

(No Model.)

S. F. FIELD & W. T. HECK.
PACKING RING.

No. 603,376.

Patented May 3, 1898.

Fig. 1.

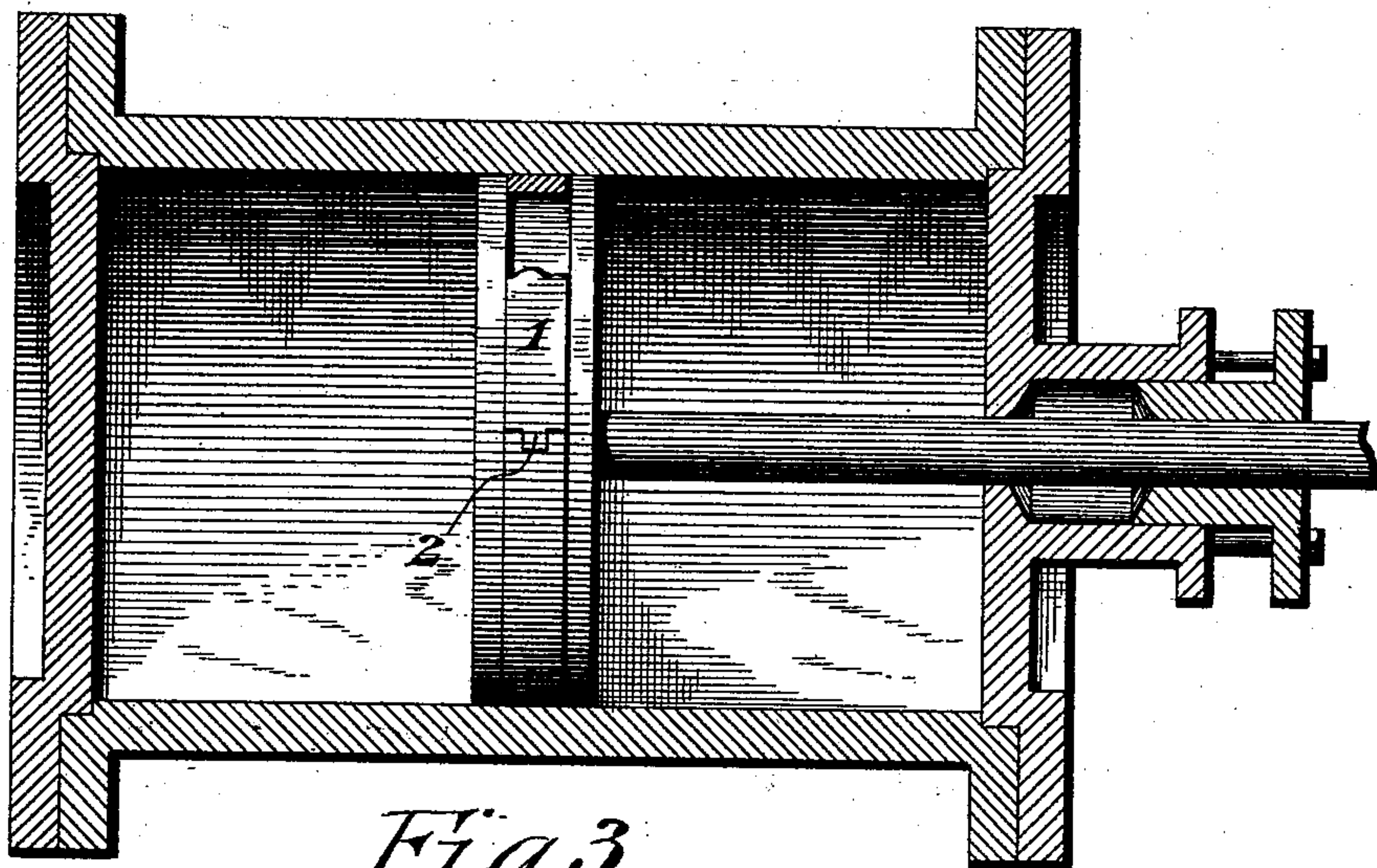


Fig. 2.

