

G. H. PERKINS.

Machines for Stamping and Bending Sheet Metal.

No. 148,748.

Patented March 17, 1874.

FIG. 2.

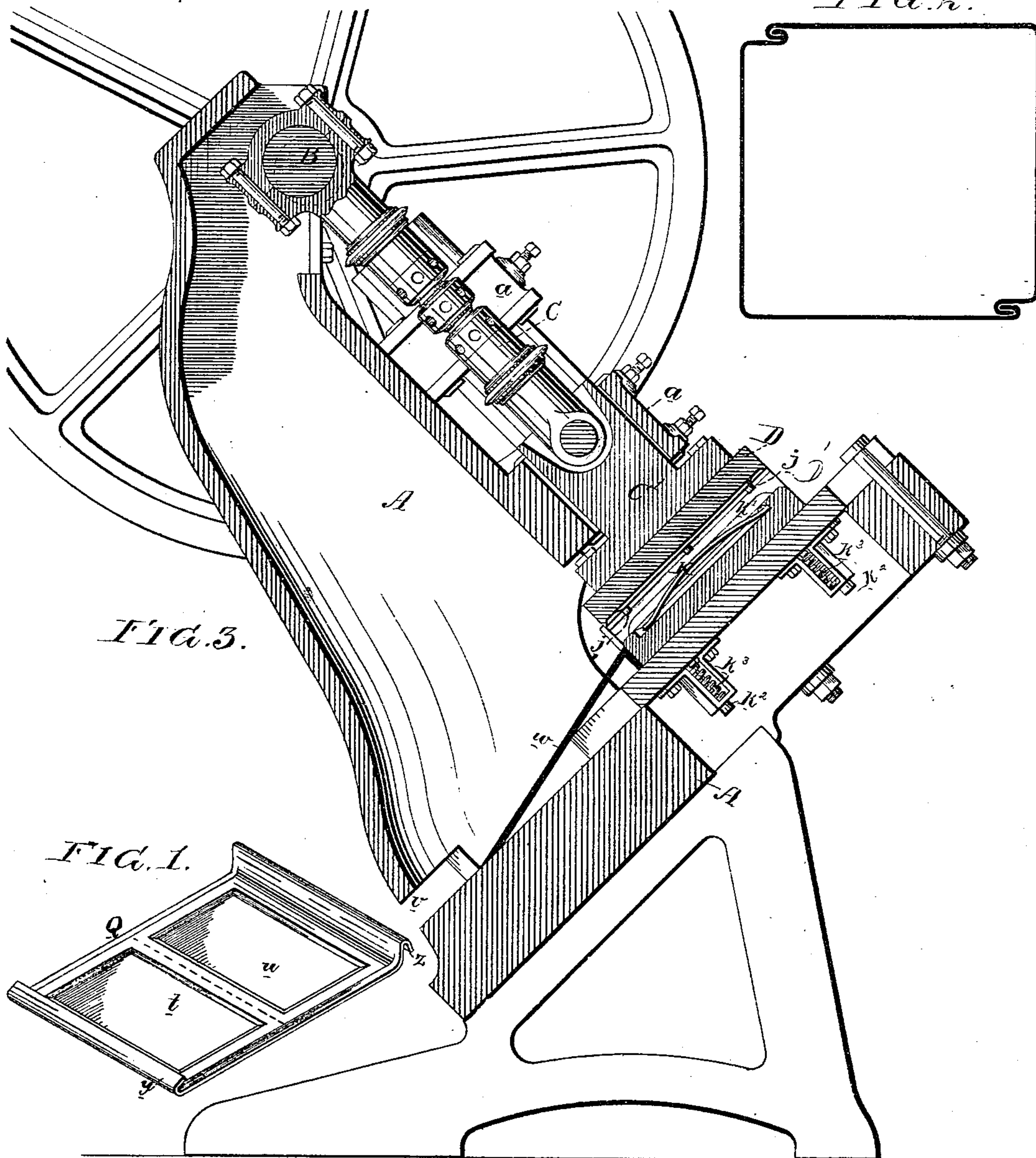
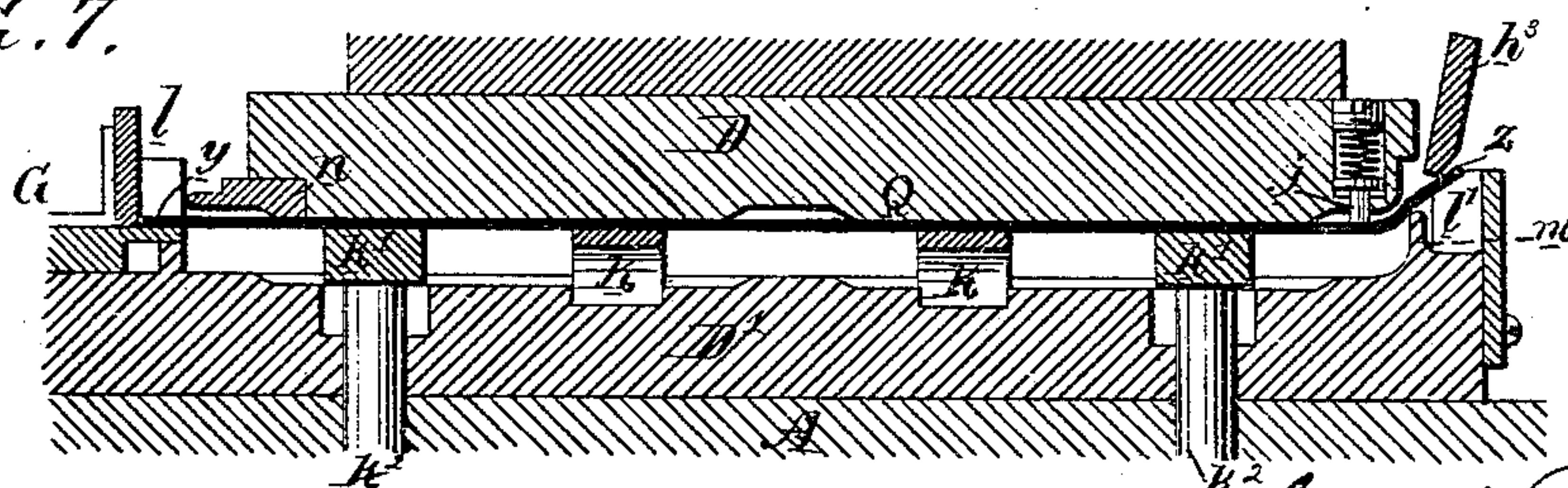


