

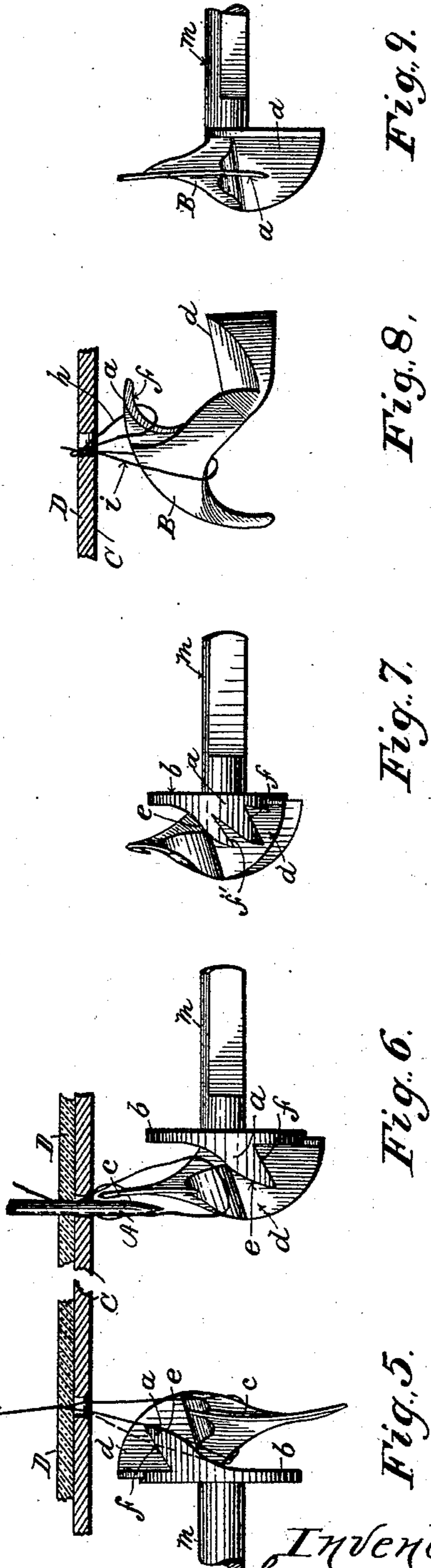
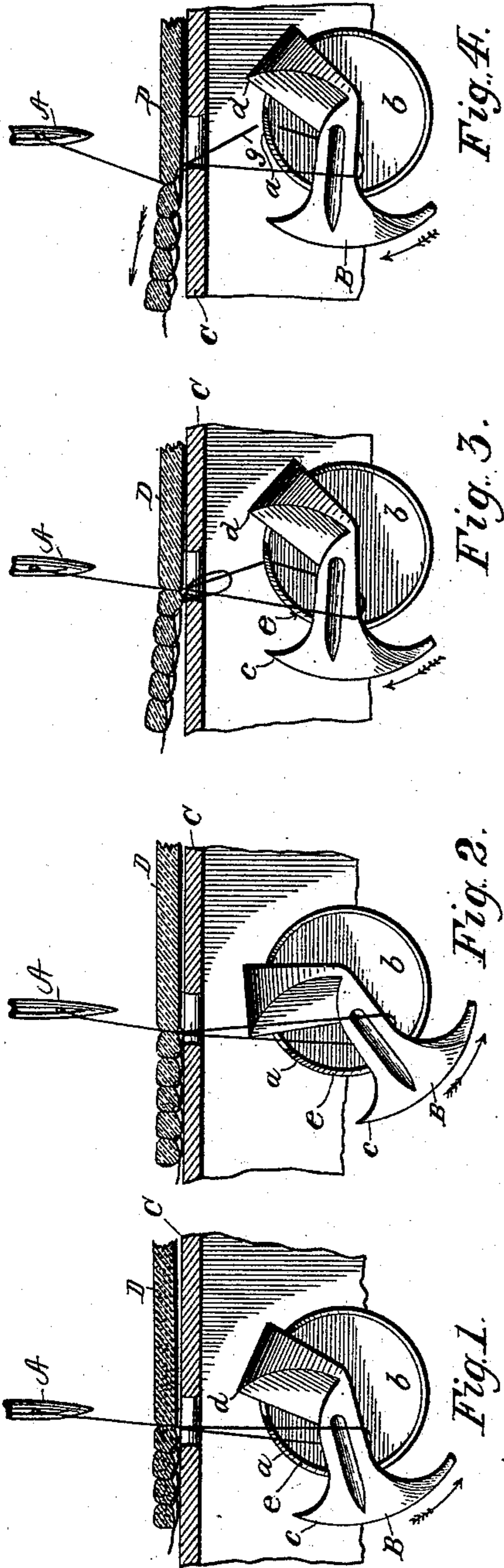
(No Model.)

