

No. 810,430.

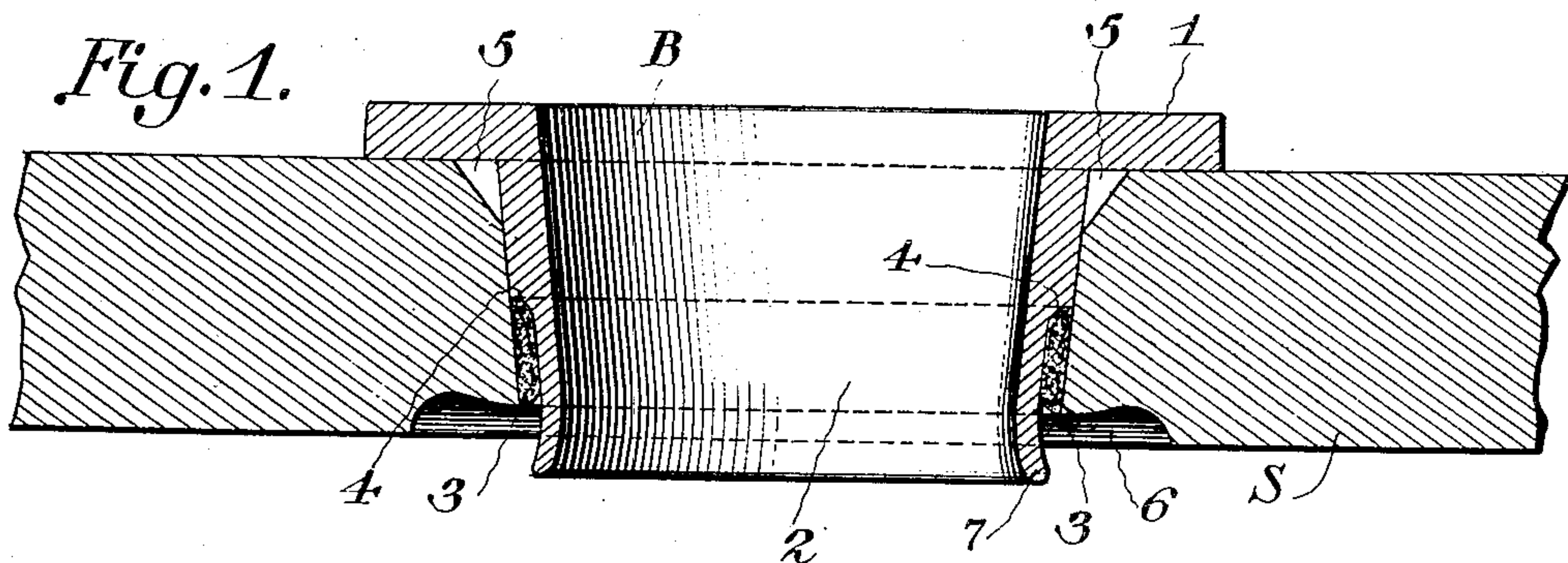
PATENTED JAN. 23, 1906.

