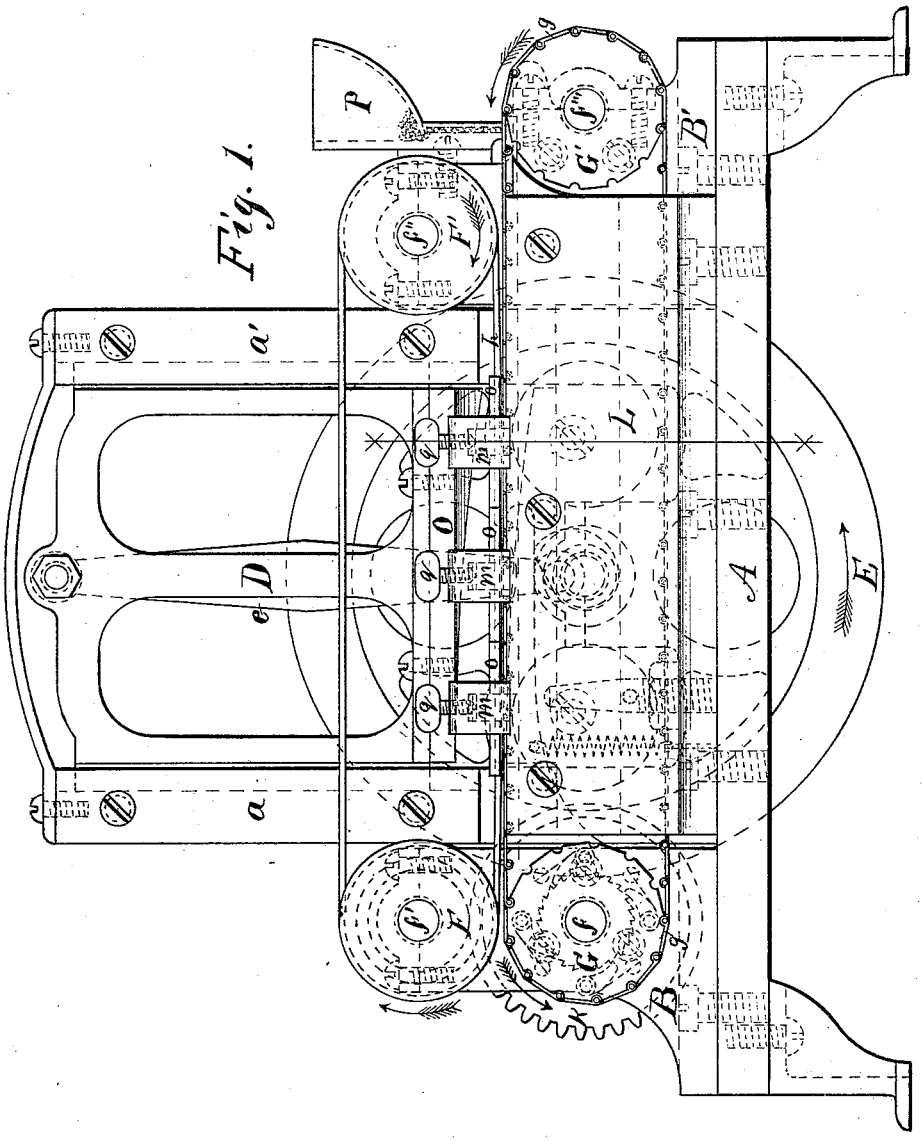
3 Sheets—Sheet I.

R. THOMPSON & P. M. BEERS.

MACHINE FOR STRAIGHTENING SEWING-MACHINE NEEDLES.

No. 191,085. Patented May 22, 1877.

Fig. 1.



