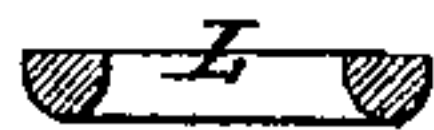
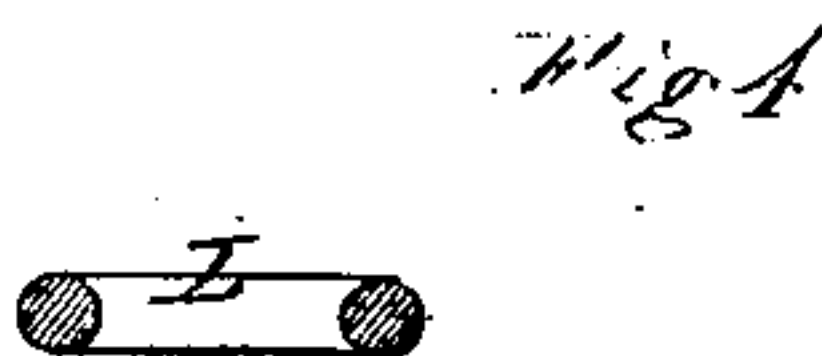
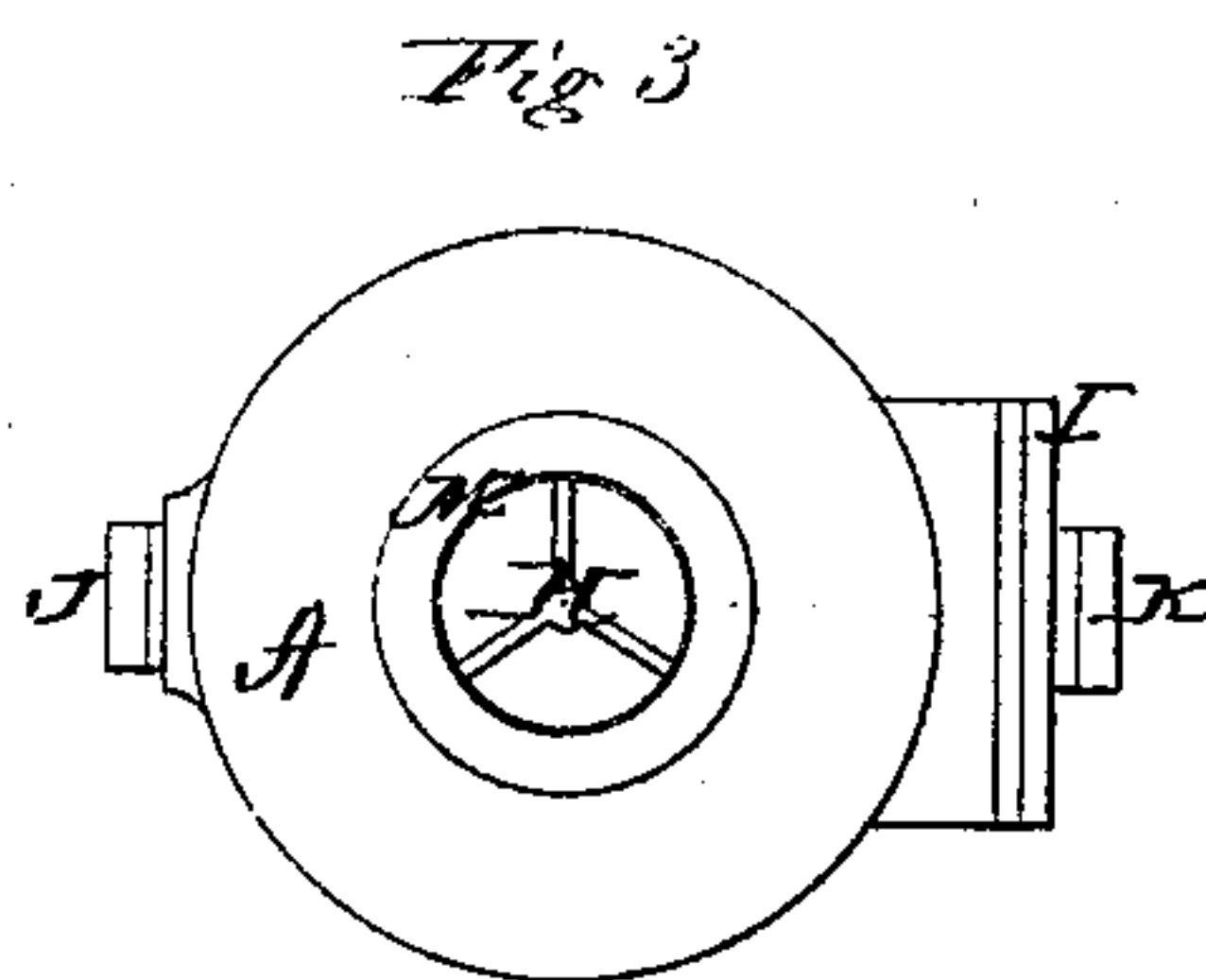
