

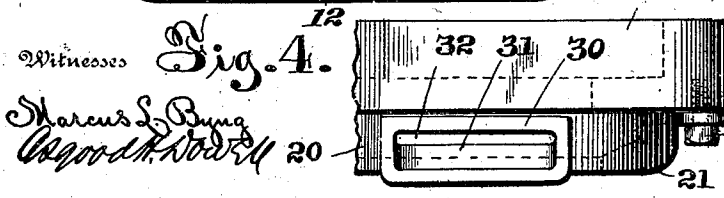
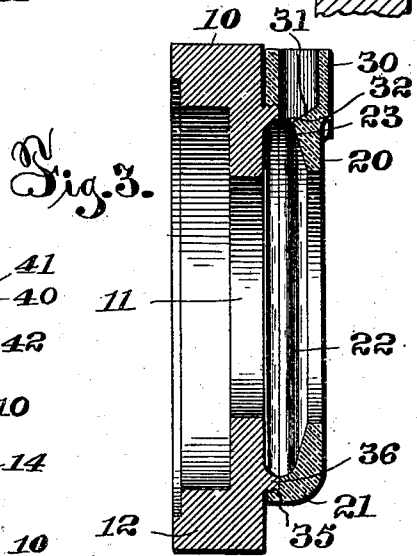
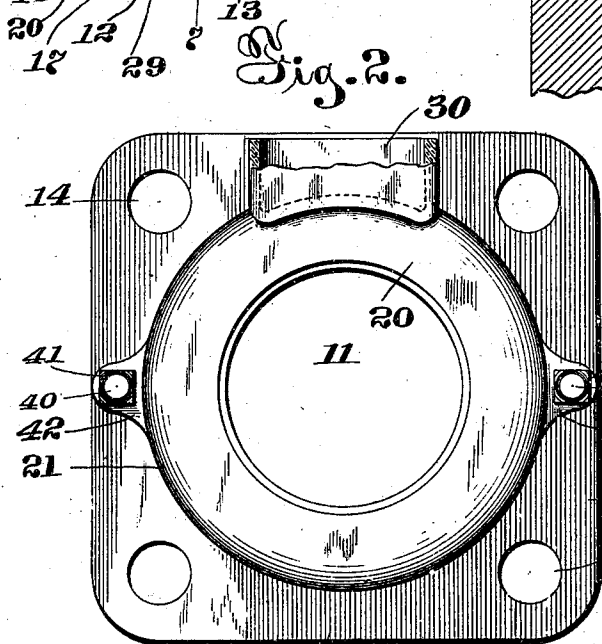
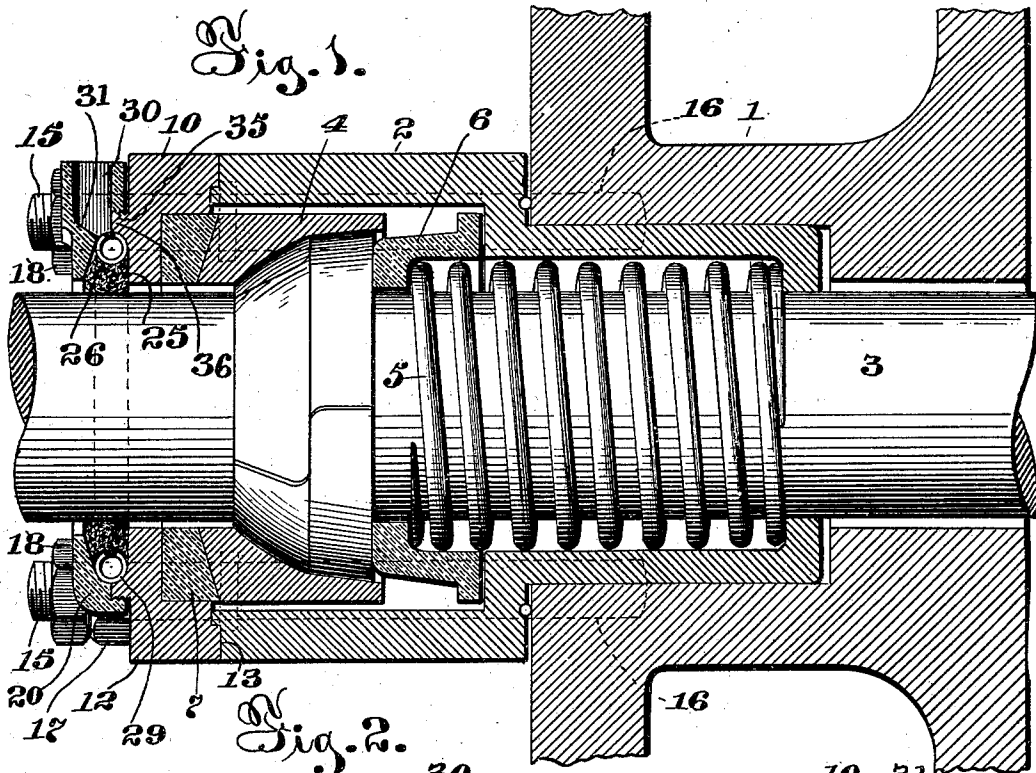
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R. E. McCUEN & P. J. GORMLEY.
LUBRICATING DEVICE FOR PISTON RODS.

