longitudinally in one side thereof; coacting means in said frame and said extension for guiding the thread from said spool along said frame and extension to parallel the grooved side of said needle; a rod extending through and fixed in said extension; a pocket in said extension; a U-shaped yoke having the parallel portions thereof slideable on said rod at opposite sides of said extension so that one parallel portion is movable along said needle, said portion having an opening therein so that it straddles said needle; and a spring in said pocket and around said rod to engage said yoke portion for urging the yoke forwardly on said needle.

8. A stitching device, including: a thread supporting frame; a needle fixed in said frame, said needle having a groove in one side thereof in which the thread from which the stitches are formed is adapted to be received, and an eye adjacent the point thereof through which the thread from said groove is extended to the other side of the needle; a thread looper pivotally

mounted on said frame; and means for yieldably urging said looper to an advanced position in relation to said needle wherein it is intermediate the ends thereof, said looper being manually swingable on said support against the action of said urging means from the advanced position to a retracted position toward the proximal end of the needle as the latter is extended through the fabric being stitched, so as to pull the thread rearwardly on the needle and provide an extended thread length at that side of the needle opposite the grooved side, whereby upon releasing said looper said urging means will return it to advanced position causing the thread length to form a loop at one side of the needle.

9. A stitching device, including: a thread supporting frame; a needle fixed in said frame, said needle having a groove in one side thereof in which the thread from which the stitches are formed is adapted to be received, and an eye adjacent the point thereof through which the thread from said groove is extended to the other side of the needle; a thread looper including an arm pivoted on said frame and having a portion surrounding said needle; and a spring between said arm and said frame for urging the arm to a forward position on said needle.

10. A stitching device, including: a frame of substantially triangular form; means for holding a needle projecting from the wide end of said frame at one corner thereof; and a thread looper comprising an arm pivoted on said frame at a second corner of said frame, said arm having an opening in its free end through which the needle extends, and a spring for urging said arm outwardly from said frame so that the free end thereof occupies an advanced position along the needle.

11. A stitching device, including: a thread supporting body; a spool of thread mounted for free rotation in said body; a needle extended from said body, said needle having an eye adjacent the point thereof and a groove in one side extended from said point toward said body and adapted to receive a thread extended from said spool in said body to and through said eye, a thread looper movably mounted on said body for movement longitudinally of said needle and including a fabric-contacting head extended transversely of said needle and adjacent thereto, spring means yieldably urging said looper to a foremost advanced position in relation to said needle wherein said head is intermediate the ends thereof, said looper being manually movable on said support against the action of said spring means to move said head from the advanced position to a retracted position toward the end of said needle spaced from said eye as the latter is advanced through a fabric being stitched, said spring means being sufficiently strong to return said looper to said advanced position, said looper head forcing the pierced fabric along said needle and toward said eye as said looper returns to said advanced position whereupon a thread length along said needle exterior of said needle groove will be formed into a loop forward of the fabric.

12. A stitching device, including: a frame having a head, a rigid thread-guiding member projecting longitudinally from one side of the head, and an extension projecting from the other side of the head; a spindle fixed to the head at the same side thereof as the member and parallel to and spaced from the latter so that a spool of thread can be rotatably mounted thereon; means on the extension for securing the butt end of a sewing machine needle therein with the needle extending longitudinally of and from the free end of the extension; the member and the extension having grooves lengthwise therein through which the thread from a spool on the spindle can be successfully extended to and through the needle eye and a looper movably supported by the extension.

13. A stitching device, including: a frame comprising a head, a rigid thread-guiding member projecting longitudinally substantially at right angles from one side of the head, and an extension projecting substantially at right angles from the other side of the head and having a part thereof longitudinally alined with the member; a spindle fixed at one end to the same side of the head from which the member projects and disposed substantially in parallelism with the member; a spool of thread rotatably mounted on the spindle to feed thread under a force exerted through the thread alone during the formation of the successive stitches; and a needle fixed in and projecting longitudinally from the free end of the extension, the needle having a groove longitudinally therein, and an eye adjacent the point thereof, the extension and the member having longitudinally alined grooves therein, and the member having a slot leading to the groove therein, whereby the thread from said spool can be extended through the slot, then in and along the member, extension and needle grooves, and finally through the needle eye and a looper movably supported by the extension.

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