

S. Hughes.
Ore Stamp.

N^o 76,461.

Patented Apr. 7, 1868.

Fig. 3.

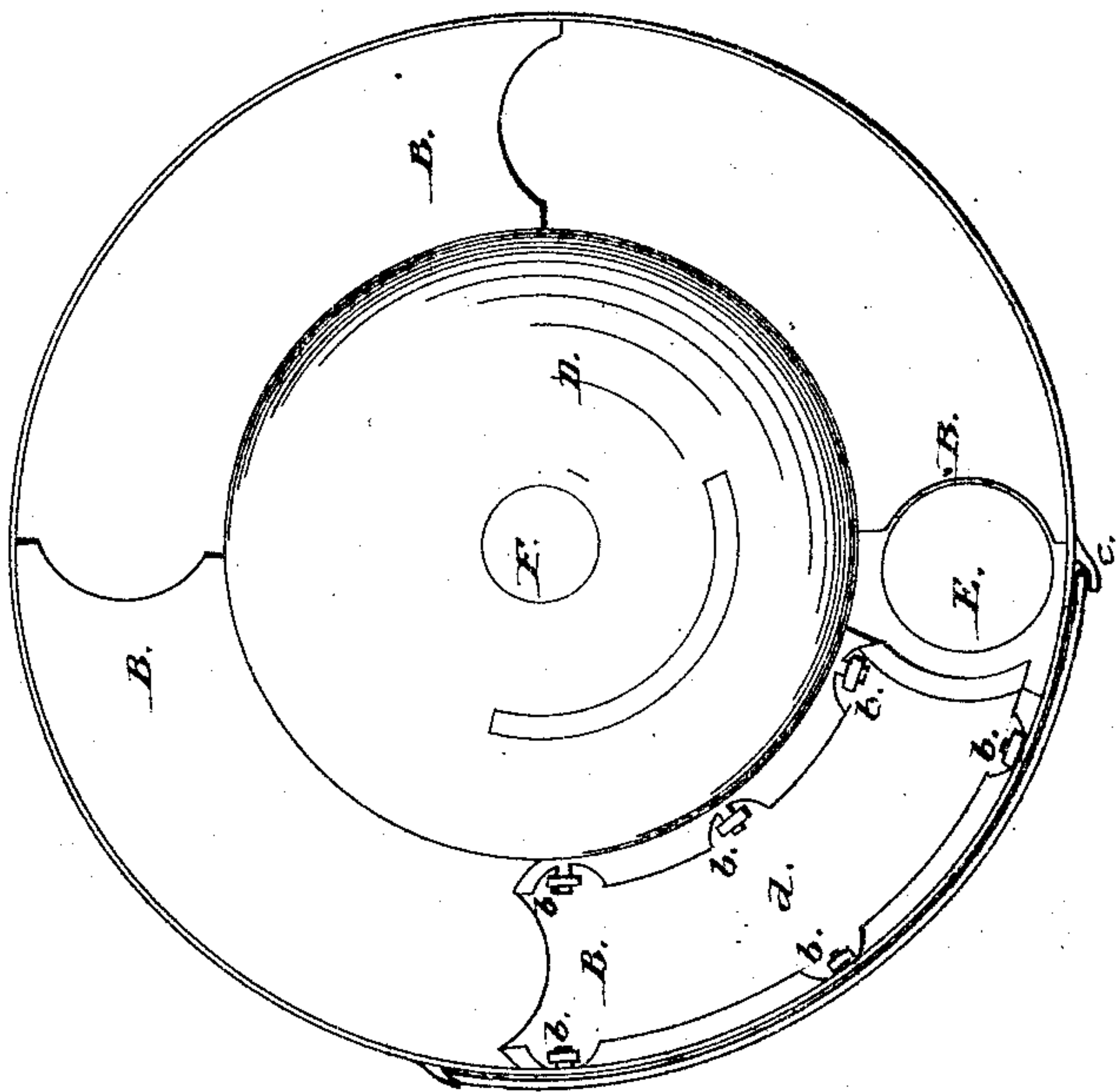


Fig. 2.

