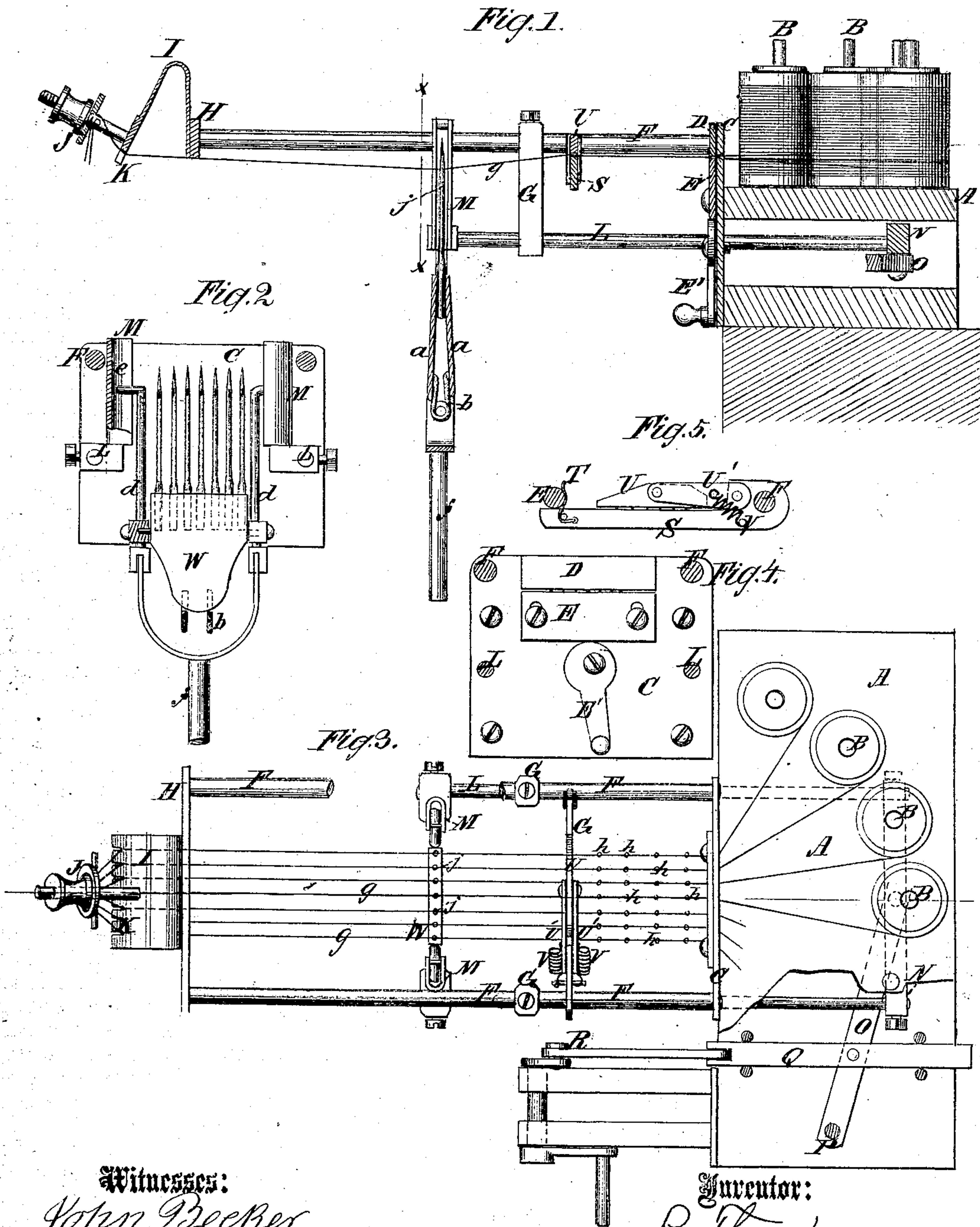


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Improvement in Machines for Polishing the Eyes of Needles.

No. 127,529.

Patented June 4, 1872.



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IMPROVEMENT IN MACHINES FOR POLISHING THE EYES OF NEEDLES.

Specification forming part of Letters Patent No. 127,529, dated June 4, 1872.

Specification describing a new and Improved Needle-Eye Polishing-Machine, invented by ROSEWELL THOMPSON, of Waterbury, in the county of New Haven and State of Connecticut.

In my improved needle-eye polishing-machine a series of threads is drawn from spools on a spool-stand through a guide-plate, and two clamping-bars to hold said threads from unwinding further from the spools till required, also to hold them at the proper distances apart. A large quantity of needles are then strung on these threads from which to draw from time to time the batches to be polished, consisting of one on each thread. When one batch is selected and moved forward on the threads to where they are to be worked, a second clamp is applied to the threads, between them and the reserve stock behind, to keep them separate, to keep the threads parallel, and also to hold the threads in case any break while the polishing is going on, and thus prevent the reserve stock from escaping off the threads, as would be the case if the threads were allowed to fall in case of breaking. The ends of the threads extend considerably beyond the clamps and pass through a notched guide, which keeps them parallel, and beyond this they are temporarily secured in a detachable clamp. The row of needles to be polished hang downward from the threads, and are confined at the lower ends in a clamp, which is connected to a reciprocating frame, worked by hand or other power, to move the eyes back and forth along the threads, which latter are charged with the emery or other polishing medium; and said clamp has a handle, to be taken in the hand to manipulate it at the same time it is reciprocated to cause the polishing-threads to act on all parts of the oval end walls of the eyes, and thus accomplish the work as well as when all the motions are imparted by the hands.

