

(No Model.)

W. E. BENNETT.  
LOOPING DEVICE FOR SEWING MACHINES.

No. 437,083.

Patented Sept. 23, 1890.

Fig. 1

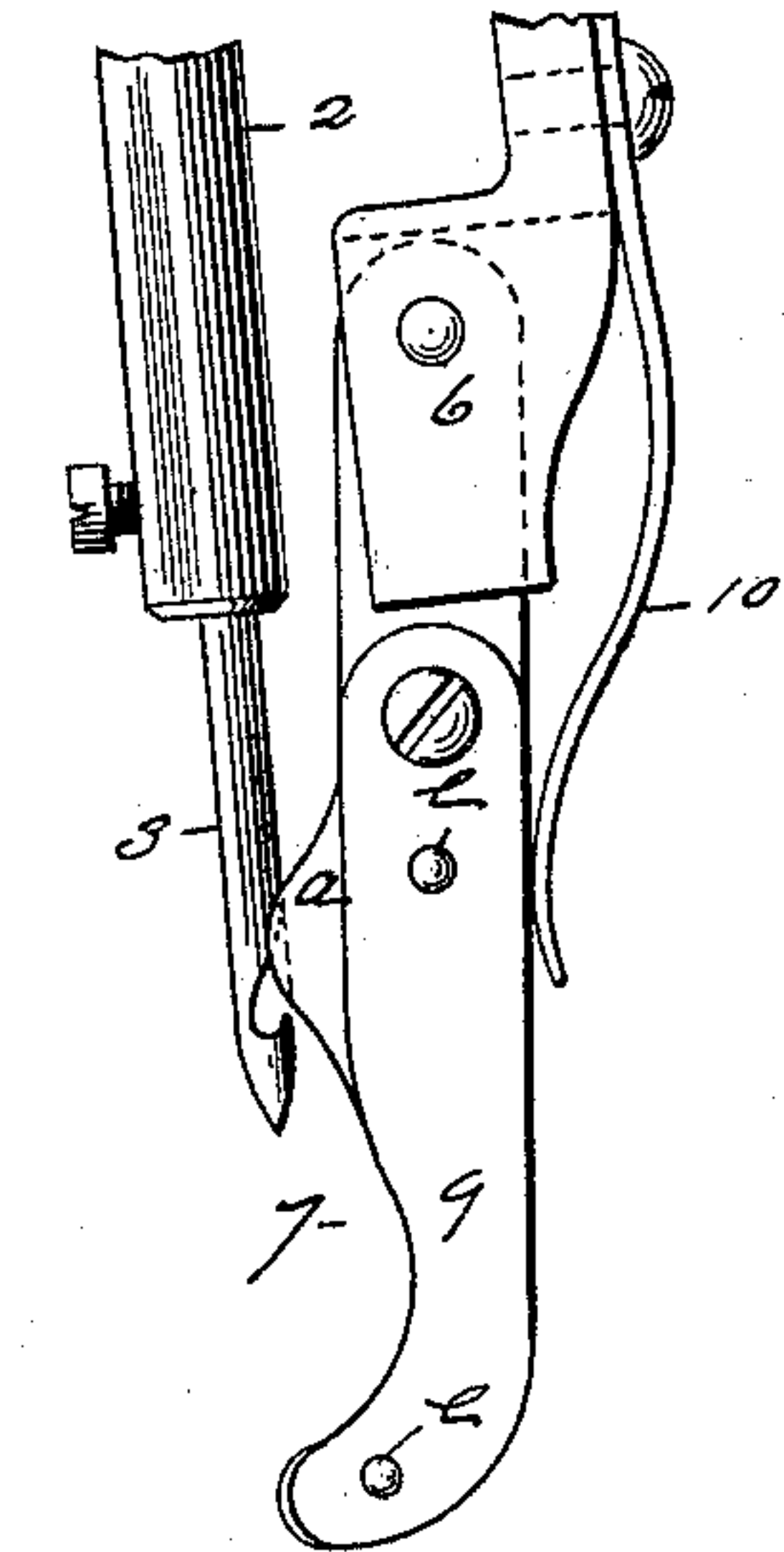


Fig. 2.

