

(No Model.)

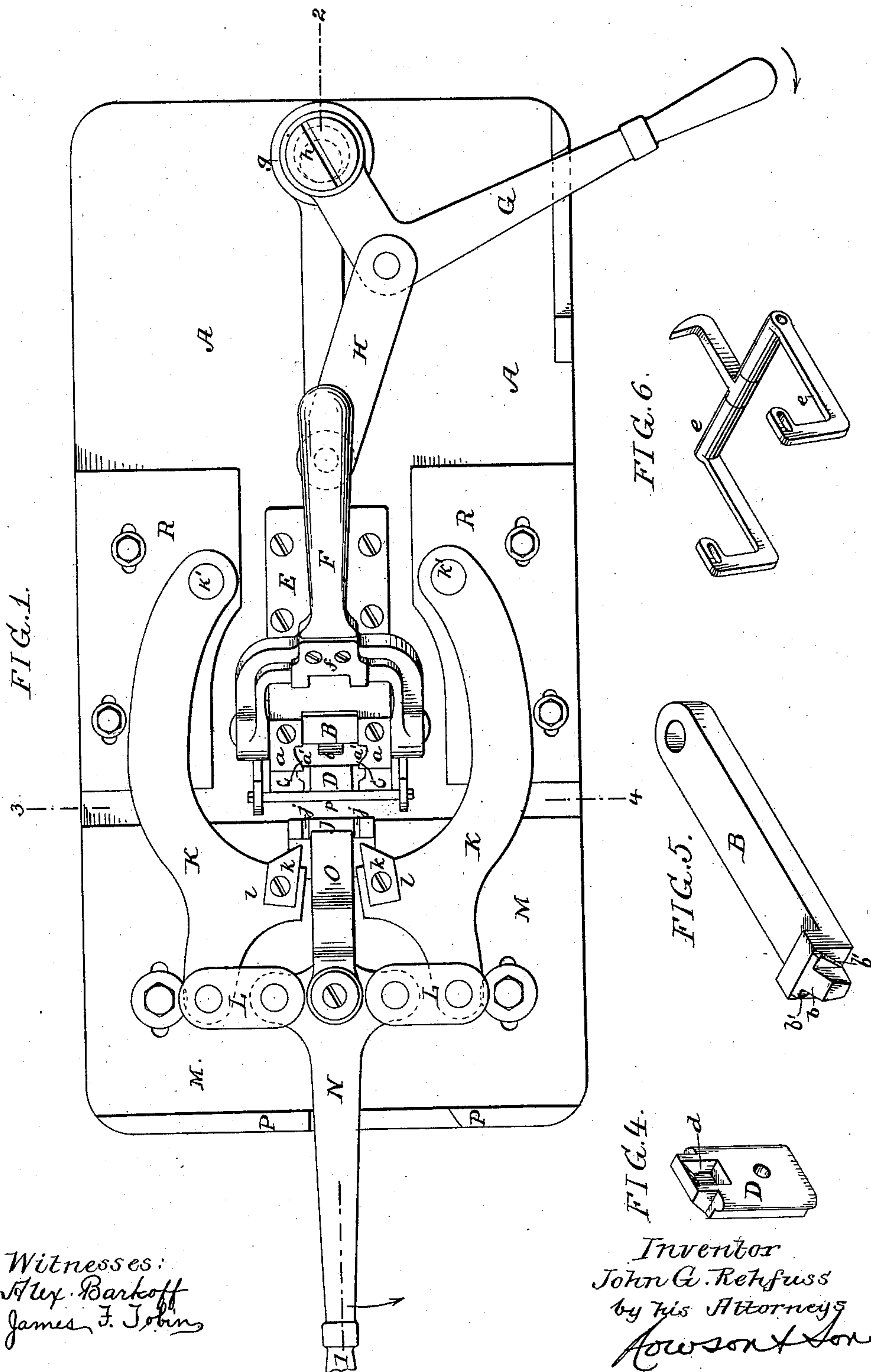
2 Sheets—Sheet 1.

J. G. REHFUSS.

MACHINE FOR FORMING WIRE BAILS OF BOTTLE STOPPERS.

No. 351,527.