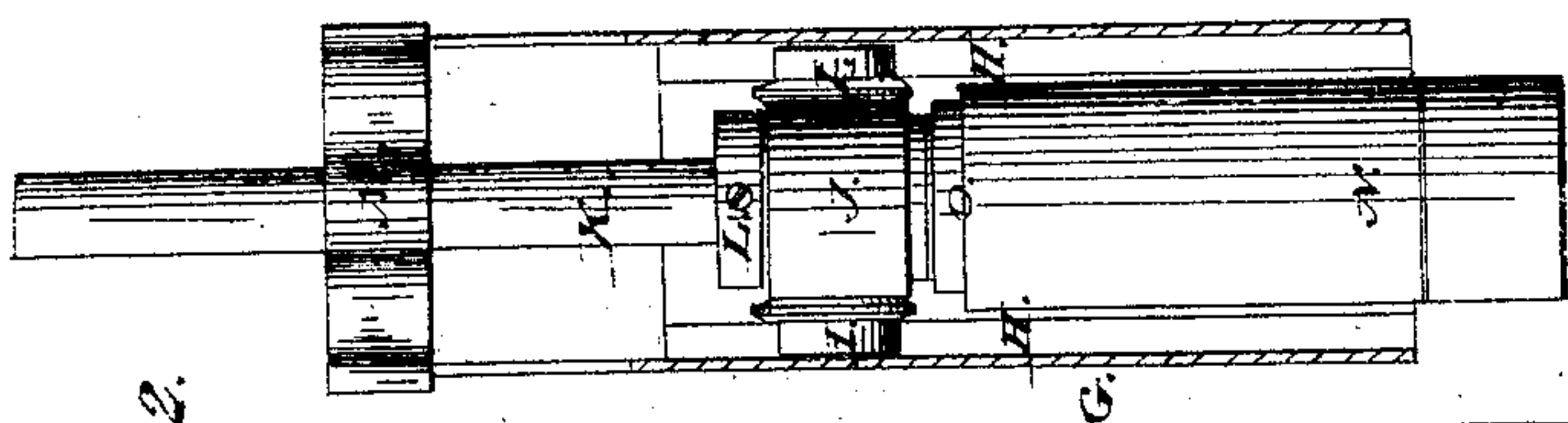
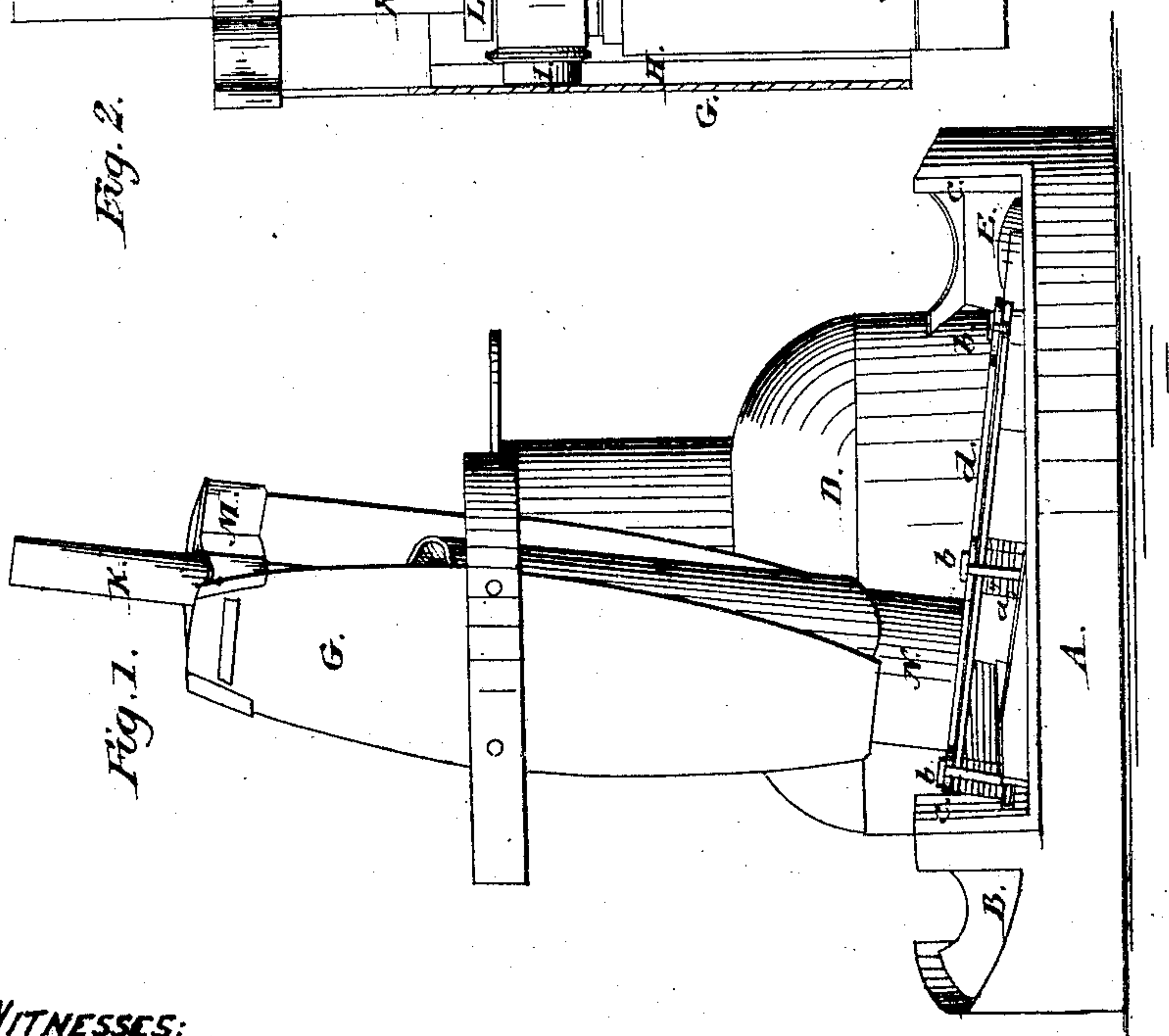


