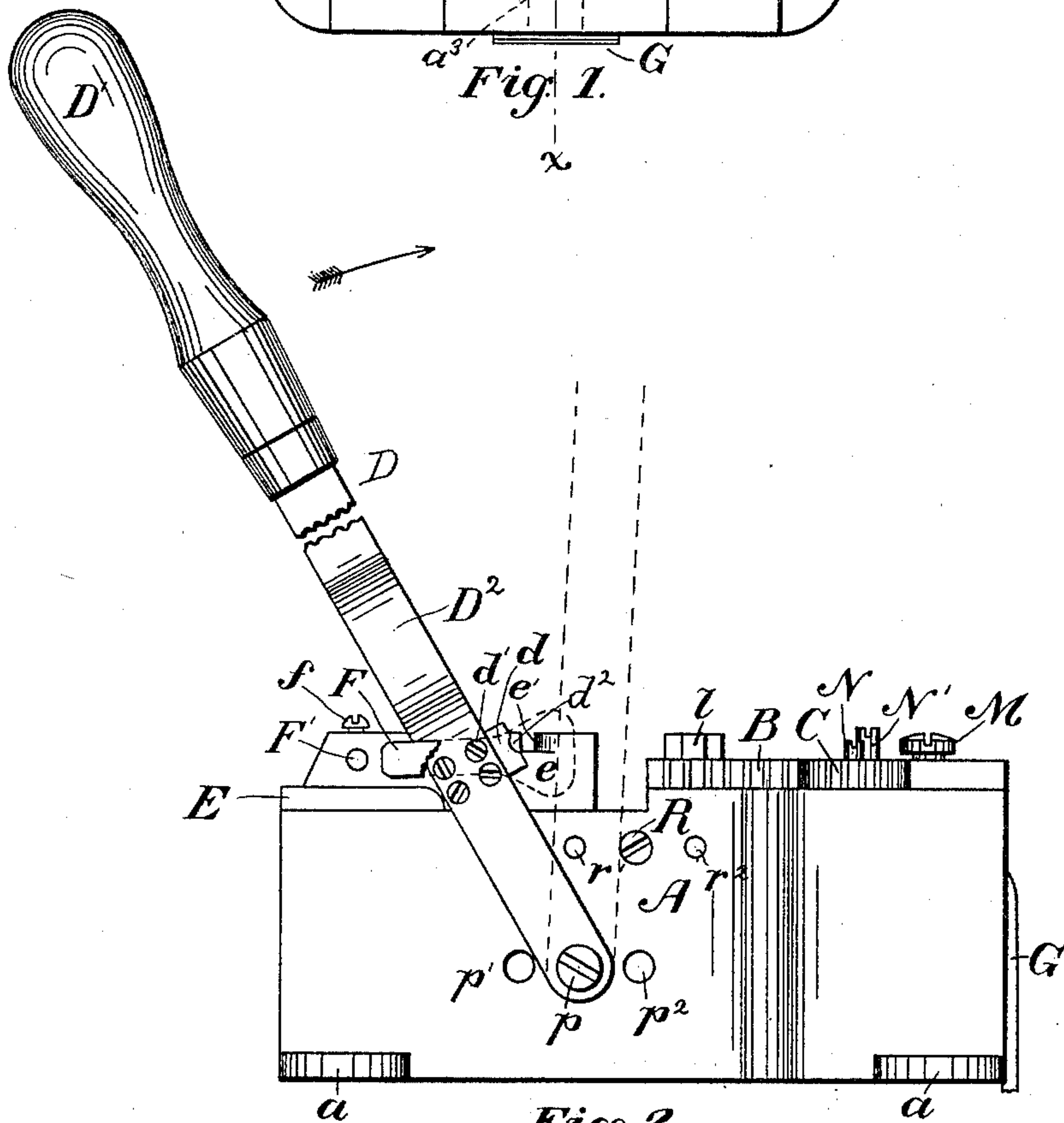
