No. 845,085. PATENTED FEB. 26, 1907.

W. W. HICKS.

BALL BEARING GLAND FOR PACKING NUTS.

APPLICATION FILED JULY 21, 1906.

Fig. 1.

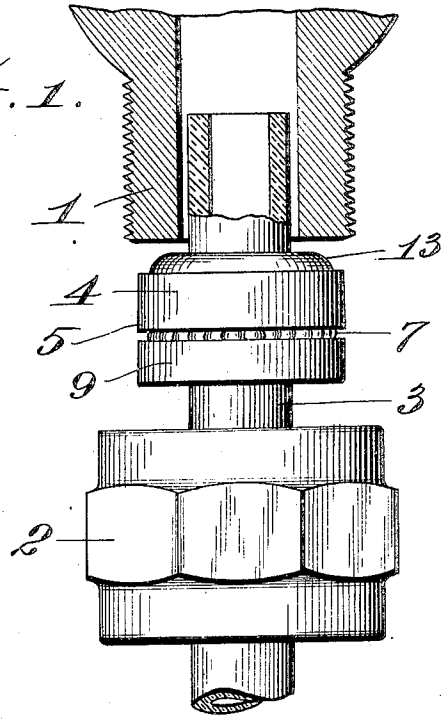
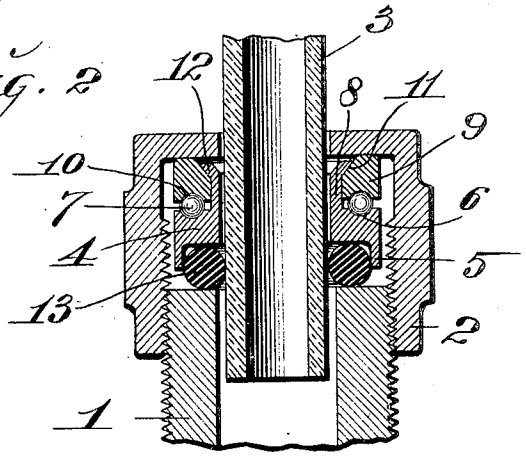


Fig. 2



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BALL-BEARING GLAND FOR PACKING-NUTS.

No. 845,085. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed July 21, 1906. Serial No. 327,238.

To all whom it may concern:

Be it known that I, WILLIAM W. HICKS, a citizen of the United States, and a resident of St. Louis, Missouri, have invented certain new and useful Improvements in Ball-Bearing Glands for Packing-Nuts, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to ball-bearing glands for packing-nuts, and the construction hereinafter described and claimed is an improvement on the ball-bearing gland for packing-nuts described by me in an application for patent in the United States filed October 31, 1905, Serial No. 285,356.

In the construction shown in the application above referred to the ball-bearings are arranged upon the interior of the gland in such a manner as that they will easily rust and corrode, owing to the presence of moisture passing the packing-ring when the same is being placed in position and before the packing-nut is screwed down. My present construction entirely does away with this rusting and corroding of the ball-bearings, for the reason that said ball-bearings are located adjacent the exterior of the gland and are entirely cut off from the gage-glass and any leakage therefrom.

To the above purposes my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved gland in position on the upper end of a gage-glass and showing the packing-nut in position to engage the gland. Fig. 2 is a vertical section taken through a gland of my improved construction, the same being shown in position for use on a gage-glass and inclosed within the packing-nut.

Referring by numerals to the accompanying drawings, 1 designates the gage-valve casing, which is exteriorly screw-threaded and adapted to receive the tubular nut 2.

3 designates the ordinary gage-glass, the ends of which pass through the tubular nuts 2 and enter the casings 1.

