No. 681,149. Patented Aug. 20, 1901.

J. J. SULLIVAN.

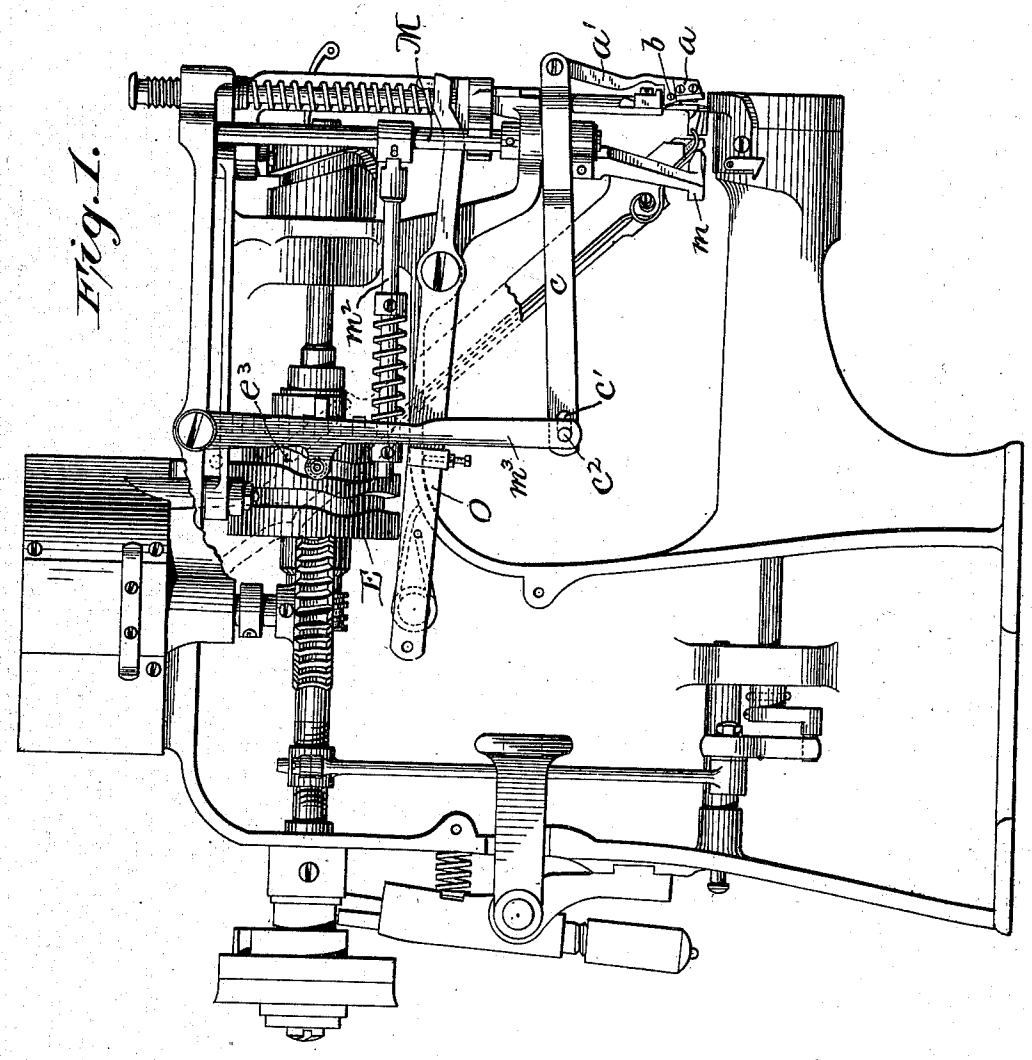
THREAD CUTTING DEVICE FOR SEWING MACHINES.

(Application filed July 28, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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THREAD CUTTING DEVICE FOR SEWING MACHINES.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 5.

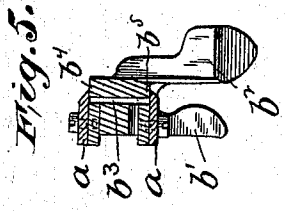


Fig. 4.

