No. 672,009. Patented Apr. 16, 1901.

F. D. PHILP.

PISTON ROD PACKING.

(No Model.) (Application filed Apr. 6, 1900.)

2 Sheets—Sheet 1.

Fig. 1.

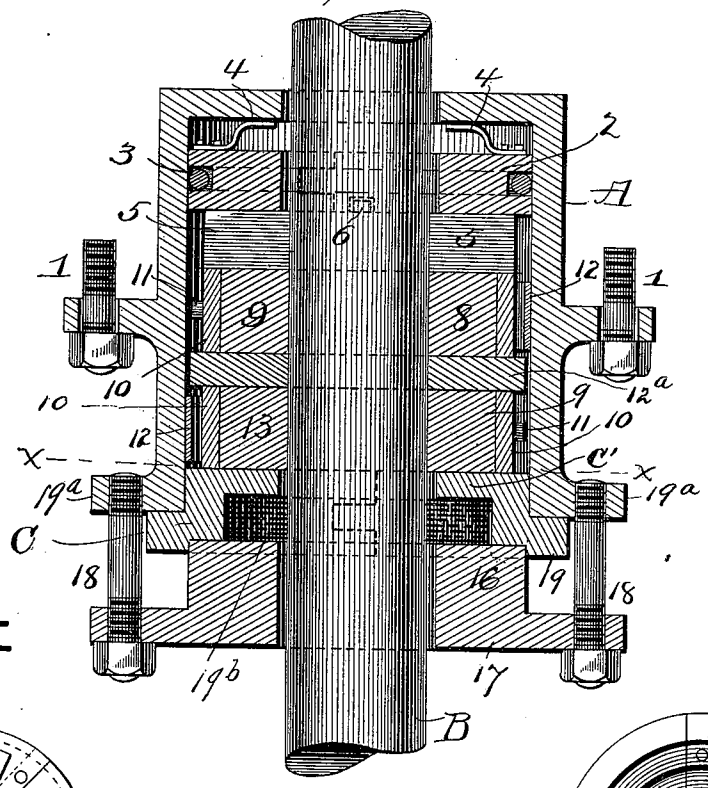


Fig. 5.

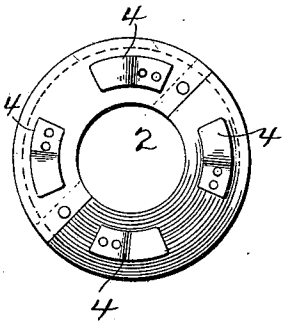


Fig. 3.

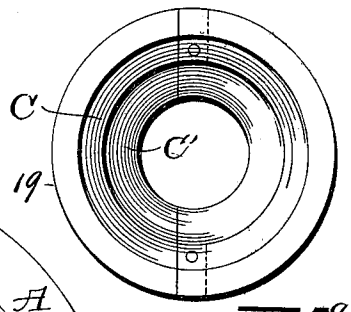


Fig. 2.

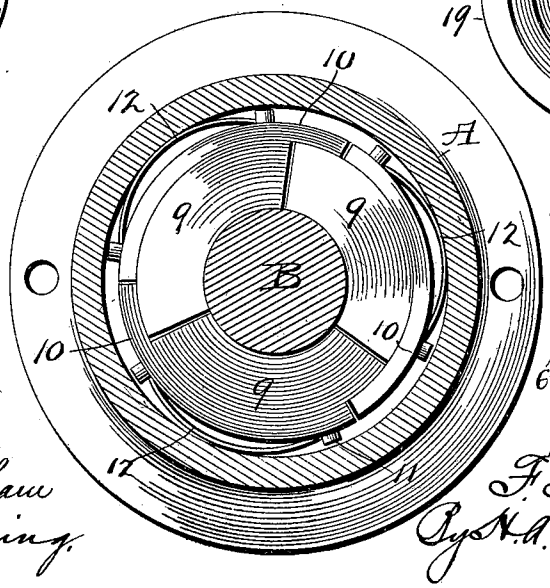


Fig. 5a.

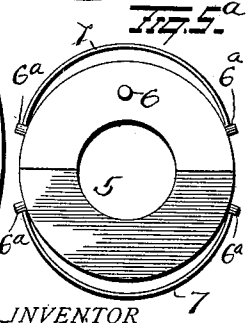
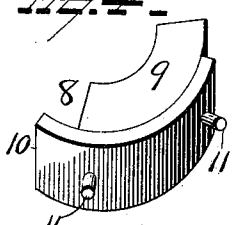


Fig. 4.



