

(No Model.)

F. H. SMITH.
BUCKET FOR LIFT PUMPS.

No. 330,933.

Patented Nov. 24, 1885.

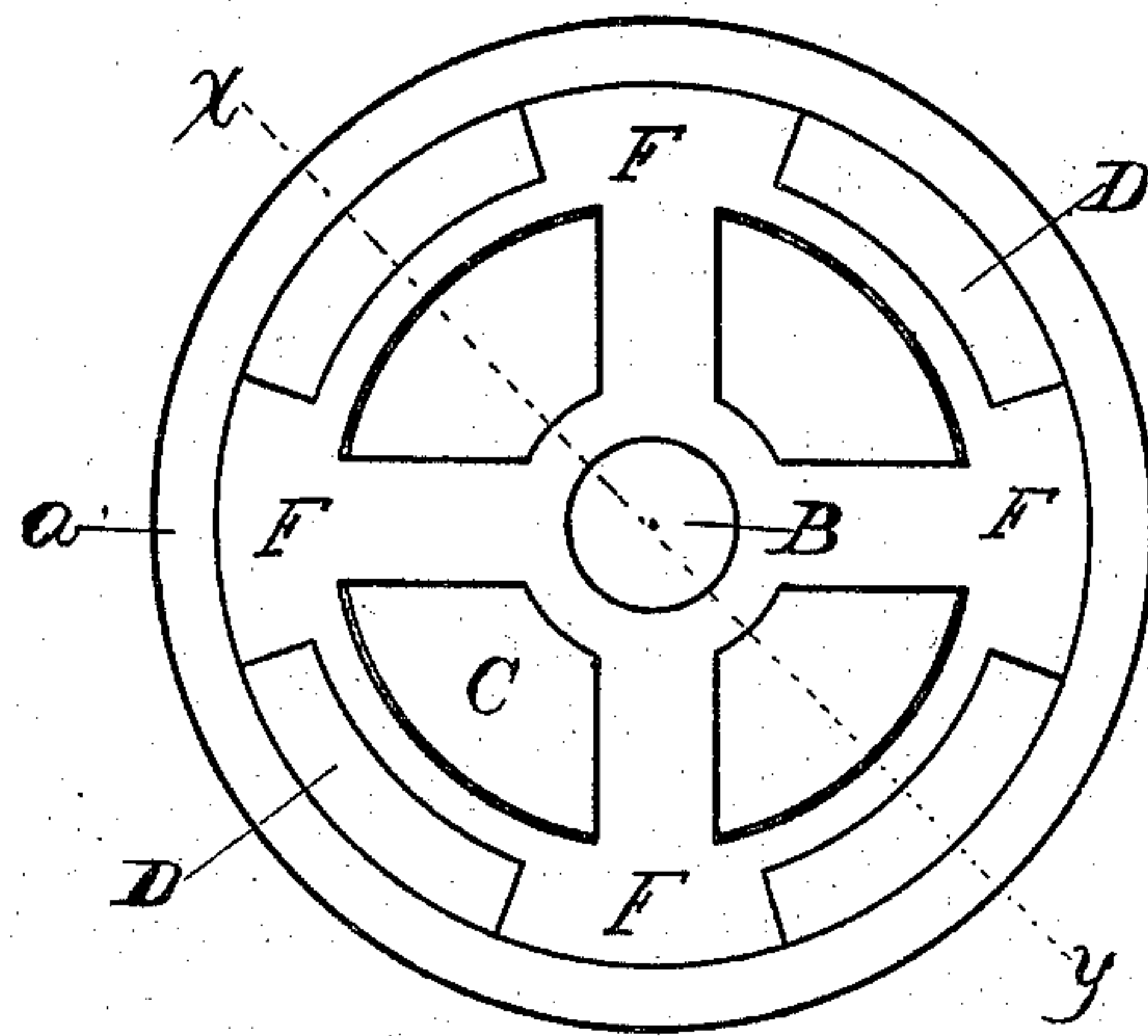


Fig. 1.

