

(No Model.)

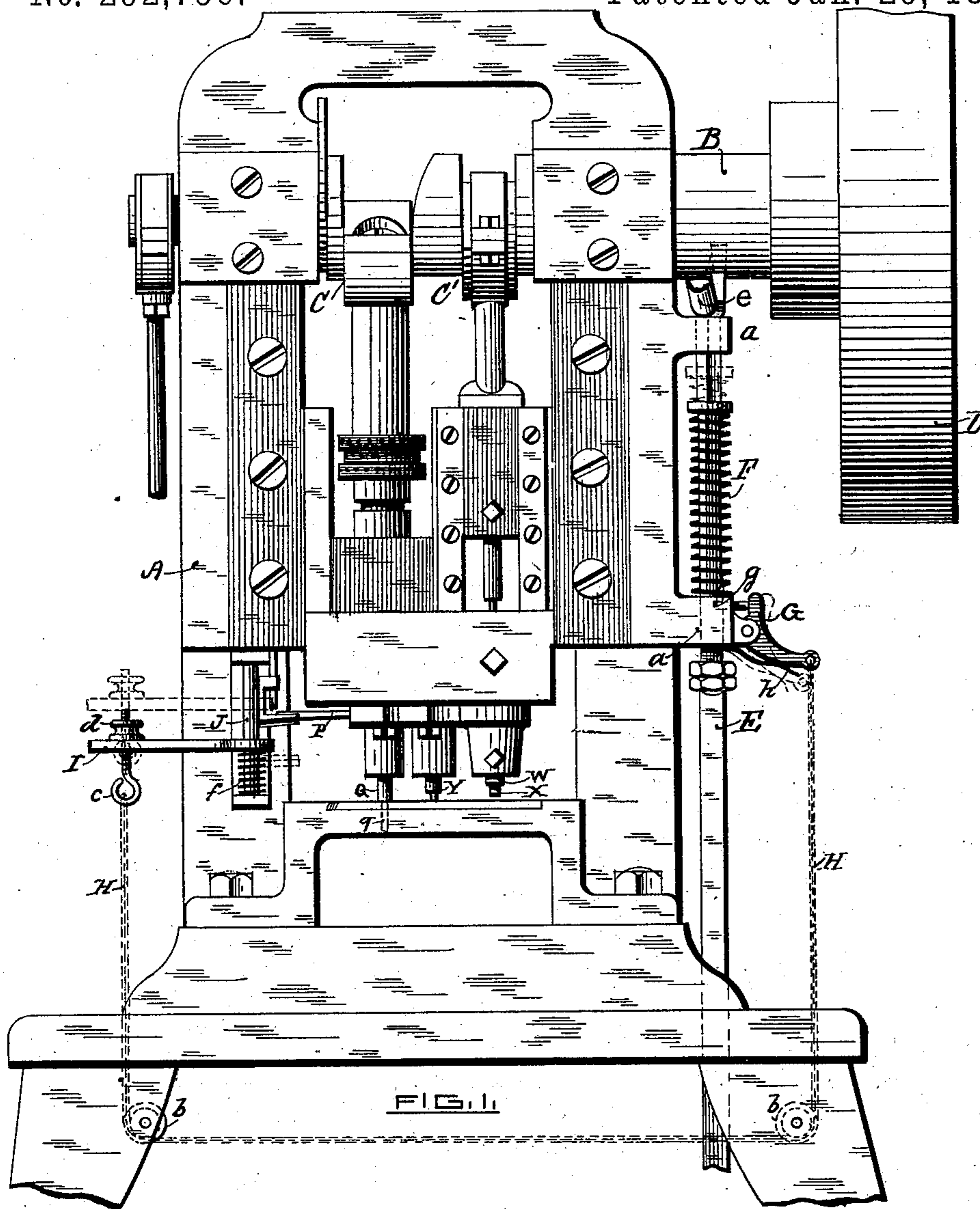
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W. I. MACOMBER.

# AUTOMATIC STOP MOTION FOR PUNCHING AND FORMING PRESSES.

No. 292,756.

Patented Jan. 29, 1884.



WITNESSES.

