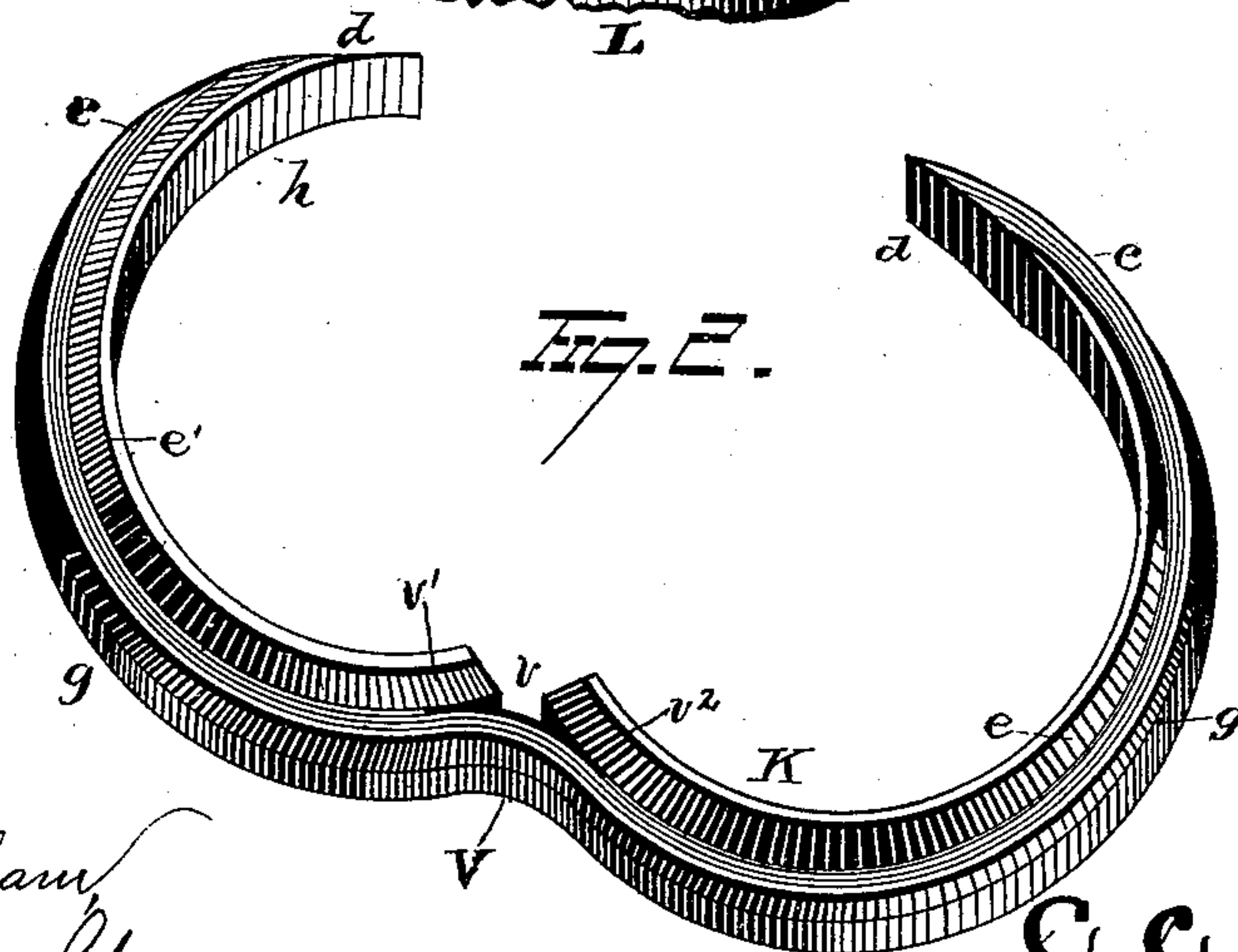
