(No Model.) 2 Sheets—Sheet 1.

P. ABBOTT.

WATER FILTER.

No. 268,971. Patented Dec. 12, 1882.

Fig. 1.

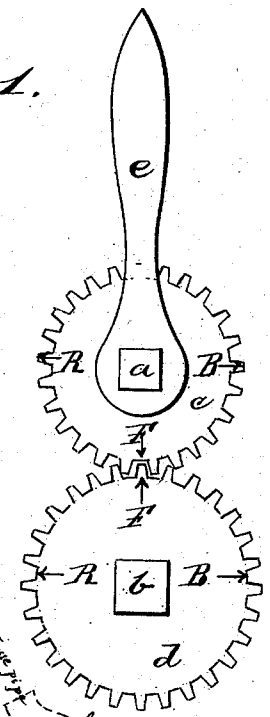


Fig. 2.

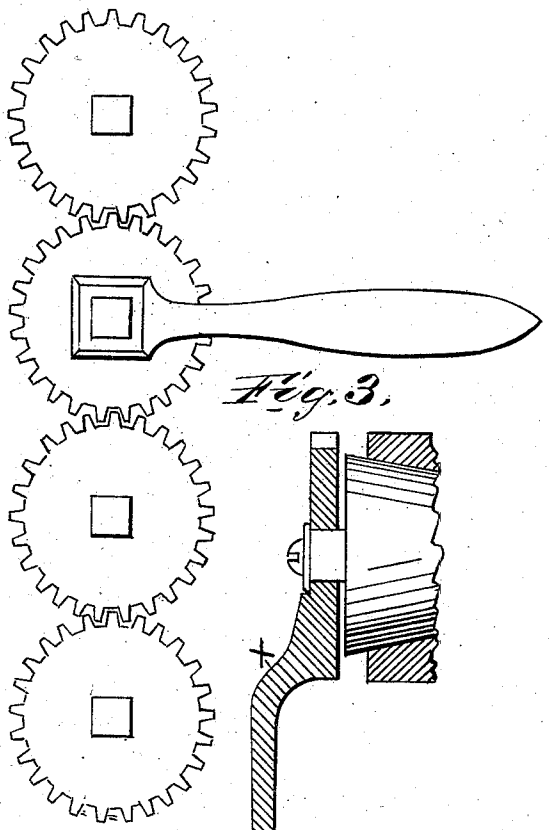
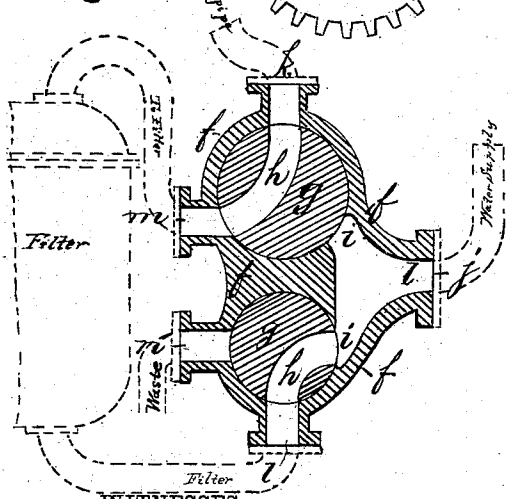


Fig. 3.

Fig. 4.



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J. H. Ives

INVENTOR

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N. PETERS, Photo-Lithographer, Washington, D. C.

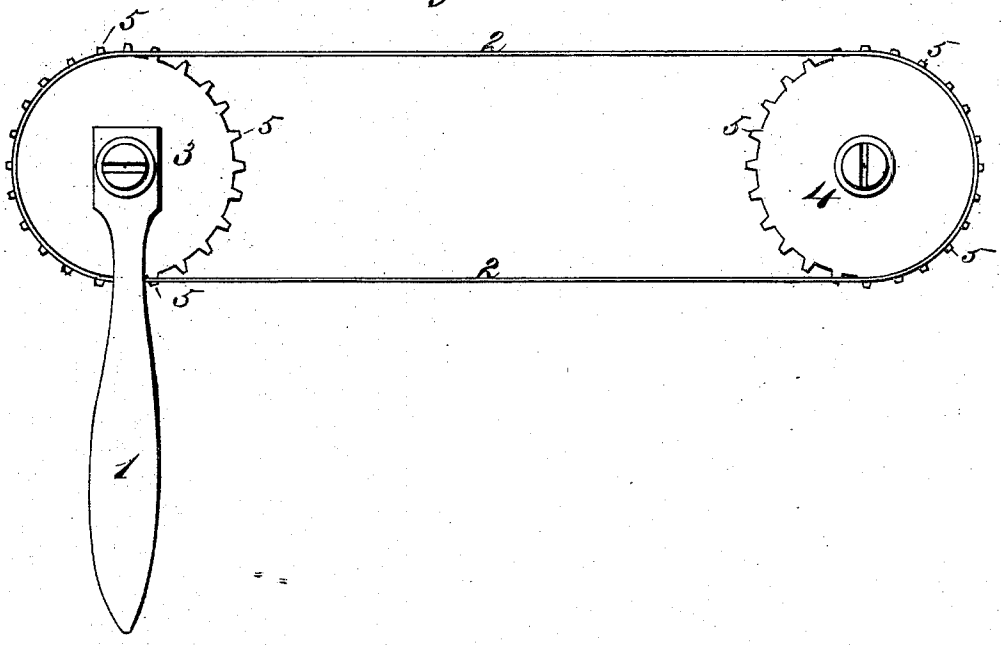
(No Model.) 2 Sheets—Sheet 2.

