(No Model.) 3 Sheets—Sheet 1.

L. MARCY.

SEWING MACHINE.

No. 433,900. Patented Aug. 5, 1890.

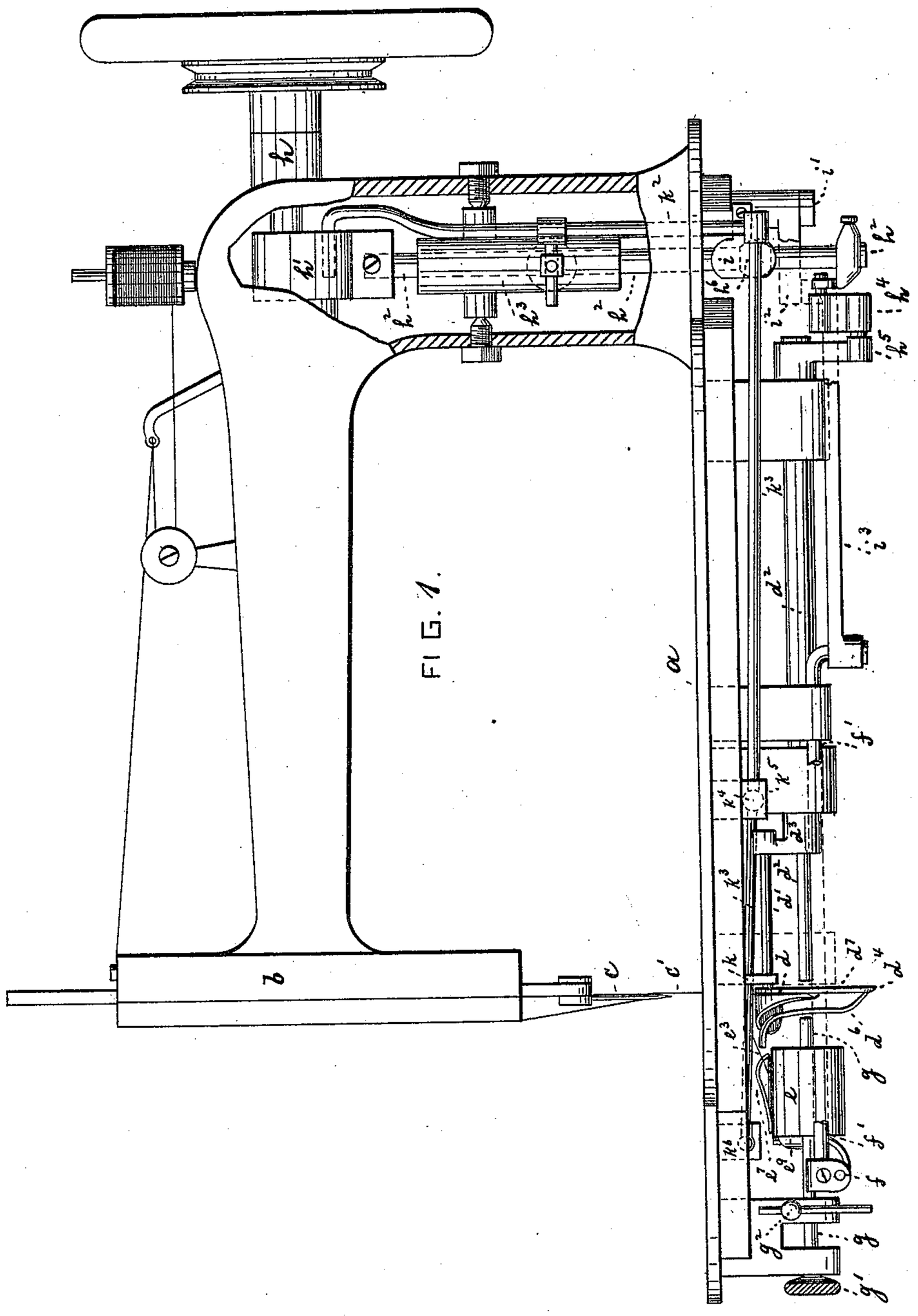


FIG. 1.

