J. HEGARTY.

Piston or Plunger Packing for Fountains.

No. 227,526. Patented May 11, 1880.

Fig. 1.

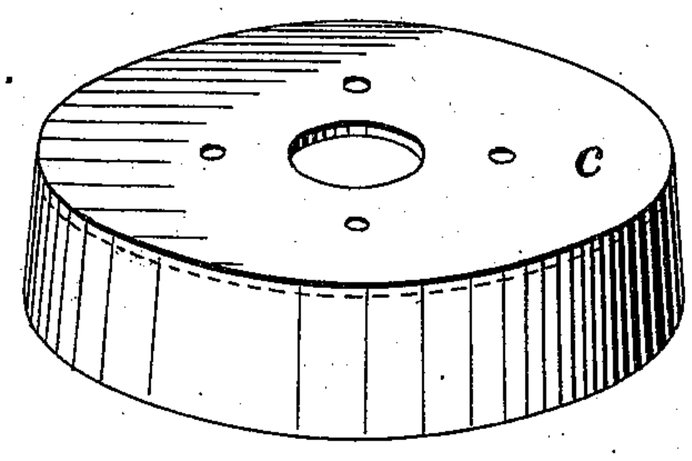
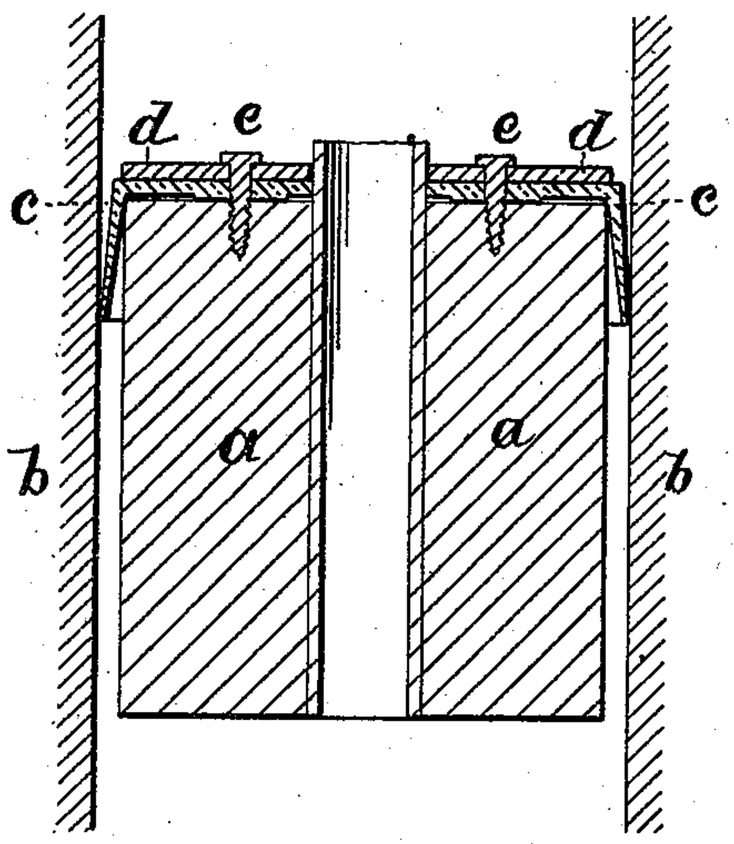


Fig. 2.



Attest:
Alexander J. Robinson
E. E. Masson

Inventor:
John Hegarty by
A. Pollok his atty

UNITED STATES PATENT OFFICE.

JOHN HEGARTY, OF NEW YORK, N. Y.

PISTON OR PLUNGER PACKING FOR FOUNTAINS.

SPECIFICATION forming part of Letters Patent No. 227,526, dated May 11, 1880.

Application filed June 16, 1877.

To all whom it may concern:

Be it known that I, JOHN HEGARTY, of the city, county, and State of New York, have invented certain new and useful Improvements in Piston or Plunger Packing, of which the following is a specification.

My invention relates to the packing of pistons or plungers used in automatic fountains in which a jet or jets of liquid are produced by a piston or plunger descending within a cylinder by its own weight. These plungers or pistons are loosely fitted within their cylinders, but are provided with a packing which prevents the water or other liquid within the cylinder from passing through any part other than that provided for its issue. It is upon the construction and operation of the packing that the efficiency of the fountain depends. Any leakage will be fatal to the perfect operation of the fountain, for it is important that the fountain should run without being wound up as long as possible, and the time within which the fountain will run down is inversely proportionate to the leakage.