Patented Oct. 26, 1886.



Witnesses:  
Alex. Barkoff  
James F. Tobin

Inventor  
John G. Rehfuß  
by his Attorneys  
Howson & Sons

(No Model.)

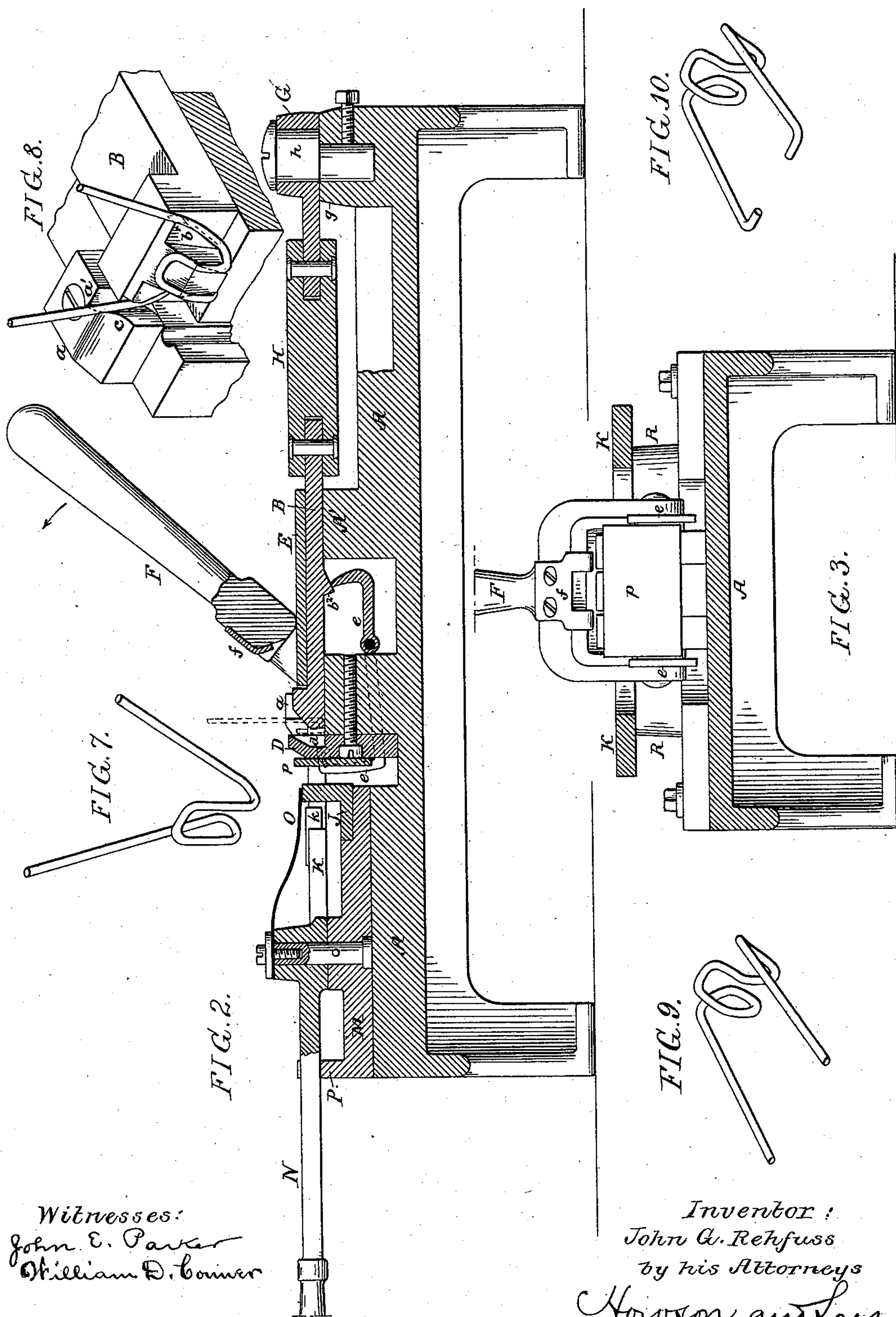
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J. G. REHFUSS.

# MACHINE FOR FORMING WIRE BAILS OF BOTTLE STOPPERS.

No. 351,527.

