2 Sheets—Sheet 1.

W. RANKIN.

PISTON-PACKING FOR STEAM-ENGINES.

No. 189,140. Patented April 3, 1877.

Fig. 1.

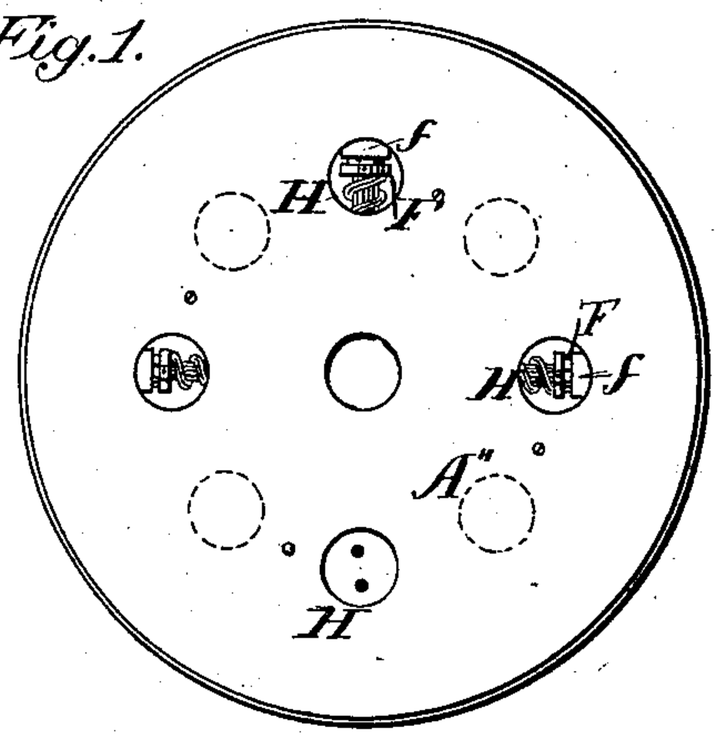
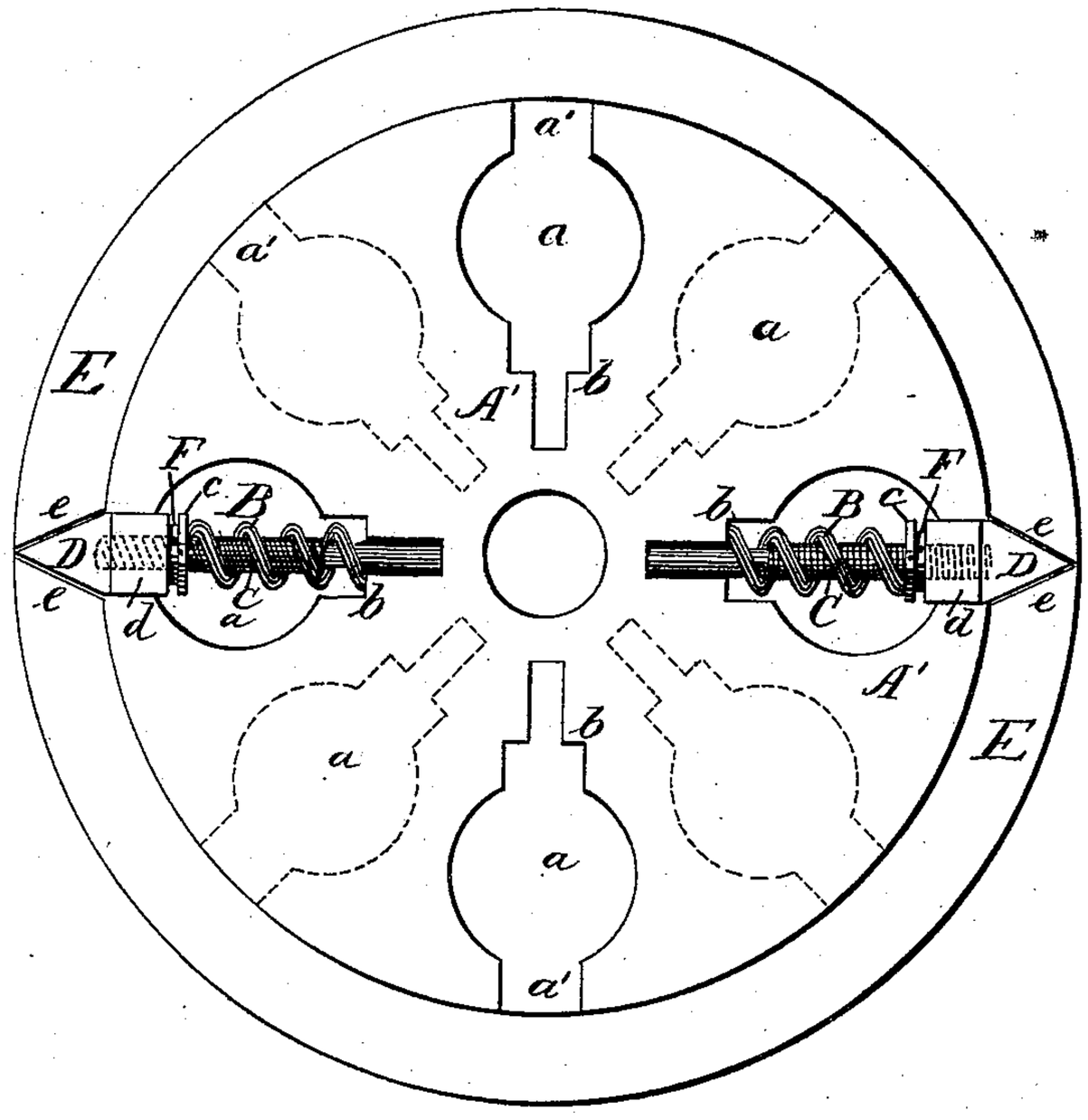


