No. 869,374. PATENTED OCT. 29, 1907.

W. H. LAW.

METALLIC PACKING.

APPLICATION FILED FEB. 26, 1907.

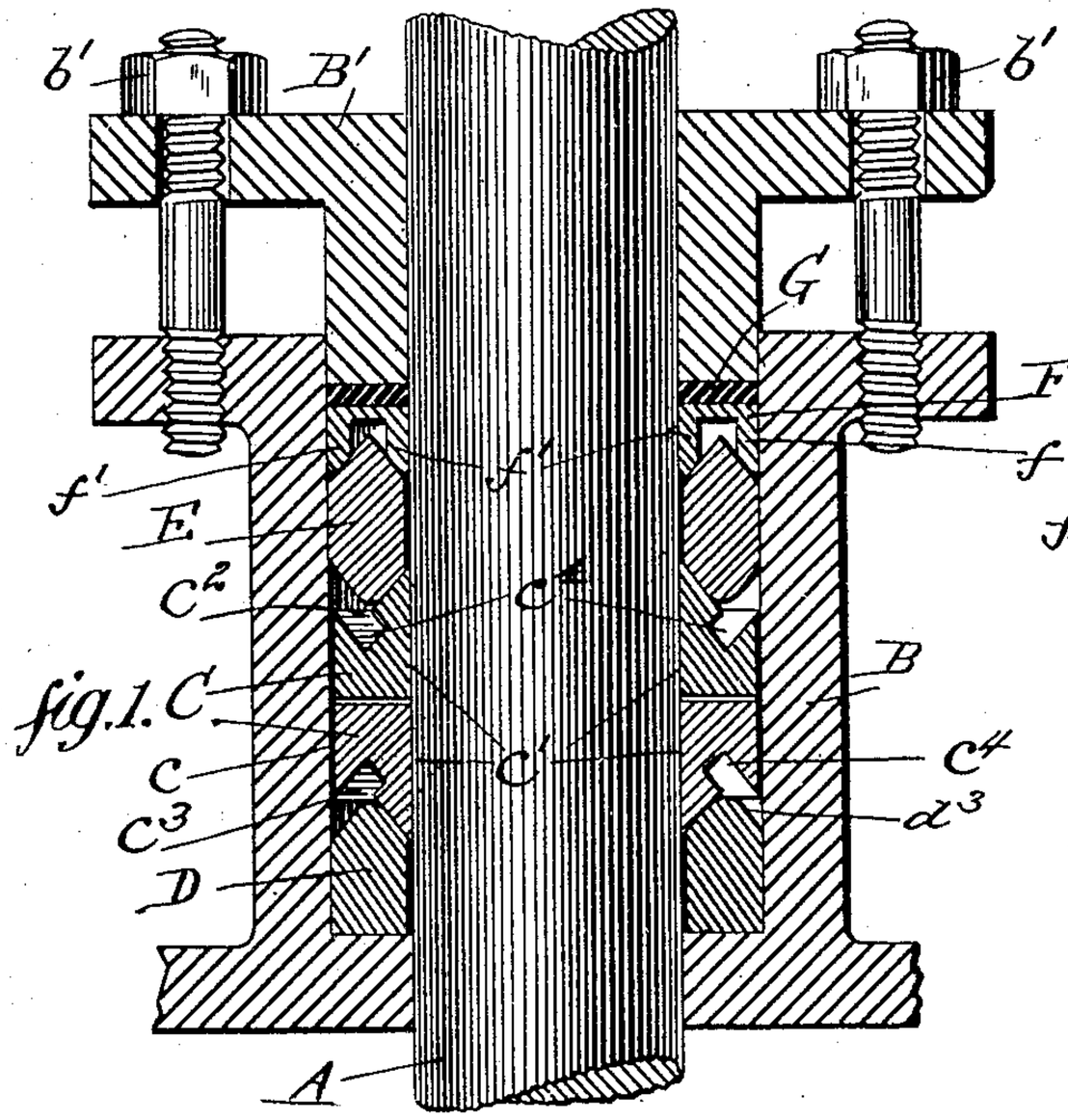

fig. 1.

