C. C. BARTLETT.

PACKING FOR STUFFING BOXES.

APPLICATION FILED DEC. 6, 1915.

**1,198,514.** Patented Sept. 19, 1916.

FIG. 1

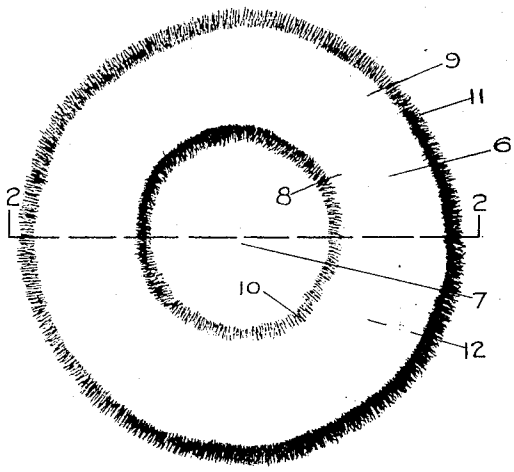



FIG. 2

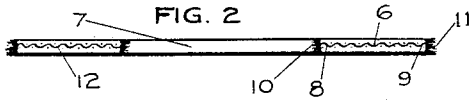



FIG. 4

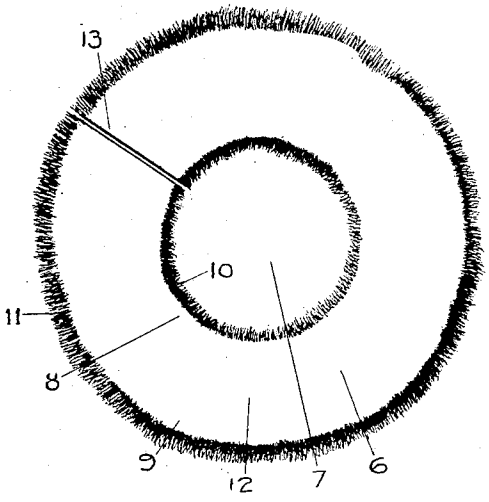



FIG. 3

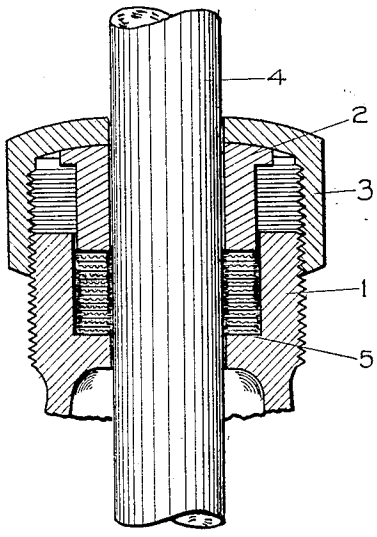
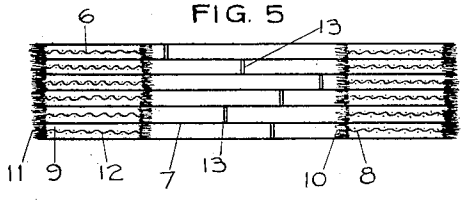



FIG. 5




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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

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## PACKING FOR STUFFING-BOXES.

1,198,514. Specification of Letters Patent. Patented Sept. 19, 1916.

Application filed December 6, 1915. Serial No. 65,357.

*To all whom it may concern:*

Be it known that I, CLEMENT C. BARTLETT, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Packing for Stuffing-Boxes; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates generally to improvements in packing for stuffing boxes, and it consists, essentially, in the novel and peculiar combination of parts and details of construction as hereinafter first fully set forth and described, and then pointed out in the claims.

The essence of my invention resides in a packing consisting of a plurality of like, independent units, each of which units is made from a hard relatively incompressible fibrous material. These units are generally of annular contour and of comparatively slight thickness, depending upon the size and shape of the stuffing box in which they are used.

I so manipulate this blank of annular or equivalent contour, that the outer and inner margins thereof become soft and pliable, so that the structure of the blank at these edges becomes segregated with respect to adjacent fibers for a proper depth either inwardly or outwardly, as the case may be. Moreover, I cause the creation of distinctively fuzzy edges along the inner and outer circumferences of the blank, so that these margins are soft, pliable and yielding, while the intermediate portion of the blank remains hard, smooth and relatively incompressible.

These blanks are introduced into the stuffing box one after the other so as to produce a superimposed stack of as many blanks as may be required, the outer fuzzy edges of the blanks contacting against the inner wall of the stuffing box, and the inner fuzzy edges embracing the rod or stem to be packed against leakage.

It is now to be pointed out that as the main body of the blank is of relatively incompressible material, no matter how tightly the gland or follower of the stuffing box be forced against the packing, no spreading thereof will take place. The fuzzy edges are initially lubricated and neatly embrace the rod or stem; excess pressure upon the blanks will not appreciably increase the initial pressure of contact of these fuzzy edges against the rod or stem to be packed.

