

R. L. LYONS.
SEWING MACHINE.
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1,018,201.

Patented Feb. 20, 1912.

Fig. 1.

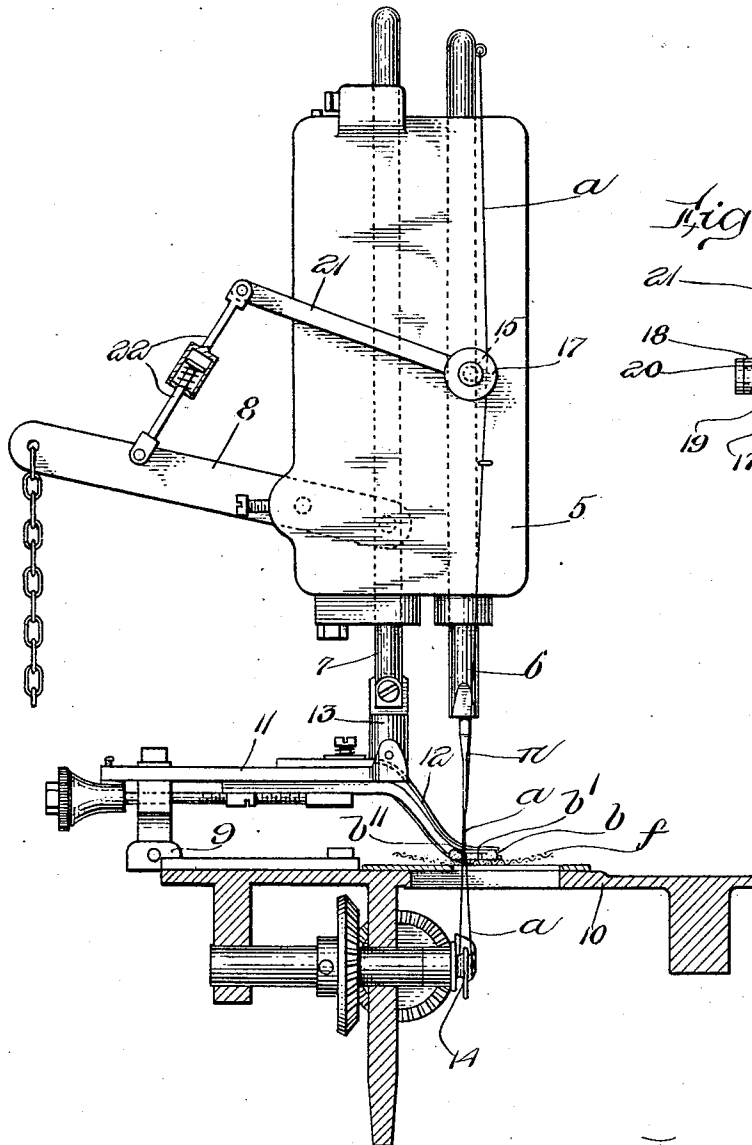
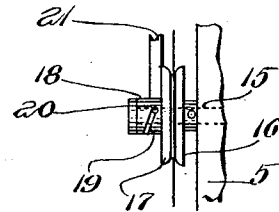


Fig. 2.



Witnesses:
L. B. Weymouth.
C. H. Smith

Inventor:
Robert L. Lyons
By Henry J. Miller
att'y.

UNITED STATES PATENT OFFICE.

ROBERT L. LYONS, OF WALTHAM, MASSACHUSETTS, ASSIGNOR TO HIMSELF, AND
CHARLES J. SIBBALD, OF TROY, NEW YORK.

SEWING-MACHINE.

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To all whom it may concern:

Be it known that I, ROBERT L. LYONS, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention has reference to improvements in sewing machines and relates particularly to means for effecting the breaking of the thread beneath the work.

The object of the invention is to so construct a sewing machine that the thread may be broken beneath the work by or through a strain exerted on the thread at the completion of a group of stitches while the delivery of the thread is prevented or resisted.

Other objects of the invention will appear from the following description.

The invention consists in providing means for engaging the thread of a sewing machine, at or about the completion of a group of sewing stitches, to resist the delivery of the thread to the needle and exerting a strain on that portion of the thread between the thread engaging device and said group of stitches whereby the thread is broken at the group of stitches and a length of thread, extending through the eye of the needle is left.

The invention also consists in such other novel features of construction of parts as shall hereinafter be more fully described and pointed out in the claims.

The invention also consists in manually operated means for so resisting the movement of thread that thread straining means cooperating with such thread restraining means may effect the breaking of said thread.

Figure 1 represents an end view of portions of a sewing machine illustrating this invention in its simplest embodiment. Fig. 2 represents a side view of portions thereof illustrating one form of device adapted to be operated to resist the movement of the thread.

Similar numerals of reference designate corresponding parts throughout.

In sewing machines and particularly in button sewing machines and similar machines that are adapted to form groups of stitches, it is desirable to separate the sewing thread from the group of stitches last formed, previous to moving the work to present another part thereof to the position

at which the stitch forming devices are adapted to operate thereon. By thus separating the main sewing thread from the group of stitches a better finish is made and economy in the use of thread is effected. Various thread cutting appliances have been utilized for cutting the thread after the completion of the group of stitches but it has been found impossible to cut the thread sufficiently close to the group of stitches to prevent the leaving of an end of thread which must ultimately be trimmed off by hand implements.

