C. O. Crosby.

Polishing Needles.

No. 86,817. Patented Feb. 9, 1869.

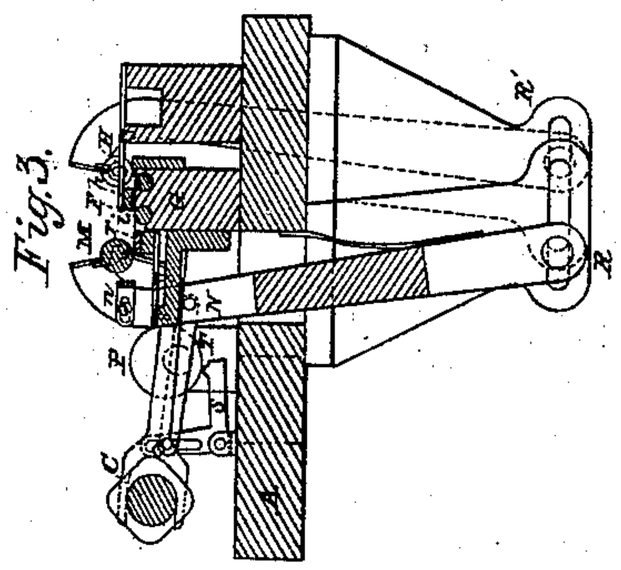

Fig. 3.

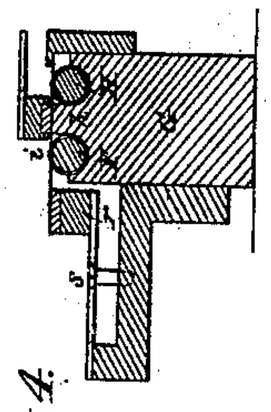

Fig. 4.