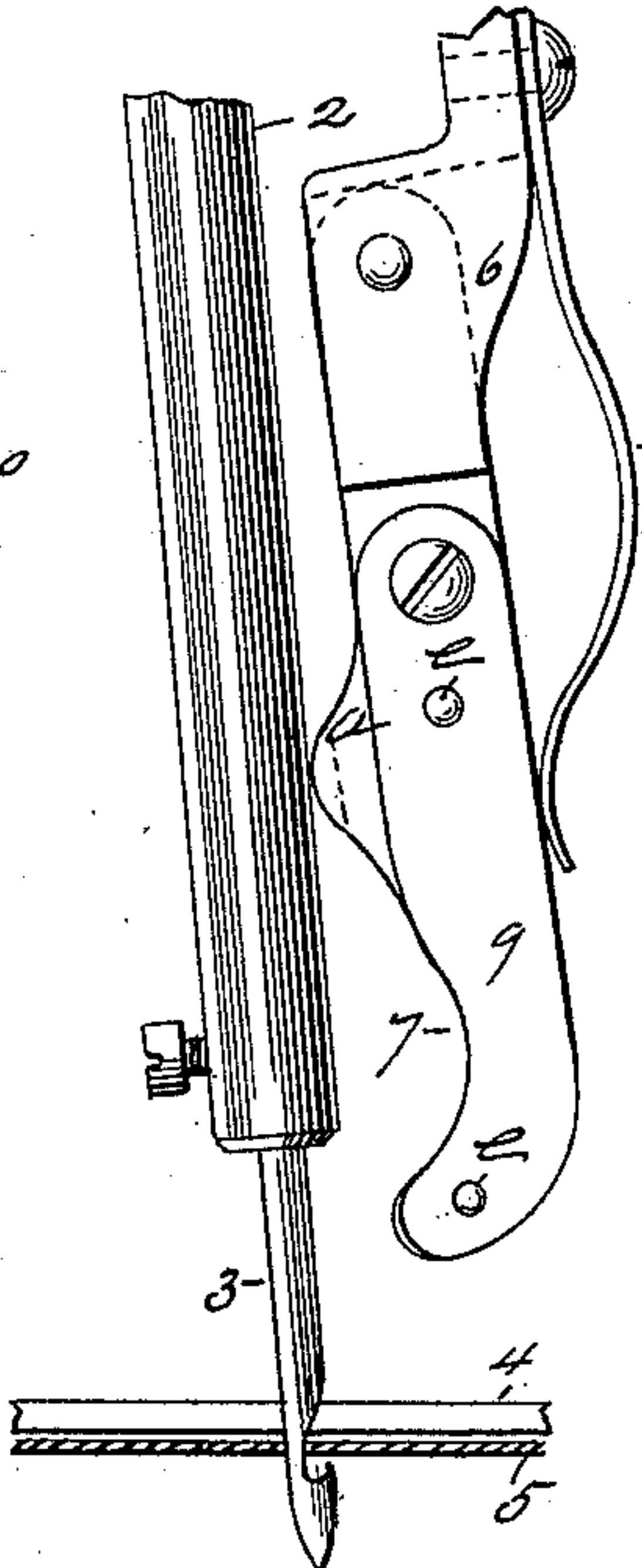


Fig. 3

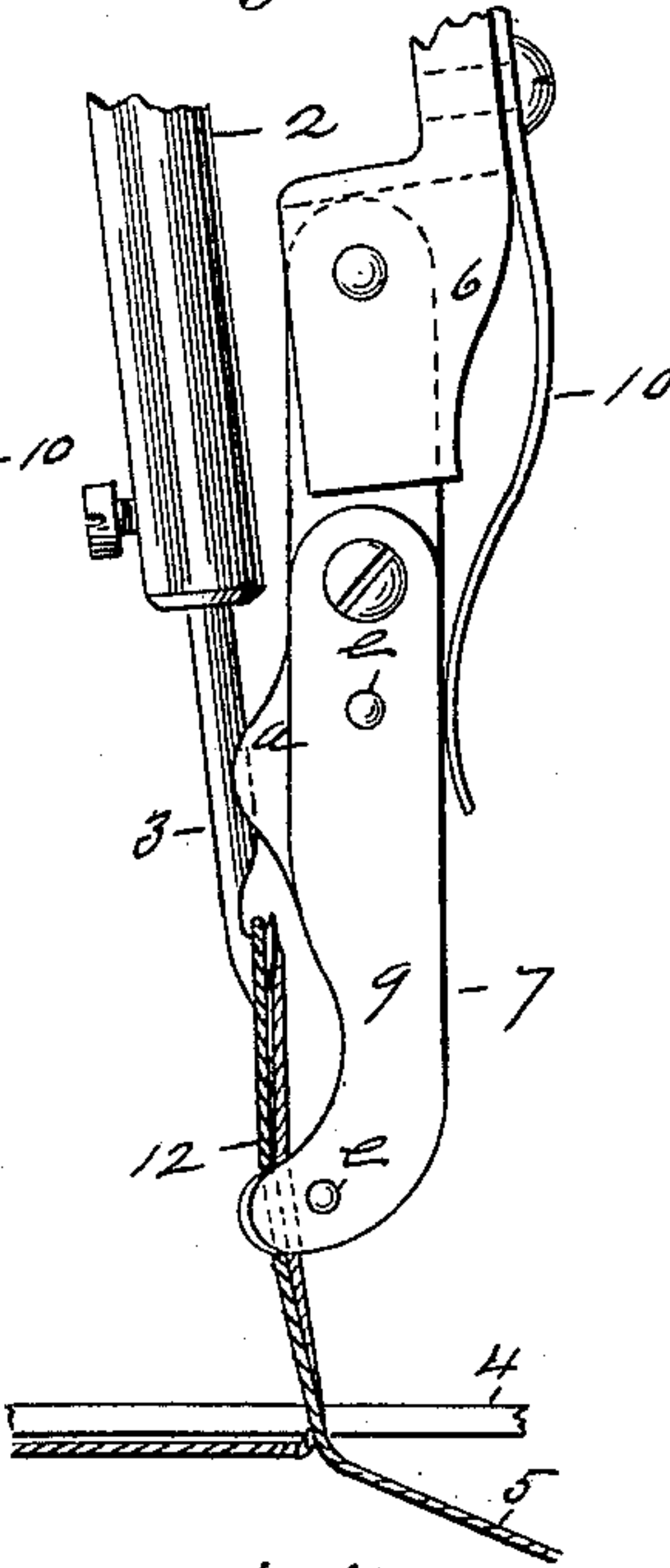


