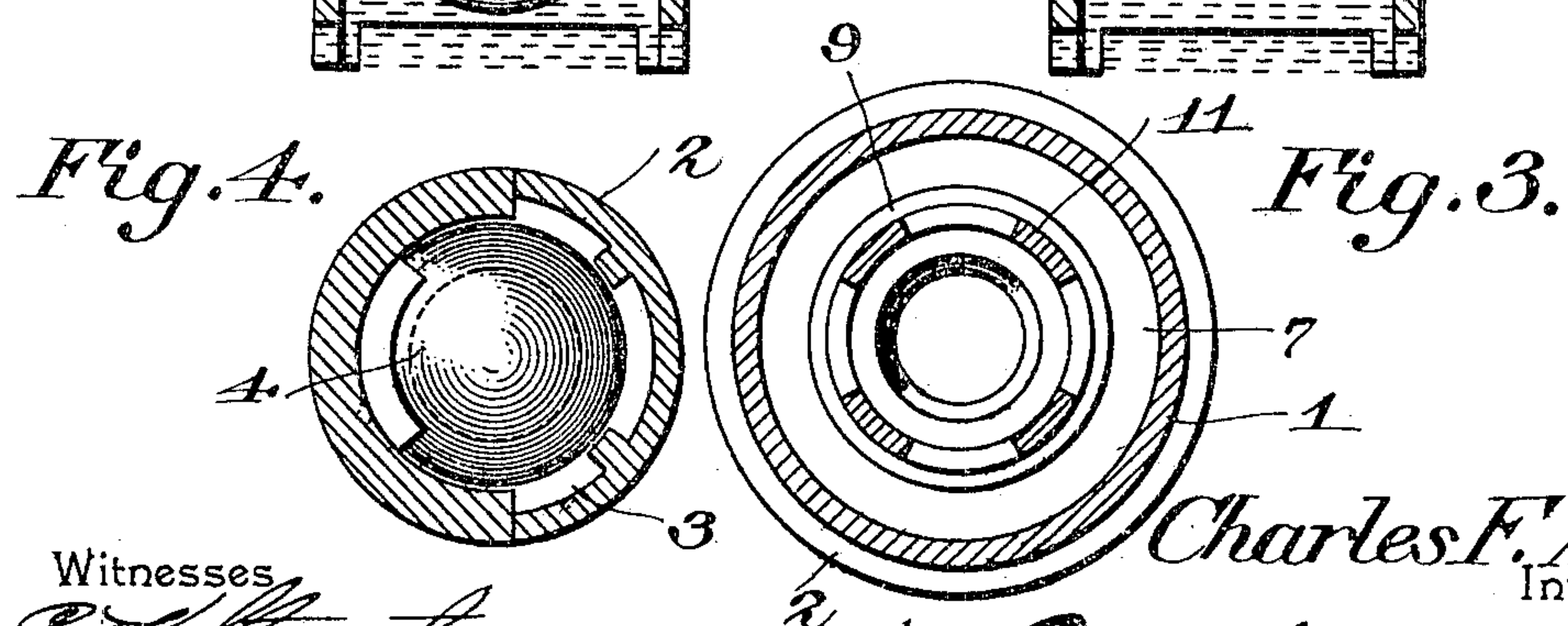
