JOHN A. HUSS.

Improvement in Pistons for Steam Engines and Pumps.

No. 115,858. Patented June 13, 1871.

Fig. 1.

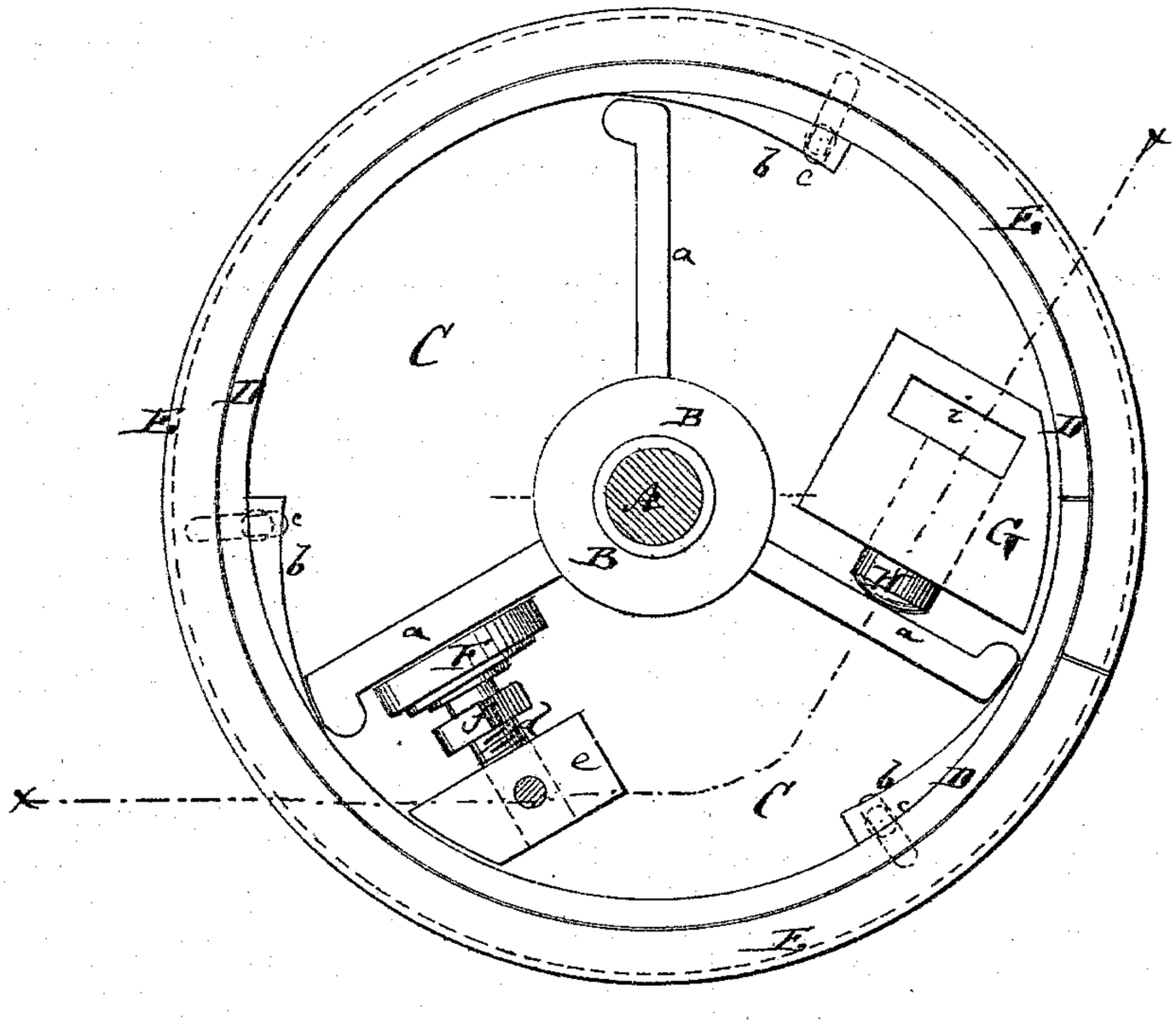
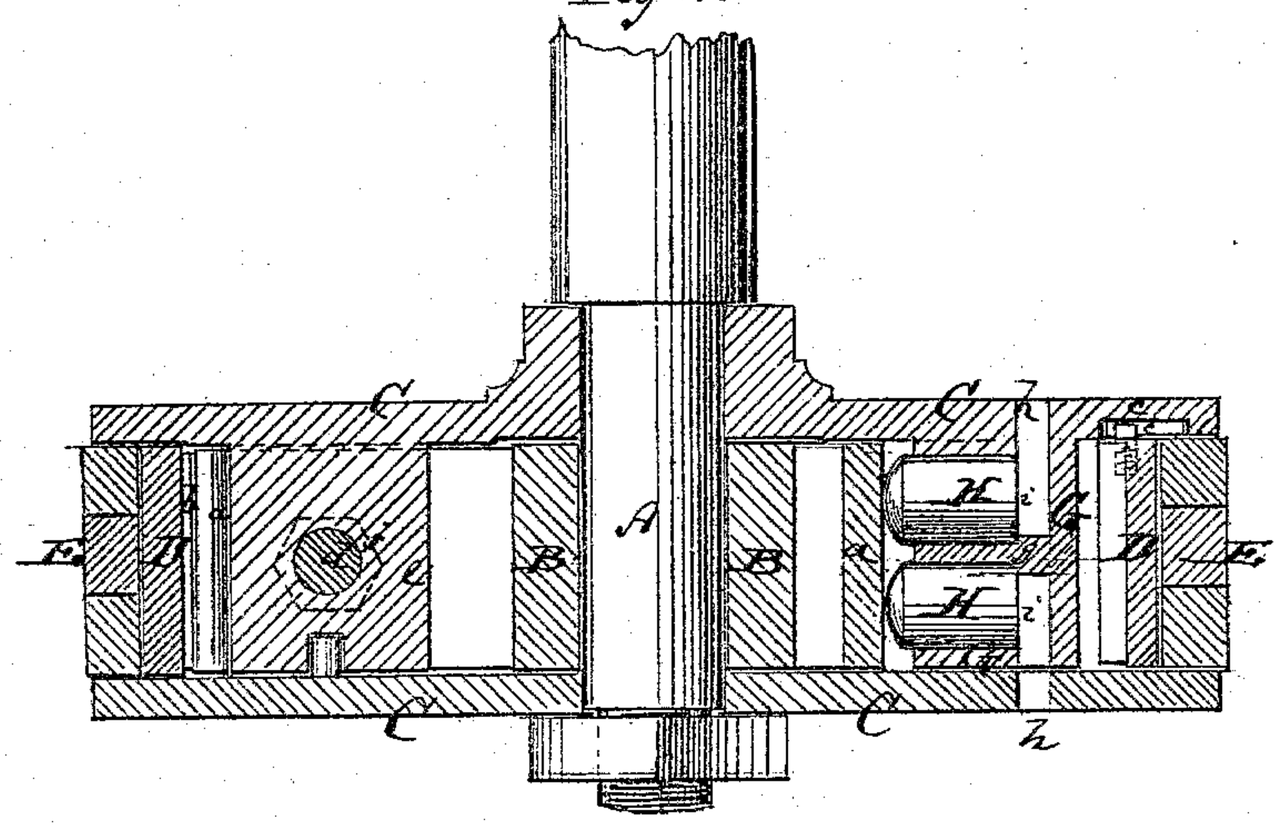