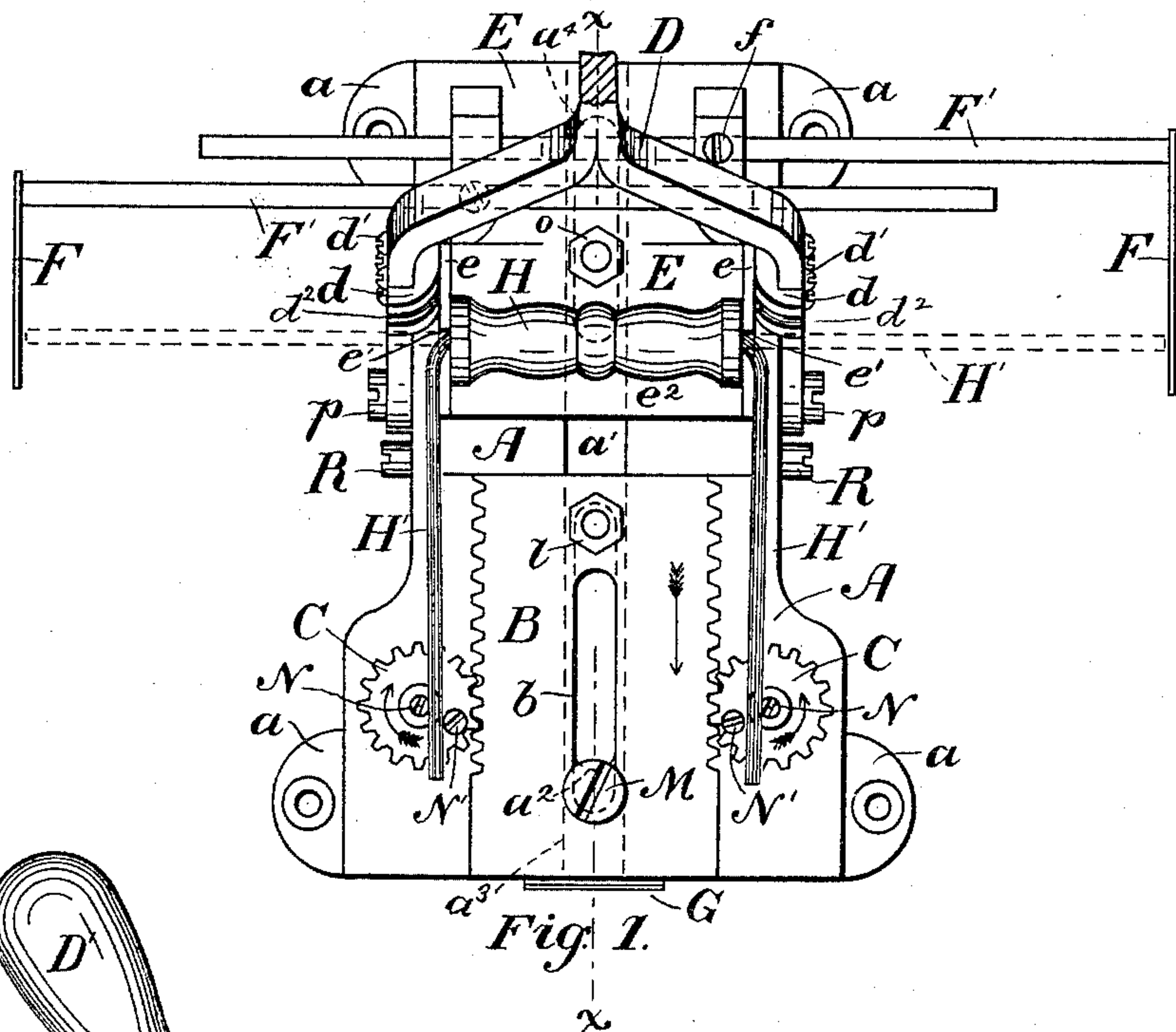