Fig. 3.



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W. RANKIN.

PISTON-PACKING FOR STEAM-ENGINES.

No. 189,140. Patented April 3, 1877.

Fig. 2.

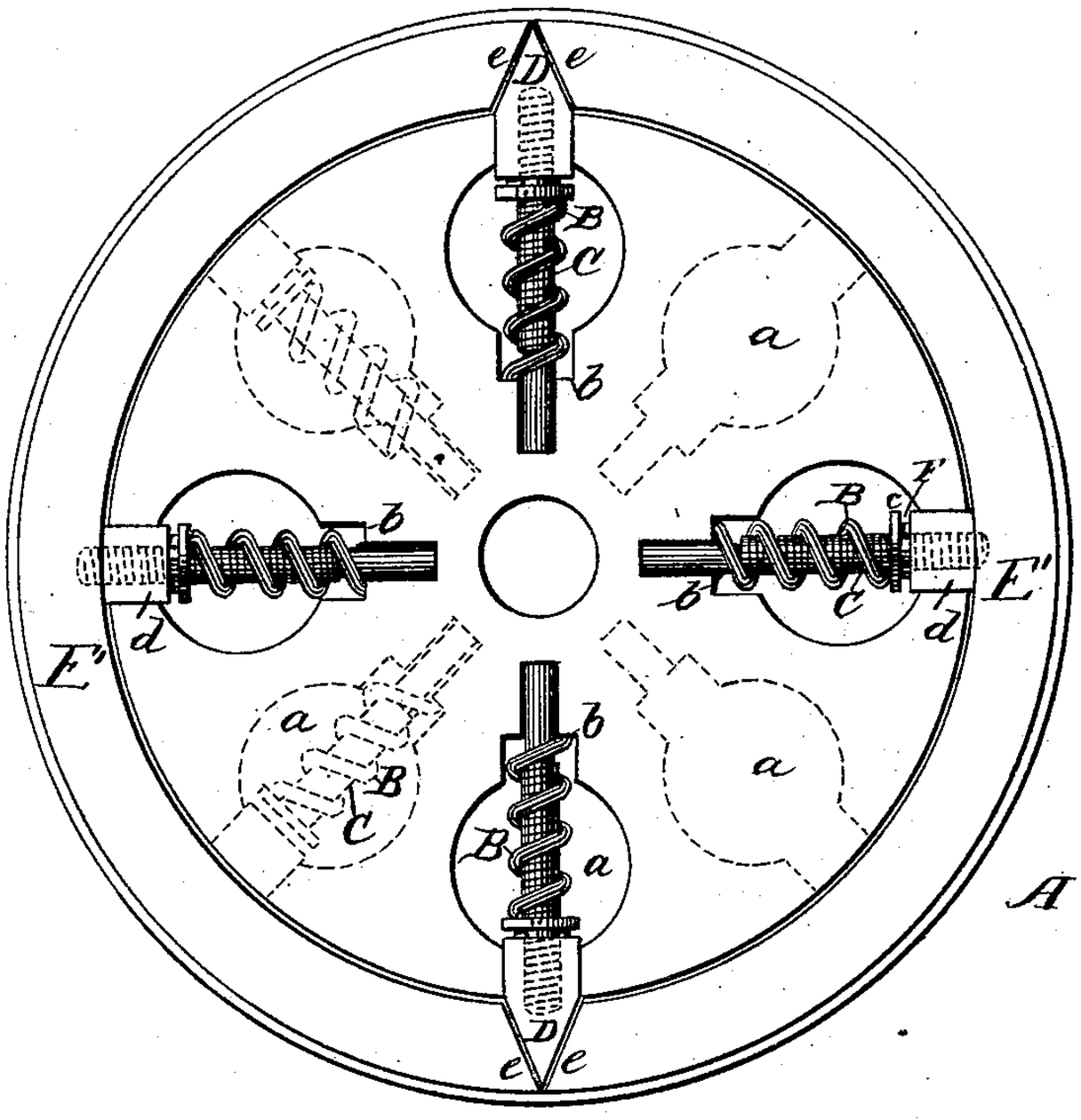
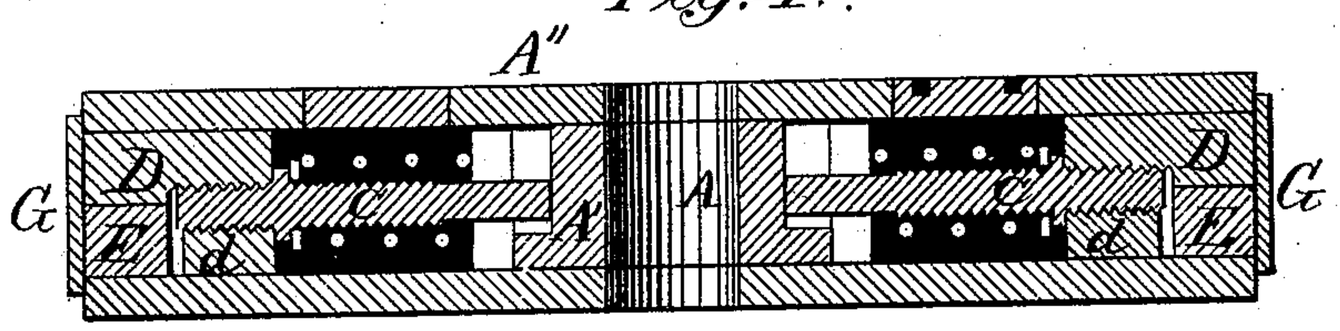


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM RANKIN, OF ST. MARGARET'S BAY, NOVA SCOTIA, CANADA.

IMPROVEMENT IN PISTON-PACKING FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **189,140**, dated April 3, 1877; application filed December 13, 1876.

