R. CHILDS.

Packing for Pistons.

No. 224,815. Patented Feb. 24, 1880.

Fig. 1.

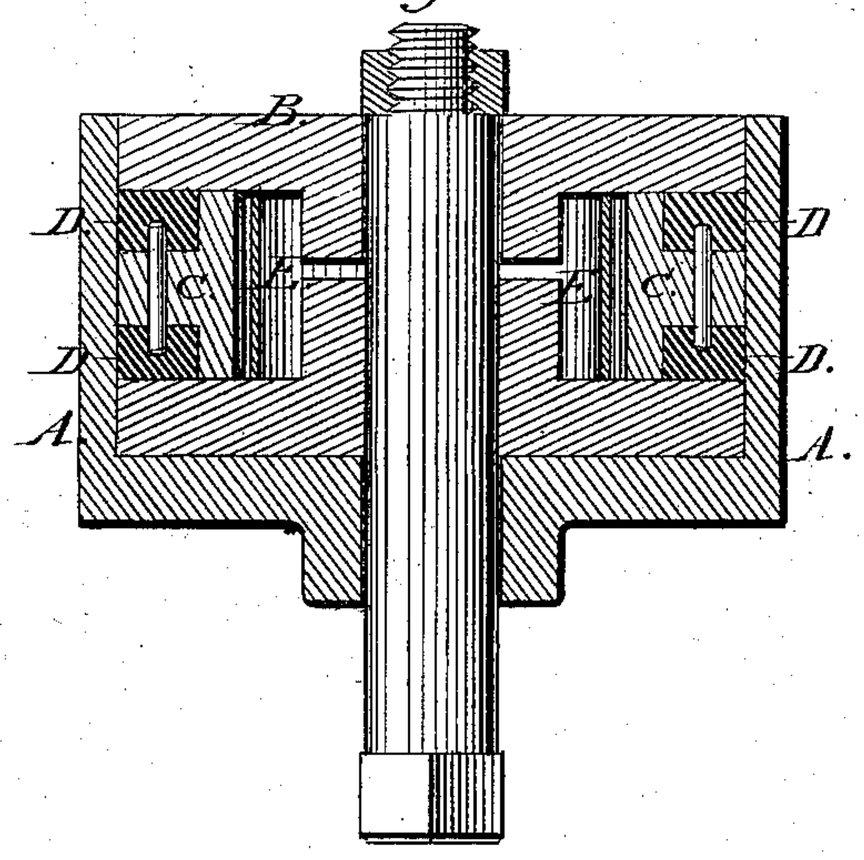
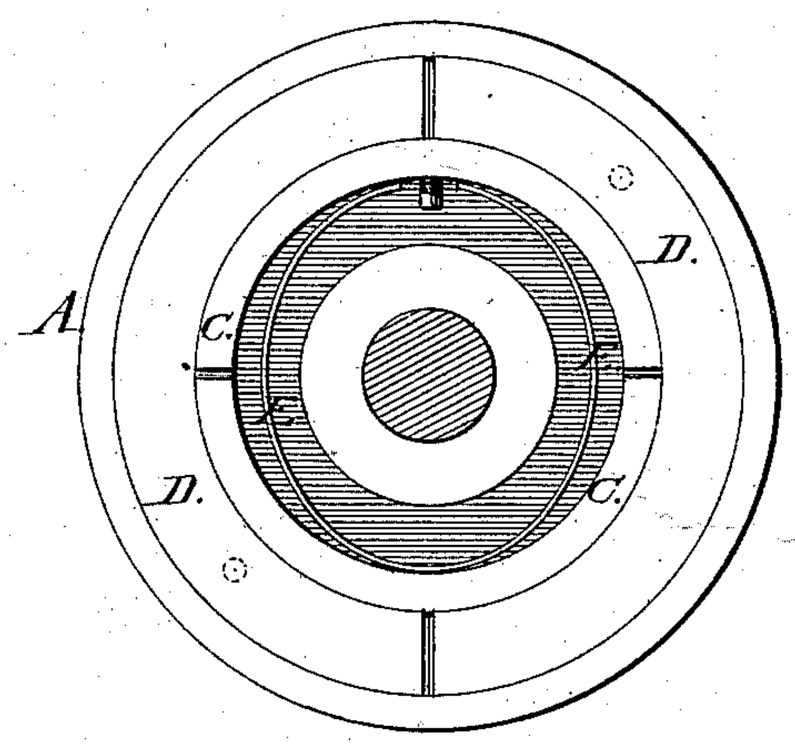


Fig. 2.