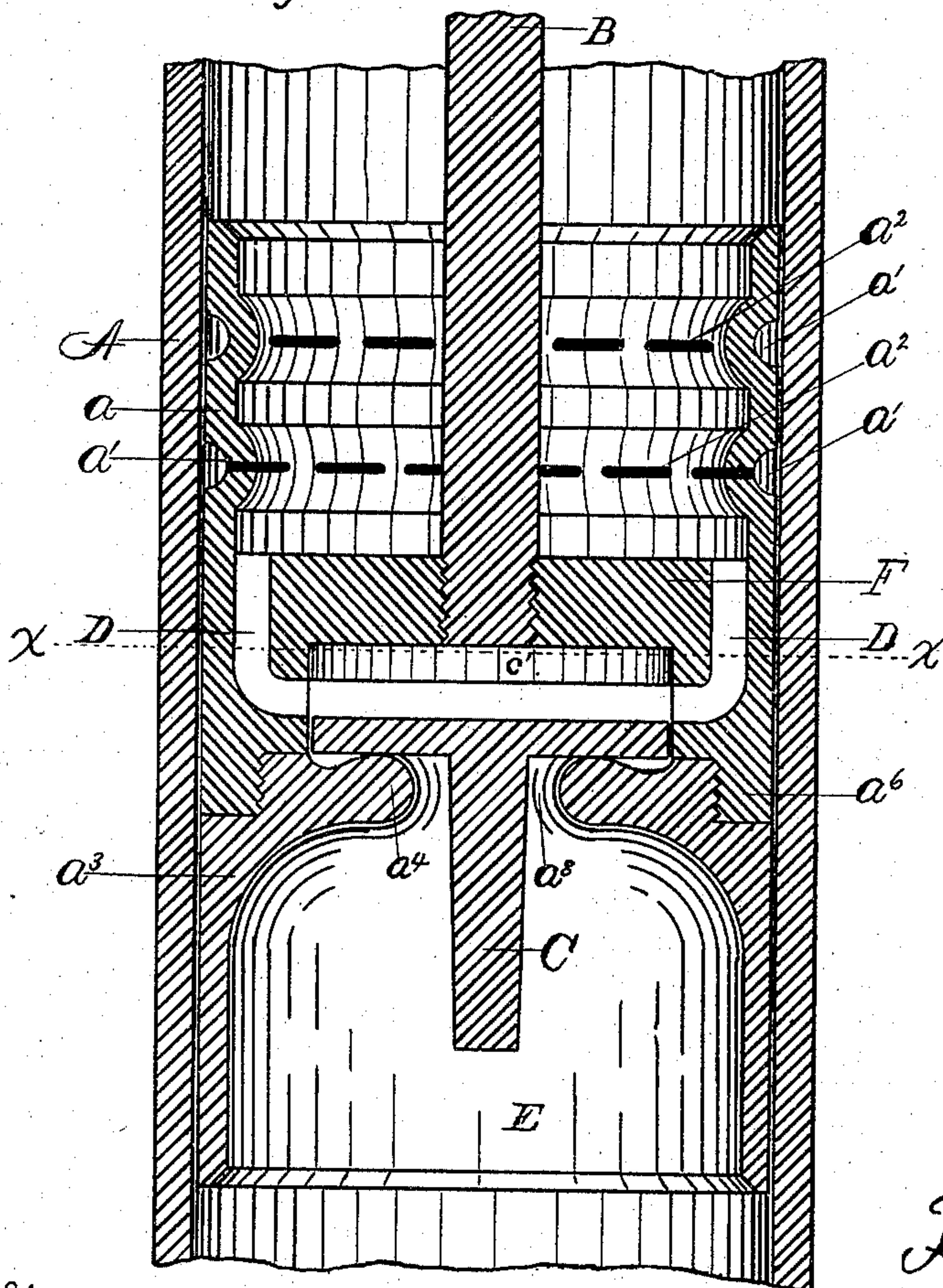


Fig. 2.

WITNESSES;
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UNITED STATES PATENT OFFICE.

FREDERICK H. SMITH, OF KANSAS CITY, MISSOURI.

BUCKET FOR LIFT-PUMPS.

SPECIFICATION forming part of Letters Patent No. 330,933, dated November 24, 1885.

