S. W. BALDWIN.

MACHINES FOR PUNCHING METAL-PLATES.

No. 195,559. Patented Sept. 25. 1877.

Fig. 1.

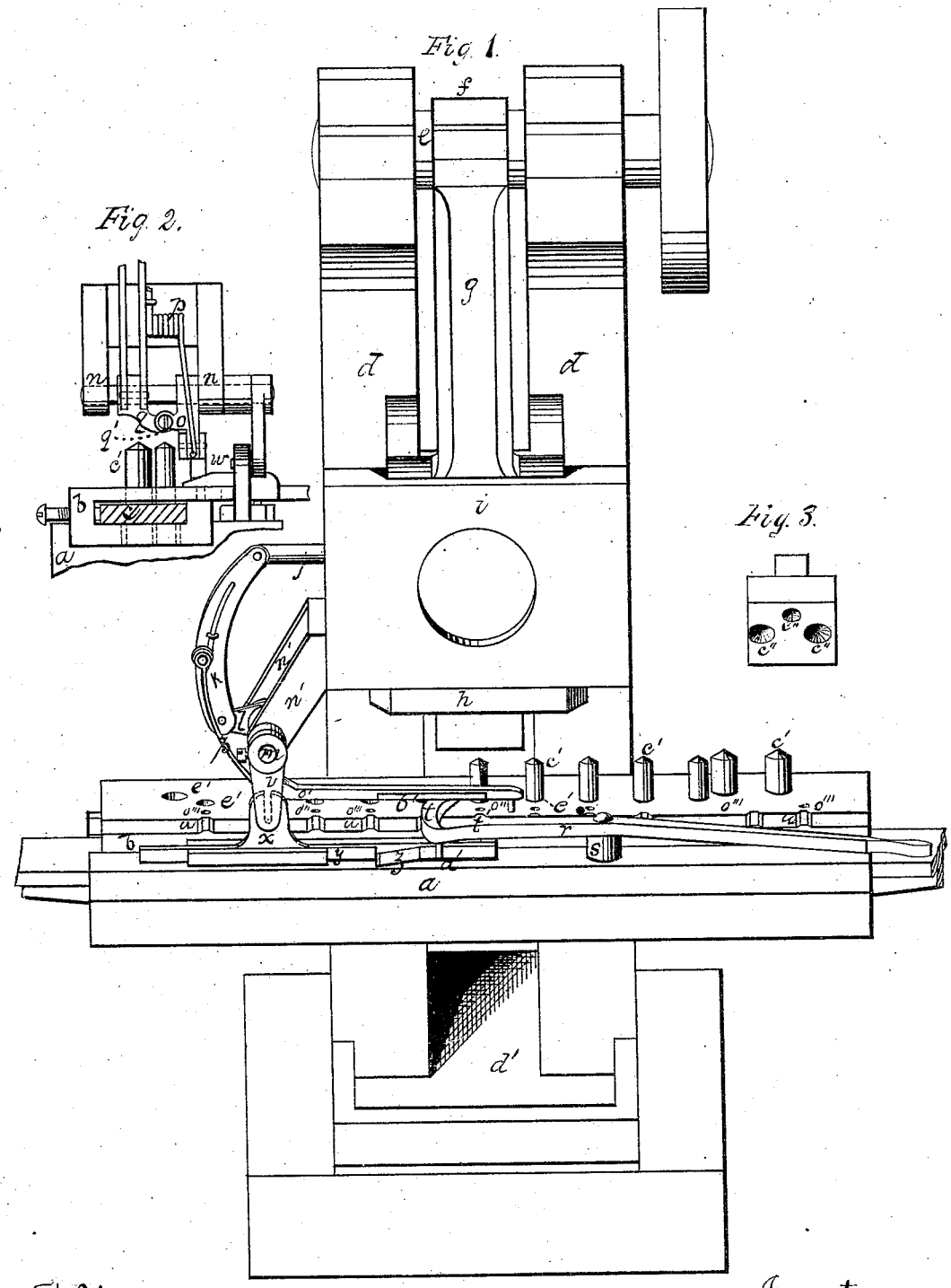

Fig. 2.

Fig. 3.

Witnesses.

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IMPROVEMENT IN MACHINES FOR PUNCHING METAL PLATES.

Specification forming part of Letters Patent No. **195,559**, dated September 25, 1877; application filed May 12, 1877.

To all whom it may concern:

Be it known that I, STEPHEN W. BALDWIN, of the city, county, and State of New York, have invented certain new and useful Improvements in Presses for Punching Metal Plates; and do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawing accompanying this specification.

My improvements consist, first, in an improved mechanism for feeding along the templet; second, in an automatic releasing mechanism for the centering-lever; third, in an improved form of independent punches and countersinks in the press-head to conform thereto.

