

Machines for Forming Sheet-Metal Ware.

Patented Jan. 27, 1874.

FIG. 1.

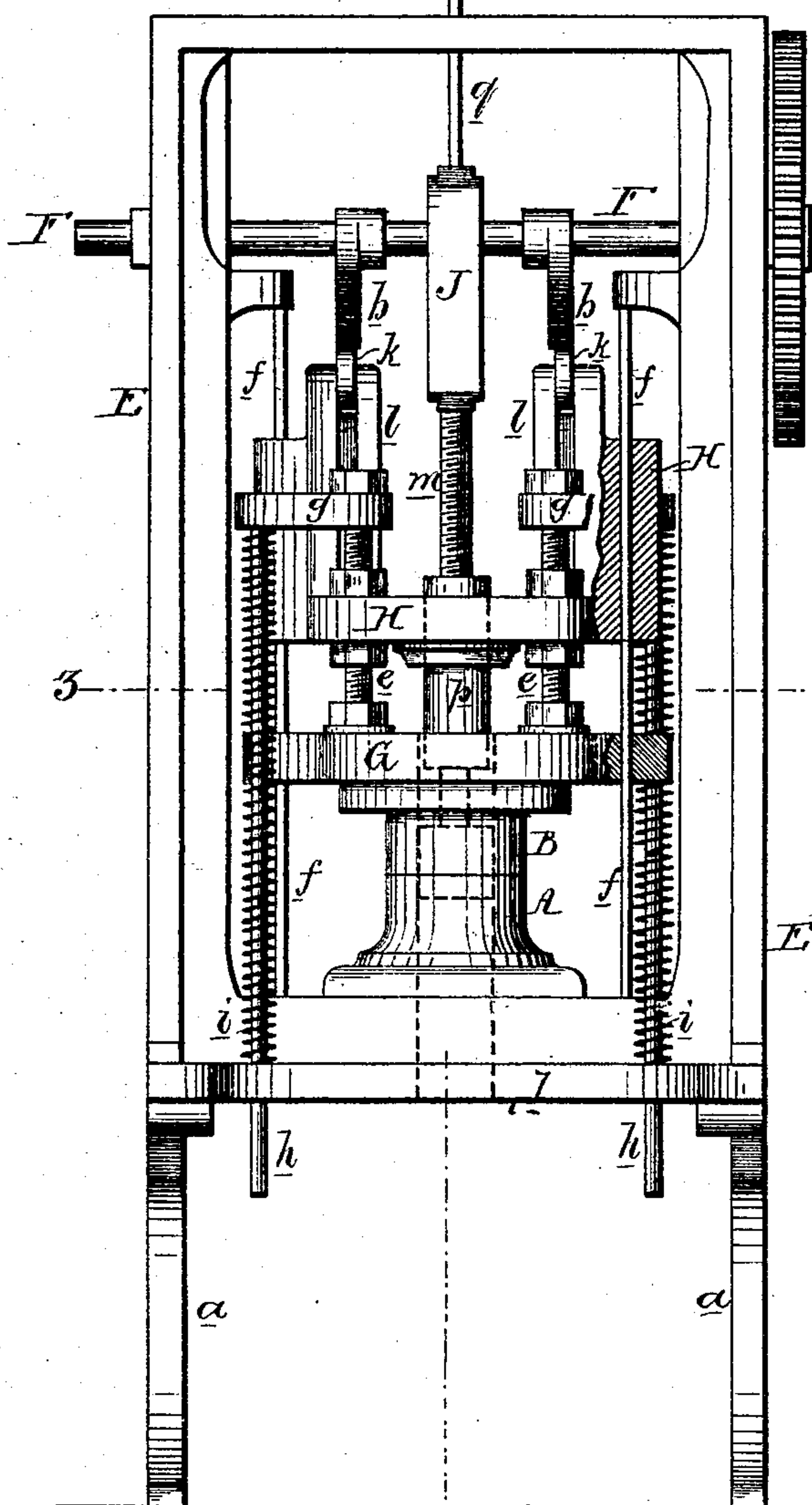


FIG. 2.