George L. Vorse

Socrates Scholfield

INVENTOR,

William B Macomber

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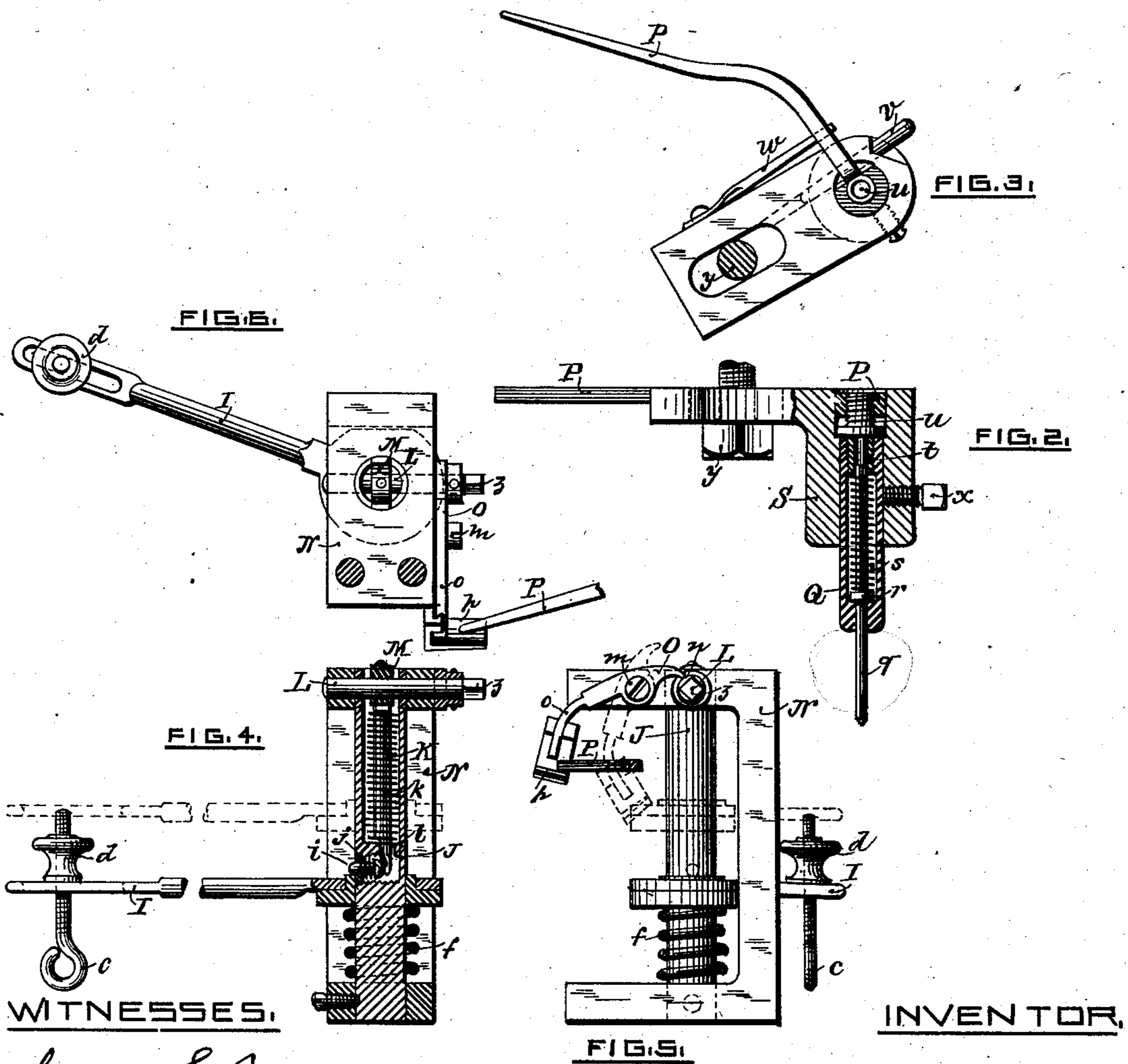
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# UNITED STATES PATENT OFFICE.

WILLIAM I. MACOMBER, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO  
GEORGE L. VOSE, OF SAME PLACE.

## AUTOMATIC STOP-MOTION FOR PUNCHING AND FORMING PRESSES.

SPECIFICATION forming part of Letters Patent No. 292,756, dated January 29, 1884.

Application filed August 31, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM I. MACOMBER, of Providence, in the State of Rhode Island, have invented an Improvement in Automatic Stop-Motions for Punching and Forming Presses, of which the following is a specification.

My invention relates to an improvement in devices for stopping a power-press in case the finished article is not properly discharged from the machine; and it consists in the improved combination of devices, as hereinafter fully set forth.

Figure 1 is a front elevation of a power-press provided with my improvement. Figs. 2, 3, 4, 5, and 6 are detail views of the same.

In the accompanying drawings, A is the frame of the press; B, the shaft; C C', cranks for operating the several tools, and D the driving-pulley, which is made to turn loosely upon the shaft B, and is caused to impart rotation to the shaft by means of a sliding clutch, held in locking engagement with the pulley D by means of a spring, and withdrawn from engagement with the pulley D by means of the spring-operated bar E, provided at its upper end with the cam *e*, as usual in such machines. The bar E is held loosely in the guides *a a* of the frame, and is forced upward by means of the spiral spring F, and when drawn downward, thus causing the release of the spring-clutch for starting the machine in operation, it will be held in position by means of the pivoted pawl G, the point of which enters a notch, *g*, in the side of the bar E, and the spring *h* will serve to force the pawl into the notch. Either a handle or a pedal may be attached to the bar E, in order that the same may be operated to start the machine. Connection is made by means of the chain H, passing around the pulleys *b b* to the eye *c*, which is screwed into the arm I and firmly held therein by means of the check-nut *d*. The arm I is arranged to slide upon the hollow cylindrical bar J, and is forced upward thereon by means of the spiral spring *f*. It is also held at its lower position, in opposition to the upward action of the spring, by means of the bolt *i*, which is drawn backward to release the arm

I by means of the spiral spring *j'*. (Shown in the section, Fig. 4.) The bar K, beveled at its lower end for action upon the head of the bolt *i*, and passing loosely through the contraction *l* in the bore of the bar J, is forced upward by means of the spiral spring *k*.

