Oct. 13, 1931. C. F. THOMAS 1,826,967

SELF ADJUSTING METALLIC GLAND PACKING

Filed Dec. 8, 1926

Fig. 1.

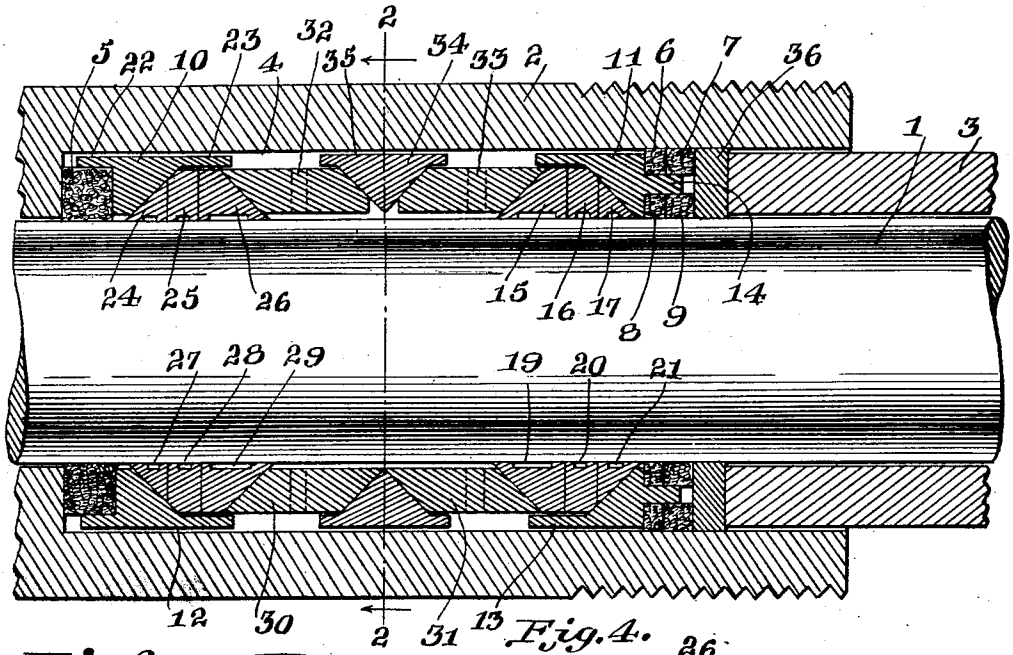


Fig. 2.

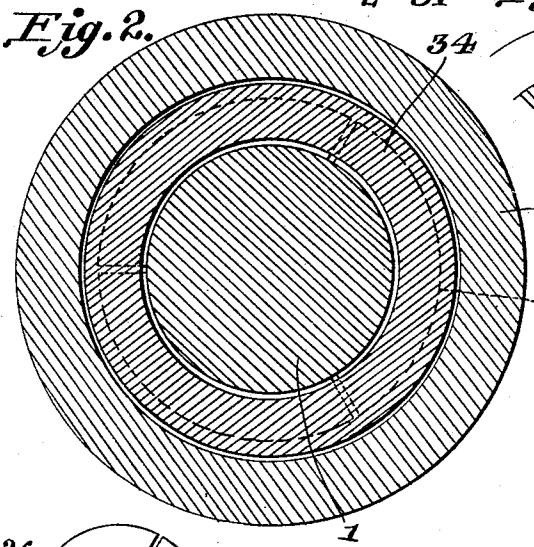


Fig. 4.

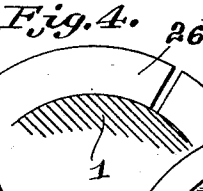
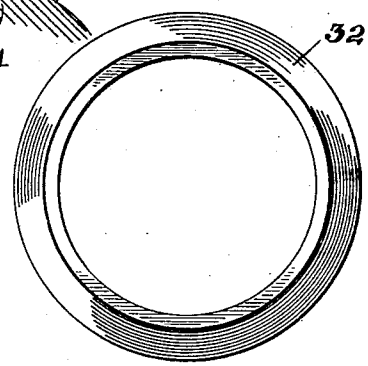


Fig. 3.



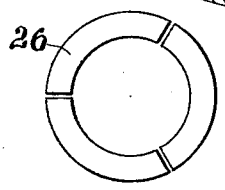


Fig. 5.

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UNITED STATES PATENT OFFICE

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SELF-ADJUSTING METALLIC GLAND PACKING

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This invention relates to improvement in gland packings, particularly, in a packing wherein a packing element may expand with the increase of temperature, thereby releasing the tension on the other packing elements, and contract with decreasing temperature, thereby increasing the tension on the other packing elements.

A further object of this invention is to provide, a self-adjusting packing, particularly, adapted for use in connection with reciprocating rods in common use on ammonia machines in the manufacture of ice. The packing, as described and disclosed herein, however, may be utilized on any suitable type of machine or device.

Other objects of this invention will appear from the following detailed description of the packing, and as disclosed in the single sheet of drawings which is herewith made a part of this application.

In the drawings, Figure 1 illustrates a longitudinal sectional view of the gland packing elements in assembled relationship with a rod and gland.