Fig. 4.

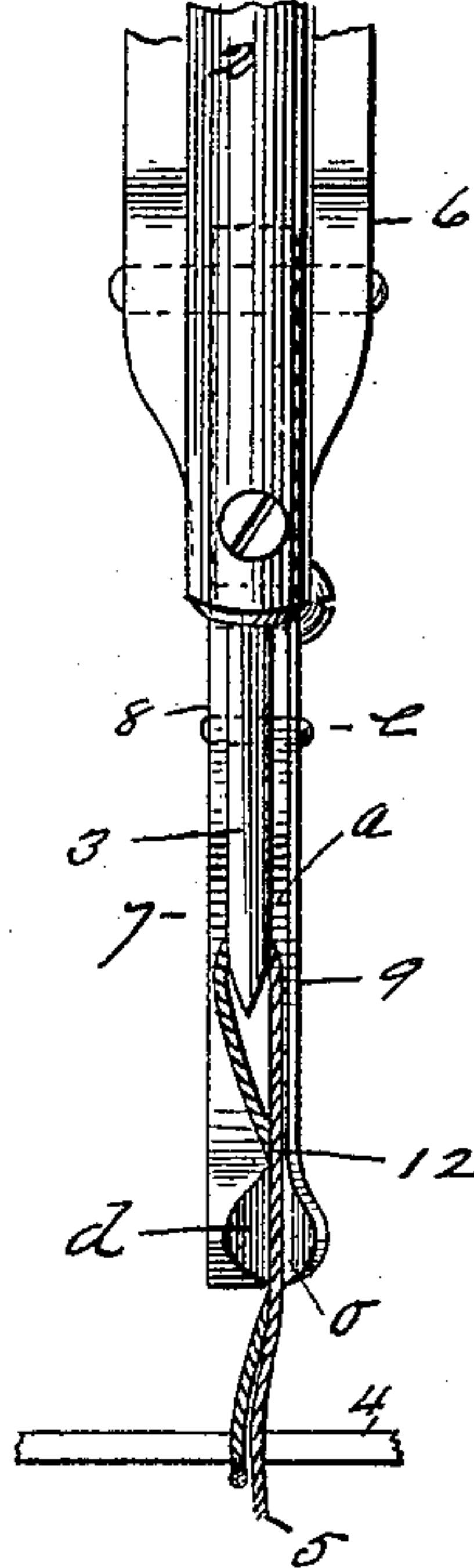


Fig. 5.