(Application filed Mar. 20, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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LUBRICATING DEVICE FOR PISTON-RODS.

SPECIFICATION forming part of Letters Patent No. 664,491, dated December 25, 1900.

Application filed March 20, 1900. Serial No. 9,385. (No model.)

To all whom it may concern:

Be it known that we, ROBERT EMMET McCUEN and PHILIP JOSEPH GORMLEY, citizens of the United States, residing at Lexington, in the county of Fayette and State of Kentucky, have invented certain new and useful Improvements in Lubricating Devices for Piston-Rods; and we 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.

This invention relates to lubricating devices for piston and like rods. It has reference more particularly to that class or type of lubricating devices in which a capillary medium or "swab" is held in contact with the piston-rod for the purpose of supplying oil or other lubricant thereto at or close to the gland of the stuffing-box.

Hitherto oiling devices have been secured to the gland or stuffing-box in different ways, with suitable means for supplying oil to the rod, either by capillarity or direct flow. In many former instances, however, the attachment of said oiling devices has been such as to render the same objectionable because of the tendency of the device to work loose from its fastening, and, moreover, considerable dirt accumulates within the device, so that the piston or other rod is greatly damaged by the cutting or scoring thereof which occurs, and the result is that leakage takes place and the rod is not permitted to move with that ease and precision so essential to a perfectly-working embodiment of a device of this character. A still further objection common also to many former devices of this class is the unequal manner in which the capillary medium for the lubricant hugs or closes itself about or upon the rod by which to keep up or maintain a uniform lubrication of said rod, this objection or fault being almost invariably experienced as soon as the swab or lubricating device has become the least bit worn due to the movements or working of the rod. Further difficulties have been encountered heretofore on account of the easy displacement of the swab or capillary medium and which usually results in so crowding the rod at the gland as to impart undue strain to

both the rod and the fastenings which secure the gland to the stuffing-box.

One object of the present invention is to overcome the above-noted objections and to provide a lubricator or oiling device for piston and like rods which is securely held in place irrespective of the vibratory action of the rod in its movements or reciprocations and also to provide means whereby the swab or capillary medium is held closely to the rod irrespective of the amount of wear to which the said swab or medium may be subjected.

A further object is to provide means for preventing access of dirt to the swab and consequently overcoming any tendency or liability of cutting or scoring the rod and also to increase the ease and facility with which the oiling device or lubricator can be attached or secured in place and again removed either permanently or for the purpose of replacing of parts or repair.

The above and additional objects we attain by the means illustrated in the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of a stuffing-box, gland, piston-rod, and packing-ring and showing our improved lubricator or oiling device surrounding the rod and secured to the gland. Fig. 2 is an end view to more clearly indicate the disposition or arrangement of the lubricator or oiling device, and Figs. 3 and 4 are enlarged views in detail.