WITNESSES

Wm. A. Lowe

Wm. Wagner

INVENTOR

L. Marcy

by his attorneys

Roeder & Briesen

(No Model.) 3 Sheets—Sheet 2.

L. MARCY.

SEWING MACHINE.

No. 433,900. Patented Aug. 5, 1890.

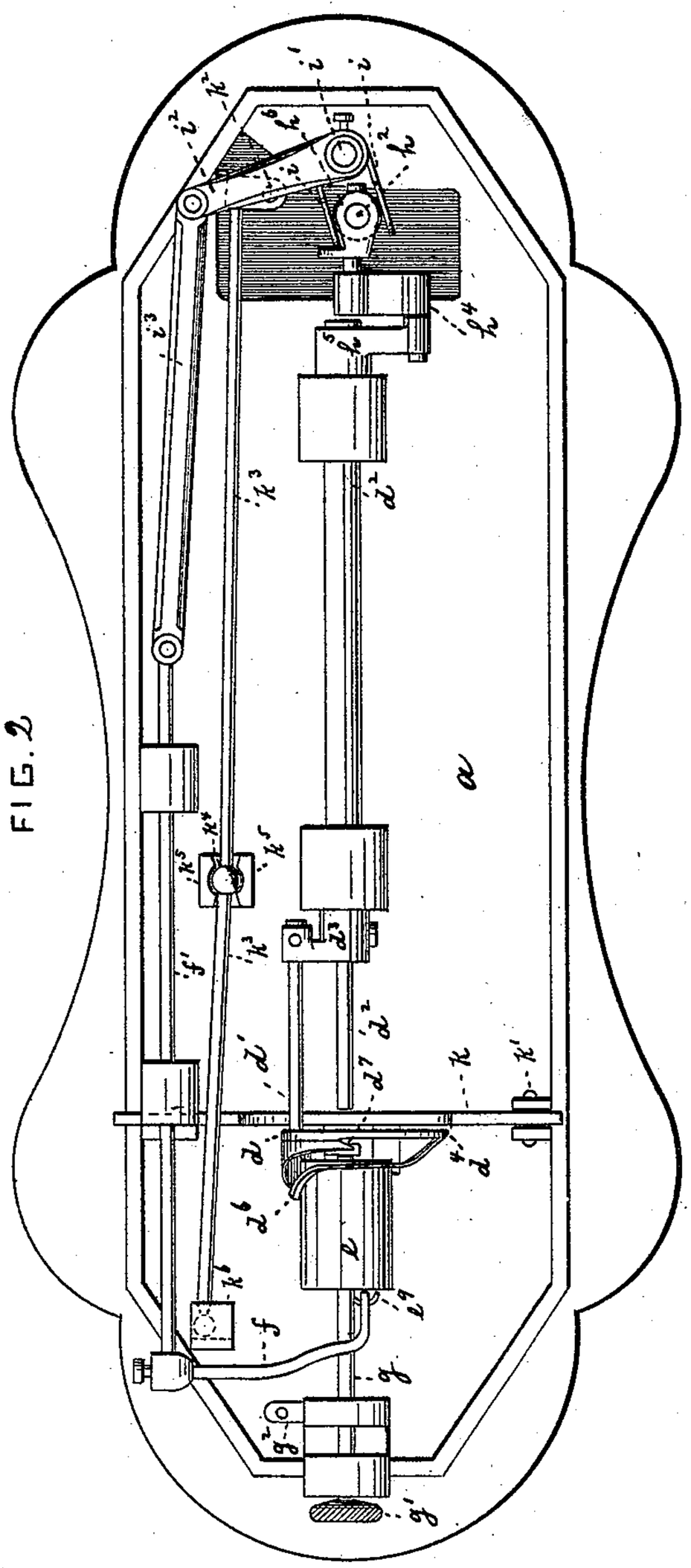


FIG. 2

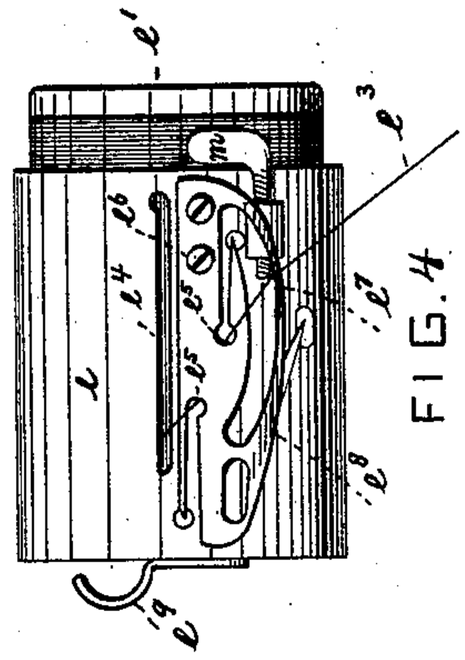


FIG. 4