Figure 2 represents a sectional view of Figure 1, taken along 2—2, through the metal expansion ring.

Figure 3 illustrates an end view of a metal oil lantern.

Figure 4 represents a fragmentary view of the metallic packing elements in operating relationship to the rod, disclosing the metallic packing in contact with the rod and the expansion space between the metallic packing elements.

Figure 5 illustrates, to reduced scale, an end elevational view of the metallic packings disclosing the expansion space between the different sections thereof.

In the modification of the self-adjusting metallic gland packing for reciprocatng ammonia compressor rods, herein described and claimed, numeral 1 designates a connecting rod, or other portion of a machine, extending through packing box or gland elements 2 and 3. The usual packing space 4 is provided between the rod and the element 2, and extends peripherally exterior of the rod. Within the space 4 is adapted to be suitably positioned various packing elements consisting of fibrous packing 5, 6, 7, 8 and 9. The fibrous packing 5 is in the form of a ring positioned in the closed end of the cup or space 4 and is adapted to prevent ammonia, in the case of an ice-making machine, or otherwise, from seeping by on the outside of the packing, while the fibrous packing rings 6 and 7 are positioned in the opposite or open end of the cup and are adapted as seal rings, the fibrous packing 8 and 9 being adapted as the inner rod contact packing element, and are, preferably, located concentrically with the packing ring elements 6 and 7. Within the cup 4, and located near each end thereof in contact with the fibrous packing elements, are two metallic, preferably, cast iron packing cups 10 and 11, so positioned within the cup 4 that allowable spaces 12 and 13 may be left for expansion effects. The cup shaped packing element 11 is formed having a suitable extension 14 for the purpose of properly retaining the fibrous packing elements 6, 7, 8 and 9 within the cup 4. The inner end of the packing cup 11 being formed so as to receive metallic packing elements 15, 16 and 17, which are located peripherally of the rod 1 and in contact therewith, having grooves 19, 20 and 21 therein which act as oil or ammonia seals, also function to reduce friction on the rod, each of the metallic rings 15, 16 and 17 are formed in a plurality of sections in such a manner as to allow for expansion between the sections, as clearly disclosed in Figures 2, 4 and 5. The metallic packing cup 10, located near the closed end of the cup or space 4, is formed having an extension 22 for the purpose of retaining the fibrous packing 5 in position, the other end of the packing cup 10 being provided with an extension 23 for the purpose of retaining the metallic packing elements 24, 25 and 26 in proper relationship with the rod 1, the packing elements 24, 25 and 26 being suitably provided with inner grooves 27, 28 and 29 for the purpose of forming an oil and ammonia seal, also functioning to reduce the friction on the rod 1. In the cup or space 4 is also suitably positioned a plurality of cast iron or other suitable

metallic oil lantern rings 30 and 31 having oil holes 32 and 33 located therein. One peripheral edge of each of the oil lantern rings 30 and 31 is adapted to be brought into contact relationship with the metallic packing elements 15 and 16. The opposite peripheral edges or surfaces of the oil lantern rings 30 and 31 are adapted to contact with a suitable metal, such as steel, expansion ring 34 which functions as an expansion and contraction ring. The ring 34 will expand with increased temperature, thereby releasing tension on the other elements of the packing, and will contract with decreasing temperature, thereby increasing the tension on the packing, suitable space being allowed between the packing box element 2 and the outer peripheral surface of the expansion ring 34 as at 35 for allowing for expansion.

A suitable babbit ring or otherwise 36 is adapted to be placed within the cap portion or space 4 at its outer or open end, as a follower ring.

The packing ring elements 10, 11, 15, 17, 33, 32, 26, 25 and 24 are provided with suitable bevelled portions at approximately 50° angle in the manner shown.

In operation, this invention provides a self-adjusting metallic packing, particularly adapted for reciprocating rods or otherwise, such as is found in refrigerating machinery where the ammonia process is used. It has been found, after careful experiment, that the combination of packing elements, as herein described and claimed, is highly efficient and differs radically from the devices now in common use. The steel expansion ring 34, as provided in this invention, will function to expand with increased temperature during which time, obviously, tension on the packing will be released, and as the temperature decreases, the metal ring 34 will contract, thereby releasing the tension materially on the packing, points which are highly desirable, and lacking, to a great extent, in the forms of packing now on the market.

What I claim is:—

1. A floating metallic packing comprising in a packing gland, spaced oppositely disposed packing cups and an intermediate expansion ring, said cups and ring each of an external diameter less than the internal diameter of the gland, sector packing rings positioned within the packing cups, and oil lantern rings disposed between said packing rings and said expansion ring.

2. A packing of the character described comprising end packing members, a medial expansion ring, a lantern ring at each side of said expansion ring, and segmental packing rings disposed between each lantern ring and the adjacent end packing member.

3. The combination as set forth in claim 2, characterized by the expansion ring having inwardly converging end surfaces, the segmental packing rings having outwardly converging end surfaces, the inner ends of said end packing members fitting flush against the adjacent ends of said segmental packing rings, and the inner and outer ends of said lantern rings fitting flush against the adjacent ends of said expansion ring and said segmental packing rings, respectively.

In testimony whereof I affix my signature.

CLAUD FRANKLIN THOMAS.