Preliminarily to a more detailed description it may be stated that in the practice of our invention we attach our improved oiling device or lubricator to the end of the gland in any suitable way, but preferably as will be explained. We secure to the gland a plate or disk having an opening by which to fit upon the rod in such manner as to allow free movement of the latter, the said plate or disk being held in place substantially as will hereinafter more fully appear. Attached or secured to the said disk or plate in any suitable way and having a central opening for the passage of the piston-rod is a cap-plate or annulus constructed to form an annular space or chamber around the rod, and located in said chamber and closely fitting the rod is a swab or capillary medium of any suitable fibrous material, by means of which the oil or

other lubricant is fed or supplied to the piston-rod. Formed with or attached to the said cap-plate or annulus is a well or reservoir for the lubricant, and the latter is supplied to the swab through a suitable port or passage leading from the body of said well or reservoir. The pressure of that portion of the swab lying intermediate the piston-rod and the under side of the well or reservoir prevents any dirt or grit from reaching the piston-rod through said well or reservoir. As before stated, the swab closely fits the piston-rod, and to effect this fit the said swab is preferably formed on its outer surface with an annular depression or groove, in which is seated or contained a spring for compressing or closing the swab upon the rod, the said spring or compressing device being of any suitable construction and operation. Preferably and as a means of permitting ready access of the oil or lubricant to the swab or capillary medium we employ a spiral spring for this purpose, the same being fitted within the groove of the swab and extending all around the latter under some tension or stress, so as to tend to press the swab closely about the rod at all times. It is evident that as the inner surface of the said swab becomes worn by contact with the rod the said spring will act to take up such wear, and thus will a perfect working of the parts be had as well as a continued and uniform lubrication thereof. An advantage will also be seen in the use of the spiral spring, since the oil flowing from the reservoir or well can easily pass between the coils or spirals thereof to the swab or capillary medium about or around which the said spring is confined.

The cap-plate or annulus referred to is secured in place in a fluid or steam tight manner, and it will be apparent that the working or operation of the parts takes place smoothly and effectually without leakage or other disadvantages heretofore frequently experienced in many former instances.

It will be understood that our improved lubricator or oiling device is adapted to be used in connection with any embodiment of a stuffing-box, gland, and piston-rod, and hence we are not limited to the particular embodiment of the same herein shown and referred to and which is intended to be simply illustrative in character.

Referring to the accompanying drawings by the designating characters thereon, the numeral 1 designates a stuffing-box, 2 a gland or follower fitting and working therein, and 3 a piston-rod working through said stuffing-box and gland. These elements can be of the ordinary or any preferred form and arrangement, as can the metallic packing receptacle or ring 4 and the packing-rings therein, the spring 5, and the rings 6 and 7, respectively, which latter in the present instance cooperate with the metallic packing receptacle or ring 4 and the packing within said receptacle in producing a fluid-tight joint. In lieu of the

said metallic packing-ring any other form of packing may be employed, and, in fact, the entire embodiment may be changed at pleasure, since the same is simply selected or chosen to illustrate our present invention in connection with a contrivance or structure of this general character or arrangement.

Our improved lubricator or oiling device is constructed and arranged substantially as follows, although it will be understood that we are not limited to the precise details shown either in their form or identical disposition, since immaterial departures therefrom can be made and the same still be within the scope of invention intended to be embraced: Thus 10 represents a plate or disk (see Fig. 2) having an opening 11 therein by which the same is slipped over the piston-rod 3, the said plate, as herein shown, being preferably formed with a flange 12, (see Fig. 1,) which partially incloses the outer ring 7, and which flange abuts closely against the end 13 of the gland or follower 2. This plate 10 can be secured in place in any suitable way; but preferably we form the same with a bolt hole or opening 14 at or near each corner thereof, and through these holes are passed the bolts 15, which are long enough to enter the end of the stuffing-box 1 at 16, and in this way both the said plate and stuffing-box are held in position in an obvious manner. In order to effect a perfect and fluid-tight fastening between the parts, we employ suitable locking-nuts 17 and jam-nuts 18, screwing upon the outer projecting ends of said bolts, the said nuts 17 closely abutting the said plate 10 and the said nuts 18 closely jamming said nuts 17. Also fitting around the piston-rod 3 and fastened or secured to the plate or disk 10 is a cap-plate or annulus 20, the same being provided all around with a flange or offset 21, so as to form an annular chamber or compartment 22 intermediate the said annulus and the said plate 10. The inner surface of the cap-plate or annulus 20 is preferably (though not necessarily) beveled outwardly at 23 in the direction of the piston-rod, so that the said plate will better receive and confine in place the swab or capillary medium 25, which feeds or supplies the lubricant or oil to the piston-rod, the said swab being herein shown as comprising a ring of any suitable porous or fibrous substance fitting around the piston-rod and closely abutting the outer surface of the said ring or disk hereinbefore referred to. The outer surface of said swab or capillary medium is preferably (though not essentially) provided all around with a depression or groove 26, by which to better adapt the same to receive suitable means for compressing the swab closely around the rod. Said means in the present instance preferably comprises a spiral spring 29, which extends all around the swab under stress or tension circumferentially, so that the said swab is both tightly compressed around the rod and prevented from displacement as well.

