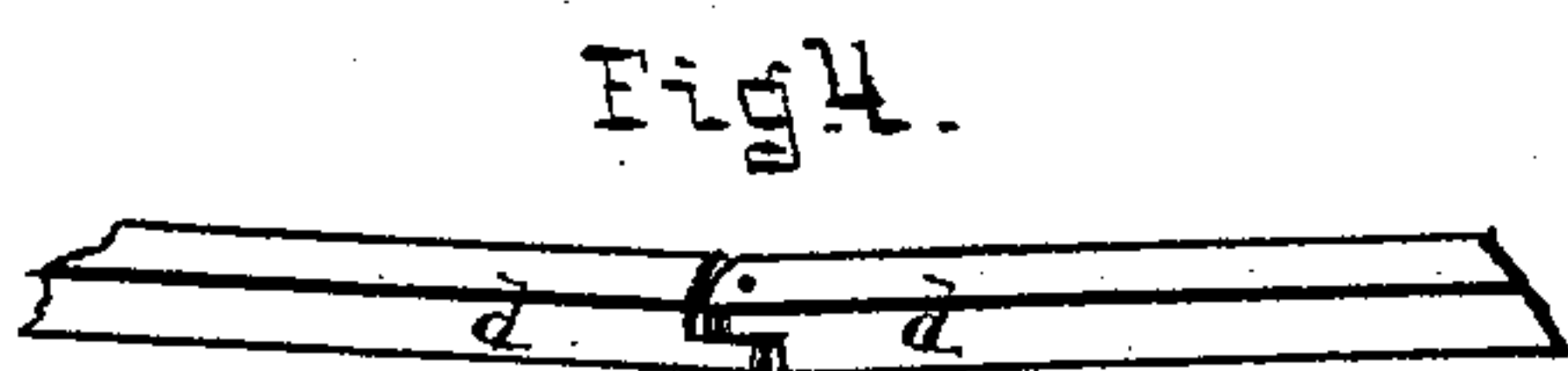
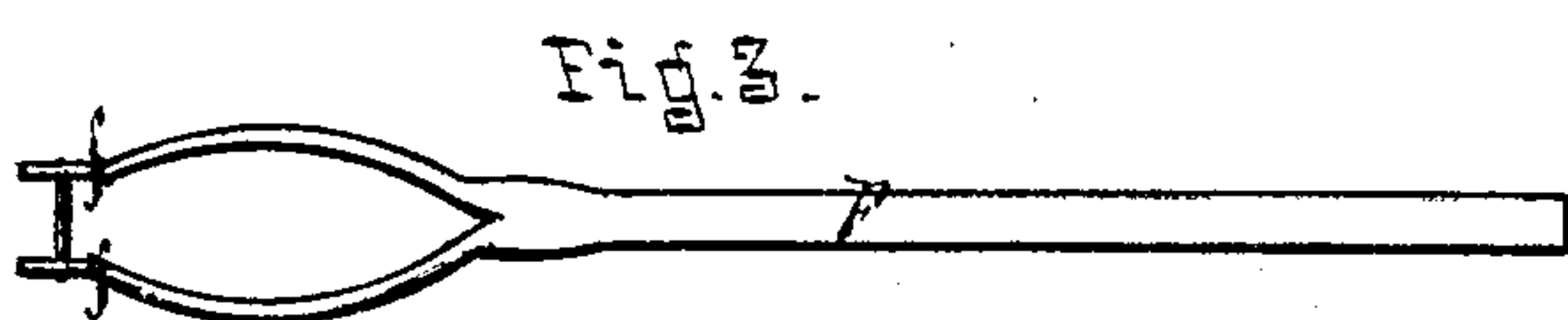
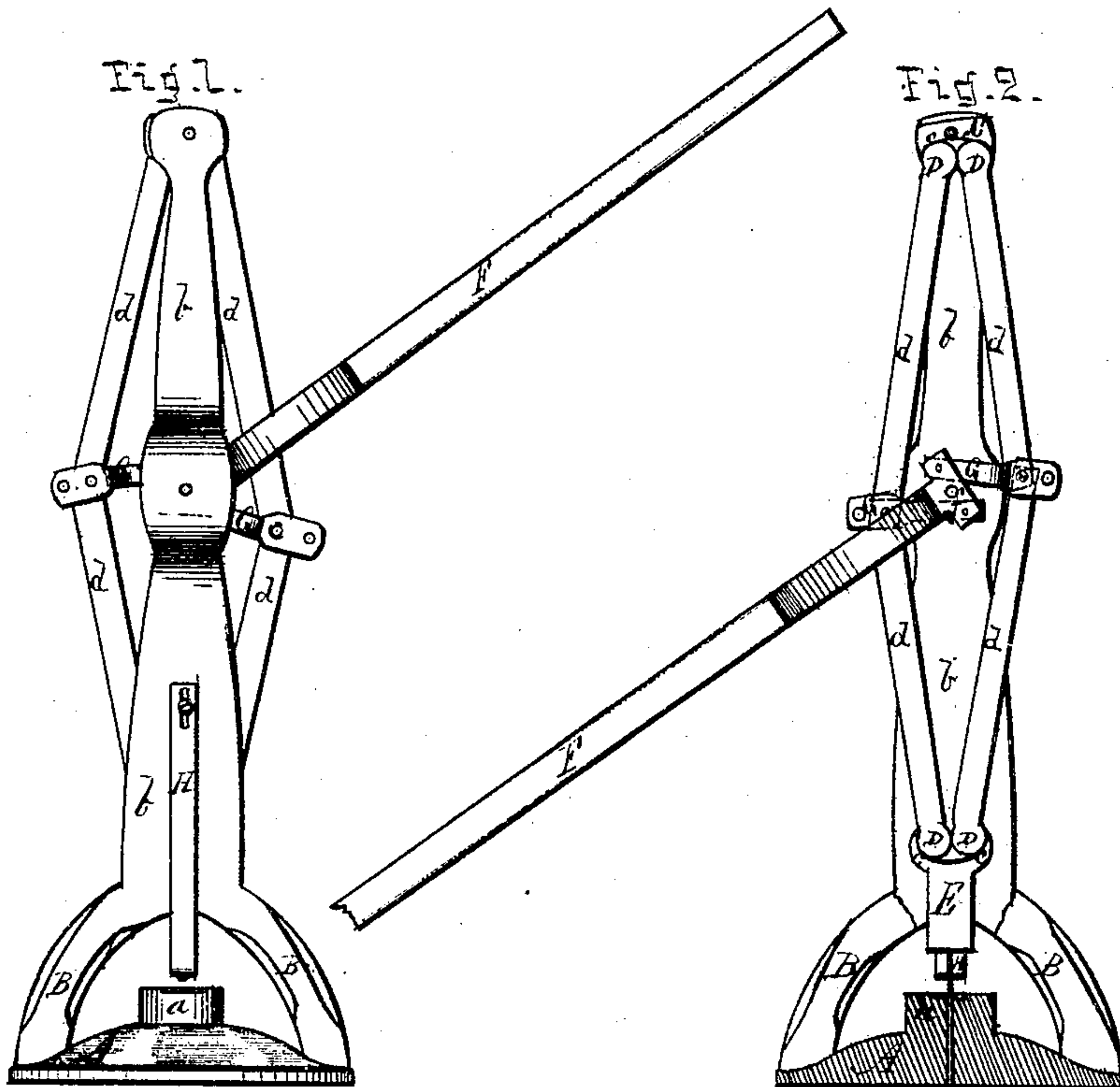