F. PFLUGER & E. CHRISTENSEN.

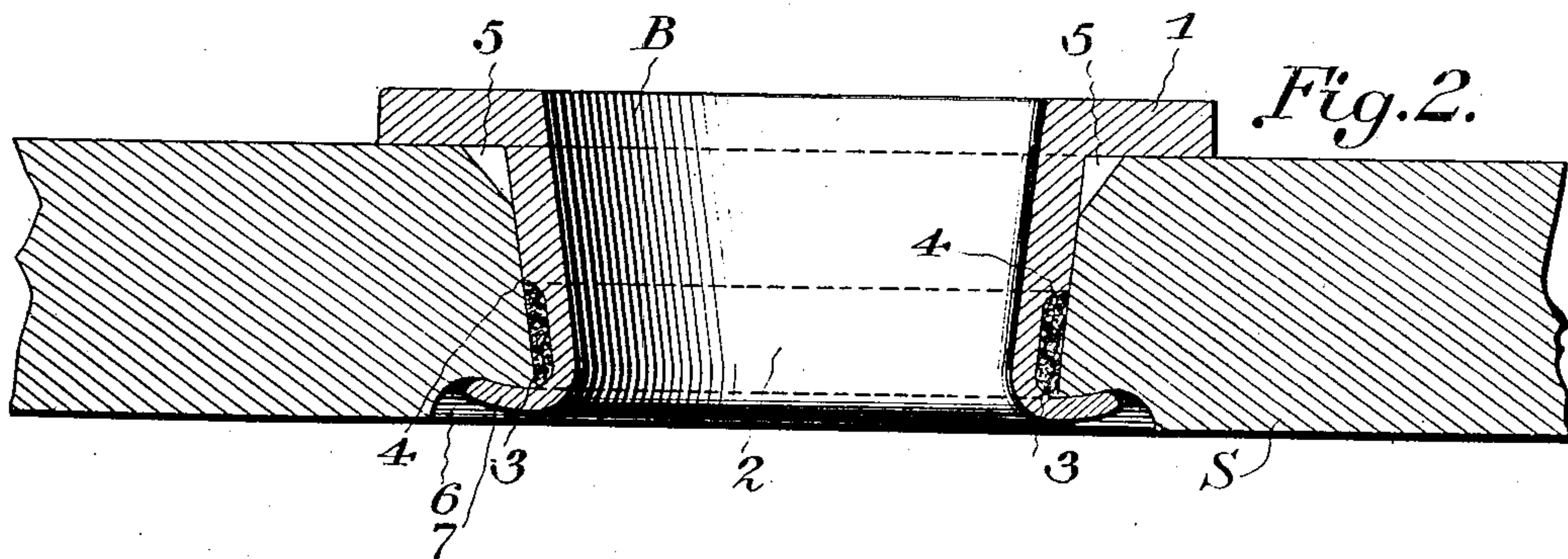
BUNG HOLE BUSHING.

APPLICATION FILED FEB. 11, 1904.

