

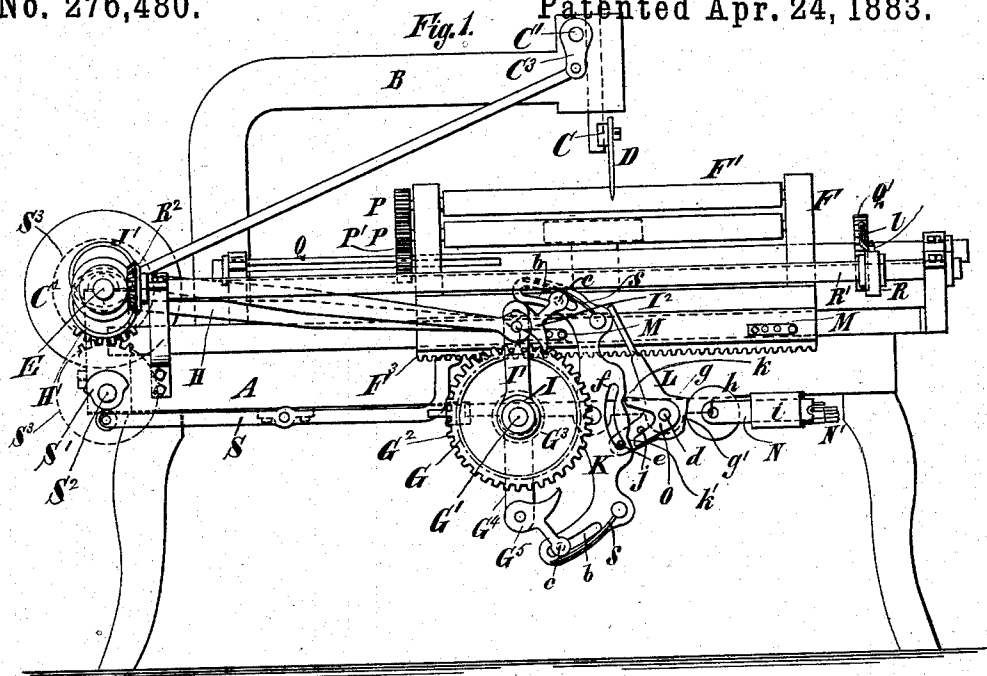
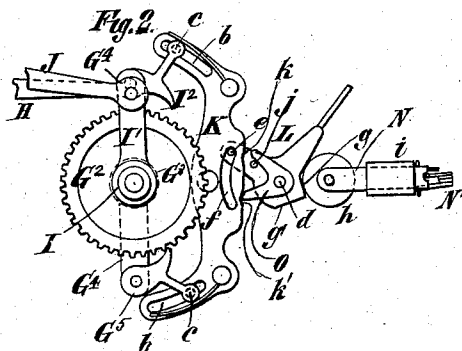
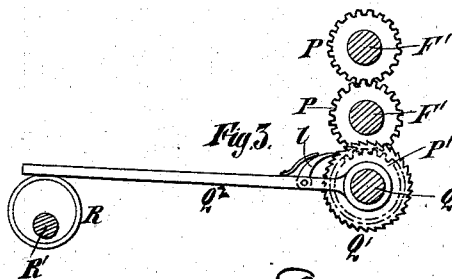
(No Model.)

2 Sheets—Sheet 1.

L. SCHULTZ.
QUILTING MACHINE.

No. 276,480.

Patented Apr. 24, 1883.



Witnesses:

James K. Bowen.
Alfred L. Brown.

Inventor:

Louis Schultz
by his attorney,
Edwin H. Brown.

(No Model.)

2 Sheets—Sheet 2.

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Fig 4.