WITNESSES

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PISTON ROD PACKING.

(Application filed Apr. 6, 1900.)

(No Model.) 2 Sheets—Sheet 2.

FIG. 5.

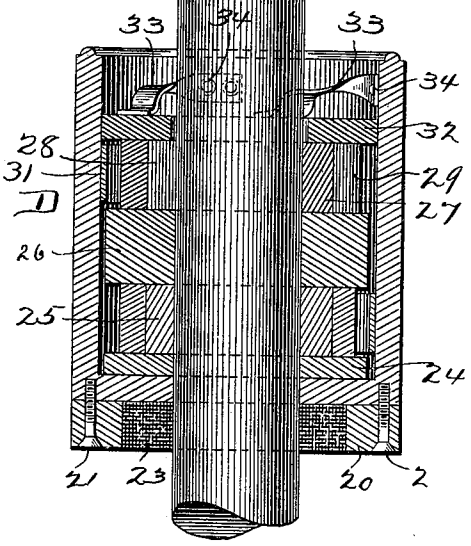
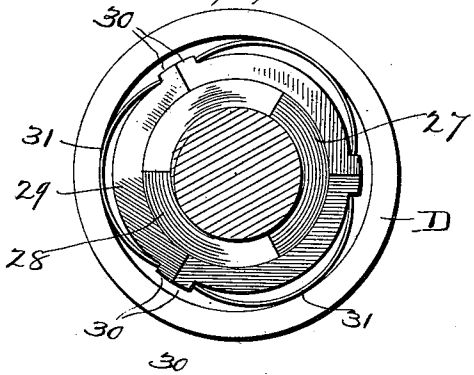


FIG. 7.



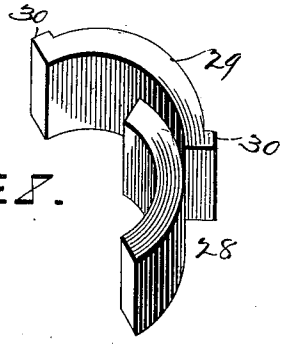


FIG. 8.

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UNITED STATES PATENT OFFICE.

FREDERICK D. PHILP, OF BUFFALO, NEW YORK.

PISTON-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 672,009, dated April 16, 1901.

Application filed April 6, 1900. Serial No. 11,831. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK D. PHILP, a resident of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Piston-Rod Packing; and I 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.

My invention relates to an improvement in piston-rod packing, one object of the invention being to provide an improved packing which can be placed on the piston-rod of an engine and be inclosed in the ordinary stuffing-box thereof without disconnecting any part of the engine.

A further object is to provide improved metallic packing-rings for piston-rod packings.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in section, illustrating my improvements. Fig. 2 is a view in section on the line *x x* of Fig. 1. Fig. 3 is a detail view of the auxiliary gland C. Fig. 4 is a view of one of the packing-rings. Fig. 5 is a detail view of the follower-ring. Fig. 5ª is a detail view of packing-ring 5, and Figs. 6, 7, and 8 are views of a modified form of packing.

A represents the stuffing-box of an engine, secured in place by screws 1 passing through perforations in a peripheral flange on the stuffing-box and into the engine-cylinder.

In the stuffing-box A, around the piston B, is disposed my improved packing-rings, preferably arranged as will now be explained.

In the extreme inner end of the stuffing-box is disposed a follower 2, of hard metal, made in two sections to permit its insertion around the piston-rod B, dovetailed at its ends and provided with a peripheral groove in which a spring-wire 3 is disposed and adapted to give to the follower a steam-tight fit in the stuffing-box. Springs 4 are secured to the inner face of the follower 2 and are so shaped as to bear at their free ends against the inner end of the stuffing-box to assist in holding the packing-rings in proper position, as will be more fully hereinafter explained.

A packing-ring 5, of soft metal, is disposed against the follower 2 and is made in two sections to permit its insertion around the piston-rod, and one of the sections of said ring 5 is provided on its inner face with a dowel-pin 6, disposed in a notch in the follower 2, to prevent independent rotary movement of either. Each section of the ring 5 is provided on its periphery with two lugs 6ª, spaced a suitable distance apart and against which the ends of bow-springs 7 abut, and said springs are adapted to bear against the inner face of the stuffing-box to hold the ring in close contact with the piston-rod B.