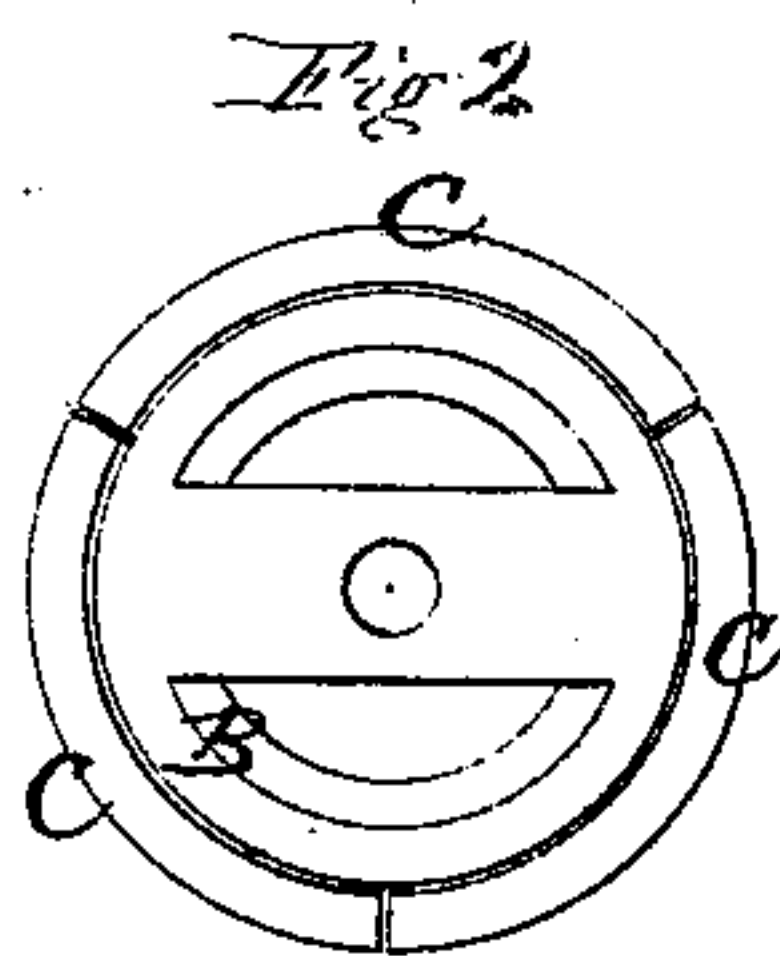
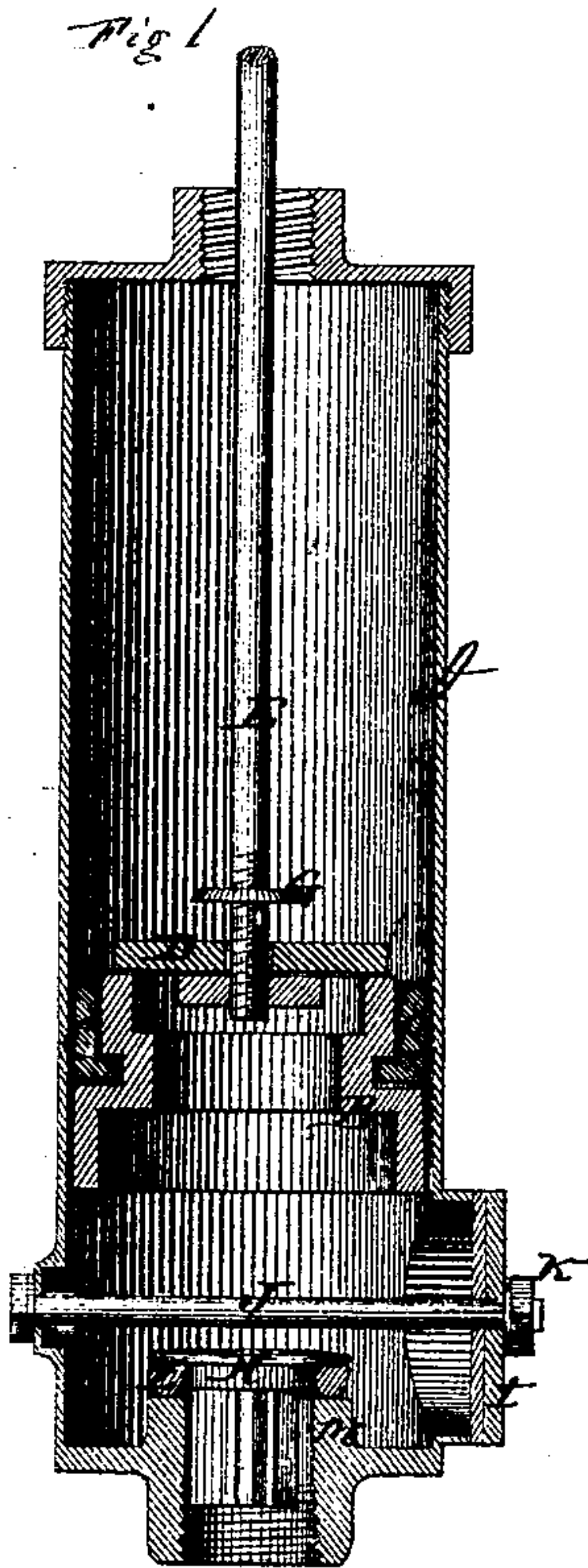