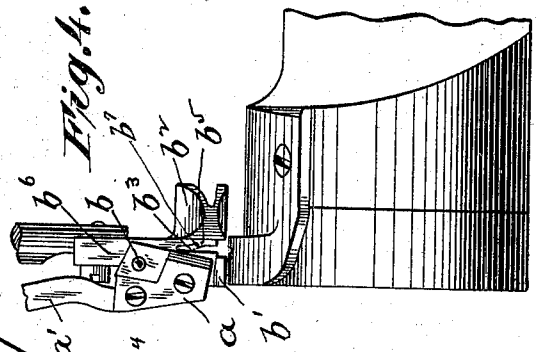


Fig. 3.

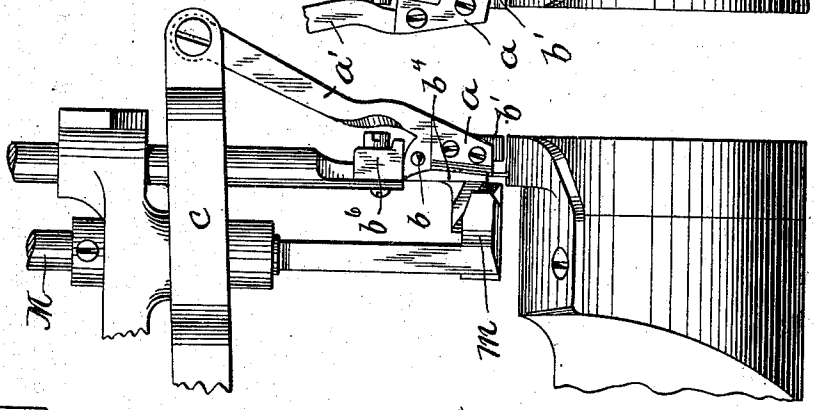
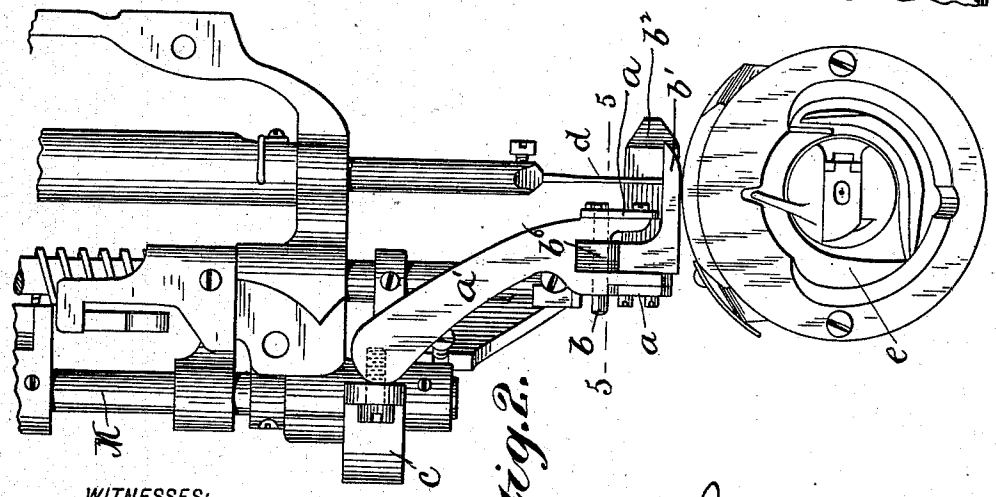


Fig. 2.



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JOHN J. SULLIVAN, OF IPSWICH, MASSACHUSETTS.

THREAD-CUTTING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 681,149, dated August 20, 1901.