The object of my invention, therefore, is to produce a packing which shall answer all the requirements and conditions of a perfectly-operating fountain—that is to say, the production of a packing which shall possess the following characteristics: first, perfect elasticity and so constructed that it shall be self-expanding—*i. e.*, adapt itself perfectly to the inner wall of the cylinder—so as to exclude all passage of liquid between the piston and the cylinder when internal pressure against the packing is produced by the descent of the piston, and also that it shall be collapsible, so that when external pressure be applied to the packing—that is to say, when the piston is raised against a superincumbent column of liquid—the packing shall, as it were, collapse and allow free passage of the liquid between the piston and the cylinder; second, absolutely tight and permanently tight joint of the packing with the piston, so that under no circumstance shall liquid pass between the packing and the piston; third, facility of application, enabling the constructor as well as the user of the fountain to perfectly and readily apply and replace the same whenever needed without special skill or experience; fourth, non-liability to get out of order. This is the more important, since, unless the fountain is operative, it is an incumbrance and a nuisance.

The packings I have used prior to the present invention are open to objection, as follows: Those composed of leather in use contract, become hard, and do not remain water-tight. Moreover, the water is discolored and the friction against the sides of the water-cylinder is greater than is desirable. Rubber has, therefore, been substituted for leather; but difficulty has been experienced in other respects. A hollow semisphere secured to the top of the plunger has been found by me to be very imperfect, owing to the even thickness of the rubber, and to be liable to turn upside down when elastic, or to leak when stiff. Moreover, the appendages required to secure it, being a brass plate, tube, and nut, are expensive. When a flaring ring thinner at the bottom than the top was tried a difficulty was experienced in the attachment. It was found that attachment at the bottom of the piston would not answer, and that when effected by wire (the instrumentality first used) was defective. In order to overcome these difficulties the packing was sprung into place and provided with an internal lip, which fitted in an annular groove in the piston, and an internal groove, into which a projection on the piston fitted. All these packings were liable to leak or to slip up and down on the piston. The last form described, when properly secured with wire, was found to answer well; but the wire fastening required an expert, or one particularly skilled, and was a source of trouble to those using the fountains.

From the foregoing description the advantages of my improvement will more readily be seen and appreciated. Its construction and mode of application are as follows:

Referring to the drawings, Figure 1 is a perspective view of the packing as made.

It consists of an inverted rubber cup, the sides or flanges of which are slightly flaring or conical. The top is perforated in the center for the passage of the jet-tube and for screws. It is of a certain thickness, so as to give the requisite strength and elasticity to it to serve as a packing or cushion between the plunger and the plate by which it is fastened to the

former. The flanges are feather-edged or thinner, so as to adapt themselves with accuracy to any inequalties in the cylinder with but little friction.

The packing is made and vulcanized in molds in a manner well known to rubber manufacturers, and no reference to that need be made here. The packing thus made is placed on top of the plunger with the flanges overhanging the sides, and it is secured thereto by a metal cap-piece, which is placed on the top of the disk portion of the packing and by means of screws passing through the cap-piece and the packing into the plunger, as shown in Fig. 2 of said drawings, which represents, in vertical section through the axis of the apparatus, the plunger *a*, to which the packing is applied. In said figure, *b* is the cylinder containing the plunger, which, in this instance, is shown to be provided with a central orifice, which, however, is to be closed on top by the jet-tube and nozzle.

c is the packing applied on top of the plunger, and secured thereto by a metal cap or disk, *d*, and screws *e*.

It will be understood that the plunger may be solid and the jet-tube may be carried along the side of or through the body of the cylinder, as shown in my Patent No. 183,163. In such case neither the rubber cap-packing nor the clamping-disk need be centrally perforated, although such construction will not interfere with the perfect operation of a solid plunger.

I do not desire to be understood as claiming, broadly, a rubber packing formed of a flange and ring for the purpose of attachment, as this has been used on the pistons of compression-pumps; nor a packing of any shape when made of leather alone or in combination; nor, broadly, the combination, with the cylinder of an automatic fountain and loosely-fitting plunger, of a collapsible and expanding rubber packing; but,

Having thus described my invention, and the manner in which the same is or may be carried into effect, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a cylinder of an automatic fountain and a loosely-fitting plunger descending by its own weight against a body of liquid, of a packing formed of rubber and composed of an elastic conically-shaped flange and a disk or ring connected with each other, as shown, so that the flange flares outward from its point of attachment, being in its normal position of a greater circumference at its free edge than the disk or ring at its exterior periphery, the said packing being secured to said plunger by the ring or disk to make a water-tight joint and prevent motion in either direction, substantially as described.

2. The combination, with a cylinder of an automatic fountain and a loosely-fitting plunger descending therein by its own weight against a body of liquid, of a self expanding and collapsing rubber packing formed of a conically-shaped flange with its thickness diminishing to the lower edge, which is free, and fixed at its upper edge to the plunger, in the manner substantially as specified, to make therewith a water-tight joint and prevent motion in either direction on the plunger, as set forth.

3. In combination with a cylinder of an automatic fountain, a plunger descending in said cylinder by its own weight against a body of liquid and provided with a packing secured thereto by clamps on the top of the plunger, as shown and set forth.

In testimony whereof I have hereunto signed my name this 13th day of June, 1877.

JOHN HEGARTY.

Witnesses:
A. H. TIFFT,
S. H. GREEN,
A. J. ORTON.