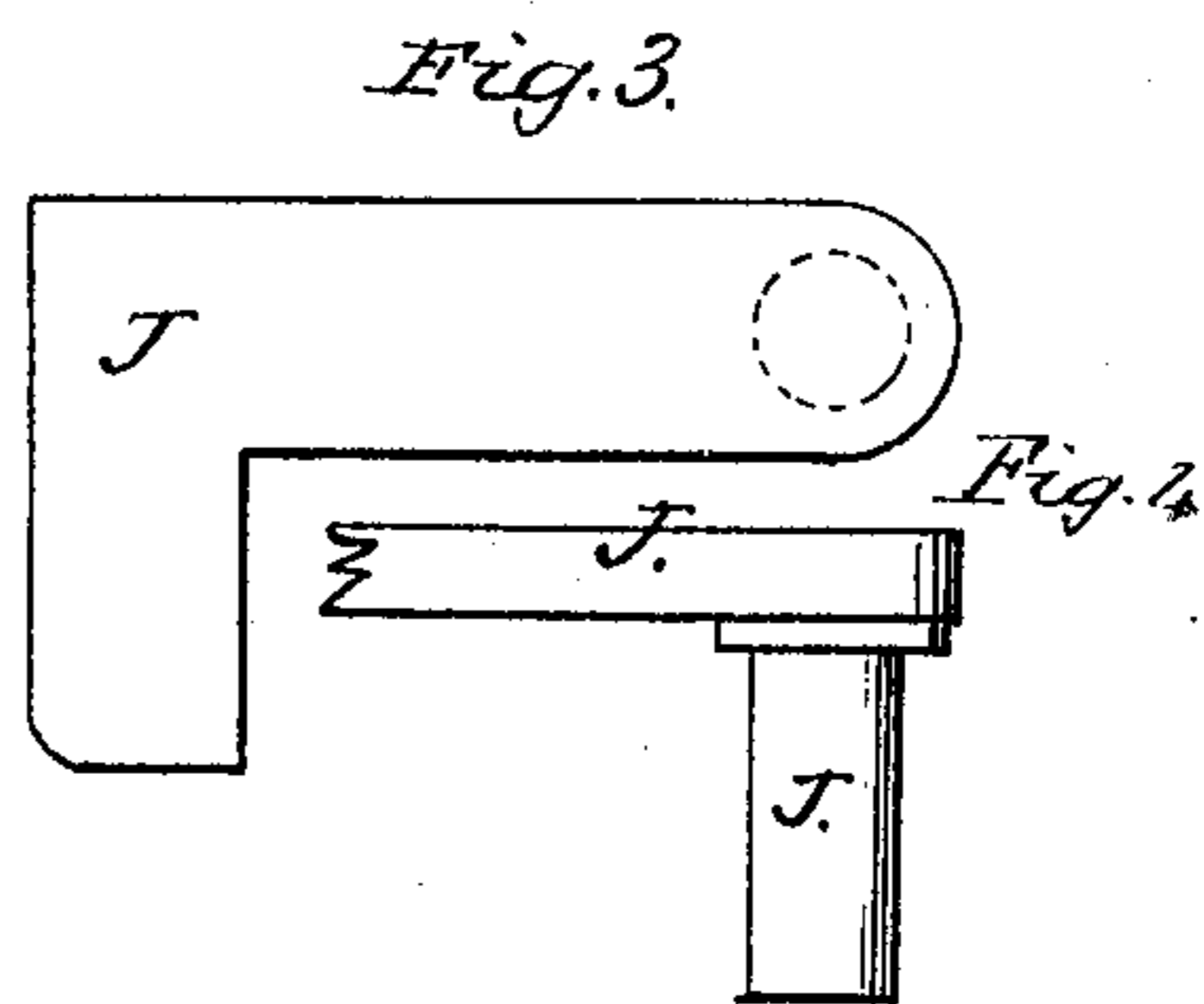
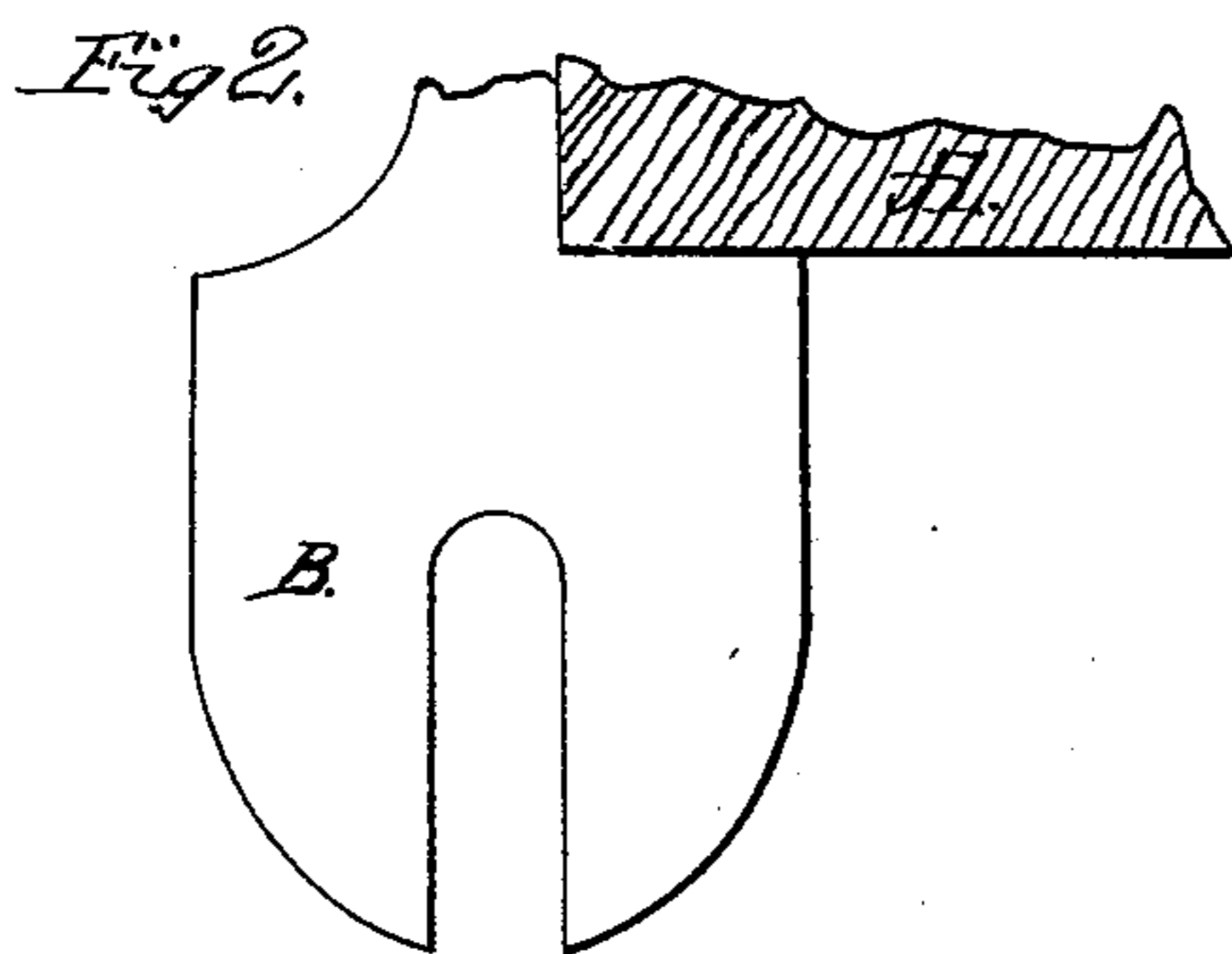
