

E. T. Prindle,

Piston Packing.

N^o 57,375.

Patented Aug. 21, 1866.

Fig. 1.

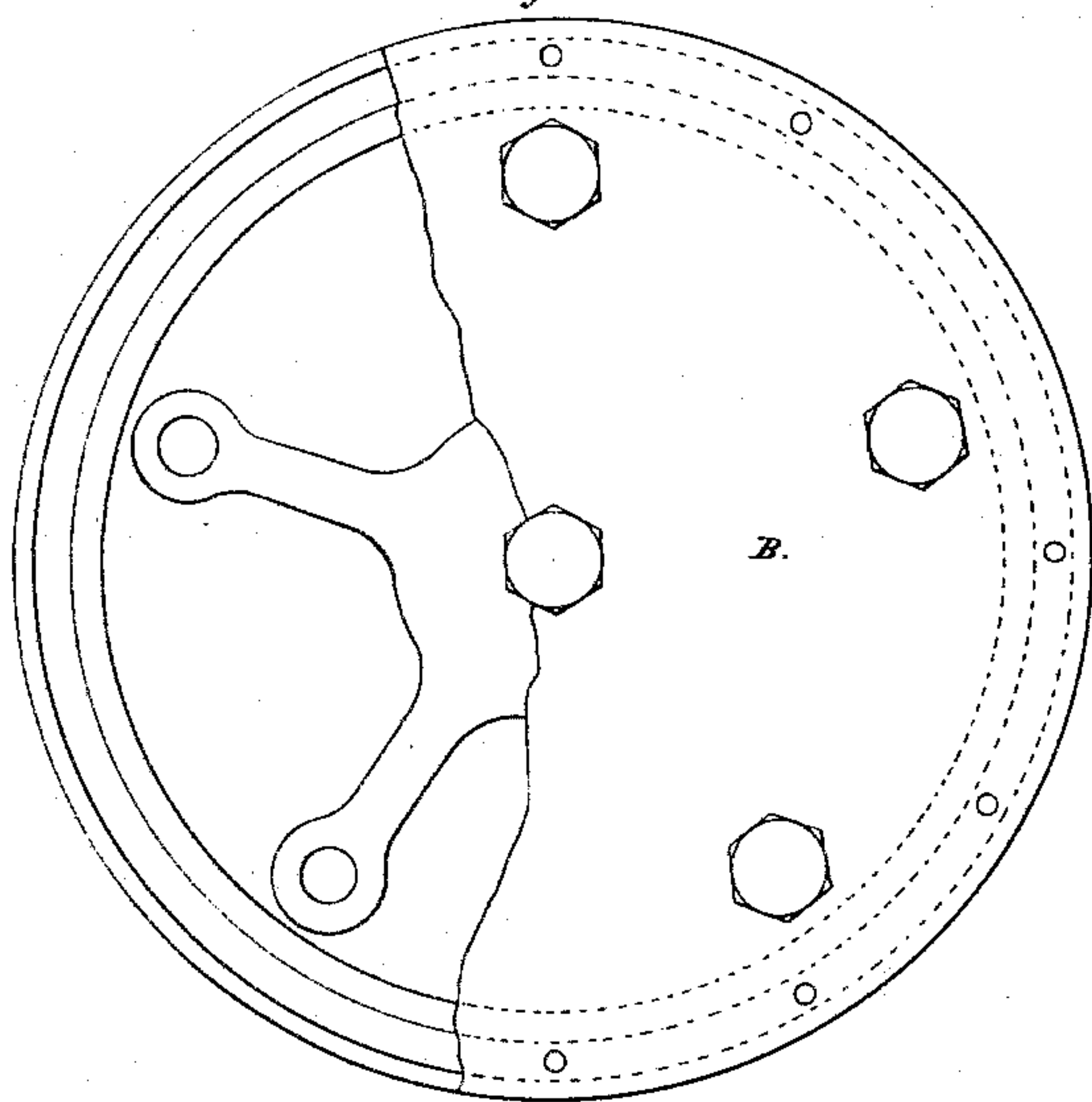


Fig. 2.