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UNITED STATES PATENT OFFICE.

ROBERT CHILDS, OF DEERFIELD, MASSACHUSETTS.

PACKING FOR PISTONS.

SPECIFICATION forming part of Letters Patent No. 224,815, dated February 24, 1880.

Application filed January 15, 1880.

To all whom it may concern:

Be it known that I, ROBERT CHILDS, of Deerfield, in the county of Franklin and Commonwealth of Massachusetts, have invented a new and useful Packing for Pistons, to be used in steam-engines, pumps, and other machines, of which the following is a specification.

My invention relates to an improvement upon the metallic packing or packing-rings used upon the pistons of engines, pumps, and other machines, whereby the durability of such packing is increased and the rings made to fit the interior of the cylinder more accurately and to wear more evenly than is the case with the metallic packing as ordinarily constructed.

My invention consists, first, in the formation and arrangement of the expansible rings, and also of the form of the spring used to keep them expanded.

The rings are three in number, each divided into two parts across the diameter, but so that the opening in each one shall be closed by another, and all made so as to expand together and closely fit the inside of the cylinder.

Figure 1 is a vertical section of the piston, and Fig. 2 is a plan view with the head removed.

In the accompanying drawings, A represents the cylinder. B is the body of the piston; C, the principal ring, sustaining the others; D D, the smaller rings, resting in and on C; E, the ovate or ellipsoidal spring expanding the rings.

The principal ring C is rendered expansible by being divided across its diameter, a small opening being left for that purpose where it is cut, so that, pressed from the inside by the spring, it makes a steam-tight joint against the face of the cylinder, those expansion-spaces being covered and made also steam-tight by the other rings. This ring C is rabbeted down from each face on its outside about one-third, and from its circumference in about two-thirds, so that a section of it is represented by a T. This rabbet is formed to receive the two smaller expansible rings which lie on both sides of C, and are also divided across their diameters to allow of expansion, the dividing cut, however, being made at right angles to the cut through C, and therefore making a tight joint against the inside of the cylinder.

In the exterior flange of C, and directly opposite each other, are two dowel-pins, passing through vertically, upon which the smaller rings, having holes drilled in them for the purpose, sit and are secured from sliding around, while at the same time they are free to expand. On the inside of the ring C, and at right angles to the dividing cut, is inserted a pin, which is intended to keep the spring in position.

To secure the expansion uniformly of the rings, I place within the ring C a spring, E, of the same width as the inside of C.

To avoid the various troubles heretofore experienced of springs wearing, losing their elasticity, and consequently their bearing, my spring is made of metal, bent into an ellipsoidal form, open at one end, and of such length and size that it can be readily compressed in the direction of the longer axis, so as to be forced snugly within the ring C, nearly filling it, and bearing continuously against its sides, covering nearly half the circumference, as the ellipsoidal spring is forced into nearly a circular form. The spring is kept in position by the pin in the side of the ring.

It will be observed that the pressure of this spring, from its peculiar structure and location, bears constantly against the side of the ring C, which lies at a right angle to the line of division, thus necessarily expanding the ring to a close joint on the inside of the cylinder, except on the division-line, and that is closed by the small rings D D, which rest on both sides of C, and by its expansion are necessarily forced back to a close joint with the inside of the cylinder, the two, acting together, making an absolutely tight joint and packing for the piston.

The spring is made of sufficient power to distend the rings and keep them in place, which, however, requires but slight force, as no steam can get in, and there is consequently but very slight pressure against them.

What I claim in a metallic piston-packing is—

1. In a piston, the ellipsoidal split spring E, for expanding the packing-rings, constructed and arranged substantially as described.

2. In a piston-packing, the combination of the three packing rings C D D with ellipsoidal spring E, all constructed and arranged substantially as described.

ROBERT CHILDS.

Witnesses:

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