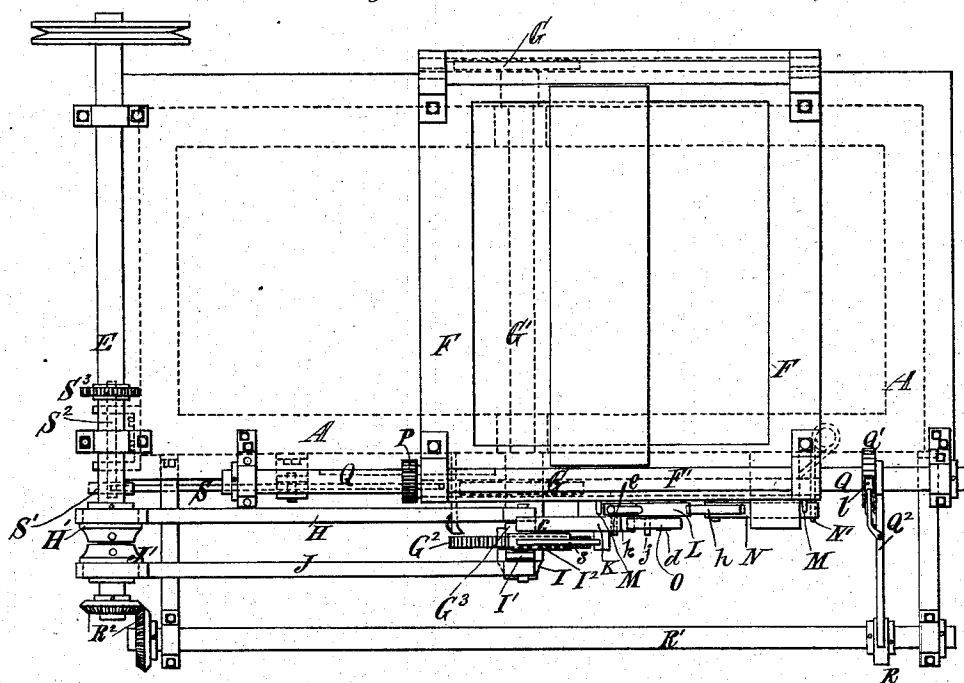
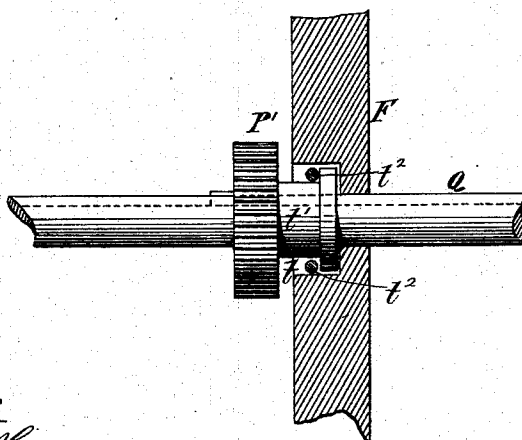


Fig 5.



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UNITED STATES PATENT OFFICE.

LOUIS SCHULTZ, OF NEW YORK, N. Y.

QUILTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 276,480, dated April 24, 1883.

Application filed October 28, 1882. (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 new and useful Improvement in Quilting-Machines, of which the following is a specification.

My improvement consists in a novel combination of parts which are particularly applicable for transmitting the rotary motion of a driving-shaft into an intermittent reversed rotary motion of another shaft, or into reciprocating movements of the work-supporting carriage of a quilting-machine.

The improvement also consists in the combination, with an intermittently-reciprocating work-carriage, of means for locking it during the intervals between its movements.

The improvement also consists in novel means for imparting an intermittent rotary movement to feed-rollers with which such a work-carriage is provided.

In the accompanying drawings, Figure 1 is an end elevation of a quilting-machine embodying my improvement. Fig. 2 is a similar view of certain parts of the machine in a different position. Fig. 3 is a vertical section illustrating the mechanism for driving the feed-rollers. Fig. 4 is a plan of the machine, and Fig. 5 is a detail view, hereinafter described.

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

A designates the frame of the machine. B designates an arm extending therefrom and supporting a bar, C, which carries a row of needles, D, and is susceptible of an up-and-down reciprocating movement. As shown, the needle-bar derives motion from arms extending to it from a rock-shaft, C'. Motion is imparted to the rock-shaft by means of an eccentric, C², which has fitted to it a rod that is connected to an arm, C³, on the rock-shaft. The shaft E, on which the eccentric C² is mounted, constitutes the driving-shaft of the machine. If shuttles are employed, they may be operated in any suitable manner.

F designates a carriage for the work. It is provided with a pair of feed-rollers, F', and also with a pair of guide-rollers. These feed-rollers move the fabric or material to be quilted across the carriage, and the carriage simultaneously moves across the frame of the machine in a direction at right angles to the

direction in which the material to be quilted is moved across the carriage. The resultant movement of the work is oblique to the length of the row of needles.

I will now proceed to describe the mechanism whereby the carriage and the feed-rollers are operated.

The carriage is provided on the under side with a toothed rack, F³, with which engages a gear-wheel, G, secured upon a shaft, G'. The wheel G constitutes a driver-wheel for operating the carriage. The shaft G' is also provided with a wheel, G², which is likewise secured to it and has square or flat-sided teeth, so that it may be rotated by pawls in either direction.

G³ designates a collar fitting loosely on the shaft G', behind the wheel G², and provided with arms G⁴. To the lower arm G⁴ is pivoted a pawl, G⁵, which is adapted to engage with and operate the wheel G². The upper arm G⁴ is connected to a rod, H, which is reciprocated by an eccentric, H', on the shaft E. Preferably this upper arm G⁴ is slotted where the rod H is connected to it, so that the connection may be made nearer to or farther from the shaft G' in order to vary the traverse which the arm and pawl derive from the rod.