2 Sheets—Sheet 1.

S. BORTON.
THREAD CUTTER FOR SEWING MACHINES.

No. 525,043.

Patented Aug. 28, 1894.



Attest
W. R. Edgely.
Per Lewis.

Inventor.
Stockton Borton
by Deere & Co.
his attorneys

(No Model.)

2 Sheets—Sheet 2.

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Fig. 10.

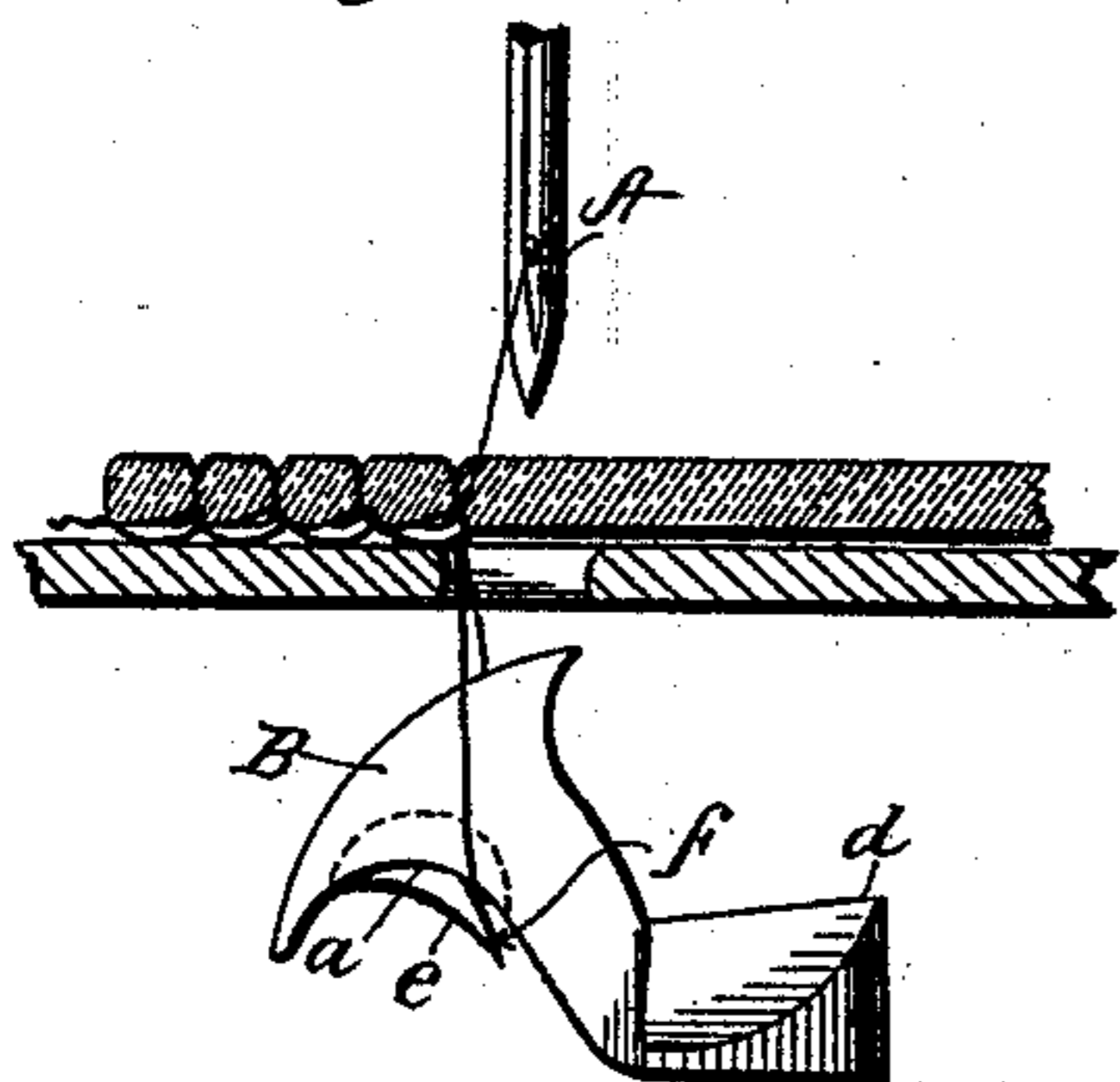


Fig. 11.

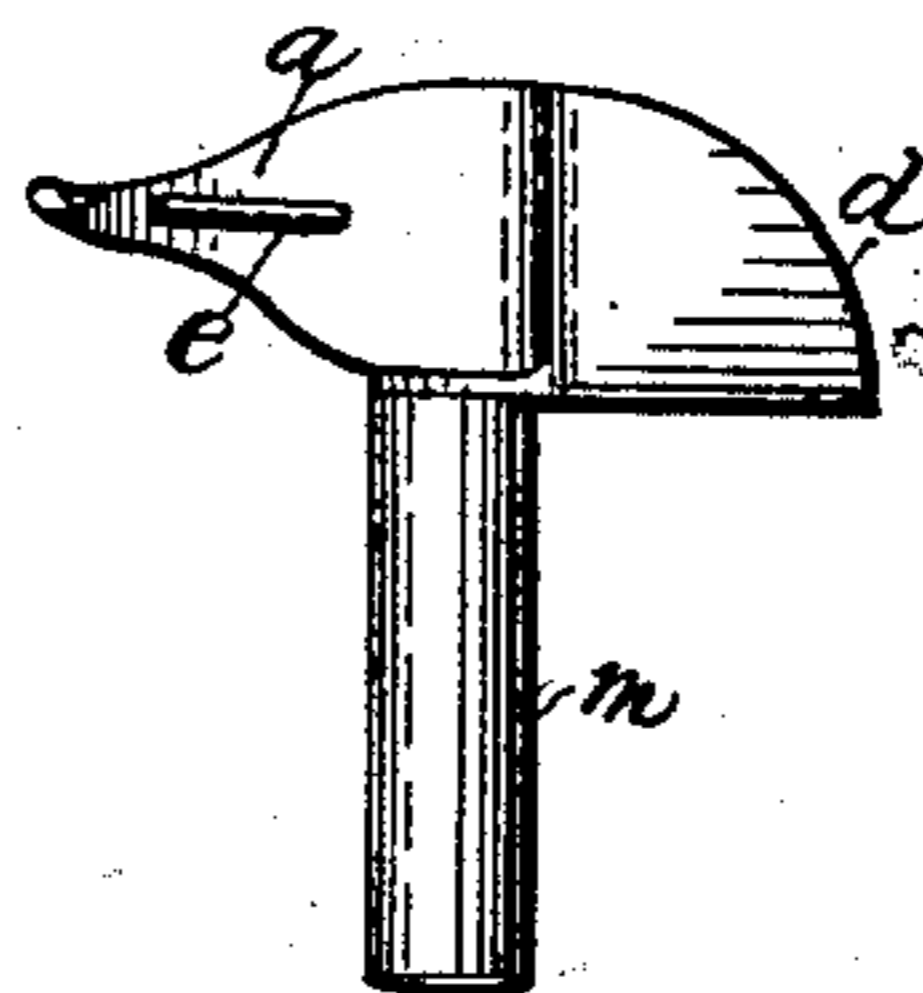


Fig. 12.

