

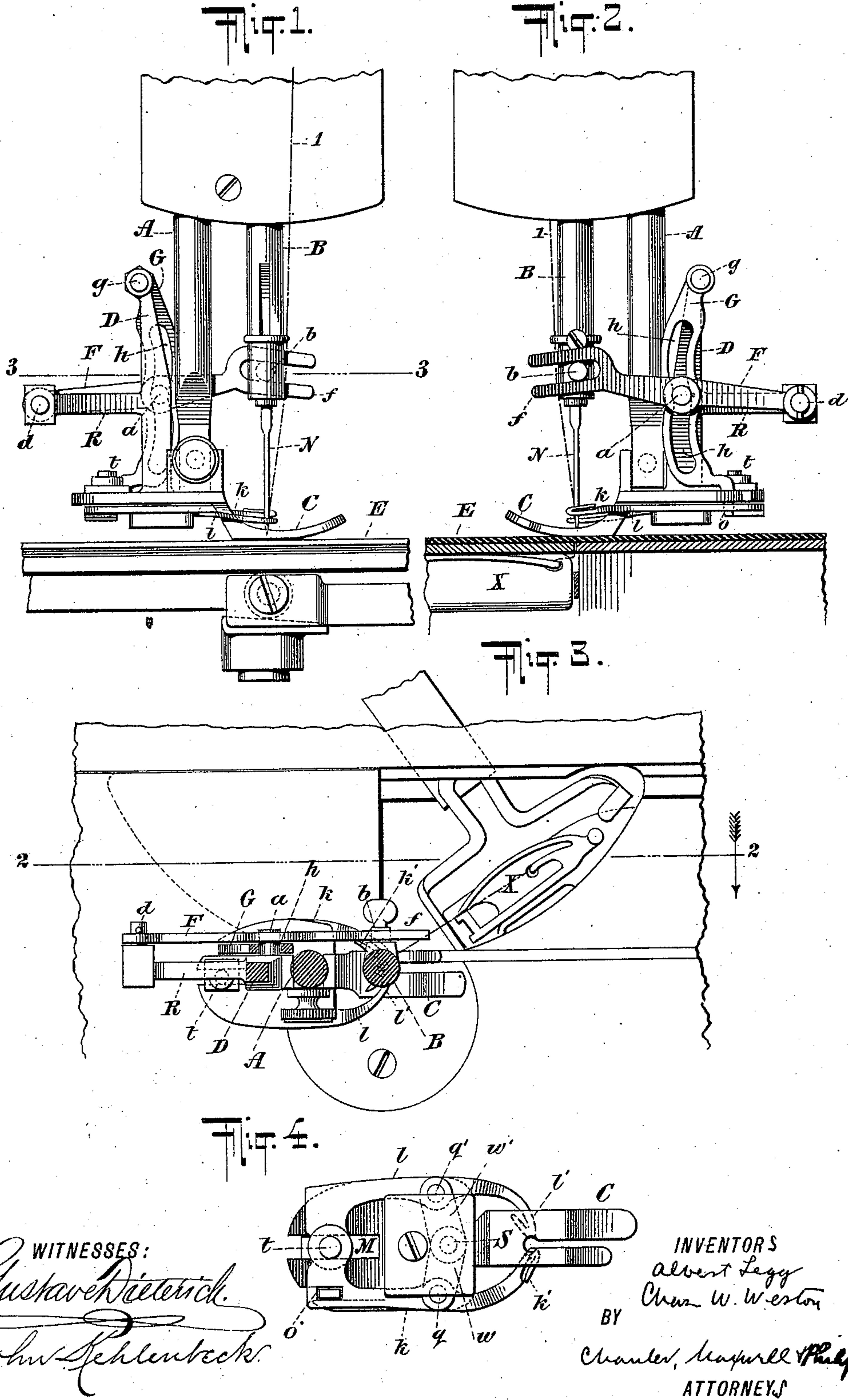
(No Model.)