Passing laterally through the upper end of the slide J is arranged the shaft L, upon which, within the bore of the slide J, is placed the eccentric M, so arranged with the bar K that the upward pressure of the bar, resulting from the resilience of the spring K, will be sufficient to cause a partial rotation of the shaft L.

Upon the side of the support M for the slide is secured the pawl O, pivoted at the point *m*, and adapted to engage with the notch *n*, made in an enlargement of the shaft L. The weighted arm *o* of the pawl O is provided with a projecting lip, *p*, adapted to receive the proper action of the lever P, which partakes of the up-and-down movement of the forming-tool Q, which is made hollow and provided with a loose central spindle, *q*, having a collar, *r*, above which is placed the spiral spring *s*, adapted to resist the upward movement of the spindle. The upper end of the spindle passes loosely through the bushing *t*, at the upper end of which rests the adjusting-screw *u*, held in the short arm of the lever P, pivoted upon the pin *v*, Fig. 3, and held against the upper end of the forming-tool Q and bushing *t* by means of the spring *w*. The forming-tool Q is held, by means of the screw *x*, in the holder S, which is attached by means of the screw *y* to the sliding head of the press.

The operation of the stop-motion will be as follows: The arm I is to be first forced downward against the action of the spiral spring *f* to the position shown in Figs. 1 and 4. A wrench is then to be applied to the square end *z* of the shaft L, and by turning the shaft L in the proper direction the bar K will be forced downward by means of the eccentric M, so that the beveled lower end of the bar K will force the bolt *i* outward, so that its outer end will serve to lock the arm I in its lower position, and in this case the shaft L is to be held from turning backward under the action of the spring

j by means of the weighted pawl O, which engages with the notch n. The outer end of the lever P is to be so adjusted by means of the screw u that at the extreme downward movement of the forming-tool Q the end of the arm P will just touch the upper surface of the projecting lip p of the pawl O. The machine is now to be started by drawing down the bar E until the pawl G enters the notch g in the bar, thus retaining the bar E in its extreme downward position until released either by the hand of the operator or by the automatic action of the machine. The press shown in the drawings is provided with three sets of tools at the upper side of the die-plate, and the piece of metal to be operated upon is made to pass successively under the action of each of them by suitably-arranged means.

In the manufacture of hollow beads from sheet metal, the blank is first cut out and made in cup form by means of the tools W and X, the latter moving through the former and serving to force the cut blank between suitable jaws for transmission to the tool Y, which serves to cut out the bottom of the previously-formed cup, and from which the perforated cup is carried to the forming-tool Q, by means of which the upper end of the perforated cup is closed inward to a spherical form, thus finishing the bead upon the spindle g, from which it is to be removed by means of a suitably-arranged stripper upon the proper elevation of the sliding head of the press, to which the forming-tool Q is attached. Now, in case of the failure of the stripper to remove the finished bead from the spindle g, then the subsequent stroke of the press will cause another bead to be placed on the spindle, and the two so placed will cause the derangement of the machine; but with my improvement, when two beads are placed upon

the spindle, the spindle will be forced upward within the forming-tool Q by means of the friction between the beads and the spindle until the upper end of the spindle strikes the head of the adjusting-screw u, causing the depression of the outer end of the lever P, and the depressed end of the lever, by striking the lip p of the pawl O, will serve to throw the pawl out of the notch n, thus allowing the bar K to move upward under the action of the spring k, and causing the simultaneous inward movement of the bolt i, which will release the sliding arm I and cause it to be carried upward by means of the spring f, and this upward movement of the arm I will be transmitted by means of the chain H to the pawl G, causing its elevation from the notch g and the consequent release of the spring-operated shipper-bar E, which will also cause the withdrawal of the clutch from the driving-pulley, and thus stop the movement of the press.

It is to be understood that my invention is not restricted to presses constructed for the manufacture of beads, but may be applied to presses adapted for the manufacture of various other articles.

I claim as my invention—

1. The combination of the tool Q, spindle g, spring s, pivoted lever P, and holder S, substantially as and for the purpose specified.
2. The combination of the shaft L, pawl O, provided with a projecting lip, p, eccentric M, bar K, spring k, bolt i, and spring j, with a sliding arm, I, spring f, connecting-chain H, pivoted pawl G, and spring-operated clutch-shipper E, substantially as described.

WILLIAM I. MACOMBER.

Witnesses:

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SOCRATES SCHOLFIELD.