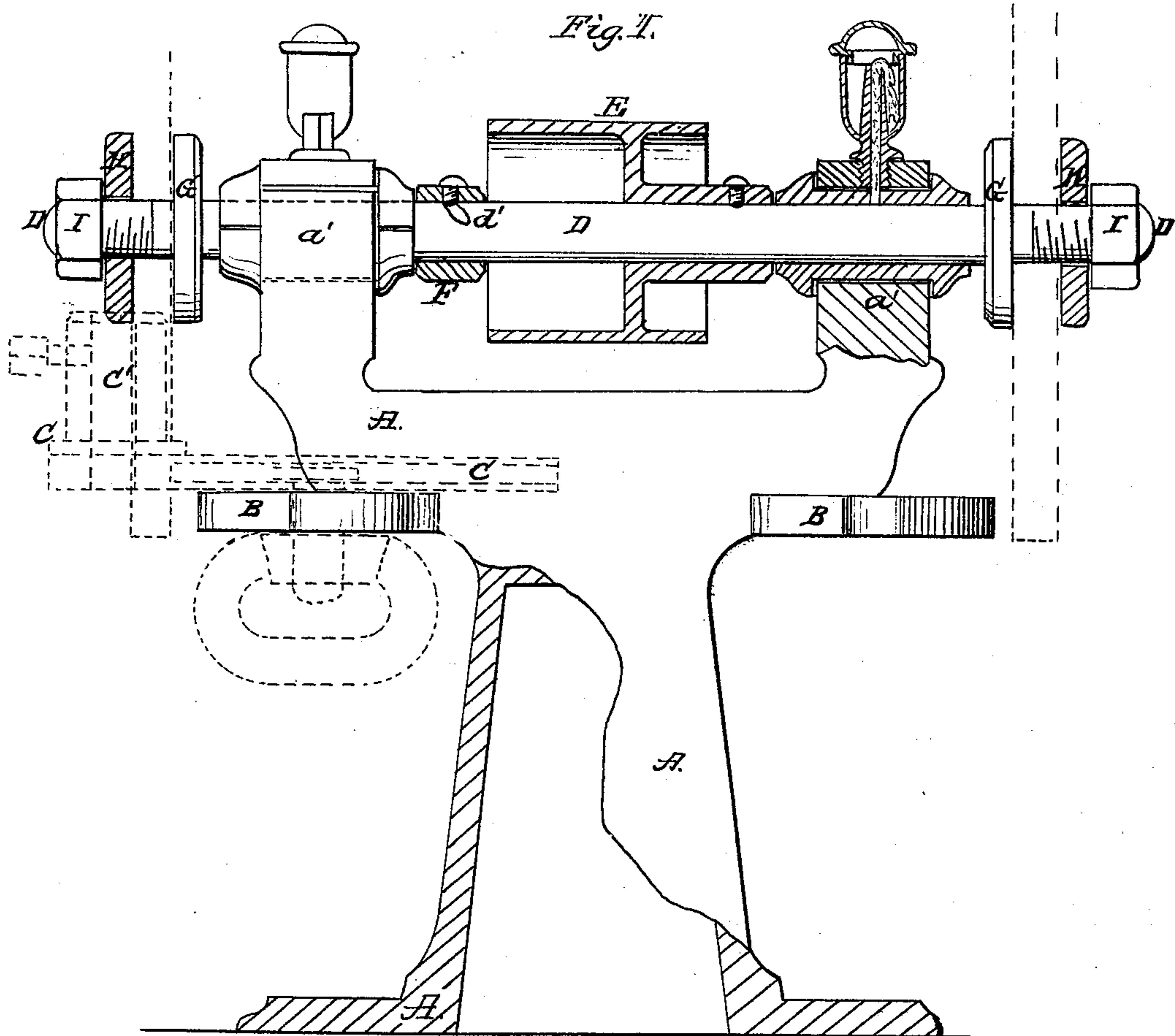