3 Sheets—Sheet 1.

C. W. WESTON & A. LEGG.
SEWING MACHINE.

No. 576,708.

Patented Feb. 9, 1897.



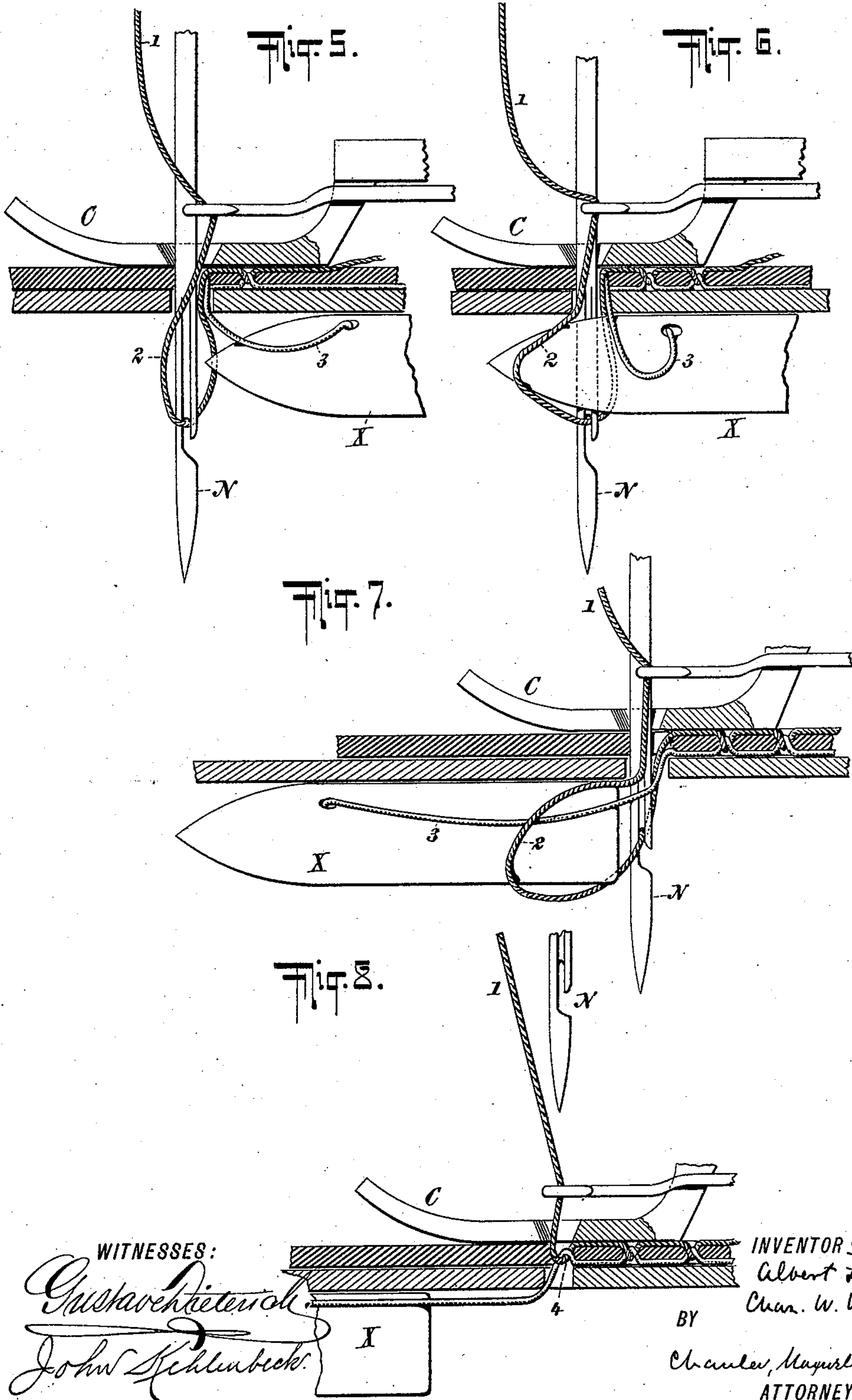
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3 Sheets—Sheet 2.

