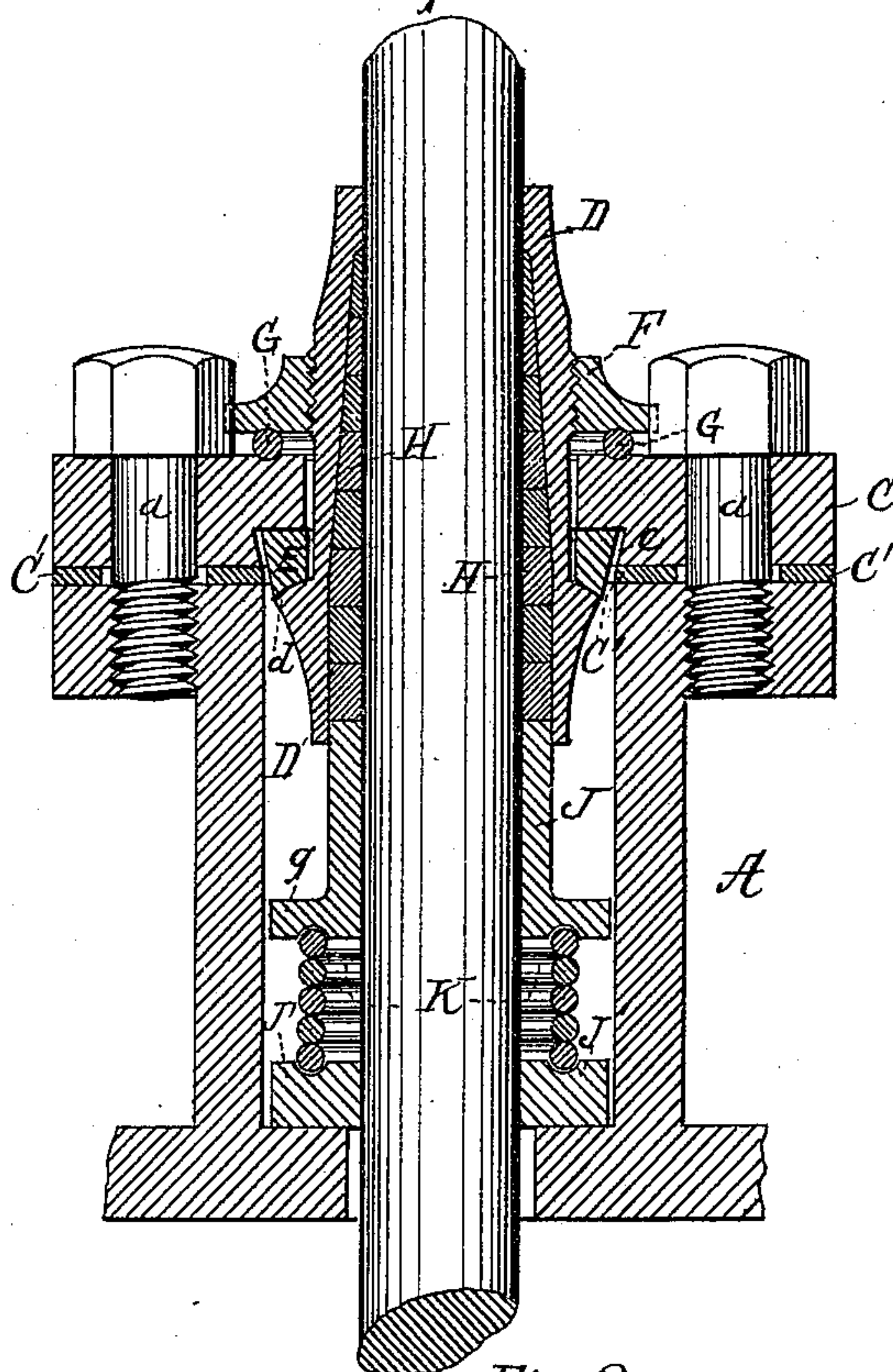


C. C. JEROME.  
 Stuffing-Box for Steam-Engines.

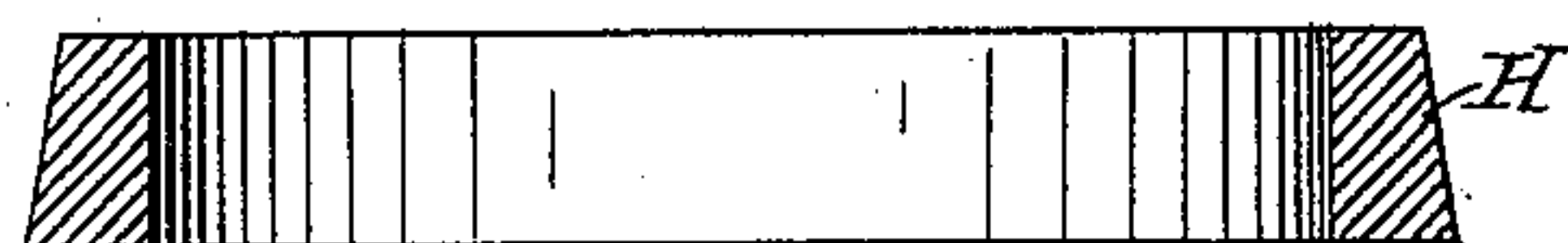
No. 200,459.

Patented Feb. 19, 1878.

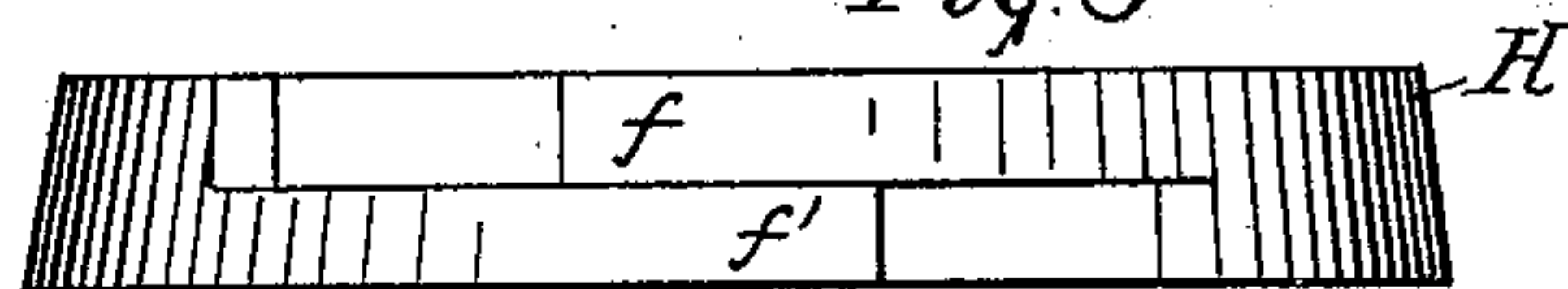
*Fig. 1*



*Fig. 2*



*Fig. 3*



*Witnesses*

*E. C. Hoffman*  
*N. Cowles*

*Inventor*

*Charles C. Jerome*  
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*Attys*



# UNITED STATES PATENT OFFICE.

CHARLES C. JEROME, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN STUFFING-BOXES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **200,459**, dated February 19, 1878; application filed December 7, 1877.

*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 Stuffing-Boxes for Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 represents a central longitudinal section of a stuffing-box embodying my said invention. Fig. 2 represents a transverse section of one of the packing-rings, and Fig. 3 represents an elevation of the same.

Like letters of reference indicate like parts.

My invention relates to that class of stuffing-boxes in which metal packing-rings are used for the purpose of packing the piston-rod and valve-stems of steam-engines; and the object of my invention is to improve the construction of such stuffing-boxes, so as to render them more durable and more complete in their operation.

To that end my invention consists in the arrangement of the several parts, as herein-after more fully described and claimed.

