(No Model.) 2 Sheets—Sheet 1.

J. G. REHFUSS.

MACHINE FOR FORMING WIRE BAILS FOR BOTTLE STOPPERS.

No. 351,653. Patented Oct. 26, 1886.

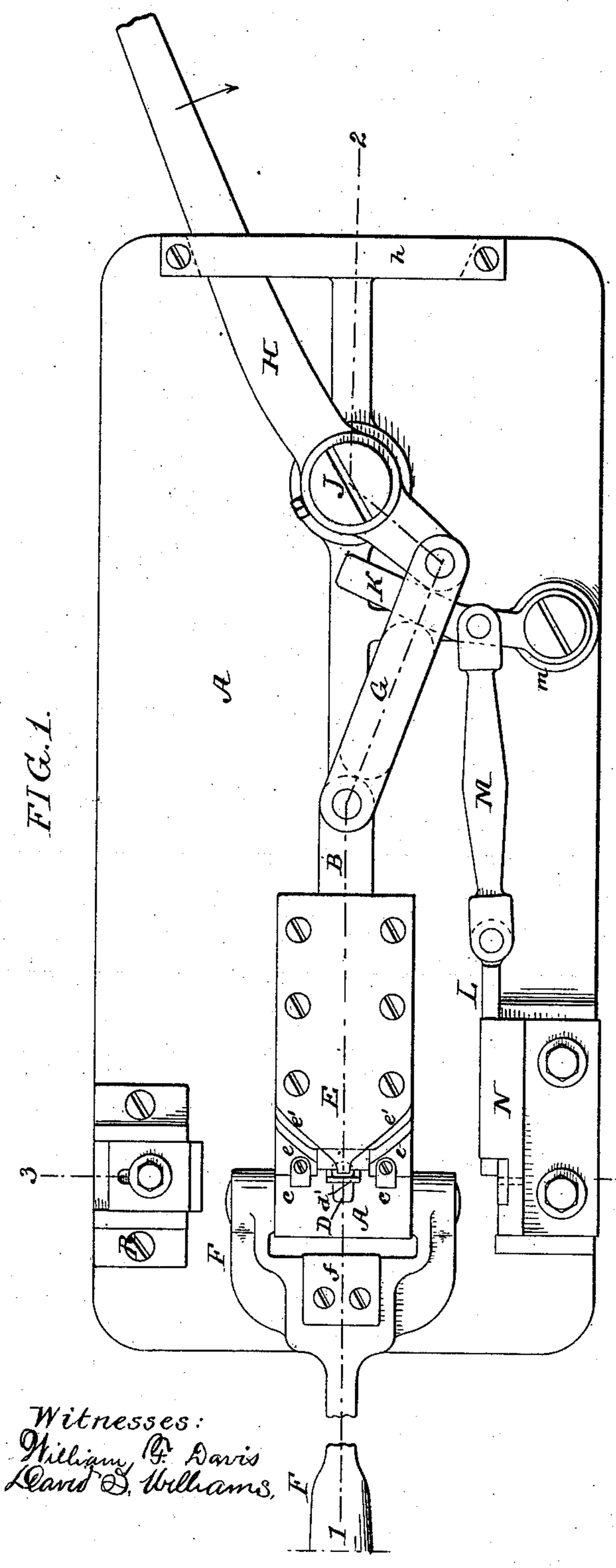


FIG. 1.