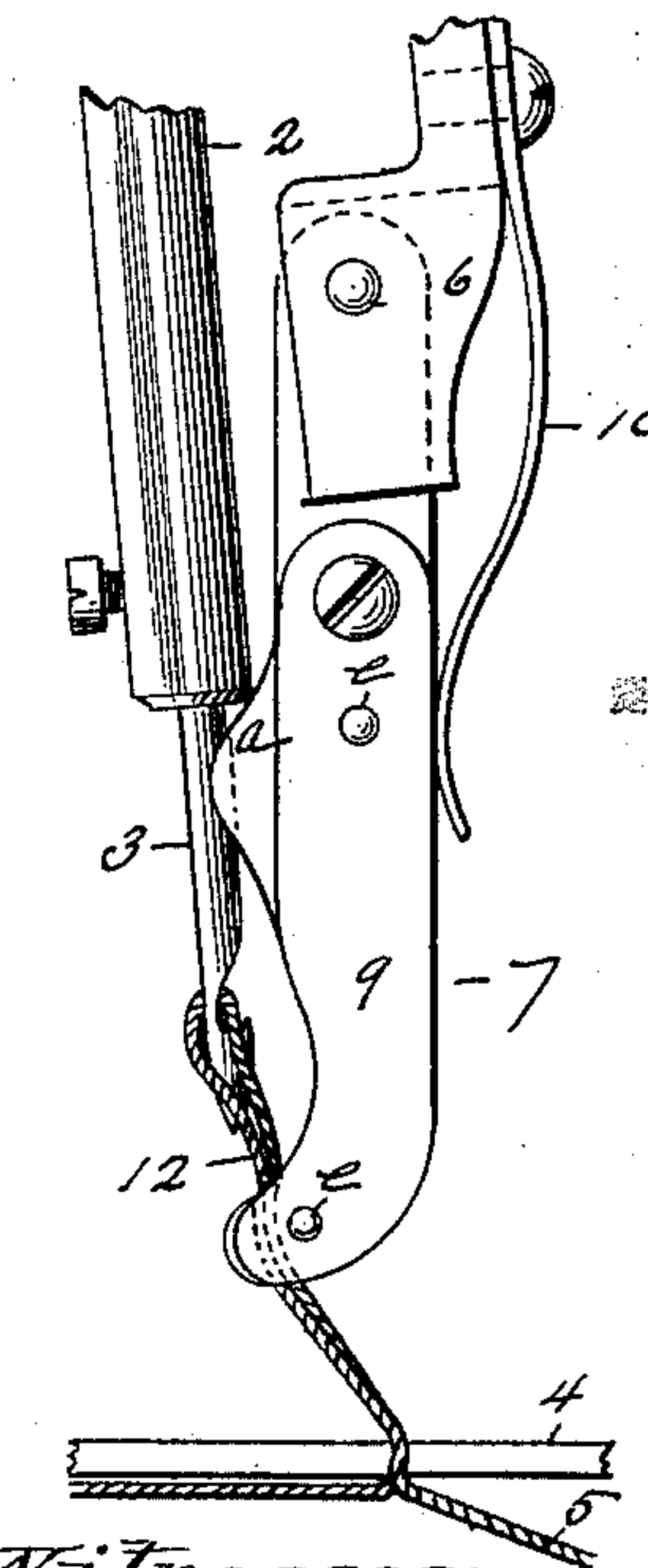


Fig. 6.

