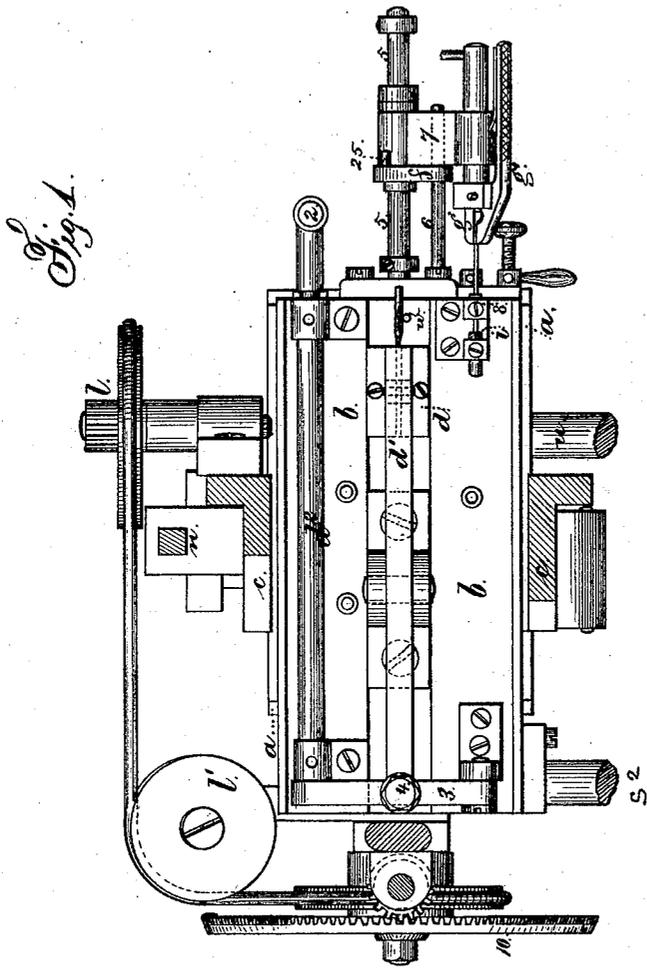


W. H. DAYTON & J. ALLDIS.

MACHINES FOR GROOVING SEWING-MACHINE NEEDLES.  
No. 184,347. Patented Nov. 14, 1876.



