

(No Model.)

J. W. DUDLEY.
PISTON ROD PACKING.

No. 595,675.

Patented Dec. 14, 1897.

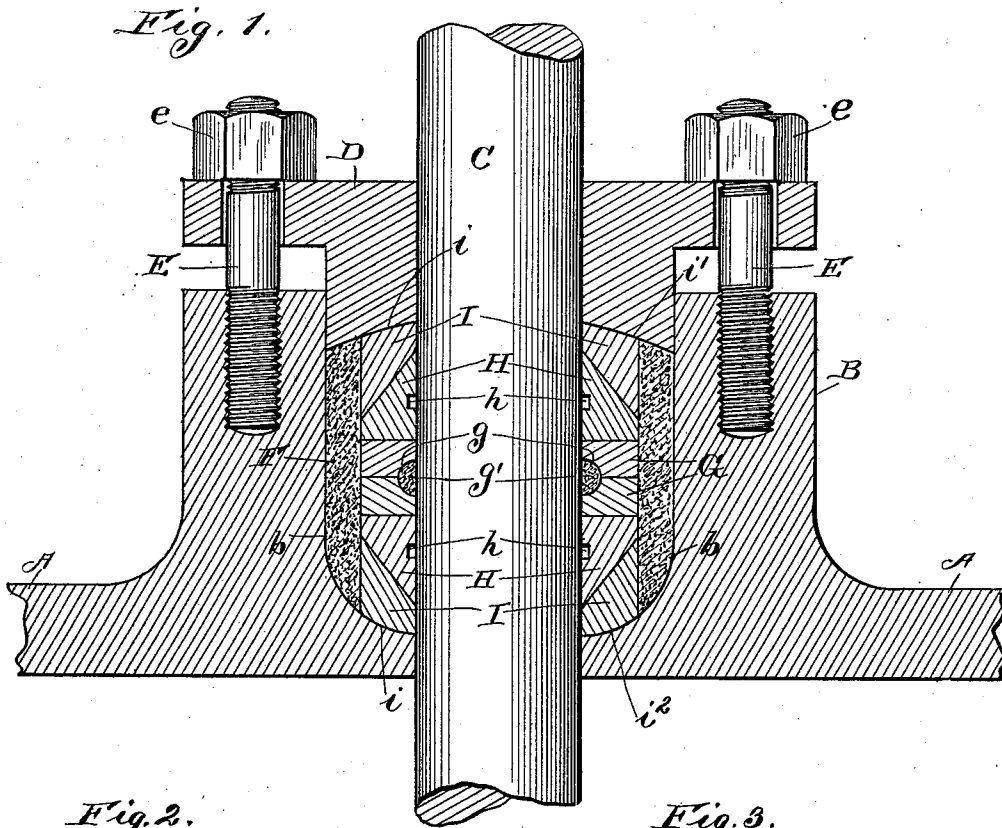


Fig. 2.

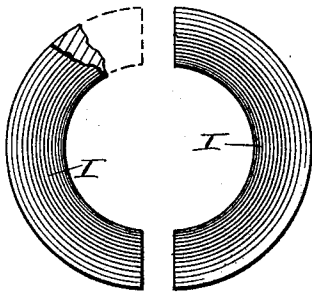
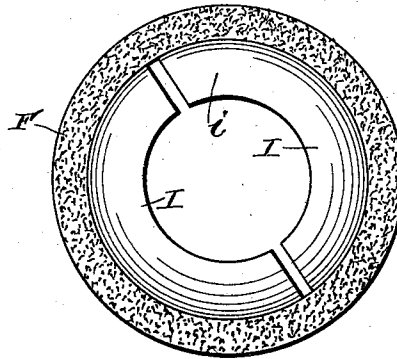


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN W. DUDLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE DUDLEY
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PISTON-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 595,675, dated December 14, 1897.

Application filed November 25, 1896. Renewed May 17, 1897. Serial No. 637,006. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. DUDLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Piston-Rod Packings, of which the following is a specification.

This invention relates to improvements in packings for piston-rods, valve-stems, and other moving rods or parts of machinery; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The objects of my invention are, first, to provide a packing for piston-rods and the like which shall be simple and inexpensive, easily applied, and durable and effective in operation, and, second, such a packing which by reason of the peculiar construction of its parts may be readily adjusted to afford a tight joint around the piston-rod and at the same time to allow the rod or stem a slight lateral play to accommodate any imperfect alinement which might exist in the arrangement of the parts of the machine.

Another object of my invention is to provide a packing the parts of which shall be so constructed and arranged as to keep the piston-rod in a perfectly-lubricated condition.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a sectional view of a stuffing-box surrounding a piston-rod and illustrating my packing in position. Fig. 2 is a bottom plan view of one of the split packing-rings, partly broken away and in section; and Fig. 3 is an end view of the packing with the follower or gland of the stuffing-box removed.