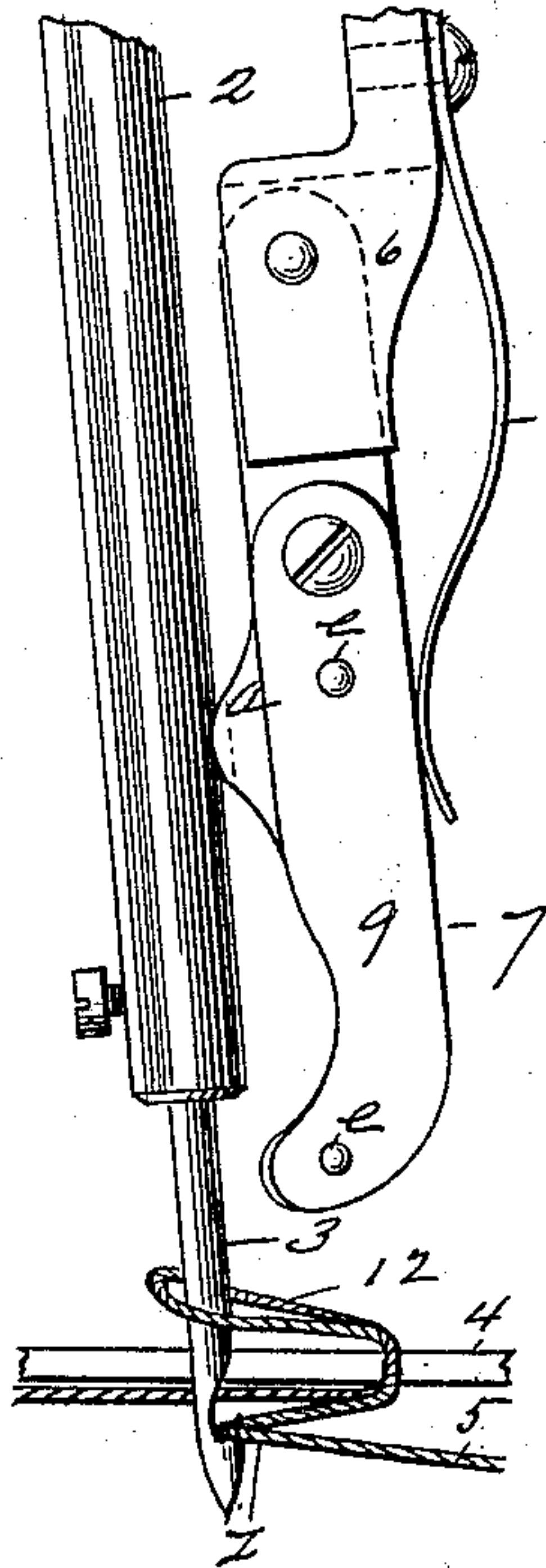


Fig. 7.

