No. 607,523. Patented July 19, 1898.

J. H. PIERCE & E. A. THAYER.

AIR PRESSURE FILTER.

(Application filed Oct. 9, 1896.)

(No Model.) 2 Sheets—Sheet 1.

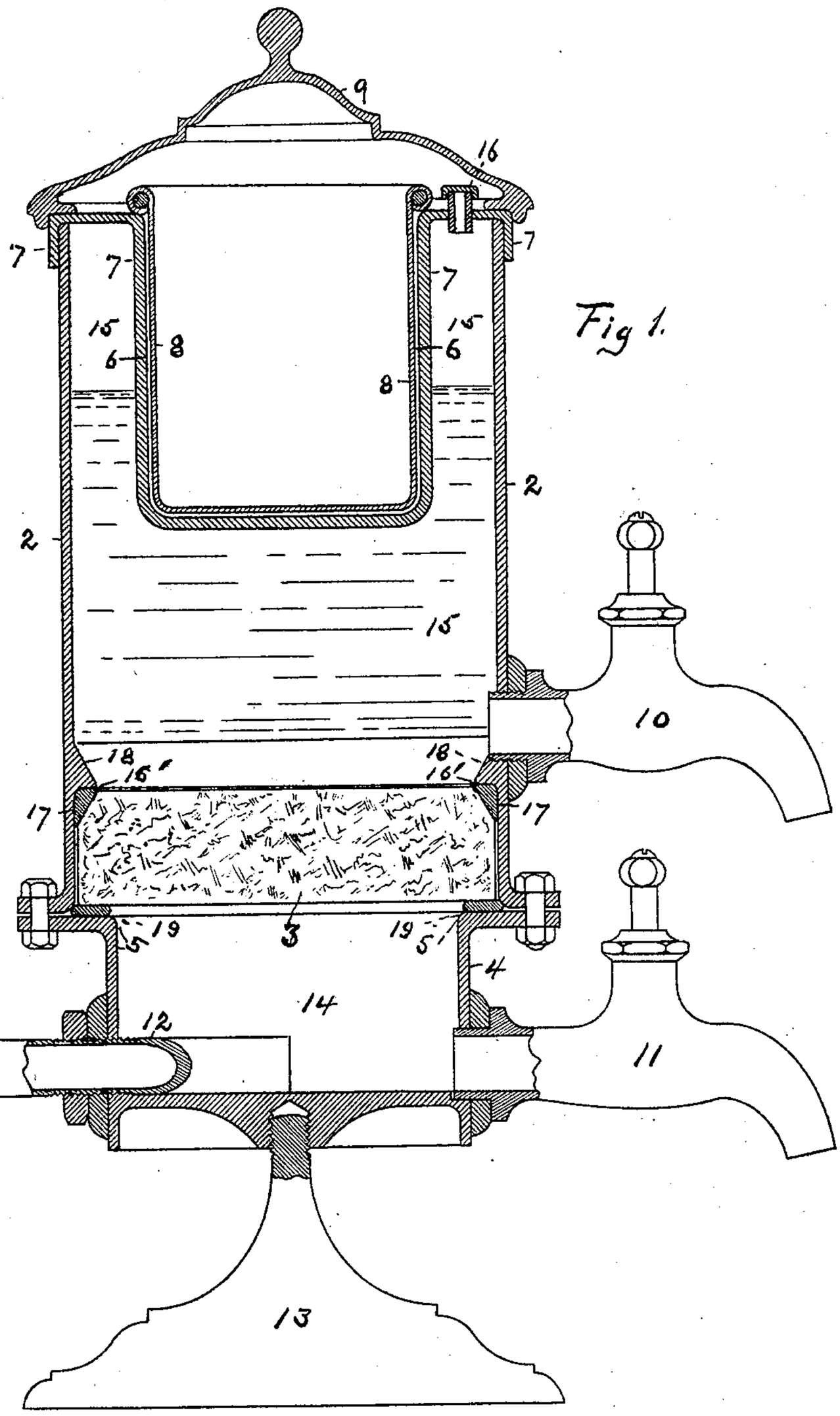

Fig 1.