*T. H. Worrall,*  
*Grinding Machine,*  
*No 101,559,                      Patented Apr. 5, 1870.*



Witnesses  
*J. H. Becker*  
*Geo. F. Brooks*

Inventor  
*T. H. Worrall*  
*attorney*

# United States Patent Office.

THOMAS H. WORRALL, OF EAST BLACKSTONE, MASSACHUSETTS.

Letters Patent No. 101,559, dated April 5, 1870.

## IMPROVEMENT IN GRINDING-MACHINES.

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, THOMAS H. WORRALL, of East Blackstone, Worcester county, Massachusetts, have invented a new and useful Improvement in "Grinding-Machine;" and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a front view of my improved grinding-machine, parts being broken away to show the construction.

Figure 2 is a detail top view of one of the projections to support the rest.

Figure 3 is a detail top view of the flat surface rest.

My invention has for its object to furnish an improved machine for running solid emery-wheels, which shall be simple in construction, compact, and strong; and

It consists in the construction and combination of the various parts of the machine, as hereinafter more fully described.

A is the cast-iron frame or stand, which is cast hollow and with a bearing, *a'*, at each end, to receive the spindle.

B are two projections, cast solid upon the upper part of the front side of the frame A, to receive the adjustable stand C for the rest.

The projections B are slotted to receive the bolt by which the stand C is clamped to the said projections B, so that the rest may be moved toward or from the machine, as may be desired.

The head of the clamping-bolt enters a dovetailed groove in the under side of the base-plate of the stand C, to enable the said stand to be adjusted as the form or character of the thing to be ground may require.

In one end of the stand C is formed a socket, *c'*, to receive the shank of the rest, where it may be secured at any desired elevation by a set-screw

D is the spindle, which revolves in brass or other composition boxes in the bearings *a'* of the frame A.

E is the pulley, which may be a plain or a cone-

pulley, as may be desired, and which is secured to the middle part of the spindle D by a set-screw passing through the hub of said pulley, and the joint of which enters a recess in the said spindle.

The spindle D is made of the same size throughout, and is kept from moving longitudinally in its bearings by the collar F, secured to it by a set-screw, the forward end of which enters a spiral groove, *d'*, in the said spindle D, so that the said collar may be adjusted to compensate for the wear.

G are flanges or collars, formed upon or rigidly attached to the end posts of the spindle D, for the emery-wheels to rest against, where they are secured in place by the movable flanges or washers H and nuts I.

The thread of the nut I, upon one end of the spindle D, is a right-hand screw-thread, and the one upon the other end of said spindle is a left-hand screw-thread, so that the emery-wheels may not become loose when in use.

J is a flat-surface rest, which is made in the form shown in figs. 3 and 4, and the stem or shank of which is adjustably secured in the socket of the rest-stand C, in the manner hereinbefore described with reference to the ordinary rest, so that it may be adjusted as required.

The rest J is designed for use in grinding the sides of nuts square with their faces, and for other purposes.

Having thus described my invention,

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

1. The hollow cast-iron stand or frame, consisting of the parts A *a'* and slotted projections B, as shown and described.

2. The spindle D, having spiral groove *d'*, pulley E, adjustable collar F, and frame A *a'*, all combined and relatively constructed and arranged, as set forth.

THOS. H. WORRALL.

Witnesses:

FRED. L. SMITH,

JEREMIAH GATCHELL.