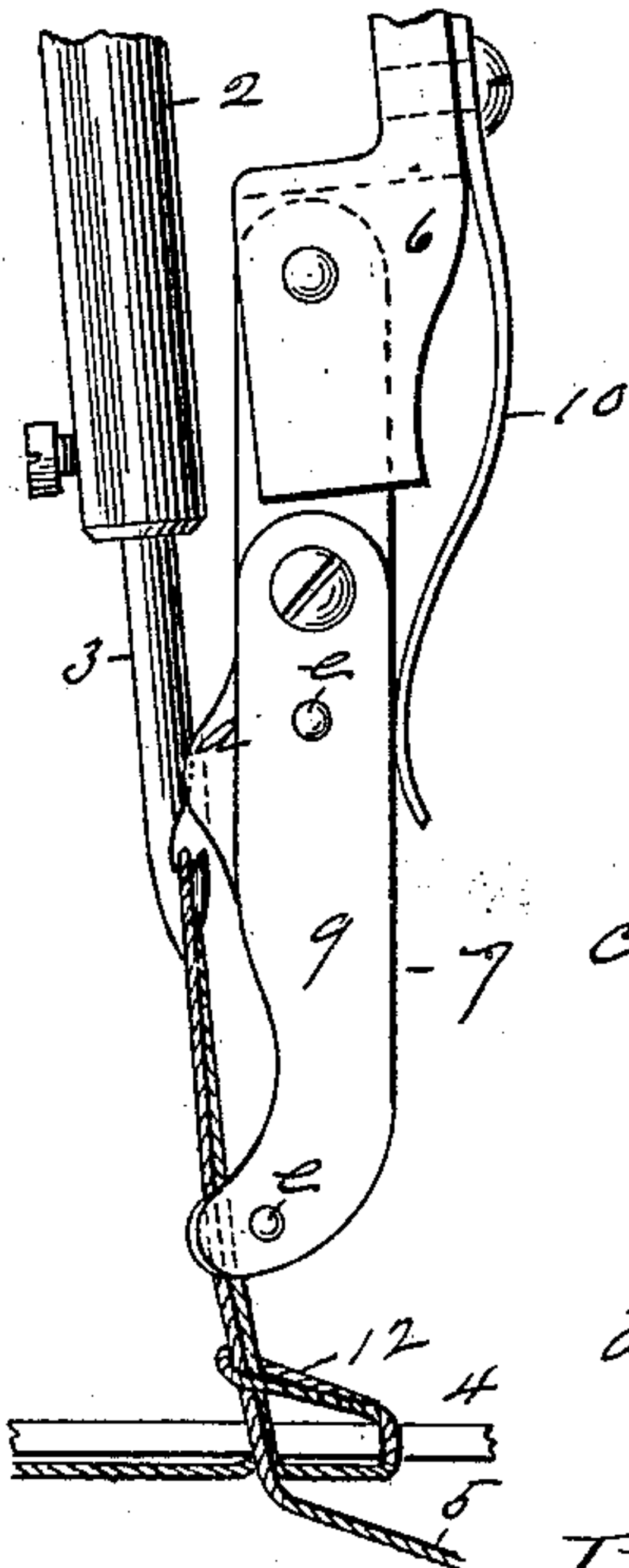
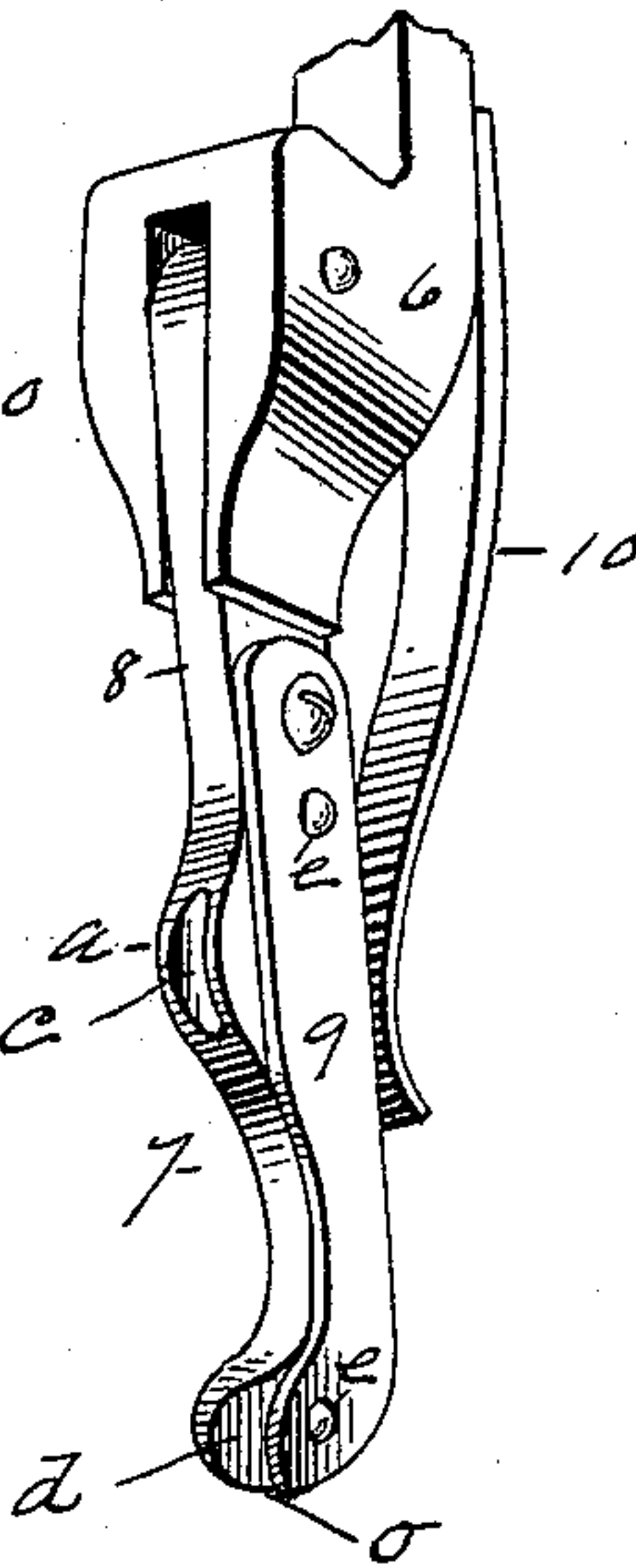


Fig. 8.



