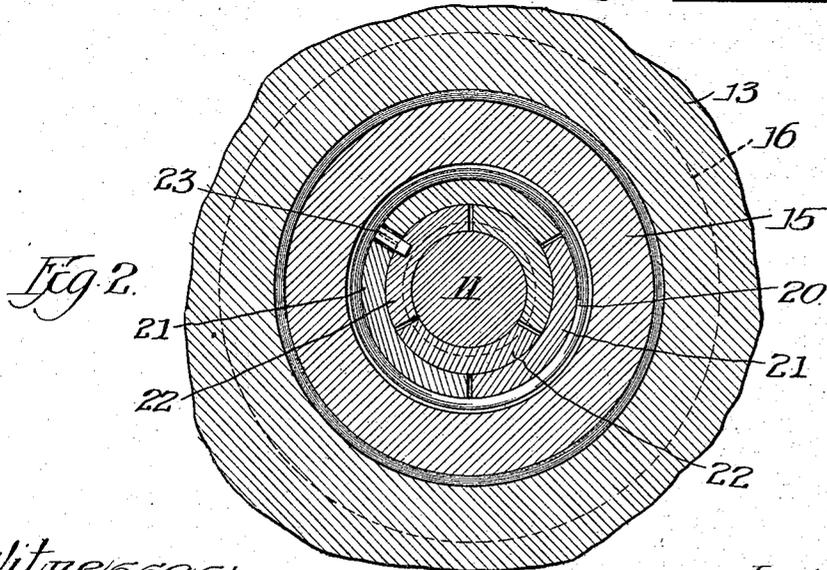
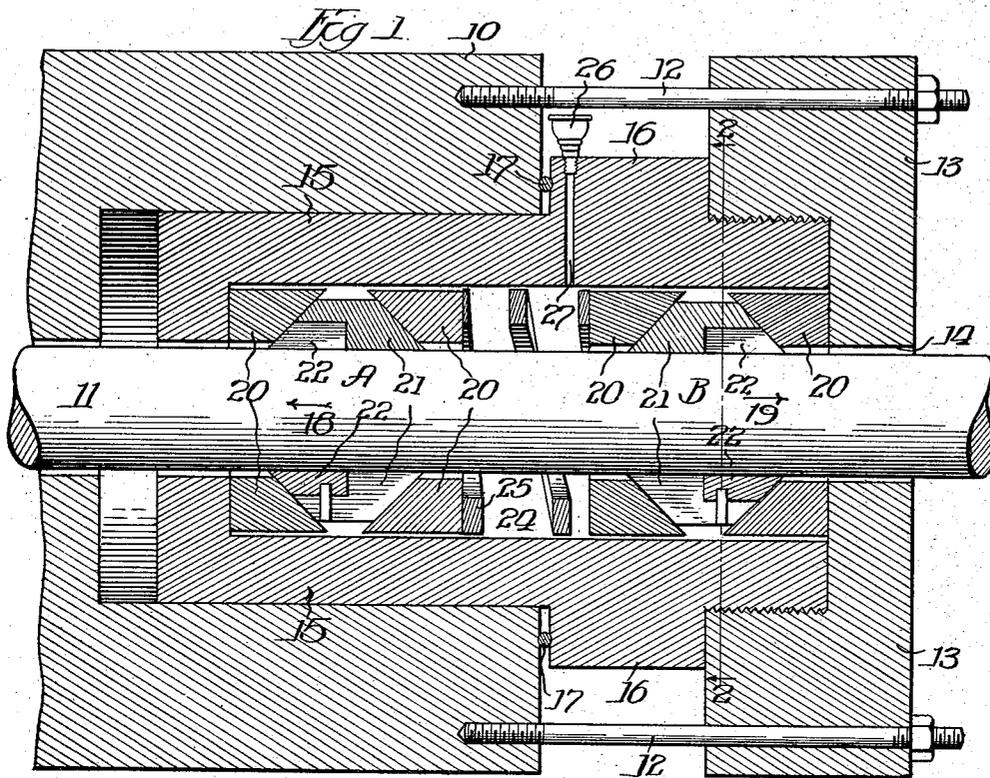


W. H. HOLMES.  
 METALLIC PACKING.  
 APPLICATION FILED FEB. 16, 1914.

1,166,686.

Patented Jan. 4, 1916.



Witnesses:

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*Att'y*

# UNITED STATES PATENT OFFICE.

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## METALLIC PACKING.

1,166,686.

Specification of Letters Patent.

Patented Jan. 4, 1916.

Application filed February 16, 1914. Serial No. 818,838.

*To all whom it may concern:*

Be it known that I, WILLIAM H. HOLMES, a citizen of the United States, residing at Blue Island, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Metallic Packing, of which the following is a specification.

My invention relates to metallic packing and has for its primary object the provision of improved apparatus of that class which shall have improved means for arresting the passage of fluid through the stuffing-box.

With the above and other objects in view this invention consists substantially in the combination, arrangement, and construction of parts all as hereinafter described, shown in the accompanying drawings which form a part of this specification and illustrate the preferred embodiment of my invention, and more particularly set forth in the subjoined claim.

In the drawings Figure 1 is a longitudinal section of a piston rod and stuffing-box in combination with my improved metallic packing. Fig. 2 is a section taken on line 2—2 of Fig. 1.

In many forms of engines, pumps or compressors conditions arise wherein pressure in the pumping or compressing chamber is alternated with exhaust or suction on that side of the piston nearest the stuffing-box, and hitherto many forms of metallic packing have been employed which served to arrest the passage of fluid under pressure in one direction only. My invention is adapted to arrest the passage of fluid under pressure in either direction, whether there be pressure in the steam chest or pumping chamber or suction.

