

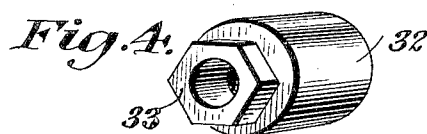
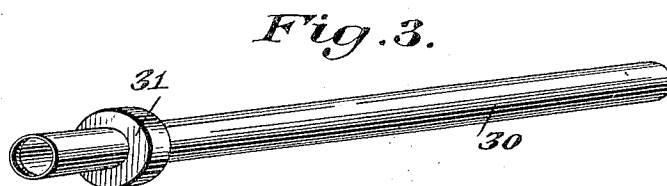
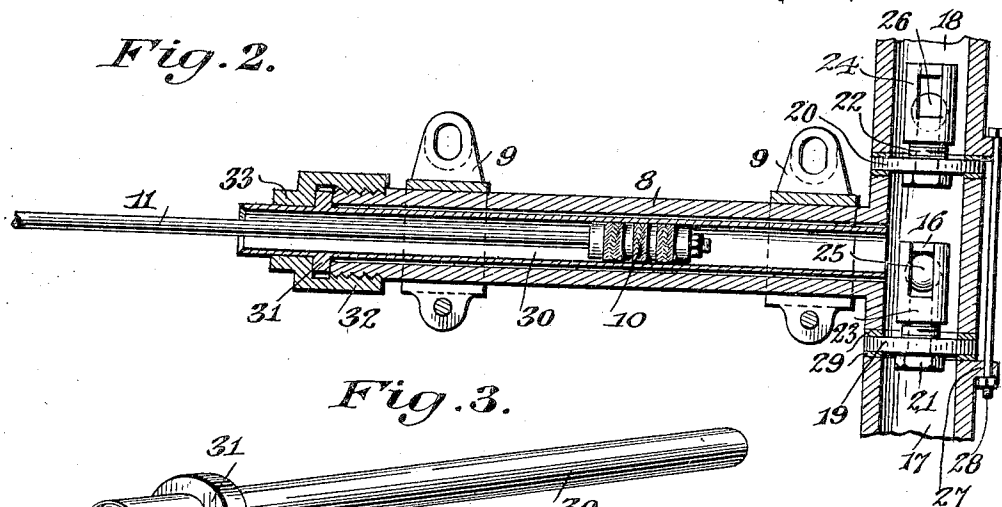
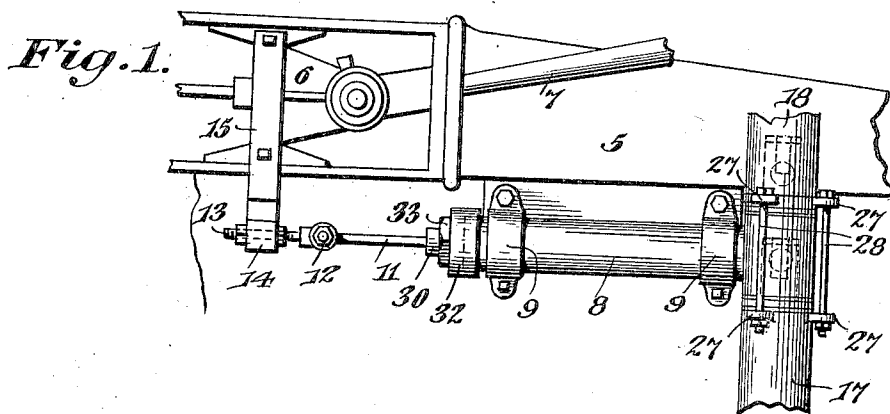
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A. R. O'BRIEN

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PUMP

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UNITED STATES PATENT OFFICE.

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PUMP.

Application filed December 31, 1921. Serial No. 526,212.

