

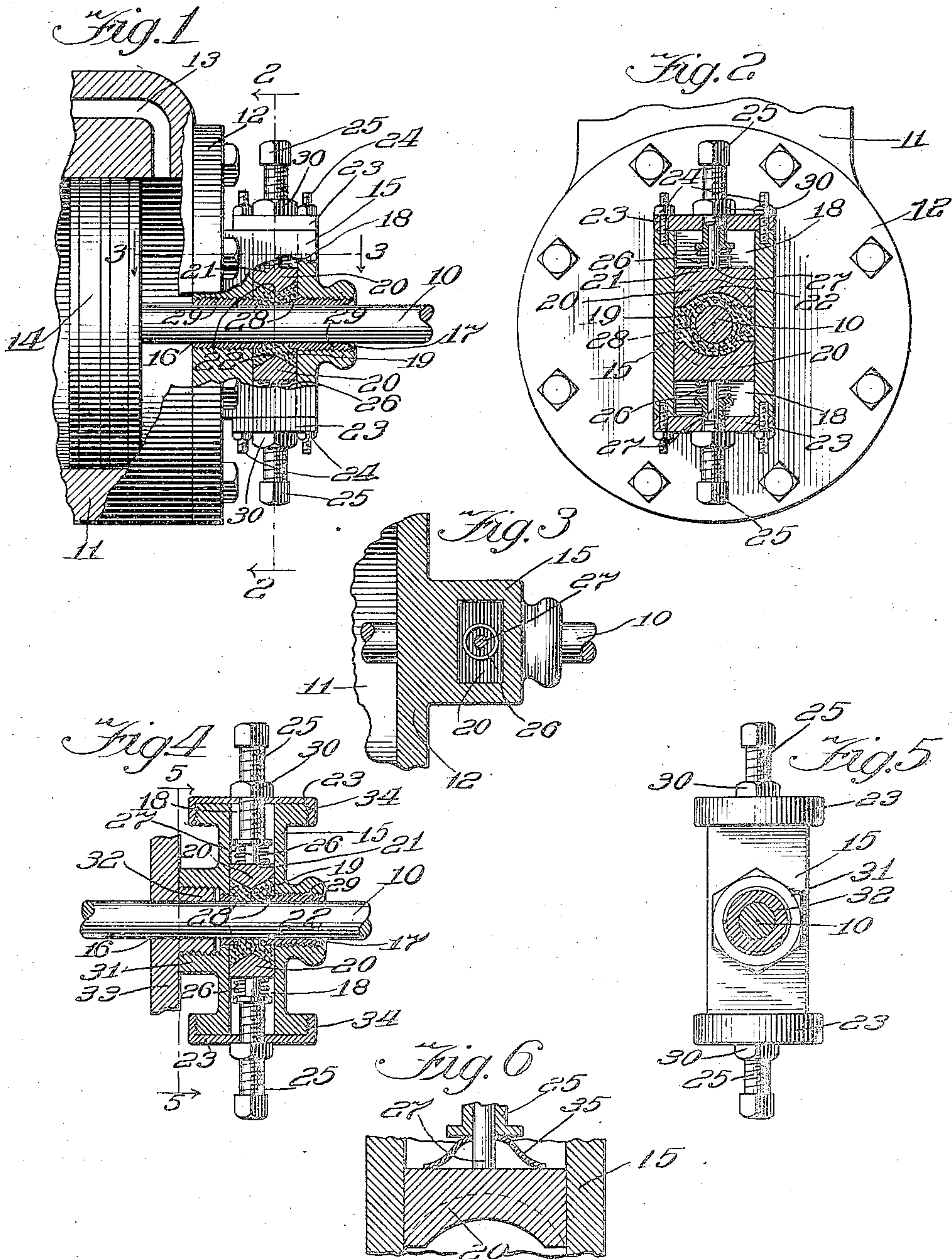
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F. GIELOW, SR.

STUFFING BOX.

APPLICATION FILED JULY 31, 1905.



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# UNITED STATES PATENT OFFICE.

FREDERICK GIELOW, SR., OF CHICAGO, ILLINOIS.

## STUFFING-BOX.

No. 845,033.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed July 31, 1905, Serial No. 271,972.

*To all whom it may concern:*

Be it known that I, FREDERICK GIELOW, Sr., a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Stuffing-Boxes, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to a device for securing a joint impervious to fluids between a movable rod and the wall of a vessel through which it leads.

More particularly the invention relates to such a device in which a tight joint is obtained by compressing a quantity of packing material into a chamber or cavity formed in the wall of the vessel about the rod.

The object of the invention is to simplify the construction and operation of devices of this kind, to increase the efficiency and durability, and to provide a joint affording less frictional resistance to the movement of the rod than has heretofore been obtained.

The invention consists in the improved structure to be hereinafter more particularly described and claimed, and which provides a chamber for receiving the packing material, having lateral openings through which suitable followers are adjustably and yieldingly advanced to compress such material upon the rod.

A further detail of the invention consists in the use of flake graphite moistened with water or oil as a packing material in stuffing-boxes.