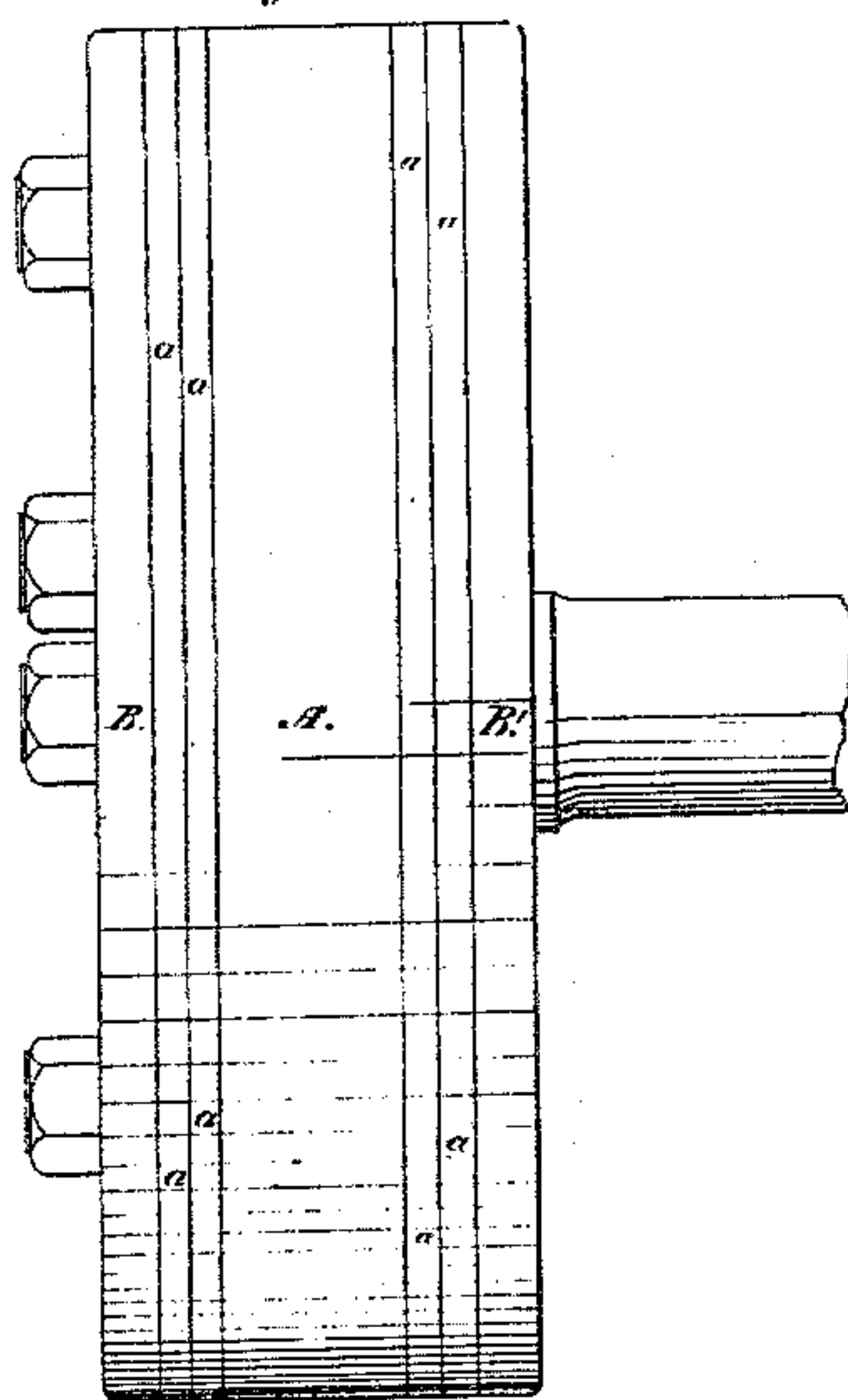


Fig. 4.