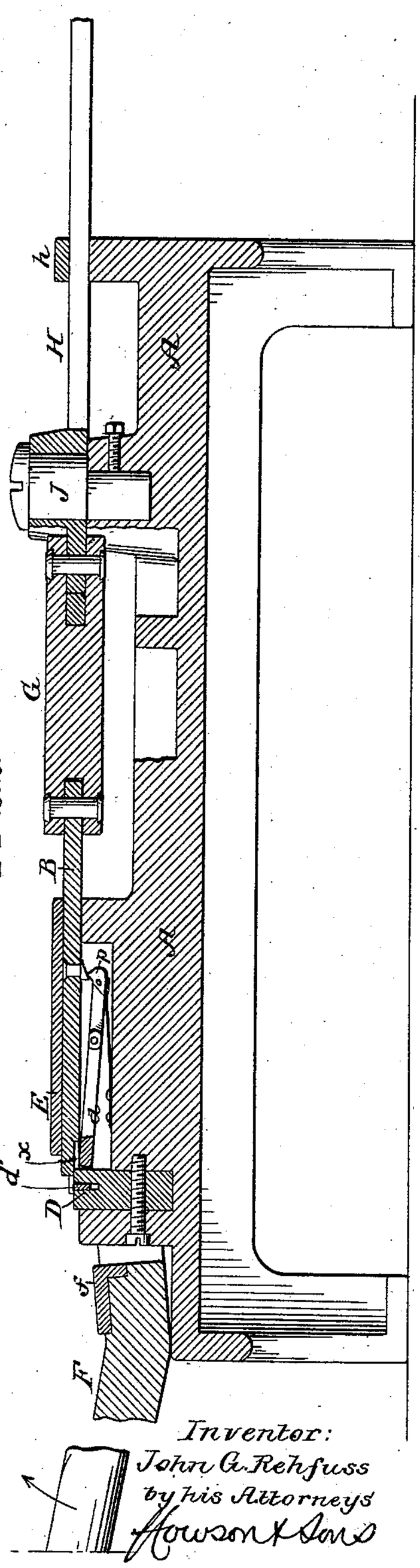


FIG. 2.

Witnesses:
William G. Davis
David S. Williams.

Inventor:
John G. Rehfuss
by his Attorneys
Howson & Sons

(No Model.) 2 Sheets—Sheet 2.

J. G. REHFUSS.

MACHINE FOR FORMING WIRE BAILS FOR BOTTLE STOPPERS.

No. 351,653. Patented Oct. 26, 1886.

FIG. 8.

FIG. 6.

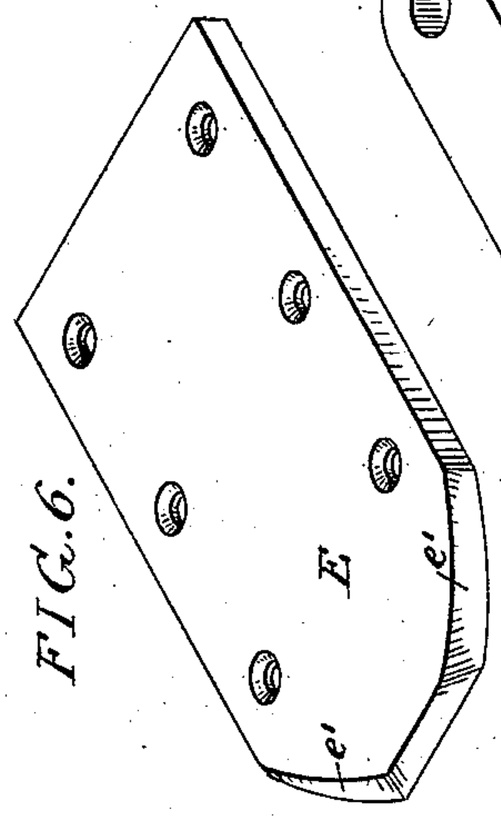


FIG. 7.

FIG. 9.

FIG. 10.

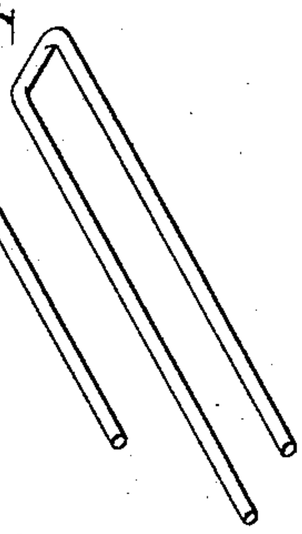


FIG. 11.

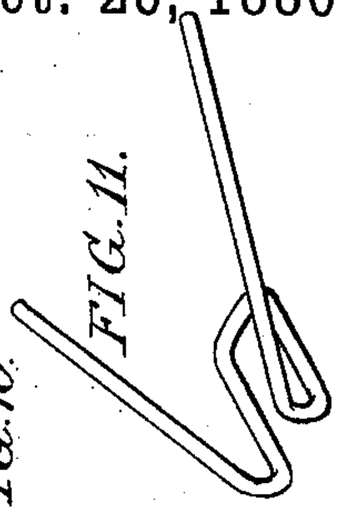


FIG. 3.