In the accompanying drawings, Figure 1 is an elevation, partly in vertical section, showing one form of the device applied to the power-cylinder of a fluid-motor. Figs. 2 and 3 are sectional views on the lines 2-2 and 3-3, respectively, of Fig. 1. Fig. 4 is a longitudinal section showing a modified form of the device. Fig. 5 is a vertical section on the line 5-5 of Fig. 4, and Fig. 6 is a sectional detail showing another modification in the construction.

In Figs. 1, 2, and 3 a detail of the rod of a fluid-motor appears at 10, the device of the invention being shown as employed for preventing the escape of the actuating fluid from the power-cylinder 11 between this rod and the walls of an aperture in the cylinder-head 12, through which it leads. A steam-port 13 is provided for the power-cylinder, and the usual piston-head appears at 14.

On the outer face of the cylinder-head is a box-like casing 15, which is pierced by the piston-rod 10. As shown in the drawings, the walls of this casing are formed integral with the material of the cylinder-head 12 and are apertured at 16 and 17 to receive the piston-rod. The casing is chambered, as indicated at 18, the chamber being preferably of rectangular cross-section and extending in a direction perpendicular to the axis of the rod from end to end of the casing.

A quantity of packing material 19, preferably graphite, is introduced in the chamber 18 and is compressed upon the sides of the rod by suitable followers 20, shown as two in number and operating from opposite directions. Each of the followers has a rectangular body portion 21, adapted to slide within the chamber 18, and a tapering or wedge-like face 22 for bearing upon the packing material, the thin edge of the wedge preferably being curved to arch over the rod, as most clearly shown in Fig. 2. A cap 23 is applied to either end of the casing 15, being secured to its seat by bolts 24, and a set-screw 25 enters the chamber 18 through each of these caps. The followers 20 are advanced upon the packing material by springs 26, reacting between the backs of the followers and the set-screws 25, and a stem 27, rising from each of the followers, loosely engages the hollow interior of the shank of the corresponding set-screw for maintaining the correct alinement of the parts.

To form a seat for the packing material designed to efficiently prevent leakage between the packing and the side walls of the chamber 18, there is provided upon the interior of each of these walls an annular shoulder 28, surrounding the aperture, as 16 and 17. This shoulder is conveniently formed by introducing a sleeve or collar 29 into each of the apertures, such sleeve being of sufficient length to extend a short distance into the interior of the chamber 18 and being of the required size to loosely receive the rod 10. They are preferably secured in place by having a threaded engagement with the walls of the chamber, as most clearly shown in Fig. 1.

In setting up the device for use the caps 23 will be removed and a quantity of the packing material introduced into the chamber 18 in front of the followers 20. The caps are then replaced and the set-screws 25 turned so as to bear on the springs 26 with



sufficient force to effect a tight joint between the rod 10 and the packing material. As the packing material is worn away by the moving rod it will be advanced by the springs to maintain a tight joint, the tension on the springs being varied as desired by turning one or both of the set-screws 25. Preferably there is provided a lock-nut 30 upon each of the set-screws for engaging the outer face of the cap 23 to maintain any desired adjustment of the parts.

By employing a packing material 19 of mineral graphite, which is preferably used in flake form and prepared by moistening with water or oil until it assumes a pliable consistency, a durable joint is obtained, affording but little frictional resistance to the movement of the rod.

If desired, the casing 15 may be formed independently of the walls of the chamber or vessel out of which the movable rod which it is intended to pack leads, as shown in Figs. 4 and 5. It is then preferably provided with a threaded nipple 31, by means of which it may be attached to a correspondingly-threaded boss 32, formed on the wall 33 of such a chamber. When the device is constructed in this form, the cap 23 most conveniently has a threaded engagement with the casing 15, as indicated at 34.

In Fig. 6 the device is shown as provided with a leaf-spring 35 for advancing the followers 20, this form of spring being preferably employed when the device is constructed in the larger sizes. By providing the followers with the tapering or wedge-like face described a spreading effect is produced upon the packing material, the tendency being to crowd it toward the intersection of the inner wall of the packing-chamber and the movable rod, where otherwise leakage would

be most likely to occur. Leakage between the wall of the packing-chamber and the packing material is further avoided by means of the shoulder 28, against which the packing material is forcibly compressed by the spreading action of the follower.

I claim as my invention—

1. The combination with a movable rod, of a stuffing-box therefor having a chamber crossed by the rod, a packing material within the chamber and a follower operating upon the packing material at an angle to the axis of the rod and having a wedge-like face, the edge of the wedge being transverse to the rod.

2. The combination with a movable rod, of a stuffing-box therefor having an oblong rectangular chamber crossed by the rod, the longer axis of the chamber being transverse to the rod and the chamber having openings at its ends, a removable cap-plate for each of such openings, a plastic packing material within the chamber, oppositely-disposed followers bearing on the packing material, each of the followers having a wedge-like face, the edge of the wedge being transverse to the axis of the rod, and a spring reacting between each of the followers and one of the cap-plates.

3. The combination with a movable rod, of a stuffing-box therefor having a chamber crossed by the rod, a packing material within the chamber and a follower operating upon the packing material at an angle to the axis of the rod and having a wedge-like face, the edge of the wedge being transverse to the rod and being curved.

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