No. 645,555. Patented Mar. 20, 1900.

P. DIEHL.

FEEDING MECHANISM FOR SEWING MACHINES.

(Application filed June 3, 1899.)

(No Model.)

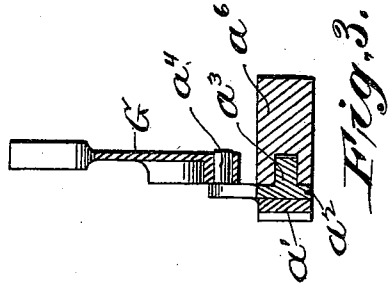


Fig. 3.

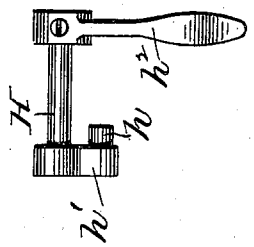


Fig. 4.

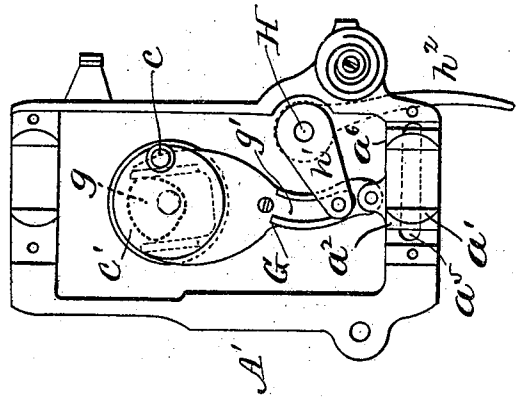


Fig. 2.

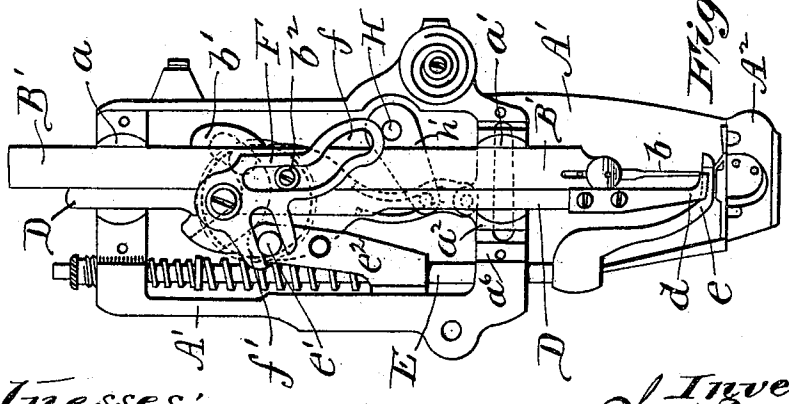


Fig. 1.

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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 645,555, dated March 20, 1900.

Application filed June 3, 1899. Serial No. 719,182. (No model.)

To all whom it may concern:

Be it known that I, PHILIP DIEHL, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Feeding Mechanism for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to that class of feeding mechanisms for sewing-machines in which the work is fed by the needle carried by a swinging and reciprocating needle-bar with the assistance of a helper-bar serving as an auxiliary feeding device and also as an auxiliary presser-bar, the object of the invention being to provide a feeding mechanism of this kind which will be effective, reliable, and positive in operation.

In the accompanying drawings, Figure 1 is a front end view, with the face-plate removed, of the head of a sewing-machine embodying the invention. Fig. 2 is a similar but partial view with the needle and helper bars removed. Fig. 3 is a detail view showing the feed-slide and its operating-lever, and Fig. 4 is a detail view of the feed-regulating device.

The present invention is shown as being applied to the form of sewing-machines embraced by my United States Patent No. 612,409, of October 18, 1898, in which the work-support A^2 is on the depending front end portion of the head A′ at the forward end of the bracket-arm; but it will be understood, of course, that the invention is adapted for use in other kinds of sewing-machines in which a needle-feed is desirable. The needle-bar B′, carrying the needle *b*, is provided with a heart-cam cross-head *b′*, entered by a crank-pin or roller-stud *c* on the crank-disk *c′* at the forward end of the driving-shaft.

