

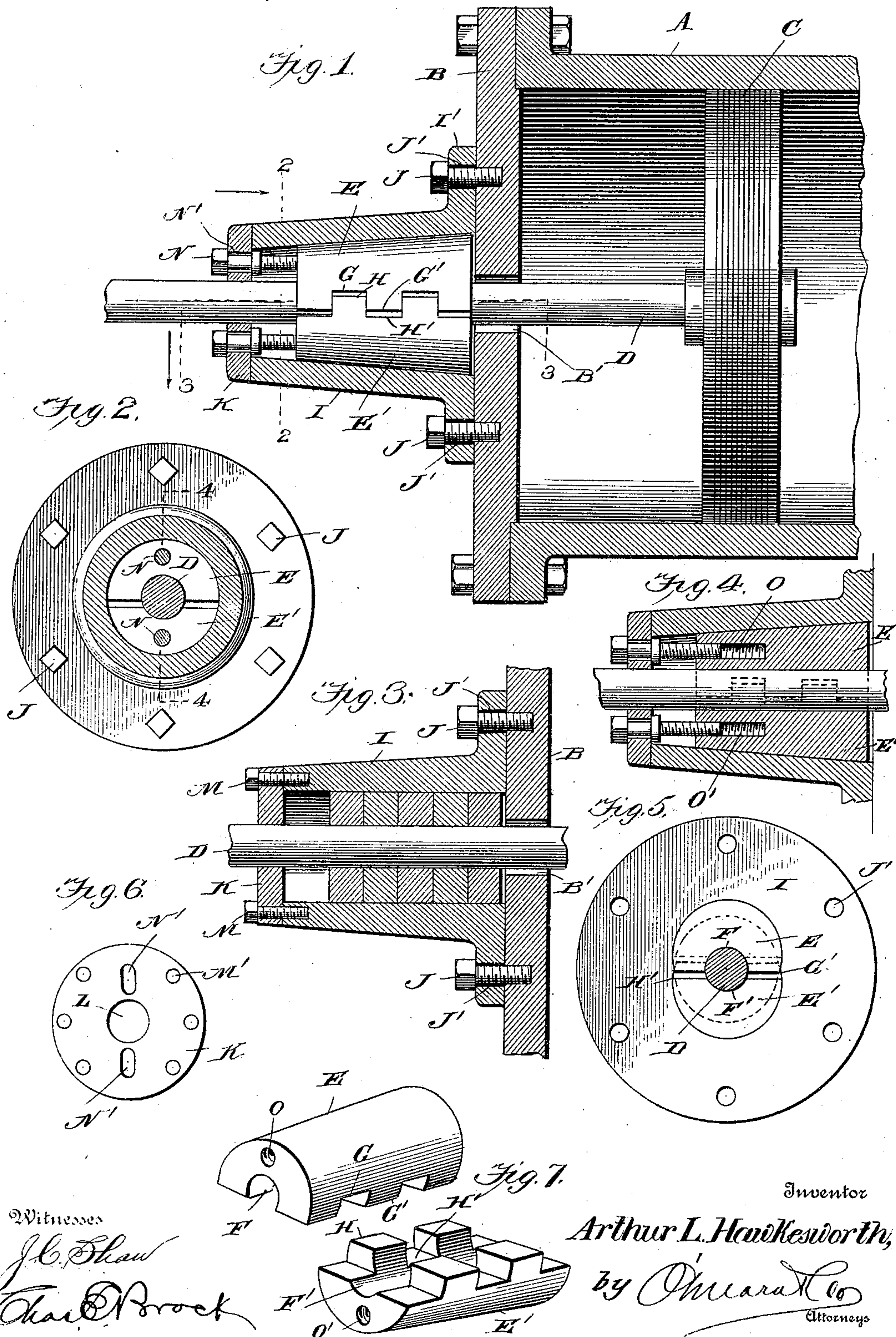
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Patented Jan. 17, 1899.

A. L. HAWKESWORTH.
METALLIC PACKING FOR PISTON RODS.

(Application filed Mar. 8, 1898.)

(No Model.)



UNITED STATES PATENT OFFICE.

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METALLIC PACKING FOR PISTON-RODS.

SPECIFICATION forming part of Letters Patent No. 617,809, dated January 17, 1899.

Application filed March 8, 1898. Serial No. 673,058. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR L. HAWKESWORTH, a citizen of the United States, residing at Elkhorn, in the county of Jefferson and State of Montana, have invented a new and useful Metallic Packing for Piston-Rods, of which the following is a specification.

My invention is in the nature of a packing for the purpose of securing a close joint around a piston-rod where it passes through a cylinder-head.

The object of my invention is to provide an improved metallic packing for the purpose mentioned.

With this object in view my invention consists in a metallic packing for a piston-rod comprising two metal blocks adapted to closely embrace the piston-rod outside of the cylinder-head, said blocks being conical or wedge-shaped upon the outside, a similarly-shaped casing within which the blocks are inclosed, and means for adjusting the blocks longitudinally in the casing to increase or decrease their pressure upon the piston-rod.

My invention further consists in the improved construction, arrangement, and combination of parts, hereinafter fully described, and afterward specifically pointed out in the appended claims.

