(No Model.)

T. FALK.

METALLIC PISTON ROD PACKING.

No. 371,309. Patented Oct. 11, 1887.

Fig. 3.

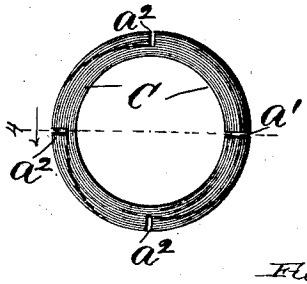


Fig. 4.

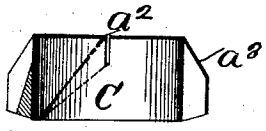


Fig. 1.

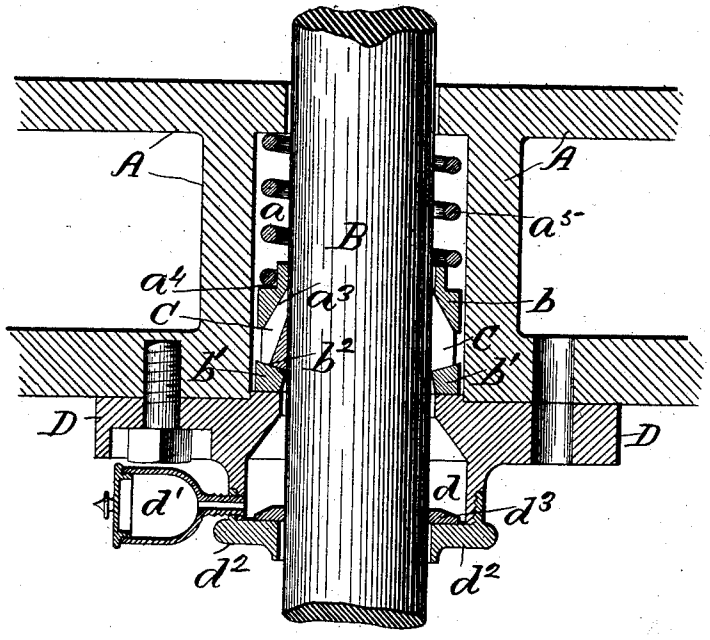
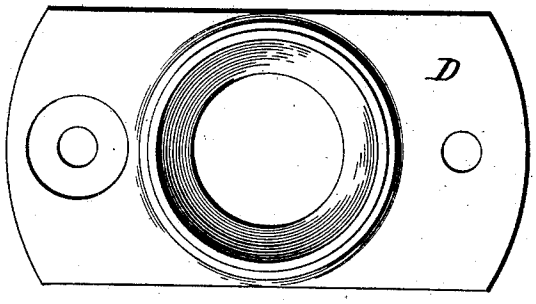


Fig. 2.



Witnesses:
Chas. E. Gaylord.
L. M. Freeman.

Inventor:
Theodore Falk.
By L. B. Copeland & Co.
Attys

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

THEODORE FALK, OF CHICAGO, ILLINOIS.

METALLIC PISTON-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 371,309, dated October 11, 1887.

Application filed May 31, 1887. Serial No. 239,784. (No model.)

To all whom it may concern:

Be it known that I, THEODORE FALK, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Metallic Piston-Rod Packing, of which the following is a full, clear, and exact description that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The object of this invention is to provide a metallic packing for piston-rods and valve-stems; and the same consists of certain novel features in the construction, arrangement, and operation of the several parts, as will be hereinafter set forth in detail, and pointed out in claims.

Figure 1 is a longitudinal section of a stuffing-box, showing the relative position of the packing, the piston-rod being in elevation. Fig. 2 is an exterior view of the packing-gland; Fig. 3, a view of the outer or lower end of the packing-ring proper, and Fig. 4 a section of the same in the plane 4, Fig. 3.

In the drawings, A represents the stuffing-box, *a* the packing-chamber, and B the piston or similar rod working through the same.