C. W. WESTON & A. LEGG.
SEWING MACHINE.

No. 576,708.

Patented Feb. 9, 1897.



WITNESSES:

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 9.

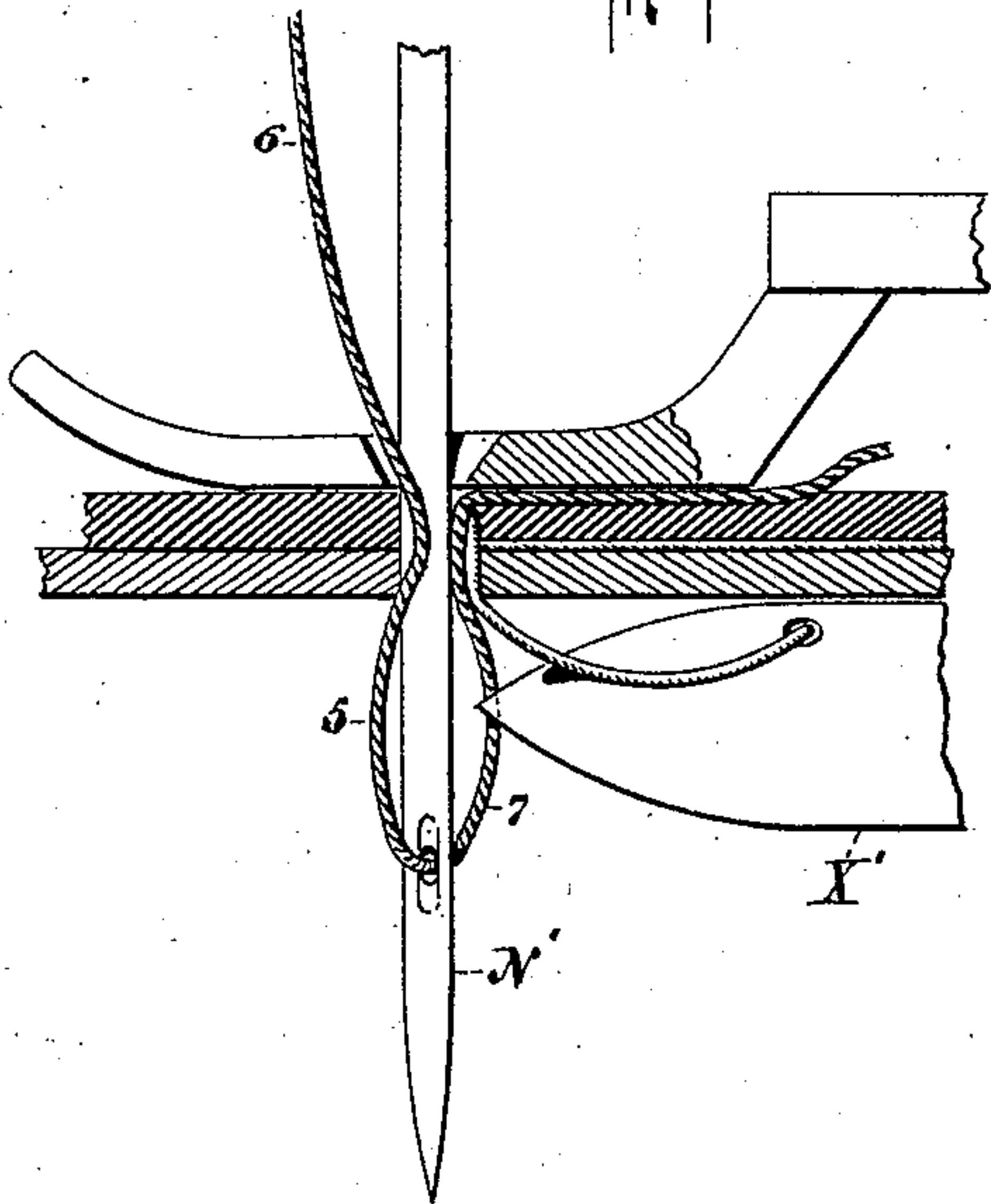


Fig. 10.

