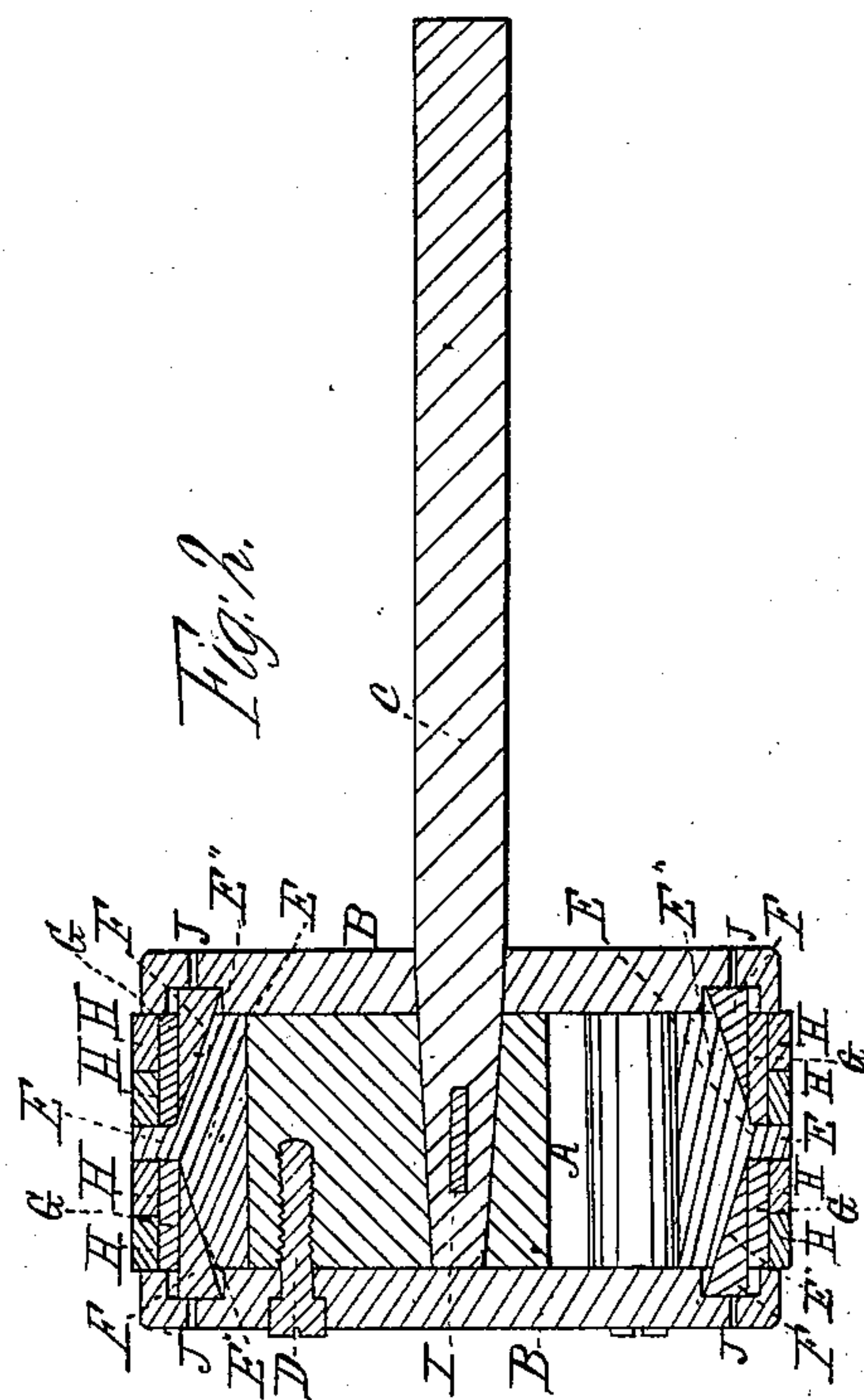