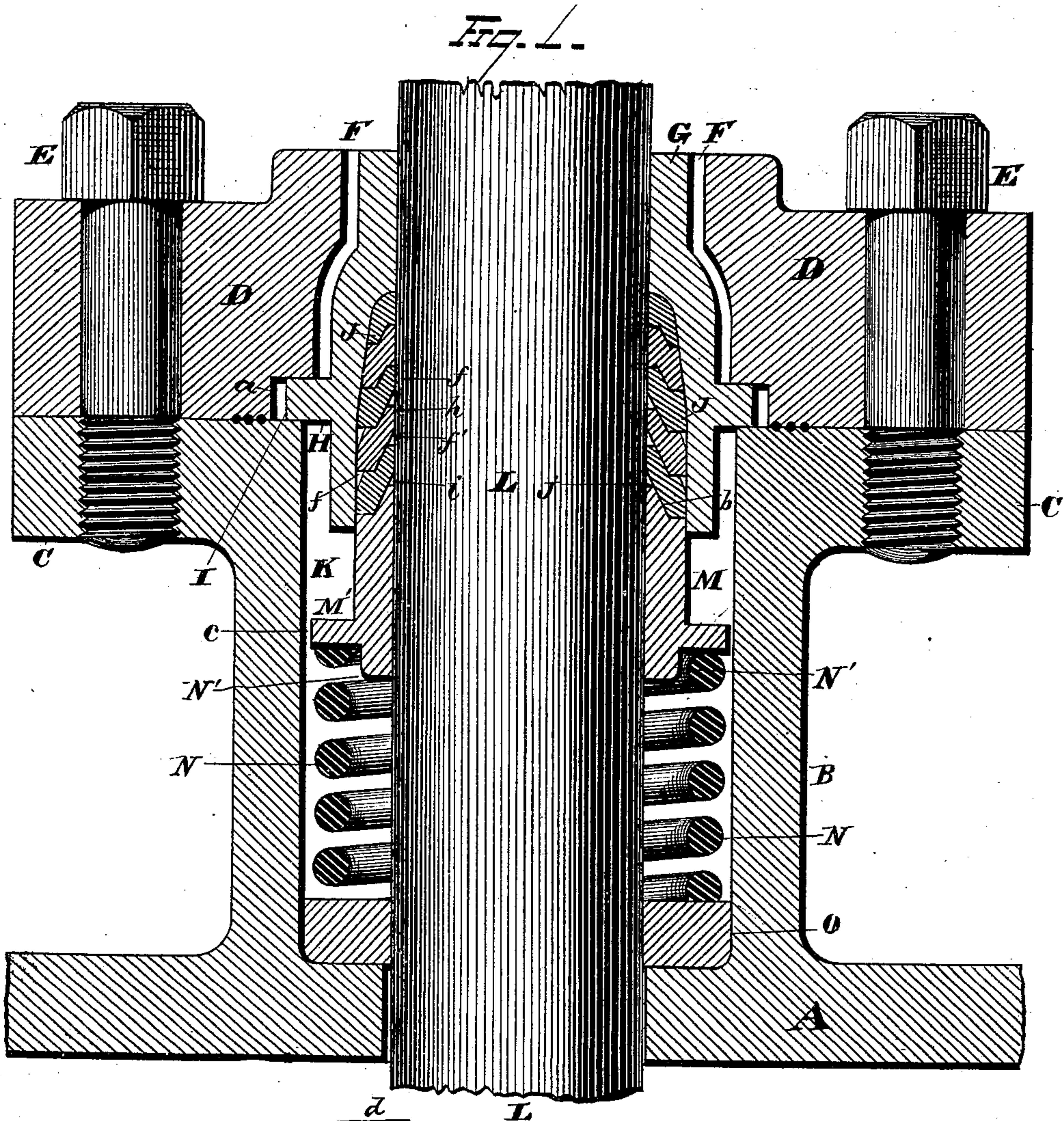