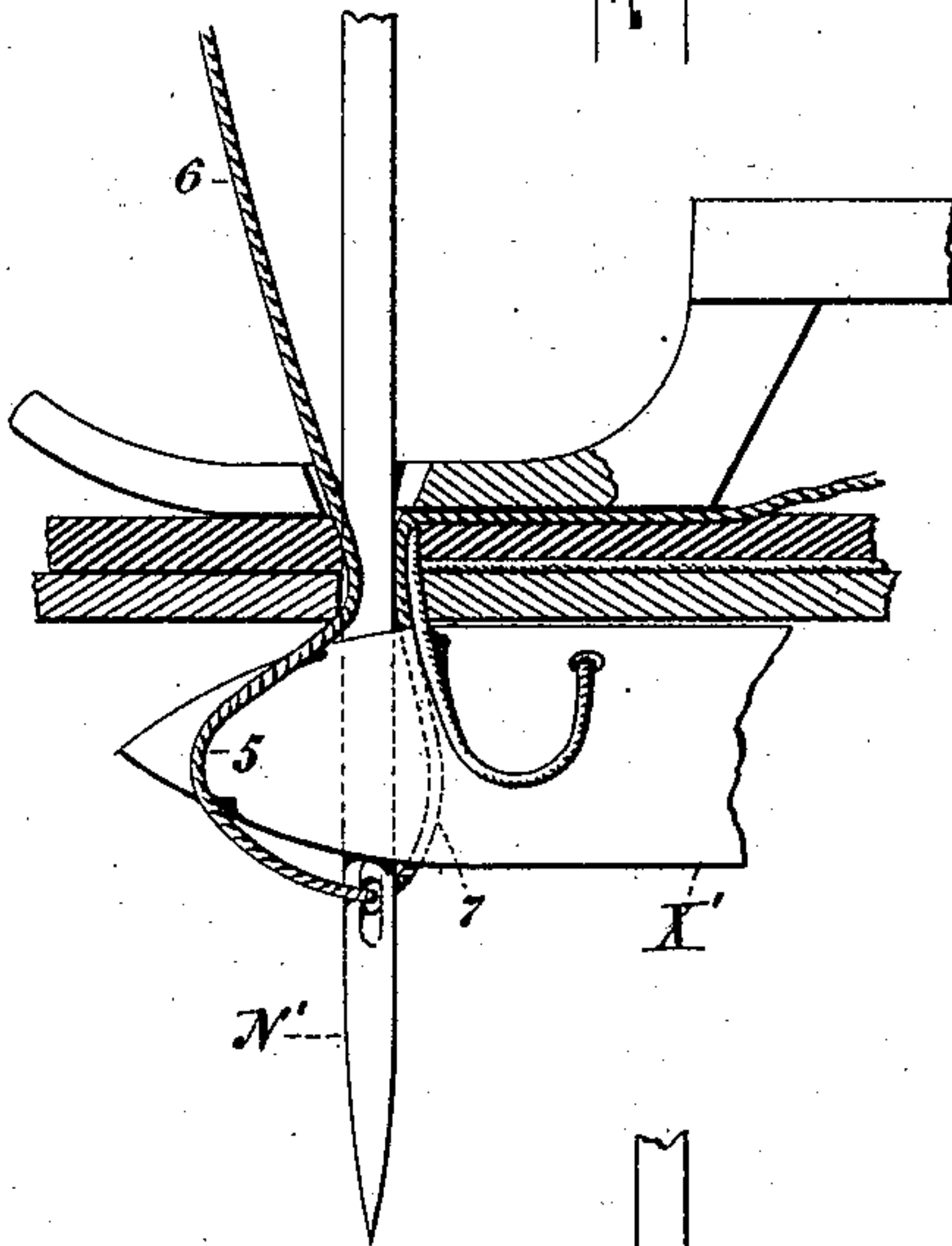


Fig. 11.