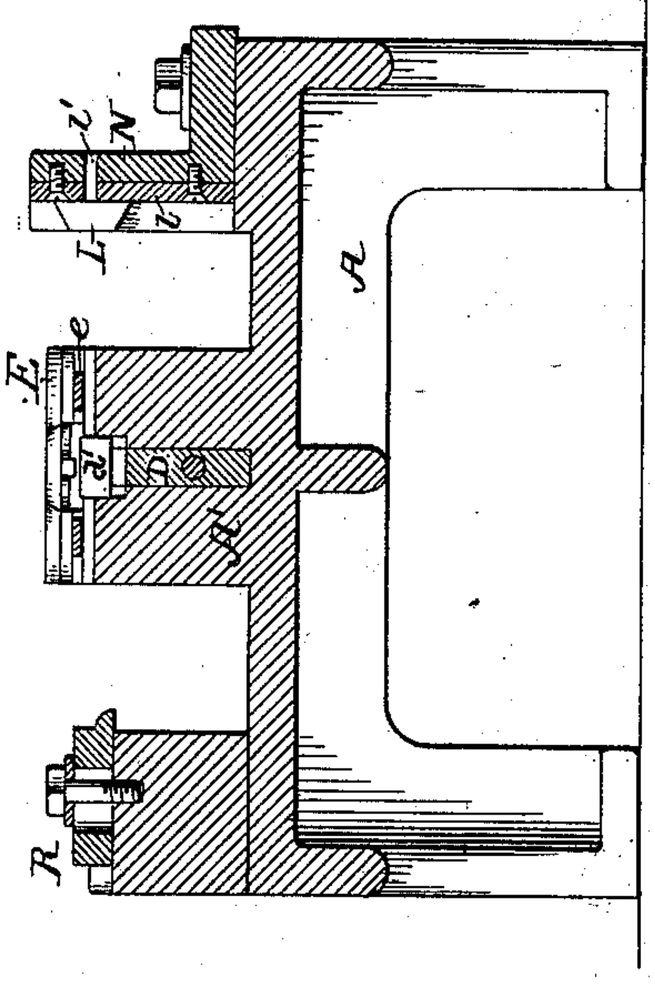
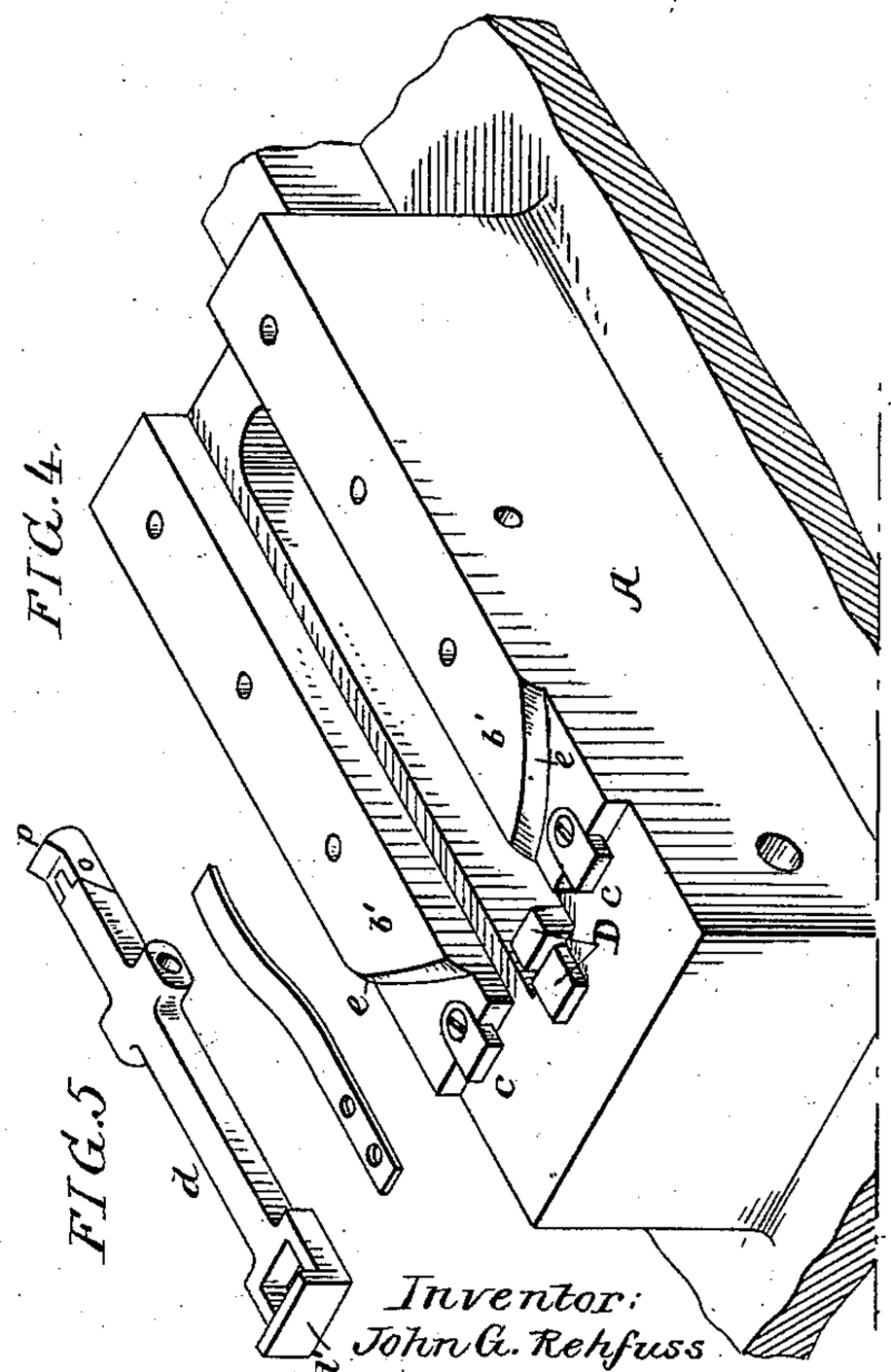


