No. 632,442. Patented Sept. 5, 1899.

R. E. BYLE, H. A. FILLMORE & R. H. NICHOLSON.

ROD PACKING.

(Application filed Nov. 26, 1898.)

(No Model.)

FIG. 1.

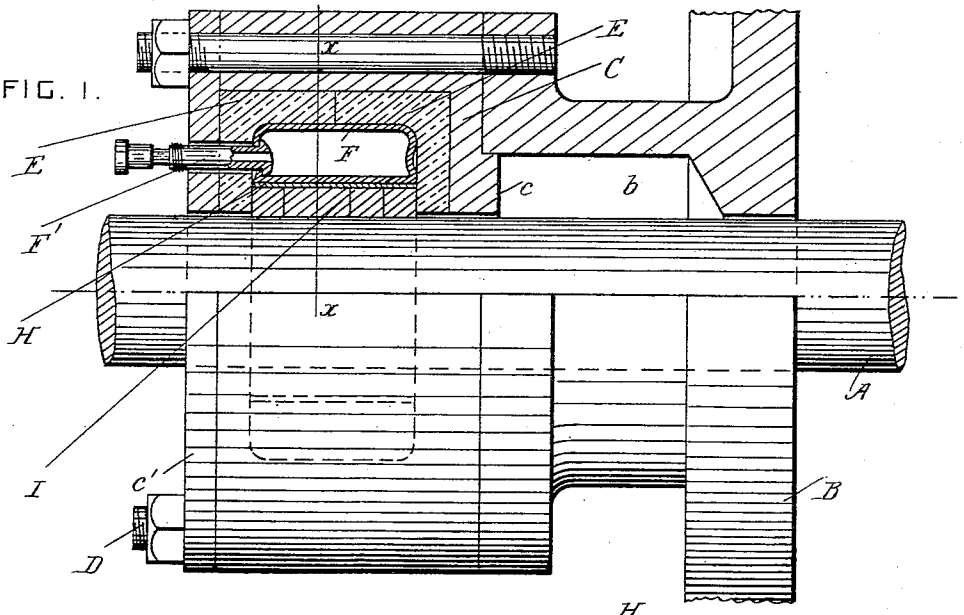


FIG. 2.

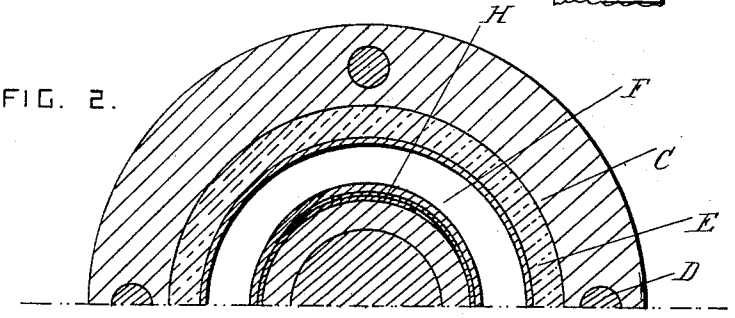
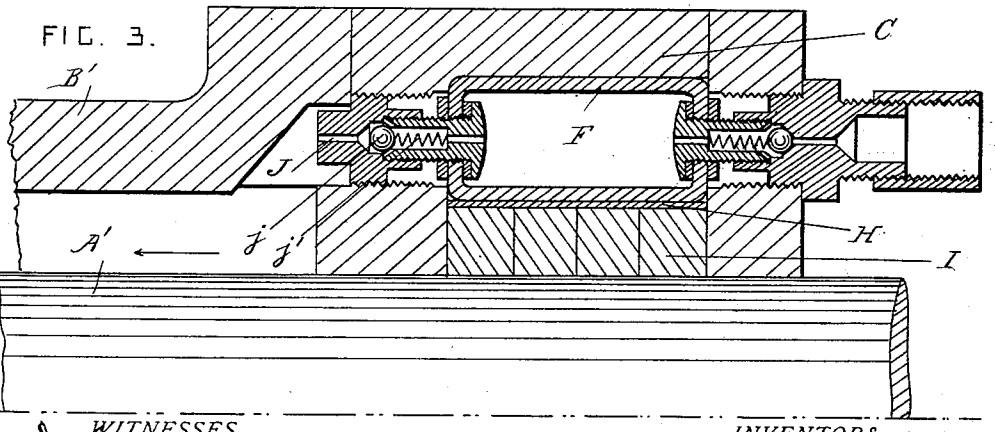


FIG. 3.



WITNESSES

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ROBERT E. BYLE, HARRY A. FILLMORE, AND ROBERT H. NICHOLSON, OF WILKES-BARRÉ, PENNSYLVANIA.

ROD-PACKING.