FIG. 7.



Witnesses, *Thos. M. Sloan*  
*John K. Rupertus*

*Geo. H. Perkins*  
*by his Atty.*  
*Howson and Son.*



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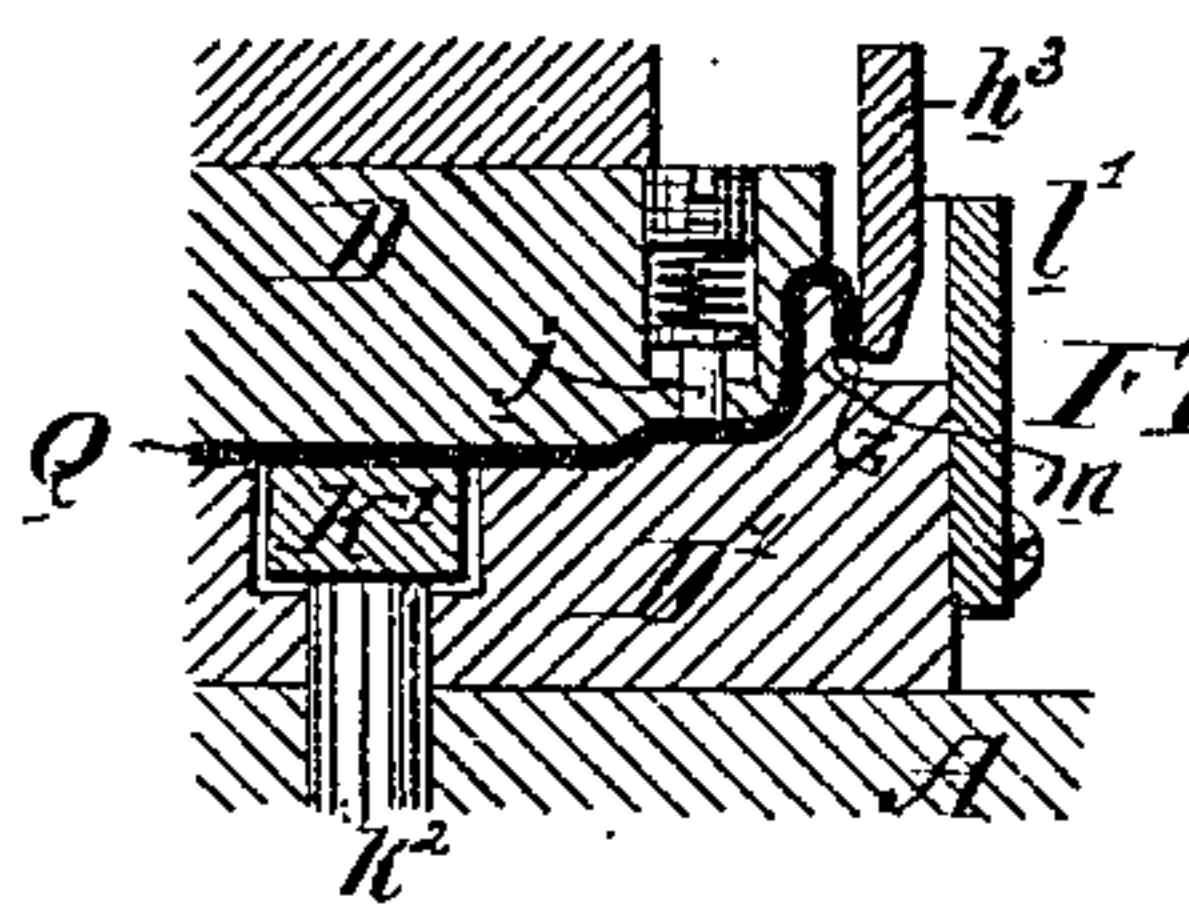
