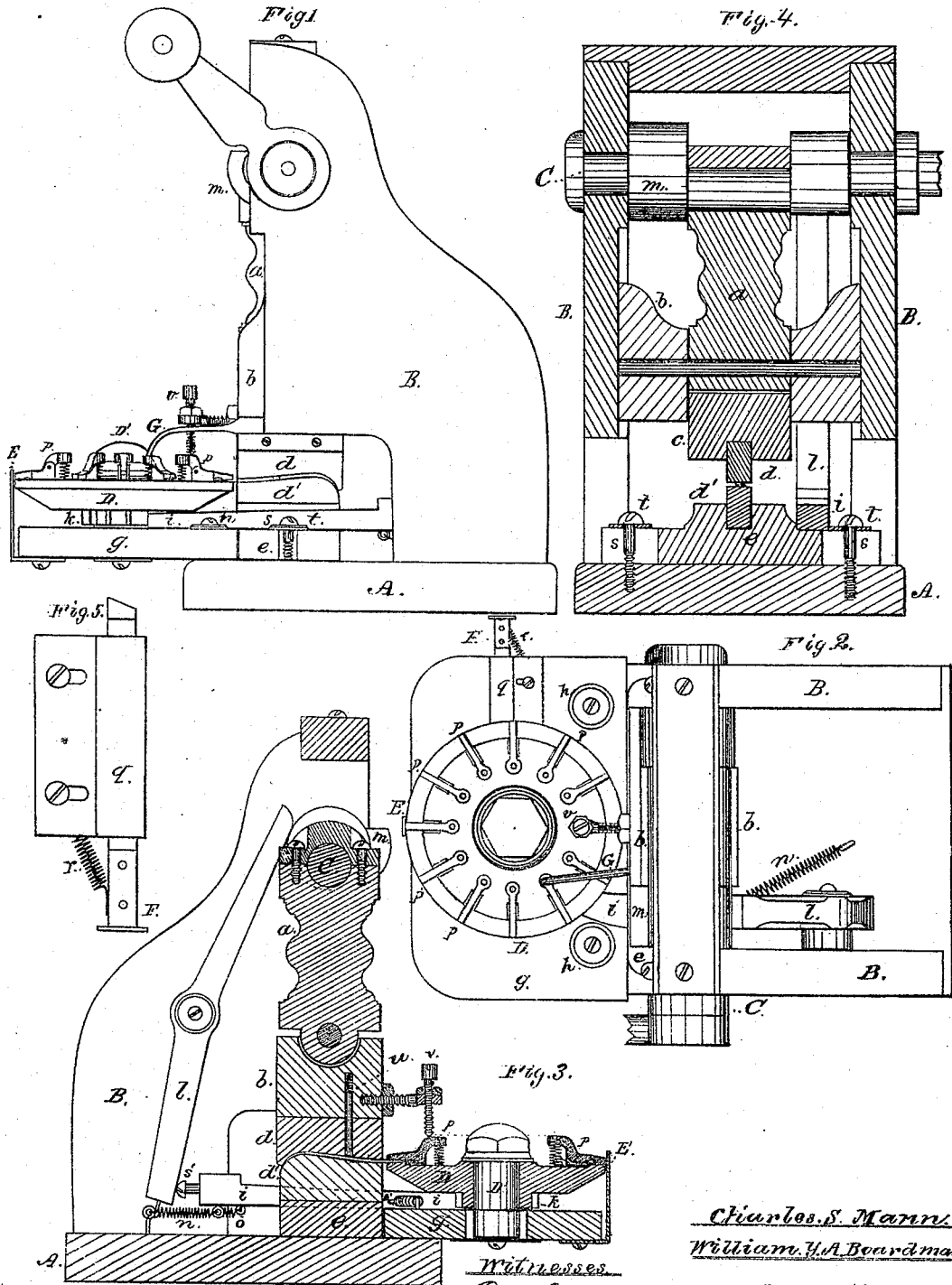


C. S. MANN & W. Y. A. BOARDMAN.  
 Machine for Bending Awls, Needles, &c.

No. 160,533.

Patented March 9, 1875.



