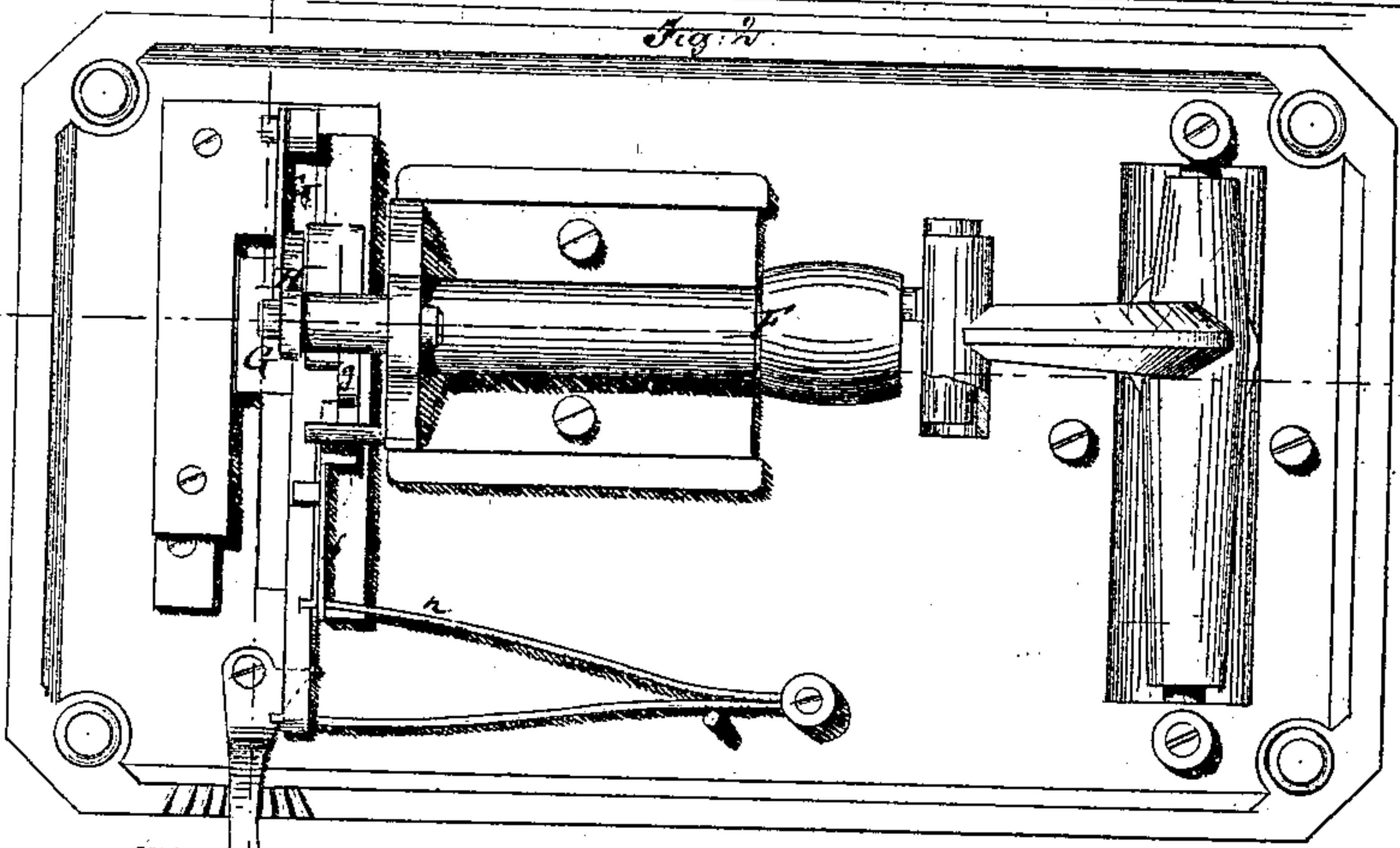