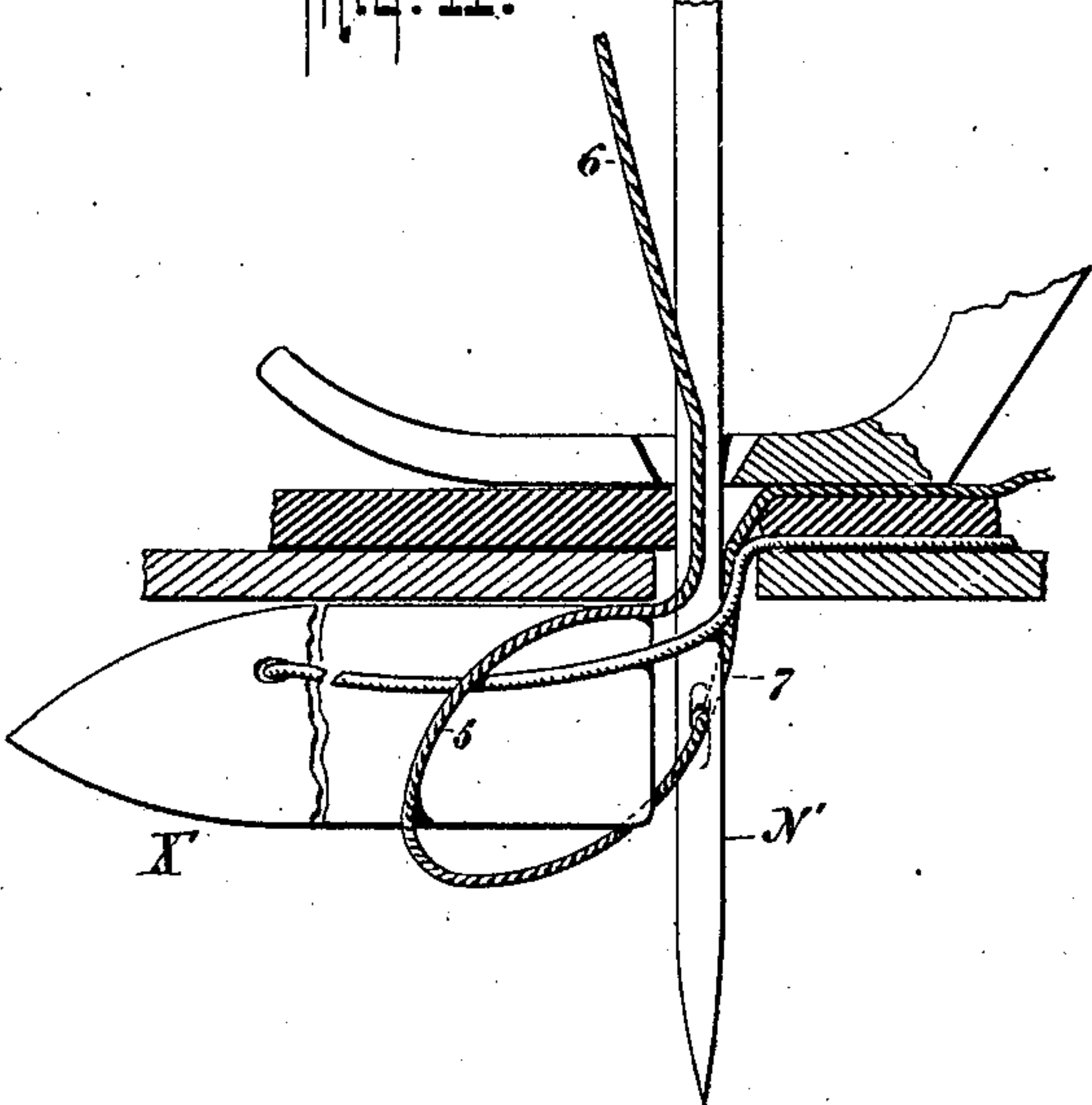