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# UNITED STATES PATENT OFFICE.

WALTER E. BENNETT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE MORLEY BUTTON SEWING MACHINE COMPANY, OF SAME PLACE.

## LOOPING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 437,083, dated September 23, 1890.

Application filed July 24, 1889. Serial No. 318,501. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER E. BENNETT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Loop-Stitch Sewing-Machines, of which the following is a specification.

This invention relates to sewing-machines in which an open-eyed needle is employed, and refers particularly to improved means for manipulating a loop of thread drawn by said needle up through the fabric, whereby said loop is retained in proper position and disengaged from said needle without withdrawing the latter from the loop, and to permit said needle to draw a second loop through the first one in the formation of a stitch in the fabric, without the aid of a cast-off; and the invention consists in the construction and arrangement of the said loop-manipulating devices, all as hereinafter fully described, and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of a portion of a needle-bar, an open-eyed needle, a portion of a fixed part of a sewing-machine, and of loop-manipulating devices constructed according to my invention, the said needle-bar and needle in this figure being shown at their highest position above the fabric and the thread, which is indicated in said figure beneath the parts above referred to. Fig. 2 is a similar view to Fig. 1, but showing the needle-bar and needle in a downward position, with the hook portion of the needle-eye through the fabric and below the thread thereunder, and the loop-manipulating device in a correspondingly-changed position from that shown in Fig. 1. Fig. 3 is a similar view to Fig. 2, but showing the needle and needle-bar in an upward position with the needle engaged with a loop of thread drawn up through the fabric and the free end of said loop-manipulating device engaged with said loop. Fig. 4 is a side elevation of the needle-bar and needle, and an edge view of the loop-manipulating device, together with a thread-loop engaged by the needle, this figure showing the parts illustrated in Fig. 3 as though looking toward the left side of said last-named figure. Fig. 5 is a similar view to Fig. 3, but showing the loop

of thread held up and disengaged from the needle, and showing the point of the latter within the loop, as at the beginning of its descent to take a second loop. Fig. 6 is a similar view to Fig. 5, but showing the needle completely through the first loop and through the fabric and in engagement with the thread preparatory to drawing up a second loop. Fig. 7 is a similar view to Fig. 6, but showing the needle-bar and needle in their upward position and the needle in engagement with the said second loop, which is drawn completely through the fabric. Fig. 8 is a perspective view of the loop-manipulating device or pivoted finger and the said portion of a fixed part of the machine to which said finger is attached.

In the drawings, 2 indicates the needle-bar of a sewing-machine having by any well-known suitable means a reciprocating endwise motion imparted thereto, and 3 is an open-eyed needle of ordinary construction secured to the lower end of said needle-bar. 4 indicates the ordinary position of a piece of fabric under said needle when being operated upon by the latter, and 5 a thread under said fabric.

A piece or part 6 is attached to or may be a part integral with the arm of a sewing-machine in convenient proximity to the needle-bar and rigid thereon, said part 6 having a slot, as shown, in its lower end, or otherwise conveniently arranged to provide for suspending thereto by a pivotal connection with one end thereof a vibratory loop-holding and deflecting finger 7, said finger being suspended by the side of said needle-bar and needle, and having its lower free end terminating a short distance above the table of the machine on which the fabric 4 is placed to be operated upon. The said finger is constructed from a metallic piece 8, (see Figs. 4 and 8,) having the general form there shown, and having on its edge adjoining the needle and needle-bar a projection *a*, of cam-like form, in which is a slight groove *c*, the lower end of said finger-piece 8 being beveled, as at *d*, from near its center toward one side thereof, as shown in Figs. 4 and 8, and the side of said piece 8 or the front side thereof has attached thereto by one end, by a screw or other suitable means, as shown, a flat metallic spring 9, the lower