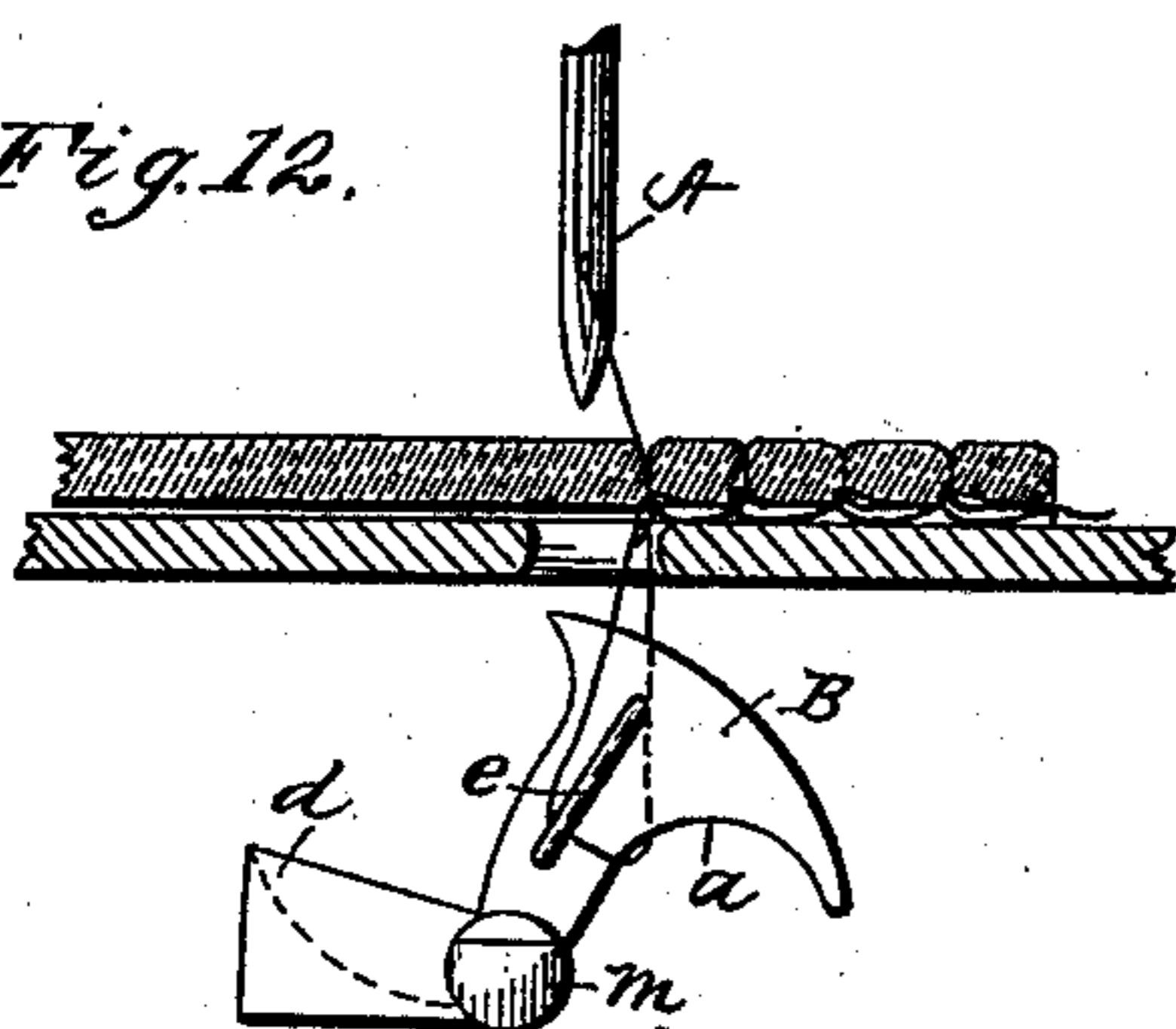
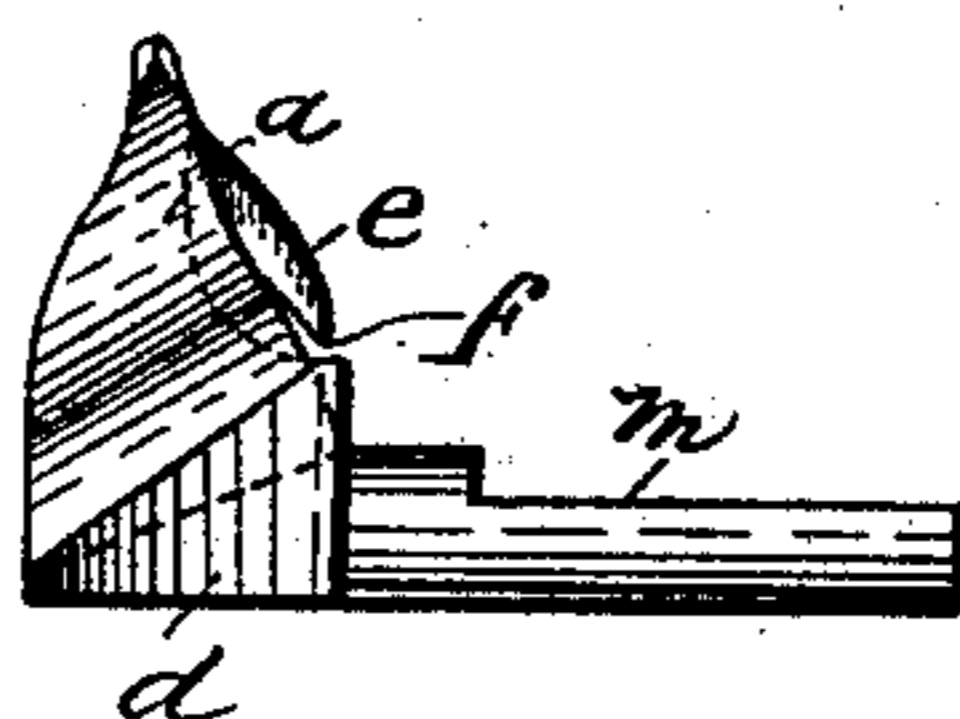


