

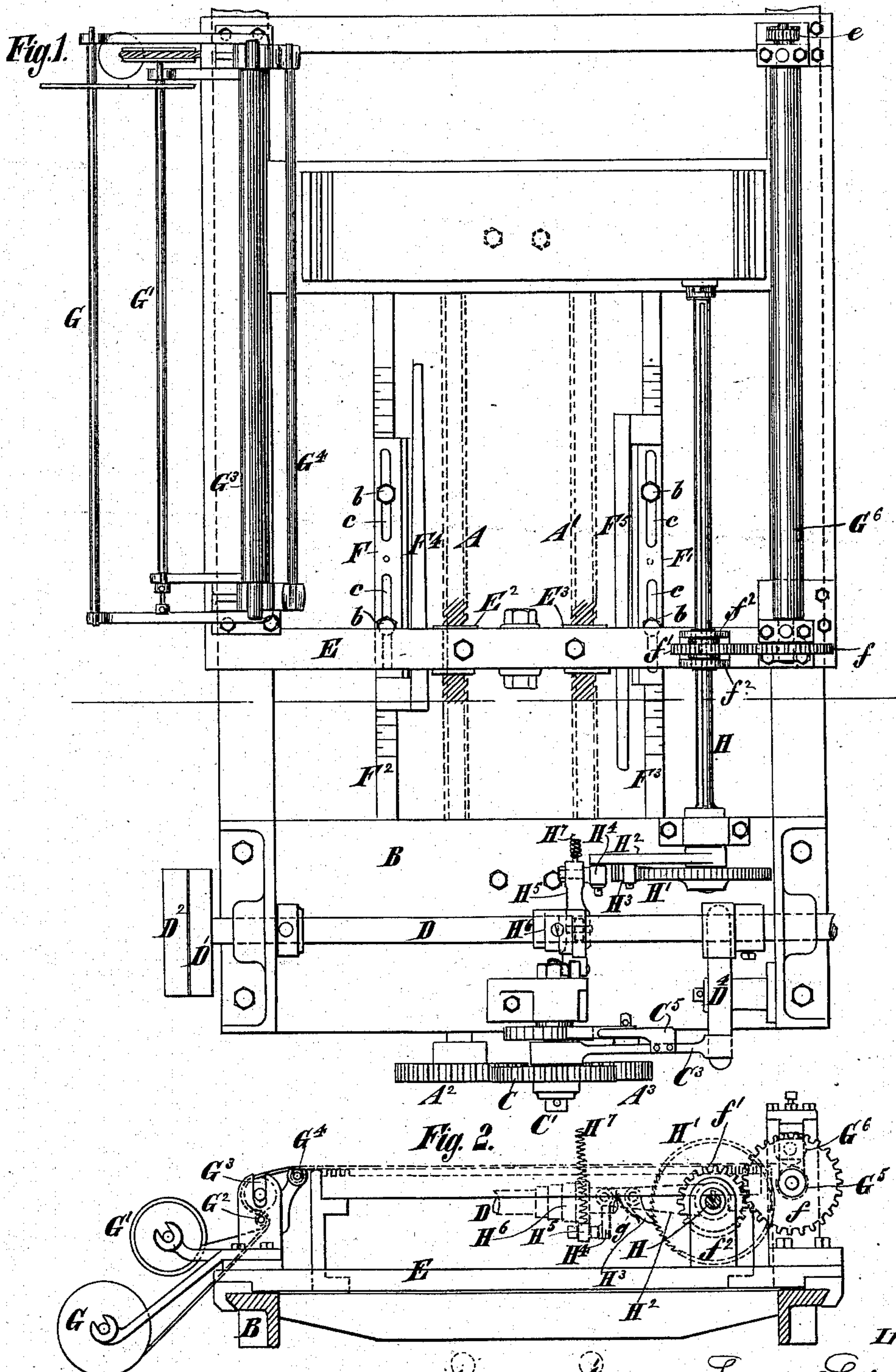
(No Model.)

3 Sheets—Sheet 1.


L. SCHULTZ.
MECHANICAL MOVEMENT.

No. 288,497.

Patented Nov. 13, 1883.



