J. BOLE.

Piston-Packing.

No. 158,895. Patented Jan. 19, 1875.

Fig. 1

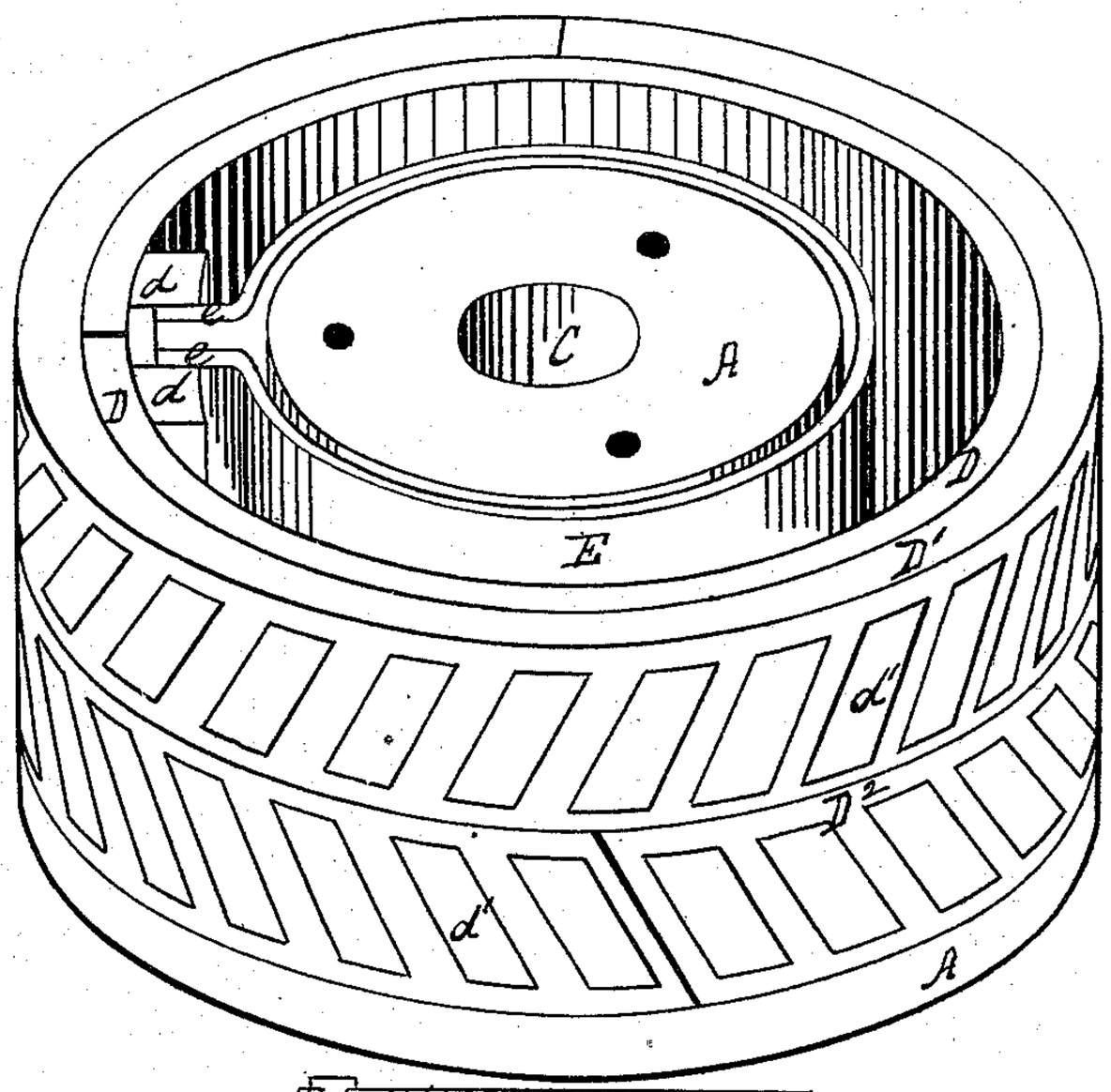


