

H. D. Dunbar,
Steam-Engine Piston:
N^o 41,205. *Patented Jan. 12, 1864.*

Fig: 1.

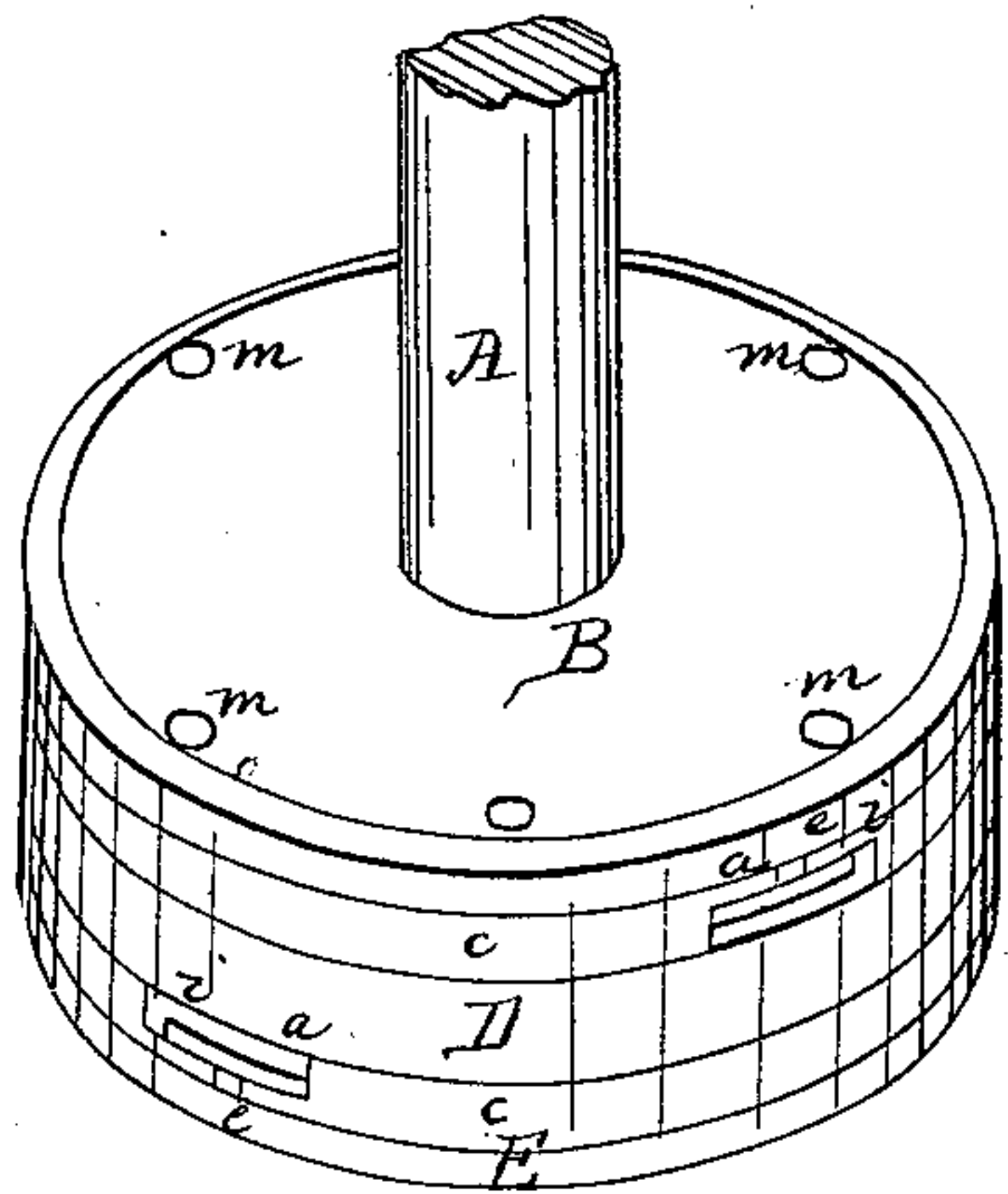


Fig: 2.