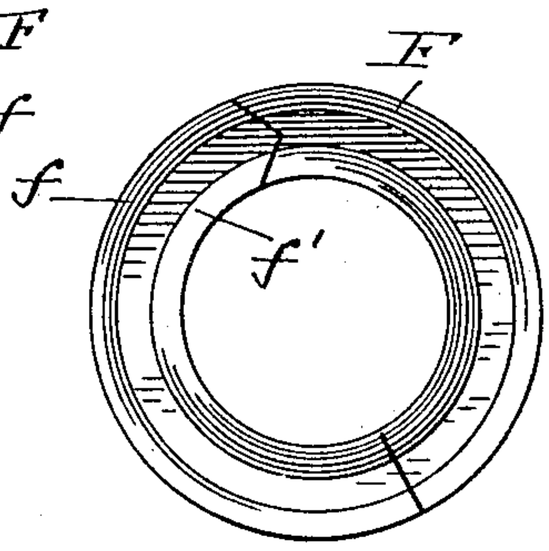

fig. 7

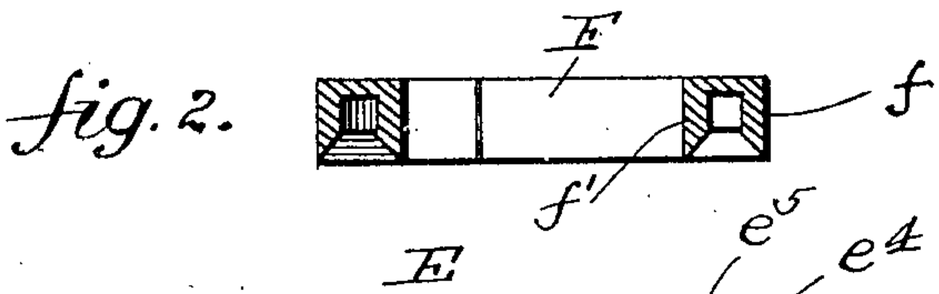

fig. 2.

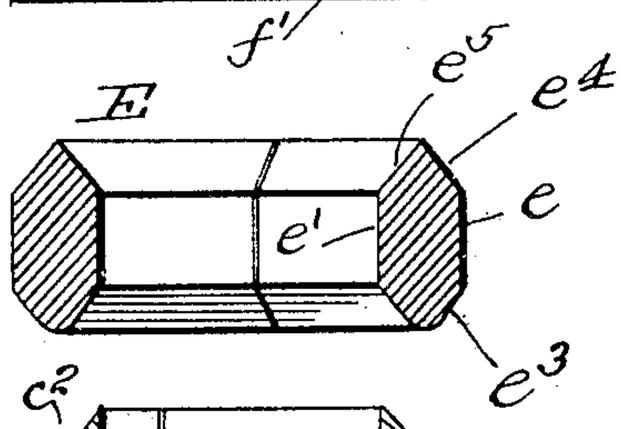

fig. 3.

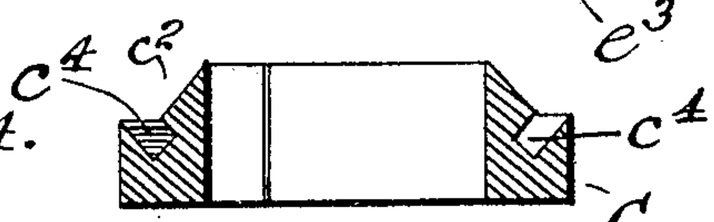

fig. 4.

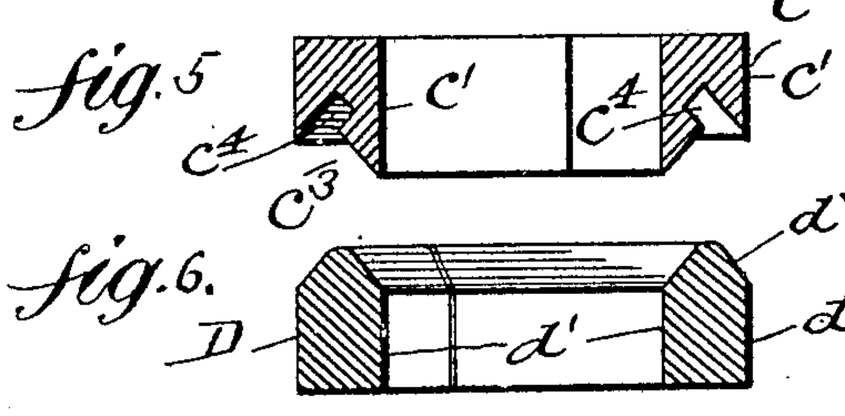

fig. 5

fig. 6.