(No Model.)

C. C. JEROME.
Piston Rod Packing.

No. 230,133

Patented July 20, 1880.



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CHARLES C. JEROME, OF CHICAGO, ILLINOIS.

PISTON-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 230,133, dated July 20, 1880.

Application filed May 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. JEROME, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Piston-Rod Packings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable other skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in piston-rod packings.

Heretofore metallic packings have been constructed either in continuous rings or in two or more separate sections, which latter, when properly arranged within the packing-receptacle, formed a continuous metallic packing around the piston-rod. Both forms of packing have been found to be objectionable in use for several reasons, among which may be recited the following: A single continuous packing-ring cannot be applied without uncoupling the piston-rod, and, as such operation involves considerable labor and delay, the continuous ring-packing has met with disfavor, and cannot be introduced. Sectional packing-rings made up of two or more separate and detached sections require considerable time and skill for their proper arrangement and application, owing to the fact that the sections must be held upon the rod until the entire set has been arranged in place, and, as is often the case, the sections (one or more) will work out of place and drop into the sand or upon the floor while being applied, and thereby become covered with gritty and abrasive substances, which, if not completely removed, will seriously impair the efficiency and durability of the packing. Again, in such detached sectional packing-rings a through-joint is formed at the adjacent ends of each section, and hence an additional force is required to retain all such joints in a steam-tight condition.

The object of my invention is to provide a metallic packing which shall have but a single through-joint to be packed steam-tight, each ring being made in a single piece and adapted to be readily applied and removed without uncoupling the piston-rod, the packing-rings to be constructed and arranged in

such a manner that they will automatically adjust themselves to compensate for wear, and always preserve a perfect steam-tight joint without exerting undue friction upon the piston-rod.

With these ends in view my invention consists, first, in a metallic packing-ring formed of two or more connected sections, said sections being formed by partly severing the ring on its inner side, thereby constituting a sectional packing-ring of a single piece of metal having but a single through or open joint, and which may be readily applied and secured within the packing cone or receptacle.

My invention further consists in certain features of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of a stuffing-box and piston-packing embodying my invention. Fig. 2 is a view, in perspective, of one of my improved metallic packing-rings.

A represents one head of a steam-cylinder, and B the stuffing-box, having an outwardly-projecting flange, C, formed thereon, upon the outer face of which is seated the gland D, the latter being retained in place by means of the stud-bolts E. Within the opening F in the gland is located a packing-cone, G, which is provided with an outwardly-projecting flange or collar, H, the latter being seated within an annular groove, I, formed between the stuffing-box or gland, and by means of which the packing-cone is retained in place.

In order to provide for lateral play or movement of the packing-cone due to the uneven wearing of the piston or other cause the groove I is of greater depth than the width of the flange or collar H, thereby insuring a space, *a*, on the outside of the collar H for the free lateral movement of the packing-cone. A conical or converging space, J, is formed within the packing-cone for the reception of the metallic packing-rings K, while the outer end of the packing-cone is formed to snugly fit the piston-rod L. A follower, M, is located within the stuffing-box, the outer end, *b*, of follower being made to correspond in form to the rear surface of one of the packing-rings and form a seat therefor, while the opposite

end of the follower is provided with a flange, M' , which constitutes a seat for the outer end of the spiral spring N , the latter being retained out of contact with the piston-rod by means of the rear projection, N' , on the follower. The flange M' is of less diameter than the interior of the stuffing-box, to insure an annular steam-passage, c , between the flange and stuffing-box, for the purpose of allowing steam to flow on opposite sides of the flange M' and operate as a cushion to prevent the wedging of the rings or any undue pressure thereon. The opposite end of spiral spring N is seated upon the bushing-ring O .

The metallic packing-rings are formed of any suitable metal, and cast with a single lap-joint, d , the adjacent ends of the ring at the joint being formed gradually tapering, as shown, to enable the rings to close around the piston-rod and preserve their circular form, and thus insure a steam-tight joint. Each ring is provided with an annular flat seat, e , and beveled seat or portion e' on its rear surface, and with a flat seat, f , and beveled seat or surface f' on its front side. The outer surface, g , of the ring is made slightly tapering from its rear to its front side, to cause the ring to adapt itself to the tapering or conical packing-receptacle, and be readily forced, when worn, into the outer and contracted end of said receptacle, while the interior or wearing surface h of the ring is made to fit snugly against the piston-rod.