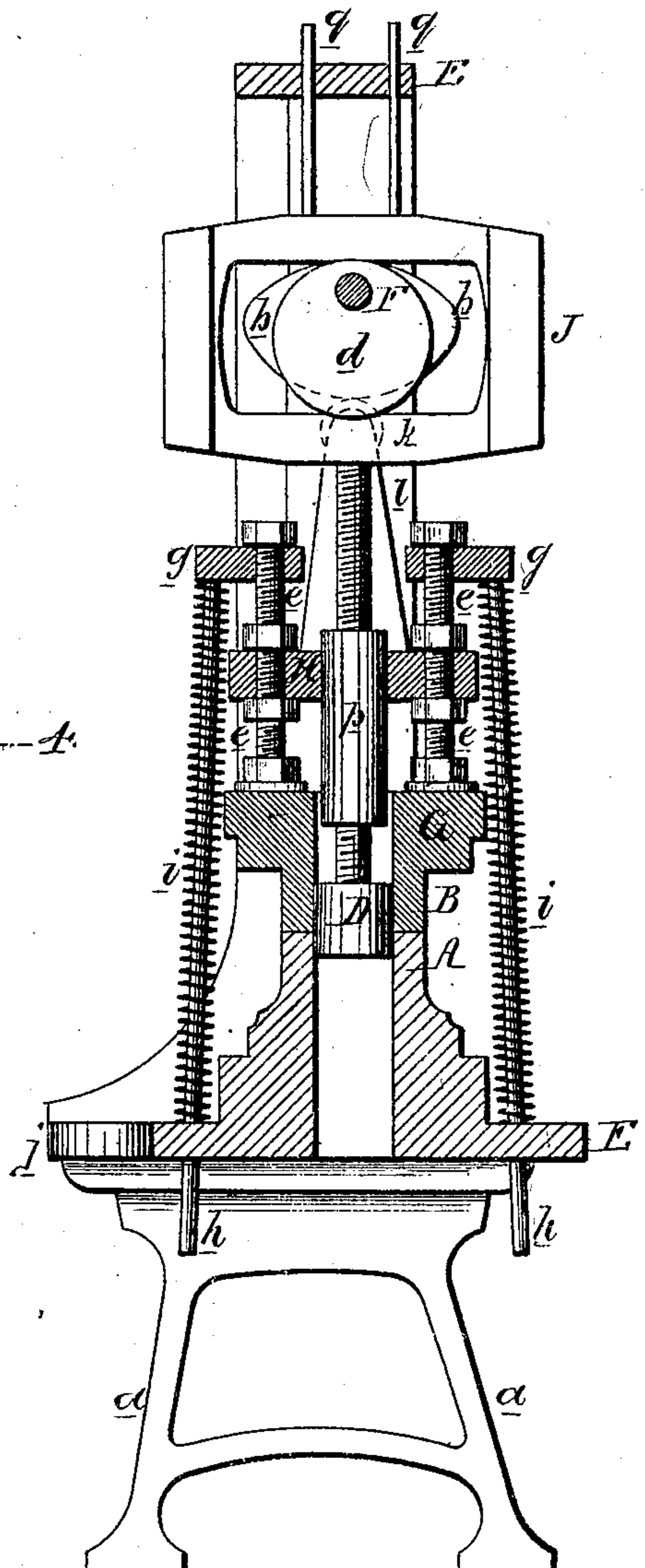