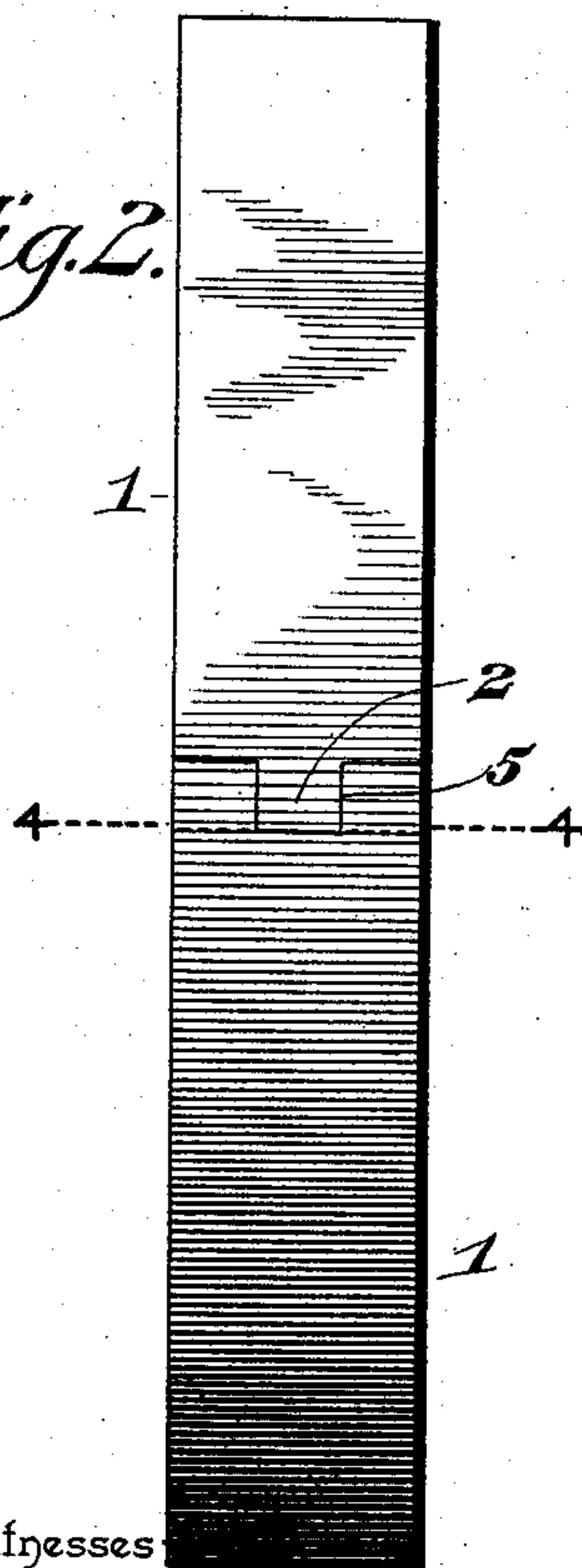


Fig. 3.

