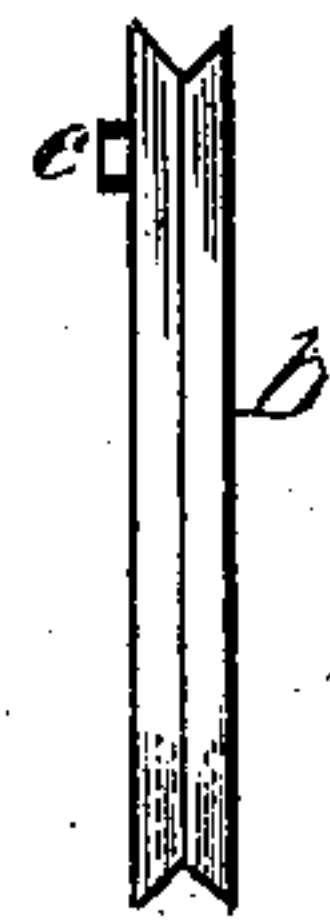
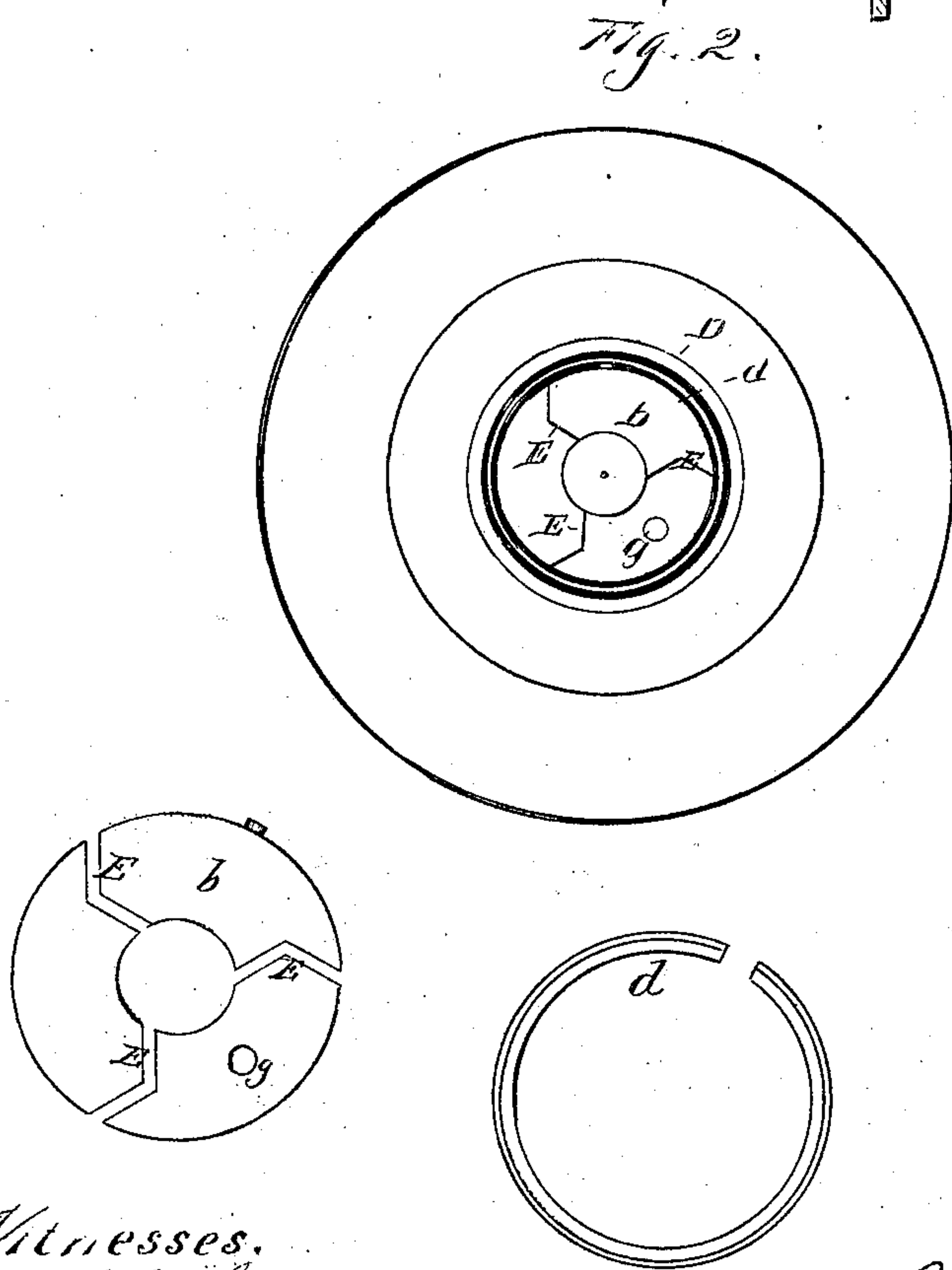