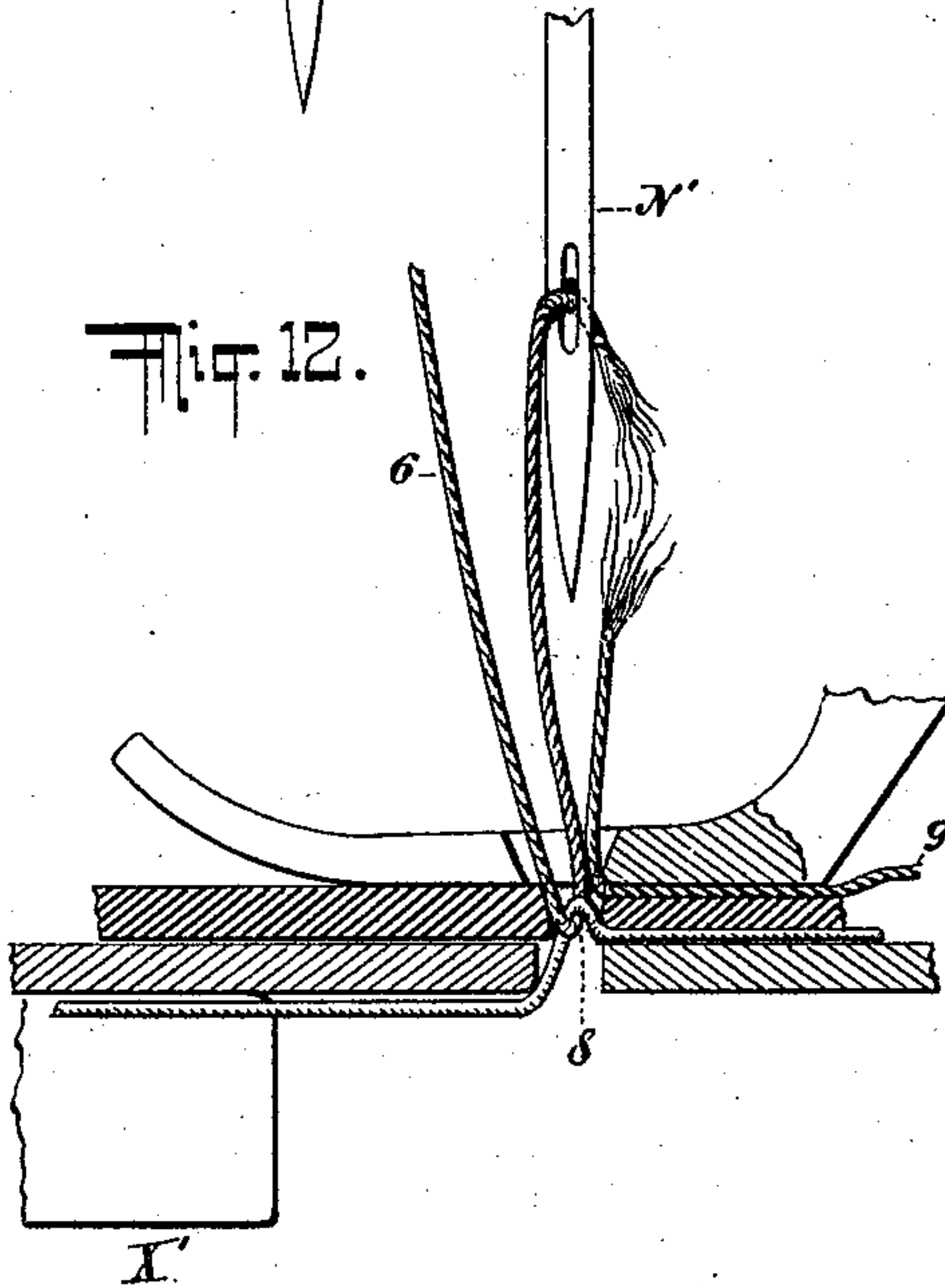