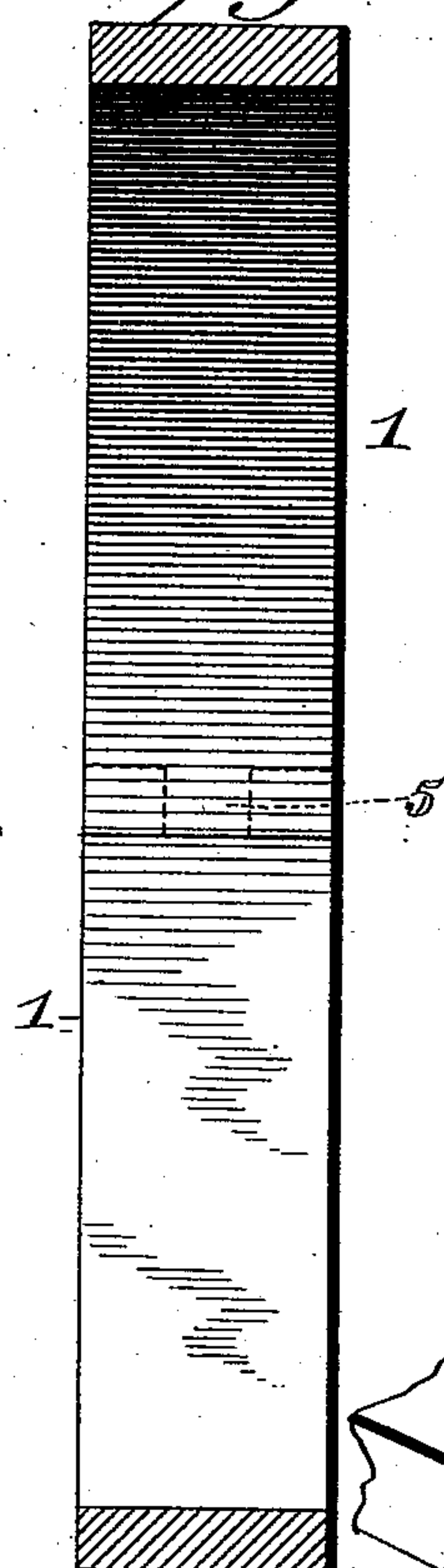


Fig. 4.

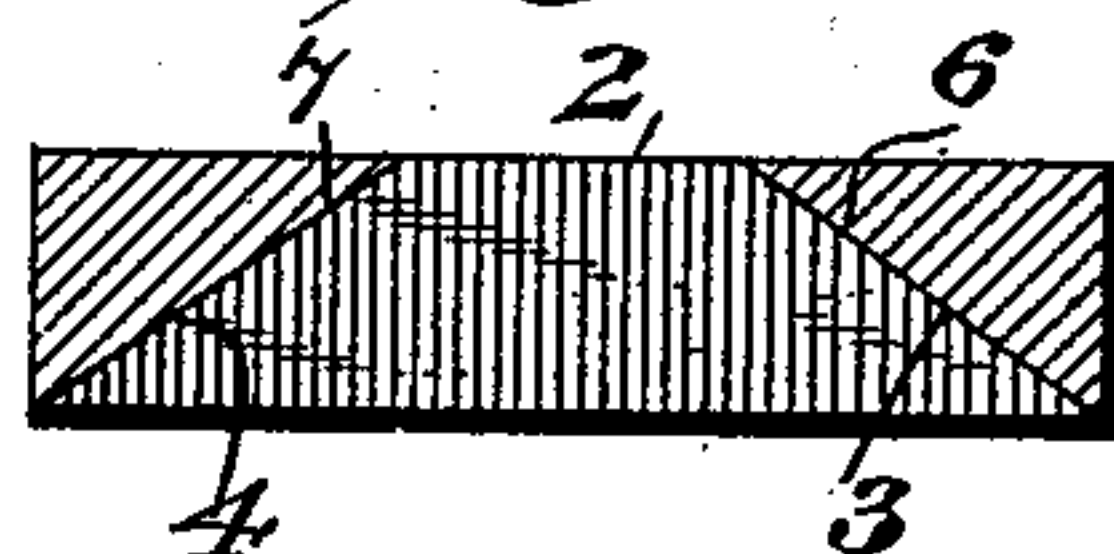


Fig. 5.