In carrying this invention into practice I have discovered that the sewing thread can be successfully broken by taking advantage of the formation of the loops of thread in the group of stitches by which the thread extending through one of said loops may, by a suitable strain thereon, be broken approximately at its intersection with said loop. This discovery is exemplified in the drawings in a simple form in which 5 represents a portion of the head of any button sewing machine having the usual needle bar 6, and the lifting rod 7 adapted to be moved by the lever 8 pivotally mounted in the head 5 and connected with the lifting rod 7. The usual button clamp 9 is mounted on the work support 10, or in any well known manner, and is operated by any well known mechanism to effect the vibration of the button with respect to the needle. This button clamp has the movable member 11, having the button engaging arms as 12, and the projection 13, which is pivotally connected with the lifting rod 7. Below the work support 10 is rotatably mounted the looper 14, which is adapted to be operated in any well known manner.

Extending from the head 5 is the stud 15 on which is mounted the thread clamp member 16 while the cooperating clamp member 17 is journaled on said stud 15 and has the sleeve 18 the diagonal slot 19 of which is engaged with the pin 20 extending from the stud 15 whereby, when said sleeve 18 is partially rotated by its lever 21, the edge of said slot 19 working against pin 20 will effect the movement of said sleeve and its clamp member 17 toward the member 16. The swinging of lever 21 is effected by the two part connecting rod 22, having a yielding joint, which is connected with the lifting lever 8.

The sewing thread *a-a* is guided between

the clamping members 16 and 17 in its passage to the needle *n*. When, now, a piece of fabric *f* is placed in position beneath the arms 12 of the button clamp and a button *b* is inserted between said arms 12 and the machine is operated, in the usual manner, the needle passes down through the holes of the button *b* in succession and, in cooperation with the looper 14 effects the formation of a group of stitches by means of which the button *b* is secured to the fabric *f* and, when said group of stitches is completed, the vibration of the button clamp or other work holder 9 is stopped during one or more additional movements of the needle whereby one or more chain loops of the thread are formed and the thread *a-a* extends between the members 16 and 17 of the thread clamp, through the eye of the needle *n* and one hole of the button to and around the looper 14 to said group of stitches where it is pinched by the last loop drawn tight.

As it is usual to lift the free end of the button clamp, to facilitate the removal of the button *b* from between the arms 12, the lever 8 is operated for such purpose in any ordinary manner, and, owing to the fact that the rod 22 is connected to said lever 8 at a point which is farther from the pivot of said lever than is the point of connection between said lever and lifting rod 7, the arm 21 is actuated to rotate the sleeve 18 and effect the clamping of the thread *a-a*, by the members 16 and 17, at the initial upward movement of the button clamp arm 12 so that the feeding of the thread beyond said clamp members 16 and 17 is prevented while the continued upward movement of the button clamp arms 12, under the action of the lifting rod 7 and its lever 8 effects the straining of the thread *a-a* around the lever 14 until said thread breaks at the point usually at which it is pinched by the last loop. The button *b* may now be removed and the process may be repeated at another point.

While the forms of the invention herein shown and described are what are believed to be preferable embodiments thereof, it is nevertheless to be understood that minor changes may be made in the matter of size, proportion, and minor details of construction without departing from the spirit and scope of the invention, as set forth in the appended claims.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. A sewing machine comprising stitch forming devices for forming a group of stitches, thread restraining means located

above the work, means for straining the needle thread between the point at which it is restrained and the group of stitches and means for operating said thread restraining means and thread straining means approximately simultaneously.

2. A sewing machine comprising means for forming a group of stitches, means adapted to be brought into operation, to restrain the feeding movement of the thread, at the completion of said group of stitches, means for exerting a strain on said thread lengthwise thereof to break the thread and operating mechanism connected with said thread restraining and thread straining means substantially as described.

3. A sewing machine comprising means for forming a group of stitches, a button clamp, a lifting means for said button clamp, and means in operative relation to such button clamp lifting means and adapted to engage the needle thread to prevent its feeding movement before the movement of the button clamp is completed, substantially as described.

4. A sewing machine comprising means for forming a group of stitches, a button clamp, a lifting means for said button clamp, a thread restraining device, and operating means for said thread restraining device in operative connection with said button clamp lifting means, substantially as described.

5. A sewing machine comprising stitch forming means including a needle and a looper, a work holder movable with respect to such looper, means for clamping the thread to prevent its movement to the looper, means for moving said work holder away from said looper, and means actuated by said work holder moving means for effecting the operation of said thread clamping means.

6. A sewing machine comprising a frame, stitch forming means comprising a needle and a looper, a button clamp having button holding means movable away from said looper, a lever pivotally-mounted on said frame, connections between said lever and said button holding means for effecting the movement of said button holding means away from the looper, a thread clamp mounted on said frame, and means operated by said lever for effecting the locking of said thread clamp approximately simultaneously with the movement of the button holding means, substantially as described.

ROBERT L. LYONS.

Witnesses:

FRANCIS J. GEAGAN,
HENRY J. MILLER.