FIG. 4.



Witnesses:
David S. Williams,
William F. Davis

Inventor:
John G. Rehfuss
by his Attorneys
Howson & Sons

UNITED STATES PATENT OFFICE.

JOHN GEORGE REHFUSS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE JOLY STOPPER COMPANY, OF SAME PLACE.

MACHINE FOR FORMING WIRE BAILS FOR BOTTLE-STOPPERS.

SPECIFICATION forming part of Letters Patent No. 351,653, dated October 26, 1886.

Application filed February 27, 1886. Serial No. 193,443. (No model.)

To all whom it may concern:

Be it known that I, JOHN GEORGE REHFUSS, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Machines for Forming Wire Bails for Bottle-Stoppers, of which the following is a specification.

The object of my invention is to construct a simple but efficient machine for the formation or partial formation of the wire bails of bottle-stoppers, and this object I attain in the manner which I will now proceed to describe.

My invention is designed for the preliminary bending of the wire to form bails more particularly for the bottle-stoppers for which Letters Patent No. 325,181 were granted August 25, 1885. The final bending of the wire into the completed bail is accomplished by additional mechanism, for which I have made a separate application for patent, filed February 26, 1886, Serial No. 193,444.

In the accompanying drawings, Figure 1 is a plan view of my machine. Fig. 2 is a longitudinal sectional view on the line 1 2, Fig. 1. Fig. 3 is a transverse sectional view on the line 3 4, Fig. 1. Figs. 4, 5, 6, 7, and 8 are detached views of parts of the machine; and Figs. 9, 10, and 11 are views which represent the different steps in the bending of the wire in my machine.

The main operative parts of my machine comprise a die or former, D, mounted in a block, A′, a reciprocating plunger, B, and a bending-lever, F. With these are combined an adjustable gage, R, on one side of the machine and a cutter on the other side of the machine for determining the length of wire needed for the formation of the bail. By means of the devices alluded to, and hereinafter more fully described, a straight length of wire, Fig. 9, is first bent into the U shape illustrated in Fig. 10, and then a backward curve is imparted to the legs of the U-piece, as illustrated in Fig. 11. This partially-bent wire, Fig. 11, is then ready to be transferred to the machine, which, as I have said, forms the subject of a separate application for a patent.

Referring now to the detailed construction of my present invention, A is the bed of the machine, on which is mounted a guide-block, A′, carrying the die or former D, slotted at its upper end, as illustrated in Figs. 2 and 4, for the passage of the wire to be bent. In this block are also formed longitudinal ways *b′*, Fig. 4, for the reception and guidance of a reciprocating plunger, B, which is held in place by a suitable cover-plate, E. As illustrated more fully in Fig. 7, the plunger B is cut away on its under side at *x*, to pass over the top of the die or former D, but leaving on each side fingers *y* of such a character as to come in contact with the wire held in the crotch of the former D when a forward movement is imparted to the bar B.

On the upper face of the outer end of the bar B are formed inclined beveled edges *e*, which, when the bar is in the proper position, will coincide with and form continuations of beveled inclines *e′* on the cover-plate E and top of the blocks *a*, Figs. 1, 4, and 6.

To the upper end of the ways *b′*, on each side of the die or former D, are overlapping fingers *c*, for the guidance and retention of the strip of wire when it is first inserted into the top of the former D and beneath these fingers.