Fig. 2

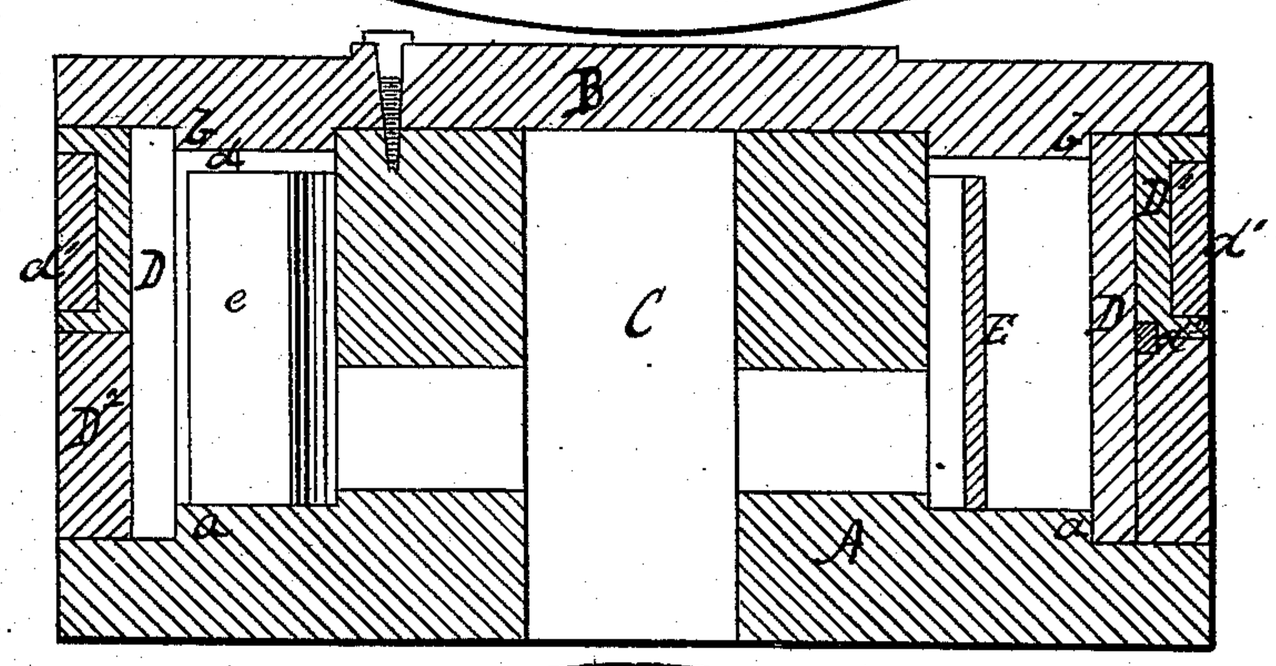
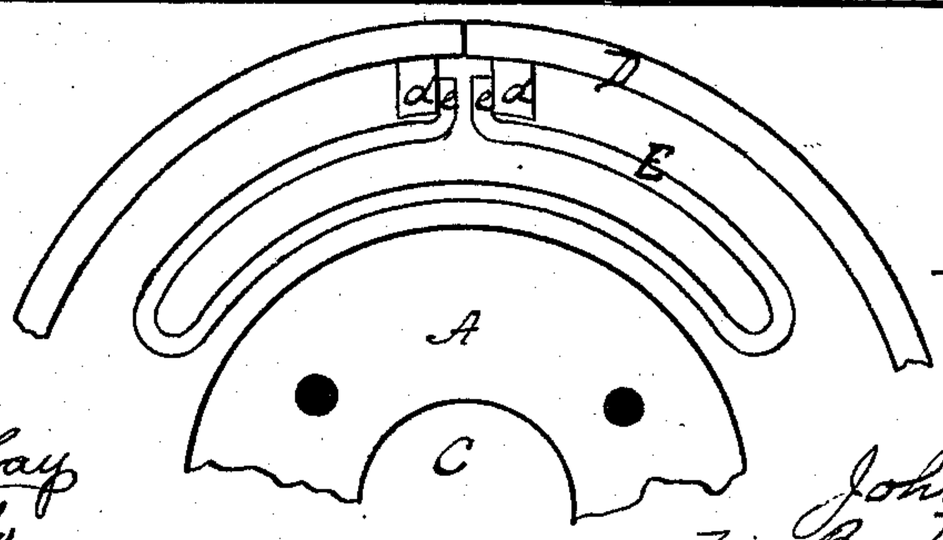


Fig. 3.