Patented Oct. 26, 1886.



Witnesses:  
John E. Parker  
William D. Conner

*Inventor :*  
*John A. Reh fuss*  
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*Horton and Lins*



# UNITED STATES PATENT OFFICE.

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

## MACHINE FOR FORMING WIRE BAILS OF BOTTLE-STOPPERS.

SPECIFICATION forming part of Letters Patent No. 351,527, dated October 26, 1886.

Application filed February 27, 1886. Serial No. 193,444. (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  
5 Improvements in Machines for Forming Wire Bails of Bottle-Stoppers, of which the following is a specification.

The object of my invention is to construct a machine for the formation or partial formation  
10 of the wire bails of bottle-stoppers; and this object I attain in the manner fully described hereinafter. This machine is more particularly designed for the final bending of the wire to form the bail of a certain bottle-stopper,  
15 which was patented August 25, 1885, No. 235,181, the preliminary formation of the bail being accomplished by a machine for which a separate application for patent has been made, filed of even date herewith.

20 In the accompanying drawings, Figure 1 is a plan view of my machine. Fig. 2 is a longitudinal section on the line 1 2, Fig. 1. Fig. 3 is a transverse section on the line 3 4, Fig. 1. Figs. 4, 5, and 6 are detached perspective  
25 views of parts of the machine. Fig. 7 is a view of the bent wire as it comes from the preparatory machine; and Figs. 8, 9, and 10 illustrate the successive steps in the bending of the wire into the bail by my present machine.  
30

The principal parts of the machine which perform the different operations of bending the wire into the bail consist of a die or former, D, mounted in a block, a reciprocating  
35 plunger, B, a pivoted bending-lever, F, and bending-arms K K. The wire is fed to the machine in the shape shown in Fig. 7, and at the first operation it is bent to the form illustrated in Fig. 8. Then the legs of the partially-  
40 formed bail are bent over, as shown in Fig. 9, and, lastly, the ends are bent inward, as illustrated in Fig. 10, thus completing the formation of the bail.

45 I will now proceed to describe the detailed construction of my machine.

50 The former or die D is secured in the block A' on the surface of the bed A of the machine, and in the inner face of this die is a recess, d, near the top, Fig. 4. The reciprocating plunger B is mounted between ways on the surface of this block A', and held in place by a suitable cover-plate, E.

Guide-pieces a a are secured on the surface of the ways of the block A' at their outer ends, and have recesses a' formed on the inside  
55 thereof, Fig. 1, in which the legs of the bent wire, Fig. 7, are placed. These guide-pieces have inwardly-projecting cams c, extending from the recesses a', for a purpose explained hereinafter. This plunger B has a projection,  
60 b, Fig. 5, at its outer end, of such construction that it will force the wire into the recess d in the former or die D, giving the bend or kink to the yoke-shaped portion, as shown in Fig. 8, and on each side of this central projection,  
65 b, are inclined flanges, b', Fig. 5, over which the legs of the bail fit at their bases, as shown in Fig. 8. On the under side of this plunger B is a projection, b<sup>2</sup>, adapted to come in contact with an arm of a forked lever, e, Fig. 6,  
70 which is pivoted in a slot in the block A', and carries an ejecting-plate, p, connected to the front end thereof.

Motion is imparted to this reciprocating plunger B through the action of a lever, G,  
75 connected by a link, H, to said plunger. This lever G is pivoted on a stud, g, on the frame of the machine by a pin, h, eccentrically mounted in the table for the purpose of adjusting the reciprocating movement of the plunger B.  
80

Pivoted to the block A' on each side, and near its front end, is a bifurcated lever, F, in the crotch of which is set a tempered plate, f, to come in contact with and to bend the legs  
85 of the wire down into slots j in a plate, J, Fig. 2, secured to an adjustable plate, M, on the bed of the machine, thereby converting the bail from the shape shown in Fig. 8 to that shown in Fig. 9.