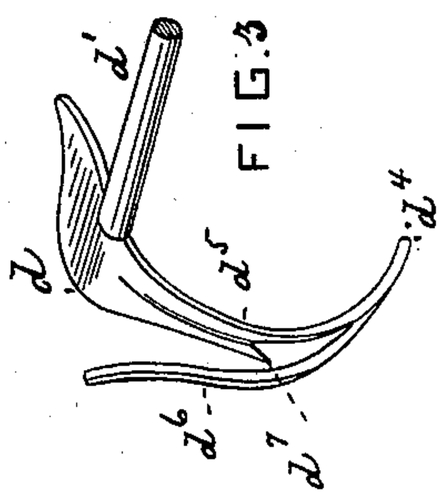


FIG. 3

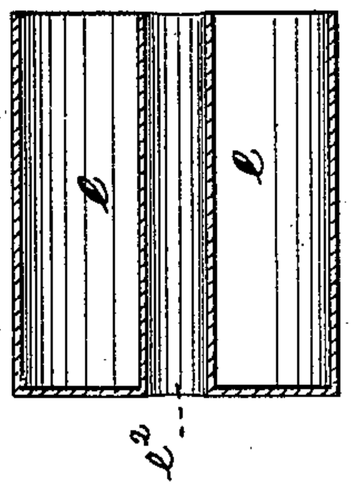


FIG. 5.

WITNESSES

Wm. A. Lowe

Wm. Wagner

INVENTOR

L. Marcy

by his attorneys

Roeder & Briesen

(No Model.) 3 Sheets—Sheet 3.

L. MARCY.

SEWING MACHINE.

No. 433,900. Patented Aug. 5, 1890.

