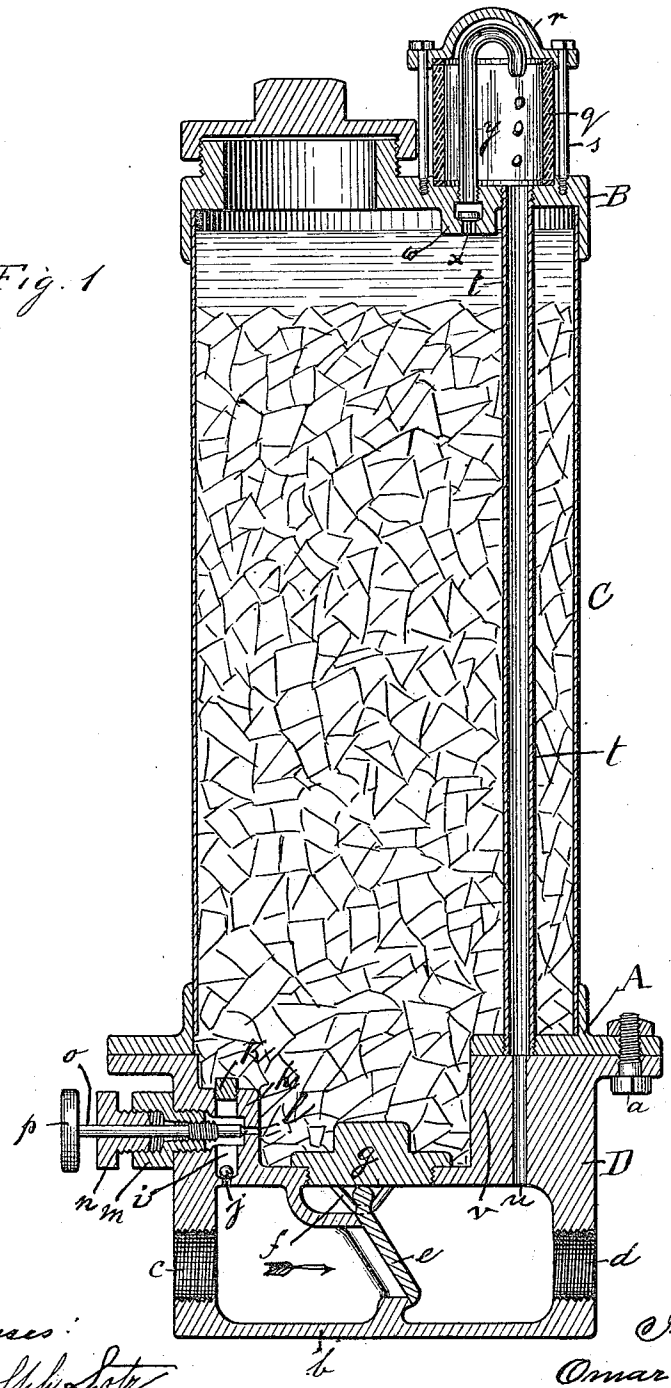
(No Model.) 2 Sheets—Sheet 1.

O. H. & W. M. JEWELL.

CHEMICAL FEEDER FOR FILTERS.

No. 440,162. Patented Nov. 11, 1890.