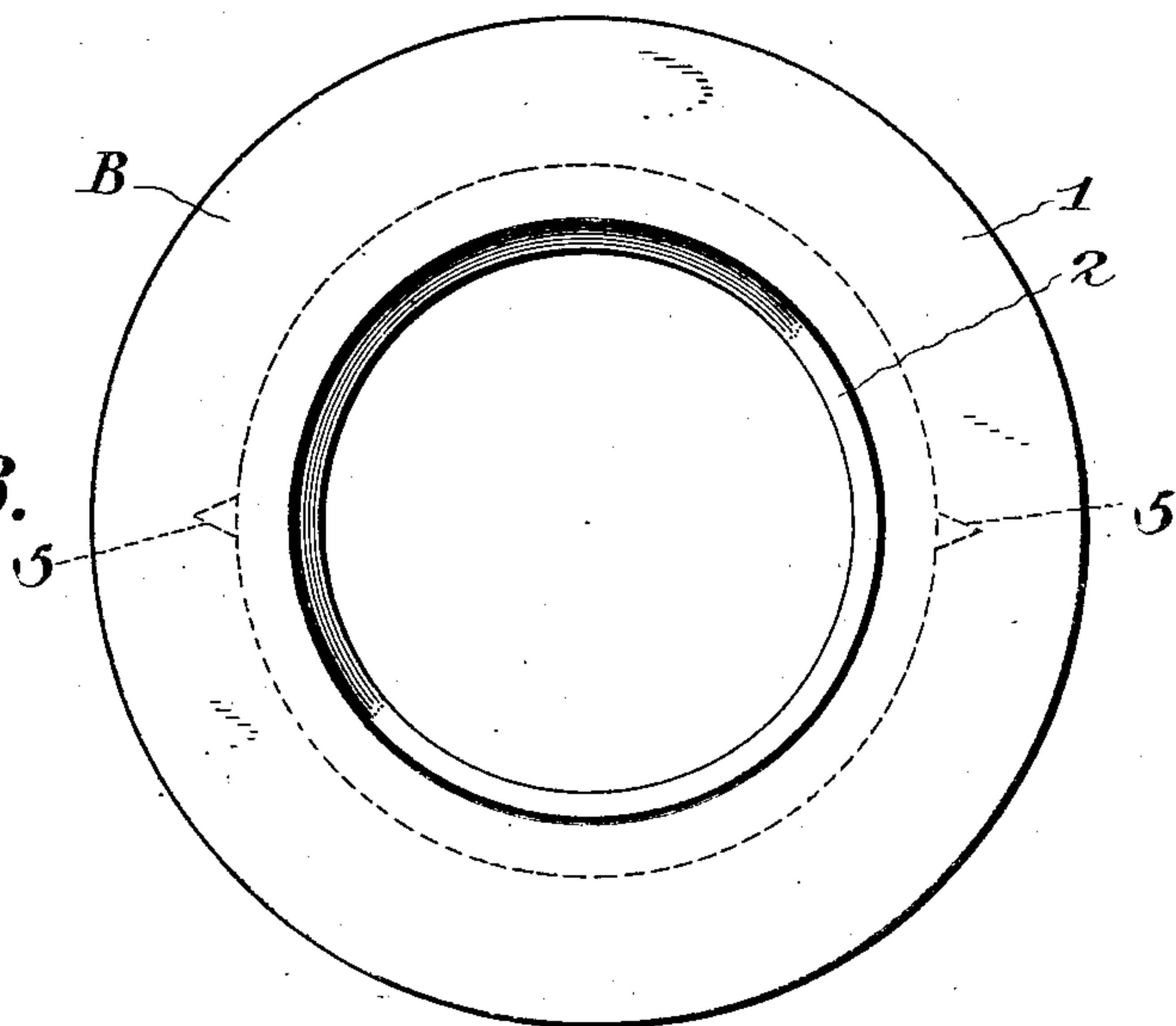
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

FRANK PFLUGER AND EMIL CHRISTENSEN, OF PORTLAND, OREGON.

## BUNG-HOLE BUSHING.

No. 810,430.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed February 11, 1904. Serial No. 193,156.

*To all whom it may concern:*

Be it known that we, FRANK PFLUGER and EMIL CHRISTENSEN, citizens of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Bung-Hole Bushing, of which the following is a specification.

This invention relates to bung-hole bushings, and the principal object thereof is to provide a bung-hole bushing of inexpensive character which may be quickly applied to a bung-hole formed in a stave and which when applied will be permanently secured in position and will form such a perfect fit within the bung-hole that any leakage between the bushing and the side of the bung-hole will be completely prevented.

A further object of the invention is to provide a bung-hole bushing especially adapted for use in counterbored bung-holes and having provision for the insertion between the bushing and the wall of the bung-hole of a layer of packing material to assist in preventing leakage between the bushing and the wall of the bung-hole.

With the objects above mentioned in view the invention consists in the novel form of bung-hole bushing hereinafter fully described and claimed, and illustrated in a preferred form of embodiment in the accompanying drawings, in which—

Figure 1 is a sectional view of the bung-hole bushing introduced into a bung-hole, but not permanently secured therein. Fig. 2 is a sectional view through the bushing applied to the bung-hole and permanently secured therein by expanding and flanging the lower edge of the bushing. Fig. 3 is a plan view of the bushing before insertion into a bung-hole.