end of which terminates opposite said beveled portion *d* of the finger-piece 8, and is somewhat outwardly curved, to form, in conjunction with the said beveled side, a V-shaped opening in the edge of the finger at its lower end opposite the path of the needle 3; but the deepest and narrowest portion of said V-shaped opening or recess *o* is in a line to one side of the axial line of said needle, as clearly shown in Fig. 4. The said spring 9 is attached, as aforesaid, by one end to the finger-piece 8, and in the latter are fixed one or more steady-pins *e*, which extend through said spring 9 somewhat freely, in order that the lower end of said spring may have a slightly-yielding motion from the lower end of the finger-piece 8 when a loop of thread is drawn into the recess *o*, as below described, whereby said loop is temporarily clamped on the end of said finger 7 and held in that position while the needle performs subsequent operations. A spring 10 is attached by one end to said rigidly-fixed part 6, and has its opposite end bearing against the outer side of the vibratory finger 7, to swing the latter toward the needle-bar and needle. The said groove *c* engages with the side of the needle and tends to keep the finger 7 in proper line with the latter.

The operation of my improvements in forming, in conjunction with a needle-bar and an open-eyed needle, loop-stitches in fabric is as follows: Fig. 1 illustrates the normal position of the needle-bar and needle, the said loop holding and deflecting finger 7 and the fabric 4 and thread 5 therebelow, and when in this position the said finger, by the action of the spring 10, is made to lie against the side of the needle 3, the point of the contact of said finger with the needle being the extremity of the cam projection *a* on said finger or the base of the groove *c* therein. The first movement of the needle-bar is downward to the position shown in Fig. 2, whereby it moves against the said cam projection *a* on the finger 7, swinging the lower end of the latter away from the needle and bringing the eye of the needle into position below the fabric 4 to engage with the thread 5 thereunder.

The succeeding movement of the needle-bar is upward, whereby it moves out of engagement with the finger 7 and permits the lower end of the latter to swing against a loop 12, which the needle draws up through the fabric, as shown in Figs. 3 and 4, said loop 12 being drawn against the beveled side *d* of the finger-piece 8, and forced thereby to be deflected laterally to one side of the axis of the needle, and to be drawn so tightly into the base or narrowest portion of the V-shaped opening *o* as to cause said loop to be engaged and held by the finger 7 temporarily in that position, the lower end of the spring 9 yielding somewhat to allow said loop to be drawn in between the latter and the adjoining side of the finger-piece 8. While the loop 12 is held by the vibratory finger, as shown in Figs.

3 and 4, the fabric is fed along, as indicated in Fig. 5, and the needle-bar and needle then descend through said loop 12, substantially as shown in Fig. 5, the needle entering said loop while held by the finger and while said finger occupies the position relative to the needle shown in Fig. 4, this effect being the result of the slacking up of said loop as the needle moves out of engagement with its extreme end, and of the lateral position relative to the axis of the needle of that portion of said loop between the end of the finger 7 and the point of the needle. The needle and needle-bar continue to move downward to the positions shown in Fig. 6, causing the vibratory finger 7 to be swung from the needle, as aforesaid, and free from the loop 12, and the eyed portion of the needle to be carried below the fabric, where it is caused to engage with a looped portion *z* of the thread and draw the same up through said loop 12, as shown in Fig. 7. The above-described operations are then repeated, and a row or line of looped stitches, as described, is formed in the fabric.

By the employment of the above-described loop holding and deflecting finger 7, the loop, which is drawn up by said open-eyed needle, is caused to be disengaged therefrom without the aid of the usual cast-off upon the descent of the latter, and the said loop is sustained in a convenient position to cause the point of the needle to descend through it without the aid of other instrumentalities, and thereby the means for forming the stitches described are much simplified.

What I claim as my invention is—

1. In devices for forming loop-stitches in fabric, the combination, with stitch-forming devices, substantially as described, of a vibratory loop-holding finger having a V-shaped recess in its free end, comprising one rigid and one opposing spring jaw or member to engage with a thread-loop, said loop-holding finger being pivoted on the machine-head and operating at the side of the needle, and a spring projecting from the said machine-head to force the free end of the finger against said loop, substantially as set forth.

2. In combination with a sewing-machine needle-bar and an open-eyed needle carried thereby for forming loop-stitches in fabric, a vibratory loop-holding finger pivoted by one end at the side of said needle and bar having a projection thereon for engagement with the needle-bar, and a V-shaped recess in its free end comprising one rigid and one opposing spring jaw or member to engage with a thread-loop, said loop-holding finger being pivoted on the machine-head and operating at the side of the needle, and a spring projecting from the said machine-head to force the free end of the finger against said loop, substantially as set forth.

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