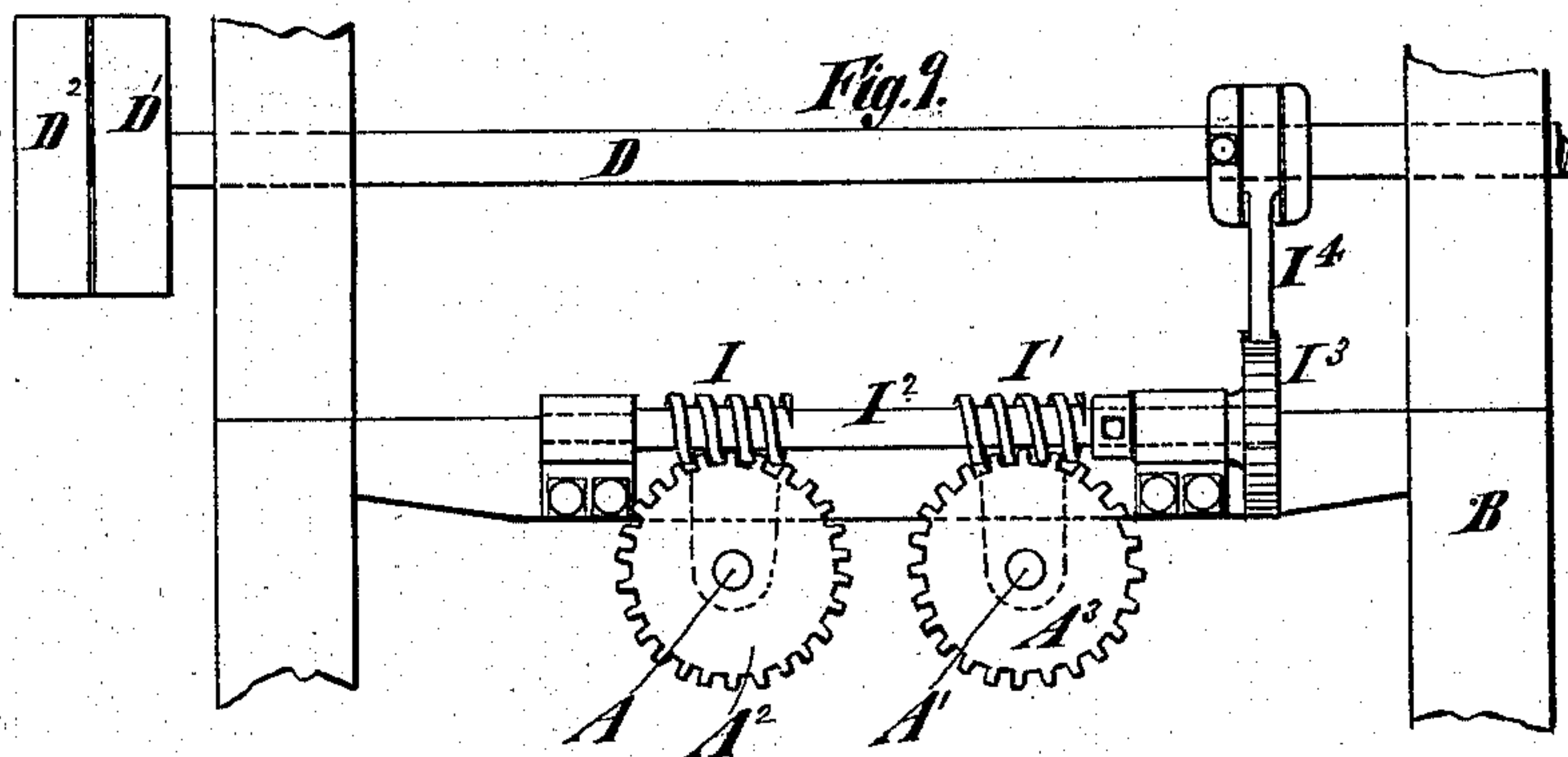
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3 Sheets—Sheet 3.

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Louis Schultz,
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Edwin H. Brown.

UNITED STATES PATENT OFFICE.

LOUIS SCHULTZ, OF NEW YORK, N. Y.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 288,497, dated November 13, 1883.

Application filed July 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, LOUIS SCHULTZ, of New York, in the county and State of New York, have invented a certain Improvement in Mechanical Movements, particularly applicable to quilting-machines, of which the following is a specification.