WITNESSES

James L. Kay
R. R. Baely

INVENTOR

John Bole
by Bakewell & Kerr
Atty's

UNITED STATES PATENT OFFICE.

JOHN BOLE, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. **158,895**, dated January 19, 1875; application filed December 26, 1874.

To all whom it may concern:

Be it known that I, JOHN BOLE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Piston-Packing; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings forming a part of this specification, in which—

Figure 1 is a perspective view of a piston embodying my invention, the follower being removed. Fig. 2 is a section of the same on the line *x x*. Fig. 3 is a modification of the form of spring.

Like letters refer to like parts on the several figures.

My invention consists in combining, with the packing-ring, a spring exerting its force at or near the joint of the ring, said spring being of such a form as will permit the movement of the rings around the center without tendency to lateral displacement.

In piston-packings where springs are employed to force out the packing-rings, in general the construction has been such that a uniform outward pressure is not exerted at all points—sometimes from differences existing in the springs themselves, where more than one have been employed, and in other cases, where a single spring is used, because the spring was not so confined as to cause it to exert its force evenly upon the ring.

This objection I have overcome by forming the ring and its spring so that the spring shall exert its force on the ring near and in a line with the joint, whereby the ring and spring are virtually a single spring exerting an equal force outward in all directions, evenly supporting the packing-rings.

But there is another objection to ordinary packings used in horizontal cylinders, viz., the wearing of the packing-rings on the lower or under side, due to the weight and motion of the piston.

This I have overcome by shaping the spring so that it can move with the ring around a given center, whereby the rings may be revolved from time to time, so as to change the wearing surface in horizontal cylinders.

I will now proceed to describe my invention, so that others skilled in the art may apply it.

In the drawing, A is the piston-head, and B the follower, the follower being removed in Fig. 1 to show the interior of the piston. C indicates the attachment of the piston-rod, which may be keyed or otherwise secured to head A. Head A and follower B are generally shouldered, as at *a b*, to form a seat for the inner and outer packing-rings. D represents the inner ring, and D^1 D^2 the outer rings, the inner ring, D, being provided with lugs *d*, or similar means, for confining the ends of a bent spring, E, said lugs or devices being placed at or near the cut in the inner ring, and along the line of separation. The rings D^1 D^2 are of the usual form, generally recessed, as at d^1, for the reception of Babbitt's metal, and are arranged so as to break joints, being prevented from moving on the inner ring, D, by a lug or projection, d^2, on the inner ring taking into recesses on the outer rings. E represents a single bent spring, the ends *e e* of which engage with the lugs *d* of ring D; or it may be secured to the inner ring along the line of separation in any other suitable manner, so that the desired result is attained, viz., causing the spring to exert all its force at the point stated, and in opposite directions, so as to open or distend the ring D.

For small pistons, I generally give the spring E the form shown in Fig. 1—circular, inclosing the piston-rod; but, as this form is not so advantageous in large pistons, a form similar to what is shown in Fig. 3 may be employed to meet the indications, namely, a shape which will give a free spring capable of moving with the rings around a center, the object of which is to permit the packing-rings to be revolved, to change the wearing surfaces in horizontal cylinders.

It is evident the follower may be passed over the rod, the reverse of its present position; but this is not material, nor would it modify the invention.

The advantages of this invention are, that an even and uniform outward pressure of the rings is obtained, together with simplicity of

construction and mobility of the rings, to compensate for wear.

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

In combination with the packing-ring of a piston-head, a bent free spring, having its ends secured to the ring at or near the joint, and formed as described, so that it may move with the ring around a common center.

In testimony whereof I, the said JOHN BOLE, have hereunto set my hand.

JOHN BOLE.

Witnesses:
W. N. PAXTON,
F. H. BOLE.