(No Model.) 2 Sheets—Sheet 1.

# J. B. SECOR.

## SEWING MACHINE.

No. 253,773. Patented Feb. 14, 1882.

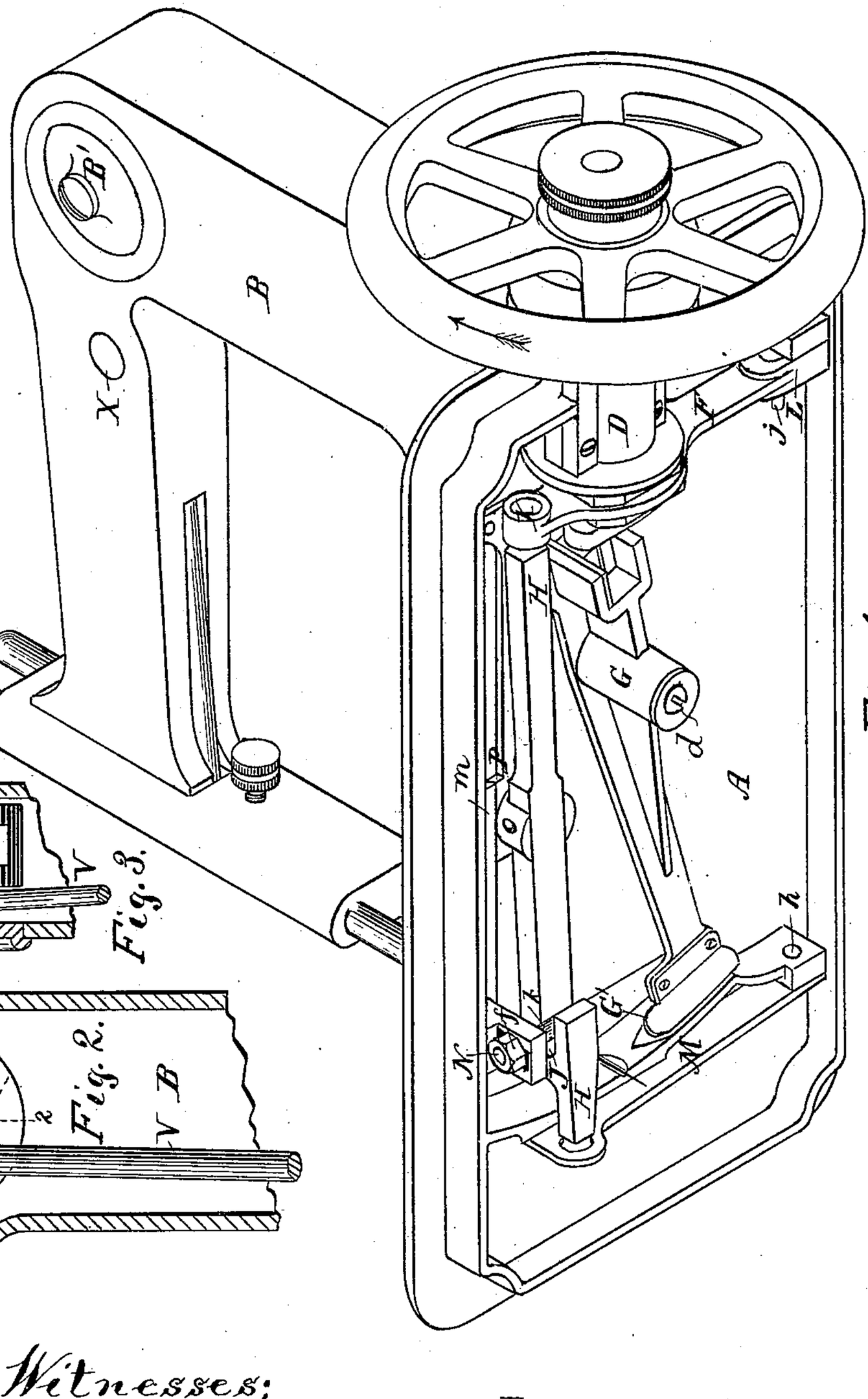


Fig. 1.