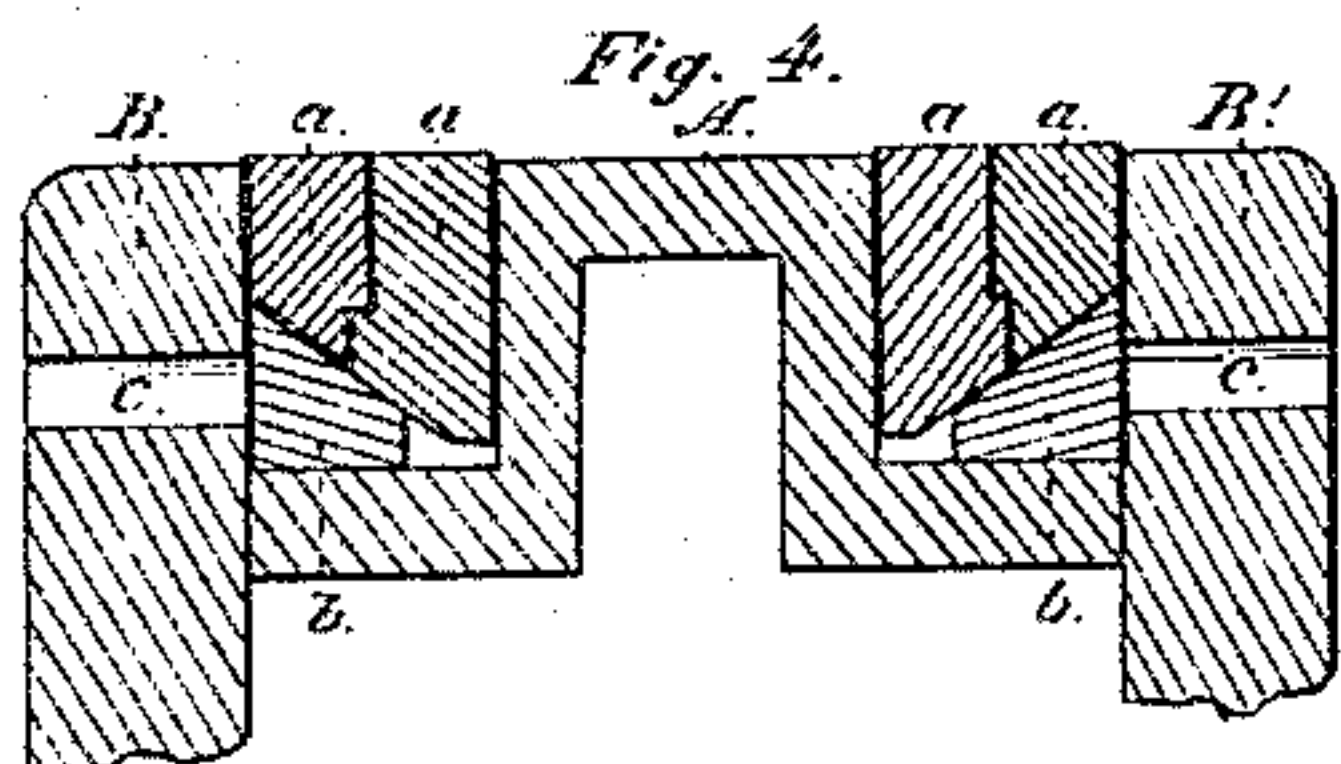


Fig. 3.