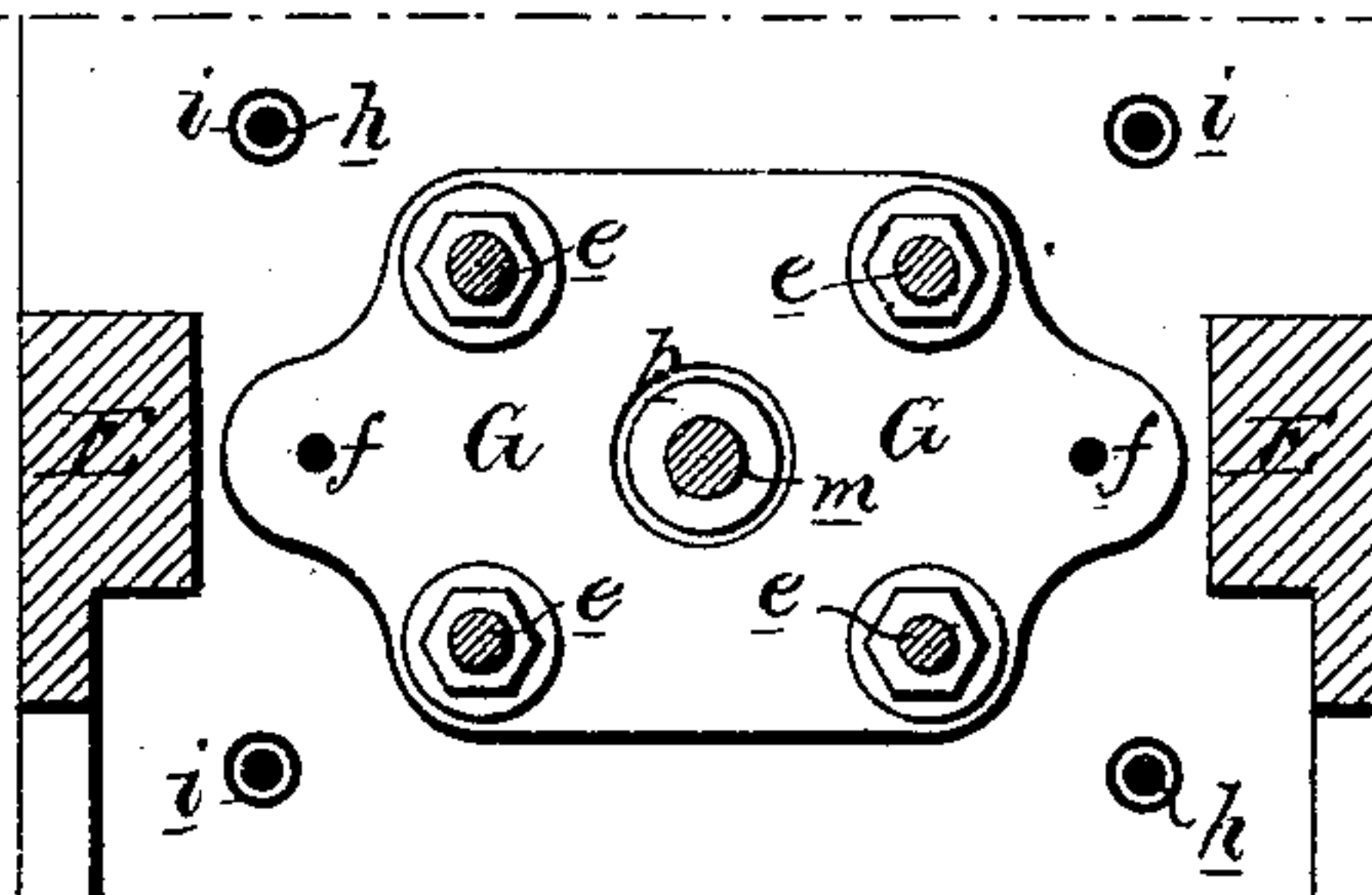