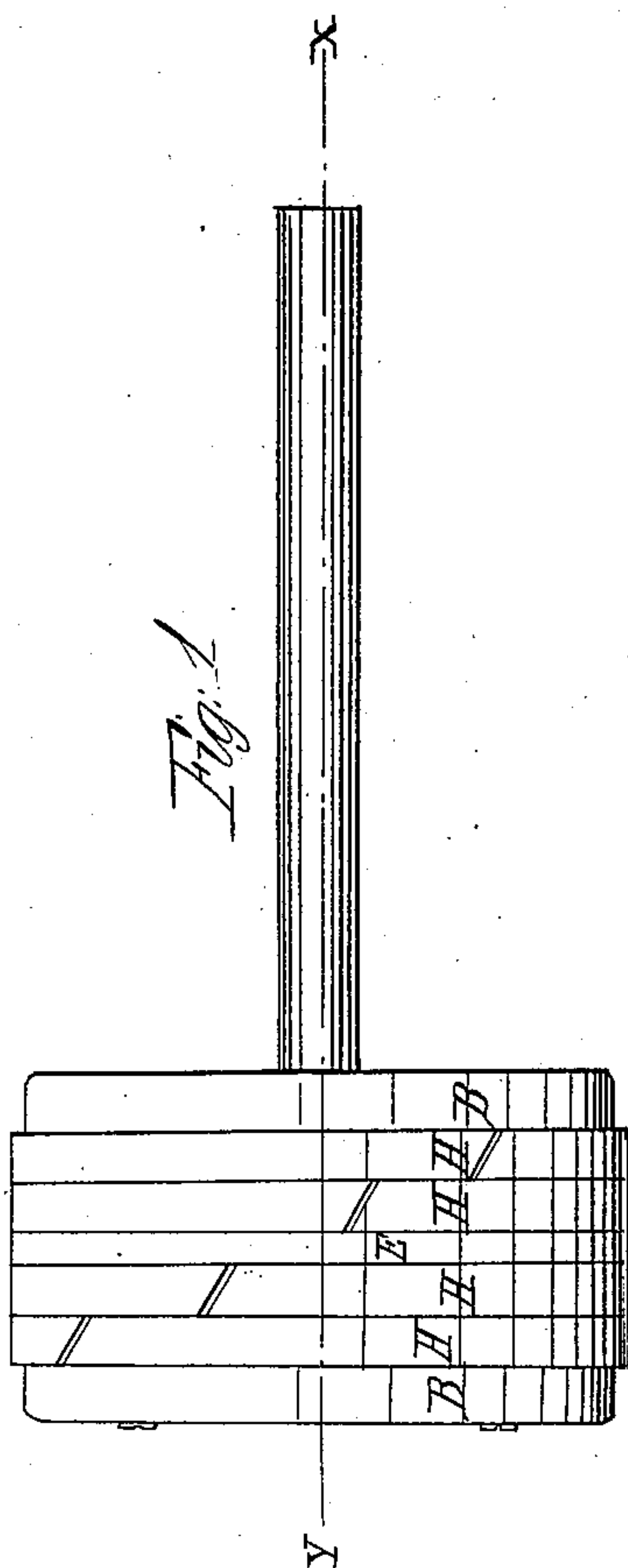
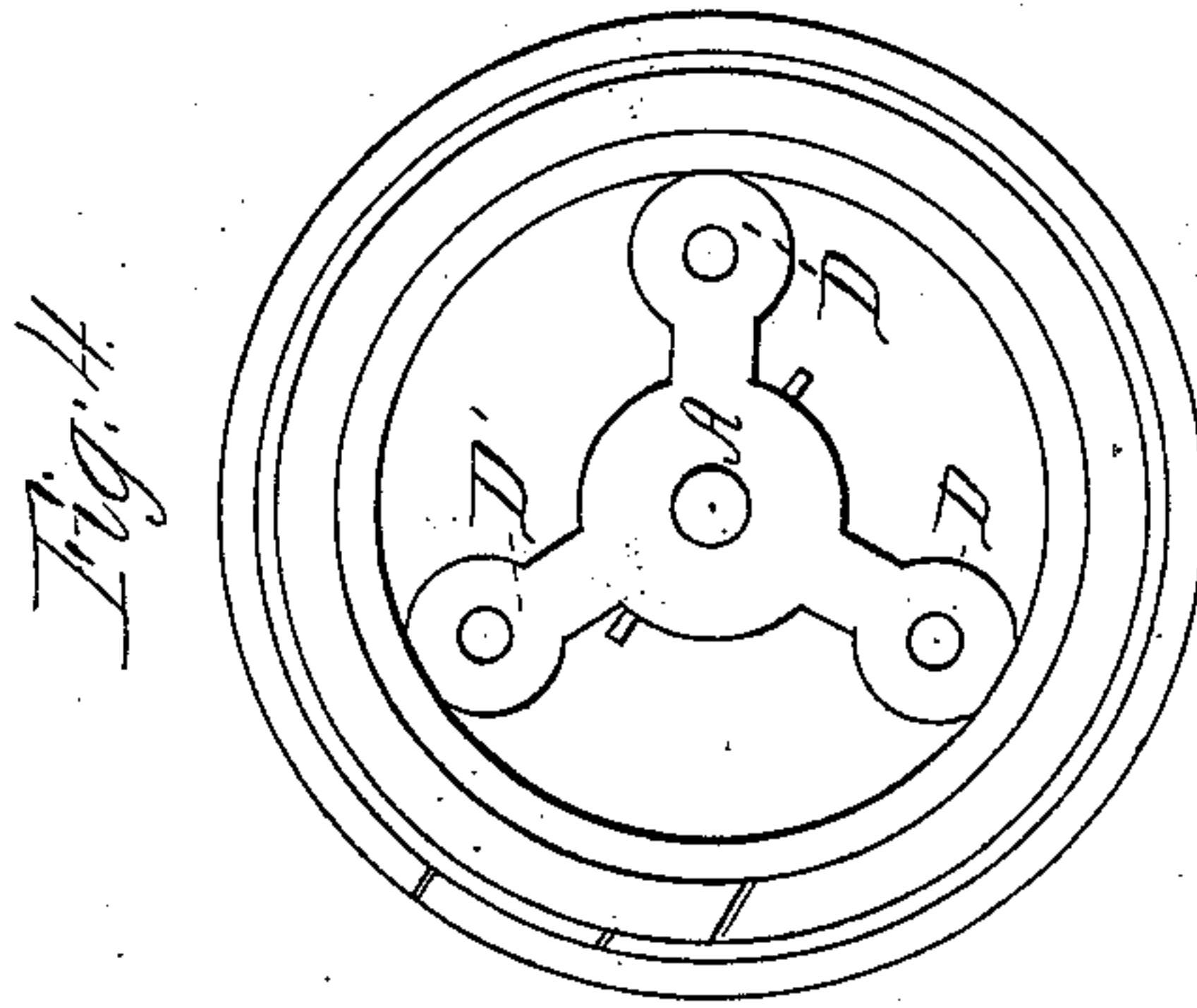
