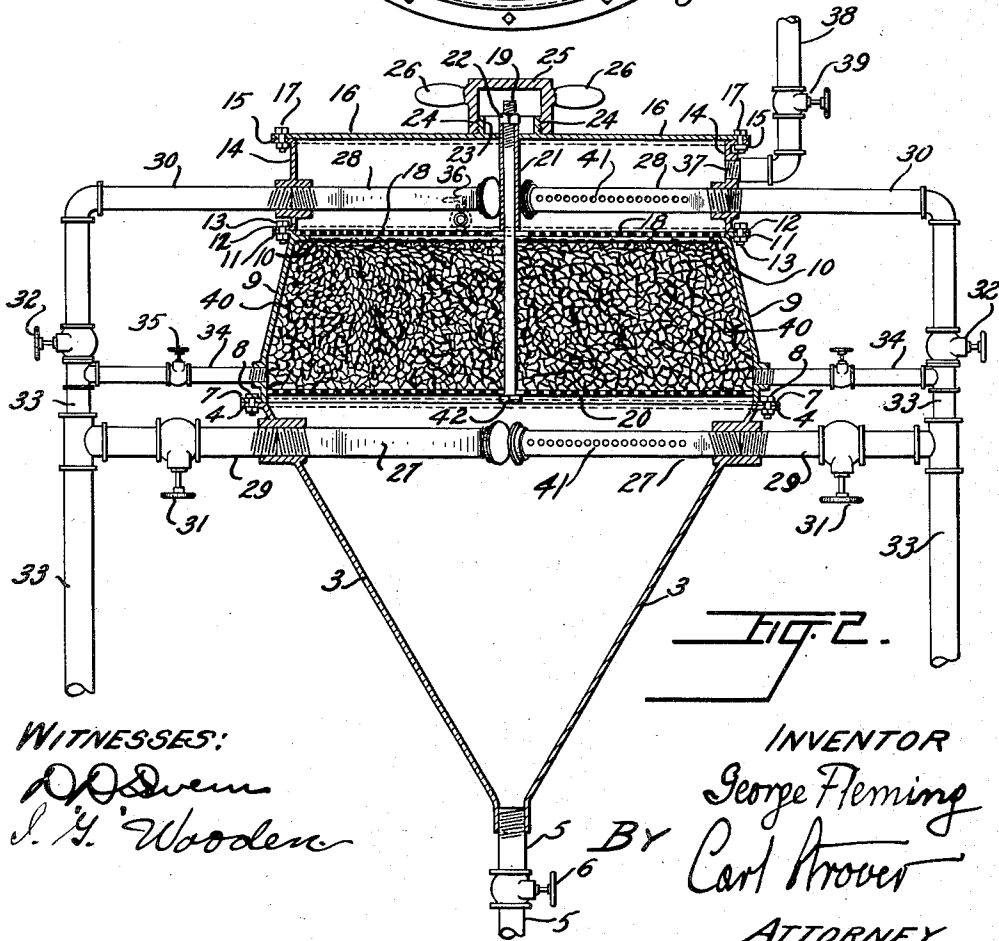
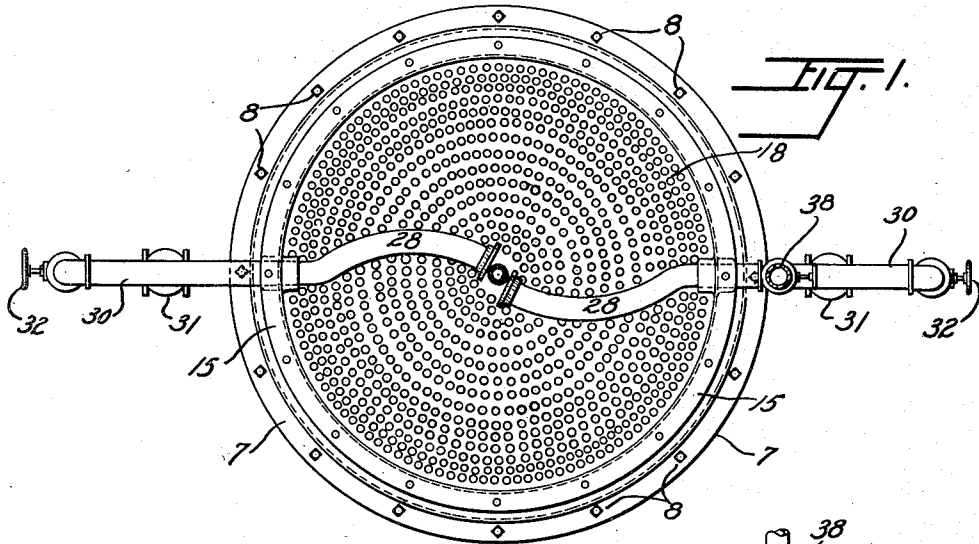