In the drawings, Figure 1 is a front view of a press containing my improvements. Fig. 2 is an end elevation of the mechanism operating the templet, &c.; and Fig. 3 is a view of the under side of the press-head, showing the countersinks.

a is the bed-plate of the press. *b* is the templet, moving on such bed-plate between the side rails of the latter. *c* is the bar or plate of metal to be punched. *d d* are standards, the top of which form bearings for a shaft, *e*, and on this shaft is placed an eccentric, *f*, and pitman *g*. This pitman is connected with the head *h*, the latter being guided in a block, *i*.

On the side of this block is a slot, to admit of the play up and down of a horizontal rod, *j*, connected to it at one end. This rod is connected at the other end to the upper end of a curved arm, *k*. The lower end of this curved arm is attached to a small crank, *l*, on the shaft *m*. This shaft works in bearings *n n* on the standards *n' n'*. Working loose on this same shaft, between the bearings *n n*, is an arm, *o*, to which is pivoted a bar, *o'*, extending along the top surface of the templet. This bar has a pin, *o''*, on the underneath surface, at its extreme end, which is intended to take into a series of holes, *o''' o'''*, &c., placed in a line, with a distance between each hole sufficient to determine the extent to which the templet is to be fed after each punching operation.

p is a spring, connected to the side of the curved arm, and with one end impinging against the rear of the arm *o*, in order to push forward the bar *o'* to engage the pin *o''* with one of the holes *o'''*, for the purpose of feeding along the templet.

On the end of shaft *m* is placed a cam, *q*, which, in the downward movement of the curved arm, performs no function; but on the upward movement of the curved arm it operates upon the front end of the arm *o*, and pushes the bar *o'* along with the engaged templet the required distance. *q'* is a set-screw, for the purpose of adjusting the distance to which the cam *q* shall be required to move the bar *o'* in its operation upon the arm *o*.

r is a lever, with its fulcrum *s* placed on the bed-plate, so arranged that when the curved arm *t* is pressed in, this curved end, being beveled on its top surface, will raise the bar *o'*, and the pin *o''* will be released from the templet. At same time the V-shaped projection *t'* on the side of the lever will take into one of the notches *u*, corresponding to this projection on the lever, placed opposite the holes *o''' o'''*, in order to properly center the templet preparatory to the descent of the head of the press and passage of the punch through the bar or plate of metal.

On the outer end of the shaft *m* is a crank, *v*, carrying a pin, *w*, which pin works in a slotted standard, *x*. This standard carries a horizontal bar, *y*, containing on its side a cam, *z*. This cam operates upon a pin, *a'*, attached to the lower side of the lever *r*, so that upon the downward movement of the curved arm *k* the cam will throw out the lever *r*, and thus free the bar *o'* for a forward movement and re-engagement with the templet. The bar *o'* is slightly beveled at the part *b'*, to admit of the easy passage under it of that portion of the lever marked *t*.

c' c', &c., are independent punches, made tapering on their upper ends, so that they will easily adjust themselves to corresponding recesses or countersinks *c'' c''*, &c., in the head of the press, and thus avoid any side movement of the punch on its commencing to penetrate the bar of metal.

d' is the inclined trough, into which the punches will drop after they have been forced through the bar of metal.

The operation is as follows: The punches are placed in their respective holes *e' e'*, &c.,

in the templet, and the head of the press is drawn up, the pin in the bar o' being engaged in one of the holes o''' of the templet corresponding, and placed opposite the holes containing the punches. By this movement the templet is drawn along until the hole to be punched in the bar is directly under one of the tapering countersinks c'' in the head of the press. The lever r is then pressed in, and the projection t' is thus caused to engage in one of the notches u of the templet opposite the punch to be acted upon, which movement of the lever will center and steady the templet in its position while the punch is being operated upon by the head of the press. This pressing in of the lever also frees the pin o'' on the bar o' from the templet, so that when the head of the press descends the bar o' will pass along the surface of the templet, bringing the pin o'' over the next feed-hole o''', and, as it passes along the cam z on the bar y, will throw out the lever r, so as to admit of the pin o'' dropping into such feed-hole. The punch having been forced through the metal, will drop into the trough and out of the way of the feeding along of the templet. And so the operation is repeated until the bar of metal is punched with the required number of holes.

The punch is made slightly conical—that is to say, it is not a true cylinder on its exterior surface—so as to admit of its easy passage into the bar of metal, and of its dropping through when it has been fully driven down into the templet by the action of the press-head.

I claim—

1. The combination of the templet and the feed-bar with the curved arm and spring attached thereto, and the cam acting on the arm of such feed-bar, substantially as described.

2. The bar, with its cam, in combination with the lever containing a projection which works into the notches of the templet, substantially as described.

3. The press-head countersunk, in combination with the independent punches, tapered on their upper ends, substantially as described.

STEPHEN W. BALDWIN.

Witnesses:

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