Fig. 12.



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UNITED STATES PATENT OFFICE.

CHARLES W. WESTON, OF NEW YORK, N. Y., AND ALBERT LEGG, OF ALLENDALE, NEW JERSEY, ASSIGNORS TO THE SELF-THREADING SEWING-MACHINE COMPANY, OF NEW YORK.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 576,708, dated February 9, 1897.

Application filed February 24, 1896. Serial No. 580,316. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. WESTON, residing at the city of New York, in the county and State of New York, and ALBERT LEGG, residing at Allendale, Bergen county, in the State of New Jersey, have invented certain new and useful Improvements in Sewing-Machines and in the Art of Making Stitches Therewith, of which the following is a specification.

Our invention relates to sewing-machines using an open-eye needle, such, for instance, as that described in Letters Patent No. 474,841, granted to us May 17, 1892.

The object of our invention is to supply needle-thread to the complemental stitch-forming mechanism with greater freedom than has been heretofore accomplished and to provide a new and useful means of threading such open-eye needle.

To this end our invention consists of a new device for forming stitches, as hereinafter described and claimed.

We attain these objects by the device shown in the accompanying drawings, in which similar letters and figures of reference indicate similar parts throughout the various views.

Figure 1 is a front view of a portion of a sewing-machine, showing threading device attached thereto. Fig. 2 is a view, partly sectional, on line 2 2 of Fig. 3, looking in direction of arrow. Fig. 3 is a sectional view on line 3 3 of Fig. 1. Fig. 4 is a bottom plan view. Figs. 5 to 8, inclusive, show our new method of forming stitches; and Figs. 9 to 12, inclusive, show an attempt to employ a closed-eye needle in such method.

We proceed to describe the manner of forming stitches with our new mechanism.

1, Figs. 5 to 8, inclusive, is the upper or spool thread, and 3 the lower or shuttle thread. Fig. 5 shows shuttle X about to enter loop 2, formed of the upper thread 1, as needle N rises and on the spool side thereof. Needle N is an open-eye needle, such, for instance, as that described in Letters Patent No. 474,841, granted to us May 17, 1892. It will be understood that the open eye or recess thereof should be formed so as to retain the thread therein long enough to form the loop 2, and

that the long groove thereof should be formed on the side on which the thread is fed to the shuttle or other complemental mechanism. Fig. 6 shows shuttle X advancing through said loop 2 and pulling its supply of thread 1 directly from the source of supply and not through the needle. Figs. 7 shows shuttle X still farther advanced and about to pass out of the loop and allow the same to be taken up and the stitch 4 formed. Fig. 8 shows the stitch 4 drawn tight and thread 1 released by needle N and ready to be again seized thereby preparatory to the making of the next stitch.

Referring now to Figs. 9 to 12, inclusive, it will be seen that if the shuttle X' is adapted to seize loop 5, formed of upper thread 6, as closed-eye needle N' rises, and on the spool side thereof, instead of loop 7, as is ordinary, the stitch 8, Fig. 12, will be formed between the needle and spool and cut off any further supply of spool-thread to the needle. In Fig. 12 the thread 6 is shown to have broken upon the continued rise of the needle, which must happen if the end 9 of said thread is not allowed to play out. The advantage of this manner of sewing is that there is less wear upon the thread, as it is supplied directly to the complemental mechanism and not through the eye or recess of the needle.