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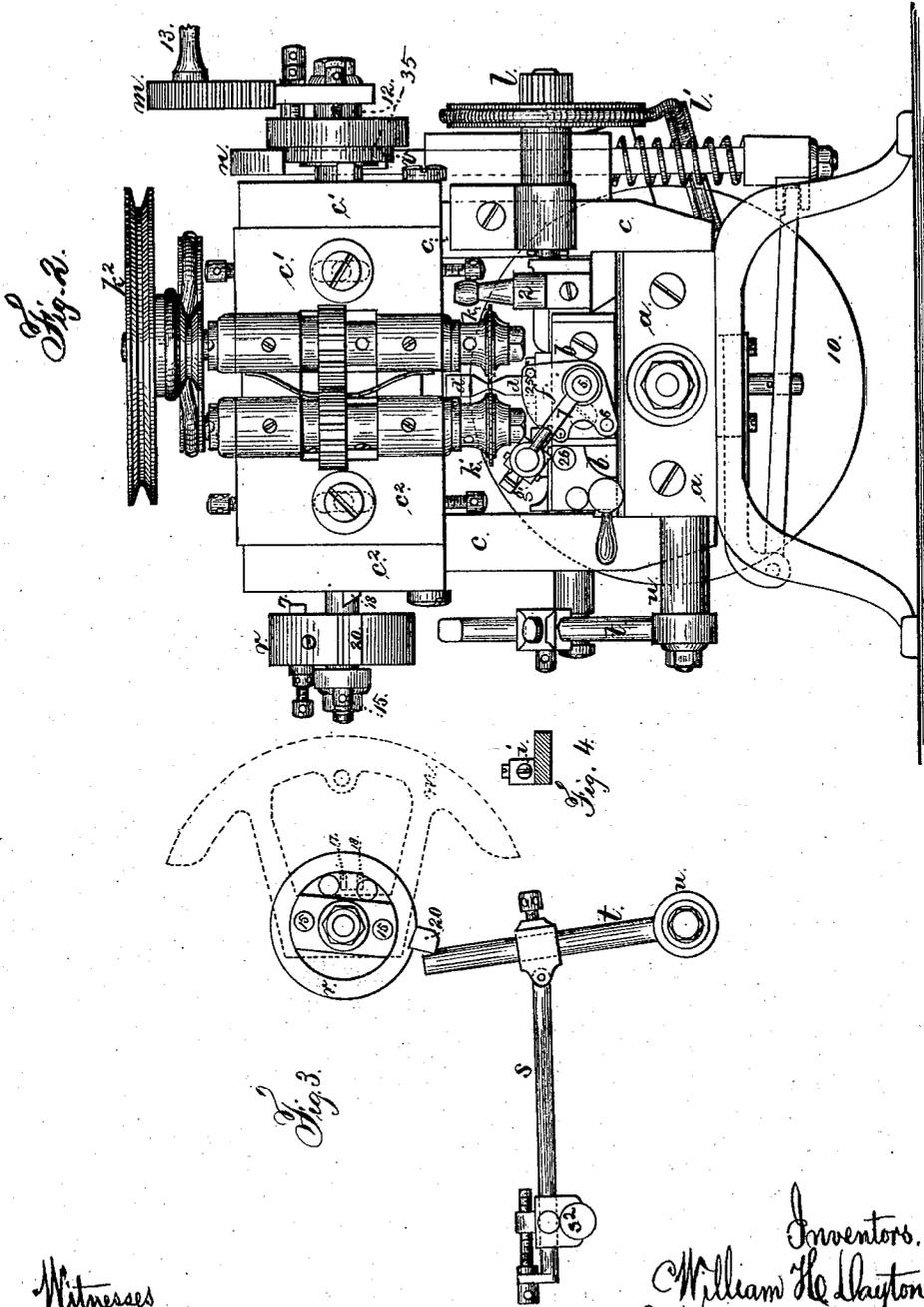
Inventors  
 and William H. Dayton  
 James Alldis  
 Lemuel W. Ferrill atty.

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# UNITED STATES PATENT OFFICE.

WILLIAM H. DAYTON AND JAMES ALLDIS, OF TORRINGTON, ASSIGNORS TO  
EXCELSIOR NEEDLE COMPANY, OF WOLCOTTVILLE, CONNECTICUT.

## IMPROVEMENT IN MACHINES FOR GROOVING SEWING-MACHINE NEEDLES.

Specification forming part of Letters Patent No. **184,347**, dated November 14, 1876; application filed  
September 4, 1876.

*To all whom it may concern:*

Be it known that we, WILLIAM H. DAYTON and JAMES ALLDIS, of Torrington, in the county of Litchfield and State of Connecticut, have invented an Improvement in Grooving Sewing-Machine Needles, of which the following is a specification:

This machine is to facilitate the insertion of the needle, and the supporting of the shank while the grooves are being cut in the sides of the needle, and for properly positioning the flattened or knife-shaped end of the needles employed in sewing leather, so that the grooves may occupy the correct relation to the point. We also bring the cutters up to the needle automatically, so as to lessen the risk of injury to the cutters by carelessness on the part of the attendant, and also to lessen the work of the attendant, and enable him to oversee and supply a larger number of machines than heretofore.

In the drawing, Figure 1 is a plan of the needle-holding bed. Fig. 2 is an end elevation of the same. Fig. 3 is a side view of the mechanism for feeding one of the cutters up to its work, and Fig. 4 is a detached view of the point-regulator.