In the drawings reference numeral 10 indicates the outer end of a stuffing-box within which is mounted for reciprocation a piston rod 11. Secured to the stuffing-box 10, preferably by means of bolts 12, is a follower 13, which is centrally apertured as at 14 for the passage of the rod 11, and is apertured on its inner face for engagement with the outer end of an auxiliary stuffing-box 15, the auxiliary stuffing-box and follower being preferably in threaded engagement. A portion of the auxiliary stuffing-box fits closely within the outer end of the main stuffing-box 10, and the auxiliary stuffing-box 15 is provided with the peripheral flange 16, which upon

its outer side abuts against the adjacent face of the follower 13, and upon its inner side is pressed toward the outer end of the main stuffing-box 10, a packing gasket 17 being interposed between the outer end of the main stuffing-box and the inner surface of the flange 16. The auxiliary stuffing-box 15 is hollow from its outer end inwardly to a point adjacent to its inner end, its inner end being centrally apertured for the passage of the rod 11. Mounted within the auxiliary stuffing-box 15 are two sets of metallic packing members A and B, the set A being positioned to arrest the inward passage of fluid in the direction of the arrow 18 and the set B being oppositely positioned to arrest the outward passage of fluid in the direction of the arrow 19. Each of these packing sets comprises a pair of pressing rings 20 countersunk on their adjacent faces; an outer packing ring 21 composed of segmental pieces; and an inner packing ring 22 partially inclosed by the outer packing ring 21 likewise composed of segmental pieces, the joints of the segmental pieces of the outer ring being staggered with respect to those of the inner ring. The inner packing ring 22 fits closely within the outer packing ring 21 and the two rings together are positioned between the pressing rings 20 and beveled on opposite sides in conformity to the countersunk sides of the pressing rings. To maintain the joints of the inner and outer segments of the packing rings in staggered relation one of the inner segments carries a radially projecting dowel pin 23, which protrudes between two of the segments of the outer packing ring, the segments of the outer packing ring between which the dowel pin protrudes being suitably cut away to accommodate it.

As is clearly shown in Fig. 2, the various segments of the inner and outer packing rings are slightly spaced from each other to admit of their contraction about the rod 11 as they are worn away by friction with that rod. The outer pressing ring 20 of the packing set B abuts against the follower 13 and the inner pressing ring 20 of the set A abuts against the inner end of the auxiliary stuffing-box 15. The sets A and B are positioned in spaced relation to each other, thus providing in the auxiliary stuffing-box 15 a chamber 24. Within the chamber 24 is positioned any resilient means, such as the

coil spring 25, for forcing the adjacent pressing rings 20 of the two packing sets away from each other. The resilient member 25, exerting a pressure in each direction 5 longitudinally of the rod 11, forces the packing sets A and B into close packing engagement with the rod 11 and maintains them in that engagement. For the purpose of assisting the packing functions of the 10 sets A and B, means are provided for introducing within the chamber 24 and maintaining therein a bath of some liquid, preferably a lubricant, the means consisting in an oil 15 cup 26 set in the flange 16 of the auxiliary stuffing-box and communicating with the chamber 24 through a passageway 27 provided therein.

It is to be noted that the only parts of the apparatus described which contact with 20 the rod 11 are the inner and outer packing rings 21 and 22, and it is further to be noted that the greatest diameter of the pressing rings 20 is less than the diameter of the hollow interior of the auxiliary stuffing-box 15. This construction admits of a slight transverse movement of the rod 11 during its reciprocation, such a movement as takes place frequently, for instance, when 30 high speed is developed in an engine. The inner packing ring 22 is set into an annular space provided in one side of the outer packing ring 21, the annular space extending within the outer packing ring a distance less than the length of the outer ring.

In the operation of my invention, when 35 pressure is exerted in the direction of the arrow 19, the packing set B arrests the passage of fluid in that direction, and if pressure is exerted in the direction of arrow 40 18 the passage of fluid in that direction will be arrested by the action of the packing set A. By means of the presence of a liquid in the chamber 24 the rod 11 is continually 45 immersed in a bath of that liquid or lubricant, and because of the reciprocation of the

rod 11, and of the force of capillary attraction, the liquid or lubricant is carried in each direction upon the rod and assists in the packing functions performed by the sets A and B.

In the accompanying drawings and in the foregoing description is set forth the preferred embodiment of my invention, but it is obvious that one skilled in the art may make modifications thereof without departing 55 from the spirit of the invention.

I claim:

In a pressure and vacuum packing for rods the combination with an auxiliary stuffing box having flat inside end faces 60 through which the rod passes loosely, of two spaced sets of packing members each comprising a pair of pressing rings fitting the rod loosely and with beveled countersunk inside faces and flat outside faces, the outside ring of each set making contact with 65 the inside end face of the stuffing box, and segmental packing rings between the pressing rings, the packing rings consisting of segmental recessed members on one side and staggered segmental members fitting the recesses on the other side, both sets of members having beveled faces corresponding to the countersunk pressing members, the recessed packing members of the two sets being 70 oppositely disposed on the rod, and a spring between the sets to hold said sets against the flat end faces of the stuffing box, and to hold the packing rings in engagement with the rod, the recessed packing 80 members being oppositely disposed to pack the rod for pressure and exhaust.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses, on this 14th 85 day of February, A. D. 1914.

WILLIAM H. HOLMES.

Witnesses:

H. G. ROCKWELL,  
ALLENA OFFUTT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."