In the drawing, A represents the ordinary stuffing-box, which is formed on the cylinder-head in the usual manner. C represents an annular face-plate, which is secured to the outer end of the stuffing-box A by means of screw-bolts *a a*, passing through the plate into the flange of the stuffing-box, and is provided on its inner surface, and at the center thereof, with an annular recess, *c*, which corresponds in size with the bore of the stuffing-box. C' represents an annular packing of any suitable material, which is interposed between the end of the stuffing-box and back or inner surface of the plate. D represents a cylindrical sleeve, which passes loosely through a central opening in the plate C, and so as to admit of a lateral movement within said opening, and is provided on its outer surface with an annular shoulder, *d*, located at the proper point thereon to be within and near the outer end of the stuffing-box when the sleeve is in working position, and with a tapering bore,

through which the piston-rod loosely passes. E represents an annular metal packing-ring, which is interposed between the shoulder *d* on the sleeve and the inner surface of the plate, and within the recess *c*, and is provided on one end with a flat ground face, which abuts against the plate, and on the other end with a concaved face, which fits against a corresponding convexed face on the shoulder *d* of the sleeve. F represents an adjusting-nut, which is fitted upon the sleeve outside of the plate C, and is so arranged as to admit of being freely turned thereon. G represents an annular packing-ring, which is made of india-rubber or other equivalent elastic material, and is interposed between the outer surface of the plate C and the back of the adjusting-nut, and so as to fit into concaved annular grooves formed in the nut and plate, as shown in Fig. 1.