E. W. SPEAR.
BAIL BENDING MACHINE.

No. 461,877.

Patented Oct. 27, 1891.



Witnesses
Albert E. Leach
O. H. Gilman

Inventor
Ephraim W. Spear
by W. B. H. Downes
his atty.

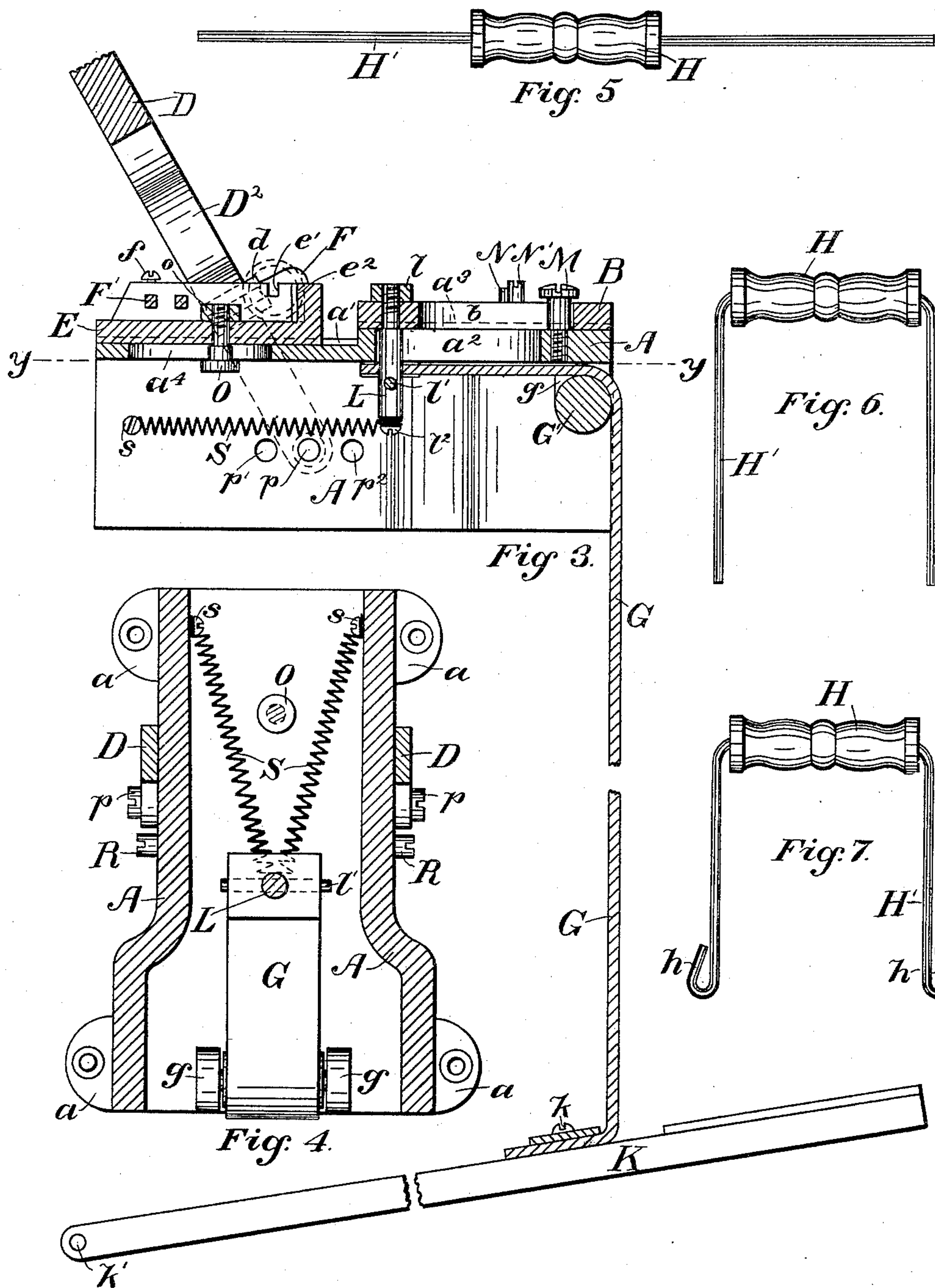
(No Model.)