To all whom it may concern:

Be it known that I, ALEXANDER R. O'BRIEN, a citizen of the United States, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to improvements in fluid pumps generally, and more particularly to a type of the same adapted for use on steam tractor or other forms of engines usually employing pumps for effecting the feed or transfer of water to the boiler of an engine from the tender or other form of water supply thereof, and which is designed to be connected with and operated by a moving part of the engine on which it is installed.

In the present construction of this class of pumps, the bores of the pump bodies or casings are usually provided with liners in the form of seamless cylinders or tubes of a different metal from that of which the bodies or casings of the pumps are made, and these liners or cylinders are generally secured within the latter by being exteriorly threaded for engagement with complementary threaded portions of the bores of the pump bodies or casings. To insert these liners into position in the bores of pump bodies or cylinders or to remove the same from such position, it is generally necessary to remove the pump bodies or casings from their operative positions on the engines for the purpose, and in the instance of having to remove old and worn liners or cylinders, the work is otherwise very laborious and can only be accomplished through the exercise of exceedingly great care and patience and with an excessive expenditure of time.

The principal object of the present invention is therefore to provide for a pump of the class mentioned, and one embodying an improved means for securing pump cylinder liners in position within the bores of pump bodies or casings, and in a manner to facilitate the easy and quick removal of a liner for the repair, renewal or replacement thereof without necessitating the dismounting of the pump body or casing from its operative position, and to otherwise rigidly secure the liner within the bore of the latter for the proper operation of the pump piston therein during the use of the pump.

With the foregoing and other objects in view, the invention resides in the certain new and useful construction and arrangement of parts as will be hereinafter more fully described, set forth in the appended claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a fragmentary side elevation of an engine frame and the cross head carried thereby, and showing the manner of mounting a pump in position to be operated from said cross head,

Figure 2 is a longitudinal section through the pump and shows the manner of mounting a liner within the bore of the body or casing thereof,

Figure 3 is a perspective view of the liner per se, and,

Figure 4 is a similar view of the means for securing the liner in its operative position.

Referring to the drawings, the numeral 5 indicates the frame of an engine, 6 a cross head mounted for reciprocating movement within the frame, 7 a piston rod of the engine for actuating the cross head 6, 8 a pump body or casing mounted in brackets 9 adjacent to and in substantially parallel relation to the said frame 5.

The pump body or casing 8 has mounted therefor reciprocating movement within the bore thereof, a piston 10 which is carried at the inner end of a piston rod 11, the latter being extended outwardly of one end of the body or casing 8 and is coupled at its free end, as at 12, to a rod section 13 threaded into a complementally threaded eye 14 formed at the lower projecting end of a bar 15 secured vertically of the outer face of the cross head 6 of the engine. The other end of the pump body or casing 8 is formed to provide a right angularly disposed T-head portion 16, to the opposite ends of which are connected the water supply and feed pipes 17 and 18, respectively, together with a pair of check valves controlling the flow of water there-through correspondingly with the operation of the pump.

As shown, these check valves each comprise circular discs or plates 19 and 20, which are clamped between the abutted ends of the T-head 16 and the pipes 17 and 18, and are formed to provide centrally disposed openings threaded to receive therein the bushings 21 and 22, which, in turn, have threaded onto their free ends the ball cages

23 and 24 housing ball valves 25 and 26, respectively. For clamping the pipe sections 17 and 18, and the valve discs or plates 19 and 20 in position, the opposed ends of the pipe sections are each formed to provide a plurality of equidistantly spaced and radially disposed lugs 27, the lugs of one pipe end being aligned with those of the other pipe end for the reception of clamping bolts or the like 28. Also, clamped in position at opposite sides of the valve discs or plates 19 and 20 are packing gaskets 29, whereby to prevent leakage at the joints thereof with the adjacent ends of the pipe sections and the T-head 16.