The base *a* of the machine is adapted to receive the sliding bed *b*, that carries the needle-clamp and other operative parts; and above the bed is a frame or head-block, *c*, with the revolving grooving-cutters and their supporting-slides. The bed *b* has upon it the block *d* and clamping-lever *d'*, the contiguous surfaces of which are channeled to receive between them the needle to be grooved, and the edges of these clamps are beveled to expose the sides of the needle, and allow the revolving cutters to act upon the same, as seen in Fig. 2.

The clamp *d'* is operated by the turning-rod *d''*, with a handle, 2, at one end, and a cam at the other end, acting beneath a cross-lever, 3, upon which rests the adjusting-screw 4 of the clamping-lever *d'*. By turning the rod *d''* the operator causes the clamps to grasp the needle, or to relieve the same. These parts have heretofore been used in grooving needles.

When the needle is introduced in the clamps, the larger portion or shank projects, and we employ a pair of sliding pinchers to grasp and

hold the stock, and by means of said pinchers the needle is entered or withdrawn.

There are two guide-rods, 5 and 6, projecting from the end of the bed *b*, and upon these slides the stock *f* of the swinging pinchers *g g'*, the arm 7 of the jaw *g* of the pinchers having a cylindrical barrel around the stock *f*, so that the pinchers can be swung laterally, and they can slide longitudinally upon the rods 5 and 6; and there are stops 25 and 26 upon the stock *f*, to determine the points to which the pinchers may be swung.

With needles having flattened or awl-shaped points, we use the point-regulator *i*, (see Fig. 4,) that is made of a stud having a groove or slit across it, into which the flattened point of the needle is placed; then the pinchers are moved up and caused to grasp the shank of the needle.

The pinchers and needle are now drawn back, and the arm and pinchers swung up to the position for inserting the needle into the clamp *d d'*, and then the needle is pushed forward into place between the clamps and held, as aforesaid.

There is a guide-hole in the block 8, in front of the point-regulator *i*, through which guide-hole the operator inserts the needle, and the flattened point enters the slot of the point-regulator, and determines its position relatively to the pinchers; and this point-regulator can be turned around and clamped in its bearing-block to adjust it, so that the flattened or knife point of the needle may occupy the correct position to the cutters after it has been entered by the pinchers in between the clamps *d d'*.

In sewing-machine needles, the grooves for the thread usually run the entire length of the needle at one side, and extend a short distance each side of the eye at the other side. The cutter *k* is for making the long groove, and the cutter *k'* is for the short groove. These cutters are upon arbors or mandrels of the usual character, supported in slide rests or beds upon the head-block *c*, and they are geared together, so as to be revolved by one pulley, *k''*; and the rests *e' e''* are upon the head-block *c*, and carry the bearings of the respective cutter-mandrels, so that the necessary lat-

eral movement can be given to cause the cutters to pass into the needle to the depth of the groove, as now practiced.

To effect this object, the shaft 12 is made use of; it passes across the head-block *c*, behind the rests *c*<sup>1</sup> *c*<sup>2</sup>, and there is upon said shaft a cam, that acts against the rest *c*<sup>1</sup>, to give the same the lateral motion as the shaft 12 is partially revolved.

Heretofore, however, it has been usual for the attendant to move the cutter up against the side of the needle by hand-power applied to turn the cam-shaft 12, that operates upon the rest *c*<sup>1</sup>. In doing this the force exerted is often too great, and the teeth of the cutter *k* are injured by cutting too heavy shavings from the steel needle. To avoid this difficulty we employ the device next described.

The pinion *l* is revolved by power, preferably by a belt passing from the pulley 10 upon the shaft of the screw that gives end motion to the bed *b*, such belt passing around the guide-pulleys *l*.