FIG. 3.



Witnesses,
Harry Smith
Thomas M. Hoan

M. Von Culin and
John de Batt
By their Attys.
Horsum and Sons

UNITED STATES PATENT OFFICE

MATTHEW VON CULIN, OF BALTIMORE, MARYLAND, AND JOHN DE BUTT, OF PHILADELPHIA, ASSIGNORS, BY MESNE ASSIGNMENTS, TO EWALD RIEDEL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR FORMING SHEET-METAL WARE.

Specification forming part of Letters Patent No. 146,966, dated January 27, 1874; application filed October 8, 1873.

To all whom it may concern:

Be it known that we, MATTHEW VON CULIN, of the city of Baltimore, county of Baltimore, State of Maryland, and JOHN DE BUTT, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improved Press for Forming Objects of Sheet Metal, of which the following is a specification:

The object of our invention is to simplify and reduce the cost of power-presses for forming objects of sheet metal, and we attain this object by constructing the press in the manner shown in the front elevation, Figure 1, and sectional elevation, Fig. 2, on the line 1 2, Fig. 1, of the accompanying drawing, the main peculiarities of the said press being the construction and arrangement of the parts for the guidance and operation of the blank-holder B and punch D above the die A.

The frame E of the press is supported upon legs *a*, and in suitable bearings in the upper portion of the said frame turns the driving-shaft F, on which are two precisely-similar cams, *b b*, and an intermediate eccentric, *d*.

The blank-holder B is secured to, or forms part of, a cross-head, G, which is suspended by four threaded bolts, *e*, from an upper cross-head, H, both of the said cross-heads being guided by, and arranged to slide upon, vertical rods *f f* of the frame. (See Fig. 1, and sectional plan, Fig. 3, on the line 3 4, Fig. 1.) A vertically-adjustable arm, *g*, is secured to the upper end of each of the bolts *e* and rods *h*, upon which are wound spiral springs *i* extending downward from these arms through openings in the base-plate *j* of the frame. The springs *i* are of sufficient strength to sustain the whole weight of the two cross-heads and blank-holder, and to constantly maintain anti-friction rollers, *k*, hung to projections *l* of the upper cross-head, against the operating-cams *b b*.

The punch D is secured to the lower end of a rod, *m*, and has a direct and positive ascending and descending movement imparted to it by the eccentric *d*, through the medium of a yoke, J, secured to the upper end of the said

rod *m*. The punch is, in the present instance, cylindrical, and is adapted to an opening of corresponding size and shape in the die A. It is guided partly by a sleeve, *p*, which fits snugly, but so as to slide freely, in the upper cross-head H, and partly by rods *q* of the yoke, which extend through openings in the top of the frame. (See Fig. 2.)

The operation of the press is as follows: When the blank-holder and punch are raised, a disk or blank of sheet metal is placed upon the die A directly over its central opening. The blank-holder first descends and clamps the disk to the top of the die, and is followed by the punch, which forces the blank into the said die, the pressure of the blank-holder upon the edges of the disk being sufficient to prevent it from wrinkling or puckering, but not too great to prevent the disk from being drawn from beneath the said blank-holder, if the stamped object, such as a blacking-box or lid, for instance, has to be forced entirely through the die, and dropped into a receptacle beneath.

After forming the blank the punch rises first, and is followed by the blank-holder, which is forced upward by the action of the springs *i* as soon as the cams *b b* have been turned to a position to permit such movement.

If the pressed object is of such a shape that it cannot be forced through the die, it may be lifted from the latter after the raising of the punch and blank-holder.

The power of the springs *i* may be increased or diminished, as required, by an adjustment of the arms *g* on the bolts *e*, and the blank-holder may also be adjusted to a nicety, in respect to the die, by properly arranging the lower cross-head G on the same bolts *e*.

By combining and arranging the operating parts of the press above the die, in the manner described, we are enabled not only to dispense with the usual cumbersome counter-balances, but to obtain direct and positive movements, and to simplify and very materially reduce the cost of the press.

We claim as our invention—

1. The combination of the blank-holder B,

the connected cross-heads G and H, and the guiding-rods *f f* of the frame, upon which the said cross-heads are arranged to slide, as set forth.

2. The screw-bolts *e*, carried by the cross-head H, and connected to and serving to adjust both the cross-head G and spring-rods *h*, all as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

MATTHEW VON CULIN.
JOHN DE BUTT.

Witnesses:

WM. A. STEEL,
HARRY SMITH.