To all whom it may concern:

Be it known that I, WILLIAM RANKIN, of St. Margaret's Bay, in the Province of Nova Scotia and Dominion of Canada, have invented certain new and useful Improvements in Piston-Packing; 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 which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a top plan. Fig. 2 is a similar view, the covering disk or plate having been removed. Fig. 3 represents a plan view, with one of the sets of rings removed; and Fig. 4 is a vertical cross-section.

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

This invention consists in the construction and arrangement of two or more sets of divided packing-rings, operated by springs and wedges, in combination with the piston of a steam-engine; and its object is to produce a steam-tight packing that will adjust itself so as to compensate for the wear caused by friction, substantially as hereinafter more fully described, and pointed out in the claims.

In the drawing, A represents the piston of a steam-engine. Cast in one piece with, or otherwise affixed upon, this is the cylindrical block A′, having recesses *a*, four or more in number. B are stout coiled springs placed within the recesses *a*, and encircling screw-bolts C, the outer ends of which pass through the steps or shoulders *d* of the wedges D. The latter slide in the necks *a′* of recesses *a*, and bear against the beveled sides *e* of the divided packing-rings E.

In the drawing I have shown the rings E divided, each in two halves only, which will do very well for very small engines; but for engines of a larger size I prefer to subdivide the rings E into four or more parts, a wedge, D, being arranged between the beveled ends of each joint.

E′ represents another set of divided packing-rings, arranged above set E, Fig. 2, and so placed as to "break joints" with the latter. In this manner two, three, four, or more sets of rings may be arranged one above the other, and so divided as to break joints with each other, the central block A′ being made in one or more sections, each provided with recesses *a*, which will accommodate the springs, screw-bolts, and wedges required to operate a double set of packing-rings, as shown in the drawing. For this purpose each alternate wedge D is reversed in its position within its guide-neck *a′*, so as to turn the shoulders *d* up or down alternately, the result of which will be that two of these wedges operate against the bevels *e* of the lower set of rings E, while the other two wedges operate against the bevels *e* of the upper set of rings, denoted by E′.

The springs B abut at their lower or inner ends against shoulders or set-offs *b* in the recesses *a*, their upper ends abutting against washers *c*, the position of which upon the screw-bolts C may be adjusted by means of nuts F. Each screw-bolt C has a square part or section just below and abutting against the under side of the shoulders *d* of wedges D, said square section having holes, so that the bolt may readily be turned either by a key or wrench, or by inserting a pin or lever in the holes. G is a thin band of any suitable kind of rubber, leather, or other packing, which encircles the packing-rings E E′, and prevents the latter from coming in direct contact with the inner sides of the cylinder.

The covering-plate A″ is provided with holes H, closed by plugs, and so arranged as to be just opposite to the square sections *f* and nuts F of the set of springs beneath. The piston or follower A may be perforated in a similar manner, so that ready access may be had to the lowermost set or series of springs, when more than one is used.

From the foregoing description the operation of my invention will be readily understood. The coiled springs B, bearing against the washers *c* and nuts F, force the screw-bolts C, and with them the wedges D, out against the ends of the packing-rings. As the wedges D engage with the beveled ends of the sectional packing-rings E E′ it follows that the latter are pressed tightly against the the band of leather or rubber, which pressure may be increased, when occasion requires, by tightening or screwing down the nuts F. The wedges D should be made of soft metal, so that

their points, if they should project beyond the packing-rings, may readily be worn off. If one of the springs B should accidentally break, it would not disturb the working of the engine, as the wedge would still be held in place, and prevented from dropping back into the recess by the square section on the screw-bolt, upon which it is affixed.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

The combination of the sectional packing-rings E E′, having beveled ends *e*, with the wedges D, having screw-threaded steps or shoulders *d* projecting at right angles, and operated by screw-bolts C and coiled springs B, substantially in the manner and for the purpose herein shown and specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

WILLIAM RANKIN.

Witnesses:

HARRIS H. BLIGH,

J. W. LONGLEY,

WILLIAM MCKENNON.