D is the helper-bar or auxiliary presser-bar, carrying the feeding presser-foot *d*, and E is the main presser-bar, provided with the presser-foot *e*. To the helper-bar D is pivotally attached the lever F, having a cam-slot *f*, entered by a pin or roller-stud b^2 on the needle-bar, said lever having a forked arm *f′*, engaging a pin *e′* on an arm or bracket e^2, attached to the presser-bar E, said lever F serving to impart alternating up and down movements to the presser-bar and helper-bar, so that they will be alternately lifted and depressed in a well-known manner.

The needle and helper bars have their upper bearings in an oscillating cheek-block *a*, mounted in the upper part of the head A′, and said bars have their lower bearings in a second oscillating cheek-block *a′*, mounted in a horizontally-movable feed-slide block or feed-bar a^3, provided with a rib a^3, entering a horizontal groove a^5 in a cross-bar a^6 of the head A′.

G is the feed-lever, pivotally supported by a pin a^4, with which the feed-slide a^2 is provided, said feed-lever being forked at its upper end to embrace a feed-cam *g* at the forward part of the driving-shaft and behind the crank-disk *c′*, said lever having a slot *g′*, entered by a pin *h* on a feed-regulating arm *h′*, attached to a small shaft H, having a second arm or handle h^2, by which its position may be changed to regulate the feed. The pin *h* serves as an adjustable fulcrum for the feed-lever G, and by raising or lowering said pin in the slot *g′* of said lever the horizontal throw of the feed-slide block or feed-bar a^2 may be lengthened or shortened to lengthen the horizontal or feeding movements of the needle and helper bars embraced by the oscillating cheek-block *a′*, mounted in said feed-slide block or feed-bar, as will be readily understood.

The feed-regulating device is in the present instance retained in any desired position of adjustment simply by friction, the shaft H being fitted somewhat snugly in its bearing.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a needle-feed sewing-machine, the combination with a needle-bar provided with a pin or roller-stud, of a main presser-bar, a helper-bar or auxiliary presser-bar, a lever connecting said presser and helper bars and provided with a cam-slot entered by said roller-stud on said needle-bar, a horizontally-movable feed-slide block provided with an oscillating cheek-block embracing said needle and helper bars, a feed-lever having a

pivotal connection with and being thus sustained by said feed-slide block, and a cam for operating said feed-lever.

2. In a needle-feed sewing-machine, the combination with the needle-bar and helper-bar and means for giving the same their vertical movements, of a horizontally-movable feed-block through which said needle and helper bars have their vertical movements, a feed-cam, a slotted feed-lever pivoted at one end to said feed-block and provided at its other end with means for positively engaging said feed-cam, and a swinging feed-regulating arm provided with a fulcrum-pin entering the slot in said feed-lever, so that by varying the position of said fulcrum-pin the feeding movements of the said needle and helper bars may be regulated.

3. In a needle-feed sewing-machine, the combination with the machine-head having a horizontal cross bar or portion, as a^6, provided with a slot or recess, of a horizontally-movable feed-block a portion of which extends into and is adapted to slide in said recess, a needle-bar and a helper-bar both of which are vertically movable through said feed-block, a feed-cam, a feed-lever pivotally connected with said feed-block and an adjustable fulcrum for said feed-lever.

4. In a needle-feed sewing-machine, the combination with a needle-bar, a helper-bar, a presser-bar and means for alternately raising and lowering said helper and presser bars and for operating said needle-bar, of a feed-slide block provided with an oscillating cheek-block embracing said needle and helper bars, a feed-lever pivotally connected with said feed-slide block and provided with a slot, a cam for operating said feed-lever, and a swinging feed-regulating arm provided with an adjustable fulcrum-pin entering said slot in said feed-lever; so that by varying the position of said fulcrum-pin the feeding movements of the needle and helper bars may be regulated.

In testimony whereof I affix my signature in the presence of two witnesses.

PHILIP DIEHL.

Witnesses:
HENRY J. MILLER,
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