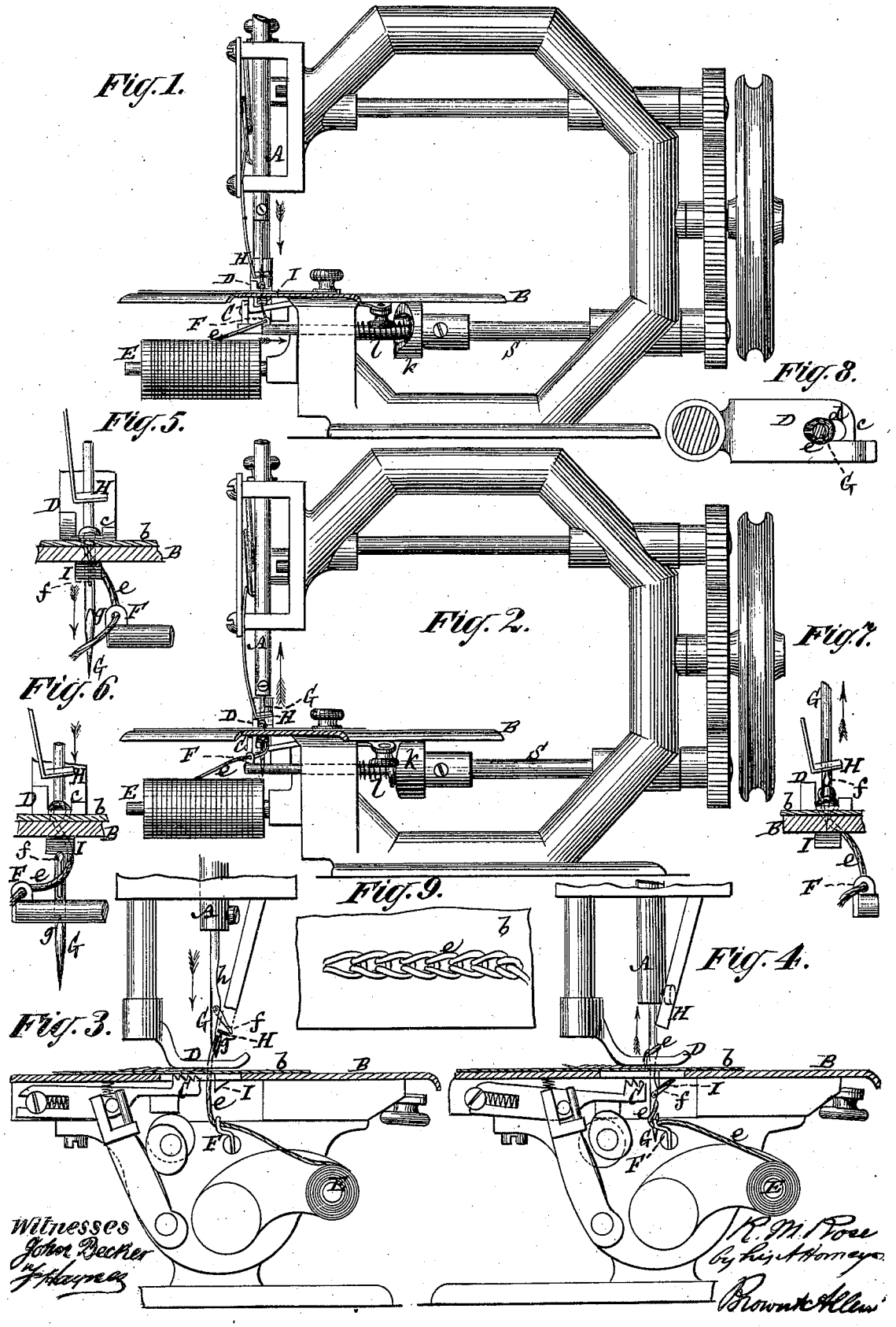
R. M. ROSE

MACHINE FOR EMBROIDERING FABRICS.

No. 170,596. Patented Nov. 30, 1875.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MACHINES FOR EMBROIDERING FABRICS.

Specification forming part of Letters Patent No. **170,596**, dated November 30, 1875; application filed September 7, 1875.

To all whom it may concern:

Be it known that I, REUBEN M. ROSE, of Williamsburg, Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Embroidering Fabrics; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention has for its object the production of a machine for embroidering fabrics by means of an interlooped or knitting stitch, which is incorporated with the fabric by passing through the latter.

The invention consists in certain combinations, in an embroidering-machine, of a pointed latch-needle, with a latch-opener and a latch-closer, to insure the proper opening and closing of the latch. Furthermore, the invention consists in a combination, with the pointed latch-needle, of an intermittingly-moving thread-guide, operating to insure the working of the needle always on the proper side of the thread as the latter is drawn from the spool or its equivalent, and to prevent the loop from prematurely slipping off the hook of the latch-needle.

Figure 1 represents a side view of an embroidering-machine with my invention applied, and the needle as having commenced its descent. Fig. 2 is a similar view of the same with the parts in position after the needle has commenced its ascent. Figs. 3 and 4 are front views, in part, on a larger scale, with the needle and its accompanying devices in like positions to those represented for them in the two former figures, respectively. Figs. 5, 6, and 7 are views in detail mainly of the needle and thread-guide in different positions during the production of the stitch. Fig. 8 is a plan of the presser-foot detached. Fig. 9 represents a face view of the stitch on the upper surface of a piece of fabric.