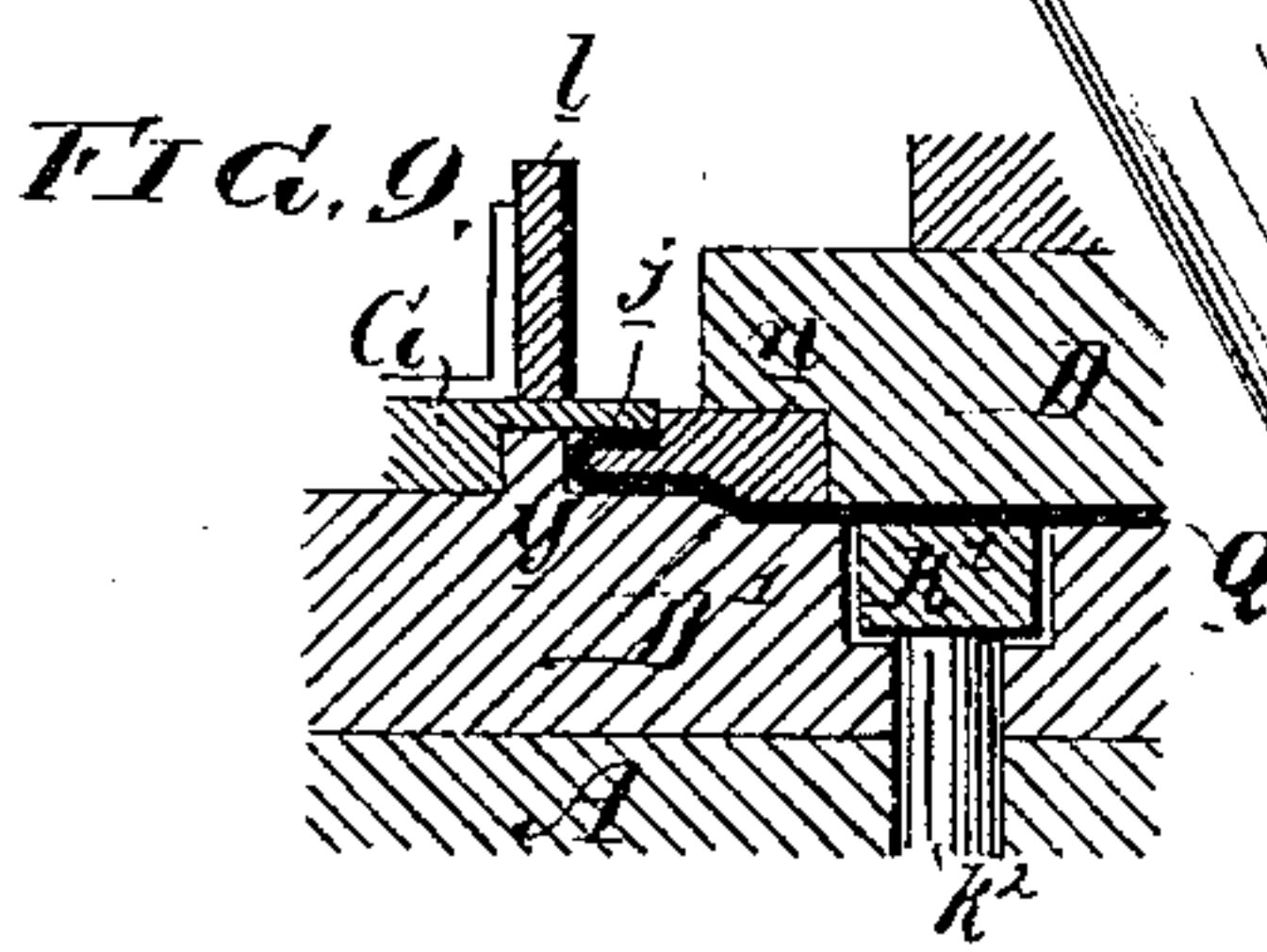
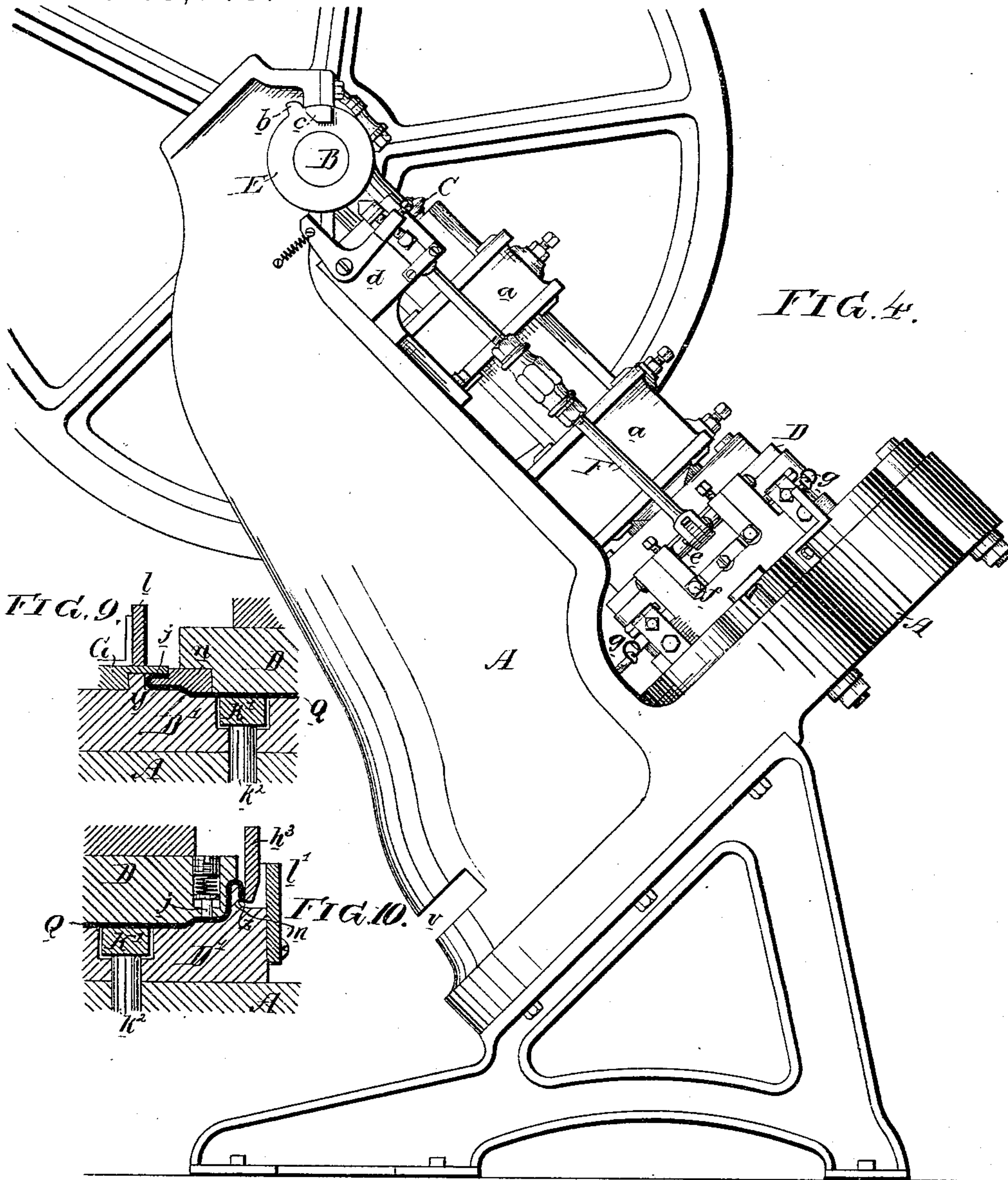
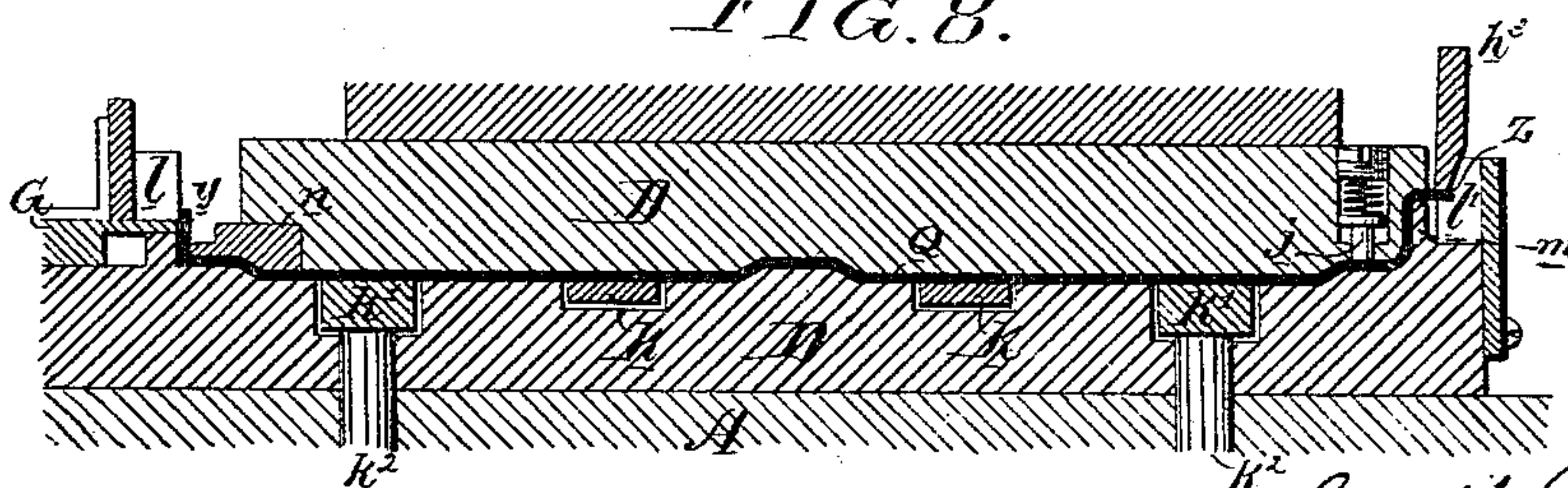