The reservoir or well for holding the lubricating-oil can be located in any suitable position, but preferably it occupies the highest point in the circumference of the cap-plate or annulus 20, as seen at 30, and the bottom of said well is inclined inwardly at 31, so as to facilitate the flow of lubricant to the port or opening 32, through which such lubricant escapes to the swab, the latter being thus kept constantly saturated in view of the fact that no impediment is offered to the passage of the oil by the spring. On the contrary, the oil is freely admitted to the said swab through the spaces separating the coils of said spring, as is clearly apparent. The said cap-plate or annulus 20 is secured to the said plate 10 in any suitable manner, it being understood that the connection must be fluid or steam tight. Preferably, however, we provide the inner surface of the flange 21 of the annulus 20 with a screw-thread 35, which fits a threaded rib or flange 36, formed on the outer face of the said disk or plate 10. Obviously by first slipping the swab and its compressing-spring upon the piston-rod and then screwing on the annulus as described the parts can be quickly and accurately fixed in position. As a double security for holding the cap-plate or annulus tightly in place against the plate 10 we employ suitable bolts 40 and nuts 41, the former passing through openings in lugs 42 and entering the said plate or disk 10.

Our improved lubricator or oiling device can be made of any material desired, and it is obvious that the same is inexpensive and advantageous, and, moreover, no skill is required in nicely fitting and adjusting the same to position in operation.

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

1. In a lubricating device for piston and like rods, the combination with the rod and gland, of an oil-chamber encircling the rod at the end of the gland, a swab or capillary medium surrounding the rod within the chamber, and a compression device for said swab independent of and within said chamber; substantially as described.

2. In a lubricating device for piston and like rods, the combination with the rod and gland, of an oil-chamber encircling the rod at the end of the gland, a swab or capillary medium surrounding the rod within the chamber, and a spiral spring enveloping or inclosing said swab; substantially as described.

3. In a lubricating device for piston and like rods, the combination with the rod and gland, of an oil-chamber concentric with the rod at the end of the gland, a swab or capillary medium surrounding the rod within the chamber and formed with a circumferential groove, and a spiral spring fitting in said

groove; substantially as and for the purposes described.

4. In a lubricating device for piston and like rods, the combination with the rod and gland, of an oil-chamber concentric with the rod at the end of the gland, a swab or capillary medium surrounding the rod within the chamber, and a spiral spring inclosing said swab under tension; substantially as described.

5. In a lubricating device for piston and like rods, the combination with the rod and gland, of an oil-chamber concentric with the rod at the end of the gland, and provided with a well or reservoir having a communicating port, a swab or capillary medium surrounding the rod within the chamber, and a spiral spring inclosing or encircling said swab; substantially as shown and for the purpose described.

6. In a lubricating device for piston and like rods, the combination with the rod and gland, of an oil-chamber concentric with the rod at the end of the gland, and provided with a well or reservoir having a communicating port, the bottom of said well being inclined toward the said port, a swab or capillary medium surrounding the rod within the chamber, and a compression device for said swab independent of and within said chamber; substantially as described.

7. In a lubricating device for piston and like rods, the combination with the rod and its gland, of a plate or disk fitting the rod and secured to the gland, a cap-plate or annulus secured to said disk and formed with a flange abutting the said plate or disk, an oil-chamber formed by the latter plate and the cap-plate, a swab or capillary medium surrounding the rod within the chamber, and a compression device for said swab; substantially as described.

8. In a lubricating device for piston and like rods, the combination with the rod, the gland, and the stuffing-box, of a plate or disk fitting the rod and abutting the end of the gland, bolts passing through the said plate and gland and entering the stuffing-box, and nuts for securing said bolts, a cap-plate or annulus screwing into the outer face of said disk, an oil-chamber intermediate the two, nut and bolt fastenings also securing the cap-plate to the disk, a swab or capillary medium surrounding the rod within the chamber, and a compression device for said swab; substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

ROBERT EMMET McCUEN.
PHILIP JOSEPH GORMLEY.

Witnesses:

A. A. McQUAID,
BEN GRIGSBY.