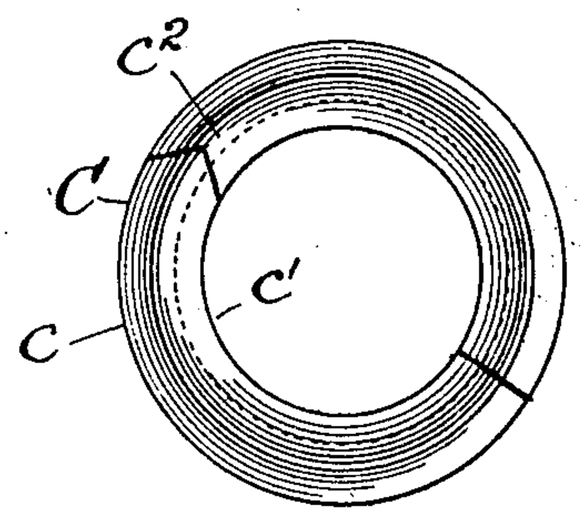

fig. 8.

Witnesses:
C. W. Benjamin
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UNITED STATES PATENT OFFICE.

WILLIAM H. LAW, OF NEW YORK, N. Y.

METALLIC PACKING.

No. 869,374. Specification of Letters Patent. Patented Oct. 29, 1907.

Application filed February 26, 1907. Serial No. 359,501.

To all whom it may concern:

Be it known that I, WILLIAM H. LAW, a citizen of the United States, residing in the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Metallic Packing, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of a stuffing box and packing rings; Figs. 2, 3, 4, 5 and 6 detail sectional views of the packing rings separated; Fig. 7 a detail view of the top ring; and Fig. 8 a detail elevation of the working ring.

My invention relates to packing for stuffing-boxes and the like, and more particularly to metallic packing, this invention being an improvement on a similar metallic packing described and claimed in a patent granted to me on the 11th day of April, 1905, No. 786,976.

The object of this invention is to improve the construction of the parts of the packing shown in my patent heretofore referred to, and it consists in certain novel features of construction to be hereinafter set forth and more definitely stated in the claims.

Heretofore in metallic packing of this class the end or thrust rings have, under certain conditions, formed shoulders on the inclined cam surfaces of the middle ring, thereby rendering it difficult to adjust said middle ring to the rod to be packed. The present invention overcomes this difficulty as will be more fully hereinafter set forth.

Referring to the various parts by reference letters A designates a piston rod or shaft and B a stuffing box surrounding the same and provided with a gland B′ of the ordinary construction and adapted to be forced down into the bore of the stuffing box by bolts *b′*.

C designates the main or middle packing ring, having an exterior face *c* and an interior face *c′*, and the upper and lower grooved or channeled edges c^2 c^3. These channels or grooves are V-shaped in cross-section, the sides thereof being of unequal length and the longer of said sides being nearest the piston or interior face *c′* and forming a wedge cam face. The wedge face of both edges of the central or shaft bearing ring are thus inclined from the point of contact with the shaft outwardly and convergently toward each other. It is necessary that they should have this inclination of the wedge faces in order that they may force the ring toward the shaft. By this construction I increase the bearing area of the shaft bearing ring while at the same time accomplishing the expanding action required.