Application filed July 28, 1898. Serial No. 687,076. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. SULLIVAN, a citizen of the United States, residing at Ipswich, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Thread-Cutting Devices for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has for its object to provide a thread-cutting mechanism applicable to machines for sewing on buttons, stitching buttonholes, barring buttonholes, forming bars or stays, and the like and by means of which the thread or threads running between buttonholes or groups of stitches may be severed in two places, so as to cut out pieces of thread, and thus remove the surplus thread from the work. To this end I provide two shear thread-cutters or thread-cutting devices which are separated from each other a distance equal to the length or piece of thread to be cut out, said thread-cutters being preferably automatically operated at the proper intervals or after each buttonhole, bar, or stay or other group of stitches has been formed, thus severing the thread or threads close up to the bar or other group of stitches just formed and also close up to the bar or other group of stitches about to be formed, so as to cut off the thread or threads close to both sides of each bar or group of stitches.

In the accompanying drawings, Figure 1 is a rear side elevation of a button-sewing machine embodying the invention. Fig. 2 is a partial front end view of the same on a larger scale than Fig. 1. Fig. 3 is a partial rear side view on the same scale as Fig. 2 to show the cutting device, and Fig. 4 is a front side view of the cutting device. Fig. 5 is a detail sectional view on the line 5 5, Fig. 4.

The machine to which I have shown my present invention as being applied is in its general construction and operation substantially the same as the button-sewing machine fully shown and described in my Patent No. 596,020, dated December 21, 1897, and comprises mechanism for making a group of a predetermined number of overseaming-stitches in one place for the purpose of attaching the shank or eye of a button to a shoe or other article, and after the desired number of stitches has been formed the machine is automatically stopped. The automatic work-feed described in my said patent is omitted from the present machine, and in the operation of the present machine the attendant shifts the work from one button-sewing position to the next, the presser-foot being raised by the treadle-operated lever O when the work is to be shifted. As the machine forms lock-stitches comprising an upper or needle thread carried by a needle d and a shuttle or lower thread carried by a shuttle e, these threads would, if not severed, extend loosely from group to group of button-attaching stitches on both sides of the work. The loose shuttle-thread being on the back or wrong side of the work, and thus ordinarily concealed, is not seriously objectionable; but the loose needle-thread on the face or right side of the work presents an unsightly appearance and has heretofore been trimmed off by hand with scissors. This hand-trimming of the needle-thread is done away with by the present invention, which provides means for automatically cutting out the surplus loose needle-thread between the groups of button-attaching stitches.

In the form of my invention herein illustrated two thread-cutting knives or blades a a are attached to a cutter-lever a', pivotally attached by a pin b to the stock portion b^6 of the presser-foot, comprising two parts b' and b^2, between which and beneath the stock b^6 is formed a thread-receiving slit or thread-guide b^3. Any suitable stationary parts, as b^4 b^5, on the presser-foot and its shank to cooperate as ledger-blades or otherwise with the blades a a may be provided. The movable blades a a and the ledger-blades, consisting of the parts b^4 b^5 of the presser-foot, constitute shear-cutters as will be readily understood from the drawings and more particularly from Fig. 5. The cutter-lever a' is connected by a link or bar c with the lower end of the lever m^3, which operates the button-feeder m through the rock-shaft M and rod m^2, said lever m^3 being actuated from the cam-groove e^3 of the intermittingly-rotating

cam-cylinder E, as in the machine shown by my said Patent No. 596,020. As the movement of the lower end of the extended lever m^3 is somewhat greater than is necessary to produce the required movement of the cutter-lever a', the bar or link c is provided with a slot c', in which the pin or screw c^2, connecting said lever and bar or link, can have a limited play, so that the button-feeder m will have performed part of its movement before the cutter-lever is operated to cut out the thread by the two separated blades or cutters $a\ a$, which are spaced or separated from each other a distance equal to the length of the piece of thread to be cut out.

The side walls of the thread-receiving slit or thread-guide b^3 in the bottom of the presser-foot serve as positive guiding means for directing the thread into position to be cut by the knives or blades $a\ a$, which when they are operated to cut the thread are moved across or transversely to said slit. The right-hand wall of the thread-guiding slit or slot b^3 is notched to afford a small shoulder or projection b^7, on which the thread will catch and which will therefore serve to hold the thread in cutting position, as will be hereinafter indicated.