G. C. Miller,
Punching Metals.

No. 103764.

Patented May 31. 1870.



Witnesses:
S. J. Noyes
E. A. Clarkson

Inventor:
Gardner C. Miller, by
H. W. Beadle atty

United States Patent Office.

GARDNER C. MILLER, OF ROCKFORD, ILLINOIS.

Letters Patent No. 103,764, dated May 31, 1870.

IMPROVED HAND PUNCHING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, GARDNER C. MILLER, of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Punching-Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention has for its object the production of a simple, compact, and powerful hand punching-machine.

To enable others skilled in the art to make and use my invention, I will now proceed to fully describe its construction and operation.

A represents a base, of any proper form and size, which is provided with holes for the purpose of bolting it to a suitable foundation.

B B represent curving standards, which unite in the center, and support the upright standards *b b*, as shown.

The parts B *b* are preferably constructed in a single piece, but they may be cast separately if desired.

C represents a block, located between the standards *b b*, at their upper ends, and secured thereto by means of a bolt, as shown, which is provided with sockets *c c*, for the upper ends of the toggle-joints D D.

These joints, which consist of the two arms *d d*, have a similar attachment below as above, that is, the plunger E, in which they rest, is provided with sockets, by means of which a loose connection is made between the two.

The toggles are hinged together in the usual manner in the center, the joint being so constructed, however, that the ends of the arms will bear upon each other, and not strain the bolt which unites them.

To operate the toggles, the forked lever F is provided, which is constructed with T-shaped heads, as shown in the drawing, and pivoted through its center to the standards, by means of a bearing-bolt.

The ends *f f* of the lever are connected to the toggles by means of arms G G, the inner ends of which rest between the ends *f f*, and are bolted thereto, as shown.

The outer ends are forked and secured to the toggles by the same bolt that unites the arms *d d*. This fork is made sufficiently long to permit the joint to be adjusted, when desired to permit a longer thrust of the plunger.

H represents a stop, which is secured to the standard *b* by means of a set-screw, and adjusted in height by means of a slot, as shown.

The lower end of this rests upon the plate which is being perforated, and prevents it from rising with the punch.

a represents the base-block, which is provided with a socket for the reception of the dies.

The plunger E moves in an orifice in the standard, and is provided with suitable means for holding punches of different sizes, and also a shear-blade for cutting purposes. When this latter is used, the base-block must be supplied, of course, with a corresponding blade.

The operation is as follows:

The handle of the lever is elevated, and the punch raised thereby. The metal to be operated upon is now placed upon the base-plate, and the stop H lowered until it rests upon it, in which position it is secured by the set-screw.

The lever is now depressed and the punch forced through the plate. This operation is repeated indefinitely.

Each upward movement of the lever raises the punch by throwing out the toggle-joints by means of the arms connected to its T-shaped head, and each downward movement depresses the punch by drawing in the toggle-joints.

The block C is held by a single bolt, in order that it may adjust itself to any unequal strain.

The described machine is simple in all its parts, is compact as a whole, and also possesses great power.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The improved machine, consisting essentially of the base A, standards B *b*, block C, arms *d d*, joints D D, plunger E, lever F, and arms G, when combined as described, for the purpose set forth.

2. The arrangement of the vibrating cap C, frame *b b*, and toggle-arms *d d*, as described, for the purpose set forth.

This specification signed and witnessed this 15th day of February, 1870.

GARDNER C. MILLER.

Witnesses:

G. W. FORD,

A. H. MCKALLOR.