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FILTER.

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976,995.

Patented Nov. 29, 1910.



WITNESSES:

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FILTER.

976,995.

Specification of Letters Patent.

Patented Nov. 29, 1910.

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To all whom it may concern:

Be it known that I, GEORGE FLEMING, a citizen of the United States, residing in the city of Chicago, county of Cook, and State of Illinois, have invented a certain new and useful Improvement in Filters, of which the following is a specification.

This invention relates to filters. Its principal objects are to provide simple and effective means for cleaning filters without taking them apart, and to increase their efficiency.

In the drawings Figure 1. represents a top plan view of my filter with the lid removed; and Fig. 2. represents a vertical sectional elevation of my improved filter and of its water connections.

Referring to the drawings, 3 represents a preferably funnel shaped receptacle, which constitutes the base of my filter, and which may be mounted on any suitable support. It is provided at its top with external circular flange 4, and at its bottom with outlet pipe 5, controlled by valve 6. Mounted on the top of receptacle 3, and attached thereto by means of external circular flange 7 and bolts 8, passing through corresponding holes in flanges 4 and 7, is ring 9, the lower one-fourth of which is made cylindrical, while the upper three-fourths are made slightly conical, and which is provided slightly below its top with inner circular flange 10, and at its top with outer circular flange 11. Mounted in turn on top of ring 9, and attached thereto by means of outer circular flange 12, and bolts 13, passing through corresponding holes in flanges 11 and 12, is cylindrical ring 14 which is provided at its top with outer circular flange 15. Mounted finally on top of ring 14 is cover 16, attached to ring 14 by means of bolts 17 which pass through corresponding holes in flange 15 and in the outer edge of cover 16. On flange 10 is mounted perforated plate 18, and toward it is drawn, by means of bolt 19, perforated plate 20 which is inserted from below into ring 9, and which snugly fits into the cylindrical portion of said ring. Bolt 19 passes through holes in the centers of plates 18 and 20, and also through tube 21 which surrounds bolt 19 snugly above plate 18, and which is long enough to reach through cover 16. At its lower end bolt 19 is provided with a head 42, resting against plate 20, and at its upper end it is threaded and provided with

nut 22, resting against the upper end of tube 21. The lower end of tube 21 rests on plate 18, the center hole thereof being barely large enough to pass bolt 19. Cover 16 is provided around its central opening through which tube 21 and bolt 19 pass, with circular boss 23, onto which is screwed, by means of threads 24, cap 25, provided with handles 26. Receptacle 3, just below its upper edge, and ring 14, just above its lower edge, carry horizontally curved tubes 27 and 28 respectively, which on their convex edges are each provided along their whole length with a row of horizontally bored holes 41. Tubes 27 and 28 are connected, in any suitable way, through pipes 29 and 30, controlled by valves 31 and 32, respectively, with water pipes 33 which in turn are branched off from a water pressure main (not shown in drawings). Auxiliary water pipes 34, controlled by valves 35, connect pipes 33 with ring 9, into which they are threaded. Into ring 14 is threaded near its lower edge, stopcock 36, and, near its top, nipple 37 which connects with outlet pipe 38, controlled by valve 39. The space between plates 18 and 20 is filled with filtering material 40, consisting of charcoal, quartz sand or any other suitable substance.