Witnesses;
Jamey Gilbert
Ashbel E. Bartram

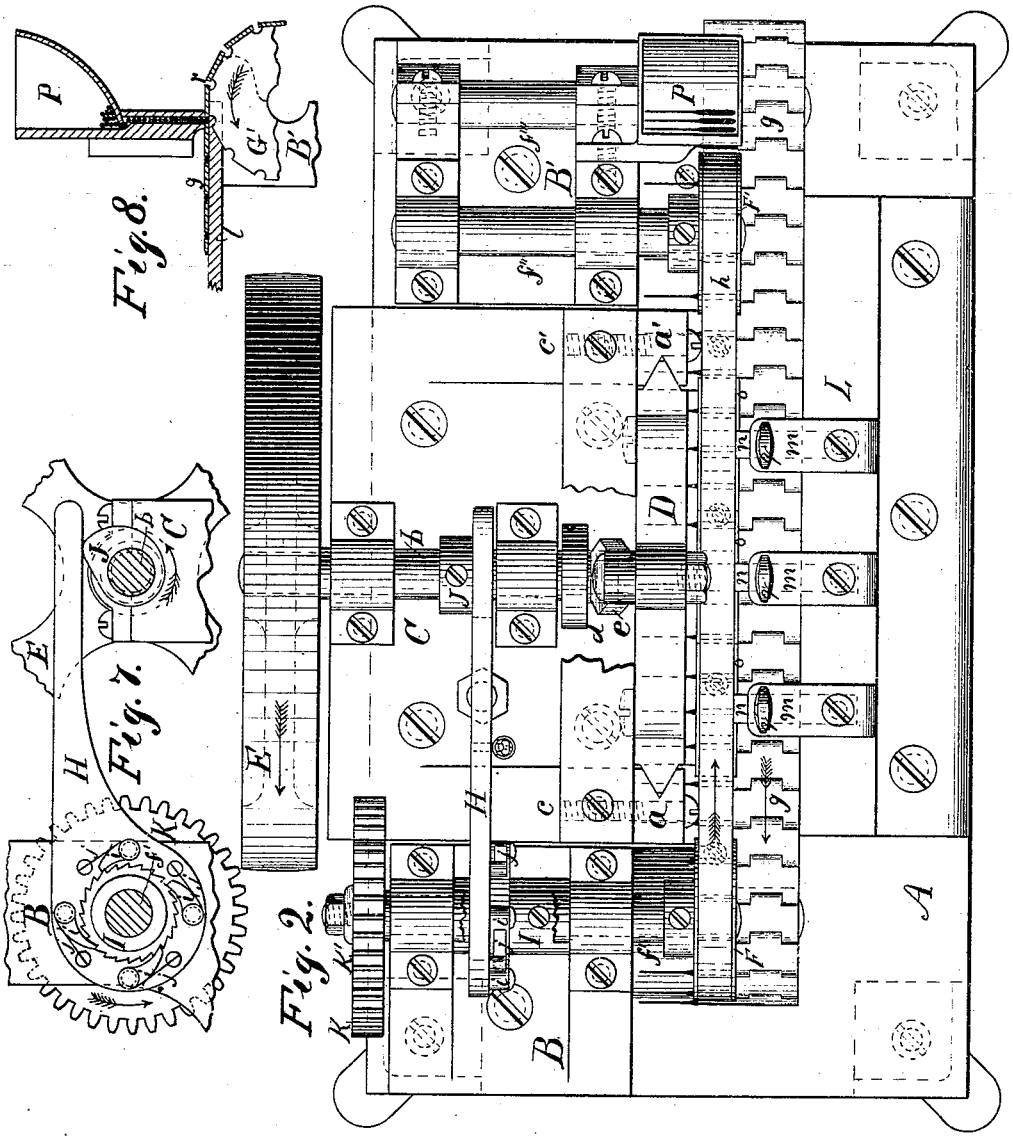
Inventors;
Rosewell Thompson
Philo M. Beers

3 Sheets—Sheet 2.

R. THOMPSON & P. M. BEERS.

MACHINE FOR STRAIGHTENING SEWING-MACHINE NEEDLES.

No. 191,085. Patented May 22, 1877.



Witnesses;
James Gilbert
Ashbel E. Bartram

Inventors;
Rosewell Thompson
Phils M Beers.

3 Sheets—Sheet 3.

R. THOMPSON & P. M. BEERS.

MACHINE FOR STRAIGHTENING SEWING-MACHINE NEEDLES.

No. 191,085. Patented May 22, 1877.

Fig. 4.

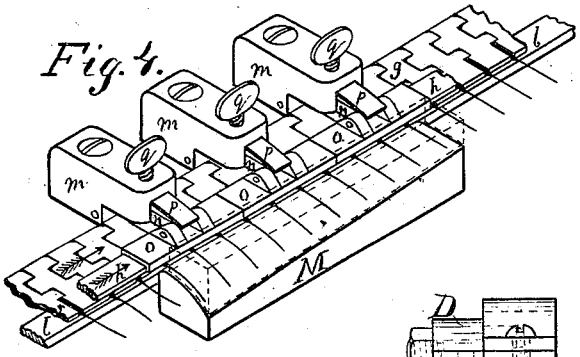


Fig. 5.