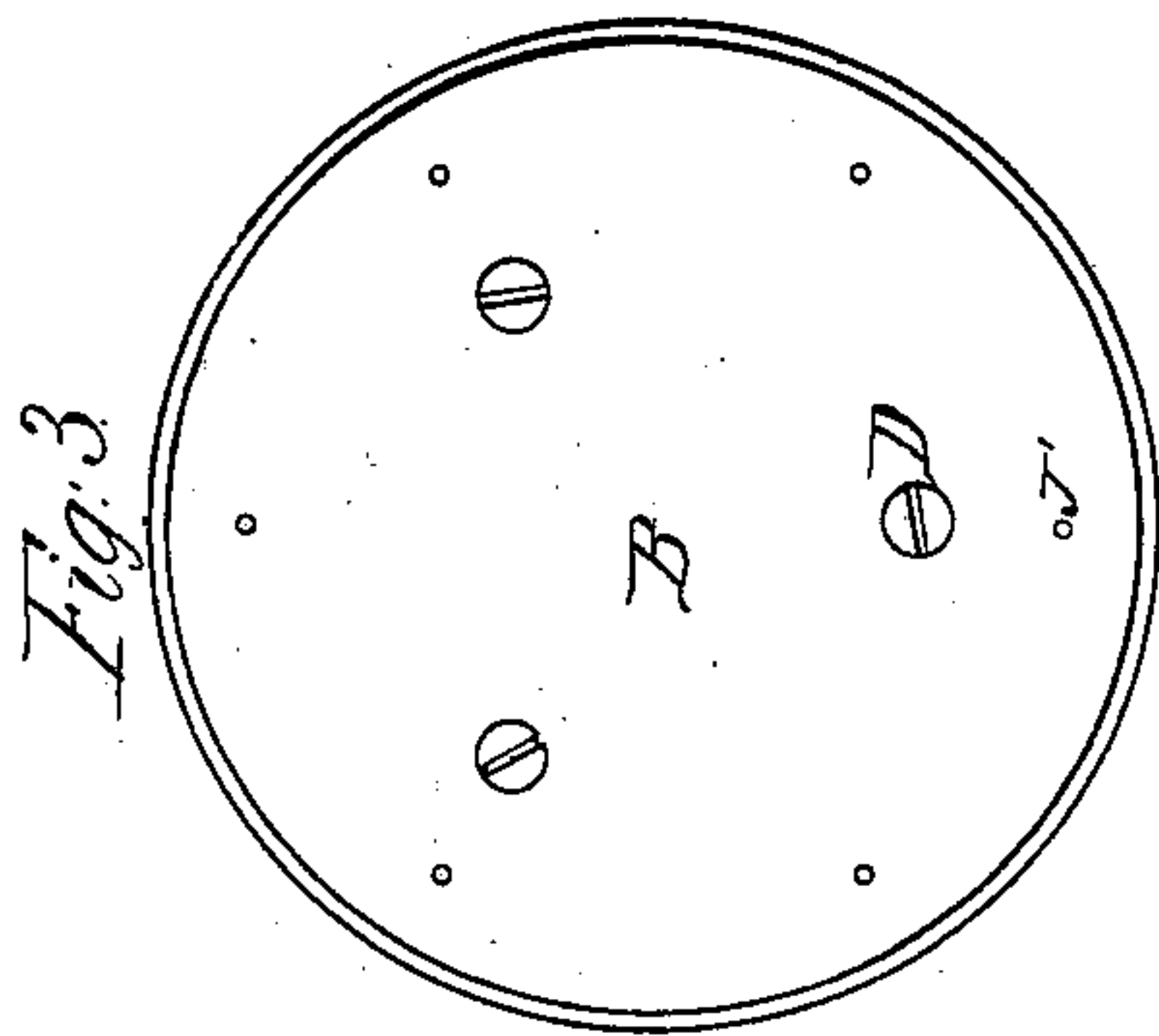