FIG. 5

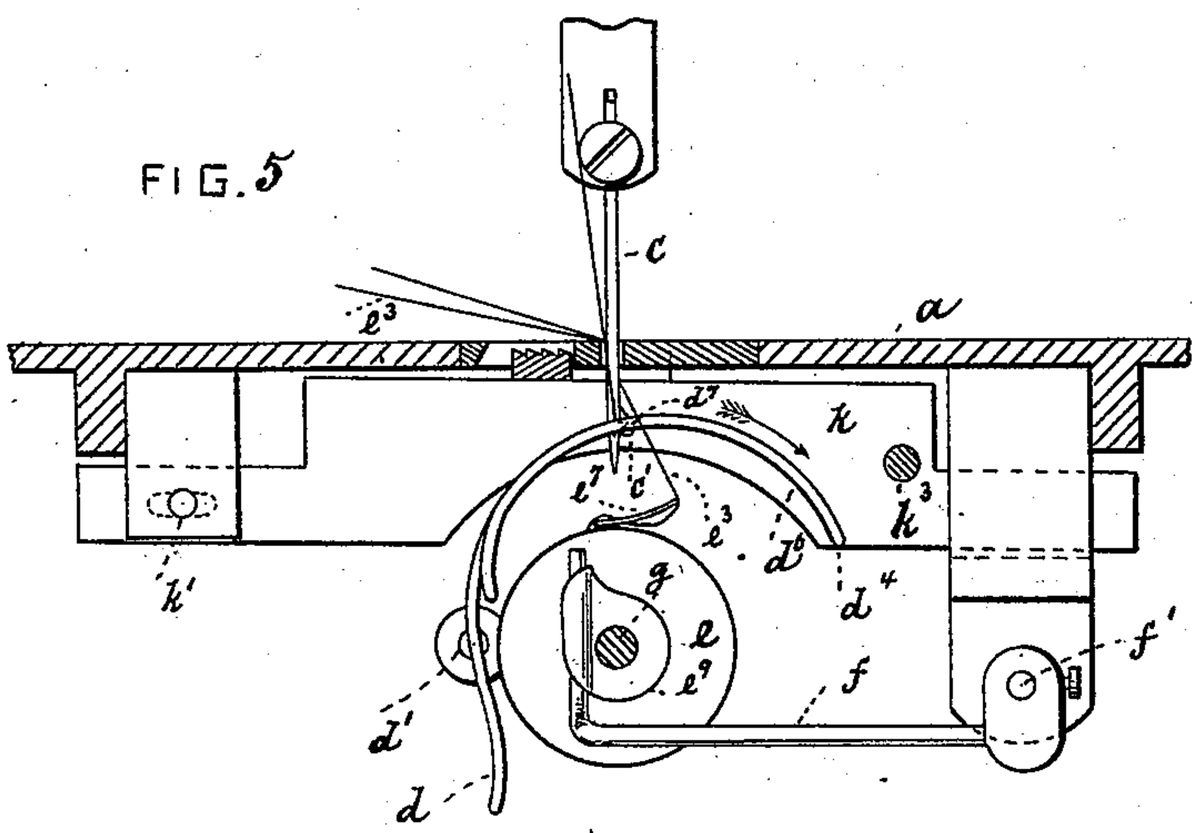


FIG. 6