Similar letters refer to like parts throughout the different views of the drawings.

A represents a portion of a steam-engine cylinder, which is formed, as usual, with an annular flange, which constitutes the wall of the stuffing-box B, through which the piston-rod C passes. As is clearly shown in Fig. 1

of the drawings, the stuffing-box or annular flange B is formed with a chamber or cavity *b*, preferably cylindrical in shape, yet contracted at its lower portion. In the upper or outer portion of the cavity *b* is located a follower or gland D, which is adjustably held in place by means of screw-bolts E, provided with nuts *e* for tightening the same in the customary manner.

Within the cavity *b* of the stuffing-box is inserted a ring or sleeve F, which is preferably made of cork or some light porous and elastic substance. This sleeve extends vertically from near the upper portion of the cavity *b* to and within the contracted portion thereof, and for this reason has its lower outer portion beveled to adapt it to fit snugly on the said contracted part of the chamber *b*, yet so as to present vertical internal walls. Within the sleeve F and about the middle thereof is placed one or more split rings G, which are preferably made of suitable antifriction metal and are provided on their inner peripheries with annular grooves *g* for the reception and retention of suitable lubricating material *g'*, usually of plumbago or plumbaginous composition. These split rings are of a sufficient size to fit snugly around the piston-rod and between it and the sleeve F and are employed when the cavity or stuffing-box is a deep one, and said rings may be increased or decreased in number, as the size of the box may require. Above and below the rings G, when the same are employed, are placed other split rings H, preferably made of suitable antifriction metal and having the cross-sectional shape of a right-angled triangle, or with straight inner sides, which bear on the piston-rod C, and flat bases at right angles to the rod, which face each other and which when the stuffing-box is shallow and the rings G are omitted will rest against each other, but when the stuffing-box is a deep one will rest against the split rings G therebetween. The outsides of the split rings H are placed in the split rings I, which are located in the upper and lower parts of the stuffing-box and have flat and vertical peripheries or surfaces adjacent to the sleeve F and are formed with slightly-curved con-

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vex bases $i i$ to fit in the concavities i' and i'' of the follower or gland D and the lower portion of the stuffing-box, respectively. The surfaces of the split rings I adjacent to the rings H are angular, as shown, and bear against the reversely-beveled outer faces of the last-named rings, as will be clearly understood by reference to Fig. 1 of the drawings.

10 The inner surfaces of the split rings H are provided with annular grooves h for the reception and retention of any suitable lubricant. While I have shown each one of the rings H provided with annular grooves h , yet I may sometimes omit said grooves in one or 15 both of the rings and rely on the lubricant g' , in the rings G, when the same are employed and I may also sometimes omit the grooves g , with their lubricant, in the rings G, but prefer to use them.

20 The operation of my packing is simple and as follows: The gland or follower D is applied over the packing by means of the screws E, which may be tightened sufficiently to hold 25 the packing in place, yet not so tight or close as to completely or compactly press the packing upon the piston-rod, so that the pressure of the steam or other fluid working in the cylinder will compress the packing endwise 30 toward the gland and expand the packing laterally against the piston-rod and the wall of the stuffing-box to make a fluid-tight joint around the rod immediately as the piston begins to work in the cylinder, and when the 35 operation of the piston ceases the packing will be permitted to relax or yield, which allows the sleeve F, which, as before stated, is preferably made of cork or of an analogous porous and elastic substance, an opportunity 40 to expand again. This elastic or yielding quality of the sleeve, in conjunction with the rings G, H, and I, will allow the piston-rod to have a limited side play or movement to accommodate itself to imperfect alinement

of the parts without causing undue wear on 45 the piston-rod or on the yielding metal packing-rings which surround it.

By forming the rings G and H with grooves g and h , respectively, for a lubricant it is obvious that the rod will be automatically lubricated in its passage back and forth through 50 the packing. It is also apparent that by forming the inner or lower portion of the packing-box concave, as shown in Fig. 1, and the inner surface of the follower or gland D 55 of a similar shape, when the latter is tightened on the walls of the stuffing-box the composite packing will be forced toward the piston-rod, thus taking up any undue looseness of the parts.

While I have shown in the drawings the metal part of the packing composed of split rings with beveled or inclined meeting faces, yet I do not desire to be limited to such form 60 of rings, as I may use any kind of metallic packing to surround the piston-rod and place around the same and against the walls of the stuffing-box a cushion or packing composed 65 of cork without departing from the spirit of my invention.

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

The combination in a packing for piston-rods and the like, of the split rings H, and I, 75 having inclined meeting faces and placed around the piston-rod, the rings H, having the grooves h , for a lubricant, with the rings G, provided with the grooves g , for a lubricant placed between the rings H, and an elastic 80 packing-sleeve composed of cork or analogous material located outside said rings against the walls of the packing-box, substantially as described.

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Witnesses:

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