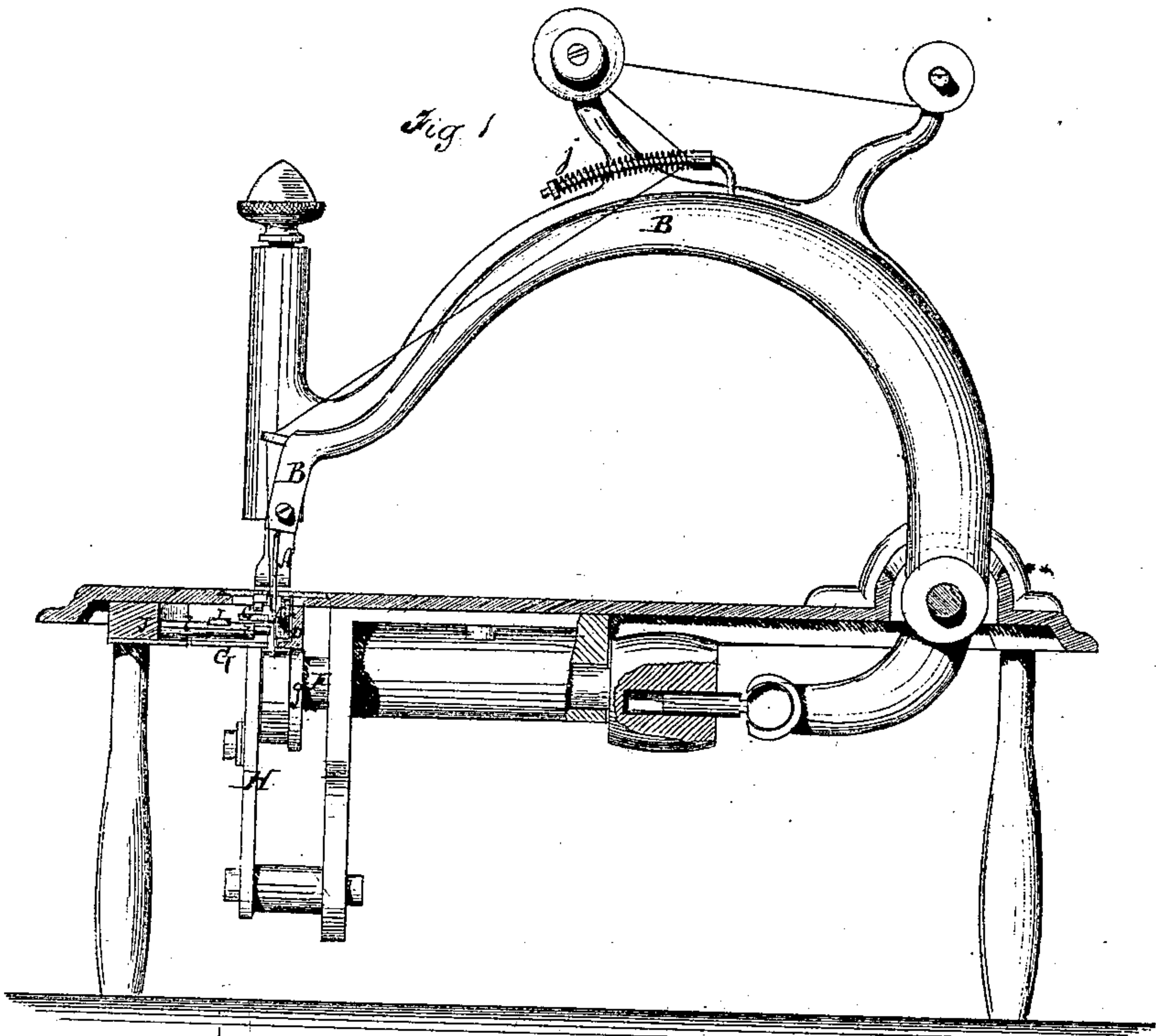