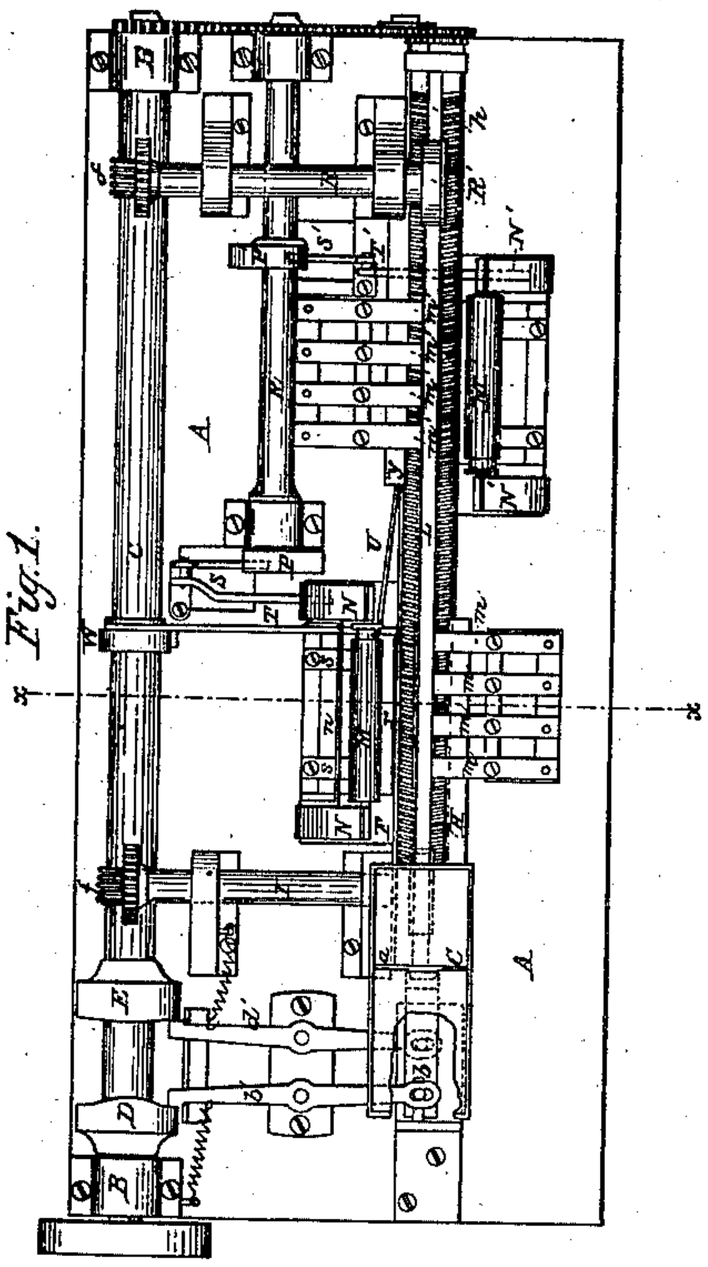

Fig. 1.

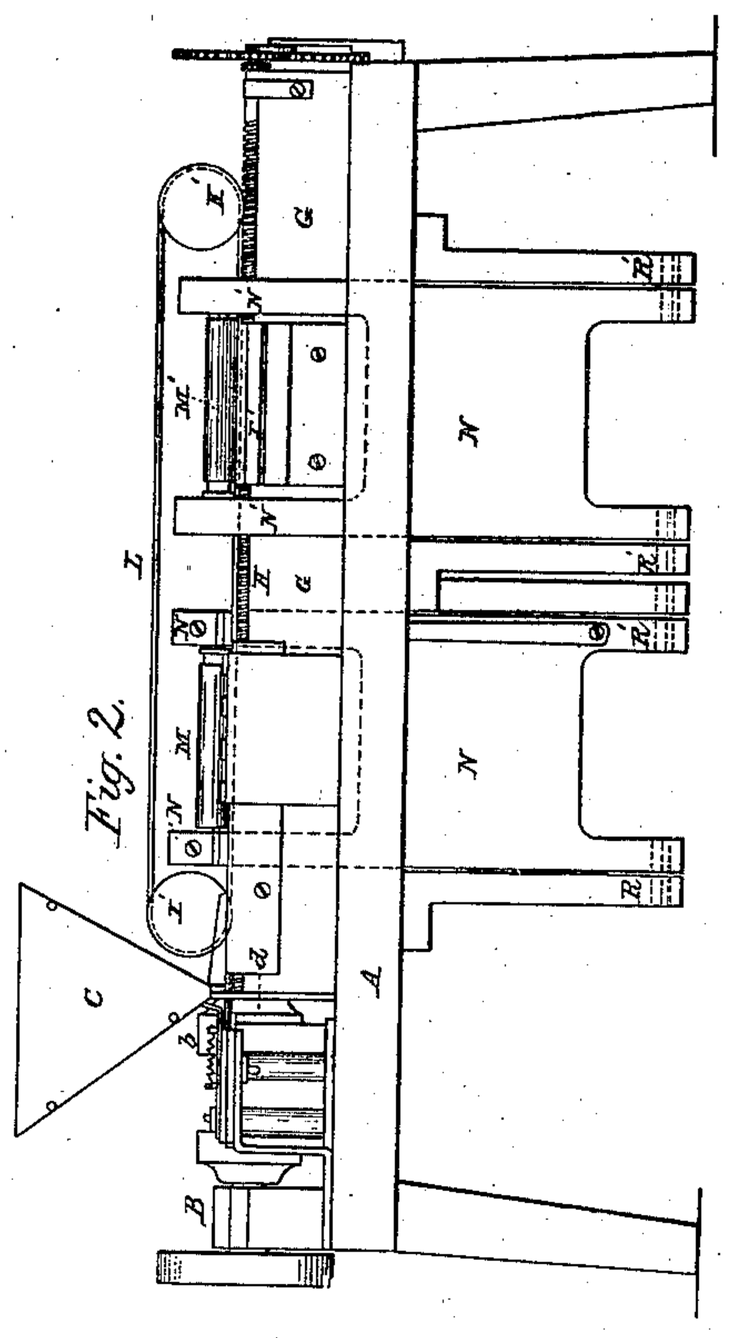

Fig. 2.

