(No Model.)

B. HOLLAND, Jr.

PACKING FOR PUMP PISTONS, &c.

No. 255,729. Patented Mar. 28, 1882.

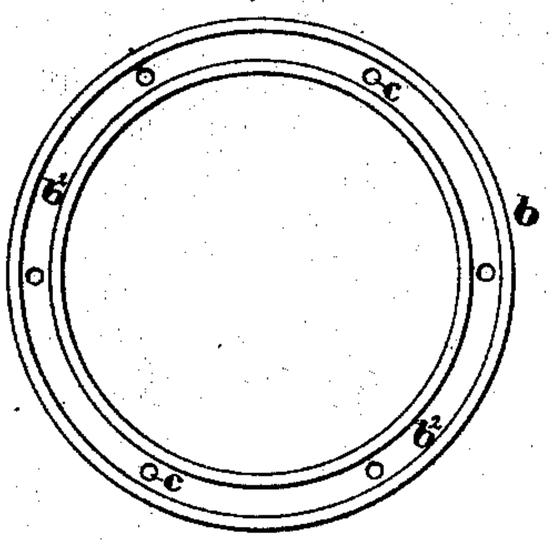

Fig. 5.

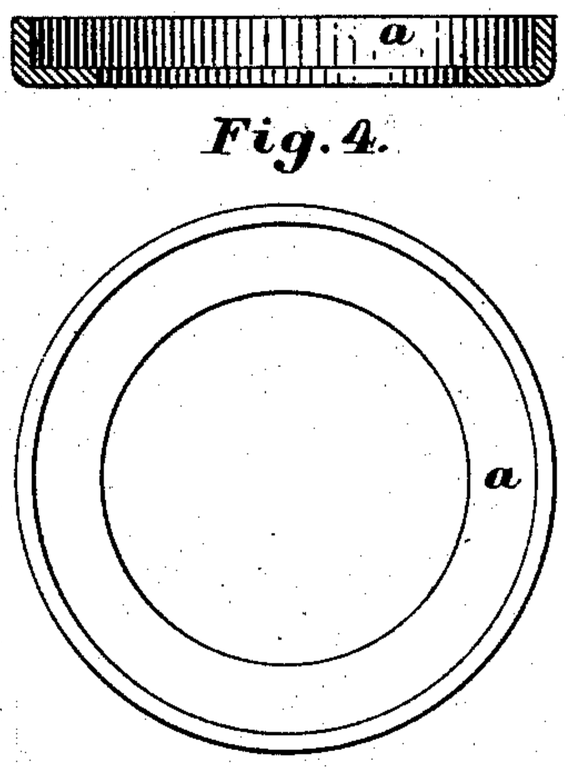

Fig. 4.

Fig. 3.

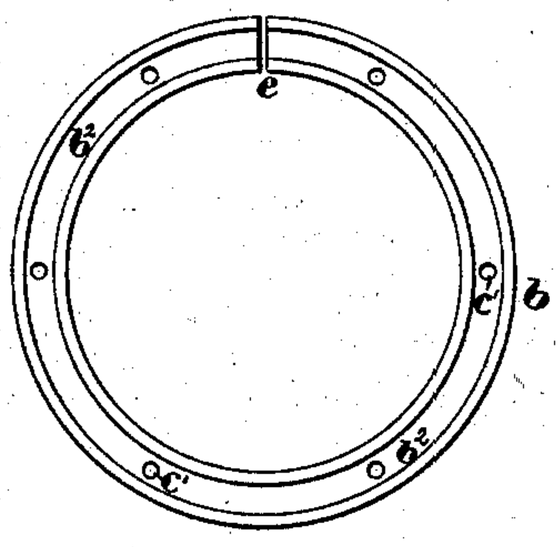

Fig. 7.

Fig. 6.

Fig. 8.