L. W. Campbell,

Piston Packing.

No 70,521.

Patented Nov. 5, 1867.



United States Patent Office.

LUTHER W. CAMPBELL, OF AURORA, ILLINOIS, ASSIGNOR TO HIMSELF,
A. T. HALL, C. F. ALLEN, AND A. J. AMBLER.

Letters Patent No. 70,521, dated November 5, 1867.

IMPROVEMENT IN PISTON-PACKING.

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, LUTHER W. CAMPBELL, of Aurora, in the county of Kane, and State of Illinois, have invented a new and useful Improvement in Metallic Packing for Piston-Heads of Steam Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making part of this specification, in which—

Figure 1 is a side elevation.

Figure 2 is a vertical longitudinal section.

Figure 3 is a plan view, and

Figure 4 is a vertical transverse section.

The same letters are employed in all the figures in the indication of identical parts.

This improvement consists in a novel arrangement of the heads, elastic metallic packing-rings, and conical expansion-rings, of a piston for the cylinder of a steam engine, the nature of which will fully appear from the following description and claims.

In the drawings A is a central hub, cast with and forming a part of the head B, and firmly attached to the piston-rod C. This hub has an inclined face, forming the frustum of a cone shown at A', fig. 2, and radial arms, to which the plate B' is attached by bolts D entering the arms at D'. The elastic packing-rings are placed between the heads B B', and around the conical face A' of the hub. The first of the series E is inclined on its inner face to correspond with the face A' of the hub to which it is fitted, so that when pressed upon the hub it will be expanded. The outer face is parallel with the bore of the cylinder. Around the ring E is placed a thin ring, F, for the purpose of making joints and preventing the passage of steam through the openings in the packing-rings. Around this is another conical ring, G, inclined on its outer face in a direction opposite to the inclination of the face A' of the hub. Next in order is the ring K, the inner face of which is inclined to correspond with the inclination of the outer face of the ring G, upon which it is fitted, so that, as it is forced upon the latter, it will be expanded. The exterior face of the ring K is parallel to the bore of the cylinder. Around the ring K are placed the expansion-rings H H, which, being pressed outwardly against the cylinder, form the packing. A series of holes, J J, is bored through the head B, by which steam is admitted against the edge of the conical ring G, forcing it into the ring K, and expanding that and the packing-rings H H, while the steam is admitted into one end of the cylinder. When the steam is admitted into the other end of the cylinder, entering through similar openings J' J' in the head B', it presses upon the edge of the ring E, forcing it upon the face A' of the hub, and expanding it and all the exterior rings. A recess is formed in the head B to receive the ring G, and a similar recess is formed in the head B' to receive the ring E.

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

1. So arranging a series of concentric elastic rings, K, G, and E, having alternately inclined faces, that, acting in combination with the conical hub A and packing-rings H H, they shall maintain an uniform outward pressure upon the latter by the action of the steam alternately entering each end of the cylinder, substantially as set forth.

2. The combination of the perforated heads B B', conical hub A, and rings E, F, G, K, and H, arranged to operate substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

L. W. CAMPBELL.

Witnesses:

RICHARD J. MOORE,

W. F. WHITEHOUSE.