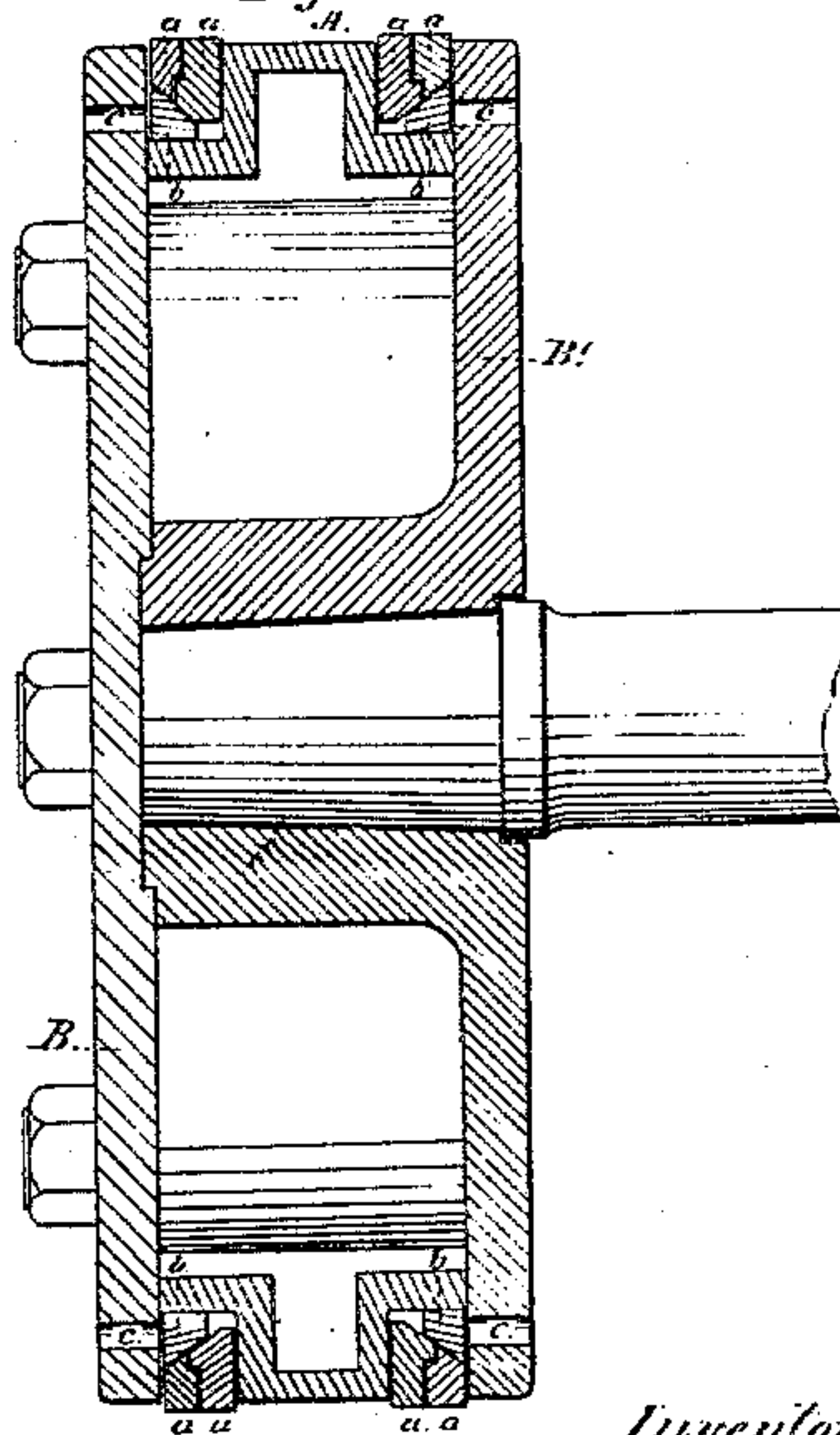