To the front end of the block A′ is pivoted a bifurcated hand-lever, F, in the crotch of which is set a tempered plate, *f*, to come in contact with and bend the legs of the U-piece, Fig. 10, into the form Fig. 11 by throwing up the said lever F, as indicated by the arrow, Fig. 2.

On one side of the machine, in line with the slot of the die or former D, is an adjustable stop, R, and on the opposite side of the machine is an adjustable bracket, N, carrying a reciprocating cutter, L, acting against a die, *l*. Through an opening, *l′*, in this die the wire is fed to the machine.

In connection with the former D, I combine an ejector, *d*, consisting of a lever pivoted in a longitudinal slot in the block A, below the bar B, and having a cross-piece, *d′*, at its outer end adapted to the slot in the die or former D below the wire. The opposite end of the pivoted ejector is provided with a beveled projection, *p*, Figs. 2 and 5, against which acts a cam, *a*, on the under side of the bar B, to throw the outer end of the lever *d* upward and eject the bent wire. I prefer to make this beveled projection *p* yielding by pivoting it to the lever *d* in such a way that as the plunger advances the

projection will turn on its hinge against the action of the spring *s* on the under side of the lever *d*. This spring at the same time acts to return the opposite end of the ejector to the bottom of the slot in the die or former D when released from the cam *a*.

To impart the necessary reciprocating movement to the plunger B, I provide a lever, H, pivoted on a pin, J, mounted on the bed of the machine, this lever H being connected by a link, G, to the plunger B. The outer end of the lever H is guided by a strap, *h*, on the bed-plate. By suitable manipulation of the lever H by hand or power any desired movement may be imparted to the plunger B. The pin J is mounted in the bed-plate A eccentrically, so that by adjusting this pin to different positions in the bed-plate the movement of the plunger relatively to the die or former D may be adjusted.

Reciprocating movement may be imparted to the cutter-bar L by this lever H through the medium of an arm, K, adapted to a slot in the link G, and pivoted to the bed-plate at *m*, and connected through the link M to the cutter-bar L.

The operation of the machine is as follows: The wire being fed into the machine through the die of the bracket N and the former D until its outer end comes into contact with the stop R, the lever H is moved in the direction of its arrow, Fig. 1, so that the length of the wire is severed by the cutter L, and at the same time the plunger B is advanced until its end, passing over the die or former D, bends the wire around the former into the U shape illustrated in Fig. 10, the legs of the U-piece then projecting over the lever F, which is in the position shown in Fig. 2. This lever F is then thrown upward in the direction of its arrow to give the return-bend to the legs of the U-piece. As the lever F is thrown over to its extreme position the bent ends of the wire are spread out by the inclines *e*, as shown in Fig. 11. The levers F and H are then returned to their former positions, and as the plunger B is drawn back its cam *a*, acting on the beveled projection of the lever *d*, ejects the bent blank.

I claim as my invention—

1. The combination, in a wire-bending machine, of a die or former, D, with a reciprocating plunger, B, having a recess, *x*, and fingers *y y*, and a bending-lever, F, substantially as set forth.

2. The combination, in a wire-bending machine, of a guide-block, A′, having beveled inclines *e*, a plunger, B, and a former, D, with a bending-lever, F, substantially as and for the purpose described.

3. The combination, in a wire bending machine, of a slotted former and reciprocating plunger, B, with an ejector-lever, *d*, adapted to be operated by the plunger, substantially as set forth.

4. The combination, in a wire-bending machine, of a reciprocating plunger having a cam with a die or former, and an ejector-lever having a yielding projection, *p*, at its opposite end, to come into contact with said cam, substantially as set forth.

5. The combination, in a wire-bending machine, of a slotted die or former with an ejector-lever, *d*, having a cross-piece, *d′*, to enter the slot of the die or former, substantially as set forth.

6. The combination, in a wire-bending machine, of a guide-block, A′, and overlapping guide-fingers *e* with die or former D and reciprocating plunger, substantially as specified.

7. The combination of the guide-block, die or former, and reciprocating plunger of a wire-bending machine with an operating-lever and an eccentrically-mounted pivot-pin adjustable to different positions, substantially as specified.

8. The combination, in a wire-bending machine, of a reciprocating plunger, B, and die or former D with a link, G, lever H, and an eccentrically-mounted pivot-pin adjustable on the base of the machine, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

J. GEO. REHFUSS.

Witnesses:
WILLIAM D. CONNER,
HARRY SMITH.