Referring to the drawings, in which corresponding parts are designated by similar characters of reference, B designates generally the entire bushing, and S designates a stave having a bung-hole formed therein. The bushing B is formed of metal having a considerable degree of malleability and ductility, so that the flanging operation, by means of which the bushing is secured in position, may be accomplished without cracking, splitting, or tearing the material of the bushing. The bushing is provided at its outer margin with a comparatively heavy outwardly-disposed flange 1, which contacts with the outer surface of the stave adjacent to the bung-hole. The body 2 of the bushing is tapered slightly, as shown in Fig. 1, and is

flared slightly outward at its inner end. The portion of the body of the bushing adjacent to the flange 1 is considerably thicker than the inner portion of the body and is intended to fit tightly within the bung-hole. The inner portion of the body of the bushing is reduced considerably in external diameter to form a space between the bushing and the wall of the bung-hole to receive packing material, as shown at 3. The slipping of the packing material upon the outer surface of the bushing as the bushing is being inserted into the bung-hole is prevented by a shoulder 4, which defines the cut-away portion of the body of the bushing.

In order to prevent the rotation of the bushing during the operation of expanding of the flange, by which the bushing was secured in position in the bung-hole, we preferably provide upon the outer surface of the bushing adjacent to the flange one or more spurs 5 with sharp edges, which may be easily forced into the wood of the stave as the bushing is pressed into the bung-hole.

The bushing is especially designed for use in bung-holes which are counterbored at their inner ends, as shown at 6, and when the bushing is permanently secured in the bung-hole the inner end of the body portion thereof is flanged, as shown in Fig. 2, the flange 7, formed thereon, conforming closely to the counterbored surface. The inner end of the bushing is formed with an initial flare, as clearly shown in Fig. 1, whereby the operation of bending the flange 7 will be greatly facilitated.

In connection with the bushing, as above described, the packing material which we prefer to use is "flag" or "bulrushes," but other fibrous compressible materials may be employed instead.

In applying the bushing, as above described, to a bung-hole the bushing is first wrapped around with the packing material at the inner end and is then driven into the bung-hole to the position shown in Fig. 1, the contact of the packing material with the wall of the bung-hole being effective to compress the material between the said wall and the outer surface of the bushing, as well as to force the packing into close contact with the shoulder 4 upon the outer surface of the body 2 of the bushing. The bushing having been introduced into the bung-hole, as shown in Fig. 1, it is then secured therein by being outwardly expanded and flanged at its inner



end, as shown in Fig. 2. In forming the flange at the inner end of the bushing any suitable instrument may be employed, but that described in our companion application, 5 Serial No. 134,612, is preferred, as it is especially adapted for the rapid expansion and flanging of the bushing in the manner desired.

While the bushing has been shown in a 10 counterbored bung-hole and it is intended that it shall be employed in such bung-holes by preference, it is of course obvious that it may be applied to bung-holes unprovided with counterbores and that when so applied 15 the bushing will give satisfactory results in use.

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

20 1. The combination with a stave having a counterbored bung-hole, of a bushing of ductile metal reduced in external diameter at its inner end and having flanges at both ends, the flange at the inner end conforming to the 25 counterbore of the bung-hole, and a wrapping of packing material about the reduced portion of the bushing and confined between the shoulder formed by said reduced portion and the inner flange.

30 2. The combination with a stave having a counterbored bung-hole, of a bushing of ductile metal provided with an external shoulder

der approximately midway between its ends and having flanges at both ends, and a wrapping of packing material about the bushing 35 between the external shoulder and the inner flange.

3. A bung-hole bushing having a flange at each end, one of the flanges being bendable, and the body of the bushing being reduced to 40 form an exterior shoulder opposing the bendable flange, and packing surrounding said reduced portion between the said shoulder and opposing flange.

4. A bung-hole bushing having a bendable 45 flange at one end and having its body portion reduced adjacent to said flange to form a depressed exterior packing-seat bounded by an exterior shoulder opposing the flange.

5. A bung-hole bushing having a tapered 50 body initially flared at its inner end and reduced in external diameter adjacent to the inner end with the formation of an external shoulder intermediate of the outer and inner ends of the bushing. 55

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

FRANK PFLUGER.  
EMIL CHRISTENSEN.

Witnesses:

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E. G. BURKE.