Fig. 1.



WITNESSES:

John L. Boone
C. W. Smith

INVENTOR.

Seymour Hughes

United States Patent Office.

SEYMOUR HUGHES, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 76,461, dated April 7, 1868.

IMPROVED ORE-CRUSHER AND GRINDER.

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, SEYMOUR HUGHES, of the city and county of San Francisco, State of California, have invented an Improved Ore-Crusher and Grinder; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

The object of my invention is to provide an improved ore-crusher and grinder in which the pulverizing, as usually performed by stamps, and the grinding, as effected by various devices, shall both be performed in one machine, which is so compactly made that it occupies much less space than the machines now in use. It consists of a circular base, above or on the top of which is a series of four or more inclined planes, each having a die at its base. Heavy stamps, each having a stem and stamp-head, as in the straight batteries, are connected with a central driving-shaft, and are thus moved up these inclined planes, from the top of which they fall upon the dies at the base. The stamp-stems move in a frame or guide provided with friction-rollers. Screens are placed around the outer circumference of the apparatus, through which the pulverized ore passes. The inclined planes are adjustable by wedges and screws, and are easily replaced when worn out. To more fully explain my invention, reference is had to the accompanying drawings, forming a part of this specification, of which—

Figure 1 is a side elevation of my machine, showing one stamp.

Figure 2 is a sectional elevation of the stamp-guide, showing the friction-rollers.

Figure 3 is a plan of the base, showing the inclined plane.

Similar letters of reference in each of the figures indicate like parts.

A is a circular base, of a size sufficient for the stamps to be used, and having four or more inclined planes, B B, around the circumference, and outside the central boss, D. These planes are adjustable, and can be raised or lowered, or may have a greater or less inclination given them by the use of thin metallic or wooden plates, *a a a*. The upper face, *d*, of the plane is made of hard iron, and is kept in place, as well as the adjustable plates, by bolts *b b*. A die, E, is placed at the foot of each plane, upon which the stamp falls when it has passed off the upper end of the plane. Slots *c c*, around the circumference of the machine, serve to admit and hold metal screens, of any degree of fineness, through which the ore, when sufficiently pulverized, may pass. A driving-shaft, F, passes up through the central boss D, and has arms, or other suitable device, which serve to drive the stamps. At the extremities of the arms are the guide-frames, G, which are firmly fastened at such an inclination as to insure the most efficient stroke of the stamp upon the die, as well as to give the best results of the grinding upon the planes. Ways or guides, H H, are constructed within the frames G, upon and between which the friction-rollers I I travel. These rollers have their axles attached to a block, J, through which the stem K passes, and turns freely, being kept in place by the collar L. The upper part of the stem may also be guided by rollers, or it may pass through a guiding-collar, as shown at M. The stamp N is fastened to the stem in the usual manner, or it may have an elastic block, of wood or rubber, O, intervening, to preserve the rollers I from concussion.

To operate my machine, the ore is placed in the track of the stamps and upon the dies, and the machine set in motion. The stamps pass up the inclined planes, grinding the fine ore as they move, until they reach the top of the plane, when they fall upon the ore, which is collected upon the die, and then move up the next plane, carrying whatever ore may be in front of them over upon the next die, and thus grinding and crushing until the whole mass is fine enough to pass through the screens. Any suitable number of stamps may be used, and dry or wet crushing may be performed, as desired, while the whole machine, being very compact and firm, can be set up in any place with but little trouble.

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

1. An ore-crusher, having the spiral inclined planes B B, together with the stamps N and dies E, the whole constructed and operating substantially as and for the purpose herein described.

2. In a circular crusher and grinder, I claim the inclined planes, consisting of the removable grinding-plates *b* and the adjusting-plates *a a a*; substantially as and for the purpose described.

In witness whereof, I have hereunto set my hand and seal.

SEYMOUR HUGHES. [L. s.]

Witnesses:

C. W. M. SMITH,
Jno. L. BOONE.