In order to better understand my invention, I now refer to the drawing herein in which—

Figure 1 is a plan of my packing blank. Fig. 2 is a cross-section in line 2—2 of Fig. 1. Fig. 3 is a vertical cross-section of a stuffing box with my packing in position therein. Fig. 4 is a plan of the packing blank, having one side split whereby the same may be spread apart and the blank passed around a rod or stem. Fig. 5 is a vertical central section of a stack of packing blanks disclosing the respective splits staggered with respect to each other.

Like parts are designated by corresponding symbols or characters of reference in all figures of the drawing.

Fig. 3 discloses in general a stuffing box in its entirety, which may form a part of a steam cylinder, a pump cylinder, a steam trap, or any type of valve as the case may be, in which the stem, rod or trunnion 4 may rotate, oscillate or reciprocate. However, I do not confine myself to any particular type of stuffing box, but may employ any one capable of performing the proper functions.

In Fig. 3, 1 is known as the packing retaining case, 2 the gland, 3 the packing nut, through all of which members the stem, rod or trunnion 4 extends, which may oscillate, rotate or reciprocate as its function requires. The packing case (1) is internally bored and provided with a shoulder 5, my packing 6 being entered into said internally bored portion, with the lower blank of said packing resting against the shoulder 5.

Referring now to Figs. 1 and 2 particularly, 6 indicates the packing unit made from hard incompressible preferably fibrous material, and 7 the axial opening intended to neatly embrace the member 4. The soft pliable yielding inner and outer margins are shown at 8 and 9 respectively, and the distinctively fuzzy edges are shown at 10

and 11, while the hard smooth relatively incompressible portion of the blank is disclosed at 12.

In instances where the outer end of the member 4 is attached to a lever or other mechanism preventing the packing from being introduced over the same, I split one side of the blank as at 13 Fig. 4, whereby the edges may be spread apart and the packing slipped around the member 4 as is evident.

In operation I first place a lubricant on the opposite faces, as well as into the fuzzy edges of the blanks 6, then introduce them into the packing retaining case 1, and draw them into full facial contact by tightening up the nut 3. The interior fuzzy edges 10 neatly embrace the member 4 effectually preventing the leakage of water, steam, air or gas, and there being practically no pressure against the rod, friction is reduced to a minimum. The outer fuzzy edges 11 neatly make contact with the inner wall of the packing retaining case 1, and thereby prevent leakage in a like manner as at the rod or stem 4.

This stuffing box and packing are especially adapted for use in steam traps of the tilt-tank type which, usually, have hollow trunnions which require packing to prevent the leakage of fluid through these trunnions to, and from, the tilting tank. In this application of my invention the conditions are such that the least possible friction in the stuffing box of these trunnions is highly desirable in order that the tilting tank respond to the change in water level within itself. As this tilting tank also operates valves which control the flow of the fluid, I have found this form of stuffing box and packing very desirable for use on such valves as well as on the trunnions. In the use of ordinary packings applicant has experience no end of trouble due to binding and sticking of the moving parts, in fact, the use of certain packings render this type of trap inoperative. It is essential in this type of mechanism that friction of the moving parts be reduced to a minimum and at the same time fluid-tight joints be maintained at all times regardless of length of service, changes in temperature, and also changes in pressures. Furthermore, this packing has been repeatedly subjected alternately to gases and liquids varying in pressure and temperature for short periods, and applicant here states that this is the only form of packing, after years of investigation and experience, that has met the demands required of it. The plurality of superimposed sheets or disks, form, substantially a relatively incompressible and inexpandible unit, so that no pressure of contact against the valve stem is exerted, yet the marginal edges of the various disks being segregated as to adjacent fibers, produces a plurality of successive, soft, yielding, absorptive, edges, which effectively prevent and absorb any leakage around the stem.

I have hereinbefore disclosed the preferred mode of practising my invention, but I reserve the right to make such and any changes as might occur to one skilled in the art to which this invention appertains, or to make any and all such alterations as may be permitted under the doctrine of equivalents.

Having thus fully described my invention I claim as new, and desire to secure to myself by Letters Patent of the United States:—

1. A stuffing box, including, a packing-container, a movable member passing through said container, and a plurality of superposed, flat, annular, integral, duplicate, fibrous, blanks therein, each of said blanks having its inner and outer margins yielding and segregated with respect to adjacent fibers, and the intermediate portion of each of said blanks being unyielding and smooth, and constructed for intimate facial contact against adjacent blanks.

2. A stuffing box, including, a packing-container, a movable member passing through said container, and a plurality of superimposed flat, annular, integral, duplicate, fibrous, blanks therein, each of said blanks having its inner and outer margins yielding, soft, and absorptive, and segregated with respect to adjacent fibers, and the intermediate portions of each of said blanks being hard, unyielding, and smooth, and constructed for intimate facial contact against adjacent blanks, the whole of said blanks forming a substantially incompressible and inexpansible unit, whereby no lateral pressure is exerted by said unit, and having successive absorbent edges coacting to absorb moisture from the surface of said movable member.

In testimony that I claim the foregoing as my invention, I have hereunto set by hand.

CLEMENT C. BARTLETT.

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