The embroidering-machine represented in the drawing possesses many features in common with those of different kinds of single-thread sewing-machines—as, for instance, a cloth-bed or table, a reciprocating needle-bar, a presser-foot, and a feeding dog or device.

A is the reciprocating needle-bar, which may be operated by any suitable means to pass the needle up and down through the fabric *b*, on the cloth bed or table B. C is the feeding dog or device, which may be a four-motion one, and be arranged below the table for operation through the latter on the under surface of the fabric, as in various sewing-machines. D is the presser-foot, which it is preferred to construct with a reduced portion, *c*, on its one side, and oblong slot *d*, for the passage of the needle through it; but I do not restrict myself to any special construction of said foot. E is a spool-spindle, arranged below the table, and F an intermittingly-reciprocating thread-guide, also arranged below the table and serving to conduct and hold the thread *e* in proper relation with the needle. G is the pointed latch-needle, carried by the reciprocating needle-bar A. The latch *f* of this needle is not a mere spring, designed to open and close the hook of the needle at specified periods, but is freely pivoted to the body of the needle, and the latter suitably constructed so that said latch may either be thrown down to close the hook *g*, at the pointed end of the needle, or be thrown up into a reverse position, within or against the body of the needle, and so that, as the latter passes down through the fabric, the latch is out of the way, or in a raised position with its nose or point projecting upward, and free from all possibility of catching in the fabric.

The operation is as follows: Supposing the needle in its descent to have reached the position represented in Figs. 1 and 3, which is shortly before it enters the fabric; then the latch *f*, which has been left in a downward or closed position against the hook *g*, is caught at its free or lower end by a latch-opener, H, which may be an arm made to project from the under side of the head through which the needle-bar plays. The lower end of this arm or latch-opener lies close up to the needle, and is stepped or otherwise constructed so that the point of the latch, when the needle comes down, will be caught by it, and in the further descent of the needle, as represented in Figs. 5 and 6, will be turned or closed upward against or within a hollow, *h*, of the needle. To insure this action, and to cause the latch, when closed, to clear the opener H, during

the ascent of the needle, said latch-opener or the needle itself should be made elastic relatively to each other.

When the pointed latch-needle G has descended to the position shown in Fig. 5, with the latch *f* raised or open, said latch passes down in front of a latch-closer, I, which, during such motion of the needle, has no action upon the latch. The needle G, also during its descent below the table to the position shown in Fig. 5, passes at its pointed and hooked end in front of the thread *e*, as the latter issues from the thread-guide F; but as the needle G continues its descent to the position represented in Fig. 6, the thread-guide F moves forward and carries the thread *e* partly around or across the needle, and remains in such forward position till the hook *g* of the needle, in the ascent of the latter, has not only fairly got hold of the thread, thus adjusted into position for the purpose, but so that the loop or thread thus caught by the hook of the needle is taken up into the cloth, or at least till the latch *f* has been turned to close the hook *g*, so that the loop cannot slip or prematurely leave the hook. After this the thread guide F retires to its original position to allow the needle, in its succeeding descent, coming down in front again of the thread *e*. Prior to such return of the thread-guide F however, and when the needle, in its ascent, reaches the position shown in Fig. 4, the point of the latch *f* comes in contact with the forward edge of the inclined back of the latch-closer I on the under side of the table. This causes the latch to be turned down and closed over the hook, and so that the latch passes, during the further ascent of the needle with its rear or pivoted end, foremost through the fabric, and the closed hook *g* of the needle carries the loop up through the fabric, and as the needle descend again the latch *f* opens and the loop is deposited on the upper surface of the fabric, and held in position by the needle till the latter, in its succeeding ascent, passes a fresh loop through the previous one, after which, and when the needle is out of the fabric, the latter is fed forward, and subsequently the new loop laid on the surface of the fabric for a repetition of the action, as before.

The latch-closer I, on the under side of the table, may be constructed in various ways; but making it with an inclined back, as shown, and arranging the needle, so that it works close up to the face of said closer, answers the purpose, the needle having spring, or the latch springing slightly back when passing down against the face of the closer to insure the point of the latch being caught by the inclined back of the closer when the needle ascends, or the same effect may be produced by giving the latch-closer an elastic action.

A cam *k*, on the rotating shaft S, operates to move the thread-guide F forward, and a spring, *l*, to carry it back at the proper times relatively with the motion of the needle, as and for the purpose herein described.

Although the machine has here been described as taking the thread from below, it is evident that the needle might be worked from below and take the thread from above, and the positions of the latch-opener and latch-closer be correspondingly changed, or the machine may be constructed to embroider in various positions other than horizontally.

I claim—

1. The combination, in an embroidering-machine, of the pointed latch-needle, with the latch-opener H and latch-closer I, for catching and releasing the thread, substantially as described.

2. The combination of the needle G, provided with reversible latch, the latch opener and closer, and the reciprocating thread-guide F, the whole constructed to operate substantially as described.

3. The combination with the reciprocating latch-needle, and latch opener and closer, the reciprocating thread-guide F, and the feed device C, the whole constructed and arranged to operate substantially as described.

R. M. ROSE.

Witnesses:
MICHAEL RYAN,
FRED. HAYNES.