Fig. 13.



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Inventor:
Stockton Boston
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UNITED STATES PATENT OFFICE.

STOCKTON BORTON, OF BROOKLYN, ASSIGNOR TO THE WILLCOX & GIBBS
SEWING MACHINE COMPANY, OF NEW YORK, N. Y.

THREAD-CUTTER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 525,043, dated August 28, 1894.

Application filed January 6, 1894. Serial No. 495,984. (No model.)

To all whom it may concern:

Be it known that I, STOCKTON BORTON, of Brooklyn, New York, have invented new and useful Improvements in Thread-Cutters for Sewing-Machines, which is fully set forth in the following specification.

This invention has reference to means for cutting off the thread of a sewing machine at the end of the seam, and more particularly to means of that character suitable for use in a single-thread chain-stitch machine.

Thread cutters frequently employed upon lock-stitch machines are usually arranged on the presser-foot, presser-bar or other convenient part of the machine above the work-plate, and in using them the operator draws the work from under the foot, and severs the threads by bringing them against the edge of the cutter. In chain stitching it is important (in order to prevent raveling), that the thread should not be cut off close to the last stitch, and the proper practice is to draw down a sufficient length of thread and break or cut it between the work and the needle, so as to leave a half inch or more of single thread through the last loop. Users of these machines do not always exercise this care, and the common practice, particularly with operatives in factories, is to break the thread off in the act of pulling out the piece of goods; in other words to pull the goods until the thread breaks wherever it will. Experience shows that, in this case, the thread almost invariably breaks just at the last loop, or so near it that the end readily slips through, and raveling begins.

The object of the present invention is to provide means by which the thread is or may be cut, when the work is pulled out of the machine, but at a point leaving sufficient length of thread projecting through and beyond the last loop for the latter to hold by. To this end the invention consists in combining with the rotary hook or looper, a thread cutter moving therewith, and placed in such relation to the loop of thread as to sever it at the desired point when called into action.