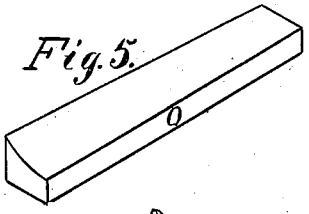


Fig. 6.

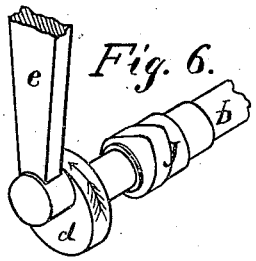


Fig. 9.

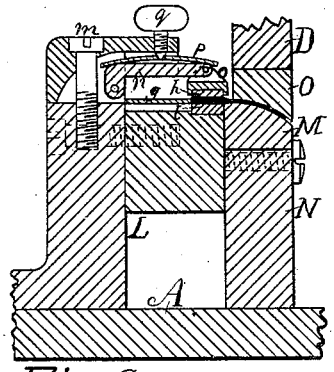


Fig. 3.

Witnesses;
James Gilbert
Ashbel E. Bartram

Inventors;
Rosewell Thompson
Philo M. Beers.

UNITED STATES PATENT OFFICE.

ROSEWELL THOMPSON AND PHILO M. BEERS, OF BRIDGEPORT, CONN.

IMPROVEMENT IN MACHINES FOR STRAIGHTENING SEWING-MACHINE NEEDLES.

Specification forming part of Letters Patent No. **191,085**, dated May 22, 1877; application filed April 30, 1877.

To all whom it may concern:

Be it known that we, ROSEWELL THOMPSON and PHILO M. BEERS, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented an Improved Machine for Straightening the Blades of Sewing-Machine Needles; and we do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification.

The blades of sewing-machine needles generally become bent more or less during the process of tempering the needles, and the usual manner of straightening said blades has been to hold a single needle by the shank of the same between the thumb and forefinger of the left hand, and place the blade upon a block of wood or metal, and, with a small hammer held in the right hand, hammer said blade until it is straight—a very slow and expensive process, and one which depends entirely upon the judgment and skill of the operator for the quality of work produced; and the object of our invention is to straighten said needle-blades by mechanical means, so as to insure a larger quantity and better quality of work in a given time than by the process above described; and our improvement consists in constructing certain mechanical devices and combining and arranging them in a machine in such a manner as to accomplish the desired object, all of which will be hereinafter fully described, and particularly pointed out in the specification and claims.

In the accompanying drawings, Figure 1 is a front elevation of the machine. Fig. 2 is a plan, and Fig. 3 is a right-end elevation, of the same. Fig. 4 is a detached perspective view of a portion of the machine, showing the manner of controlling the needles, and passing the blades of the same over the straightening-block. Fig. 5 is a perspective view of the concave block which presses the needle-blades upon the convex surface of the straightening-block during the process of straightening said blades. Fig. 6 is a perspective view of a portion of the driving-shaft, with the crank and pitman attached, which imparts a vertical reciprocating motion to the frame to which the concave block is attached. Fig. 7 is a detached view of the mechanism for imparting an intermittently-revolving motion to the shafts, gearing, and pulleys which drive the feed-belts. Fig. 8 is a sectional view of the hopper in which the unstraightened needles are placed, together with a section of the slotted endless feed-belt, showing the manner of supplying said belt with the needles from said hopper. Fig. 9 is a sectional view of a portion of the machine through the line *x x*, Fig. 1, to complete the explanation of the manner of straightening the needle-blades.

We will now proceed to describe the construction and operation of our needle-straightening machine with reference to the accompanying drawings.

Similar letters of reference indicate corresponding parts.