Arms K K, Fig. 1, are pivoted at their ends  
90 k' to adjustable plates R R on the bed of the machine, and are connected at their opposite ends by links L L to a hand-lever, N, which is pivoted to a stud, m, on the adjustable plate M on the bed of the machine. These arms K  
95 K have inwardly-projecting portions l, carrying fingers k k, which are to act on the ends of the legs of the wire and bend them inward round the slots j in the plate J, to bring them to the form shown in the completed bail, Fig. 10.  
100

A stop, P, is formed on a rib on the plate M at a suitable point to arrest and limit the backward movement of the lever N. A spring, O,



is secured on the top of the pivot-pin of the lever N, and has its outer end resting on the top of the plate J, to temporarily retain the bent ends of the legs of the completed bail prior to the ejection of the latter from the machine.

The operation of the machine is as follows: The partially-bent wire, Fig. 7, is placed in the machine with its legs upward, and the yoke portion toward the recess in the die D, as indicated by dotted lines in Fig. 2. The lever G is then pulled in the direction of its arrow, Fig. 1, so as to throw the plunger B outward toward the die D, which will have the effect of bending the wire into the form shown in Fig. 8, the kink or bend being imparted to the yoke by its compression between the beveled end of the plunger B and the corresponding recess in the die D, while the upper ends of the legs of the wire are bent toward each other to some extent by the forward movement of the plunger B pressing them inward against the cams *c*, Figs. 1 and 8, of the guide-pieces *a*, the bases of the legs of the wire being in the meantime retained in place by the inclined projections *b'*. When the plunger has effected this result, the pin by which the link H is connected to the elbow-lever G will then be in line with the plunger, so as to lock the latter in its extended position and prevent its accidental return. The bifurcated lever F is then thrown over in the direction of the arrow, Fig. 2, to bend the legs of the wire down into the slots in the plate J. In this downward and outward movement of the legs of the wire their outer ends will be brought a little nearer together by their continued movement against the cams *c*, and the bail will then be brought to the form illustrated in Fig. 9. The lever N is now forced in the direction of its arrow, Fig. 1, to move the jaws of the arms K K together, and the projections *k k* will bend the ends of the legs of the wire around the slots *j* in the plate J to the form illustrated in Fig. 10. The plunger B is now thrown back, and the projection *b'* on its under side is thereby brought into contact with the ejecting lever *e*, which will cause the plate P to rise quickly and eject the finished bail from the machine. As the inwardly-bent ends of the legs of the bail are held under the spring O at one end, and the bent yoke is at the same time held in the recess *d* of the die, the ejecting-plate meets some little resistance until the bent ends of the legs of the bail are

freed from the said spring, and owing to this temporary restraint the bail will be jerked out of the way and the press will be ready for the reception of the next blank.

By mounting the levers K K and N and the plate J on the adjustable plates R and M, the relative actions of the levers on the bail-wire may be varied as found desirable.

I claim as my invention—

1. The combination, in a wire-bending machine, of a die or former, D, having the recess *d*, with a reciprocating plunger, B, having the projection *b* to bend the wire yoke, substantially as set forth.

2. The combination, in a wire-bending machine, of a former, D, having the recess *d*, with a reciprocating plunger, B, having a projection, *b*, to bend the yoke, and a bending-lever, F, substantially as set forth.

3. The combination, in a wire-bending machine, of a guide-block, A', having guide-pieces *a a*, with a former or die, D, and a reciprocating plunger, B, substantially as set forth.

4. The combination, in a wire bending machine, of a former or die, D, having a recess, *d*, with a plunger, B, provided with a projection, *b*, and flanges *b'*, having inclined edges, substantially as set forth.

5. The combination, in a wire-bending machine, of a former or die, D, and reciprocating plunger B, with arms K K, having projections *k k*, and plate J, having slots, substantially as specified.

6. The combination, in a wire bending machine, of a former, reciprocating plunger, and ejector, with a spring, O, substantially as set forth.

7. The combination, in a wire-bending machine, of a former, D, plunger B, arms K K, having projections, and a slotted plate, J, with lever N, and connecting-links L L, substantially as set forth.

8. The combination of a former, D, plunger B, arms K K, having projections, and connected lever N, with slotted plate J, and adjustable plates R and M, as and for the purpose specified.

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

JOHN GEORGE REHFUSS.

Witnesses:

WILLIAM F. DAVIS,  
HARRY SMITH.