To answer satisfactorily the purposes of the invention it is necessary that the thread-cutter, while so constructed that it cannot cut the thread so long as the looper is rotating in

the proper direction, can still be readily and quickly called into action at the finish of the seam. Unless its use is made extremely easy, involving little trouble or delay, the users probably would continue to pull the work out of the machine, as above explained, without regard to point of breakage of the thread. In carrying out the invention, therefore, the thread-cutter is so arranged that it is in convenient position to cut the loop when the looper is arrested to remove the work, that is to say, when the needle is out of the work at or near its highest point. At this moment the edge of the cutter which is turned opposite to the direction of the looper's rotation, has just passed the thread so that the operator, by reversing slightly the motion of the shaft engages the thread with the cutting edge, and a comparatively gentle pull upon the goods severs the thread at the proper point.

The principle of the invention may be carried out in many different ways, several of which, by way of example, will be explained herein. When the needle is at its highest point there is a loop of thread passing around the hook near its middle part, and the preceding loop is about being released by the cast-off or tail of the hook. It is preferred to cut the loop which at this moment passes around the body of the hook, and for that purpose the cutter may be placed in any convenient position on the hook or relatively thereto, provided its cutting edge is in juxtaposition with the line then occupied by the thread when the needle is at its highest point.

In what is deemed the best embodiment of the invention, the thread-cutter is placed on the disk or thread-guard which stands between the looper and the end of the looper-shaft, and the cutter is in the form of a curved flange projecting from the edge of said disk into the space between the tail of the looper and the spreader. The edge of this flange is inclined outward in a direction opposite to the rotation of the shaft, and the cutting edge is formed on the end of the flange. The inclined or cam edge pushes the thread coming down from the needle inside of the looper away from the disk or thread-guard until the flange has passed the thread when the latter springs back. At this moment, if the machine be ar-

rested and slightly reversed the cutting edge comes against the thread; but so long as the looper revolves in the proper direction there is no contact of the thread with the cutting

5 edge.

In all the embodiments of the invention there is a part or device which acts as a deflector, to guide the thread past the cutting edge, so that the latter cannot engage the

10 thread during the operation of forming stitches.

The invention will be explained more in detail in connection with the accompanying drawings which form part of this specifica-

15 tion, and in which—

Figures 1, 2, 3 and 4 are elevations from the end of the looper shaft, partly in vertical section through the needle hole, showing the looper and thread cutter in various positions. Figs. 5 and 6 are elevations from opposite sides of the looper shaft. Fig. 7 is a side elevation of a looper provided with a thread cutter whose construction is slightly modified. Fig. 8 is a front elevation, and Fig. 9 a side

25 elevation of a looper having a thread cutter of different form from that shown in the other figures. Figs. 10 and 11 are respectively a sectional elevation and a bottom plan view of a looper having the cutter under the nose

30 or point of the hook. Figs. 12 and 13 are sectional elevations of a looper having the cutter on the inside or side adjacent to the looper shaft.

The looper B illustrated in the drawings is that used in the Willcox & Gibbs single-thread, chain-stitch machine, the construction and operation of which are well known. The presser-foot is omitted from the drawings.

According to the construction illustrated in Figs. 1 to 7 the thread cutter *a* is in the form of a thin piece of steel placed perpendicularly to the disk or thread-guard *b* which protects the thread from oil that may flow from the bearing on the looper shaft and

45 which stands between the looper B and its pin or spindle *m*, by which it is attached to the looper shaft. The cutter projects forward from this disk into the space between the cast-off or tail *c* of the looper and the spreader

50 *d* and its outline is clearly shown in Figs. 5 and 6. It has the inclined thread-deflecting edge *e* and the cutting edge *f*. The latter is preferably, as shown, inclined forward from its intersection with the deflecting edge, that

55 is to say inclined in the direction of the rotation of the hook (indicated by the arrows, Figs. 1 and 2) so that such rotation, after the thread has reached this point, carries the cutting edge away from the thread, and a slight

60 reversal is required to bring them into contact. This feature is preferably adopted whatever form the thread-cutter may take.

The function of the deflecting edge *e* is to deflect the thread which comes down from the fabric D between the guard *b* and the hook B. This action is clearly shown in Fig.

