

(No Model.)

F. M. LUDLOW, Sr.

PACKING FOR PISTONS, PLUNGERS, &c.

No. 348,527.

Patented Aug. 31, 1886.

Fig. 1.

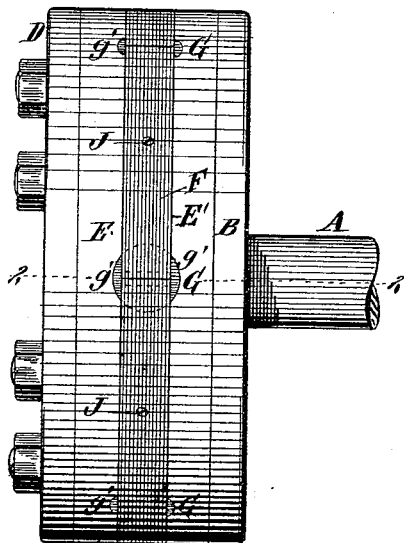


Fig. 2.

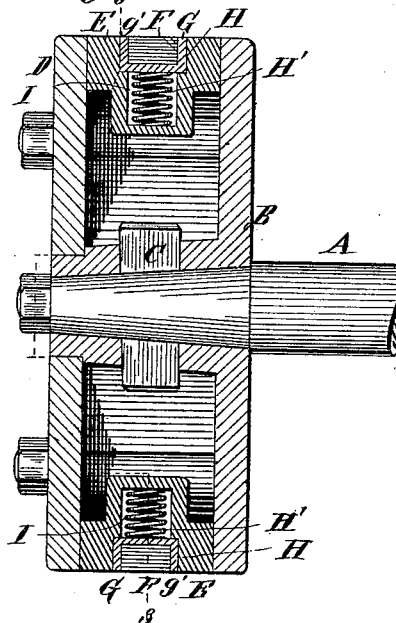


Fig. 3.

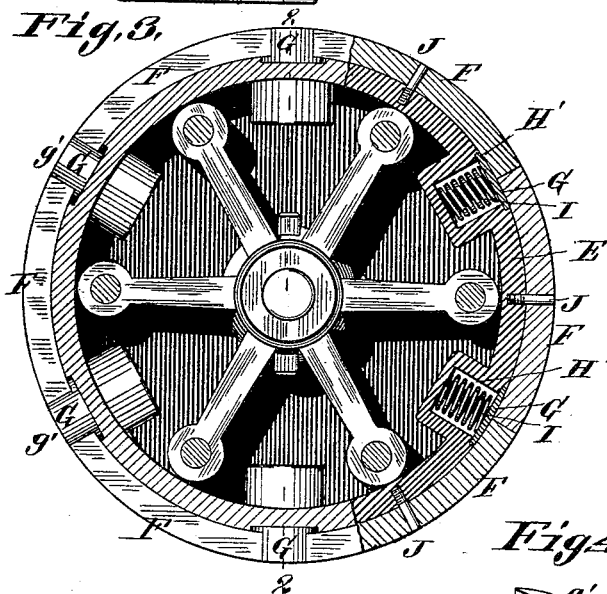


Fig. 5.

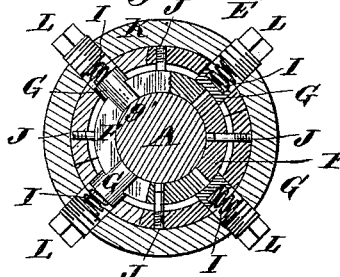
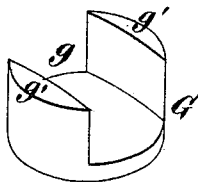


Fig 4.



Attest,

Charles Pickles

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Inventor:

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By Knight Bros

Atty

UNITED STATES PATENT OFFICE.

FRANCIS M. LUDLOW, SR., OF ST. LOUIS, MISSOURI.

PACKING FOR PISTONS, PLUNGERS, &c.

SPECIFICATION forming part of Letters Patent No. 348,527, dated August 31, 1886.

Application filed December 5, 1885. Serial No. 184,792. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS M. LUDLOW, Sr., of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Packing for Pistons, Plungers, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

10 Figure 1 is a side view of a piston-head with part of the piston-rod. Fig. 2 is a section at 2 2, Figs. 1 and 3. Fig. 3 is a section at 3 3, Fig. 2. Fig. 4 is a perspective view of one of the blocks by which the packing-ring is made steam-tight at the ends of the sections. Fig. 15 5 is a section showing the packing applied to a plunger, the section plane being transverse to the plunger. The same may be applied to a piston-rod.

20 A distinctive feature of this packing is that the packing-ring, or each section of the same, is made of equal width from end to end, so that as it wears and its ends separate there is no opening made at the edges of the ring or section, as the case may be.