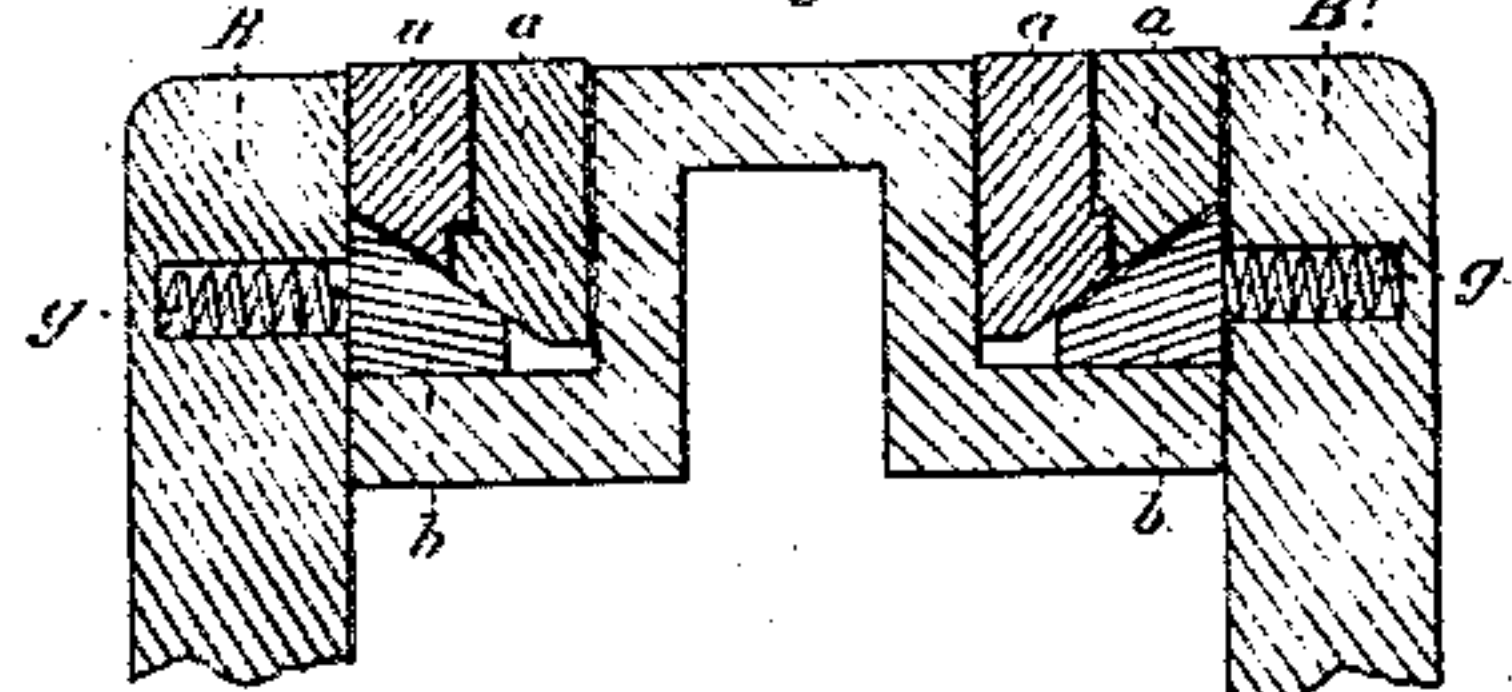