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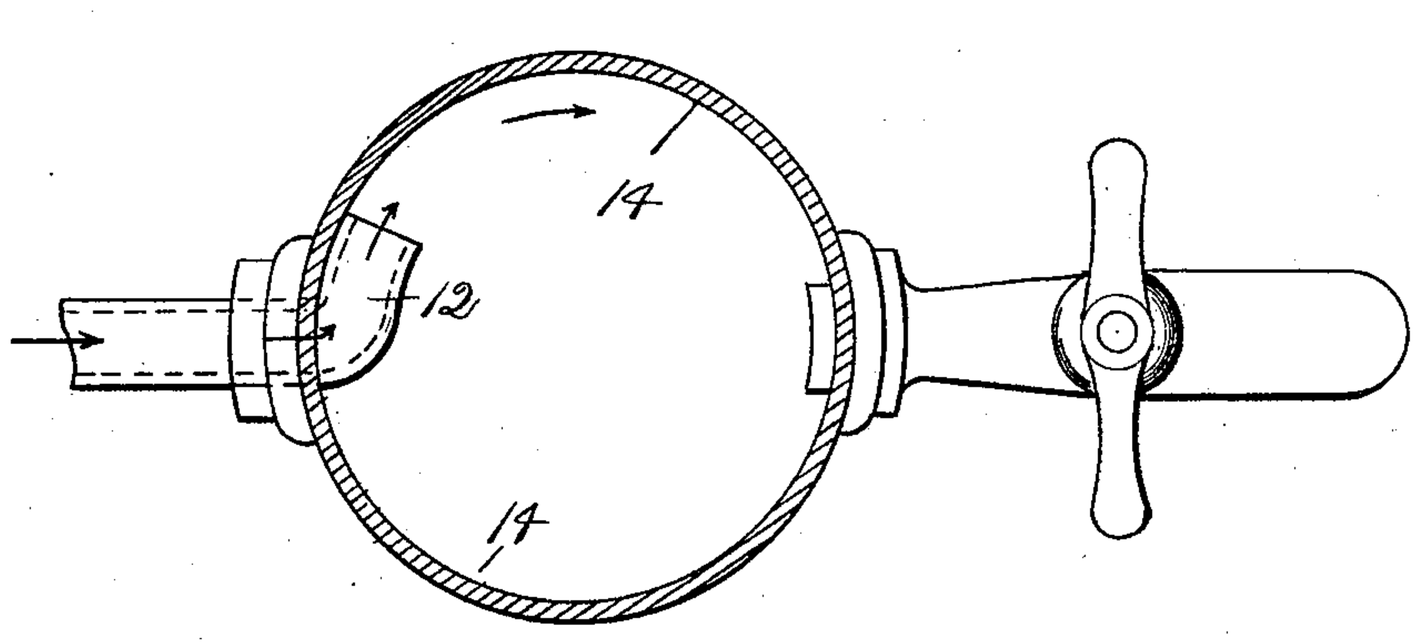
Fig. 2.



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UNITED STATES PATENT OFFICE.

JOSEPH H. PIERCE AND ELMER A. THAYER, OF PUEBLO, COLORADO.

AIR-PRESSURE FILTER.

SPECIFICATION forming part of Letters Patent No. 607,523, dated July 19, 1898.

Application filed October 9, 1896. Serial No. 608,402. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH H. PIERCE and ELMER A. THAYER, citizens of the United States, residing at Pueblo, in the county of Pueblo and State of Colorado, have invented certain new and useful Improvements in Air-Pressure Filters; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in filters of the class in which the water is filtered by pressure through a porous wall; and its objects are to provide an improved filter of more economical construction and in which the porous wall can be readily cleansed without removal; and the invention consists in the construction and novel combination of parts hereinafter described, pointed out in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the device. Fig. 2 is a horizontal section taken on a line bisecting the lower chamber.

Similar numerals of reference refer to similar parts throughout both views.