25 A is the piston-rod, and B the part of the piston-head which is secured to the piston-rod by a key, C. D is the follower, held to the part B by bolts. These parts need not be particularly described, as they may have the usual or any preferred construction.

Between the parts B and D is what is called the "bull-ring" E, having a diameter equal to the parts B and D. In the bull-ring is a circumferential groove, E', rectangular in cross-section, in which the packing-ring sections F 35 closely fit, the fit, however, not being so tight as to prevent the outward movement of the ring-sections as they wear away by friction against the cylinder. I have shown six of these sections; but they may be more or less in number. A single ring may be used with an opening at one place to allow expansion.

40 G are cylindrical blocks, having recesses equaling in cross-section the groove E', so that the ends of the ring-sections shall fit snugly therein. The ends of the the ring-sections F extend to about the middle of the recess g, so that a lap-joint is made, preventing the passage of steam between the ends of the ring-sections, as the ends of the ring-sections fit 50 the cheeks g' of the block. The blocks G fit

snugly in cylindrical sockets H of the bull-ring, but with sufficient freedom to allow the blocks to move outward as the ring-sections wear away. The blocks G are pushed outward by the springs I within recesses H', which form continuations of the sockets H.

At J are shown steady-pins, which project from the bull-ring and occupy sockets in the ring-sections F, and whose purpose is to prevent endwise movement in the ring-sections. The office of the springs is to carry the packing-ring sections outward as they wear away and keep them in contact with the engine-cylinder. The ends or cheeks g' of the blocks G wear away equally with the section F by friction against the cylinder, so that there is no way for the passage of steam into the space between the ends of the sections F, as the space is enlarged by the wearing away of the sections by friction against the cylinder.

In Fig. 5 the packing is shown applied to a piston-rod or plunger, A. In this case the ring E is inserted in the cylinder or stuffing-box K, as the case may be. The concave sides of the sections F bear against the piston-rod or plunger. They occupy the groove E and the recesses of the blocks G, and their ends are packed and forced inward by the blocks, the latter being pushed toward the piston rod or plunger A by the springs I.

L are screws, turning in screw-threaded holes of the stuffing box or cylinder K, and bearing against the outer ends of the springs I.

I have spoken of the blocks G and their sockets H as cylindrical, but I do not confine myself to this shape.

I am aware that it has been proposed to form a piston-head with a circumferential groove enlarged laterally at one point, and to fit in said groove a cut packing-ring, and in said enlarged portion a grooved block which embraces and overlaps the meeting ends of said ring, said block being forced radially outward by steam-pressure from the cylinder. This is not the equivalent of my invention, and I do not claim, *per se*, any feature or features which my said invention may possess in common therewith. Where steam-pressure is relied upon to expand the packing-ring the results are very unsatisfactory. For example, when the steam first enters the cylinder the ring will be in its normal or contracted

condition; hence the steam may escape past the ring before the block has been forced outward, and said ring thereby brought to its bearing against the inner face of the cylinder. 5 Furthermore, when the ring has come to its bearing there is nothing to regulate the force with which the block is pressed outward; hence the pressure of the packing-ring against the face of the piston will be proportional to 10 the pressure per square inch of steam in the cylinder. This is decidedly objectionable, as it causes unnecessary friction and wear of the parts.

I am also aware that sectional overlapping 15 packing-rings contained within a peripheral groove in the piston-head have been forced outward by spring-pressure; but this is not the equivalent of my invention, and I also disclaim any feature or features, *per se*, which my 20 said invention may possess in common therewith.

I claim—

1. The combination, with a piston-head having a circumferential groove, of the packing 25 ring or sections occupying said groove, a radially-movable grooved block embracing and overlapping the contiguous ends of said ring or sections, a spring for forcing said block

outwardly, and a socket inclosing the rear side of the block and preventing contact of 30 steam therewith, as set forth.

2. The combination, with a piston-head having a circumferential groove, of the packing ring or sections occupying said groove, a radially-movable grooved block embracing and 35 overlapping the contiguous ends of said ring or sections, having its rear side protected from the action of the steam admitted to the cylinder, and a spring for forcing said block outwardly, substantially as set forth.

3. The combination of the section F, steady-pins J, fixed in the ring E and working in the section, or vice versa, blocks G, and springs I, all substantially as and for the purpose set 40 forth.

4. The combination, with a piston having a circumferential groove and the ring or sections occupying said groove, of the block embracing and overlapping the contiguous ends 45 of said ring or sections, and a pin for preventing the movement of said ring or sections 50 relatively to said block, as set forth.

FRANCIS M. LUDLOW, SR.

In presence of—

SAML. KNIGHT,

BENJN. A. KNIGHT.