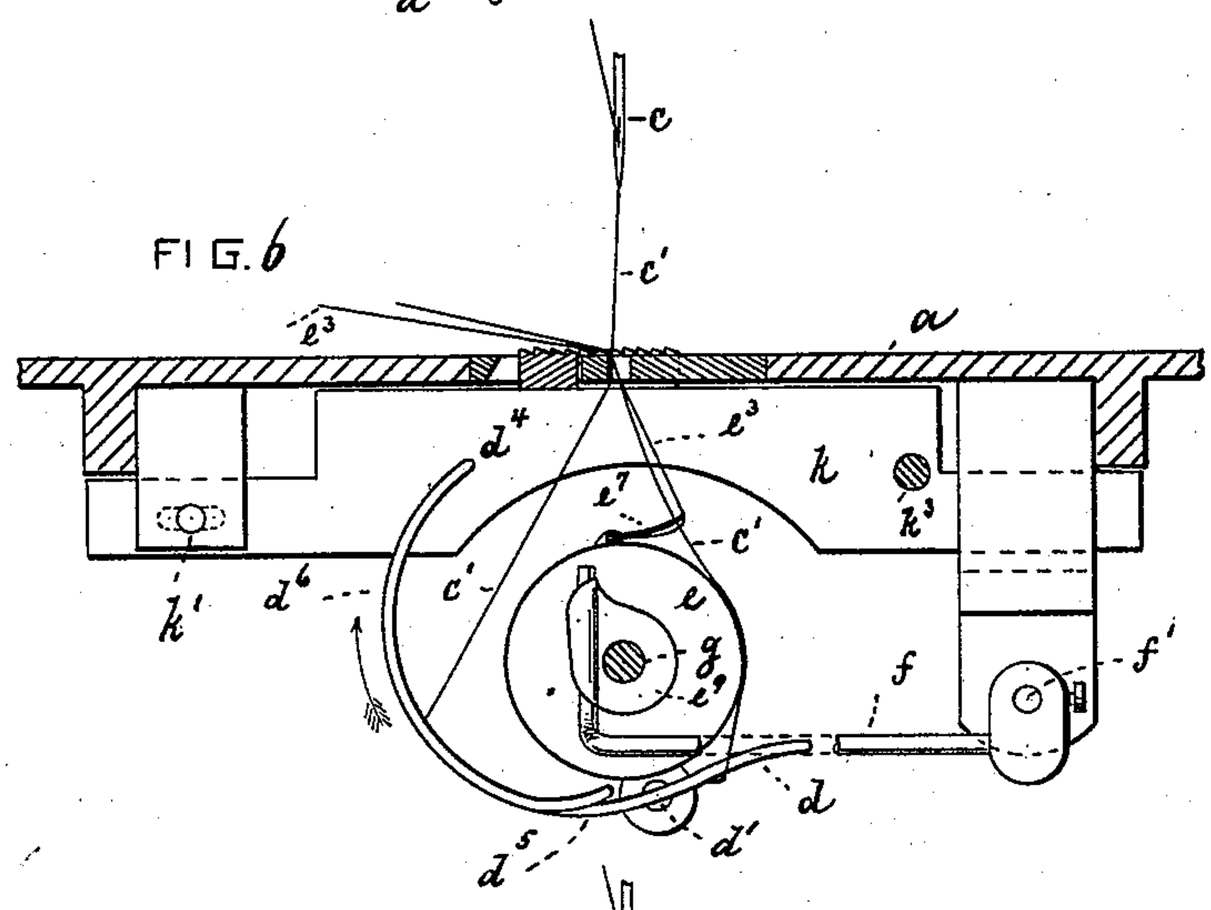
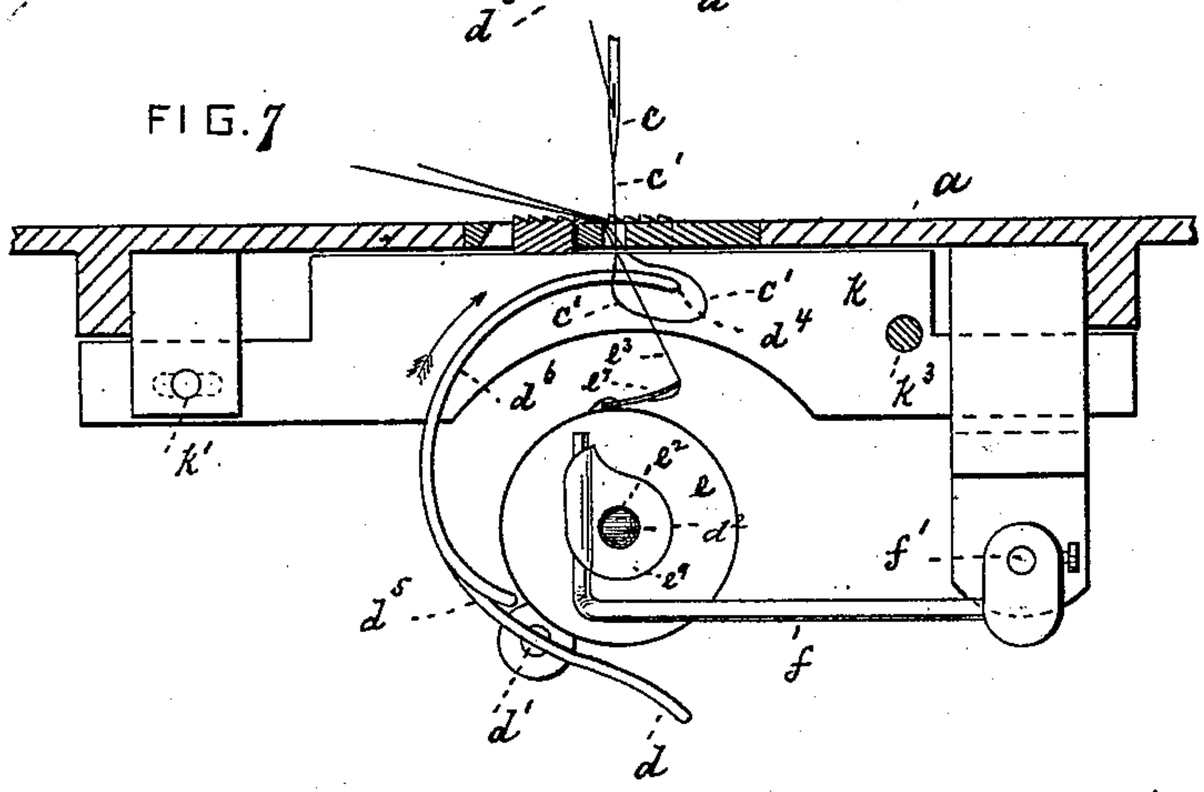