A packing-ring 8 is disposed on the piston-rod B against the ring 5 and consists of three segments, each comprising an inner segment 9, of soft metal, and an outer segment 10, of hard metal, secured thereto. The outer segment 10 is of approximately the length of the outer face of the inner segment, but is disposed so as to have one end project beyond the segment to which it is secured and over the next adjacent segment. Thus the outer segments serve as guides for the inner segments to maintain the latter at all times in circular formation, and also forms overlapping joints to prevent the passage of steam therethrough. On each of the outer segments 10 are provided lugs 11, spaced a suitable distance apart and against which are disposed the respective ends of bow or semi-elliptic springs 12, which bear between their ends against the stuffing-box to hold the segments against the piston-rod.

A spacing-ring 12ª is disposed in front of the ring 8 and is made segmental to permit its insertion on the piston-rod, and a packing-ring 13, precisely like packing-ring 8, is disposed in front of the spacing-ring 12ª, and an auxiliary gland C, made in two sections to permit it to be applied on the piston-rod and dovetailed at its ends, is provided on the outer end of the stuffing-box. The gland C is provided on its inner end with an internal flange C′, disposed against the packing-rings, and on its outer end with an external flange 19, overlapping the end of the stuffing-box and fitting tightly thereagainst, and said

flanged outer portion is grooved to form a seat for the circular enlargement 16 on the main gland 17, which latter is secured to the stuffing-box by means of screws or bolts 18 passing through perforations in the gland 17 and screwed into a peripheral flange 19^a on the outer end of the stuffing-box to hold all of said parts in place.

The overlapping peripheral flange 19 on the auxiliary gland C will absolutely prevent any escape of steam at the outer end of the stuffing-box. Thus any steam which may escape past the follower 2 will be retained in the stuffing-box and act as a seal to prevent the entrance of more steam, though the entrance of steam past the follower will be extremely small, and for all intents and purposes practically none.

In the recess or cavity formed between the auxiliary gland C and the main gland 17 I provide a turn of soft fibrous packing 19^b to hold the lubricant on the rod.

I may insert dowel-pins in the side faces of the packing-rings, with corresponding recesses in the faces of the next adjacent rings, to prevent rotary movement of any of said rings and prevent the joints of the rings ever coming in alinement with each other.

Instead of constructing my improved packing as above described I might make the same as shown in Figs. 6, 7, and 8. In this form of my invention I provide a cylindrical casing D, open at its inner end and adapted to be secured to the engine-cylinder and closed at its outer end, with the exception of a central opening for the passage of the piston-rod. A ring 20 is secured to the outer end of the casing D by means of screws 21, as shown, and in said ring is mounted a flexible packing-ring 23. A ring 24, of hard metal, is disposed in the cylinder D against the closed outer end thereof, and against said ring 24 is disposed a packing-ring 25, similar to the packing-rings 8 and 13, heretofore described. A thick ring 26, of soft metal, is disposed beside the packing-ring 25, and on the opposite side of the ring 26 a packing-ring 27 is mounted. The ring 27 comprises two segmental rings 28 and 29, one disposed within the other, the segments of the outer ring overlapping the segments of the inner ring, and said outer segments 29 provided at their ends on their outer faces with shoulders 30, against which bow-springs 31 abut. A follower 32 is disposed against the packing-ring 27 and is forced toward the packing-rings by means of springs 33, secured to the inner face of the casing D by means of screws 34, and said springs are so shaped as to bear at their free ends against the follower.

Various other slight changes might be resorted to in the general form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. A piston-rod packing comprising a casing, metallic rod-packing therein, an auxiliary gland bearing against the open end of the casing and made in separable sections, a main gland secured to the casing and bearing against the auxiliary gland and a spring-pressed follower located in the closed end of the casing and pressing the metallic packing toward said auxiliary gland.

2. A piston-rod packing comprising a casing, metallic packing-rings therein, an auxiliary gland made in separable sections and bearing against the open end of the casing and against the metallic packing, said auxiliary gland having a recess in its outer face, fibrous packing in said recess and a main gland secured against said auxiliary gland and inclosing the fibrous packing therein.

3. In a piston-rod packing, the combination with a casing, and packing-rings therein, of an auxiliary gland made in interlocking sections and disposed against one end of the casing and having a recess in one face, packing material in said recess and a main gland secured to the casing and bearing against said auxiliary gland.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRED. D. PHILP.

Witnesses:
JOHN T. MAHONEY,
E. C. MILLER.