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F. E. COOPER

LINER FOR PUMPS AND THE LIKE

Filed Nov. 24, 1922

Fig. 1.

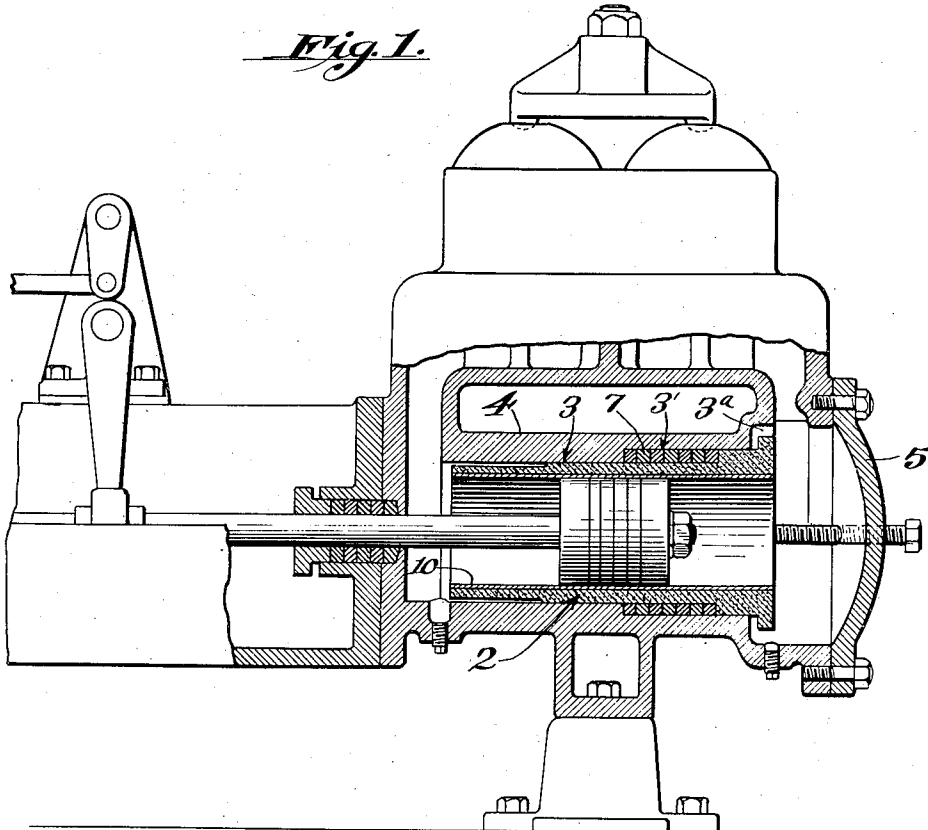


Fig. 3.

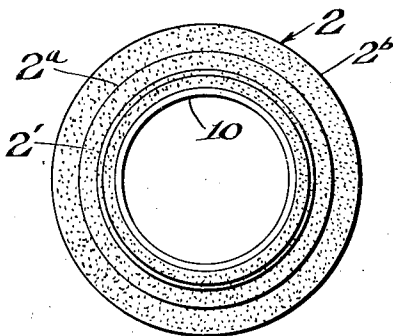
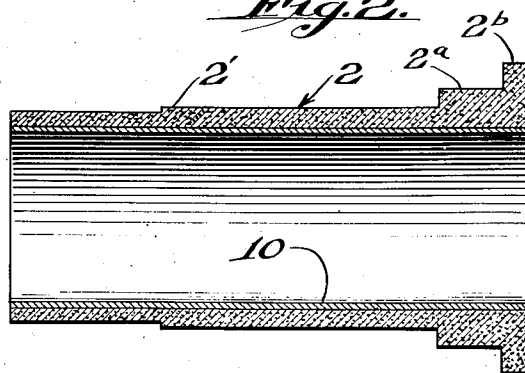


Fig. 2.



Inventor:
F. E. COOPER.
BY *Hazard and Miller*
Attorneys

UNITED STATES PATENT OFFICE.

FRED E. COOPER, OF LOS ANGELES, CALIFORNIA.

LINER FOR PUMPS AND THE LIKE.

Application filed November 24, 1922. Serial No. 603,001.

To all whom it may concern:

Be it known that I, FRED E. COOPER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Liners for Pumps and the like, of which the following is a specification.

This invention relates to pumps and more particularly to reciprocating slush pumps.

Reciprocating pumps which are utilized for pumping of slush including a large percentage of gritty material become inefficient because of the rapid wearing of the lining.

It has previously been proposed and practiced to provide removable metal liners, but this is an expensive practice due to the cost of the metal liners.

It is a broad object of the present invention to provide a removable pump cylinder bushing of low price material having a metal lining or barrel for actually taking the wear; the lining being made of comparatively thin metal and being supported by its shell or bushing, the latter being adapted to be readily inserted in the chamber of the engine cylinder.

Other objects and advantages will be made manifest in the following specification of an embodiment of the invention illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation and central longitudinal section of a portion of a reciprocating pump.

Fig. 2 is a central longitudinal section of the renewable cylinder bushing.

Fig. 3 is an end view of the bushing.

The pump bushing and liner of my invention consists of an exterior tubular jacket or shell 2 of suitable length and diameter or diameters to fit within the bore 3 of a pump cylinder 4. In the present embodiment of the invention the bore 3 is shown of differential diameters having a larger forward bore portion 3', access to which is readily had by removing a pump head 5. The outer end of the cylinder 4 is provided with an annular clearance pocket or recess 3^a.

The removable and renewable lining shell 2 I prefer, for purposes of economy, to construct of cementitious material, and this cement shell or jacket is provided with a suitable metallic wear taking liner 10 which obviously, since it is externally supported by the jacket 2, may be of comparatively thin sheet or other metal so that as soon as it has been unduly worn the jacket with its lining can be readily removed with but low cost of waste.

The exterior of the shell or jacket 2 is made approximately complementary to the differential bore of the pump cylinder, and as shown, the jacket has a cylindrical portion 2' to fit the bore 3 and has a front end shoulder 2^a to fit the bore 3'. The latter is of such length that suitable packing material 7 may be compressed between the shell and the bore of the cylinder. The outermost end of the jacket is provided with a flange 2^b adapted to be disposed in the recess 3^a of the bore when the jacket is driven home.

From the above it will be seen that I provide a renewable and removable pump lining consisting of a low cost, cement jacket or shell which is provided with a wear taking metallic lining.

Further embodiments, modifications and changes may be resorted to within the spirit of the invention as here claimed.

What is claimed is:

1. A renewable and removable pump bushing consisting of a cement jacket having differential external diameters adapted to conform to the bore of the pump cylinder having differential internal diameters, said jacket having a metallic wear taking liner.

2. In combination with a pump having a cylinder with differential bores, a cement jacket having diameters complementary to the bores and providing a packing space between the cylinder and the jacket, packing arranged in said space, and a metallic lining in the jacket.

In testimony whereof I have signed my name to this specification.

FRED E. COOPER.