We now proceed to describe our new device for threading the open-eye needle upon each downward stroke thereof, referring to Figs. 1 to 4, inclusive.

A is the presser-bar, B the needle-bar, and E the cloth-plate, of one of the ordinary styles of sewing-machines.

C is the presser-foot, which is adapted to form the frame of our device.

The needle-bar B carries an open-eye needle N, as above described. The open eye or front of said needle is shown facing the presser-bar, but we do not limit ourselves to this construction, it being readily understood that should the recess or open eye face in the opposite direction, for instance, then the threading device hereinafter described should be arranged to operate also in reverse direction.

Attached rigidly to or forming part of presser-foot C is the standard or post D.

Said post D bears arm R, on which at *d* lever F is fulcrumed. Lever F is provided at its other end with fork *f*, adapted to engage with the needle-screw *b*, so as to swing said lever upon its fulcrum as said needle-bar reciprocates. Said lever F is also provided with pin *a* between its fulcrum *d* and fork *f*. Fulcrumed on said post at *g* is a cam-lever G, the cam *h* of which is operatively connected with lever F by means of pin *a*. The movement of cam-lever G depends, of course, upon the shape given to cam *h*. The lower end of said lever G is operatively connected with the arms *k* and *l*, so as to reciprocate the same as said lever is swung.

The arms *k* and *l* bear, respectively, guide *k'* and finger *l'*, and any suitable means may be employed whereby upon the reciprocation of said arms the guide and finger will operate so as to distend the thread and carry it into the open eye of the needle upon each downward stroke thereof. The means for this purpose which we illustrate is similar to that described in Letters Patent No. 546,768, granted to A. Legg and F. H. Tracy September 24, 1895. Said arms *k* and *l* are formed so that when their ends *k'* and *l'* are together in front of the needle they may pass under the base of the presser-foot and their other ends meet and be pivotally united by a bolt *t*, as shown in Fig. 4. Said bolt *t* passes through a slot M in said presser-foot, which serves to guide the reciprocation of the rear ends of said arms in a straight line. Two links *w* and *w'* are pivoted, respectively, on arms *k* and *l* at *q* and *q'* and at their other ends pivoted at a common fixed center S. The connection of lever G with arms *k* and *l* is made by the end of said lever entering slot *o*. It will be readily understood that as said lever G is swung, as the needle-bar reciprocates, it will carry with it said arms and cause said guide and finger to move so as to thread the needle upon each downward stroke thereof, and it will also be understood that when said threading device is used in our new method of forming stitches above

described the guide *k'* and finger *l'* are transposed from their positions shown in said Letters Patent No. 546,768, the guide *k'* being upon the same side of the needle as the complementary mechanism. The new arrangement of levers G and F above described has many advantages over devices previously known for producing at the presser-foot a horizontal reciprocating movement from the vertical reciprocation of the needle-bar.

What we claim, and desire to secure by Letters Patent, is—

1. The improvement in stitch-forming mechanisms which consists of a needle having an open eye or recess for engaging and carrying a bight of thread through the material to be sewed, means for operating said needle, means for feeding thread to the same upon each downward stroke thereof, and mechanism complementary thereto for completing the stitch coöperating with the loop formed on the thread-supply side of the needle, substantially as described.

2. In a sewing-machine, the combination of a needle having a recess or open eye for engaging the thread, means for operating said needle, means for feeding thread to the same, which consists of a guide and finger movable from in front of the path of the needle, the guide to the side thereof on which the complementary stitch-forming mechanism enters the loop of thread, and the finger to the other side, whereby the thread is distended and carried into the open eye of the needle as it descends, and means for operating said guide and finger, with complementary stitch-forming mechanism, substantially as described.

In witness whereof we have hereunto affixed our signatures, in presence of two witnesses, this 20th day of February, 1896.

CHAS. W. WESTON.
ALBERT LEGG.

Witnesses:

H. V. N. PHILIP,
J. B. MAXWELL.