The operation of my device is as follows:—Valve 31 and valve 39 are opened; all other valves closed. This causes vessel 3 to be filled with water, and then water to pass under pressure from vessel 3 through perforated plates 18 and 20, and the filtering material 40 between them, into the space between plate 18 and cover 16, and thence through pipe 38 out of the filter into any suitable storage vessel in which there is either no pressure or a pressure less than that in the filter. This process of filtering can at any time be stopped by merely closing valve 39. The principal accumulation of refuse would ordinarily be on the lower face of plate 20. But by means of the continual swirling motion of the water entering receptacle 3 just below plate 18, caused by its entry under pressure through the radial holes in curved tubes 27 this accumulation is largely prevented, and the refuse caused to settle in the bottom of receptacle 3 whence it is easily removed by the opening of valve 6. By but partially opening this valve and fully opening valves 31 the said swirling and cleansing motion of the water in receptacle 3 can be materially increased, and

finally, by fully opening valve 5, all refuse therefrom fully removed. In a similar manner the upper surface of plate 18, and the whole space between plate 18 and cover 5 16 can be effectively cleansed by opening valves 32 and stopcock 36, after first shutting all other valves. The upper face of plate 20 together with the lower strata of filtering material 40, and the perforations 10 in plate 20 can be effectively cleaned by opening valve 6 and valves 35, after first closing all other valves. Finally when it becomes necessary, at larger intervals, to thoroughly clean all of the filtering material 15 40, this may be readily accomplished by first closing all valves; then taking off cap 25, partially unscrewing nut 22, pushing down correspondingly bolt 19, and thereby lowering plate 20; then replacing cap 25, 20 and thereupon alternately opening and closing, first valves 32 and valve 6, and then valves 31 and stopcock 36:—thereby loosening up the filtering material 40, and washing it by forcing a full stream of water 25 through it, alternately downward and upward, until it is thoroughly cleansed:—whereupon all valves are again closed, cap 25 removed, nut 22 screwed down again, thereby drawing up bolt 19 and plate 20, 30 and packing the filtering material 40 tight again by means of the wedge action of the conical part of ring 9 upon it, and finally again replacing cap 25. Thus a thorough cleansing of my filter can be accomplished 35 without either replacing the filtering material, or taking the filter apart.

What I claim and intend to protect by Letters Patent is:—

1. In filters, the combination of two chambers; a horizontal filtering partition between them; valve controlled outlets from each of said chambers; valve controlled pressure jets entering said chambers near said partition, and horizontally curved 45 spraying nozzles attached to said pressure jets, arranged with their convex sides in the same circular direction, and provided, on said convex sides only, with a series of openings, for the purpose described.

2. In filters, the combination of a cone- 50 shaped base with valve-controlled outlet at its lower end, with an upward tapering ring attached to the top thereof; a cylindrical ring attached to the top of the first named ring; a cover attached to the top of the cy- 55 lindrical ring; perforated plates constituting horizontal partitions near the top and bottom of the tapering ring; a flange on the inside of the tapering ring on which the upper perforated plate rests; means for draw- 60 ing the lower perforated plate toward the upper perforated plate; filtering material interposed between the two perforated plates; valve controlled pressure jets entering each of the chambers of said filter; 65 and a valve-controlled outlet from the upper chamber, substantially as described.

3. In filters, the combination of a cone- shaped base with valve-controlled outlet at its lower end, with an upward tapering ring 70 attached to the top thereof; a cylindrical ring attached to the top of the first named ring; a cover attached to the top of the cylindrical ring; perforated plates constituting horizontal partitions near the top and 75 bottom of the tapering ring; a flange on the inside of the tapering ring on which the upper perforated plate rests; a vertical bolt penetrating the two perforated plates, having a head resting against the lower 80 side of the lower perforated plate and carrying a nut threaded on its upper end; a tube surrounding said bolt, the lower end of which rests against the upper surface of said upper perforated plate while the upper end 85 thereof rests against said nut; a cap-closed opening in the cover to give access to said nut; filtering material interposed between the two perforated plates; valve controlled pressure jets entering each of the chambers 90 of said filter; and a valve-controlled outlet from the upper chamber, substantially as described.

GEORGE FLEMING.

Witnesses:

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