A. ROBERTSON.

MACHINE FOR PUNCHING METAL.

No. 191,074. Patented May 22, 1877.

Fig. 1.

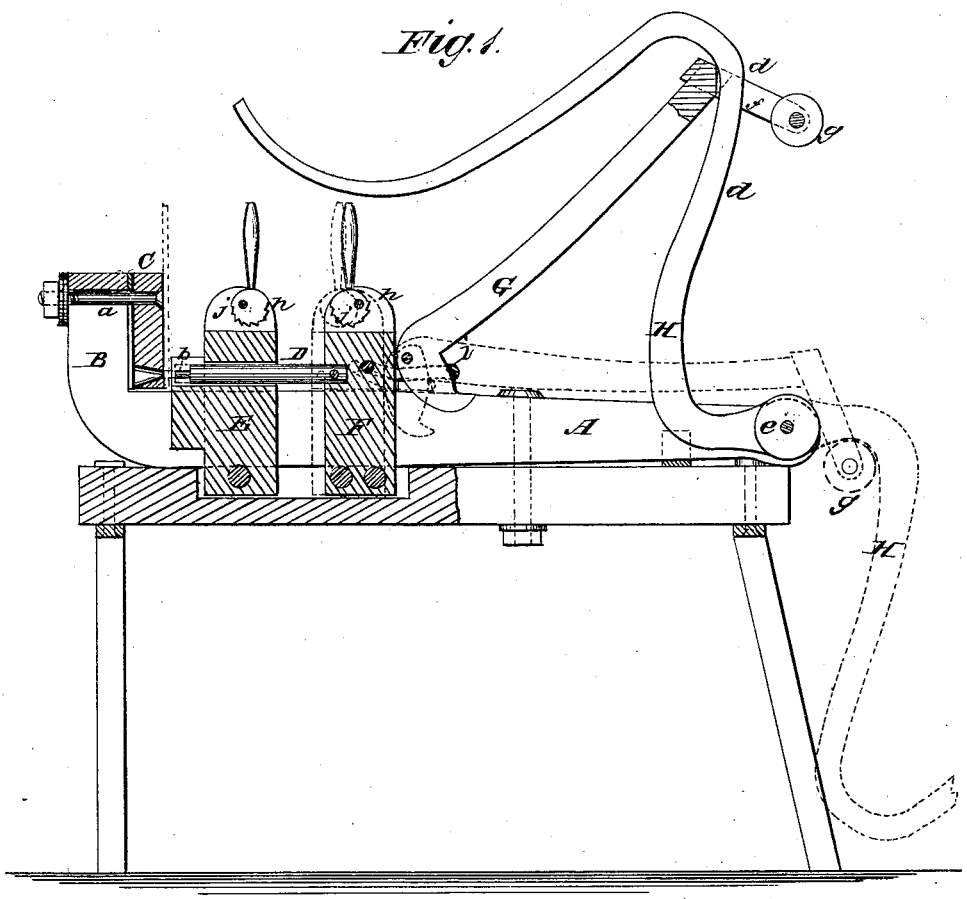
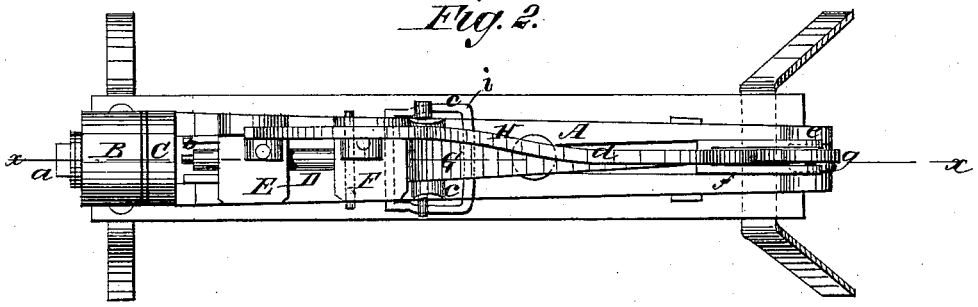


Fig. 2.



WITNESSES:

Francis McArdle,

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INVENTOR:

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UNITED STATES PATENT OFFICE.

ADAM ROBERTSON, OF BLANCHARDSVILLE, WISCONSIN, ASSIGNOR TO HIMSELF AND HENRY B. MASON, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR PUNCHING METAL.

Specification forming part of Letters Patent No. **191,074**, dated May 22, 1877; application filed October 30, 1876.

To all whom it may concern:

Be it known that I, ADAM ROBERTSON, of Blanchardsville, in the county of La Fayette and State of Wisconsin, have invented a new and useful Improvement in Punching-Machines, of which the following is a specification:

Figure 1 is a side elevation in part section on line *x x* in Fig. 2. Fig. 2 is a top view.

Similar letters of reference indicate corresponding parts.

My invention relates to certain improvements in punching-machines; and it consists in a combination of cam-levers, by which the required power is applied.

The object of the invention is to provide a means for applying power to the punch to the best advantage.

A is the bed of the machine, which is placed upon a suitable support. B is a right-angled support for the dies, that is formed on the end of the bed A. C is a die that is provided with several holes for punches, and is adjustably attached to the support B by a bolt, *a*. D is a follower that moves in a guide, E, attached to the bed, and F is a movable block that is attached to the end of the follower and slides in the slot in the bed. The follower D carries a punch, *b*. G is a cam-lever that is journaled in ears *c c*, attached to the bed of the machine, and bears against the block F.

The cam formed at the end of the lever is of such form that as the lever is pressed down the point of contact between the lever and the block F becomes more remote from the fulcrum of the lever; but this loss is more than compensated for by the peculiar form and arrangement of the lever H, with which it engages.

The lever H is curved in the form of an irregular volute from *d* to its fulcrum *e*, and its outer end is bent into convenient form for a handle. A fork, *f*, is formed on the end of the lever G, for supporting a friction-roller, *g*, between which and the lever G the lever H passes.

A loop, *i*, is attached to the block F, and passes around the lever G, for drawing the follower back and removing the punch from the metal.

The fulcrum of the lever H being in the end of the bed, and that of the lever G being in the ears near the bed, brings the strain in nearly a straight line.

The guide E and block F are provided with ears *h*, to which fluted eccentrics *j j* are pivoted for clamping tire, for the purpose of upsetting it.

It will be seen that as the lever H is brought into the position shown in the dotted lines in the drawing, the roller *g* draws constantly nearer the fulcrum of the said lever, thereby increasing its advantage over the lever G, which, by the form of its cam, works against the block F with a slightly-decreasing efficiency; but this loss is more than compensated by the advantage gained in the lever H.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination of the curved lever H, cam-lever G, friction-roller *g*, movable block F, follower D, guide E, and bed A, substantially as shown and described.

ADAM ROBERTSON.

Witnesses:

J. S. WADDINGTON,

L. W. DEVOE.