SPECIFICATION forming part of Letters Patent No. 632,442, dated September 5, 1899.

Application filed November 26, 1898. Serial No. 697,529. (No model.)

To all whom it may concern:

Be it known that we, ROBERT E. BYLE, HARRY A. FILLMORE, and ROBERT H. NICHOLSON, citizens of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Rod-Packing; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to packing for rods and plungers; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a partial longitudinal section through a stuffing-box of a steam-engine provided with packing according to this invention. Fig. 2 is a partial cross-section taken on the line *x x* in Fig. 1. Fig. 3 is a partial longitudinal section showing a modification of the packing and showing it applied to a pump-plunger.

A is the piston-rod, and B is a portion of the engine-cylinder.

C is the packing-chamber, which is carried by the cylinder. When the packing-chamber is to be applied to a cylinder having an ordinary stuffing-box *b*, the chamber C is provided with a projection *c*, which engages with the recess of the box *b* and has a separable cover-plate *c'*.

D are stud-bolts which secure the packing-chamber and its cover-plate rigidly to the stuffing-box *b*.

E E are two cup-shaped liners of asbestos or other material which is a bad conductor of heat. These liners are fitted within the packing-chamber, with their edges abutting against each other.

F is an inflatable tube which is seated within the liners E. The tube F is formed of any approved elastic material or composition, such as india-rubber and canvas.

F' is an inflating-pipe provided with a check-valve (not shown) of any approved construction. The inflating-pipe is preferably passed through an opening in the cover-plate and in one of the liners, so that access to it can easily be had.

H is a spring-band, which is arranged on the inner side of the annular tube F and which is provided with overlapping end portions, as shown in Fig. 2.

I is packing material inserted in the liners between the spring-band and the piston-rod. The packing material preferably consists of a series of rings of fibrous material arranged side by side. The spring-band is preferably arranged to press the packing against the piston-rod, and the inflatable tube F also presses the packing against the rod. The tube F can be inflated or expanded with or by any approved fluid, such as air or water. The spring-band equalizes the action of the tube upon the packing-rings, but its use, although of great advantage, is not absolutely essential. The spring-band supports the packing when the tube is deflated and enables the packing to be arranged in position without first inflating the tube.

The asbestos liners may be omitted when the packing is used on a pump-rod or where it is otherwise protected from being injured by heat.

Instead of inflating the tube F periodically through the pipe F' the tube F may be inflated or expanded automatically.

In Fig. 3 B' is a portion of a pump-barrel, and A' is a portion of its plunger. The packing is the same as hereinbefore described. J is a lateral passage at the side of the packing-chamber, which connects the interior of the tube F with the interior of the pump-barrel. The passage J is provided with a valve *j*, which opens inwardly and which is normally held to its seat by a light spring *j'*. If desired, the other side of the packing-chamber may have a similar passage and valve and may be connected to the pump-barrel or other source of pressure by a pipe. (Not shown.) The valve *j* admits the pressure to the tube F at each compression-stroke of the plunger and holds the pressure in the tube during the return stroke, and this pressure is available for expanding or setting up the packing material, because the pressure of the fluid in the

cylinder or pump-barrel does not have as free an application or access to the inner surface of the packing material as it does to its outer surface, and the effective pressure operating to press the packing material inward against the rod is therefore in excess of the actual effective pressure, if any, between the packing material and the rod, which tends to force the packing material outward.

We do not herein broadly claim means for expanding the inflatable tube automatically nor the specific construction of the valve mechanism preferably used, as the same is claimed in a separate application, filed on November 25, 1898, Serial No. 697,400.

What we claim is—

1. The combination, with a packing-chamber, of an annular ring of packing material arranged in the said chamber, an annular inflatable tube seated in the said chamber and encircling the said packing material, and a spring-band interposed between the said tube and packing material, and supporting the packing material when the tube is deflated, substantially as set forth.

2. The combination, with a packing-chamber, of an annular ring of packing material, an annular inflatable tube for setting up the said packing material, and a liner of non-heat-conducting material interposed between the said tube and chamber and protecting the said tube and packing material, substantially as set forth.

3. The combination, with a packing-chamber, of two cup-shaped liners of non-heat-conducting material arranged edge to edge within the said chamber, an annular ring of packing material arranged between the said liners, and an annular inflatable tube encircling the said packing material and seated within the said liners, substantially as set forth.

4. The combination, with a packing-chamber having a hole in its side, and a rod slidable in the packing-chamber; of packing material, an annular inflatable tube for setting up the packing material against the rod, a tubular screw-threaded stem secured to the said tube, a plug provided with an air-passage and engaging with the said hole and stem, and a valve controlling the said air-passage and permitting the said tube to be inflated, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ROBERT E. BYLE.
HARRY A. FILLMORE.
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Witnesses:
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