FIG. 7



WITNESSES

Wm. A. Lowe

Wm. Wagner

INVENTOR

L. Marcy

by his attorneys

Roeder & Briesen

UNITED STATES PATENT OFFICE.

LEONARD MARCY, OF NORTH BERGEN, NEW JERSEY, ASSIGNOR TO MARY LOUISE MARCY, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 433,900, dated August 5, 1890.

Application filed February 20, 1890. Serial No. 341,187. (No model.)

To all whom it may concern:

Be it known that I, LEONARD MARCY, of North Bergen, Hudson county, New Jersey, have invented an Improved Sewing-Machine, of which the following is a specification.

This invention relates to a sewing-machine, in which a semi-annular hook that engages the needle-thread co-operates with a cylindrical spool-holder that constitutes the shuttle. The ordinary spool of cotton or silk may be placed into this spool-holder without unwinding the thread and rewinding it upon the bobbin.

The invention consists in the various features of improvement more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved sewing-machine. Fig. 2 is a bottom view of the work-plate; Fig. 3, a detail perspective of the hook; Fig. 4, a detail side view of the spool-holder. Figs. 5, 6, and 7 are sectional end views of the machine, showing the hook in different positions. Fig. 8 is a longitudinal central section through the spool-holder.

The letter *a* represents the work-plate of a sewing-machine. *b* is the head; *c*, the needle, and *c'* the needle-thread. The needle-thread is looped by a hook *d*, secured to an arm *d'*, which is connected to a revolving shaft d^2 by an arm d^3. The shaft d^2 is driven from the power-shaft in manner hereinafter described.

The hook *d* is of semi-annular form—that is to say, it is open at the center, (for the passage through it of the spool-holder,) and is bent to approximate the form of a half-circle, Figs. 5 to 7. The peculiar shape of the hook is more fully illustrated in Fig. 3. From the apex d^4 the hook is divided into two arms d^5 d^6. The arm d^5 is provided at its inner edge with a point or hook d^7, facing in the same direction as pointed end d^4, while the arm d^6 serves as a guard to protect the lower thread from such hook.

e is the spool-holder, free to be driven so as to pass through the hook. This spool-holder is made of the form of an annular drum, closed at one end and open at the other end, for the insertion of a spool of thread *e'* of any one of the ordinary sizes. This spool is slipped over a tube e^2, extending through the spool-holder and open at both ends, and is confined within the spool-holder by a catch *m*. In Fig. 4 the spool *e'* is shown to be partly withdrawn, so as to be visible. The lower thread e^3 passes through a slit e^4 of the spool-holder, and is then engaged by a double tension-hook e^5. This tension-hook is screwed to the spool-holder, and by adjusting the screw e^6 the tension may be regulated. The tension-hook e^5 is, moreover, provided with the guard e^7, having horn e^8, between which the shuttle-thread passes out, so as to be always delivered upward at the proper inclination.