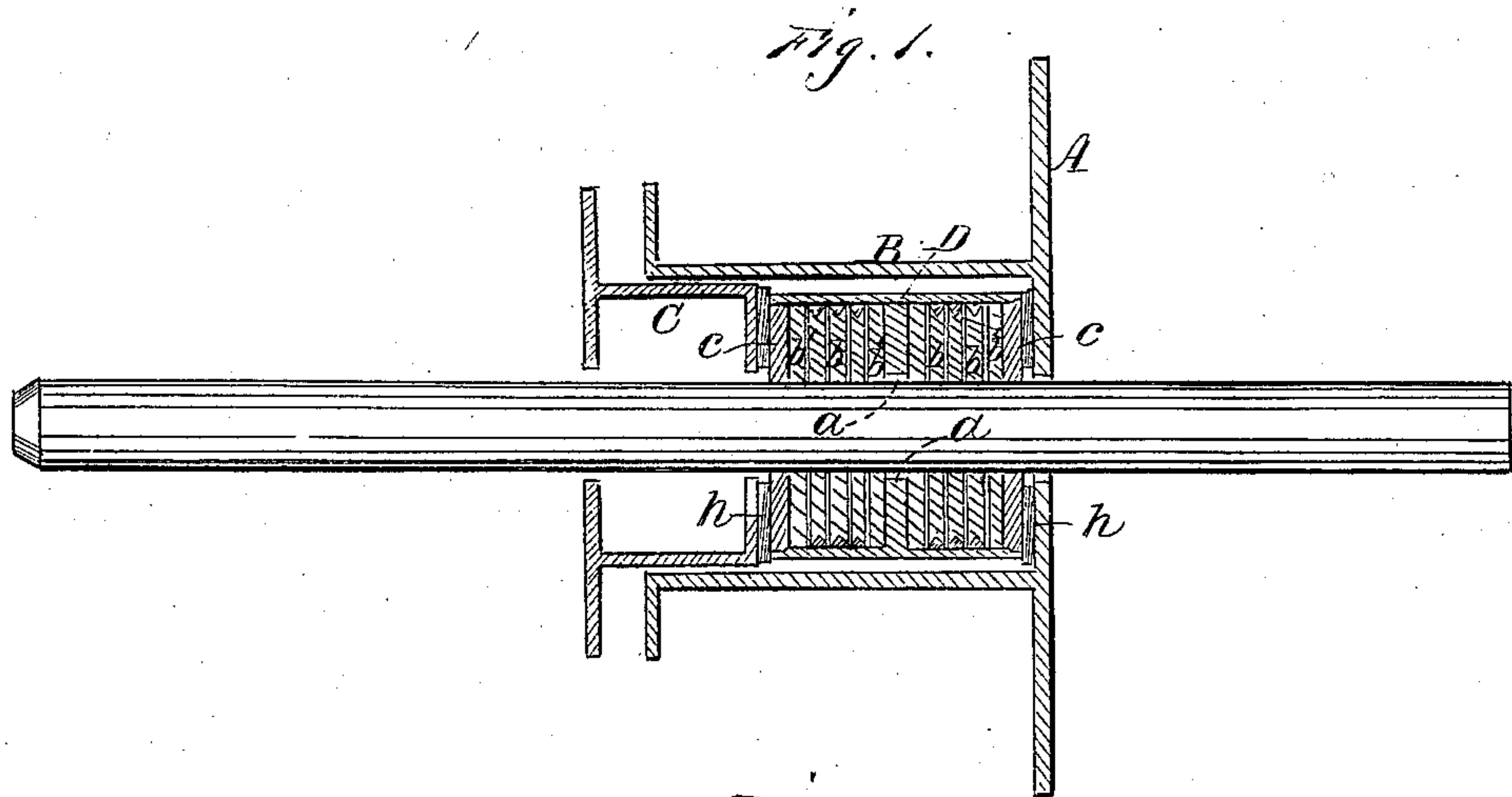