FIG. 8.



Witnesses, *Thos. M. Swan*  
*John Rupertus.*

*Geo. H. Perkins*  
*By his Atty.,*  
*Howson and Son*







# UNITED STATES PATENT OFFICE.

GEORGE H. PERKINS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND JOSEPH LE COMTE, OF NEW YORK CITY, AND ATLANTIC REFINING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN MACHINES FOR STAMPING AND BENDING SHEET METAL.

Specification forming part of Letters Patent No. 148,748, dated March 17, 1874; application filed January 7, 1874.

*To all whom it may concern:*

Be it known that I, GEORGE H. PERKINS, of Philadelphia, Pennsylvania, have invented a Machine for Stamping, Bending, Creasing, and Folding Sheet-Metal Plates, of which the following is a specification:

The object of my invention is to facilitate the various operations of stamping, bending, creasing, and folding sheet-metal plates by the machine illustrated in the sectional view, Figure 3, Sheet 1, side view, Fig. 4, Sheet 2, and front sectional view, Fig. 5, Sheet 3, of the accompanying drawing.

The machine, as constructed in the present instance, is adapted for the reduction of a plain tinned plate, Q, to the condition shown in the perspective view, Fig. 1, Sheet 1, so as to render it available for the ready formation of two adjoining sides of a can, as shown in the sectional plan view, Fig. 2.

A represents the frame of the machine, at the upper ends of which are bearings adapted to the shaft B, an eccentric on the latter being embraced by one end of a rod, C, the opposite end of which is connected to a cross-head, C', adapted to guides on the frame of the machine; this cross-head, carrying the upper die D and the lower die D', being fitted to the projecting portion of the frame. To the shaft B is secured a wheel, E, a projection, b, on which is arranged to depress the rod F, the speedy return of the latter being insured by a bell-crank lever, d, one arm of which is struck by a lug, c, on the said wheel E. (See Fig. 4.) The lower end of the rod F is connected to an arm on the shaft e, which has another arm, f, for acting on the sliding die G, the return movement of the latter being accomplished by the above-mentioned lug c and bell-crank lever d. (See transverse vertical section, Fig. 5, and sectional plan, Fig. 6.) Under ordinary circumstances the die G is operated positively from the driving-shaft, in both advancing and retracting, this being necessary, owing to the rapidity of its movements; but springs g are connected to the said die for the purpose of drawing it back out of the way in the event of the rod F, or parts attached thereto, becoming inoperative. To