I designates a collar fitted loosely on the shaft G' in front of the wheel G². It is provided with an arm, I', to which is pivoted a pawl, I², that is adapted to engage with the wheel G². This pawl I² is designed to rotate the wheel G² in a reverse direction from that in which it will be moved by the pawl G⁵. A rod, J, is connected to the arm I', and is reciprocated by an eccentric, J', which is mounted on the shaft E, and, as here shown, is set reversely to the eccentric H'. The arm I' is preferably slotted, so that the rod J may be connected to it at points nearer to or farther from the shaft G' to vary the traverse of the arm and pawl. On the extent of the traverse of the pawls depends the amount of motion which the wheel G² derives from them. Wheels similar to the wheel G², but having their teeth differently spaced, may be used to suit different traverses of the pawls, if desirable.

K designates a reversing device fulcrumed between the ends to a stud extending from the frame of the machine, at one side of the shaft

G', and having its ends extending toward the said shaft. Its end portions have slots *b*, which receive arms or pins *c*, arranged on the pawls G⁵ I². When this reversing device is shifted into one position it will raise one of the pawls away from the wheel G² and allow the other to operate on said wheel, and when it is shifted into its other position it will render operative that pawl which before was inoperative and render the other pawl inoperative. The slots *b* are made considerably wider than the diameter of the pins *c*, so as to allow the pawls to play over the teeth of the wheel G². Springs *s* impel the pawls toward the wheel.

L is a bell-crank or elbow-lever, which is fulcrumed between the ends to a stud, *d*, extending from the frame of the machine. The lower arm is provided with a pin, *e*, which works in a slot, *f*, in the reversing device K, and the upper arm extends up into proximity with the end of the carriage. Tappets or pins M on the end of the carriage come in contact with the upper arm of this lever and move it aside, so that its lower arm will shift the reversing device K from one position into another. These tappets or pins M are detachably secured to the carriage, so that they may be arranged in different positions. As they will operate sooner or later upon the lever L, according to their position on the carriage, the extent of the traverse of the carriage may obviously be varied by changing the position of the said tappets or pins. The lever L is provided with cam-faces *g g'*, against one or the other of which, according to the position of the lever, a locking-bolt, N, impinges. This locking-bolt is employed to prevent the accidental shifting of the said lever L. Its end is preferably provided with an anti-friction roller, *h*. This bolt slides in a bearing, *i*, toward and from the lever L, and is impelled toward the latter by a spring, N'. When the lever is shifted into one position the cam-face against which the bolt previously impinged forces it back and passes it, whereupon the bolt moves forward against the other cam-face.

Preferably I employ, in conjunction with the reversing device K, a dog for securing it against accidental movement. Such a dog, O, is here shown as mounted on the lever L. It has two arms, and is pivoted between the arms to the said lever and shifted by a pin, *j*, on the lever acting on the arms. One or other of its arms engages with a shoulder, *k* or *k'*, on the reversing device, according to the position of the reversing device and the lever L, and thereby holds the lever against accidental displacement. It will have been seen that the motion imparted to the carriage in each direction is an intermittent motion, owing to the action of the pawls.

I will now explain the mechanism whereby the feed-rollers F' of the carriage are operated. These two feed-rollers are geared together by wheels P, and the lower derives motion from a gear-wheel, P', on a shaft, Q. The gear-wheel P' engages with a groove or feather in

the shaft Q, and is connected with the carriage, so as to move along the said shaft in accordance with the traverse of the carriage. The means shown for connecting it consists of a hub upon the gear-wheel fitting in a recess, *t*, in one of the side frames of the carriage F, and having a circumferential groove, *t'*, on that portion which extends into the recess, and serving to receive pins *t''*, which pass through the recess and enter the groove. This connection is shown clearly in Fig. 5. On the shaft Q is a ratchet-wheel, Q'. A lever, Q'', is hung on this shaft, and carries a pawl, *l*, which engages with the said ratchet-wheel. This lever is swung up and down by means of an eccentric, R, on a shaft, R', which is driven by miter-wheels R² from the shaft E.

To prevent any accidental movement of the carriage I preferably provide means for locking it between the intermittent motions which are imparted to it. I have shown for this purpose a bell-crank or elbow-lever, S, fulcrumed to the frame of the machine under the carriage, and so that when one arm is swung up and down the other will intermittently bite and lock the carriage. The means shown for operating this lever consist of a cam or eccentric, S', on a shaft, S², which derives motion, through gear-wheels S³, from the shaft E. This eccentric is so set that the lever S will lock the carriage when the operative pawl G⁵ or I² is receding, and release the carriage when such pawl is imparting motion to the wheel G². A friction-brake acting on the wheel G² may be used, in lieu of this mechanism, for locking the carriage.