Witnesses.
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C. O. CROSBY, OF NEW HAVEN, CONNECTICUT.

Letters Patent No. 86,817, *dated February* 9, 1869.

IMPROVEMENT IN POLISHING NEEDLES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, C. O. CROSBY, of New Haven, in the county of New Haven, and State of Connecticut, have invented a new Improvement in Machine for Polishing Needles; and I do hereby declare the following, when taken in connection with the accompanying drawings, and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a top view;

Figure 2, a front view;

Figure 3, a transverse section on line *x x;* and in

Figure 4, a transverse section through the carrying-screws, enlarged.

This invention is designed for polishing or finishing sewing-needles, after they have been tempered, the object being to avoid the usual hand-labor, by constructing the machine so as to receive the unpolished needles from a hopper, and rolling them over, so as to be acted upon by the polishing-cylinders, and delivering them from the machine polished and finished complete.

To enable others to construct and use my improvement, I will proceed to describe the same as illustrated in the accompanying drawings.

A is the bed-plate, upon which, in proper bearings B, the driving-shaft C is arranged, so as to be revolved by the application of power thereto in any convenient manner.

C′ is the hopper, its lower end or mouth, *a*, being of the width of the diameter of the needles to be polished.

Beneath the said mouth are arranged two slides, *b* and *d*, operated respectively by cams, D and E, on the driving-shaft, through levers *b′* and *d′*, the said slides being shown through the hopper, as seen in fig. 1, the hopper broken away for the purpose.

The lower slide *d* passes under the mouth of the hopper, so that the column of needles rests thereon; then the upper slide *b*, which is adjusted to the proper relative position of the slide *d*, so as to pass in above the first needle, and between that and the second; then the lower slide *d* is drawn back, and a single needle is then delivered; then the slide *d* returns beneath the hopper, the slide *b* is withdrawn, the column of needles falls upon the lower slide, the upper slide again enters, as before, and a second needle is delivered, and so continuing, delivers a single needle at each complete operation of the two slides.

Beneath the mouth of the hopper, and longitudinally across the machine, extend two screw-shafts, F and H, the front, or H, being a right-hand, and the other, or F, a left-hand screw, or may be *vice versa*, and arranged beneath the mouth of the hopper, so that the needles are delivered into the thread of the screws lying at right angles to the axis of the screws.

The said screws are arranged in a proper support, G, and are caused to revolve by connection with the driving-shaft, as seen in fig. 1, so as to draw the needles delivered into the said screws across the machine from the hopper.

Near the hopper is arranged a transverse shaft, I, and at the other end of the machine, a corresponding shaft, K, caused to revolve by worms *f f* on the driving-shaft, and upon each shaft respectively is arranged a pulley, I and K, the said pulleys being in a position central between the screws, as seen in fig. 1, and a band, L, around the said two pulleys, its lower surface lying in close proximity to the bed or support between the screws, as seen in fig. 4, enlarged, and the direction of the revolution of the said pulleys being such that the lower side of the band moves in the direction of the draught of the screws, but at a velocity twice as fast as the draught of the screws, so that the needles rolled along by the revolving screws, and beneath the band L, (the said band I lying upon the needles,) and moving twice as fast as the needles, the needles will, by the combined action of the revolving screws and moving band L, be caused to revolve or roll along upon the surface or bed between the screws. the depth of the thread in the screws, relative to the bed *h*, or rest between the screws, being such that the needle will rest upon the said bed, and this bed may be of any suitable material, to prevent injury to the needles while rolling thereon.

The needles are fed into the screws so that their head-ends project upon one side, here represented as the back side.

Upon the back side I arrange a polishing-cylinder, M, hung in a frame, N, and caused to revolve rapidly by the application of power thereto in any convenient manner.