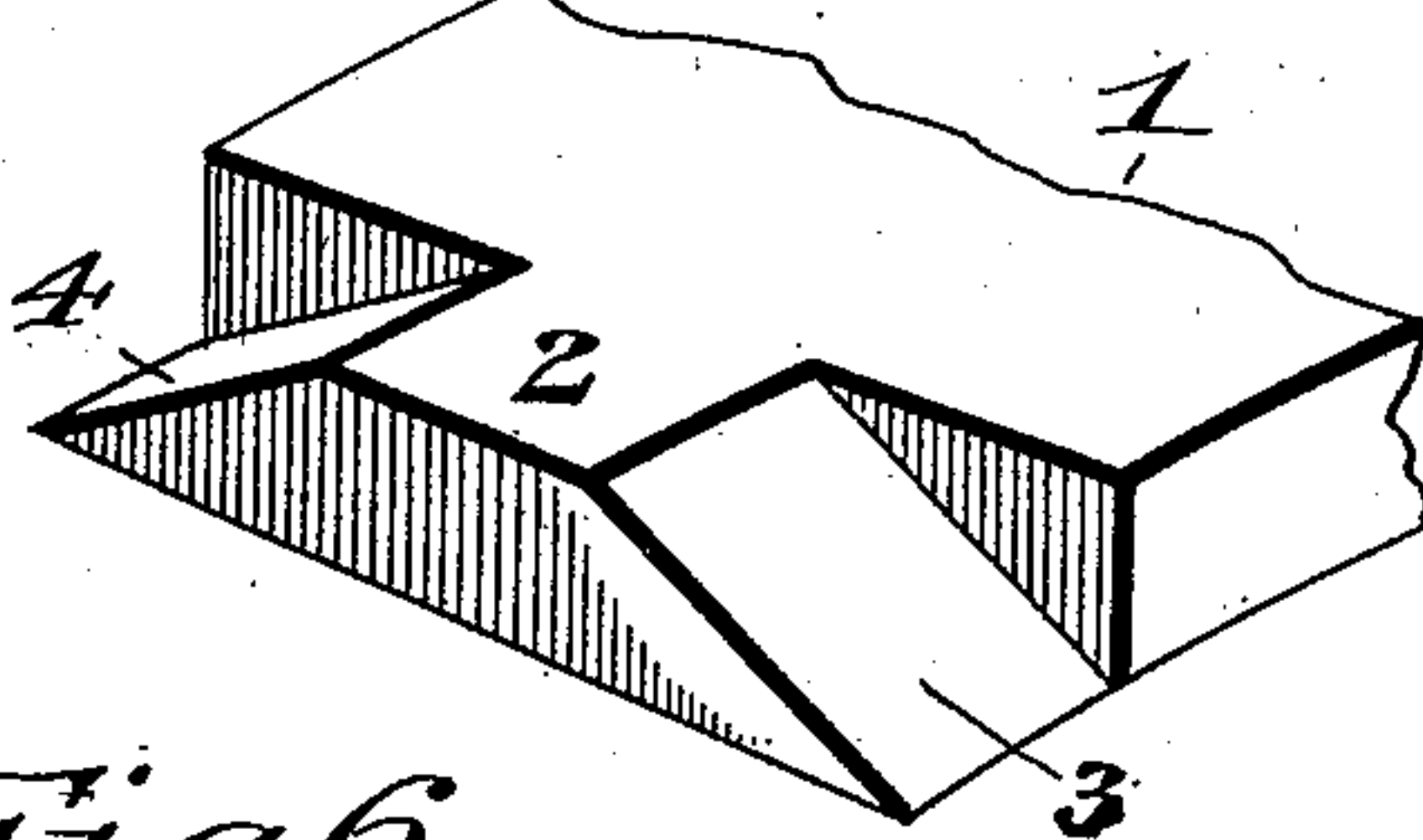