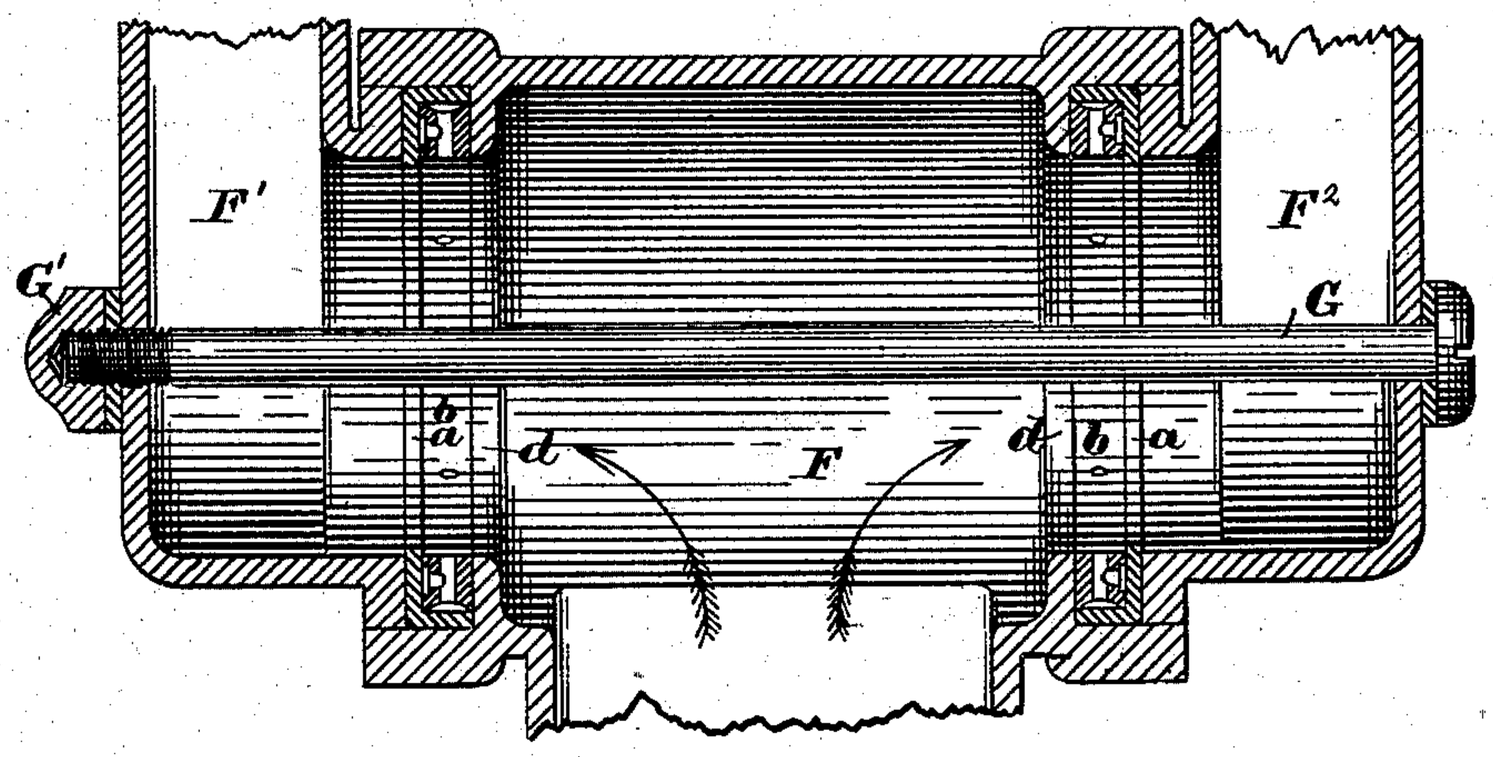

Fig. 2.

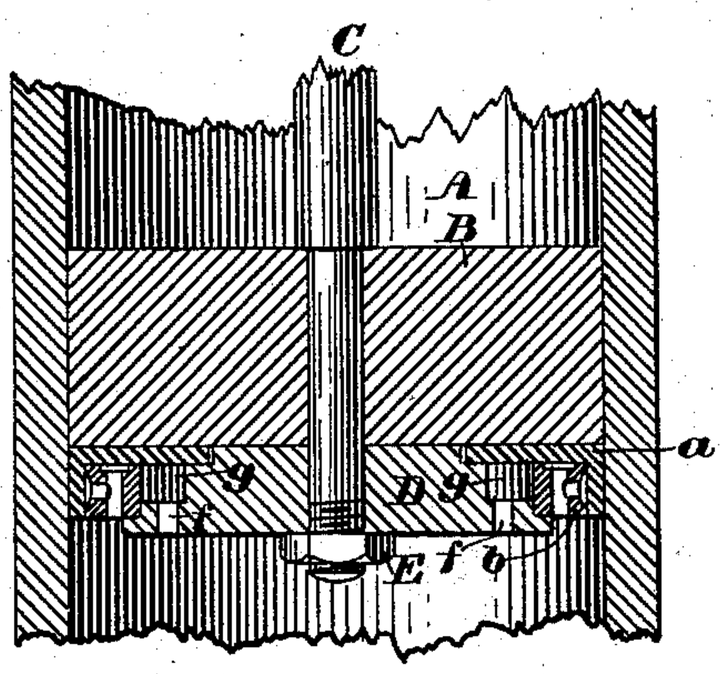

Fig. 1.

Witnesses:

Walter E. Lombard.

E. A. Hemmenway.

Inventor:

Benjamin Holland Jr

by N. B. Lombard

Attorney.

UNITED STATES PATENT OFFICE.

BENJAMIN HOLLAND, JR., OF NEWPORT, RHODE ISLAND, ASSIGNOR TO THOMAS S. NOWELL, TRUSTEE, OF BOSTON, MASSACHUSETTS.

PACKING FOR PUMP-PISTONS, &c.