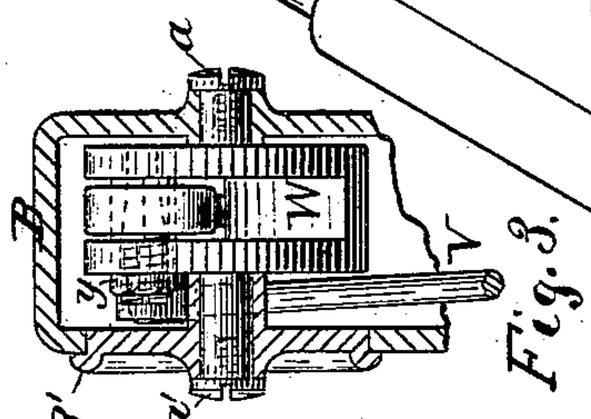


Fig. 3.

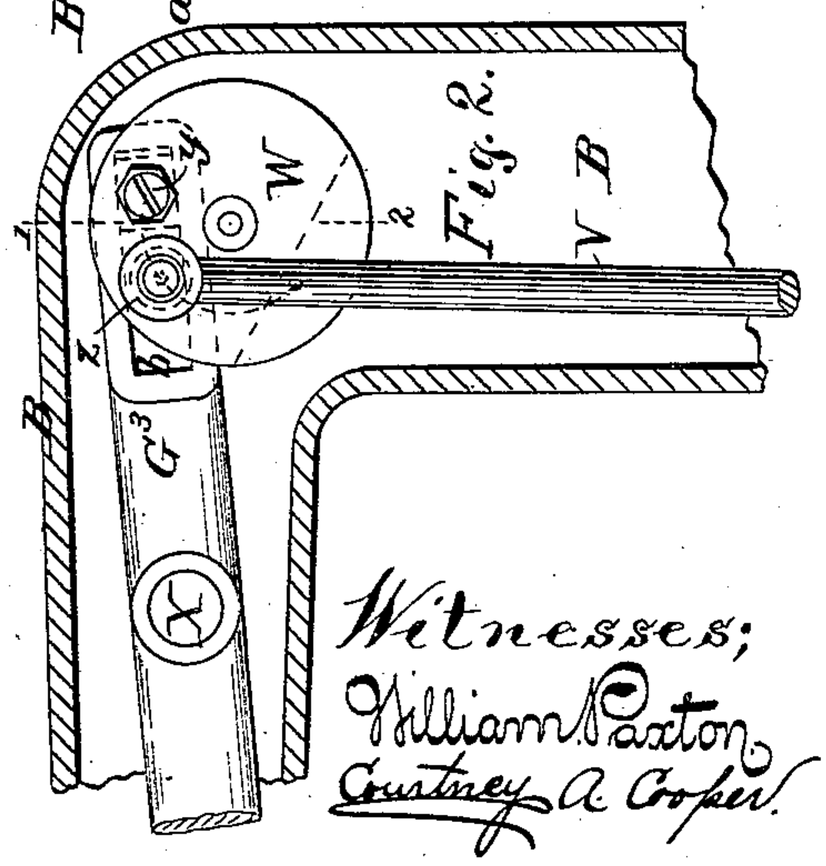


Fig. 2.

Witnesses;
William Paxton
Courtney A Cooper

Inventor;
Jerome B. Secor,
By his Attorney
Chas. E. Foster.

(No Model.)

2 Sheets—Sheet 2.

# J. B. SECOR.

## SEWING MACHINE.

No. 253,773. Patented Feb. 14, 1882.

