June 12, 1923. 1,458,574

J. A. CUMMINGS, JR

PACKING MATERIAL

Filed Jan. 18, 1921

Fig. 1.

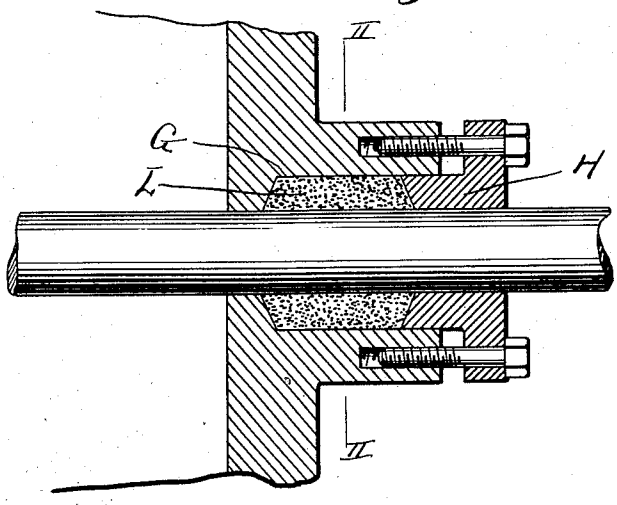
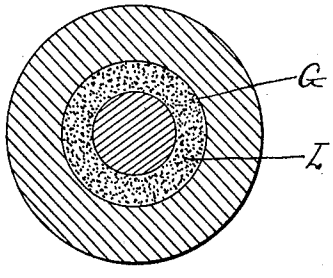


Fig. 2.



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UNITED STATES PATENT OFFICE.

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PACKING MATERIAL.

Application filed January 18, 1921. Serial No. 438,074.

To all whom it may concern:

Be it known that I, JOSEPH A. CUMMINGS, Jr., a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Packing Material, of which the following is a specification.

This invention relates to an improved packing material, and particularly to a packing material which, altho suitable for many purposes, is primarily intended for use in the packing of piston rods and the like.

An object of the invention is to provide a packing material which may be handled, for placing it within a stuffing box, while the material is in plastic form, and which will provide a durable and efficient packing for the piston rod.

A further object is to provide a packing of the kind indicated which will possess certain lubricating qualities such as serve to lessen the frictional resistance of the packing to the movements of the piston rod.

A further object is to provide a packing of the kind indicated which, altho placed within a stuffing box in plastic form, will, after a period of use, become sufficiently solidified so that when occasion arises for its removal it may be readily removed as a solid body.

Other objects and aims of the invention, more or less specific than those referred to above, will be in part obvious and in part pointed out in the course of the following description of the elements, combinations, arrangements of parts and applications of principles, constituting the invention; and the scope of protection contemplated will be indicated in the appended claims.

In the accompanying drawings which are to be taken as a part of this specification, and in which I have shown merely a preferred form of embodiment of the invention:—

Figure 1 is a sectional view thru a conventional form of stuffing box showing the same to be packed with a packing material according to this invention, and

Figure 2 is a transverse sectional view taken upon the plane of line II of Fig. 1.

In attaining the above objects, it has been found that the same may be admirably attained by the use of lignum vitæ saw dust or by using lignum vitæ wood which has been shredded, ground or otherwise reduced to a consistency in which it may be mixed with a suitable liquid to provide a plastic body. A quantity of plastic material, as L, produced in this manner may be thrust by hand into an empty stuffing box, as G, until the box is suitably filled after which the cap piece H is tightened into place so that it serves to compress the material to an appropriate degree against the piston.

No further treatment is required except that from time to time it may be necessary to slide back the cap H and place into the box a small additional quantity of the packing material, the cap being then returned to press this new quantity against that previously within the box.

A tightly closed joint may thus be maintained for an indefinite period.

It has been found, in practice, that due to the frictional heat generated by the moving piston rod, or to the heat of steam or other medium within the cylinder, and to the pressure of the gland, or cap, H, the packing material becomes solidified into an appropriately solid and impervious body which may thereafter be handled for being removed from, or placed into, the stuffing box.

The body, as thus produced and solidified, is nevertheless of a sufficiently yielding character that it will readily yield under the pressure of the cap H to an appropriate degree for maintaining it in sealing engagement at all times with the moving piston.

Since packing rings made up of compressed bodies of material may be produced in this manner, and since rings thus produced may be used within any stuffing box of suitable size and proportion, it may be here mentioned that it is a feature of this invention to provide packing rings produced in this manner.

Of course it will be understood, in this latter connection, that the moulds required for producing these packing rings need not necessarily be actual parts of machine cylinders; that is, they may be moulds of any appropriate construction suitable for properly shaping the material and for applying heat and pressure thereto.

Packings, as described, produced of lignum vitæ; that is, both before and after solidification, possess peculiar advantages principally among which may be mentioned:

First, that they are subject only to a negligible amount of expansion and contraction

under changes in heat and moisture; second, that they are not detrimentally affected by ordinary commercial acids or other mediums in association with which machinery packings are ordinarily employed; third, they are not affected by, nor do they produce, any galvanic action. Also, they do not produce any other chemical action detrimental either to themselves or associated elements of mechanism; and fifth, they contain a natural oil, or wax, inherent to the lignum vitæ wood, which renders them self-lubricating to a desirable degree so that their engagement with the moving piston rods produces a minimum of friction and inversely enables the packing itself to last for extended periods without necessity for replenishing or tightening of the gland.

Any one, or more, of a number of different liquids may be used for reducing the wooden material to plastic consistency, the choice of liquids being dependent somewhat upon the location of the stuffing boxes and upon the work performed by the cylinder upon which the stuffing box is formed.

Ordinary pure water has been found to be suitable for producing a mixture for general use.

A non-freezing liquid, such as a liquid base oil or like liquid, has been found suitable for use where the packing is to be employed on brine pumps, that is, within stuffing boxes which are subject to freezing temperatures.

Liquids, such for instance as castor oil, which maintain their consistency under heat, may be employed where the stuffing box occurs upon high pressure steam cylinders or the like; that is, where the stuffing boxes are subject to high temperatures.

Other materials which may be used in combination with the lignum vitæ with varying degrees of success are kerosene oil, cylinder oil and graphite.

In all instances, however, it is to be understood that the lignum vitæ material forms the essential body and that the liquid constitutes only a temporary binding material which usually disappears to a greater or less extent, and after the packing has been in use for a short time. The only exception to this is that in some instances it may be desirable to mix the reduced lignum vitæ a small quantity of waterproof glue, or rubber dust or lead dust, or of all said ingredients, for service as a permanent binder under certain circumstances.

Here it may be mentioned that in some instances; that is, where the position of the stuffing box will permit, the reduced wood may be placed into the stuffing box in its dry condition, no binder being present.

Where the term "reduced" is employed in the attached claims, said term is intended to describe the wood in its shredded, ground, or otherwise reduced condition as hereinbefore mentioned.

As many changes could be made in this construction without departing from the scope of the invention as defined in the following claims, it is intended that all matter contained in the above description, or shown in the accompanying drawings, shall be interpreted as illustrative only and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A stuffing box packing comprising reduced lignum vitæ.

2. A stuffing box packing consisting of a plastic body made up of reduced lignum vitæ and a liquid binder.

3. A stuffing box packing made up of reduced lignum vitæ compressed into shape suitable for use as a packing ring.

In testimony whereof I affix my signature in the presence of two witnesses.

JOSEPH A. CUMMINGS, Jr.

Witnesses:

L. Gessford Handy,

S. J. Aumiller.