A is the bed of the machine. B B′ are bearings for shafts, secured to the bed. C is a bearing for the main driving-shaft, to which are attached the two pillars *c c′*. D is the reciprocating frame, secured to the pillars *c c′* by means of the gibs *a a′*. E is the driving-pulley. *b* is the driving-shaft. *d* is a crank, attached to the end of the driving-shaft. *e* is the pitman connecting the frame D with the crank *d*. *f f′ f″ f‴* are shafts fitted to bearings B and B′. F F′ are pulleys secured to the shafts *f′* and *f″*. G G′ are drivers secured to the ends of shafts *f* and *f‴*. *g* is the slotted endless feed-belt. *h* is the needle-revolving belt. H is a lever, pivoted to the shaft *f*. I is a ratchet-wheel, secured to the shaft *f*. *i i* are pawls, pivoted to the lever H. *j j* are springs for retaining the points of said pawls in the teeth of the ratchet-wheel. J is a cam, secured to the driving-shaft *b*, for imparting motion to the lever H. K K′ are gear-wheels, secured to the ends of shafts *f* and *f′*. L is a support secured to the front edge of the bed. *l* is a rest for the shanks of the needles, and is secured to the upper corner of the projecting portion of the support L. *m m* are blocks secured to the support L. *n n* are levers, pivoted at one end to the blocks *m m*. *o o* are presser-bars, pivoted to the ends of levers *n n*. *p p* are springs over levers *n n* and presser-bars *o o*. *q q* are thumb-screws for the purpose of regulating the pressure of springs *p p*. M is the convex straightening-

block, and is fitted to rest upon the parallel block N. O is the concave block which presses the needle-blades upon the convex surface of the straightening-block M, and is secured to the lower edge of the reciprocating frame D. P is the hopper, and is secured to the bearing B′ in such a manner as to hang over the slots *r* in the endless feed-belt *g*, so that the shanks of the needles in the same may fall into said slots, in the manner shown in Fig. 8.

In preparing the machine for use, the cam J on the driving-shaft *b* is so adjusted as to impart the intermittently-revolving movements to the mechanism which drives the belts *g* and *h* during the extreme upward stroke of the frame D, and, the gear-wheels K and K′ being of a proportion of two to one, the belt *h* will be driven at double the rate of speed of the feed belt *g*, causing the needles to partially revolve in consequence of the friction of the belt *h* upon the shanks of said needles in the slots *r* of the feed-belt during the movements of said mechanism, and allowing said needles to remain at rest during the bending of the blades upon the convex surface of the straightening-block M, in the manner shown in Fig. 9.

Motion being communicated to the driving-pulley E in either direction, the feed-belt *g* and belt *h* will be driven in the directions indicated by the arrows, and as the slotted side of the feed-belt passes under the hopper, the shanks of the needles in the same will fall successively in the slots *r*, in the manner shown in Fig. 8, and the needle-blades passed over the straightening-block M, in the manner shown in Figs. 4 and 9, commencing at the end of said block having the greatest convexity, each needle-blade being bent successively upon all sides of the same, over said convex surface, by means of the block O, during the extreme downward stroke of the frame D; and as said surface gradually diminishes in convexity until quite flat at the opposite end, the needle-blades which pass the entire surface of the straightening-block are made perfectly straight in consequence of said operation upon them.

The surface of the straightening-block is designed to be sufficiently convex at the first working end of the same to cause the needle-blades to be bent sufficiently to remove all extreme curvatures and short crooks caused by the process of tempering the same, in consequence of the "set" which they will receive by the above-described operation, and the surface is diminished in convexity toward the opposite end, so that all the blades may receive just set or bending enough during their passage over said surface to make them perfectly straight before leaving the straightening-block.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination of the convex block M, mechanism for transferring the needle-blades over and along the working-surface of said block from end to end, and a reciprocating hammer-drop, substantially as described, for the object set forth.

2. In combination with the reciprocating frame D and straightening-block M, the block O, secured to the lower edge of said frame, and having the working-surface concave in form, and gradually diminishing in concavity from one end to the other, so as to conform to the convex working-surface of said straightening-block, and operating substantially as described, for the object set forth.

3. In combination with the feed-belt *g*, belt *h*, rest *l*, shafts *f f′*, and gear-wheels K K′, the ratchet-wheel I, lever H, and cam J, all arranged substantially as shown, for the purpose of feeding and intermittently revolving the needle-blades over the working-surface of the straightening-block, for the object set forth.

4. The combination of the straightening-block M, block O, reciprocating frame D, feed-belt *g*, belt *h*, rest *l*, shafts *f f′*, gear-wheels K K′, ratchet-wheel I, lever H, cam J, and driving-shaft *b*, all constructed and arranged substantially as shown, and for the object set forth.

ROSEWELL THOMPSON.
PHILO M. BEERS.

Witnesses:
JAMES GILBERT,
ASHBEL E. BARTRAM.