The said cylinder is coated with any suitable material for polishing-purposes, and the frame N is caused to vibrate, so as to carry the polishing-cylinder toward and from the screws, by means of a cam, P, on a shaft, R, through levers S and T, (see figs. 1 and 3.) This vibration passes the cylinder M over the surface of the needles, while the latter, slowly revolving, are polished by the polishing-cylinder M.

In order to securely hold the needles in their position, while being polished, as well as to guide the band L, I arrange, upon the upper surface of the under belt, shoes *i*, the said shoes being constructed with a flange, projecting down over each edge of the band, as seen in fig. 3, and borne down by springs *m* with sufficient force to sustain the needles in their proper position, and yet so as to allow the band to be drawn freely thereunder. The shoes also serve to guide and hold the band in its proper path while rolling the needles. And on the frame N, in the rear of the revolving cylinder, I arrange a bar, *n*, which, as the frame advances, strikes the heads of the needles, and forces them into an even position, if they shall, in their transfer, have been displaced, the said bar being adjustable for different lengths of needles. And beneath the needles, upon the support G, or at other convenient point, I arrange a cushion, *r*, (see fig. 4,) upon which the needles bear, as the polishing-cylinder M passes over their surface, this cushion *r* being arranged upon springs *s*, or their equivalent, so as to be self-adjusting.

The frame N is supported in bearings R, so as to be

adjusted to change the arc of the circle through which the polishing-cylinder moves while passing over the needles.

Passing from under the first cylinder M, the needles are forced through, so that their points project upon the opposite side, to be, in their turn, polished, and are so forced by a bar, U, actuated by a cam, W, arranged so as to operate against the heads, and gradually force the needles through, as they advance, until, having arrived at the end of the bar U, they are forced sufficiently far through, that the remainder of the needle, not polished by the first operation, may be polished by the second, and this is done by the arrangement of a cylinder, M′, in a frame, N′, in like manner as the first cylinder; the frame hung and adjusted in like manner in its bearings R′, and provided with its cushion *r′* beneath, and with the shoes and adjusting-springs *m′*, also in like manner as the first, the frame N′ being actuated by a cam, P′, through levers S′ and T′. The needles passing under the polishing-cylinder M′, their point-ends are finished up to and meeting the first polished surface, and thus pass from beneath the cylinder M′ complete; thence carried on from under the band, and discharged from the machine.

During the last polishing, the needles are retained in position to be properly guided, by a bar, Y, arranged in the rear of the screws, so that the heads bear against the said bar, as they pass along the second polishing-cylinder.

The two cylinders may be reversed, or the needles may be polished either end first. I prefer, however, the arrangement or manner of procedure described.

Having thus fully described my invention,

What I claim as new and useful, and desire to secure by Letters Patent, is—

1. The arrangement of the two screws F and H, revolving toward each other, and their axes parallel to each other, and both in same plane, so as to receive and transfer the needles, substantially in the manner set forth.

2. The combination of the two slides *b* and *d* with the two screws F and H, arranged and operating substantially in the manner described.

3. In combination with the two screws F and H, the band L, moving in the direction imparted by the screws to the needles, and at such speed, relative to that of the screws, that the needles, between the screws and band, are caused to rotate, substantially as set forth.

4. In combination with the screws F and H and band L, operating as described, the polishing-cylinder or cylinders M, operating so as to polish the surface of the needles, substantially as described.

5. In combination with the screws F and H and band L, the shoes *i*, arranged to bear upon the band L, and to press the latter down upon the needles, substantially as and for the purpose specified.

6. The arrangement of the polishing-cylinder or cylinders M and carrying or revolving-device for the needles, with the cushion *r* to support the needles, substantially in the manner and for the purpose set forth.

7 In combination with the first polishing-cylinder M, the carrying and revolving-devices for the needles, and the polishing-cylinder M′, the bar U, arranged so as to move the needles, substantially in the manner and for the purpose set forth.

8. In combination with the carrying and revolving-devices for the needles and the polishing-cylinder M′, the bar Y, arranged so as to guide and sustain the needles, substantially in the manner and for the purpose set forth.

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