The new mechanical movement for converting rotary motion into reversed rotary movements or reciprocating motion may be found applicable in various machines other than quilting-machines, and I therefore desire to claim it broadly for all possible uses.

In lieu of providing the periphery of the wheel G² with teeth, it may have a plain surface, and then dogs can be used in lieu of the pawls G⁵ I². In any case such wheel may be regarded as a driver-wheel for the shaft to which it is affixed.

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

1. The combination, with a shaft, of a wheel affixed thereto, arms mounted loosely on the shaft, and carrying pawls or dogs adapted to impart motion to the wheel in different directions, a reversing device which will render one pawl or dog operative, and at the same time render the other inoperative, rods connected directly with said arms, and serving to transmit to them a vibratory movement, a driver-wheel, also mounted on said shaft, and a carriage deriving motion from said driver-wheel, substantially as specified.

2. The combination, with a carriage provided with a toothed rack, of a shaft provided with a gear-wheel engaging with the rack and having a driving-wheel affixed to it, arms mounted loosely on the shaft and carrying pawls or dogs

adapted to impart motion to the driving-wheel in different directions, a reversing device which will render one pawl or dog operative and the other pawl or dog inoperative simultaneously, and means for rocking the said arms, substantially as specified.

3. The combination, with a shaft having a toothed wheel affixed to it, of arms loosely mounted on the shaft and carrying pawls or dogs adapted to impart motion to the wheel in opposite directions, the reversing device pivoted between its ends, and having its ends connected with the pawls or dogs, means for rocking or vibrating said arms, and means, operated by tappets on the carriage, for shifting said reversing device, substantially as specified.

4. The combination, with a shaft having a toothed wheel affixed to it, of arms loosely mounted on the shaft and carrying pawls or dogs adapted to impart motion to the wheel in opposite directions, the reversing device pivoted between its ends, and having its ends connected with the pawls or dogs, the dog O', for holding the reversing device after shifting, and means for vibrating said arms and rocking or shifting said reversing device, substantially as specified.

5. The combination, with a shaft having a wheel affixed to it, of arms loosely mounted on the shaft and carrying pawls or dogs adapted to impart motion to the wheel in opposite directions, the reversing device K, and the lever L, substantially as specified.

6. The combination, with a carriage provided with a toothed rack, and a shaft provided with a gear-wheel engaging with the rack for imparting motion to the carriage, and having a driving-wheel affixed to it, of arms loosely mounted on the shaft and carrying pawls or dogs for imparting motion to the driving-wheel in opposite directions, a reversing device, tappets on the carriage for shifting the reversing device, and means for rocking the said arms, substantially as specified.

7. The combination, with a carriage provided with a toothed rack, and a shaft provided with a gear-wheel engaging with such rack, so as to impart motion to the carriage, and having a driving-wheel affixed to it, of arms loosely

mounted on the shaft and carrying pawls or dogs for imparting motion to the driving-wheel in opposite directions, a reversing device, tappets detachably connected to the carriage for shifting the reversing device, and means for rocking the said arms, substantially as specified.

8. The combination, with a carriage provided with a toothed rack, and a shaft provided with a gear-wheel engaging with such rack and having a driving-wheel affixed to it, of arms loosely mounted on the shaft, and carrying pawls or dogs for imparting motion to the driving-wheel in opposite directions, the reversing device K, the lever L, and the tappets M, substantially as specified.

9. The combination, with a shaft having a wheel affixed to it, of arms carrying pawls or dogs for imparting motion to the wheel in reverse directions, the reversing device K, the lever L, and the locking bolt N, substantially as specified.

10. The combination, with a carriage and mechanism for imparting an intermittent reciprocating motion to it, of means for locking the carriage during the intervals between its movements, substantially as specified.

11. The combination, with a carriage and mechanism for imparting an intermittent reciprocating motion to it, of the lever S, the eccentric S', and shaft S², substantially as specified.

12. The combination, with a work-supporting carriage and mechanism for imparting an intermittent reciprocating motion to it, of feed-rollers for the work, a gear-wheel on one of them, a gear-wheel imparting motion thereto, and adapted to slide along a shaft on which it is arranged, a ratchet-wheel on this shaft, a lever and pawl for imparting an intermittent rotary movement to the shaft, and an eccentric mounted on another shaft and serving to operate the said lever, substantially as specified.

LOUIS SCHULTZ.

Witnesses:

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