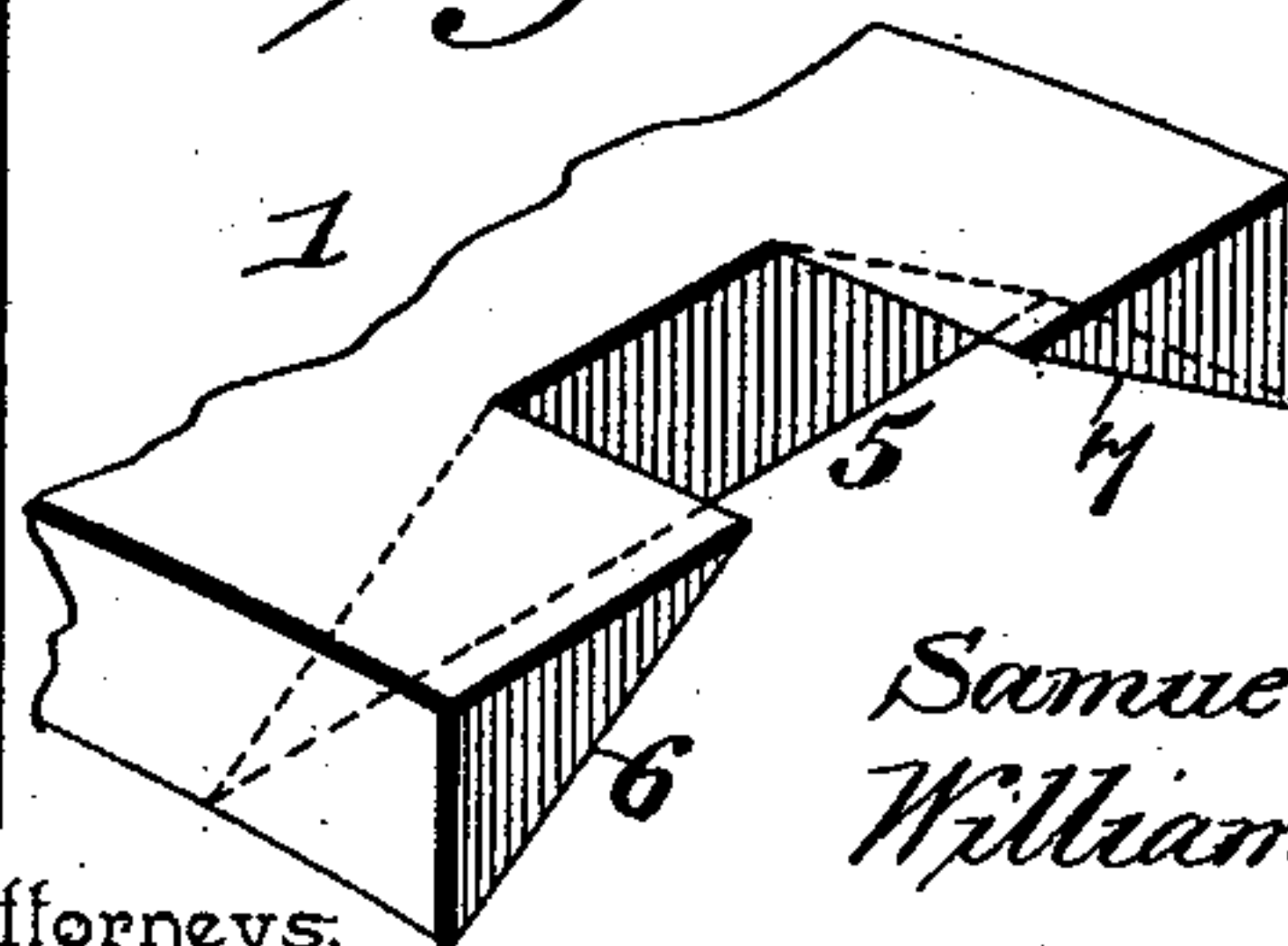