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WATER FILTER.

No. 268,971. Patented Dec. 12, 1882.

Fig. 5.



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UNITED STATES PATENT OFFICE.

PHILLIPS ABBOTT, OF BROOKLYN, NEW YORK.

WATER-FILTER.

SPECIFICATION forming part of Letters Patent No. 268,971, dated December 12, 1882.

Application filed January 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, PHILLIPS ABBOTT, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Water-Filter and Similar Cocks, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

Figure 1 is a top view of my invention applied to two cocks. Fig. 2 is the same applied to four cocks. Fig. 3 shows the cog-wheel and handle made in one piece. Fig. 4 shows two cocks cast together. Fig. 5 shows two cocks connected by an endless chain or belt.

Water-filters made prior to my invention have been furnished either with a single cock through the plug, and in the barrel of which many separated water-channels have been made to effect the needful flows of water, or with a number of simple cocks, which necessitated turning many of them to effect the needful flows, and in some instances two of these cocks have been operated by a rod connecting their handles, and thus when either handle was moved the plugs of both cocks were turned; but there has always been the difficulty in this arrangement that it was impossible to move the handles over the center, because of the dead-point. It was also difficult to move the plugs even through half a revolution, because when the handles of the plugs and the connecting-rod were nearly in a straight line with each other the force required to move the plugs still farther was very great. Where the single cock before mentioned has been used it has been found difficult to keep it water-tight, because of the great number of passages in its plug and barrel, and it is also much more expensive than two simpler cocks. By my invention I am enabled to effect all the desired flows of water by the turning of a single handle, as in the case of the single plug, and I can also turn the plugs entirely around, if desired, there being no dead-point. This improvement I propose to use in connection with my filter patented December 13, 1881, and numbered 250,868.

In Fig. 1, *a* and *b* are respectively the usual projecting top part of the plug of the cocks, which cocks are constructed as may be needful to effect the desired flows. *c* and *d* are two cog-wheels, which have openings in their centers, which fit over the ends of the plugs *a* and *b*, and are rigidly fastened to them. These cog-wheels gear into each other. A handle, E, is applied to the plug of either one of the cocks. Thus when the handle is turned in either direction it turns the plug of the cock to which it is fastened, and the cog-wheel on the same plug turns the plug of the other cock. It is immaterial in what way the cog-wheels are fastened to the plugs. If desired, the cog-wheel and the handle may be made all in one piece, as shown in Fig. 3, the handle being curved, as at *x*, so as to pass over the adjacent cog-wheels. If the plugs of the cocks or their pipe-connections are so constructed that in order to effect the desired flows of water they must move differently—as, for instance, one must move by third or quarter revolutions, while the other moves in half-revolutions—then the relative sizes of the cog-wheels must be made to correspond to the difference in the plugs or fittings, the cogs being always the same size. Arrows or other suitable indicating-marks, as shown on the cog-wheels of Fig. 1, may be used, which being brought together will indicate when to stop turning. For instance, F will indicate "filtered," R will indicate "reversed," and B will indicate "by-pass."

In Fig. 2 I show a system similar to that above described, but in which there are four cocks moved by the same handle. The cog-wheels on the plugs of these several cocks may be geared into the wheel on the plug of which the handle is applied, or to one of the other wheels, depending on the location of the cocks or on the direction in which it is desired that the plugs should turn. If the cocks are separated from each other by such a distance that cog-wheels gearing into each other will be inconveniently large or otherwise impractical, then an endless chain connecting the cock-plugs by passing around wheels fastened to them may be substituted for the cog-wheels. The links of the chain should fit over or be caught by teeth or cogs on or depressions in the wheels, as usual in such devices. The chain should be stretched tightly between the wheels. The use of this endless chain or belt will, when the handle is moved, produce the same movements of the cock-plug to which the

handle is not fastened as will result from the use of the cog-wheels, with the exception that when the chain is moved both plugs will revolve in the same direction instead of in opposite directions, which last is the case when the cog-wheels are used gearing into each other. The chain should be nicely fitted to the cogs or teeth on the wheels, so as to allow no play on reversing the movement of the wheels. Different-sized wheels will produce a variation in degree of rotation of the plugs, as in the case of the geared wheels. An endless metallic belt with holes in it through which pins on the wheels work will be a good substitute for the chain.