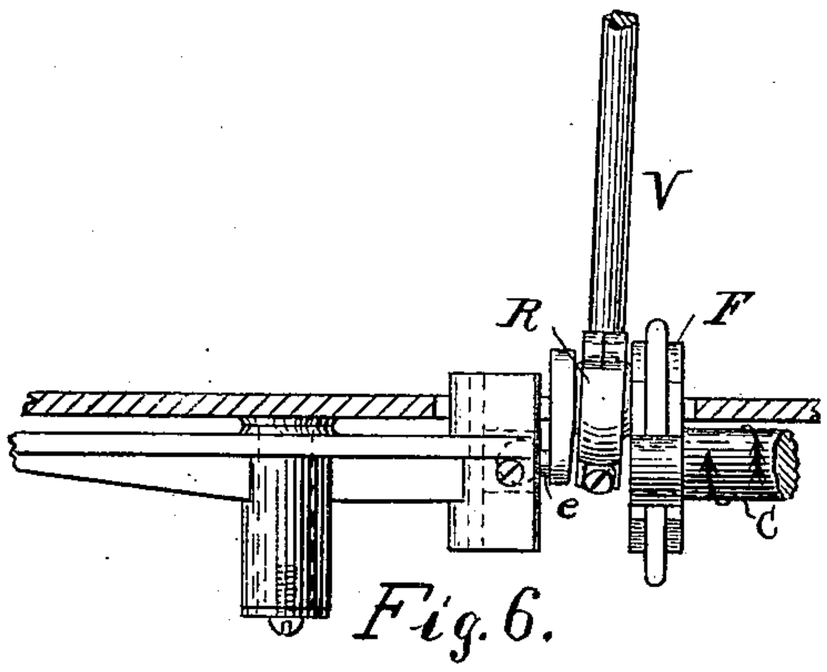


Fig. 6.

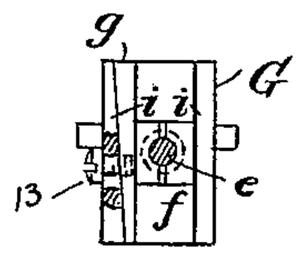


Fig. 8.

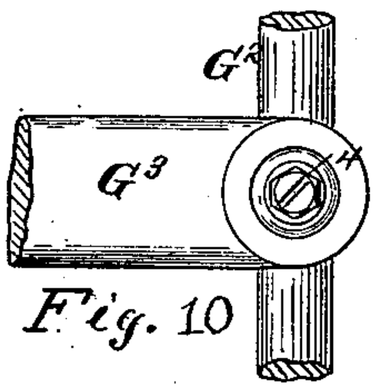


Fig. 10

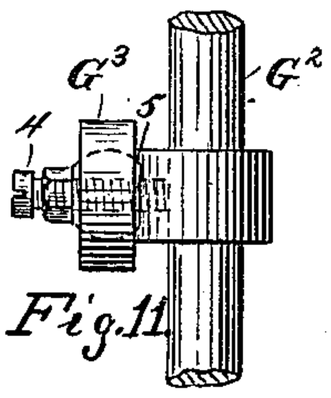


Fig. 11

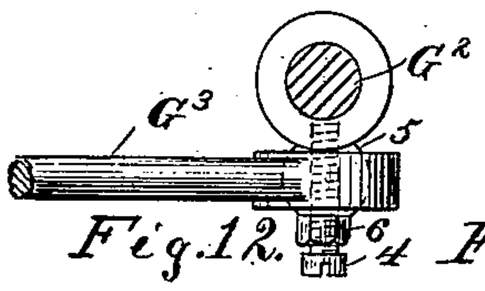


Fig. 12.

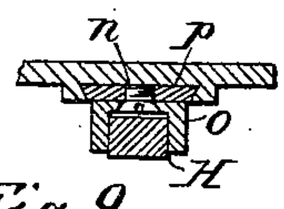


Fig. 9.

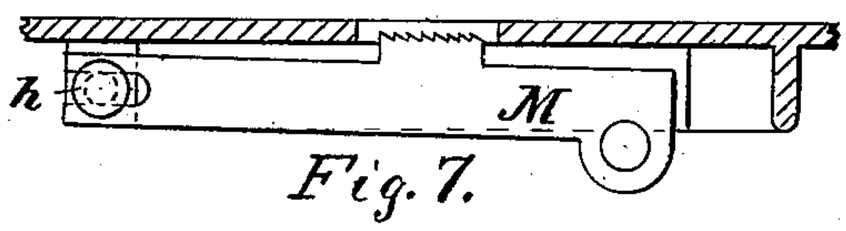


Fig. 7.