I. W. LAMB.
SEWING MACHINE.

No. 109,632.

Patented Nov. 29, 1870



Witnesses:

Chas. Nida
D. S. Mabie

Inventor:

I. W. Lamb

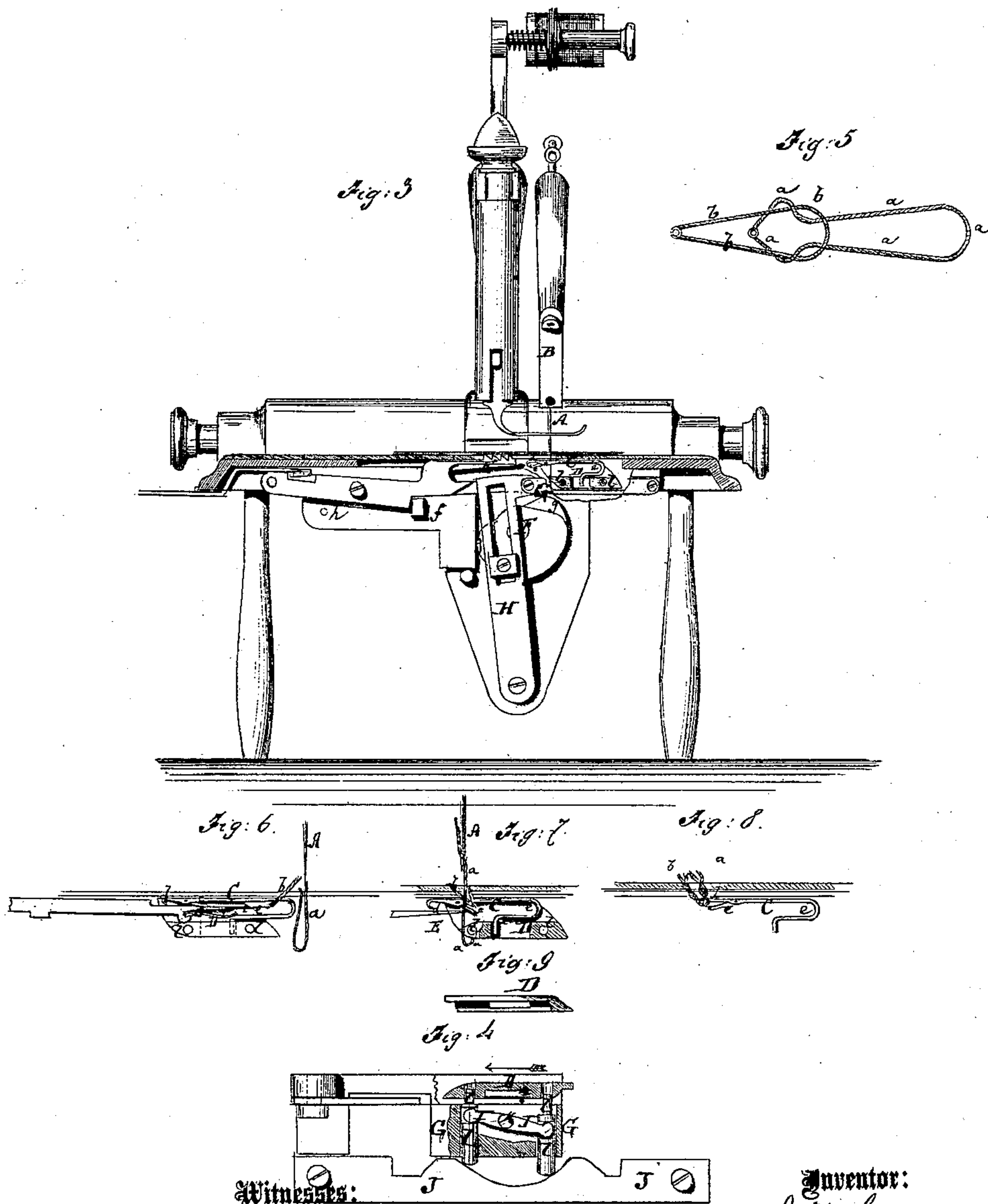
PER

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United States Patent Office.

ISAAC W. LAMB, OF NORTHVILLE, MICHIGAN.

Letters Patent No. 109,632, dated November 29, 1870.

IMPROVEMENT IN SEWING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ISAAC W. LAMB, of Northville, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 represents a side view, partly in section, of my improved sewing-machine.

Figure 2 is an inverted plan view of the same.

Figure 3 is a front view, partly in section, of the same.

Figure 4 is a detail horizontal section, on an enlarged scale, of the shuttle mechanism.

Figure 5 is a diagram illustrating the kind of stitch made by my machine.

Figures 6, 7, and 8 are detail side views, showing the formation of the stitch.

Figure 9 is a detail plan view, partly in section, of the shuttle.

Similar letters of reference indicate corresponding parts.

This invention has for its object the construction of a machine, by which, with one single thread, a stitch can be produced which has every new loop put first around and then through the previous loop, under the fabric; thereby a succession of loops is formed which will be securely locked together, and which, with but one single thread, will be fully as reliable as the stitches made by two or more threads.

In fig. 5, the loop made by the machine is fully illustrated. In it *a* is the new loop, and *b* the one made previous to *a*.

It will be seen that the new loop is first put around and then through the loop *b*, or that the old loop *b* is first put through *a*, and then *a* through *b*.

The present invention also consists in the construction and arrangement of various details of machinery employed for the aforesaid purpose.

The main difference between my machine and those now in use consists in the looping mechanism, and in the employment of a powerful take-up for the thread.

The looping mechanism consists of a straight or curved needle, *A*, which is attached to a suitable reciprocating or oscillating needle-holder, *B*, and of a lower needle or looper, *C*, which is carried by a reciprocating chaser or shuttle, *D*.

The looper *C* is made in form of a latch-needle, similar in form to a knitting-machine needle, it having a pivoted latch *c* and a hook, *d*, at one end, and a hook-shaped shank, *e*, at the other end.

The stitch is produced in the following manner:

The first position is that shown in fig. 6. In this

the needle *A* has just been passed through the fabric, and has carried its thread down below the same, forming the loop *a*.

The loop *b*, previously made, is on the hook-shaped shank *e* of the looper. The looper in this is in its extreme left or backward position.