In Fig. 5 I show two cocks connected in the manner last above stated, the connecting device being shown as an endless metallic belt. 1 is the handle. 2 is the endless belt. 3 and 4 are the wheels, and 5 5 5, &c., are the pins or teeth projecting from the edges of the wheels, and which pass through and fit into holes made through the belt. Thus the handle, being moved, turns the wheel 3, and the pins on it compel the belt to move, and it in turn, engaging with the pins on the wheel 4, compels it (the wheel 4) to move simultaneously with the wheel 3. It is not essential that the wheels 3 and 4 should be used, for the pins or teeth may be formed on the end of the cock-plugs themselves, if they be large enough. When the cog-wheels are used gearing into each other, an intermediate cog-wheel may be used revolving on a suitable pivot provided for it, if it is desired that the plugs should revolve in the same direction. These modifications, however, are not claimed in this application, and I therefore reserve the right to file a new application for Letters Patent based upon the features thus briefly described.

It is desirable that the cog-wheels should accurately fit into each other, and to effect this the plugs of the cocks should be in the same plane and at the proper distance apart; and in order to secure this result without necessitating accurate measurement and nice adjustment of parts on the part of the person putting the apparatus together, I prefer to cast the cocks together all in one solid piece, with a suitable water-passage through the casting leading to the respective plugs, to conduct the water from the supply-pipe to them, and with the necessary ports from the cocks to the connecting-pipes.

In Fig. 4 I show in section two cocks (such as may be used under my said patent of December 13, 1881, No. 250,868) cast together in one piece, as above set forth. *f f f f* show the casting which contains the barrels for the two plugs. *g g* are the plugs; *h h*, the water-passages through them; *i*, the water-passage through the casting which conducts the water from the supply-pipe to the cocks; *j*, the supply-pipe; *k*, the house-pipe; *l*, the pipe to the filter for the direct flow; *m*, the pipe from the filter for the direct flow, and *n* the waste-pipe.

This is an operative arrangement of the parts when no intermediate gear-wheel is to be used; but I do not at all limit myself to the specific arrangement shown, for it may be greatly varied. When an intermediate gear-wheel is used, or when an endless chain or belt is used, the arrangement of the ports will be different on account of the plugs then both revolving in the same direction.

It will be noticed that when cocks constructed as shown in Fig. 4 are used the handle should not be carried completely around, but should oscillate back and forth between the positions which effect the two extreme flows, the other one lying between them; otherwise it is possible to put the plugs of the cocks in such position that although one plug may be in a proper position the other will not be. I have shown Fig. 4 constructed in this way that I might point out this danger, and in order that it may not occur I prefer to place a stop at some suitable point, against which the handle or some part of the cog-wheels shall strike, so that it will be impossible to turn the handle completely around. I have also shown one plug larger than the other, as this may sometimes be desirable. It is not essential that the cocks should be cast in one piece. They may be separate and connected by a pipe.

If more than two cocks are to be operated by one handle, then all the cocks may be cast solid in one piece.

I have not attempted to be mathematically exact in my drawings.

The handle should be stronger and longer than ordinary cock-handles, that the leverage may be sufficient to make the movement easy and smooth.

The wheels may be on the back ends of the plugs, if desired.

I do not claim broadly the use of gear-wheels to effect the rotation of cock-plugs.

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

1. The combination, in a filter, of a supply-pipe, two cocks, a pipe connecting one of the cocks with one end of the filter, another pipe connecting the other end of the filter with the other cock, a pipe leading to the house, a waste-pipe, a gear-wheel fastened to the plug of each of the cocks and gearing into each other, and a handle attached to one of the plugs, all combined and operating substantially as and for the purposes set forth.

2. The combination, substantially as before set forth, of a supply-pipe, a filter, a house-pipe, a cock adapted to connect the supply-pipe with one end of the filter, or the latter with a waste-pipe, and a second cock adapted to connect the other end of the filter with the house-pipe, or the supply-pipe with this other end of the filter, or the supply-pipe with the house-pipe, the said cocks being both cast in one casting, substantially as and for the purposes set forth.

3. The combination of a supply-pipe, a filter,

a house-pipe, a cock adapted to connect the supply-pipe with one end of the filter, or the latter with a waste-pipe, and a second cock adapted to connect the other end of the filter with the house-pipe, or the supply-pipe with this other end of the filter, or the supply-pipe with the house-pipe, the said cocks being both cast in one casting, and a gear-wheel fastened to the plug of each cock and gearing into each other, and a handle attached to one of the plugs, substantially as and for the purposes set forth.

PHILLIPS ABBOTT.

Witnesses:
JOHN H. IVES,
J. J. CAULDWELL.