2 Sheets—Sheet 2.

E. W. SPEAR.
BAIL BENDING MACHINE.

No. 461,877.

Patented Oct. 27, 1891.



Witnesses
Albert E. Leach
O. N. Gilman

Inventor
Ephraim W. Spear
by W. B. H. Dows,
his Atty.

UNITED STATES PATENT OFFICE.

EPHRIAM W. SPEAR, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
INTELLIGENT CAN COMPANY, OF PORTLAND, MAINE.

BAIL-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 461,877, dated October 27, 1891.

Application filed January 28, 1891. Serial No. 379,369. (No model.)

To all whom it may concern:

Be it known that I, EPHRIAM W. SPEAR, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Bail-Bending Machines, of which the following is a full specification.

My invention consists of an improved machine intended especially for bending the bails for cans, pails, and similar receptacles from the straight wire into the shape required for use, but which may of course be used for bending wire for various purposes.

Referring to the accompanying drawings, Figure 1 is a plan view of my machine. Fig. 2 is a side elevation. Fig. 3 is a section on x , Fig. 1. Fig. 4 is a section on y , Fig. 3. Fig. 5 shows the bail-wire and handle before they are placed in the machine. Fig. 6 shows the same after the first operation of bending; and Fig. 7 shows the same bent in the required shape, ready for use.

A is the standard of the machine, preferably made of a single metal casting in the shape shown, and having ears a provided with screw-holes whereby the machine may be screwed to a bench or stand.

D is a lever surmounted by the handle D' and bifurcated at its lower end into two branches D^2 to embrace the standard A, being pivoted thereto on opposite sides at p . On the inner sides of the branches D^2 are fastened, preferably by screws d' , the forming-blocks d , having the curved grooves d^2 on their inner surfaces.

E is a plate screwed or clamped on top of the standard near the rear thereof and adapted to be held at different positions thereon, for reasons hereinafter stated. To this end the top of the standard A is provided with the slot a^4 , Fig. 3, in which fits the enlarged portion of the shank of the clamping-screw O, and with the groove a' , in which fits a wide tongue on the under surface of the plate E, the said plate E being held in any desired position by tightening the fastening-nut o on said screw. The front e^2 of the plate E is preferably cut out to form a seat for the handle H of the bail, as shown in Fig. 1, e being a flange on each side of the plate, the distance between the two side flanges e being such

that the handle H fits easily between them. Each flange e is provided with the depression e' of sufficient size to contain within it the material of the bail H' as it projects on either side. Through projections on the plate E pass two rods F' , carrying at their outer ends the guides F. These rods are held by the fastening-screws f , and are so adjusted that the said guides F will determine that the handle H is on the center of the straight bail-wire H' when placed in the machine, or, in other words, that an equal length of said wire projects on each side of the handle, in a manner readily understood by reference to Fig. 1.

On the top of the standard A is arranged the double sliding rack B, having teeth along both sides thereof gearing with pinions C, which turn on screws or pins set in said standard. The top of the standard has the slot a^2 , while the rack B has a slot b over the same, arranged as shown in Fig. 3.

M is a guiding-screw set in the top of the standard A, the enlarged shank of said screw serving as a guide over which the slot moves as the rack slides back and forth. The rack is also preferably grooved to slide in the tongue a^3 on the top of the standard.

L is a short rod secured to the rack B and projecting downward through the slot a^2 , within which it is adapted to slide. As herein shown, the said rod is screw-threaded at its upper end and rigidly held to the rack B by means of the nut l . Projecting downward from the top of the standard within the same are the two lugs g , between which the roller G' is journaled. G is a band passing over the said roller, one end of the band being secured to the rod L, while the other is fastened to a treadle K by means of one or more screws k or otherwise. As herein shown, the rod L passes through the band G and is provided on the under side of the band with the pin l' , which holds the two together. The treadle K is pivoted at k to any suitable support beneath the bench or stand on which the machine rests. The rack B is ordinarily kept at its extreme backward position by means of one or more springs S, secured to the rod L at one end and at the other to the standard near the rear thereof.