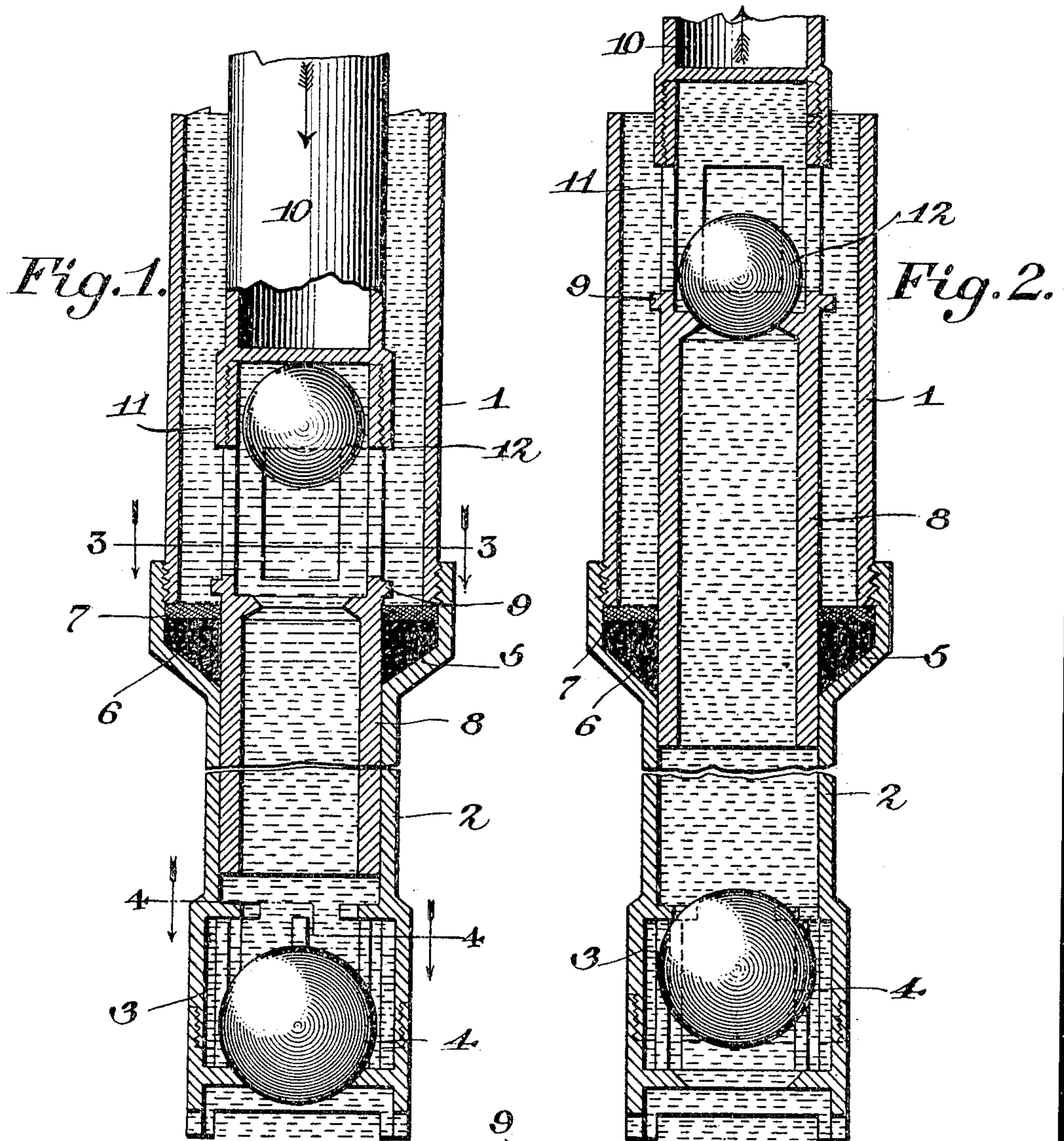