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

SAMUEL F. FIELD AND WILLIAM T. HECK, OF FINDLAY, OHIO.

PACKING-RING.

SPECIFICATION forming part of Letters Patent No. 603,376, dated May 3, 1898.

Application filed September 27, 1897. Serial No. 653,180. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL F. FIELD and WILLIAM T. HECK, citizens of the United States, residing at Findlay, in the county of Hancock and State of Ohio, have invented a new and useful Packing-Ring; of which the following is a specification.

Our invention relates to improvements in packing-rings for engine-pistons, although the improvement is designed for use universally in connection with engines and other machinery where it is desirable to prevent leakage of steam, air, or fluids of any kind.

The object of our invention is to provide an improved packing-ring which will accurately fit the interior or bore of a cylinder and which has its ends so joined as to effectually and wholly obviate the leakage of the fluid under pressure under all conditions of service of the engine or machine and even when the ring itself is so worn as to be unfit for use.

A further object of our invention is to provide an improved packing-ring of simple construction which may be readily applied to a piston-head to be seated therein or to be sprung externally thereon and which can be readily and cheaply made.

To the accomplishment of these ends our invention consists in a metallic packing-ring having its adjacent ends united together against the leakage of steam by a double reversely-beveled joint, one end of said ring being provided with a protruding tenon or lug and inclined or chamfered faces which are inclined in opposite directions from said tenon or lug toward the edges of the ring, and its other end provided with a recess to receive the tenon and with chamfered seats or faces corresponding to the inclined seats or faces on the first-named end of said ring.

The improved packing-ring is elastic or resilient to such an extent that its ends will overlap each other in a manner to have the inclined faces mutually engage with each other, so as to present smooth surfaces, both externally and internally, at the jointed ends thereof, and these inclined overlapping faces at the meeting end of the packing-ring are so disposed that the leakage of the fluid un-

der pressure through the joint is effectually prevented no matter how great the pressure of the fluid may be nor the wear of the ring at the joint; and the invention further consists in the peculiar construction and arrangement of parts forming our improved packing-ring, all as will be hereinafter more fully described and claimed.

To enable others to understand our invention, we have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a sectional elevation of part of a piston-head, showing one manner of applying our improved metallic packing-ring thereto. Fig. 2 is a plan view of the ring, looking at the joint on the outside thereof. Fig. 3 is a transverse sectional view through the ring, looking at the joint on the inside of said ring. Fig. 4 is a sectional view through the joint on the plane indicated by the dotted line 4 4 of Fig. 2. Figs. 5 and 6 are perspective views looking at the respective ends of the divided packing-ring.

Like numerals of reference denote corresponding parts in all the figures of the drawings.

The present improvement is directed more particularly to that class of metallic packing-rings which are split or divided to enable them to be applied to a piston of an engine or to a working part of a pump or other machinery.

We are aware that prior to our invention it has been proposed to provide split packing-rings with various forms of joints at the meeting ends of the ring; but such prior devices known to us are open to the objection that the packing does not accurately fit the interior of a cylinder or other part, and when the packing becomes worn and is required to be expanded in order to approximately fit to a measurable working extent the interior of the cylinder the joint at the meeting ends of the packing-ring will leak more or less and allow of the escape of the fluid under pressure, thus decreasing the efficiency of the engine.

We construct our improved packing-ring

with a peculiar form of joint which will remain perfectly tight against leakage of the fluid under pressure even when the ring itself is worn by constant service to such an extent as to be practically unfit for service.

The packing-ring 1 of our invention is constructed in a single piece of suitable metal, brass, steel, or other metal being used in the manufacture of the ring, which will give thereto the necessary degree of expansion or resiliency to adapt it for efficient service. This ring is divided to present two ends adjacent to each other, and our improvement consists in the peculiar form of overlapping joint by which the joint is rendered tight against leakage under all conditions of service.