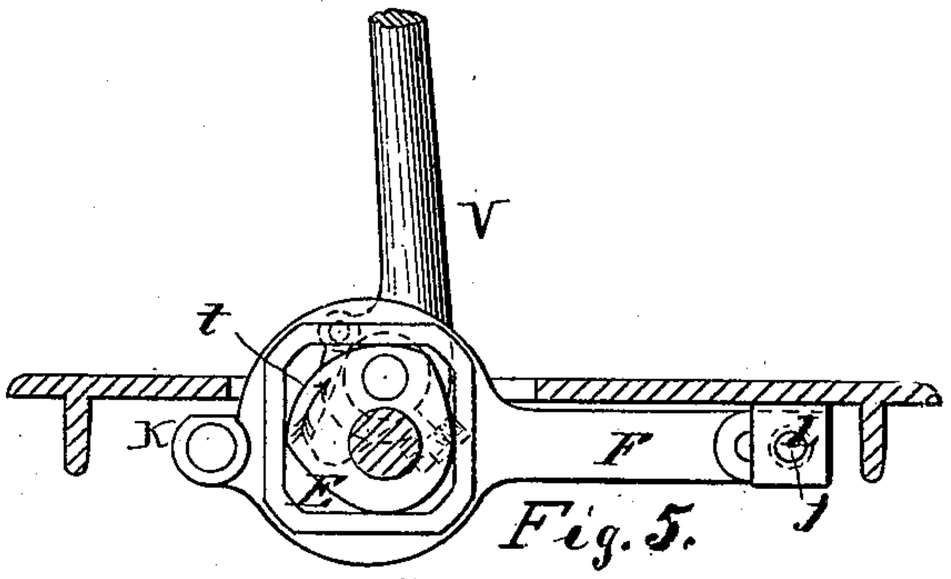


Fig. 5.