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHARLES S. MANN AND WILLIAM Y. A. BOARDMAN, OF WEST MEDWAY, MASSACHUSETTS, ASSIGNORS TO NEW ENGLAND AWL AND NEEDLE COMPANY, OF SAME PLACE.

## IMPROVEMENT IN MACHINES FOR BENDING AWLS, NEEDLES, &c.

Specification forming part of Letters Patent No. 160,533, dated March 9, 1875; application filed January 8, 1875.

*To all whom it may concern:*

Be it known that we, CHARLES S. MANN and WILLIAM Y. A. BOARDMAN, of West Medway, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Bending Awls, Needles, &c.; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

In the said drawing, Figure 1 is a side elevation; Fig. 2, a top view; and Fig. 3, a central, vertical, and longitudinal section of an awl-bending machine constructed in accordance with our invention.

The object of our invention is to provide a simple, automatic, and effective machine, whereby the curving of sewing awls, needles, &c., may be effected with far greater facility than by the methods heretofore adopted; and our invention consists in the peculiar construction, combination, and arrangement of the parts, as hereinafter more fully described and claimed.

In the drawing, A denotes the base of the machine, the same having a frame, B, extending up therefrom. C is a driving-shaft, having its journals supported in bearings in the upper part of the frame. This shaft is connected, by means of a pitman, *a*, to a sliding head, *b*, which slides in ways or grooves in the upright parts of the frame, and has the upper die-block *c* and its die *d* affixed to its lower end. The die-block *c* is so applied to the head *b* as to be readily detached therefrom, as occasion may require. *d'* is the lower die or half of the die, which is mounted upon its block or carrier *e*, the latter being connected to the base A by means of screws *s* and washers *t*, the slots in base or carrier *e* for the passage of the screws being of such length and width as to enable the die-block to be adjusted either longitudinally or laterally, as may be necessary. D is a circular disk or table, which rotates upon a spindle, D', extending down

through the platform *g*, which is secured to the base A by set-screws *h h*, as shown in Fig. 2, which permits the platform, with the table, to be moved either toward or away from the dies, as may be desirable. This table D receives its rotation by means of an impelling pawl or lever, *i*, which engages with a ratchet-wheel, *k*, affixed to the under surface of the table. The rear end of the lever *i* is connected, by means of an adjustable pivot or screw, *s*, with a curved rocker-lever, *l*, which is pivoted on a stud or pin projecting from one of the uprights of the frame, as shown in Figs. 2 and 3. The pawl or lever *i* receives its forward impulse by means of a cam, *m*, disposed on the driving-shaft, acting upon the upper end of the lever *l*, while its back movement is effected by means of one or more retractile springs, *n o*, disposed as shown in Fig. 3. The engaging end of the pawl-lever is kept in contact with the ratchet by the action of a coiled spring, *o'*, affixed to the platform *g* and the pawl-lever. On the top of the table is disposed a series of radial spring jaws or grippers, *p p*, &c., their outer ends extending out flush with the vertical edge of the table. Each of these jaws or grippers is formed with a curved or angular recess on its under surface, to operate with a similarly-shaped recess arranged underneath the same, in the top surface of the table, the object of such being to grasp and hold the shank of an awl-blank. E is a flat metallic bar, which is affixed to the platform *g*, and extends up above the table D. This bar is formed with an angular notch, whose apex is in the same horizontal plane with the notches in the ends of the grippers, the object of such notched bar being to guide and direct the shanks of the awls into the sockets of the jaws or grippers as they are successively moved around, the relation or arrangement of the grippers with respect to the guide-plate E and ratchet-wheel being such that the forward movement of each tooth of the ratchet brings one of the grippers into alignment with the notch in the guide. F is what we term the "adjuster," which is a flat metallic bar sliding in a metallic case, *g*, affixed to the platform *g*, as shown in Fig. 2. The outer end of this bar

is bent at a right angle to its main part, and extends above the plane of the table D. The inner end of this bar, resting against the ratchet, is formed with a bevel corresponding with that of the teeth, the same being as shown in Fig. 5, which is a top view of the adjuster and its case. This adjuster is disposed in a plane, at which each griper stops as it is moved forward; a spring, *r*, having one end affixed to the outer end of the adjuster, and its other end connected to the case *g*, serving to retain the latter in contact with the ratchet.