The screws or pins N on which the pinions C turn project considerably above the upper surface of the pinion, and each pinion contains, moreover, a second screw or pin N' arising therefrom, the object of the screws or pins N N' being to make the final bends at the extreme lower ends of the bail-wire, (represented by *h* in Fig. 7.) The handle and bail-wire are received into the machine in the form shown in Fig. 5, the handle H being placed on the plate E against the seat *e*², with the bail-wire H' in the depressions *d'* and with the handle in the center of the wire as determined by the guides F, the lever D D² being in the position shown in Figs. 1, 2, and 3. The lever is then carried forward in the direction indicated by the arrow in Fig. 2, and the forming-blocks *d* being so arranged that the grooves therein are in line with the bail-wire H' the said bail-wire is bent by this operation into the shape shown in Fig. 7, the two bent portions being carried first upward and forward (as the forming-blocks move in the arcs of circles on either side) and then downward, being left with the forward ends between the pins or screws N and N' on each pinion C, as shown in Fig. 1. The stops R, one on each side of the standard, determine the extreme forward position of the lever D D². The first operation being completed, the foot is applied to the treadle K, which, being pressed down, pulls the band G, which thus moves forward the double rack B, the pinions C being thereby turned in the direction indicated by the arrows thereon in Fig. 1. The ends of the bail are thus bent outward into the position indicated by *h*, Fig. 7, by the action of the pins or screws N N'.

In order to adapt the machine for bending bails of different lengths I have provided it with several adjustments, two of which have already been alluded to—viz., the rods F' and guides F, adjustable to different lengths of bail-wire, and the plate E, capable of being moved forward or backward and clamped in various positions.

As shown in the drawings, the machine is adjusted for bending bails of medium length, the pivot-screws *p* of the lever D D² being on each side screwed into the central of three holes, the other two of which are *p'* *p*². In like manner the screw-stop R, determining the

forward position of the lever, may have other positions *r'* *r*², corresponding to the holes *p'* *p*². If longer bails are to be bent, the plate E is moved farther back and clamped in the proper position, the pivotal screws *p* are inserted in the holes *p'*, and the screw-stops R in the holes *r'*.

I claim—

1. In a bail-bending machine, a bifurcated lever having grooved forming-blocks on the inner sides of the branches thereof, in combination with a plate provided with a seat for the bail-handle and having side flanges provided with depressions for the bail-wire, substantially as described.

2. In a bail bending machine, the combination, with a bail-holding seat, of a sliding rack and a pinion gearing therewith turning on a pivot N and provided with a screw or pin N', said pivot projecting above the surface of the pinion, whereby the end of the bail is bent, substantially as described.

3. In a bail-bending machine, the combination, with a bail-holding seat, of a sliding rack B, having teeth on both sides, and pinions C, gearing with said rack, mounted on pivots N and provided with screws or pins N', said pivots projecting above the surface of the pinions projecting upward from the faces of said pinions, substantially as and for the purposes described.

4. The combination, with a bail-handle-holding seat, of a sliding rack having teeth on both sides and pinions gearing therewith having bail-bending pins or screws, arranged and operating substantially as described.

5. In a bail-bending machine, a standard provided with a slot *a*², in combination with a double sliding suitably-guided rack, bail-bending pinions C, pivoted on said standard and gearing with said rack, a bail-holding seat, a rod L, secured to said rack and sliding in said slot, a treadle-operated band G, secured to said rod, and a spring counteracting the said band, arranged and operating substantially as described.

In witness whereof I have hereunto set my hand.

EPHRIAM W. SPEAR.

Witnesses:

WM. B. H. DOWSE,
ALBERT E. LEACH.