No. 799,132.

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C. F. ALLEN.
PUMP.

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PUMP.

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To all whom it may concern:

Be it known that I, CHARLES F. ALLEN, a citizen of the United States, residing at Albuquerque, in the county of Bernalillo and Territory of New Mexico, have invented a new and useful Pump, of which the following is a specification.

This invention relates to pumps, and especially to pumps for deep wells, the object of the invention being to provide a pump of this class which with the least possible expenditure of power shall be adapted to raise fluid to any desired height.

With this and other ends in view, which will readily appear as the nature of the invention becomes better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described, and particularly pointed out in the claim.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being understood, however, that no limitation is made to the precise structural details therein exhibited, but that the right is reserved to all changes, alterations, and modifications which may be resorted to within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a vertical sectional view of a pump constructed in accordance with the principles of my invention, the working barrel being shown near the downward limit of its movement. Fig. 2 is a view similar to Fig. 1, but showing the working barrel near the upward limit of its movement. Fig. 3 is a horizontal sectional view taken on the line 3 3 in Fig. 1. Fig. 4 is a horizontal sectional view taken on the line 4 4 in Fig. 1.

Corresponding parts in the several figures are indicated by similar numerals of reference.

In the construction of my improved pump I employ a pump-barrel or conducting-pipe 1, which is of greater diameter than the pump-cylinder 2. The latter is provided at its lower end with a valve-chamber 3, in which is seated a foot-valve 4, which in the form of embodiment of the invention illustrated is represented as an ordinary ball-valve, although it will of course be understood that any other well-known and approved form of valve may be substituted.

The upper end of the pump-cylinder is enlarged to form a stuffing-box 5, which is filled with fibrous packing 6, a solid flexible pack-

ing-ring 7, of leather or other suitable material, being placed on top of the fibrous packing to secure the latter in position. The leather packing-ring 7 is retained in position partly by the pump-barrel, which has screw-threaded connection with the stuffing-box at the upper end of the cylinder, but especially by the weight of the fluid which is contained in the pump-barrel when the pump is in operation. This is an important feature of the invention for the reason that I do not have to depend upon the tightening together of the members of the stuffing-box in order to make the packing effective to prevent leakage. This packing, moreover, will readily and automatically adjust itself to different circumstances and conditions under which the pump may be used. If the well is a very deep one, the weight of the superimposed column of liquid will be correspondingly increased and the packing 6 will be compressed around the working barrel much more tightly than will be the case in a comparatively shallow well, where the weight of the superimposed column of water is not so great.

8 designates the plunger, which consists of a tube fitting within the cylinder and adapted to reciprocate vertically in the latter. The plunger is provided at its upper end with an annular flange or shoulder 9, which is so disposed that at the limit of the downward movement of the plunger it will contact with the flexible packing-ring 5, the inner portion of which will thus be forced downward in the event of its having exhibited any tendency to twist or curl upwardly by following the plunger when the latter is on its upward stroke. Said flange thus serves to correct any tendency to displacement of the flexible packing-ring 6. The upper end of the plunger is connected with the pump-rod 10 by means of vertical connecting members 11, spaced apart and constituting a cage in which a valve 12 is seated.

The pump-rod 10 consists of a tube closed at its lower end above the valve-cage 11 and which is of equal diameter with the plunger, of which it may be described as forming an upward continuation or extension. This tubular pump-rod extends upwardly through the pump-barrel and is connected in any suitable manner with operating mechanism of any description. The upper end of the pump-barrel is provided with a discharge, which may be in the nature of an ordinary spout.

From the foregoing description, taken in connection with the drawings hereto annexed,

the operation and advantages of my improved pump will be readily understood. On the upstroke the valve 12 at the upper end of the plunger will close and the weight of water 5 contained in the pump-barrel will be thrown upon the packing contained in the stuffing-box. The tendency of the pump-rod will thus be to float in an upward direction, causing the foot-valve to open and the cylinder to be 10 come filled with liquid. At the termination of the upstroke the plunger occupies a space in the pump-barrel which is practically equal to the volume of water to be displaced from the cylinder on the downstroke, which con- 15 sequently may be effected with comparatively slight expenditure of power, the weight of the column of water on the downstroke being transferred to the foot-valve and a portion of the contents of the cylinder being dis- 20 placed upwardly under the valve 12 and caused to pass into the pump-barrel.

As will be seen from the foregoing description, my improved pump is of an extremely simple construction, and it may be made of 25 almost any desired capacity. As already stated, the upstroke is accomplished with extreme facility, owing to the fact that the working barrel being connected with the tubular pump-rod is practically floated by the latter

in an upward direction. On the other hand, the 30 downstroke is accomplished with great facility for the reason that a portion of the contents of the cylinder is simply displaced into the space hitherto occupied by the tubular plunger, which displaces a volume of liquid 35 practically equal to that contained in the cylinder.

Having thus described the invention, what is claimed is—

In a pump, a cylinder expanded at its up- 40 per end to form a stuffing-box, a plunger engaging the cylinder and having an annular flange near its upper end, fibrous packing in said stuffing-box, a flexible ring superimposed upon the packing and permanently engaging 45 the plunger, and a pump-barrel threaded into the stuffing-box and exercising downward pressure upon the flexible ring; the flange upon the plunger being disposed to contact with the flexible packing-ring at the limit of 50 the downward movement of the plunger.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES F. ALLEN.

Witnesses:

LEWIS H. CHAMBERLIN,
NELLIE C. BREWER.