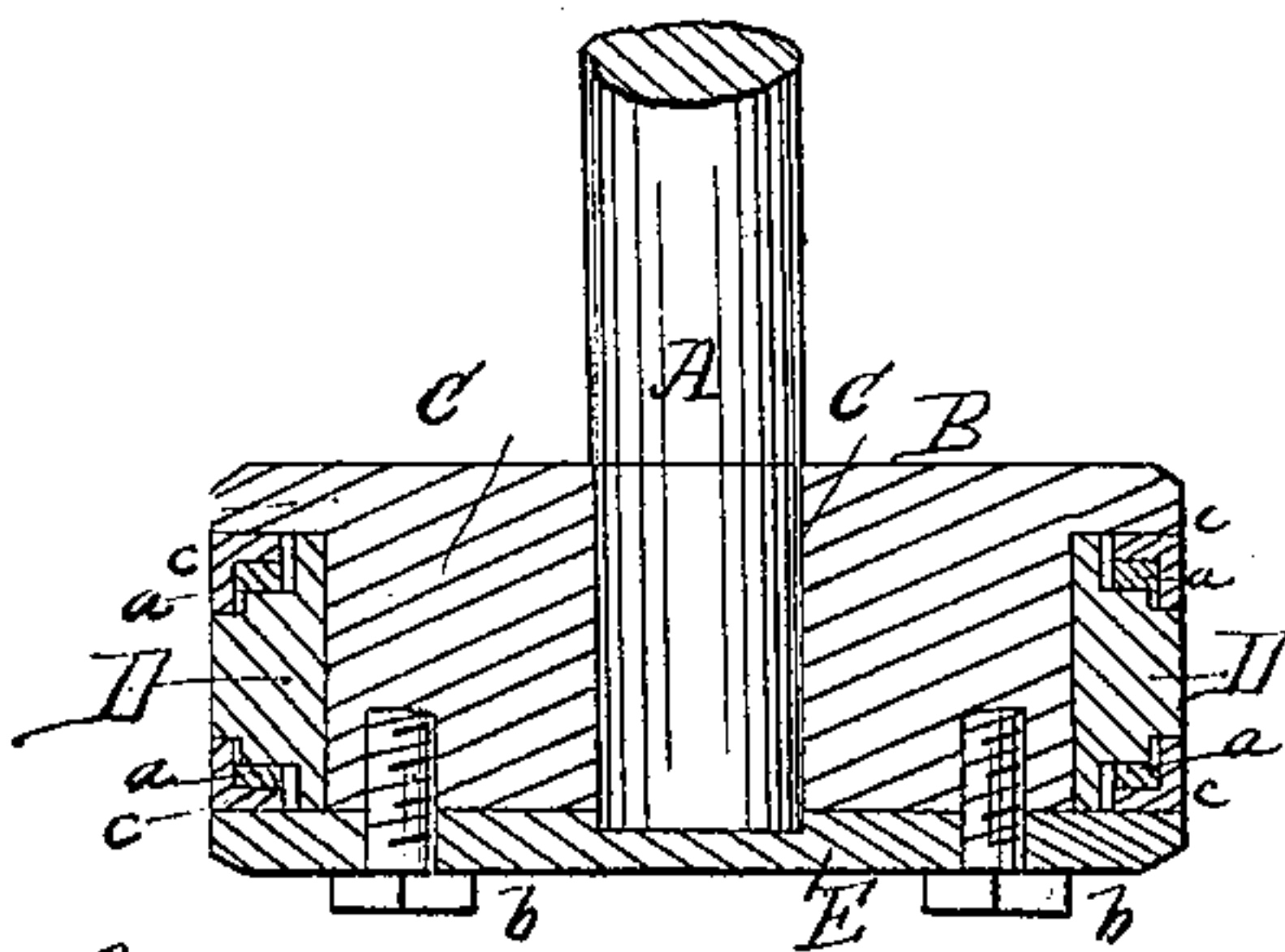


Fig: 3.