The case consists of a vessel of any suitable size and form and is preferably constructed in two parts for convenience of construction. The upper part 2 is for the filtered water, and the porous wall 3 is fitted in it, forming its bottom, and it is packed with suitable gaskets to seal it in place. Our preferable construction to secure a water-tight connection is to bevel the upper edges 16′ of the porous wall 3 and provide beveled gaskets 17, shaped on their inner faces to coincide with said upper beveled edges, and attach a projection 18 to the upper vessel 2, against which the beveled gaskets 17 impinge and are held in place. When the porous wall 3 is forced up against these beveled gaskets 17 and held there by the shoulders 5, the sealing is complete. The gaskets 17 may be put in dry and be of such material that they will swell by subjection to moisture.

In the construction shown in the drawings a flat gasket 19 is used to seal the joint between the two vessels 2 and 4 by compression between the porous wall and the shoulders 5. The lower part or vessel 4 forms a chamber 14 below the porous wall 3, and by its flanged construction provides shoulders 5, which aid in supporting and holding the porous wall 3 in place when the two vessels 2 and 4 are secured to each other. Both of the vessels 2 and 4 are constructed air and water tight. For the purpose of forming an ice-chamber 6, when desired, the top wall 7 of the upper chamber 15 is constructed with a recess or cup-basin, forming the chamber 6, as shown in the drawings. In this chamber 6 a thin metallic ice-receptacle 8 is fitted in, so as to be easily removed. A cover 9 ornaments the top of the device and covers it and the ice chamber or receptacle 8. The filtered water is drawn off through a stop-cock 10, placed just above the porous wall 3. Another stop-cock 11 enters the chamber 14 for discharge, and is preferably of greater diameter, about twice, than the supply-pipe 12 to secure an ample discharge for cleansing purposes. An inlet-pipe 12 connects the chamber 14 with the water-supply pipe. A stand 13 supports the filter any convenient or desired height.

The inlet-pipe 12 projects through the wall of the chamber 14 and is then turned to one side to give the water a rotary motion in the chamber, which aids in cleansing the bottom of the porous wall and in preventing particles of dirt and other impurities from remaining attached to it. It is obvious that the inlet-pipe 12 could be adapted to give this rotary motion to the water by other forms and constructions, but the means described is the preferable construction. The valve 16 is preferably similar to a bicycle-tire valve. It is placed in the top of the upper vessel or chamber 15 for the introduction of air under pressure to aid the discharge for cleansing purposes.

The mode of operation is as follows: The water enters the chamber 14 through the supply-pipe 12 under pressure. The stop-cock 11 being closed, the water is forced up through the porous wall 3 into the upper chamber 15, compressing the air in the upper part of this chamber until the pressure of the air and water is equalized. The filtered water is drawn off as wanted through the stop-cock 10. The

filtered water is kept cool without contact with the ice by means of the ice-receptacle 8 and recess 6. The receptacle 8 being removable can be easily cleaned as required. When it is desired to clean the porous wall, the supply is shut off, and the lower stop-cock 11 is opened. The compressed air in the chamber 15 forces the water down through the porous wall 3 with a pressure, and thereby forces off the particles of dirt and other impurities from its bottom. If there is a deficiency of air, it is supplied through the valve 16, preferably by means of a bicycle air-pump. The chamber 14 and the porous wall 3 may also be flushed by turning on the full supply of water and leaving the stop-cock 11 wide open. The discharge being greater than the supply through the inlet-pipe the water in the upper chamber 2 also escapes through the porous wall, thereby aiding the cleaning.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of the two closed vessels or chambers secured to each other integrally or otherwise, a porous wall forming a partition between said two vessels; a valve as 16 placed in the top of the upper vessel; means to draw the filtered water from the upper vessel; a supply-pipe adapted to discharge the water into the lower vessel with a rotary motion; means for the discharge of water from the lower vessel of greater capacity than the supply-pipe, preferably twice as much; and means to seal and hold the porous wall in place.

2. In a porous-wall filter, the combination of an upper chamber or vessel provided with inner projections, as 18, near its bottom, with a porous wall provided with beveled edges, as 16; a gasket adapted to impinge against said projections and provided with inner beveled faces to coincide with the beveled edges of said porous wall; a lower vessel provided with flanges adapted to hold said porous wall in place against said gaskets; and means to secure the upper and lower vessels to each other.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH H. PIERCE.
ELMER A. THAYER.

Witnesses:
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