Application filed July 20, 1885. Serial No. 172,027. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. SMITH, of Kansas City, Jackson county, Missouri, have invented a new and Improved Bucket for
5 Lifting-Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to plungers or buckets of that class commonly known as "water-packed buckets," the object sought for being to so construct and arrange the different parts and the water-passages contained therein that friction will be reduced to a minimum, and
15 self-packing will be more effectively accomplished than heretofore.

The invention consists in the devices and the combination of devices, substantially as hereinafter set forth, and pointed out in the
20 claim.

In the drawings, Figure 1 is a sectional plan of my bucket on line $x x$, Fig. 2; and Fig. 2 is a sectional elevation of the same located in a portion of a cylinder, the section being taken
25 on line $x y$, Fig. 1.

As the bucket alone forms the subject-matter of the invention, I have deemed it unnecessary to show a complete pump in the drawings.

The letter A represents a cylinder of ordinary construction, though in practice I would prefer to have my improved buckets operate in brass-lined cylinders on account of the corrosive action of most waters upon plain iron surfaces. The bucket proper, a , is cast in the
35 form of a hollow cylinder, with two or more bridges or arms, F, extending across its internal diameter near the lower end. These bridges intersect each other at a common center, and a pump-rod, B, is attached at that
40 point for reciprocating the bucket. A recess, c' , for receiving the valve C when fully open, is formed within the lower end of the bucket a , and it extends inwardly a sufficient distance to receive the main body of the valve, thereby
45 permitting a clear and free passage-way for the water beneath the bridges, as shown.

D represents two or more water-passages (four are shown in the drawings) formed in the body of the bucket, and extending from
50 the recess c' outwardly and up, and opening between the bridges F into the upper portion of the bucket.

The bucket a is provided with two or more circumferential grooves, a' , which are connected with the interior of the bucket by
55 means of an annular series of oblong apertures or slits, a^2 , which extend entirely through the shell of the bucket and open into said grooves.

I do not claim that the general idea of water-
60 packing is original with me, for I am aware that circular apertures have been drilled through the shell of a plunger or bucket for the passage of water to form a packing; but apertures formed in such a manner are, as I have found,
65 liable to become clogged with sand and sediment carried by the water, and thereby impair the action of the bucket or plunger.

With my improved construction of packing the slits a^2 cannot become clogged, for the following reasons, viz: The water-passages D are
70 located quite near to the internal surface of the bucket, and each time that the bucket descends in making a stroke a strong current of water is caused to issue from said passages
75 directly past the slits a^2 , thereby keeping the latter washed clear of all sediment, and even were the water-currents dispensed with the slits could hardly ever become clogged because
80 of their oblong form. It is true, however, that one end or a portion of a slit could become clogged; but thus far I have never known that to occur.

Another portion of my improved construction which I wish to point out is using two
85 or more water-packing grooves, such as a' , and arranging the lower series of slits alternately in such manner as to exclude the possibility of any two being in the same vertical line, and thereby leaving a portion of the cyl-
90 inder-surface unpacked.

The lower end of the bucket a is threaded at a^6 internally. A follower, a^3 , having a diameter corresponding to that of the bucket a , is provided with an externally-threaded upper
95 end and a shoulder which engages the lower end of the bucket. The upper end of the follower is made in the form of an apertured diaphragm, a^4 , and its upper surface constitutes a seat for the valve C.
100

The bucket and the follower may be readily separated from each other by unscrewing, thus permitting the valve to be removed and again replaced, as required.

It is obvious that without any detriment at present known the arms or bridges F may be solidly connected together by a web cast integral therewith, and I desire to reserve the
5 right to so connect the bridges whenever it may prove convenient.

The letter E represents the internal surface of the follower a^3 , and the letter a^8 is the passage for the water through the diaphragm a^4 .

10 My bucket is designed to fit the cylinder closely; but by reason of its construction very little friction is generated by its action, for the following reasons: The slits a^2 permit the water to press evenly all around the inner
15 surface of the cylinder, thereby preventing frictional contact in a great degree.

Having thus described my invention, what I claim is—

A pump-bucket provided with two or more circumferential grooves, and having oblong 20 apertures or slits connecting the grooves with the interior of the bucket, the apertures of one groove being arranged to alternate with the unbroken spaces between the apertures of an adjacent groove, substantially as described. 25

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK H. SMITH.

Witnesses:

JNO. W. NORTON,
W. A. GLOVER.