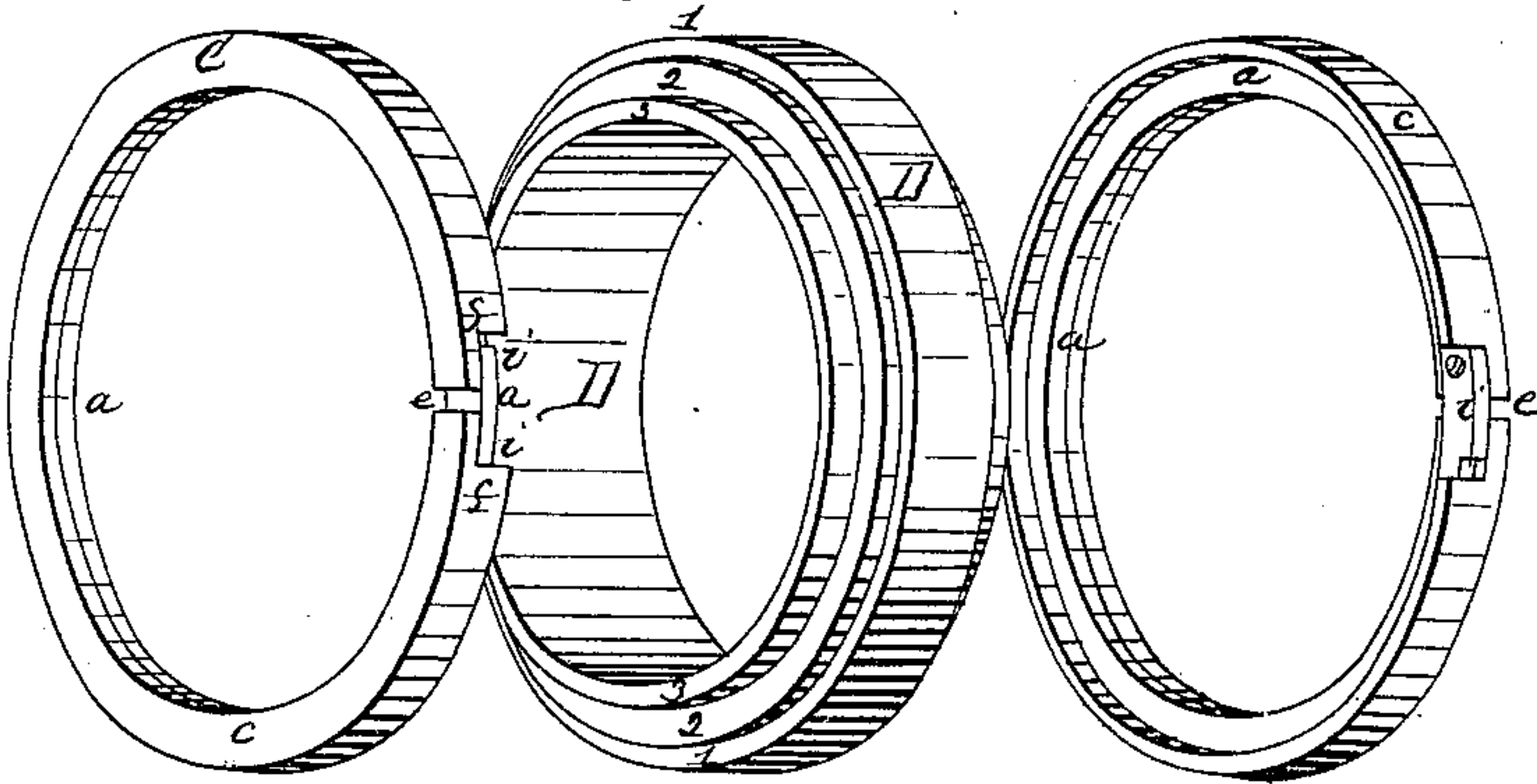
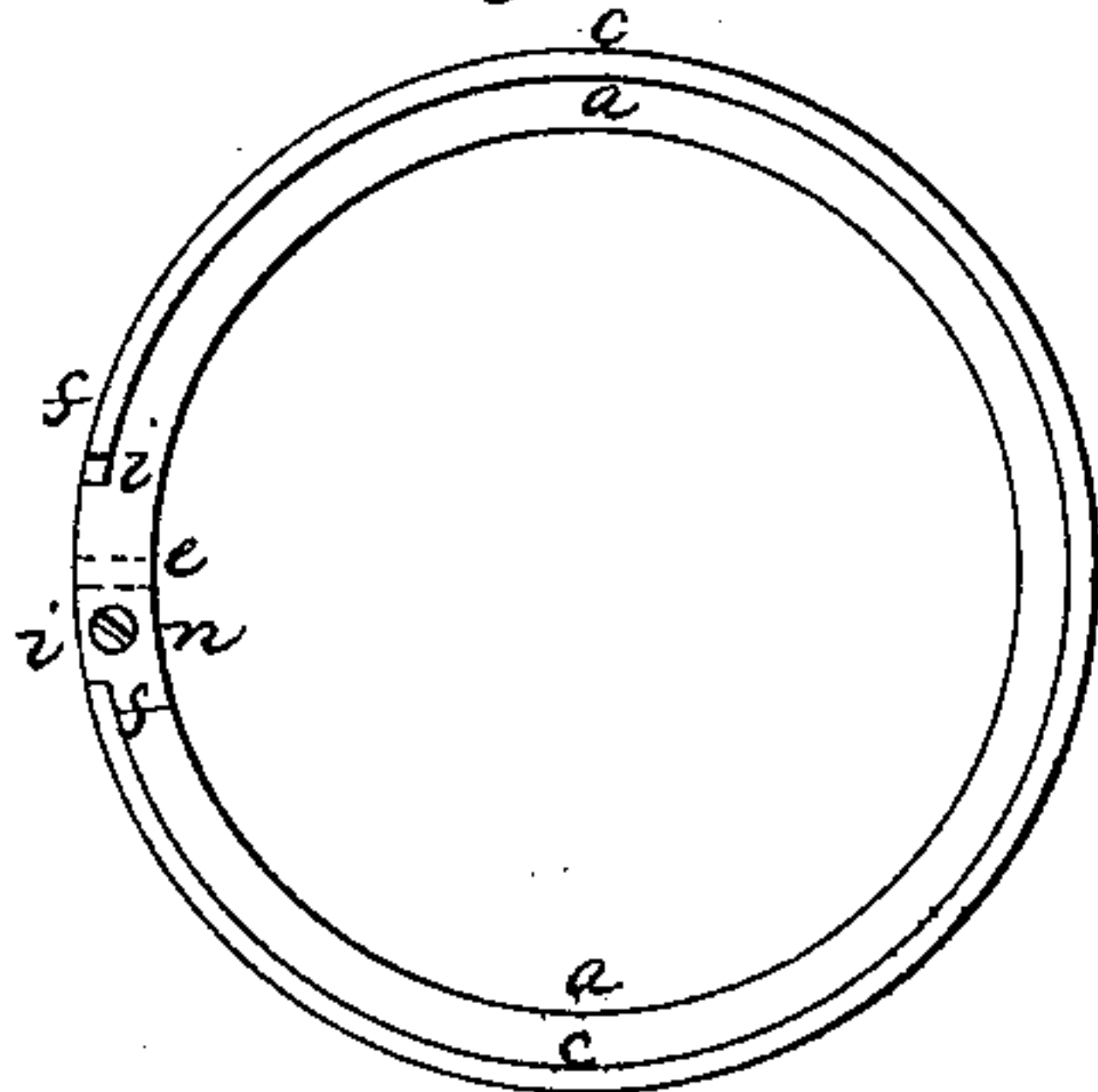