From this arrangement it will be seen that the adjuster has an outward and an inward movement by the action of each tooth thereon, such outward movement enabling the awls held by the gripers, whether projecting more or less, to pass inside of the adjuster, while its inward movement serves to push in or adjust the awls so as to produce a uniformity in the projecting portion of each awl, in order that they may be properly presented to the action of the dies.

The upper die *d* is provided with a sliding rod, *u*, which extends centrally and vertically through the same, and has its lower end projecting a short distance therefrom. The lower end of the rod is formed with a curved or angular notch to embrace the awl-blank and hold or retain it in a proper position while being bent by the dies, whose longitudinal curvature is such as is desired to have imparted to the awls. *v* is an adjustable tripping-dog, which is formed and affixed to the upper die-block, as shown in the drawing, and is so arranged that when the retainer *u*, by the downward movement of the upper die, has seized the awl such dog shall impinge against the inner end of the griper, and thereby raise its outer end so as to release its hold of the awl, and thus allow the dies, when brought together, to impart the desired curvature to the awl throughout its entire length. *G* is a curved arm or dog, which is affixed to the upper die-block or sliding head *b*, the same being so arranged as to trip each griper when brought around underneath it, and thereby cause it to release its grasp upon the awl, which, by the action of gravity, will drop from the machine.

We would remark that the dies may be formed with letters or figures, which may be impressed upon the awls while being bent.

Having described the construction of our invention, its operation is as follows: The awl-blanks, having been previously reduced to the required size and placed in any convenient receptacle, are to be taken one by one by the operative, who, by means of the feed-guide, readily inserts the shank of an awl in the socket of each griper as it in turn by the rotation of the table is brought into alignment with the eye of the guide. The table being maintained in rotation by means of power suitably applied to the driving-shaft, each awl will be brought around and into alignment with, and so as to be operated on by, the adjuster, which is

moved out to allow the awl to pass inside of it and into alignment therewith, and is retracted or moved inward, so as to cause all the projecting ends of the awls to be gaged to one uniform length or standard. The awls, having been adjusted, are next carried forward by the gripers, which, by the intermittent action of the pawl-lever, brings each awl-blank, in turn, around between the dies. The upper die being next moved downward, brings the spring-retainer in contact with the awl, which retains or holds the awl, while the tripping-dog, coming in contact with the inner end of the pivoted griper, releases the hold of the latter upon the shank of the awl, and thus permits the dies to act upon the entire length of the awl, so as to impart the required curvature thereto. On raising the upper die the dog is moved out of action with the contiguous griper, which, by the stress of its spring, falls, and again seizes the shank of the awl. The rotation of the table still continuing, will next carry forward the curved or finished awl until its griper comes under the releasing-arm, which, being raised by its dog, will permit the awl, by its gravity, to be discharged from the table, and received into any suitable receptacle disposed in the proper position.

What we claim as our invention is—

1. In a machine for bending or curving sewing-awls, &c., the combination, with the rotary table and its series of spring jaws or gripers, of the notched guide *B*, substantially as and for the purpose set forth.

2. In combination with the table and its series of spring jaws or gripers, the dies *d d'*, substantially as and for the purpose set forth.

3. The spring-retainer *u*, in combination with the dies *d d'*, substantially as and for the purpose set forth.

4. In combination with the movable die or head *b* and the series of spring jaws or gripers, the tripping-dog *v* and releasing-dog *G*, or either one of them, substantially as and for the purpose set forth.

5. In a machine for bending or curving sewing-awls, &c., the combination of the following elements: A rotary table provided with a series of spring jaws or gripers for holding the awls, mechanism for guiding the shanks of the awls into the jaws, mechanism for adjusting or insuring uniformity in the projecting parts of the awls, mechanism for holding the awls while being curved, mechanism or dies for imparting the desired curvature to the awls, and mechanism for discharging the awls when curved or finished, the whole being arranged substantially as shown and described.

In testimony that we claim the foregoing as our own invention we affix our signatures in presence of two witnesses.

CHAS. S. MANN.  
WM. Y. A. BOARDMAN.

Witnesses:

F. P. HALE,  
F. C. HALE.