SPECIFICATION forming part of Letters Patent No. 255,729, dated March 28, 1882.

Application filed November 11, 1881. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN HOLLAND, Jr., of Newport, in the county of Newport and State of Rhode Island, have invented a new and useful Improvement in Packing-Rings for Pump-Pistons and other Joints, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to the construction of packing-rings for rendering pump-pistons and other joints of hydraulic apparatus absolutely water-tight; and it consists in the combination, with a flexible cupped packing of leather or other suitable material of a metal ring placed within said cup and provided with annular chambers upon the two faces thereof, which are contiguous to the inner surfaces of said cup, and orifices leading from one of the opposite faces of said metal ring to one or both of said annular chambers, as will be hereinafter described.

Figure 1 of the drawings is a central longitudinal section through a portion of a pump-cylinder and its piston with my invention applied thereto. Fig. 2 is a similar section of a portion of a T-pipe with two branch pipes arranged to be partially rotated about the axis of that portion of the T to which they are attached, and having my invention applied thereto. Fig. 3 is an elevation of the cupped leather packing, and Fig. 4 is a section of same. Figs. 5 and 6 are respectively an elevation and a section of the metal ring, and Figs. 7 and 8 are similar views of a modified form of the metal ring.

In Fig. 1 of the drawings, A is a portion of a pump-cylinder. B is the main body of the piston, arranged to be reciprocated by means of the piston-rod C and other mechanism. (Not shown.) The flexible cupped packing-ring *a* is placed with its outer radial face against the lower radial face of the piston B, and the metal ring *b* is placed within said cupped ring, as shown, and the whole is secured together by the rod C and the disk D, which is firmly clamped to the piston B by the nut E, said disk D being so formed as to project outward beyond the inner periphery of the metal ring *b*, and thus hold it in place. The ring *b* has formed in its periphery an annular groove, b', and in its upper radial face a similar groove, b^2, which grooves b' and b^2, when the ring *b* is placed in position in the cupped ring *a*, form annular chambers between the metal and flexible rings, to which water is admitted through the orifices *c* and c' as the piston is moved downward to force the water below it through the discharge-passage. (Not shown.) The pressure of the water admitted to the chambers b^2 and b' forces the cupped packing hard against the lower face of the piston B and the inner periphery of the cylinder A, so as to effectually prevent any leakage past the piston.

The construction of the rings *a* and *b* will be more readily understood by reference to Figs. 3, 4, 5, and 6.

In Fig. 2, F is a T-section of pipe, to the opposite ends of the cross-arm or horizontal portion of which are fitted, so that they may be partially rotated thereon, the branch pipes F' and F^2, secured in position by the bolt G and nut G'. A cupped packing-ring, *a*, with a metal ring, *b*, within it, is placed between the inner radial face of each of the branch pipes F' and F^2 and the inwardly-projecting flange *d* of the T-pipe F, with the radial portion of the cupped packing between the metal ring *b* and the branch pipe F' or F^2, as shown. When water under pressure, as in the case of fire-engine hose, is made to pass through the T-pipe F and the branch pipes F' and F^2, as indicated by the arrows, water will pass through the orifices *c* and c' and fill the chambers b' and b^2, and by its pressure force the leather cupped ring *a* hard against the contiguous face of the branch pipe F' or F^2 and the inner periphery of the cross-arm of the T-section, and thus render the joints between the T-section and the branch pipes F' and F^2 absolutely water-tight without regard to the rotation of the branch pipes about the axis of the bolt G.

In some cases I cut the metal ring *b* through upon one side, as shown in Fig. 7 at *e*, so that the pressure of the water upon its inner periphery will cause said metal ring to be forced outward against the cupped packing-ring *a* by expanding said metal ring.

When a cut ring is used on a piston or pump-plunger I make orifices *f* in the clamping-disk D, to permit the passage of the water to the annular chamber *g* within the ring *b*, as shown in Fig. 1. The orifices *c* may be drilled from

the grooves b' to the inner peripheral surface of the ring b, as shown in Fig. 8, or from the groove b^2 to the opposite radial face of said ring, as shown in Fig. 6.

The cupped packing-rings a may be made of leather, rubber, or any other flexible material that is susceptible of being swaged or molded into a cupped form; but I prefer leather as the material best adapted for general use, all things considered.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. As a means of packing joints water-tight, the combination of a cupped ring of leather or other flexible material, and a metal ring placed within said cup and provided with the annular grooves b' and b^2 and the orifices c and c', substantially as and for the purposes described.

2. As a means of packing joints to render them water-tight, the combination of the cupped packing-ring a and the metal ring b, provided with the annular grooves b' and b^2 and the orifices c and c', and divided upon one side, substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 27th day of October, A. D. 1881.

BENJAMIN HOLLAND, JR.

Witnesses:
N. C. LOMBARD,
W. E. LOMBARD.