My improved gland comprises a ring 4, the opening in which is slightly larger than is the diameter of the gage-glass, and formed integral with the outer end of this ring is a downwardly-projecting flange 5. Formed in the top surface of the ring 4 is a raceway 6, in which is located a number of steel balls 7, such as are ordinarily used in ball-bearings. Formed integral with the inner edge of the ring is an upwardly-projecting flange 8. 9 designates a movable ring of the gland, the exterior diameter of which is equal to the exterior diameter of the ring 4, and formed in the under side of this ring 9 is a raceway 10, which is a counterpart of the raceway 6 and in which the balls 7 operate. The opening in this ring 9 is large enough to receive the flange 8, and the upper inner corner or edge of the ring 9 is beveled, as designated by 11, and the extreme upper end of the flange 8 is bent outwardly, so as to form an overlying lip 12, which engages on this beveled edge 11. This lip is bent outwardly after the rings have been properly placed together and the balls 7 have been located in the raceways 6 and 10, and when so assembled the ring 9 will freely rotate relative the ring 4. Located beneath the ring 4 and partially inclosed within the flange 5 is a packing-ring 13, of suitable material, which ring is of such size as to snugly fit upon the surface of the gage-glass 3. One of the glands so constructed is positioned around the end of the gage-glass within the tubular nut 2, and when said nut is screwed onto the valve-casing 1 the under side of the top of said nut will engage on the top of the ring 9, and said ring will readily rotate with the nut, while the ring 4, carrying the packing-ring 13, will remain stationary, owing to the engagement of said packing-ring upon the surface of the gage-glass and the end of the casing 1.

The flange 5 prevents the packing-ring from expanding outwardly as the nut 2 is tightened, and therefore said packing-ring will be forced against the surface of the gage-glass and will spread thereon owing to the elasticity of said packing-ring, and therefore a very tight joint will be effected between said packing-ring and the gage-glass, which prevents any leakage through the packing-nut.

The lower end of the flange 5 striking against the end of the casing 1 acts as a lock to prevent the packing-nut from being screwed too far upon the casing 1, which action might result in a breakage of the gage-glass owing to the excessive pressure of the packing-ring against said glass.

This construction of gland does away with

all torsional strain upon the gage-glass while a packing-nut is being tightened thereon, and the flange 8, extended upwardly over the inner surface of the ring 9, prevents any moisture from coming in contact with the balls 7 to rust and corrode the same.

The top of the nut 2 fitting tightly upon the top of the ring 9 and the packing-ring 13 fitting tightly upon the top of the casing 1 effectually prevents moisture from entering the space between the inner surface of the nut and the outer surfaces of the rings 4 and 9, and thus the balls 7 are maintained in a moisture-proof compartment, and therefore they will not rust or corrode, but will be at all times free to travel around in the raceways, following the movement of the packing-nut 2.

I claim —

1. In a device of the class described, a gland constructed of two rings, ball-bearings arranged between said rings, a flange integral with one of the rings and projecting through the opening in the opposite ring, a packing-ring arranged on the under side of the flanged ring, and means carried by said flanged ring for maintaining the packing-ring in position; substantially as specified.

2. In a device of the class described, a gland constructed of two rings, ball-bearings arranged between the rings, a flange integral with one of said rings and projecting through the opening in the opposite ring, and the upper end of said flange being bent over the upper edge of the upper ring; substantially as specified.

3. In a device of the class described, a gland constructed of two rings, ball-bearings arranged between the rings, a flange integral with one of said rings and projecting through the opening in the opposite ring, and a flange integral with and depending from the outer edge of the lower ring; substantially as specified.

4. In a device of the class described, a gland constructed of two rings, ball-bearings arranged between the rings, a flange integral with one of said rings and projecting through the opening in the opposite ring, a flange integral with and depending from the outer edge of the lower ring, and a packing-ring arranged beneath the lower ring within the flange thereon; substantially as specified.

5. In a device of the class described, a gland constructed of a pair of rings, a flange intergal with one of said rings and projecting through the opening of the opposite ring, and ball-bearings arranged between said rings outside the flange; substantially as specified.

6. In a device of the class described, a gland constructed of a pair of rings, a flange integral with one of said rings and projecting through the opening of the opposite ring, ball-bearings arranged between said rings outside the flange, and a packing-ring arranged beneath the flanged ring; substantially as specified.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

WILLIAM W. HICKS.

Witnesses:
M. P. SMITH,
E. L. WALLACE.