In the embodiment of our improvement shown in the drawings we provide a central lug or tenon 2 on one end of the divided packing-ring and the chamfered or beveled faces 3 4, which are inclined in opposite directions from the lug or tenon to the edges of the ring. The inner face or annular surface of the ring is continuous at the end thereof on which the tenon 2 and the chamfered faces 3 4 are formed. This lug or tenon is produced on the outer face of the ring, at one end thereof, by cutting away the metal from the side edges inwardly to leave the metal solid or integral at the center, and thus the metal surface on the inside of the ring is continuous and smooth. The chamfers or bevels 3 4 are inclined in opposite directions from the tenon toward the outer or side edges of the ring, and thus the beveled faces lie transversely across the ring.

At its other end the packing-ring is formed with a central recess 5 and with the transversely-inclined faces 6 7, which are produced on the inner face of the divided ring in a manner to overlap the chamfers or bevels 3 4 at the first-described end of the ring. These chamfered or beveled faces 6 7 at one end of the ring are inclined reversely to each other, as shown, and the respective faces which overlap the faces 3 4 are inclined reversely thereto in order that the transversely-beveled or chamfered ends of the meeting ends of the ring may fit snugly together to produce a joint at the meeting ends of the ring which shall be flush both on the outer and inner faces of the ring.

The tenon 2 at one end of the ring fits into the central recess in the other end of the ring, and the faces 6 7 at one end overlap the beveled faces 3 4 at the other end of said ring. The described form of the interlocking joint with the transversely-beveled faces which are seated snugly together provides an improved ring in which the joint is flush at the inner, outer, and edge faces of the ring. This construction is important in a metallic packing-ring, because it enables the ring to accu-

ately and truly fit the interior of a cylinder or other part of an engine or machine, and also because the ring when slightly expanded to compensate for wear of said ring will not have the joint at the meeting ends so separated or exposed as to permit of the leakage of fluid under pressure. The ring when expanded will draw the faces 6 and 7 lengthwise along the faces 3 and 4 and slightly separate said faces and the interlocking tenon and recess; but owing to the transverse inclination of the faces and to the overlapping faces on the opposite sides of the medial line of the ring such separation of the lapped ends thereof will not expose the joint to leakage, even when the ring itself shall have been worn to such an extent, owing to severe or prolonged service, as to render the ring practically unfit for continued service.

From the foregoing description, taken in connection with the drawings, it will be seen that in our improved ring the adjacent ends are joined together by a double bevel-joint, that part of the joint on one side of the ring being reversed to the other part of the joint on the opposite side of the ring. The improved joint wholly obviates the leakage of steam through the ring, because when the ring is worn any steam under pressure which may leak through one beveled part of the joint will be checked or arrested by the other and reversely-beveled part of the joint, and thus the efficiency and security of the joint is promoted, so that the joint is kept intact against the leakage of steam even when the ring is so far worn as to be unfit for service.

Our improved packing-ring may be used in the arts generally where it is desirable to provide a moving part with a packing which shall be proof against leakage under such conditions of service as evolve rapid wear on the packing-ring. In Fig. 1 of the drawings we have shown our improved packing-ring applied to the piston-head of a steam-engine. The ring may be seated in the groove of the piston-head in the ordinary manner, as shown, or said ring may be sprung externally around the head. We do not limit ourselves to this specific use of the packing-ring, nor indeed do we confine ourselves to the exact form and proportion of parts herein shown and described as the preferred embodiment of the invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

A single-piece packing-ring having its meeting ends united by a double beveled joint, one end of said ring being provided with a protruding lug having the transverse bevels on opposite sides of the flat central face thereof, and the other end of the ring having a central notch and the under bevels lying on

opposite sides of the notch and inclined re-
versely to each other; said ring having its
ends joined together by the lug fitting in the
recess and with the beveled faces in contact
5 with each other, and the inner and outer
faces of the ring lying flush at the joint, sub-
stantially as described.

In testimony that we claim the foregoing as

our own we have hereto affixed our signatures
in the presence of two witnesses.

SAMUEL F. ^{his} × FIELD.

WILLIAM T. ^{mark} HECK.

Witnesses:

H. G. GRAND,
B. F. BOLTON.