Figure 1 is a longitudinal sectional elevation of my improved machine. Fig. 2 is a section on the line *xx* of Fig. 1. Fig. 3 is a plan view, with a part of the spool-stand sectioned. Fig. 4 is a section, showing the first clamp, through which the thread passes after leaving the spools; and Fig. 5 is a similar section, showing the second clamp.

Similar letters of reference indicate corresponding parts.

A represents a spool-stand, to be fastened on a bench or other support, and having as many spindles, B, as the required number of threads to be used in the polishing operation. In front of said spools is an eye-plate, C, through which the threads pass under a fixed plate, D, on the outside, against which said threads are to be clamped, when the polishing is going on, by a movable plate, E, worked by an eccentric, E', or any other suitable means. From the outside of plate C are two long horizontal parallel rods, F, on each of which is a hanging bar, G, a short distance from plate C, and at the outer ends is a cross-bar, H, supporting the A-shaped spring tension-plate I with the notched lower edge, and on the outside of this plate is a thread-clamp, J, opened or closed by a thumb-nut. L represents a pair of rods mounted in plate C, and the hangers G below the rods F, and parallel with them, each carrying a vertical guide or grooved bar, M, on the outer end, and behind the plate C they are connected to a cross-bar, N, which is pivoted to one end of a lever, O, pivoted to the spool-stand at the other end P, to be vibrated by the crank-shaft R and slide Q, the latter connecting said crank-shaft and lever. S is the lower bar of a clamp for the threads, swinging on one rod, F, at one end, under the threads, and fastening to the other rod by a spring-catch, T; and U is another clamp-bar, pivoted to S on the upper side by a jointed connection with a bar, U', to allow it to bear equally on all the threads, and opening upward. Said bar is held down by a spring, V, which is arranged for also holding it open, when swung, so as to carry the connection of said spring with it behind the connection of said spring with the lower bar. This clamp is arranged on the rods F as far in advance of plate C as the required space between it and said bar for the aforesaid reserve stock of needles. W is the clamp for engaging the lower ends of the row of needles to be polished. It consists of two clamping-plates, *a*, pivoted together, and springs *b* below the pivot to force the upper ends onto the shanks of the needles, as clearly shown in Fig. 1. The upper ends of said plates are grooved slightly at intervals as far apart as the polishing-threads are to be. This clamp has rods *d* attached to the opposite ends, as shown in Fig. 2, with their upper ends bent outward to work in the grooves *e* of guides M;

and to the lower ends of these rods a forked handle, *f*, is pivoted, which said handle is for controlling and directing the needles while the polishing is going on.

The polishing-threads *g* being drawn through the eye-plate *C*, the reserve stock *h* is strung upon them, being as many as said threads are capable of holding properly; then the threads are carried on through the notched guide-plate *I* and fastened in the clamp *J*; then the clamp-plate *E* is brought up to the threads and plate *D* to secure them against being drawn off the spools while the polishing operation is going on; next, the needles *j* to be polished are separated from the reserve stock and moved beyond the clamp *S V*, which is then brought up and clamped on the thread, as shown in Fig. 5; then the clamp *W* is applied to the needles *j*, and the handles of the latter being taken by the operators, say in the left hand, while he turns the machine by the right, the said needles *j* are moved rapidly back and forth on the threads, which are charged with emery for polishing, and at the same time, by means of clamp *W*, the operator holds them obliquely to the threads both sides of their vertical lines, and up or down, for polishing both end walls and all the corners thereon, for smoothing them throughout in the most perfect manner, similar to the polishing commonly done by working the needles by hand.

When the threads become too much worn the clamps *E'*, *D*, and *S U* are opened and the threads drawn along through the needles far enough to renew them in the wearing parts; being also shifted along in the clamp *J*.

It will be noted that in case of the breaking of

a thread, which very often happens on account of the wearing of them by the needles, the reserve stock will be retained, whereas under the ordinary arrangement the threads would fall and the needles escape.

Thus I operate a series of needles at once, and give them all the motions necessary to round off the corners of the eyes as regular and uniform as if one only was done by hand.

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

1. In combination with the perforated plate *C* and a series of polishing-threads, I claim the clamp *E' D*, substantially as specified.

2. The combination of the notched spring tension-plate *I* and clamp *J* with plate *C* and clamp *E' D*, substantially as specified.

3. The combination of the clamp *J* with the notched spring tension-plate *K*, substantially as specified.

4. The combination, with rods *F* and a series of polishing-threads, of the clamp *S U*, arranged and operating substantially as specified.

5. The combination, with said handled clamp and a series of polishing-threads, of the reciprocating frame *M L N* in such manner as to allow said clamp to be oscillated while being reciprocated by said frame, substantially as specified.

6. The combination of clamp *W*, rods *d*, and vertically-grooved bars *e* of the reciprocating frame, substantially as specified.

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