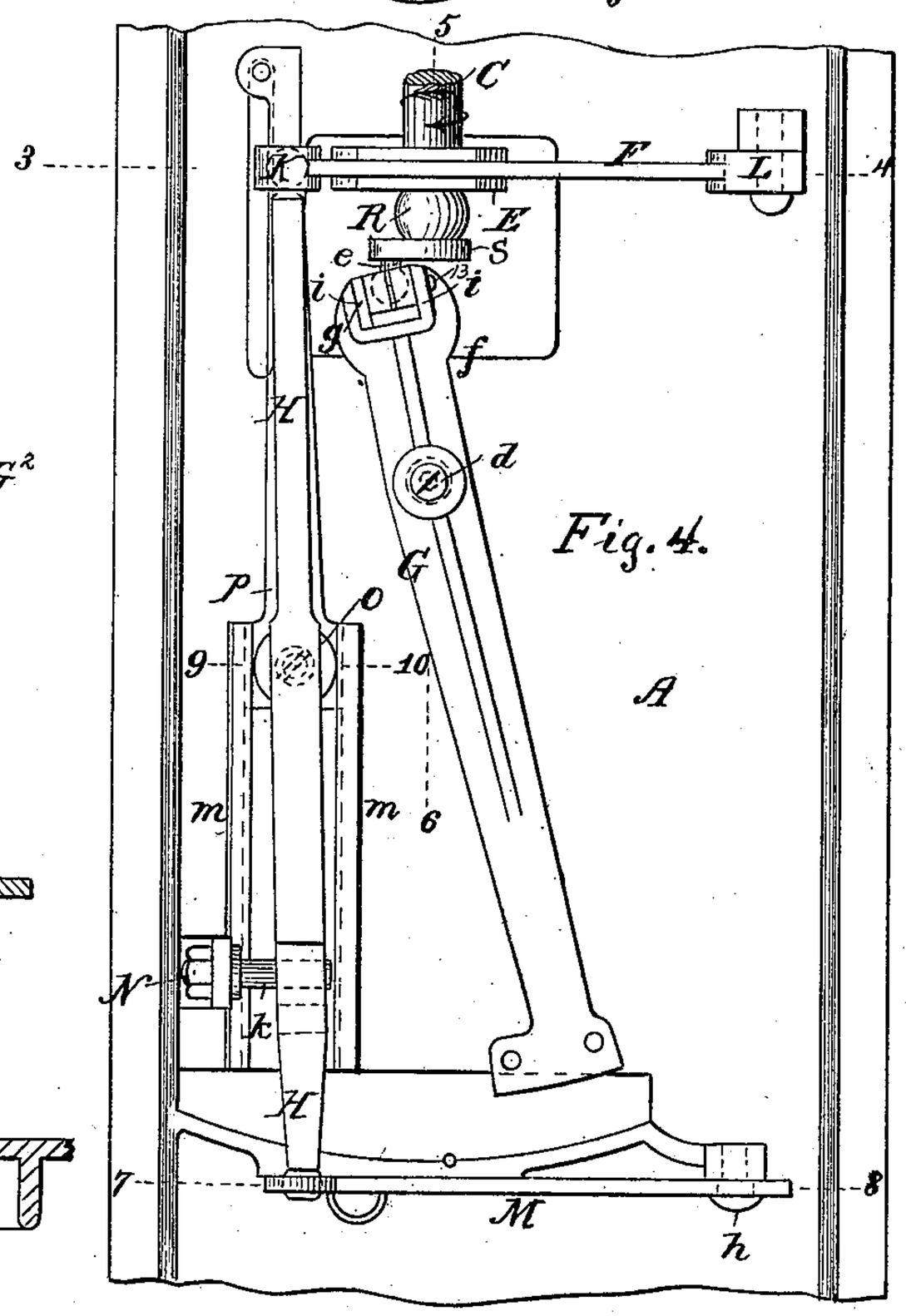


Fig. 4.

Witnesses;
William Paxton
Courtney A. Cooper

Inventor;
Jerome B. Secor,
by his Attorney
Chas. E. Foster.

# UNITED STATES PATENT OFFICE.

JEROME B. SECOR, OF BRIDGEPORT, CONNECTICUT.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 253,773, dated February 14, 1882.

Application filed September 17, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JEROME B. SECOR, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to that class of sewing-machines in which the stitches are made by two threads, carried one by a needle and the other by a shuttle; and my invention consists in certain improvements, fully described hereinafter, in the construction of the shuttle, needle, and feed-operating appliances.

In the drawings, Figure 1 is a perspective view, showing a sewing-machine with my improvements. Fig. 2 is a section of part of the overhanging arm, showing the connection of the needle-bar and driving-rod. Fig. 3 is a part section on the line 1 2, Fig. 2. Fig. 4 is an inverted plan. Fig. 5 is a part section on the line 3 4, Fig. 4. Fig. 6 is a part section on the line 5 6, Fig. 4. Fig. 7 is a part section on the line 7 8, Fig. 4. Fig. 8 is an end view of the shuttle-lever. Fig. 9 is a section on the line 9 10, Fig. 4; Figs. 10, 11, and 12, views illustrating the connection of the needle-lever and needle-bar.

A is the bed-plate; B, the overhanging arm; C, the driving-shaft projecting through the pillow-block D. G is the shuttle-lever; G′, the shuttle. $G^3$ is the needle-operating lever, vibrating on a fulcrum, *x*; $G^2$, the needle-bar; and H is the feed-lever.

The driving-shaft C carries a cam, E, and disk S, connected by a crank-pin, R, with a spherical surface adapted to form a ball-and-socket crank connected with an arm, V, which extends upward into the arm B, and is pivoted at the upper end to a pin, *z*, at the side of a disk, W, turning on pins *a a′*, the former extending through the side of the arm B and the latter through a detachable plate, B′, covering an opening in the arm, through which access may be had to the adjacent parts.

The disk W is slotted, and a pin, *y*, extends across the opening through a slot, *b*, at the end of the needle-bar-operating lever $G^3$.