The arrangement of the adjusting-nut is such as to draw the sleeve through the face-plate until the packing-ring E is compressed between the shoulder *d* and the inner surface of the face-plate, when the nut is screwed taut against the packing-ring G, so as to compress the said ring against the outer surface of the face-plate, while at the same time the elasticity of the ring G admits of a sufficient yielding movement to allow the sleeve and nut to move laterally with the piston-rod.

H represents a series of metal packing-rings, which are fitted into the base of the sleeve D around the piston-rod. These rings are each made tapering on the outer side, so as to correspond with the taper of the bore of the sleeve, as shown in Fig. 2, and are each halved together, as shown in Fig. 3, so that the part *f* will lap upon the part *f'*, and so as to leave a space between the end of the lap and the adjacent shoulder, by which means the rings proper are allowed to contract as they are forced into the bore of the sleeve, and so as to fit closely around the piston-rod.

J represents a follower, which is fitted around the piston-rod within the stuffing-box, and is of the proper external diameter to pass loosely into the bore of the sleeve and against the rear packing-ring, and is provided at its end opposite to the sleeve with a flange, *g*, which is of the proper diameter to fit loosely within the



bore of the stuffing-box.  $J'$  represents an annular ring, which is of the proper diameter to fit loosely within the stuffing-box, and is provided with a central opening, through which the piston-rod passes.  $K$  represents an adjusting-spring, which is interposed between the follower  $J$  and the ring  $J'$  around the piston-rod, and is so adjusted as to hold the follower against the packing-rings within the sleeve, and so as to force the rings forward toward the outer end of the sleeve, so as to cause them to pack or wedge between the piston-rod and the inner surface of the tapering portion of the sleeve as the inner surface of the rings is worn away by the friction of the piston-rod, thereby producing a uniform degree of tightness of the rings around the piston-rod, and so as to prevent the escape of steam through the sleeve.

The object of so arranging the follower  $J$  as to enter the sleeve is to provide a means of moving the rings which are within the straight portion of the sleeve forward into the tapering portion thereof as the rings at the outer end of the sleeve are worn away by the friction of the piston-rod, and thereby keep up the supply of rings at the outer end of the sleeve for a much greater length of time than could be done without the follower.

In some classes of steam-engines the piston-heads are packed with steam-expanding packing, which contracts when the steam is exhausted from the cylinder, so as to allow the piston-rod to fall slightly below the plane in which it works when under pressure, in which case the entire weight of the inner end of the piston-rod rests upon the packing-rings, which is more or less liable to wear the lower portion

of the rings immediately under the piston-rod more than at any other point. It is to overcome this difficulty that the flange  $g'$  on the follower and the ring  $J'$  are designed, which are so arranged as to support the weight of the inner end of the piston-rod, and thereby keep the rod in the same plane in which it works when under pressure.

The object of the annular packing-ring  $G$ , which is located between the adjusting-nut and the face-plate, is to hold the sleeve in a working position, and at the same time prevent the escape of steam between the nut and face-plate should the packing-ring  $E$  be out of place, so as to allow the steam to escape or leak between the shoulder  $d$  and the ring  $E$ , as well as to allow the sleeve to move laterally with the piston-rod.

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

1. The combination, with the sleeve  $D$ , carrying the series of packing-rings  $H$ , and adjusted to extend through the face-plate, of the adjusting-nut  $F$  and elastic packing-ring  $G$ , substantially as and for the purpose specified.

2. The combination, with the sleeve  $D$ , carrying the series of conical packing-rings, and arranged to admit of a lateral movement with the piston-rod, of the ring  $J'$ , spring  $K$ , and the follower  $J$ , provided with the flange  $g$ , and arranged to loosely enter the sleeve, substantially as and for the purpose specified.

CHARLES C. JEROME.

Witnesses:

N. C. GRIDLEY,  
G. R. HOFFMAN.