To vary the length of the piece of thread to be cut out by the separated thread-cutters, interchangeable cutting devices with differently-spaced cutters may be employed. This same result might be secured by mounting the cutters in such a way that they may be adjusted from or toward each other by a screw or other adjustment.

When a group of a predetermined number of button-attaching stitches has been formed, the machine is automatically stopped with the needle in its raised position, and the presser-foot is then lifted slightly to release the work. The attendant now shifts the work laterally or toward the left, referring to Fig. 2, to bring the work into position for sewing on the next button. In forming the button-attaching stitches the needle occupies a position between the prongs b' b^2 of the presser-foot (see Fig. 5) and in line, or approximately so, with the thread-guiding slit or slot b^3, and thus as the work is shifted by the attendant the thread running from the work to the eye of the raised needle draws naturally into the said thread-guiding slit or slot and is positively directed by the walls thereof to cutting position within the range or path of movement of the blades $a\ a$. Before the machine is again started for the formation of the next group of button-attaching stitches the presser-foot is lowered on the work, and to prevent the thread from getting out of range of the left-hand blade a, Fig. 2, the attendant holds the work lifted slightly at the rear or left-hand end of the presser-foot. When the needle first descends in commencing the formation of the next group of button-attaching stitches, the needle-thread is caught on the shoulder b^7 at one side of the thread-guiding slit or slot b^3 and is prevented by said shoulder from being drawn down out of the said slit or slot, and thus out of range of the right-hand blade a, referring to Fig. 2. After the thread has been fastened in the work by the formation of two or three stitches and before the group of stitches is completed the blades or cutters $a\ a$ are operated by the mechanism hereinbefore described, so as to cut out a piece of thread equal in length to the distance between the said blades or cutters $a\ a$.

While I have illustrated my double thread-cutter adapted to cut out a piece of thread in connection with a button-sewing machine, it will be understood that it is equally applicable to buttonhole-stitching or to barring or staying machines or to other machines forming groups of stitches with loose threads between them, and I do not therefore wish to be understood as limiting my invention to any particular form of sewing-machine. Also instead of operating this double thread-cutter automatically it might be actuated manually by the attendant, or it might be arranged to sever the shuttle or looper thread without departing from the spirit of my invention.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a sewing-machine, the combination with a presser-foot provided with a thread-receiving slit, as b^3, of two separated or spaced shear thread-cutters mounted on said foot and each adapted to make a separate cut through a thread extending in said slit from one cutter to the other, so as to cut out a piece of thread, and means for actuating said thread-cutters.

2. In a sewing-machine, the combination with a presser-foot provided with a thread-receiving slit, as b^3, of two separated or spaced shear thread-cutters, a cutter-lever pivotally attached to said foot and by which said blades or thread-cutters are carried, and means for operating said lever.

3. The combination with a sewing-machine presser-foot having the cutting parts b^4, b^5 and a thread-slit b^3, of the cutter-lever a' pivotally attached to said foot, the separated blades or cutters a, a, carried by said lever, the bar or link c, the lever m^3 and a cam for operating said lever m^3.

4. In a sewing-machine, the combination with the stitch-forming mechanism thereof, of two separated or spaced thread-cutting devices adapted to cut out a length or piece of thread, said thread-cutting devices each comprising a cutting-blade and an opposing cutting device, positive guiding means for directing the needle-thread to said cutting devices, and means for operating said blades.

5. In a sewing-machine, the combination with the stitch-forming mechanism thereof, of two separated or spaced thread-cutting devices adapted to cut out a length or piece of thread, said thread-cutting devices each comprising a cutting-blade and an opposing cutting device, positive guiding means for directing the needle-thread to said cutting devices, and automatic means for operating said blades.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN J. SULLIVAN.

Witnesses:
HENRY J. MILLER,
HAROLD W. BROWN.