This improvement consists in a combination of parts, whereby there will be produced an alternately reverse motion, which is particularly adapted for moving a traveling work-carriage in a quilting-machine.

In the accompanying drawings, Figure 1 is a plan of a quilting-machine embodying my improvement, the needle-bar and shuttles and the mechanism for operating the same being removed. Fig. 2 is a transverse section of the same. Fig. 3 is a plan of a portion of the machine. Fig. 4 is an end view thereof. Fig. 5 is a transverse section of the same. Figs. 6 and 7 are detail views. Fig. 8 is a plan of a machine of modified form, and Fig. 9 is an end view of this modified machine.

Similar letters of reference designate corresponding parts in all the figures.

Referring first to Figs. 1, 2, 3, 4, 5, and 6, A A' designate two screw-threaded shafts or worms mounted in bearings in a stationary frame, B, and provided at one end with gear-wheels A² A³, whereby they are made to turn in unison, although in reverse directions. The gear-wheels A² A³ are shown of the same size; hence the screw-shafts will rotate at the same speed.

The gear-wheel A³ engages with a gear-wheel, C, mounted on a shaft, C', which is journaled on the frame B. The shaft C' has affixed to it a ratchet-wheel, C², and has hung loosely on it a lever, C³. To the lever C³ is pivoted a pawl, C⁴, which engages with the ratchet-wheel C², and is held in contact therewith by a spring, C⁵.

D designates the driving-shaft of the machine. It is journaled on the frame B, and provided with a driving-pulley, D', and idler-pulley D². Near one end it is provided with an eccentric, D³, which operates on one end of a lever, D⁴, that is fulcrumed between the ends, and at the other end operates against the under side of the free end of the lever C³. The eccentric D³ rocks the lever D⁴ once during each rotation of the driving-shaft, and the lever D⁴, by rocking the lever C³, causes the pawl C⁴ to move the ratchet-wheel C² one tooth

forward. An intermittent rotary motion is thus imparted to the screw-shafts A A'.

E designates a device which is moved alternately in reverse directions by the screws A A'. As shown, it is the traveling work-carriage of the quilting-machine, and it slides on the frame B as it travels. To its under side is fulcrumed, at about the middle of its length, a rocking beam, E', provided near the ends, on the under side, with semi-cylindric nuts E² E³. When this beam is rocked into one position, the nut E² is made to engage with the screw A, and when the beam is rocked into the reverse position the nut E³ is made to engage with the screw A'.

F F' are rails whereby the ends of the beam E' are held in such positions that one of the nuts will be engaged with one of the screw-shafts and the other nut will be disengaged from the other screw-shaft. These rails are mounted on bars F² F³, which are supported by the frame B of the machine. The rails are secured to the bars by screws b, passing through slots c in the rails and entering the bars; hence the rails may be adjusted lengthwise of the bars.

The rails F² F³ are provided with push-pieces F⁴ F⁵, severally consisting of springs adapted to impinge upon the rocking beam E' at different points in its travel. The push-pieces are fastened to reverse ends of the rails F² F³, and extend beyond the rails on which they are fastened. Their free ends extend downwardly below the rails. When one of the nuts of the rocking beam is engaged with its screw-shaft, the end of the rocking beam adjacent to that nut bears against the under side of its rail, and the other end of the rocking beam bears against the upper side of the other rail. In these positions the ends of the rocking beam ride along the rails to the ends thereof, and when they pass beyond the rails they are reversed, and then the beam travels in the reverse direction. The reversal of the rocking beam is effected by the push-pieces F⁴ F⁵. As these push-pieces are fastened to the top of the rails F² F³, they are, at the ends which are secured to the rails, much higher than the rocking beam, although at the free ends they are even lower than any part of the rails. As the rocking beam travels along, its end which is above the adjacent rail always moves toward the free end of the push-piece belonging

to that rail, and the end of the beam which is below the adjacent rail moves toward the end of the push-piece belonging to that rail which is fastened to the push-piece, and consequently toward the higher end of the push-piece. Owing to this, when the rocking beam passes beyond the rails, one push-piece has a tendency to and does depress the end which was the higher during its last preceding movement, and the other push-piece at that time exerts no influence upon the rocking beam; hence it is reversed. By shifting the rails farther apart or nearer together, the length of the travel of the rocking beam, and consequently that of the carriage, may be varied to suit fabrics of different widths. The rails may be adjusted by means of scales marked on the bars upon which the rails are mounted.