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN ADAM HUSS, OF BOWLING GREEN, KENTUCKY, ASSIGNOR TO BOWLING GREEN IMPROVED CYLINDER AND PUMP PACKING COMPANY, OF SAME PLACE.

IMPROVEMENT IN PISTONS FOR STEAM-ENGINES AND PUMPS.

Specification forming part of Letters Patent No. 115,858, dated June 13, 1871.

To all whom it may concern:

Be it known that I, JOHN ADAM HUSS, of Bowling Green, in the county of Warren and State of Kentucky, have invented a new and Improved Piston for Steam-Engines and Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a face view of my improved piston. Fig. 2 is a transverse section of the same taken on the plane of the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to a new piston-packing, which is made self-acting, and so as to expand the rings with equal power on all sides. The invention consists in a new arrangement of slides which are worked by steam to turn a crossed ring, which, acting on wedge-shaped noses of the expanding ring, serves to spread the latter and enlarge the piston.

A in the drawing represents the piston-rod. B is a sleeve fitted loose upon the piston-rod, between the piston-heads C C. The sleeve B has two or more radial arms, *a a*. D is a ring of cast-iron or other material, having as many wedge-shaped noses *b b* on its inner periphery as there are arms *a* on B. These noses are cast to the ring or otherwise affixed, and the ends of the arms reach against them. The ring D is split to be expansible. When the sleeve is turned to carry the arms *a* against the larger ends of the noses the ring will be expanded; otherwise it will contract to close its ends together. E is a packing-ring of ordinary kind, cut also to be expansible, and placed around the ring D. From the end of the ring D project tenons *c c* into grooves the piston-head, as indicated in Fig. 2, and by dotted lines in Fig. 1. These guide the ring to prevent it from turning, the grooves being long enough to permit full expansion and contraction. F is a coiled or flat spring fitted upon a set-screw, *d*, which has its bearings in a projecting ear, *e*, of a piston-head. The spring bears against one arm, *a*, of the sleeve, and can, by turning the screw *d* or a nut, *f*, thereon, be adjusted to permanently expand the ring D and more or less enlarge the piston. G is a block secured to the inner face of one piston-head, and extending to the opposite head. In it are placed two transverse slides or small pistons, H H, which are separated by a partition, *g*, and fitted into appropriate cavities *i* of the block G. These cavities are, respectively, in communication with ports or slots *h h* in the two piston-heads.

When steam is forced through one of these slots into the cavity *g* behind one of the small pistons H, the latter is pressed against an arm, *a*, moving the same so as to expand the ring D and enlarge the piston automatically. As the piston moves in the cylinder it is expanded during every motion by the steam pushing it.

The cross-arms *a* cannot be fitted out of center, and, being made of equal length, their pressure must at all points be alike. The proper packing of an engine can thus be readily produced by an attendant of ordinary ability, and the danger of warming the cylinder or wearing it uneven is overcome. Should the cylinder be uneven it can, nevertheless, be packed, as the arms yield to the pressure of the packing-rings.

The packing is easier regulated than a large number of springs, and creates no unnecessary friction, being thereby the means of lighting the piston. The self-acting packing is light, and produces easy pressure against the packing-rings, being thereby an economizer of steam.

The invention is applicable to steam-engines and pumps of every description.

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

1. The armed sleeve B placed around the

piston-rod within the expansion ring D, which has the noses *b b*, to be operated substantially as herein shown and described.

2. The spring F and adjusting-screw *d*, combined with the arms *a*, sleeve B, and expansion ring D, substantially as and for the purpose herein shown and described.

3. The adjusting-piston H H fitted within the sliding piston, and combined with the ports *h h* and adjusting-arms *a* to move the latter by steam-pressure, as set forth.

JOHN ADAM HUSS.

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