Fig: 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY D. DUNBAR, OF HARTLAND FOUR CORNERS, VERMONT.

IMPROVEMENT IN PISTONS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 41,205, dated January 12, 1864.

To all whom it may concern:

Be it known that I, HENRY D. DUNBAR, of Hartland Four Corners, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Self-Adjusting Steam-Pressure Piston-Packing for Steam and other Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of a piston having my improved packing thereon. Fig. 2 represents a section through the same. Figs. 3 and 4 represent the rings detached, to better show their construction.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

My invention consists, first, in the use and employment of a combined cut and uncut packing ring or rings that are to be expanded by steam, and having the outside or wearing surface broader than the inside or steam surface, for the purpose of avoiding the wear on one side and too much pressure on the other side; and, secondly, my invention consists in the manner of covering the joint in the expansive ring or rings to prevent the escape of steam.

A represents a piston-rod, to which the head B and hub or central portion, C, are permanently attached. The solid or uncut ring D, which is properly shouldered out to receive the packing-rings *a c*, slips over the hub C, and when the plate or head E is set on and fastened by the screws *b* or otherwise the piston is ready for use. The ring *c* is of an L form in its cross-section, and is cut, as at *e*, Fig. 3, and has a portion of its rim cut away each side of the slot, as seen at *f*. The ring *a* is uncut, and has a portion of its perimeter, as at *i*, extended so as to fit into the cut-away portion *f* of the ring *c*, and one end of the cut ring *c* may be united to the uncut ring *a*, as at *n*, by screw, rivet, or otherwise, the other end of said ring being free. The rings *a c*, united

and placed together as above described, pass over the shoulders or recesses 1 2 3 of the solid ring D, and when the plate E is in place cannot drop out of their proper positions.

In the heads or plates B E are openings or holes *m m*, through which steam may pass to force out the rings *c* against the cylinder and thus pack the piston. It will be perceived that the steam-surface on the inside of the ring *c* is very small, while its bearing-surface on the perimeter is quite extended. The object of this is that the friction between the rings thus expanded by steam and the cylinder shall be diminished, while the wearing-surface shall be enlarged. The ring *a*, which is uncut and occupies a portion of the interior of the ring *c*—it lying under its flange—takes away a portion of the steam-bearing surface from the ring *c*, while it also overlies the cut in said ring *c* and prevents the steam from passing through it.

I have shown two sets of rings, *a c*, as connected to one piston—I may use but a single set in such pistons, as the solid ring D is dispensed with—or in large upright cylinders; and I propose to use this kind of self-adjusting packing-rings in air, gas, or water engines, including pumps.

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

1. A combined cut and uncut packing ring or rings, with the outside or wearing surface broader than the inside or steam surface, which the steam, gas, air, or water acts upon to expand, substantially as and for the purpose described.

2. The combination of the projecting and cut-away portions of the rings *a c*, for the purpose of breaking the joint in the expanding ring, the two rings being united and operating together, substantially as herein described and represented.

HENRY D. DUNBAR.

Witnesses:

ALBERT B. BURK,
JOHN W. LABARSE.