In casting or molding the packing-rings a T-shaped piece of metal is placed in the mold at the back of the ring, if the ring is to be formed of two connected sections, so that when the ring is withdrawn from the mold the inner portion thereof will be separated, as at v , while the outer portion of the ring will be separated from the inner portion by the elongated slots or openings $v' v^2$, thus furnishing an elongated connecting-strip, V , between the two sections. It is necessary, to insure sufficient length to the connecting strip or portion V , to allow the two portions of the ring to be bent toward and away from each other without danger of breaking the sections apart. It will thus be observed that the rings may be readily placed upon the piston-rod and forced within the outer end of the packing-cone, the operation being performed without rendering it necessary to uncouple the piston-rod, and, further, without requiring but a single through or open joint in each ring.

When the packing-rings are secured in place the flat annular seat e on the rear side of one ring will rest upon the flat annular seat f upon the front side of the next ring.

This construction of packing-ring insures a positive and uniform feeding movement to the entire number of packing-rings in the packing-cone, which result cannot be secured where the rings are made tapering on the outer surfaces, as in the latter case the feeding movement is due to the frictional contact of the rings, and it is often the case that one ring

will slip and become wedged upon the next succeeding ring, and thus impair the efficiency of the packing. The forward ends of the rings are cut off, as at i , so that when the rings are arranged within the packing-cone several annular grooves, j , will be formed in the rear portion of the metallic packing-surface, within which grooves the lubricating material will accumulate and operate to thoroughly lubricate the piston-rod.

In piston-rod packings constructed and adapted for the employment of the power of steam to force metallic packing within a converging or conical packing-receptacle the follower is made to snugly fit the stuffing-box and serve as a piston to transmit the power of the steam to the metallic packing-rings. In devices of such construction a light spiral spring is sometimes used simply to retain the packing-rings in place when steam is cut off from the cylinders.

Piston-rod packings constructed as above are faulty in operation, owing to the fact that the pressure on the metal packing-rings is constantly varying, as the pressure of steam is sometimes very slight and does not serve to set the rings closely around the piston-rod, while, on the contrary, the pressure of steam is often so great as to firmly wedge the rings around the piston-rod and produce an unnecessary and undue amount of friction thereon.

In my improved device the flange on the rear end of the follower is cut away to allow the steam which escapes from the cylinder into the stuffing-box to flow on opposite sides of said flange, and thereby partially counterbalance the pressure thereon, the outer pressure exerted on the follower being equal to the difference between the areas of the front and rear surfaces of said follower. The spiral spring is of such size to maintain a uniform and effective pressure on the follower, causing it to force the packing-rings into the converging space between the piston-rod and packing-cone and maintain a perfect steam-tight joint at all times without subjecting the packing-rings to any undue wear.

It is evident that many slight changes in details in construction and relative arrangement of parts might be resorted to without departing from the spirit of my invention, and hence I do not restrict myself to the exact construction and arrangement of parts shown and described; but,

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

1. A metallic packing-ring provided with a single lap-joint, the inner portion of the ring being partly severed at one or more points, substantially as set forth.

2. A metallic packing-ring provided with flat annular bearings on its opposite sides and formed with a single lap-joint, the inner portion of the ring being severed at one or more points, substantially as set forth.

3. A metallic packing-ring having its inner

or wearing faces subdivided into two or more sections, which are connected by an outer portion of the ring, substantially as set forth.

5 4. The combination, with a packing-cone and follower, of a series of metallic packing-rings, each provided with flat annular seats on their front and rear sides, substantially as set forth.

10 5. The combination, with a packing-cone and follower, of a series of metallic packing-rings formed with a single lap-joint, and with

the converging end of the ring cut away to form lubricating-grooves between the adjacent rings, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of May, 1880.

CHARLES C. JEROME.

Witnesses:

A. W. BRIGHT,
ALBERT L. LAWRENCE.