Fig. 1



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Fig. 2

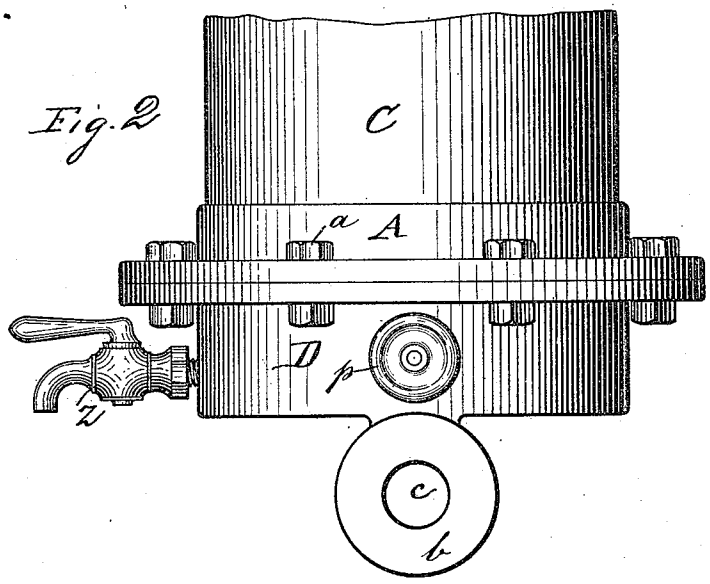
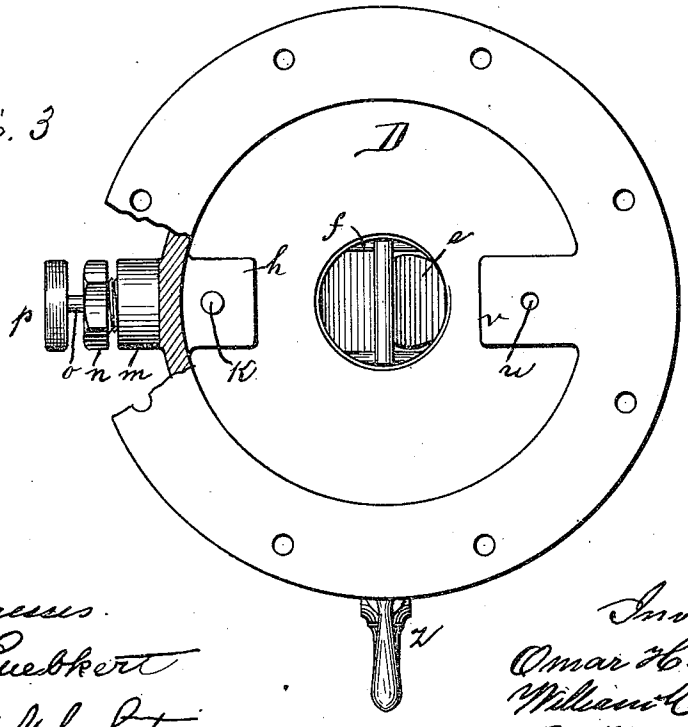


Fig. 3



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UNITED STATES PATENT OFFICE.

OMAR H. JEWELL AND WILLIAM M. JEWELL, OF CHICAGO, ILLINOIS.

CHEMICAL-FEEDER FOR FILTERS.

SPECIFICATION forming part of Letters Patent No. 440,162, dated November 11, 1890.

Application filed September 1, 1890. Serial No. 363,708. (No model.)

To all whom it may concern:

Be it known that we, OMAR H. JEWELL and WILLIAM M. JEWELL, citizens of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Chemical-Feeders for Filtering Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This our invention relates to apparatus for purifying water by the admixture of chemicals and the subsequent filtering thereof, and more particularly to improvements on the chemical-feeder described in Letters Patent of the United States, No. 423,773, granted to us on the 18th day of March, 1890.

This invention has for its object; to provide such a chemical-feeder so connected with the water-supply pipe that a uniform portion of the water will pass through the same and through the chemicals therein, the exact proportion of such water to be adjustable by a valve, and in which the feed of the chemical solution is made visible for observation; and with these objects in view our invention consists of the novel devices and combinations of devices hereinafter described, and specifically claimed.

In the accompanying drawings, Figure 1 represents a longitudinal vertical section through the center of the apparatus; Fig. 2, an end elevation of the lower portion of the same, and Fig. 3 a plan view of the lower section detached with the central screw-plug removed.

Corresponding letters of reference in the several figures of the drawings designate like parts.

The chemical-tank consists of a flanged bottom ring A and a flanged cap-piece B, both of cast metal, and an intermediate cylindrical shell C, of sheet metal, expanded with its lower and upper ends into both parts A and B, and secured therein by rivets, bolts, or soldering, in any well-known manner, so as to form hermetic joints therewith.

The flange of ring A is closely fitted upon a similar flange of the lower chamber-piece D, and both are detachably connected by a series of bolts *a*. This chamber-piece D has formed to its bottom a tubular extension *b*, having to both ends screw-tapped holes *c* and *d*, for coupling therein the supply-pipe and the filtering-tank feed-pipe for the water to flow through such tubular extension in the direction of the arrow on its course toward the filtering-tank. The flow of the water through this tube *b*, however, is resisted by a lid-valve *e*, that may either operate by its gravitation alone or by an additional spring device, as shown in our former patent above referred to. The trunnions of this valve *e* rest in suitable side bearings *f*, cast in tube *b*, and the valve *e* is inserted into tube *b*, through a tap-hole in the bottom of the chamber D, which is then closed by a screw-plug *g*.

In one side of chamber-piece D, to be solid with the bottom and side wall thereof, is formed a protuberance *h*, that is vertically bored and counterbored to provide a small channel *i*, communicating with tube *b* behind valve *g*, and forming a seat for a small ball-valve *j*, the upper outlet of this channel *i* being closed by a screw-plug *k*. Radially in line with this channel *i* a hole is bored through the side wall of chamber-piece D and through protuberance *h* to provide a small vent *l* from channel *i* into the chemical-tank, and a tap-hole in the side wall for screwing therein a stuffing-box *m*, having gland *n*, and through this stuffing-box *m* and gland *n* is passed a valve-stem *o*, being screw-threaded near its inner end to engage a screw-thread in the stuffing-box *m*, and having mounted upon its exterior end a hand-wheel *p*. The pointed end of this valve-stem *o* meets vent *l* for adjusting the escape of water through such vent into the chemical-tank.