In order to enable others skilled in the art to which my invention most nearly appertains to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional view through one end of a cylinder and its head and a piston-head therein upon the piston-rod of which is shown a packing constructed in accordance with my invention, the piston-head, piston-rod, and packing being shown in elevation. Fig. 2 is a vertical transverse section on the line 2 2 of Fig. 1, looking in the direction of the arrow. Fig. 3 is a longitudinal section through a portion of the cylinder-head and the packing on the line 3 3 of Fig. 1, looking downward. Fig. 4 is a longitudinal section on the line 4 4 of Fig. 2. Fig. 5 is a plan view of the inner end of the packing-casing detached from the cylinder-head, the piston-rod being shown in section. Fig. 6 is a view in elevation of the cap

or end piece of the casing detached. Fig. 7 is a detail perspective view illustrating the two parts of the packing or bushing detached from each other.

Like letters of reference mark the same parts wherever they occur in the various figures of the drawings.

Referring to the drawings by letters, A indicates the shell of a steam-cylinder, B one of the heads thereof, C the piston-head, and D the piston-rod, all of which parts may be of any ordinary or well-known construction, forming no part of my invention.

The piston-rod D projects through a central opening B' in the cylinder-head B, which opening is of slightly-larger diameter than the piston-rod. Upon the piston-rod, outside of the cylinder-head, is placed the packing or bushing, consisting of two sections E and E', which are shown as so shaped on their outer surfaces as to form when brought together two intersecting conic frustums with their bases slightly eccentric to each other, with a central bore, substantially cylindrical in cross-section, formed of the grooves F and F' in the opposite inner surfaces, the meeting edges of the sections E and E' being provided with alternate intermeshing notches and projections G and G' and H and H'. These sections of packing, which when together form substantially a bushing, may be made of any suitable metal softer than iron or steel, such as Babbitt metal, brass, or any like metal for use in bearings. This packing is inclosed within the casing I, provided with flanges I', through which are passed bolts J, by means of which the casing is secured to the cylinder. The holes J' in the flanges I', through which the bolts J pass, are slightly larger than the bolts J in order to permit of a limited adjustment of the packing with reference to its position on the cylinder-head.

The casing I is substantially a frustum of a cone, and its upper end is closed by means of a cap or end plate K, provided with a central opening L, through which the piston-rod passes, bolt-holes M', through which pass bolts M for securing the cap to the casing, and slots N', in which are swiveled screws N, whose inner ends engage threaded openings O and O' in the outer ends of the sections E and E' of the packing.

The construction of my invention will be readily understood from the foregoing, and its operation may be described as follows: The piston-head having been fitted in the cylinder and the cylinder-head secured in position with the piston-rod projecting through its central aperture B', the two sections E and E' of the packing are placed on the piston-rod, with the grooves and projections G G' and H H' intermeshing with each other. The casing I is now placed in position and secured rigidly to the outer side of the cylinder-head, being properly adjusted thereon through the medium of the enlarged bolt-holes J', as before described. The cap K, with the screws N swiveled therein, is now slipped over the piston-rod and the bolts M threaded into the outer end of the casing to secure the cap in position thereon. The inner threaded ends of the swiveled screws N will now be engaged in the threaded openings O and O' of the packing-sections E and E', when by turning these swiveled screws the sections E and E' may be drawn outward away from the cylinder-head or forced inward toward the cylinder-head, as may be desired. When they are drawn outward or away from the cylinder-head, they are forced into closer contact with the outer surface of the piston-rod D, and when moved in the reverse direction or toward the cylinder-head they are loosened on the piston-rod. As these sections are adjusted toward or from the piston-rod by the described outward and inward movements the swiveled screws will move inward or outward in the radially-located slots N' in the cap K, which will prevent their being bent or twisted, which would be the case were they closely fitted in round holes instead of loosely fitted in slots N'.

From the foregoing it will be readily seen that by simply turning the screws N the packing may be tightened or loosened upon the piston-rod and that all necessarily movable parts are provided with means for properly adjusting and centering them.

The well-known qualities of the metal used for the packing will insure close and almost frictionless joints between the piston-rod and packing, which will be steam-tight and can be kept so by the adjustments permitted in my construction.

While I have illustrated and described the sections E and E' when brought together as

being of a substantially conical outer form, it will be understood that they might be made angular in cross-section, so as to be substantially wedge-shaped when separate and pyramidal when together, the casing being correspondingly shaped to operate in conjunction with them.

Other slight changes and variations might be made in the form and construction of the various parts without departing materially from the spirit of my invention.

While I have illustrated my improved packing as applied to the piston-rod of a steam-engine, I desire it to be understood that it may be applied with equal advantage in all kinds of engines, pumps, machine-drills, or other machinery in which a piston and piston-rod are used and operated by means of steam, gas, water, air, oil, or other similar power, where the prevention of leakage is desirable.

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

1. The combination with the cylinder-head and the piston-rod projected therethrough, of a packing around the piston-rod, consisting of two metallic sections, outwardly wedge-shaped, a casing for inclosing the sections, interiorly shaped to fit upon their outer surfaces and secured to the cylinder-head, a cap, adapted to embrace the piston-rod and close the outer end of the casing, and bolts, swiveled in said cap and having their inner, threaded ends engaging the threaded openings in the outer ends of the packing-sections, substantially as described.

2. The combination with the cylinder-head and the piston-rod projecting therethrough, of the two packing-sections embracing the cylinder-head, having inclined outer sides, a casing, I, adjustably secured to the cylinder-head and fitting upon and inclosing the said sections, a cap, K, fitted over the piston-rod and bolted to the end of the casing, said cap being provided with radial slots, N', and screws, N, swiveled in said radial slots and having their inner ends engaged in threaded openings in the outer end of the packing-sections, substantially as described.

ARTHUR L. HAWKESWORTH.

Witnesses:

W. B. PEARSON,
WILLIAM HARRIS.