The open packing-ring C is cut clear through on one side, as at a', and will be composed, ordinarily, of some suitable soft metal. This packing-ring is provided with a number of longitudinal grooves or scores, as at a^2, which are originally only partially cut through in the inner or upper end of the ring. (See Fig. 4.) From thence these grooves take a diagonal course, growing gradually more shallow until they run out at the lower end, as shown in Fig. 4. The number of grooves in each ring will usually be determined by the diameter and the required degree of elasticity. The exterior upper part of the ring is in the form of a conical bevel, as at a^3, reducing the end to a thin wearing-edge. The interior surface of the cap-ring *b* corresponds to that of the conical end of the packing-ring, and sets over the same in the manner illustrated in Fig. 1. The exterior surface of the cap-ring is provided with the shoulder a^4, to provide a bearing for one end of the coiled spring a^5, which is confined between said cap and the bottom of the stuffing-box. The seat-ring b' rests upon the packing-gland and forms a seat for the outer or lower end of the packing-ring. The ring b' is provided with the spherical seating-surface, as at b^2, the contacting end of the packing-ring being correspondingly rounded, whereby the friction of these parts is reduced to a minimum and a free adjustment imparted to the packing-ring, causing the same to adhere closely to and follow the vibrations of the piston-rod. An annular space is left between the different rings and the inclosing sides of the stuffing-box, as shown, in order to leave room for the usual play of the parts. The surface of the seat-ring b', bearing against the piston-rod, is cut away on a bevel, leaving only the inner edge in actual contact with the rod, thus preventing the seat-ring from having a tendency to follow the longitudinal movement of the rod.

As the packing-ring is worn away by the friction of the rod, the diagonal grooves gradually open, so as to provide the proper amount of elasticity to permit the beveled end of the packing-ring to yield sufficiently to the annular pressure of the cap-ring *b* and the coiled spring to have a continuous and uniform bearing on the piston-rod, thus automatically compensating for the wear on the packing-ring until the same is entirely worn out, when a duplicate can be conveniently inserted. The steam-pressure in the packing-chamber also assists in keeping the different parts in their proper relative position.

The packing-gland D may be of any desired shape, and secured to the stuffing-box in any suitable manner, to form a steam-tight joint. In this case provision is made to attach the same by means of tap-bolts. This gland is provided with the lubricating-chamber *d*, which will be filled with cotton waste or some similar absorbing substance to receive the lubricant supplied from the oil-cup d', thus keeping the piston-rod in a constant state of lubrication and greatly lessening the wear on the frictional parts. The chamber *d* in the gland is closed by the screw-cap d^2, and the ring or washer d^3 inside of the same has a close annular bearing on the rod, and serves to prevent the waste from working out.

The cap d^2 is prevented from working loose

by means of the stem of the oil-cup, which is inserted through the threaded part of the cap and the gland, thus locking the parts together. By this arrangement a packing is provided that can be inserted and used in almost any ordinary stuffing-box without requiring a special reconstruction of the parts. It will also be observed that the packing will always adjust itself and follow the movements of the rod no matter how much the same may be working out of line.

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

1. A metallic packing ring provided with a number of longitudinal grooves which are cut through for a portion of the length of said ring and then gradually growing more shallow until they run out, substantially as and for the purpose set forth.

2. A metallic packing-ring having a conical beveled end and provided with a number of grooves extending from end to end, and which are only cut clear through for a portion of the length of said ring, substantially as and for the purpose set forth.

3. The combination, with a metallic packing-ring having a conical beveled end and provided with a number of graduated grooves, as described, of a cap-ring fitting over the conical end of said ring, and a spiral spring interposed between said cap-ring and the bottom of the stuffing-box, substantially as and for the purpose set forth.

4. The combination, with the metallic packing-ring C, provided with a number of diagonal grooves, as described, of the loosely-arranged seat-ring b', beveled on the inner edge next the piston-rod and having a spherical bearing-surface for the contacting end of said ring, which has a corresponding surface, substantially as and for the purpose set forth.

5. The combination, with the packing-ring C, having a conical beveled end and longitudinal grooves, as described, of the cap-ring b, fitting over the conical end of said packing-ring and provided exteriorly with the shoulder a^4, the coiled spring a^5, the seat-ring b', and the packing-gland D, all constructed and arranged substantially as set forth.

6. The combination, with the packing-gland D, provided with the lubricating-chamber d, of the ring or washer d^3, the screw-cap d^2, and the oil-cup d', substantially as set forth.

THEODORE FALK.

Witnesses:
L. M. FREEMAN,
L. B. COUPLAND.