the cross-head which carries the upper die is secured a striker, h, the latter, when the cross-head descends, coming in contact with a lever, h<sup>1</sup>, the movement of which is communicated to the lever h<sup>2</sup> and its blades h<sup>3</sup> through the medium of connections shown in Fig. 5. The return movement of the lever h<sup>1</sup> is effected by the spring h<sup>4</sup>. A stop, i, secured to the upper die, prevents too great an elevation of the blade h<sup>3</sup> by the recoil of the spring h<sup>4</sup>, or, in other words, maintains the said blade in proper position in respect to the upper die and to the edge of the plate of sheet metal. (See Figs. 5 and 7.) In the upper die there are small spring-pins, j, the duty of which will be rendered apparent hereafter. Within the lower die D', near the center of the same, there are light spring-plates, k, and at either side of the latter plates k<sup>1</sup>, rods k<sup>2</sup>, which pass entirely through the die and through the bed of the machine, below which they are acted upon by springs k<sup>3</sup>.

The operation of the machine is as follows: A plain sheet of tinned plate is placed on the lower die D', its proper adjustment being determined by stops l l'. The first operation of the upper die D, on descending to the position shown in Fig. 7, is to force the plate, near its edge z, against a lip, m, on the lower die, thus causing the said edge of the plate to be turned up, as shown in that figure. On the further descent of the upper die, the plate will be tightly confined between it and the spring-bars k k<sup>1</sup>, the latter yielding as the die descends to the position shown in Fig. 8. The outer spring-bars k<sup>1</sup> k<sup>1</sup> are much heavier than the inner bars k k, and serve as clamps to confine and prevent lateral movement of the plate of sheet metal, the inner bars k k serving merely to prevent the sagging of the central portion of the plate. When the die has arrived at the position shown in Fig. 8, the panels t and u, Fig. 1, have been embossed on the plate by the combined action of the two dies, and the edge y of the plate has been turned up across the edge of a bar, n, attached to the upper die. The moment the upper die has reached the position shown in Fig. 8, the sliding die G suddenly advances and bends the edge y of the



plate over the top of the bar  $n$ , as shown in Fig. 9, and instantly retreats. In the meantime the edge  $z$  of the plate is bent downward by the plate  $h^3$  over the lip  $m$ , and the operation is complete. When the upper die rises the plate will follow it, owing to the recoil of the spring-bars  $k$   $k^1$ , the upward movement of which is limited, so that the plate, when it arrives at a position above the stops  $l$  and  $l'$ , is free from the control of the springs, and is at liberty to slide downward from the dies and down the plate  $W$  into any suitable receptacle, (see Fig. 3;) the dies and bed of the machine being inclined for the purpose of thus permitting the plate, after the operation has been completed, to slide downward clear of the dies. The spring-pins  $j$ , above alluded to, serve to clear the plate from the upper die when the latter is elevated. The completed plate, after leaving the machine, can be at once bent so as to form two adjoining sides of the can, as shown in Fig. 2, a like plate being bent to form the two remaining sides, and the two plates being locked together in a manner

which will be readily understood without explanation.

I claim as my invention—

1. In a sheet-metal-stamping machine, the combination, substantially as described, of dies for bending the edge of a plate upward with a die which bends the upturned edge inward, the said dies operating in unison and automatically, in the manner described.

2. The combination of the upper die  $D$ , the lower die  $D'$ , lips  $m$ , and plate  $h^3$ , the whole operating to bend the edge  $z$  of the plate  $Q$  by their joint action, as set forth.

3. The combination of the upper die  $D$ , lower die  $D'$ , and spring-bars  $k$  and  $k^1$ .

4. The combination of the plate  $h^3$ , the striker  $h$ , and the intervening system of levers.

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

GEORGE H. PERKINS.

Witnesses:

WM. A. STEEL,  
HARRY SMITH.

1.25-0 *wms*