5 in which the dotted line indicates the position the thread would occupy if the thread-cutter were removed, and it also indicates the position the back thread occupies after it has

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Figs. 1 to 4 show successive positions of the parts illustrating the manner of using the thread cutter. In Fig. 1 the needle A is ascending and near its highest point, and the thread is gliding along the deflecting edge *e* of the thread-cutter. In Fig. 2 the rotation of the looper in the direction of the arrow has carried the cutter past the thread, which has sprung back behind it. To sever the

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thread the operator, having brought the parts to this position, turns the main shaft backward, as indicated by the arrow (Fig. 3) and engages the back thread with the cutting edge as shown in Fig. 3. If now the presser foot

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be raised and the work be pulled out, the thread will be severed at the cutting edge, as shown in Fig. 4, leaving the length of thread *g* projecting through the loop last formed. Or the same result is obtained by turning back the shaft a little farther than shown in Fig. 3, without raising the presser foot, bringing sufficient stress of cutting edge *f* on the thread to sever it at that point.

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As shown in Fig. 7 the cutter has two cutting edges *f* and *f'* to increase the certainty of action. If when the machine is arrested the shaft has not advanced far enough to bring the edge *f* past the thread it will be engaged by the supplementary edge *f'*. As shown in Figs. 8 and 9 the cutter *a* is placed at the rear of the cast-off, being made of a thin flat piece of steel let into a groove cut in the rear edge of the cast-off by a rotary cutter, or it may be made solid with the looper. The cutting edge *f* in this modification is, as in that previously described, inclined forward from the point of the cutter. It acts, not upon the loop *i* (Fig. 8) passing around the body of the looper, but upon the preceding

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loop *h* which is just leaving the looper. As shown in Figs. 10 and 11 (the latter being a bottom plan with the loop in the same position as in Fig. 10) the cutter is let into the body of the looper just under the point. Its outline is shown in dotted lines, Fig. 10. The edge *e* acts on the loop *i* and *f* represents the cutting edge as before. In the position shown in the drawings the looper has been turned until the thread has passed the point of the cutter, and then reversed until the thread is brought against the cutting edge, at which position of the loop the point of the needle is about at the level of the underside of the presser foot when the latter is raised.

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The cutter shown in Figs. 12 and 13 is of the same general form as that just described and is secured to the side of the looper adjacent to the end of the shaft. Its action will be fully understood from the drawings in connection with the explanations already given.

Other modifications may be made in the

form and location of the cutter, without departing from the spirit of the invention.

Although the looper is a part of an organized sewing machine, and has no function except in co-operation with other stitch-forming devices it is a detachable part, and may be manufactured and sold as a distinct article, I therefore claim a sewing-machine looper when provided with a thread-cutter separately, as well as in connection with other parts of a sewing machine.

Having now fully described my invention, what I claim is—

1. In a single-thread chain-stitch sewing machine, the combination with the needle and rotary looper, of a thread-cutter for severing the sewing-thread at the end of a seam, said cutter being carried by and rotating with said looper, substantially as described.

2. In a chain-stitch sewing machine, the combination with the needle and rotary-hook or looper, of a thread-cutter having its cutting edge carried by said hook or looper inclined from its point in the direction of the rotation of said hook or looper, so as to engage the thread upon reversal of the movement of said hook or looper, substantially as described.

3. The combination with the rotary looper, of a thread cutter, having a thread deflecting edge and a cutting edge intersecting the latter and inclined therefrom in the direction of

the forward rotation of the looper, substantially as described.

4. In a chain-stitch sewing machine, the combination with the needle and rotary looper, of a thread cutter rotating with the looper, and having its cutting edge so disposed as to be in proximity to a loop of thread when the needle is above the work, substantially as described.

5. The combination with the rotary looper of the character specified having a point, a tail or cast-off, and a spreader, of a thread cutter projecting forward into the space between the tail of the looper and the spreader, substantially as described.

6. A sewing-machine looper provided with a disk a cast-off and a thread guard, on the inside, and with a thread-cutter carried by said disk, said cutter having a deflecting edge inclined forward into the space behind the cast-off, so as to deflect the thread out of its normal path, and a cutting edge intersecting said deflecting edge, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

STOCKTON BORTON.

Witnesses:

CHAS. H. WILLCOX,
S. A. SWART.