Above and below the main packing ring C, that is to say at its edges c^2 and c^3, and fitting into the V-shaped channels thereof, are the end rings D and E. Both of these end rings have exterior and interior faces d d' and e e', which bear respectively against the rod A and the walls of the stuffing box. The ring D has an upper wedge-shape edge d^3, and the ring E a lower wedge-shape edge e^3, which are adapted to enter the V-shaped channels c^2 and c^3, as shown clearly in Fig. 1, and to bear against the longer correspondingly inclined sides of said channel c^2 and c^3 to force the shaft bearing ring inward to the shaft. At the base of the channels c^2 c^3 the longer inclined side of said channel is undercut as at c^4 to form the annular inward extending grooves around the base of said longer inclined sides of said channels. The object of this is to prevent the edges of the wedge-shaped end rings from biting into the metal of the middle or shaft-bearing ring and forming a shoulder thereon. Should the end rings bite into the middle ring the metal will be shoved down into the groove c^4 where it will not interfere with the proper adjusting of the middle ring to the shaft. This groove c^4 need only be shallow as under no conditions would the end rings bite into the middle ring to any considerable extent. It will, of course, be understood, that the middle ring may be formed of one piece as shown in my patent hereinbefore referred to, or in two sections as shown herein. The lower edge of ring D rests upon the bottom of the stuffing box; and the upper edge of ring E is wedge-shape, having two inclined faces e^4 and e^5. The top ring F is of metal and is annularly grooved on its inner side, the walls *f f′* of said groove being slightly elastic so that by forcing the inner edges of said walls into contact with the inclined faces e^4 and e^5 said walls *f f′* will be forced, one against the shaft and the other against the wall of the stuffing box. The purpose of this is to prevent any water or vapor which may find its way around the packing rings from passing out through the gland. Interposed between the gland and the top packing ring is a flat washer G of any suitable material. The rings are split as is common in rings of this character, said rings being arranged in the stuffing box so that these joints will be out of alinement with each other. The rings are to be made of any appropriate metal or composition suitable to the work to be done.

The annular spaces formed by the groove c^4 and the annular groove in the packing ring F, form cooling chambers in which steam and moisture will condense and be retained, thereby serving to cool the packing rings.

I have used the term "upper" and "lower" as designating the positions of the end rings, but it will be understood that the phrase is purely relative to the parts as arranged in the drawing.

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

1. Packing for stuffing boxes comprising a central ring having a bearing face for contact with the rod passing therethrough, and end rings having bearing faces for con-

tact with the stuffing box wall, the adjacent edges of said rings having reverse wedge faces, the upper and lower wedge faces of the central ring being inclined convergently toward each other from the bearing face thereof in the direction of the stuffing box wall, said bearing faces being inwardly cut at their outer edges to form annular channels or grooves.

2. A packing for stuffing boxes comprising a middle ring or section having two sides and two edges each of said edges having two oppositely-inclined wedge-faces converging toward each other from the bearing-face of the ring in the direction of the stuffing-box wall; and two end sections or rings having each two sides and an edge having oppositely inclined faces disposed for engagement with the inclined faces of the edges of the middle ring; the apices of the inclined edge faces of the end rings being out of alinement with the apices of the inclined edge faces of the middle section, said bearing faces being inwardly cut at their outer edges to form annular channels or grooves.

3. A packing for stuffing-boxes comprising a central ring having a bearing-face for contact with the rod passing therethrough, and end rings having bearing faces for contact with the stuffing-box wall, the adjacent edges of said rings having reverse wedge-faces, the upper and lower wedge-faces of the central ring being inclined convergently toward each other from the bearing-faces thereof, in the direction of the stuffing-box wall, the outer end ring being formed with a wedge-face at its outer edge and a grooved metallic packing ring arranged with the edges of the two walls formed by said grooves bearing against the sides of the wedge face of the said outer end ring, whereby the walls of said grooved ring will be forced outward against the stuffing box wall and inward against the shaft.

4. The combination in a stuffing-box, of a middle split ring, a lower split ring adapted to wedge the middle ring inward away from the wall of the stuffing-box and to be thereby wedged out against said wall; an upper split ring adapted to wedge the middle ring inward and to be itself thereby wedged outward against the said wall; and a grooved packing ring above the said upper end ring and having two walls adapted to be expanded outwardly and inwardly by forcing it down upon the said upper ring, the upper edge of the end ring being out of contact with the grooved ring.

5. A packing for stuffing boxes comprising a plurality of split rings, one of said rings being formed with an outward inclined bearing surface and the contacting ring being formed with a correspondingly inclined bearing surface, one of said bearing surfaces being undercut to form an annular groove or channel, substantially as described and for the purpose set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 21st day of February 1907.

WILLIAM H. LAW.

Witnesses:
WM. R. DAVIS,
E. H. KAUFMANN.