The needle *A* is now being drawn up, and the looper moves to the right, or forward; the shank *e* of the looper is thereby carried through the new loop *a* on the needle, and the old loop *b* is also carried through such new loop, as shown in fig. 7.

The latch *c*, during the position shown in figs. 6 and 7, is open, as shown, and the loop *b* forward of the said catch. The new loop is thus placed around the old loop.

As the looper continues to move forward the old loop causes the latch to swing closed, as in fig. 8; previous to this, however, the new loop was drawn up into the hook *d* of the looper. As the latch is closed it locks the new loop in the looper. The further-provided motion of the looper causes the old loop to slip over the latch, and consequently also over the new loop, and thereby to become entirely disengaged from the mechanism of the machine. Thus the new loop was first put around and then through the old loop, or, in other words, the old loop was first put through the new and then the new through the old, as in fig. 5.

As the needle *A* descends again, the looper moves backward, or to the left, and the loop *a* takes the place, formerly occupied by the loop *b*.

The operation is repeated for each stitch, and whenever the looper draws the old loop through the new one it hooks the new and throws off the old loop, thereby causing the new loop to be also drawn through the old one.

The looper, it will be seen, operates in a manner very similar to the action of an ordinary shuttle, with the exception of the latch action.

In order to secure the latch in the open position shown in figs. 6 and 7, I employ a latch-opener, *E*, which is on a pivoted bar, and which fits with its point under the latch, as is clearly shown in figs. 6 and 7, to hold it open.

It also serves to open the latch when the looper makes its backward stroke.

The latch-opener has a slight transverse motion, which it receives by a movable plate, *f*, from a cam, *g*, on the main operating shaft *F*, and from a spring, *h*.

The looper, as aforesaid, is fitted into and guided by a carrier, *D*, which is made L-shaped in cross-section, as in fig. 1.

The thick lower part is slotted to receive the end of the looper-shank *e*.

The slot in the carrier is long enough to allow it

to move about one-fourth of an inch before it will carry the looper along in either direction. The object of thus shortening the motion of the looper is to prevent the drawing of a long loop during the backward stroke of the looper, and to allow the carrier to open the needle-loop well before the looper enters it during the forward stroke.

In the first portion of making the loop, fig. 6, the carrier is drawn back some distance from the needle while the shank of the looper is near to the needle, as shown. The carrier is then started, and moves into the needle-loop, opening the same, the looper remaining stationary.

A spring, *i*, on the latch-opener, holds the looper back while the carrier is thus moved.

When the carrier has opened the needle-loop it draws the looper along with it, and carries it also through the loop into the second position of fig. 7. Then the loop or thread is drawn up by a suitable take-up spring, *j*, on the needle-arm B, and the said loop is rapidly drawn up on the rounded back edge of the carrier.

The action of the take-up spring, together with the said rounded end of the carrier, has the effect of properly drawing up the needle-loop before the closing of the latch; and without arresting the motion of the looper.

The carrier is operated by a reciprocating slide, G, which receives its motion by an oscillating lever, H, which is moved by a crank on the shaft F.

In the slide G are two pins *l l*, connected with each other by a lever, I, which is pivoted by a pin, K, to the slide.

The pins *l* fit with their ends into apertures which are provided in the carrier, as shown in fig. 4.

As the slide moves back and forth, the outer ends of the pins *l* fit against the edges of a stationary cam, J, which edge is so formed that one pin, *l*, will be thrown in and the other brought out of the carrier alternately.

Each pin *l*, as it approaches the needle A, is thus drawn out of the carrier, and the latter moved ahead by the other pin *l*, and thus, without interrupting the motion of the looper, it can be moved by or past the needle and needle-loop.

The needle-bar is moved by any suitable mechanism.

The shape of the looper and carrier, and also the mechanism for operating the same, may be changed and modified, and I do not confine myself to the particular devices herein described, as the invention consists in the use of devices for producing the peculiar single-threaded stitch.

The feed mechanism may be of any suitable construction, the same not forming part of my invention.

The latch-opener E may, if desired, be made stationary, especially when other forms of loopers are employed.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. A sewing-machine, arranged to produce, with one single thread, a stitch, in which every new loop is first put around and then through the preceding loop, substantially as herein shown and described.
2. The carrier D, in combination with the looper C, having a hook, *d*, and latch *e*, when constructed and operating substantially as herein shown and described.
3. The latch-opener E, arranged in combination with the looper C, substantially as here shown and described, to operate as set forth.
4. The spring *i*, formed on the latch-opener, for the purpose of holding the looper while the carrier advances, as set forth.

ISAAC W. LAMB.

Witnesses:

ISAAC PLACE,
WILLIAM COATES.