The cap-piece B has a large opening closed by a screw-cap for introducing the chemicals into the tank, and it also has secured to its top a glass cylinder *q*, fitted with its lower end in a recess of such cap-piece B, and having fitted to its top a metal dome *r*, fixed to the cap-piece by a series of screw-bolts *s*, the joints between the ends of glass cylinder *q* and its top and bottom metal bearing-surfaces being packed with rubber gaskets in the usual manner.

A pipe *t*, being tapped with one end through cap-piece B and with its lower end through inward flange of ring A, communicates with a hole *u*, drilled through protuberance *v*, that

is diametrically opposite to protuberance *h* inside of chamber-piece B to provide a communicating-channel between the interior of glass cylinder *q* and the inside of tube *b* forward of valve *e*. Close to pipe *t* the cap-piece B has a downwardly-projecting boss *w* bored and counterbored to provide a seat for a conical check-valve *x* and screw-tapped in the upper end of the bore for a goose-neck pipe *y*, extending into the dome *r* inside of glass cylinder *q*, with its downwardly-pointed opening vertically in line with pipe *t* for the liquid passing up in such goose-neck *y* to discharge directly into such pipe *t*. In one side the chamber-piece B is tapped and has connected a discharge-cock *z*.

The operation of the apparatus is as follows, to wit: The tank being filled with chemicals to about the height, as shown, and water being forced in from a pipe coupled with tubular chamber *b* at *c* to pass off into the filtering-tank through a pipe connected with the tubular chamber at *d*. A small portion of this water by the resistance of valve *e* will be forced to flow past valve *j*, through vent *l*, into the bottom of the tank, the amount or flow of such water being regulated by the adjustment of valve-stem *o*. The water thus entering the tank will rise through the chemicals until its level reaches the bottom of boss *w*, when the atmospheric air imprisoned under cap-piece B will prevent a further rising. The water thus rising through the chemicals will dissolve a portion of the same, and the solution will now escape through goose-neck pipe *y* by first raising check-valve *k*. This solution as it escapes in drops from the end of the goose-neck will discharge into pipe *t* to escape through hole *u* into the current of water forward of valve *e* to mix therewith. There will be no rise of water to any extent in pipe *t*, because the water forward of valve *e* is no longer obstructed in its flow. As the water is discharged from the downward-pointing end of goose-neck *y* and falls in drops to enter pipe *t*, it has to pass through the open space inside of glass cylinder *q*, that only contains atmospheric air, and its passage from one pipe to the other can thus be observed through the glass to ascertain not only the proportional quantity of such solution to be intermixed with the water to be filtered, but also to inspect the proper operation of the apparatus and to observe at a glance whether any obstruction prevents the feeding of the chemical solution. By this device the quantity of chemicals to be intermixed with the water will be always in proper uniform proportion to the quantity of water passing through tubular chamber *b*, because with a more forcible current more water will enter through vent *l* when a proportionally-larger amount of chemical solution will be discharged into pipe *t* than with a less forcible current.

This device, as will be readily seen, is very simple and not apt to get out of order.

What we claim is—

1. In a chemical-feeder to be operated in connection with a filter, the combination of the main water-supply channel provided with a water-flow-obstruction valve, the water-inlet vent at near the bottom of the chemical-tank, communicating with the main supply-channel rearward of the flow-obstructing valve and provided with a check-valve, a goose-neck pipe on the cap of the chemical-tank, providing the outlet for the chemical solution, a glass casing or cup hermetically inclosing such goose-neck pipe, and a tube providing communication between such glass casing and the main water-channel forward of the obstruction-valve, all substantially as set forth.

2. In a chemical-feeder to be operated in connection with a filter, the combination of the main water-supply channel provided with a water-flow-obstruction valve, the water-inlet vent at near the bottom of the chemical-tank, communicating with the main supply-channel rearward of the water-flow-obstructing valve and provided with a gravitating check-valve and with an adjustable water-regulating valve, a goose-neck pipe on the cap of the chemical-tank, providing the outlet for the chemical solution past a gravitating check-valve, a glass casing or cup hermetically inclosing such goose-neck pipe, and a tube providing communication between such glass casing and the main water-channel forward of the obstructing-valve, all substantially as set forth.

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

OMAR H. JEWELL.
WILLIAM M. JEWELL.

Witnesses:
WILLIAM H. LOTZ,
OTTO LUEBKERT.