In order to drive the spool-holder *e*, it is provided with a catch e^9, which is engaged by an arm *f*, secured to a sliding rod or driver *f'*, receiving reciprocating motion from the work-shaft, in manner hereinafter more fully described. The arm *f* is partly embraced by a small bulge on catch e^9, Figs. 4 and 7, and if the spool-holder is slightly revolved toward the operator by the live-spindle d^2, in manner hereinafter described, the catch will partly release the arm *f* and the loop of the needle-thread will readily pass up between the catch and the arm.

In order to properly guide the spool-holder, it is mounted upon a fixed shaft *g*, placed opposite to a reduced end of shaft d^2. Between the shafts *g* d^2 there is an open space, Fig. 1, through which the needle-thread is free to pass.

The tube e^2 of the spool-holder is slipped over the shaft *g*, and by reciprocating the spool-holder it is driven so as to alternately ride upon shaft *g* and shaft d^2, clearing the open space between such shafts at every motion. The shaft *g* may be drawn out by a head *g'*, so that a new spool may be placed upon it. The shaft *g* is held in place by a locking-pin g^2. In order to impart revolving motion to the hook-shaft d^2, the following mechanism has been shown to be employed: *h* is the work-shaft, upon which is mounted a cam or eccentric, as usual. This eccentric is surrounded by the ring *h*, to which is secured the pitman h^2, passing through a rocking bearing h^3. The revolution of the

work-shaft imparts a rocking and reciprocating motion to pitman h^2. The lower end of the pitman h^2 is connected by link h^4 and crank h^5 to shaft d^2, so as revolve the same.

To reciprocate the spool-driver f', the pitman h^2 is provided with an enlargement h^6, placed between a pair of cheeks i, secured to a shaft i'. The motion of pitman h^2 will rock shaft i'. The shaft i' imparts reciprocating motion to sliding rod f' through the intermediate link i^2 and arm i^3.

The operation of the machine will be readily understood. The spool being to the right and traveling toward the left, the point d^4 of the hook d will first enter to the right of the shuttle-thread to crowd the latter aside. Next the loop of the needle-thread is formed, as usual, and this loop is engaged by the hook d^7, Fig. 5. As the spool-holder completes its travel to the left and has reached the hook again on its backward journey, the latter has completed a half-revolution, and thus formed a loop of the needle-thread, through which the spool-holder is free to pass, Fig. 6. After the spool-holder has passed through the loop, the latter is drawn up by the needle to complete the stitch, as shown in Fig. 7.

The spool-holder, it will be observed, travels partly on a fixed shaft or spindle g and partly on a revolving shaft or spindle d^2. While on the revolving spindle it is by such spindle slightly revolved toward the operator, which opens the catch $e^9 f$ and permits the loop of the needle-thread to readily slip through the catch.

I claim as my invention—

1. The combination, in a sewing-machine, of a spool-holder with a catch e^9 at one end thereof, a spool-driver f', having arm f, that is embraced by said catch, a live-spindle d^2, revolved from the work-shaft, and a dead-spindle g, opposite thereto, on which the spool-holder is reciprocated by the driver, substantially as specified.

2. The combination, in a sewing-machine, of a tubular spool-holder with a bulged catch e^9 at one end, a spool-driver having arm f, embraced by said catch, a spool-retaining catch m at the opposite end of the spool-holder, and a tension device on its face, substantially as specified.

3. The combination, in a sewing-machine, of a reciprocating spool-holder with a revolving loop-taking hook composed of two arms d^5 d^6, diverging from apex d^4, and a hook d^7, secured to the inner edge of arm d^5 and facing in the same direction as apex d^4, substantially as specified.

4. The combination, in a sewing-machine, of a revolving hook and a reciprocating spool-holder with the following driving mechanism: pitman h^2, link h^4, crank h^5, hook-revolving shaft d^2, connected to said crank and with a spool-driver f', intermediate links i^2 i^3, rock-shaft i', having cheeks i, and an enlargement h^6 on pitman h^2, engaged by said cheeks, substantially as specified.

LEONARD MARCY.

Witnesses:
F. v. BRIESEN,
WM. WAGNER.