Disposed within the bore of the pump body or casing 8 is a tubular cylinder or liner 30, preferably of brass or other suitable non-rustable metal, which has its inner end terminating in the plane of the inner end of the bore of the pump body or casing, and is of a length to have its outer end project for a distance beyond the outer end of the latter. Formed inwardly of the outer end of the tubular cylinder or liner 30 is an annular flange or collar 31, arranged in abutting relation with respect to the outer end of the pump body or casing 8, and is clamped in such abutting relation by means of a cap nut or follower 32, which is interiorly threaded onto the complementally threaded end of the pump body or casing 8. The outer end of this cap nut or follower 32 is of a reduced formation, as at 33, and is formed to provide a series of wrench engaging faces, whereby to facilitate the manipulation of the same for the easy and quick assembling of the cylinder or liner 30 into position within the pump body or casing 8, or the removal thereof from such position as may be desired or necessary from time to time.

In the operation of the pump thus provided, upon the reciprocation of the cross head 6, the piston 10 is correspondingly reciprocated within the pump cylinder or liner 30, through its rod connections 11, 12 and 13, and upon the outward stroke of the piston 10, water will be drawn from pipe 17 through check valve 25 and into the pump body or casing 8 and the cylinder or liner 30, during which action the check valve 26 will remain closed, while upon the inward stroke of the piston 10, the water within the pump will be forced through the check valve 26 and into the pipe 18 to the boiler of the engine (not shown), when the check valve 25 will remain closed. When it is desired to remove the tubular cylinder or liner 30 for purposes of repair, renewal or replacement, or for the cleaning out of the pump, the piston rod 11 will be disconnected from the bar 15, and the cap nut or follower unthreaded from the pump body or casing 8, when the cylinder or liner 30 can be with-

drawn from the pump body together with the piston 10, all without necessitating the dismounting of the pump in its entirety from its operative position.

From the foregoing, it will be readily apparent that, while a preferred embodiment of the pump construction has been described and illustrated herein in specific terms and details of construction, arrangement and operation, various changes in and modifications of the same may be resorted to without departing from the spirit of the invention, or the scope of the claims appended hereto.

Having thus particularly described the invention, what is claimed is:—

1. In a pump of the class described, a pump barrel having its periphery at the outer end threaded, a liner positioned within and extended beyond the outer end of the barrel, a collar integral with the outer portion of and positioned inwardly with respect to the outer terminus of and abutting against the outer end of said barrel, and a sleeve formed of an inner and an outer portion and further having a shoulder arranged between the two portions thereof, said outer portion of said sleeve extended from the shoulder and around the liner outwardly with respect to said collar, and the said inner portion of said sleeve surrounding the collar and further surrounding and threadably engaging with the threaded portion of the barrel, said shoulder abutting against said collar and of greater diameter than the outer portion of the sleeve and of the same diameter as the inner portion of the sleeve.

2. In a pump of the class described, a pump barrel having its periphery at the outer end threaded, a liner positioned within and extended beyond the outer end of the barrel, a collar integral with the liner intermediate the ends thereof and having its inner face abutting against the outer edge of the barrel and a sleeve comprising a polygonal outer portion, a cylindrical inner portion and a shouldered intermediate portion integral with the polygonal and cylindrical portions, said outer portion projecting outwardly from the intermediate portion and surrounding said liner, and said cylindrical portion having internal threads engaging with the threaded periphery of the barrel, and said intermediate portion abutting against the outer face of the collar.

3. In a pump of the class described, a pump barrel having its periphery at the outer end threaded, a liner positioned within and extended beyond the outer end of the barrel, a collar integral with the liner intermediate the ends thereof and having its inner face abutting against the outer edge of the barrel and a sleeve comprising a polygonal outer portion, a cylindrical inner portion and a shouldered intermediate portion integral with the polygonal and cylindrical

portions, said outer portion projecting outwardly from the intermediate portion and surrounding said liner, and said cylindrical portion having internal threads engaging
5 with the threaded periphery of the barrel, and said intermediate portion abutting against the outer face of the collar, said
polygonal portion of less diameter than said intermediate portion and said cylindrical portion of the same diameter as the intermediate portion. 10

In testimony whereof, I affix my signature hereto.

ALEXANDER R. O'BRIEN.