Upon the end of the shaft 12 there is a segmental rack, *m*, gearing into the pinion *l*, and there is a handle, 13, upon this rack, so that the operator can turn the segment around until the end thereof touches the pinion *l*, and then the pinion will move the segment gradually and regularly, and feed up the cutter against the side of the needle, and continue this feed-movement until the rack *m* moves clear of the pinion *l*, and in this position the slide-rest *c*<sup>1</sup> and cutter *k* will be held while the bed *b* is moved along endwise, and the longitudinal groove cut in the needle.

We are aware that cutters have been moved laterally up against a needle to groove the same, and for this purpose a shaft and cam have been employed to act upon the slide-rest carrying the cutter-arbor. It will be apparent that the shape and position of this cam may be varied to suit the size of the needle to be operated upon, and the other parts of the mechanism. This cam is shown in the drawing at 35.

We remark that the screw which moves the bed along operates upon a half-nut connected with the bed, and this half-nut is moved up into contact with the screw by a cam on the shaft 12 acting upon the hook *n* at the proper time to lift such hook and half-nut. These parts are of usual construction.

It is preferable to use a cam on the shaft 12 to feed the cutter up laterally, because the operator can cause the cutter to move back after the groove is complete by turning the shaft 12 partially around, after which he withdraws the grooved needle, and inserts another needle and proceeds as before.

We will now describe the means for automatically feeding up the cutter *k*<sup>1</sup>. The shaft 12 has upon the opposite end to the rack *m* a wheel, *r*, that is adjustable toward or from the slide-rest *c*<sup>2</sup> by screws 15, passing through a cross-head at the end of the shaft 12.

There is a tooth, 17, upon the inner face of the wheel *r*, and an inclined stud, 18, upon the side of the slide-rest *c*<sup>2</sup>. When the rack *m* has moved clear of the pinion, the tooth 17 is near the stud 18, and it so remains while the bed *b* is moving along and the cutter is cutting the long groove of the needle; but just before the completion of the movement of the bed *b* the adjustable link *s*, extending from a stud, *s*<sup>2</sup>, at one edge of the bed, and attached to the lever-arm *t* upon the stud *u*, causes said arm *t* to press against the projection 20 upon the wheel *r*, and move the same partially around, and by the tooth 17 pressing upon the tooth 18 the slide-rest *c*<sup>2</sup> is moved, and the cutter *k*<sup>1</sup> fed up to the needle to cut a groove in the same where the eye is to be made in said needle. These devices for bringing up the second cutter automatically at the proper time are similar to those that have heretofore been used.

These movements being completed, the bed is stopped by the lever-arm *t* turning the shaft 12 sufficiently to allow the hook-ended lifter *n* to slip off the cam *v*, and thereby drop the half-nut from out of contact with the feed-screw.

In this needle-grooving machine the point-regulator is out of the way of any chips, and does not become obstructed, as is the case when the point-regulator is between or formed by the jaws.

The post *w* upon the bed *b* supports the shank of the needle outside the clamping-jaws while it is being grooved; hence there is not any vibration of the needle, and risk of bending the same is overcome.

We claim as our invention—

1. The needle-pinchers *g g'*, sliding endwise upon the rods 5 and 6, in combination with the holding-jaws *d d'* and grooving-tools, substantially as set forth.
2. The detached point-regulator *i*, in combination with the pinchers, holding-jaws, and grooving-cutters, substantially as set forth.
3. In combination with the revolving grooving-cutter *k*, its rest *c*<sup>1</sup>, shaft 12, and cam 35, acting to move the rest and cutter laterally, the segment *m* upon the shaft 12, and the revolving pinion *l*, to move such segment *m* gradually, for the purposes and substantially as set forth.
4. The combination, with the holding-jaws and grooving-cutters, of the post *w*, applied substantially as set forth, to support the shank of the needle at the commencement of the grooving operation, as set forth.

Signed by us this 28th day of August, A. D. 1876.

WILLIAM H. DAYTON.  
JAMES ALLDIS.

Witnesses:

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JOHN H. WADHAM.