*A. Y. McDonald,*

*List Funtz.*

No. 103481.

*Patented May 24. 1870.*



Witnesses.

Harry King.  
C. L. Quert.

*Inventor,*

A. Y. McDonald  
per Shadrach Mason  
Atty.

# United States Patent Office.

ANDREW Y. McDONALD, OF DUBUQUE, IOWA.

Letters Patent No. 103,481, dated May 24, 1870.

## IMPROVEMENT IN PUMPS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, ANDREW Y. McDONALD, of Dubuque, in the county of Dubuque, and in the State of Iowa, have invented certain new and useful Improvements in Pumps; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists—

First, in the construction of the pump-plunger, with two or more expanding and self-adjusting wings;

Second, in the arrangement of a circular door on the pump-cylinder for gaining access to the lower valve; and

Third, in the application of a rounding washer or packing for the lower valve.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a longitudinal vertical section of the pump;

Figure 2 is a plan view of the plunger;

Figure 3 is a bottom view of the pump-plunger; and

Figure 4 shows vertical sections of the washer or packing to the lower valve.

A represents the pump-cylinder, within which the plunger B works perpendicularly, up and down.

The lower part of the plunger B is turned just the size of the cylinder, and above the same is a recess formed entirely around the plunger, in which recess are placed three wings C C of the form shown in fig. 1. These wings, when put together, form a ring around the upper part of the plunger, and a flange at their lower edges fitting in the recess mentioned on the plunger.

The upper edges of the wings C C are beveled on the inside, so that, when the plunger is moving upward, the pressure of the water will cause them to hug the cylinder, making them expanding and self-adjusting.

I do not confine myself particularly to three of said wings, as I may in some instances use only two, and in other cases more than three, the idea being merely to construct expanding and self-adjusting wings around the pump-plunger.

The plunger-valve D works on the rod E in the usual way, and is prevented from rising too high on the rod by means of the nut G screwed on the rod.

In the bottom of the cylinder is placed the valve H, and above the same in the side of the cylinder is

a circular door, I, secured by means of the bolt J and nut K, said bolt passing through the cylinder horizontally.

By means of this door access is gained to the lower valve H for the purpose of cleaning and repairing the same without unscrewing the entire pump.

The bolt or rod J also answers the purpose of preventing the lower valve from rising too high.

Under the lower valve H, between it and the valve-seat, M, is a rounding washer or packing L.

The object of making this rounding instead of flat, as is now commonly used, is to form what is called a sand-valve.

In driven wells there is usually a little sand comes up with the water for a while at first, getting under the flat surface of the valve, causing it to leak back; but with a rounding valve-packing the point of contact is so small as to effectually prevent this.

The ring L may be either round or half round, with the rounded portion turned down, as shown in fig. 4, and may be made of leather, rubber, or other suitable material.

The wings C C may be made of brass, iron, rubber, or any other suitable material; rubber may be moulded and suit the purpose very well.

The cylinder A is connected in the usual way by a pipe and rod to an ordinary pump-standard, the cylinder always being below frost.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The wings C C, constructed as described, with a flange at their lower ends and beveled at their upper ends, substantially as herein set forth.

2. In combination with the flanged and beveled wings C C, the plunger B, recessed as described, for the insertion of the flanges of said wings, substantially as herein set forth.

3. In combination with the plunger B and the expanding and self-adjusting wings C C, the rod E, valve D, and nut G, arranged as described, to operate substantially as and for the purposes herein set forth.

4. The arrangement, in the lower portion of the cylinder A, of the wing-valve H, rounding ring-washer L, rod J, door I, and nut K, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand, this 8th day of February, 1870.

A. Y. McDONALD.

Witnesses:

ALONZO CRAGIN,  
J. B. HOWARD.