G designates a roller on which cotton-batting is wound, and G' designates a roller on which silk or other fabric is wound. These rollers are journaled in arms extending from the back of the carriage. The batting and silk or other fabric, leaving the rollers on which they are wound, pass between rollers G² G³, and then over a roller, G⁴, between the needles and shuttles, and between the feed-rollers G⁵ G⁶.

The feed-rollers G⁵ G⁶ are at one end provided with gear-wheels *e*, engaging with each other, and whereby the rollers are caused to travel at the same rate of speed. At the opposite end the roller G⁵ is furnished with a gear-wheel, *f*, which engages with a gear-wheel, *f'*, that is arranged between standards *f*² upon a shaft, H. This shaft is journaled in the frame B. The gear-wheel *f'* is secured to the shaft H by a feather on the latter, and while it will always be turned when the shaft is rotated, it can move lengthwise of the shaft with the carriage.

On one end of the shaft H is rigidly affixed a ratchet-wheel, H', and close to this ratchet-wheel an arm, H², is loosely hung on the shaft. On the arm H² is pivoted a pawl, H³, which is held in engagement with the ratchet-wheel H' by a spring, *g*. The arm H² is connected at the free end by a link or rod, H⁴, to one end of a lever, H⁵, which at the other end is fulcrumed on the frame B of the machine.

On the shaft D is a stepped eccentric or cam, H⁶, which operates upon the lever H⁵. This eccentric or cam may be shifted into such positions along the shaft D that portions of different diameter may act upon the lever H⁵, so as to swing it different distances. A spring, H⁷, connected to the lever H⁵ or to the arm H² and to an upper fixture, raises the arm and lever, so as to draw the pawl H³ back over the teeth of the ratchet-wheel H' when the eccentric or cam H⁶ allows of this. When the eccentric or cam depresses the lever, it causes the pawl to turn the ratchet-wheel. By this mechanism an intermittent motion is transmitted from the driving-shaft D to the feed-rollers G⁵ G⁶, and provision is afforded for

varying the extent of this movement by adjusting the eccentric or cam H⁶, so that it will produce a greater or less throw of the pawl H³.

Turning now to Figs. 8 and 9, the screw-shafts A A' here have their screw-threads reversed, and are turned in reverse directions. Their gear-wheels A² A³ are made in the form of worm gear-wheels, and engage with worms I I' on a shaft, I². The shaft I² is provided with a ratchet-wheel, I³, which is turned intermittently by a pawl, I⁴, which is mounted on an eccentric, I⁵, affixed to the driving-shaft. The other parts of this machine are like the corresponding parts of the machine first described.

I have omitted to show the needle-bar, needles, shuttles, and the mechanism whereby these parts are operated, because they form no part of this improvement.

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

1. The combination, with two screws, a rocking beam provided with nuts adapted to engage with the screws, and means for driving the screws so that they will reciprocate the beam, of means for rocking the beam, substantially as specified.

2. The combination, with two screws, a rocking beam provided with nuts adapted to engage with the screws, and means for driving the screws so that they will reciprocate the beam, of push-pieces for rocking the beam, and rails for holding the beam in positions to which it may be rocked during times in which it is to be reciprocated by the screws, substantially as specified.

3. The combination, with two screws, a rocking beam provided with nuts adapted to engage with the screws, and means for driving the screws so that they will reciprocate the beam, of push-pieces for rocking the beam, and rails serving to hold the beam in positions to which it may be rocked, and adapted to be adjusted lengthwise to vary the distances that the beam will be reciprocated, substantially as specified.

4. The combination, with two screws, a rocking beam provided with nuts adapted to engage with the screws, and means for driving the screws so that they will reciprocate the beam, of push-pieces for rocking the beam, and rails supported on bars and serving to hold the beam in positions to which it may be rocked, and adapted to be adjusted lengthwise with reference to scales on the bars, substantially as and for the purpose specified.

5. The combination of two screws, a rocking beam provided with nuts adapted to engage with the screws, and means for rotating the screws intermittently, so that they will reciprocate the beam, and means for rocking the beam, substantially as specified.

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