The connection between the needle-lever and needle-bar is made by a pin, 4, on the needle-bar, carrying a sphere, 5, fitting a socket in the needle-bar lever, as shown in Figs. 10 to 12. This construction secures a direct connection between the needle bar and lever, and permits the play of the latter without lost motion, the needle-bar turning slightly as the lever vibrates. As the driving-shaft C is turned the rod V is reciprocated, rocking the crank-disk W, vibrating the lever $G^3$, and thus reciprocating the needle-bar.

The shuttle-lever G vibrates on a vertical pivot, *d*, and receives its motion from a spherical-headed crank-pin, *e*, on the disk S. The head of said pin fits between the two parts *i i* of a box sliding in a vertical slot, *f*, at the rear end of the lever G. A nice fit is secured and lost motion prevented and wear compensated for by making one side of the slot *f* inclined, and fitting thereto a wedge, *g*, as shown in Fig. 8, the adjustment of the wedge by means of a screw, 13, passing through a slot in the lever into the wedge, varying the width of the slot.

The feed-plate M slides at one end on a pin, *h*, extending through a slot in the plate, and the other end is socketed to receive the end of the feed-lever H, which has a transverse slot, through which passes a pin, *k*, Figs. 1 and 4, the said pin being vertically adjustable in a slotted stud, N, at the bottom of the base-plate. The rear end of the lever H is spherical and adapted to a socket in a lever, F, with a square opening, in which plays the cam E, and with a slot at the other end, through which passes a stationary pin, *j*, Figs. 1 and 5.

To an adjustable plate, P, sliding between guides *m m* at the under side of the base-plate, Figs. 1, 4, and 9, is pivoted by a pin, *n*, a stud, O, with a slot for the free passage of the lever H, which may thus slide through the stud, while the latter serves as a vertical pivot or fulcrum for the lever, determining the extent of the longitudinal movement of the feed-plate, while the pin *k* constitutes a horizontal fulcrum, on which the lever vibrates vertically, determining the vertical movement of the feed-plate. Both the vertical and horizontal vibrations of the lever H are derived from the lever F, which is thrown up and down and back and forth by

the cam E, and as the latter has an edge, *t*, which coincides with the periphery of a circle whose center is the axis of the cam, there will be a dwell after each movement, so as to insure four distinct motions of the feed-plate.

By the use of ball-and-socket connections between the different connected parts, as shown, I reduce the expense and liability to wear, and avoid the lost motion resulting when links or slots and pins are employed.

It will be seen that the crank-shaft C and the shuttle-lever G, which is driven from said shaft, are on the same horizontal plane. By this arrangement the thrust is reduced and a shorter crank required and a more even motion secured than would be the case if the parts were otherwise relatively arranged and connected, a different arrangement rendering more complicated connections necessary.

I claim—

1. The combination of the shaft C, spherical-ended crank-pin *e*, shuttle-lever G, arranged on the same horizontal plane as the shaft, having a vertical slot at the rear end, and a box adapted to receive the head of the crank-pin *e* and sliding in the slot of the lever, substantially as set forth.

2. The combination of the driving-shaft, its spherical crank R, slotted rock-disk W, rod V, connecting the disk and crank, and needle-bar lever slotted to receive a pin, *z*, extending across the slot of the disk, substantially as specified.

3. The shaft C, carrying the cam E, crank R, disk S, and crank-pin *e*, in combination with the needle-bar-operating appliances connected with the crank R, the feed device connected with the cam E, and the shuttle-lever connected with the crank-pin *e*, substantially as set forth.

4. The combination of the feed-plate M, sliding at one end on a pin, *h*, a lever, H, connected to the opposite end of said feed-plate, an adjustable horizontal fulcrum-pin, *k*, extending through a slot in the lever, a vertically-pivoted adjustable fulcrum-block, O, slotted for the passage of the lever, and appliances for vibrating the rear end of the lever vertically and horizontally, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JEROME B. SECOR.

Witnesses:
H. F. NORCROSS,
H. O. LUND.