W.H.T. Clark.

Piston Packing.

No. 93,518.

Patented Aug. 10, 1869.



Witnesses.
Geo. H. Strong.
J. L. Borne

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Wm. H. T. Clark
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United States Patent Office.

WILLIAM H. T. CLARK, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 93,518, dated August 10, 1869.

IMPROVEMENT IN STUFFING-BOXES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM H. T. CLARK, of the city and county of San Francisco, State of California, have invented a Metallic Stuffing-Box; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains, to make and use my said invention or improvements without further invention or experiment.

The object of my invention is to provide an improved metallic stuffing-box or packing for the piston-rods of steam-engines or pumps, propeller-shafts, and for making a tight joint in all cases where there is a rod or shaft moving partly within a medium under pressure, and partly outside of that medium; but the stuffing-box is so constructed that it allows considerable side motion to the rod or shaft, and, in case of any portion of the machinery getting out of line, the rod will not bear against the sides of the opening in the cylinder-head, or the stuffing-box, nor depend upon them to guide it.

To effect this, I construct a stuffing-box with a gland or follower, as in the cylinder-head of a steam-engine

Within this stuffing-box is placed a short cylinder, with a cover at each end, and containing the packing-rings, which may number ten or more, five in each of the two compartments into which the cylinder is divided.

The piston-rod passes through the ends of this short cylinder, and also through the contained rings or disks, which are cut at various points on their circumference, and are kept close to the rod by encircling springs, so that the rod passes perfectly steam-tight through the cylinder.

The two ends of the packing-cylinder may be faced, or have an elastic packing, which makes it steam-tight against the interior face of the gland and the end of the stuffing-box.

The openings through the gland, by which the rod passes out from the stuffing-box, are considerably larger than the rod, so that it will not press against the sides, if any portion of the machinery gets out of line.

To more fully describe my invention, reference is made to the accompanying drawings, and letters of reference, of which—

Figure 1 is a longitudinal vertical section.

Figure 2 is a transverse vertical section.

A is a portion of the cylinder-head of a steam-engine or pump, and B is a cage projecting from it, as in the ordinary form of stuffing-box; C is the gland or follower; and in order to apply my invention, these parts are not materially varied from the present forms, except that the different openings, through which the piston-rod passes, are made considerably larger than the rod, so as to permit a lateral motion without its pressing against, or being in any way guided by the sides of these openings, if it gets out of line.

In order to prevent the escape of steam, I place within the cage a short cylinder, D, which has a perforated diaphragm, *a*, in the centre.

Within this cylinder, and at each side of the diaphragm, the packing-rings or disks *b b* are placed; and the covers *c c* are then fitted to the ends of the cylinder.

The disks are cut, as shown at E, and are encircled by an elastic ring, *d*, which keeps them together, and in close contact with the piston-rod.

In order to make the disks break joints, and remain steam-tight, they are formed with a pin, *e*, and a corresponding cavity, *g*, in the two adjoining disks, which prevent them turning.

The heads or ends of the cylinder D may be faced, or elastic disks *h* may be placed between the ends and the interior ends of the stuffing-box, thus preventing any escape of steam around the outside of the cylinder D.

The disks *b b* all fit loosely within the cylinder D, and those which rest against the heads *c c* and the diaphragm *a* are solid. Those which are between these solid ones are cut, as before described.

The operation is as follows:

When steam is admitted to the forward end of the cylinder, some of it will escape into the stuffing-box, and, being prevented from passing around the outside of the cylinder D by the packing *h*, it will enter it around the piston-rod, and expand between the first solid disk *b'* and the cut disk next to it, also passing around the outside of the disks, and tending to keep them in close contact with the rod.

The pressure will also force the first solid disk *b'* closely against the head *c*, and all the disks between the first one and the diaphragm *a* will be kept in close contact with each other, the last one pressing against the diaphragm.

Any leakage of steam into the chamber beyond the diaphragm would produce a similar effect in that chamber.

Any lateral or irregular motion of the piston-rod will communicate itself to the disks within the cylinder, the whole moving as a solid body.

The cut disks are prevented from displacement by their connection with the solid ones at the ends and centre, and the whole forms a steam-tight packing without binding or pressing the piston-rod in any of its movements.

This packing may be made of different sizes, and sold separately, as it can be applied to any pump or engine in a few minutes.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The movable cylinder D, with the enclosed disks *b b*, rings *d*, and the elastic disks *h*, substantially as herein described.

In witness whereof, I have hereunto set my hand and seal.

WM. H. T. CLARK. [L. s.]

Witnesses:

GEO. H. STRONG,
WILLIAM STANFORTH.