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

E. T. PRINDLE, OF AURORA, ILLINOIS.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. 57,375, dated August 21, 1866.

To all whom it may concern:

Be it known that I, E. T. PRINDLE, of Aurora, in the county of Kane and State of Illinois, have invented a new and Improved Self-Acting Piston-Packing; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a half-sectional view of the piston, showing the steam-inlets through one of the followers. Fig. 2 is a view of the edge of the piston. Fig. 3 is a diametrical section through the piston. Fig. 4 is an enlarged section of the packing-rings and steam-passages through the followers. Fig. 5 is an enlarged section of a portion of the piston and its rings, showing the pressure-springs.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to a new and improved mode of constructing piston-packing and applying the same to pistons, whereby the packing shall be uniformly expanded by means of steam acting through ports or passages which are made through the followers of the piston.

The nature of my invention consists in applying a number of sectional beveled rings to annular depressions formed in the circumference of the piston in such manner that, by the action of steam through perforated followers upon circular wedges or beveled rings, the sectional rings will be uniformly expanded and set out against the sides of the cylinder in which the piston works, said rings being also acted upon constantly by means of springs in such manner that they shall be held out against the cylinder by a gentle pressure only when not acted upon by steam, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the circular skeleton ring or rim of the follower, and B B' are the circular followers thereof, which latter are bolted to the central supporting-spokes in any suitable manner.

The rim A is constructed with two annular depressions in its circumference, which are

adapted for receiving two sets of sectional packing-rings that are alternately expanded by the action of steam on each side of the piston.

The packing-rings *a a* are constructed of segments or sections having their inner edges beveled, as shown in the drawings, which sections are inserted into their respective recesses in the rim A so as to break joints with each other, and thereby admit of expansion and contraction without exposing leaky joints.

Before applying the sectional rings *a a* to the piston, I apply within the annular recesses in the rim the circular wedges or beveled rings *b b*, as shown in Figs. 3, 4, and 5, which rings are allowed to play back and forth freely. The beveled surfaces of the sectional rings *a a* are fitted to the corresponding beveled surfaces of the rings *b b*, so that these latter rings will force the former rings outward by the pressure of steam acting through the ports or perforations *c c c*, which are made through the followers B B'.

Each set of the segments or rings *a a* are made of such width that they will fit snugly but not too tightly in their respective recesses. They may be connected together by rabbets, as shown in the drawings, and they may be constructed of any suitable metal which will be found best adapted to the purpose.

The wedge-rings *b b* may be divided into segments; but I prefer to have each of these rings solid, and to make the perforations *c c* through the followers sufficiently numerous to cause a uniform pressure of steam upon said rings, so that the segments will be expanded equally.

In order to keep the circumference of the sectional rings *a a* pressed against the cylinder within which the piston works when said rings are not acted upon by them, I employ springs *g g g*, which are inserted into recesses in the followers B B' and arranged so as to act upon the wedge-rings *b b* and press the sectional rings outward gently, but not with sufficient force to create undue friction upon the piston. These springs are intended to keep the packing-rings in their places, so that they shall always be in position for being acted upon by the steam through the medium of the rings *b b*, as above set forth.

When the piston constructed as above described is placed within a cylinder for which it is adapted, the coiled springs *g g* will press against the wedge-rings *b b* with just sufficient force to keep in proper position and to set the segments *a a* outward gently against the bore of the cylinder. The instant steam is let into the cylinder it passes through the steam-holes *c c* and presses against one of the rings *b b*, and expands the segments *a a* that are upon such ring uniformly, so as to make it impossible for steam to pass them. After the piston has traveled the length of its stroke, and the steam has been exhausted from this end of the cylinder, there remains no friction on the cylinder from this set of rings, except what little is caused by the pressure of the coiled springs *g g*. The steam entering the opposite side of the piston, the operation of expanding the set of rings on that side is the same.

It will be seen from the above description that I employ two sets of sectional packing-rings, each set being acted upon by means of springs *g g*, through the medium of circular wedges, so that the packing-rings are at all times, when the piston is within a steam cylinder, pressed out against the bore of such cylinder.

The pressure which is necessary to act upon said packing-rings to prevent the escape of steam past them is effected by the steam which acts to move the piston, and in proportion as this pressure increases the pressure upon the packing-rings will be increased and the liability of steam to escape diminished.

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

1. The combination of the sectional beveled packing-rings *a a* and wedge-rings *b b*, placed within annular recesses formed in the circumference of a piston, so that steam acting through perforations *c c*, through the followers of the piston, shall effect the uniform expansion of the packing, substantially as described.

2. The combination of the two sets of packing-rings *a a*, the wedge-rings *b b*, and springs *g g g*, with the skeleton-ring *A* of the piston and the perforated followers *B B'*, substantially as described.

E. T. PRINDLE.

Witnesses:

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