

(No Model.)

B. H. COFFEY.
CHEMICAL FEEDER FOR FILTERS.

No. 441,284.

Patented Nov. 25, 1890.

FIG. 2.

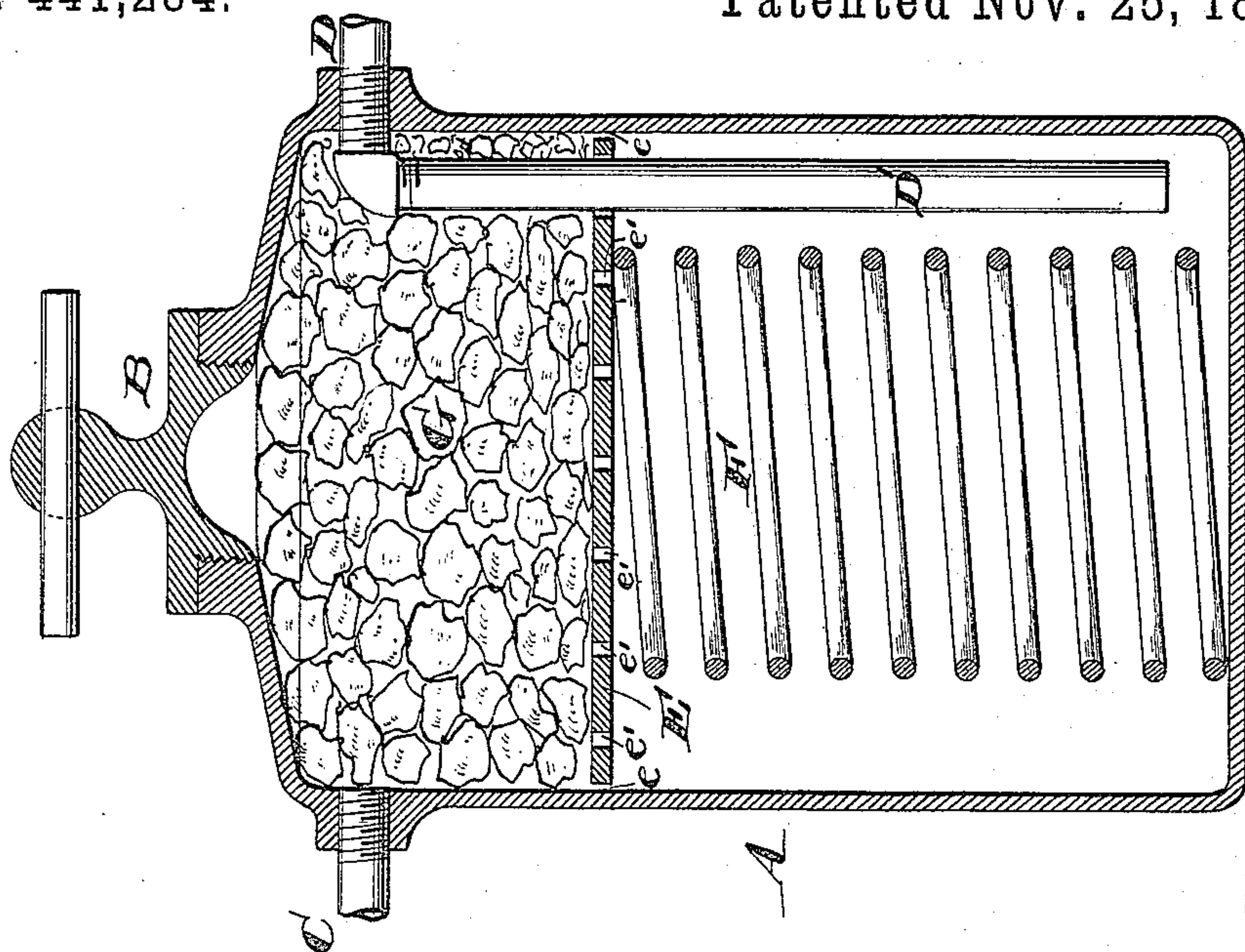
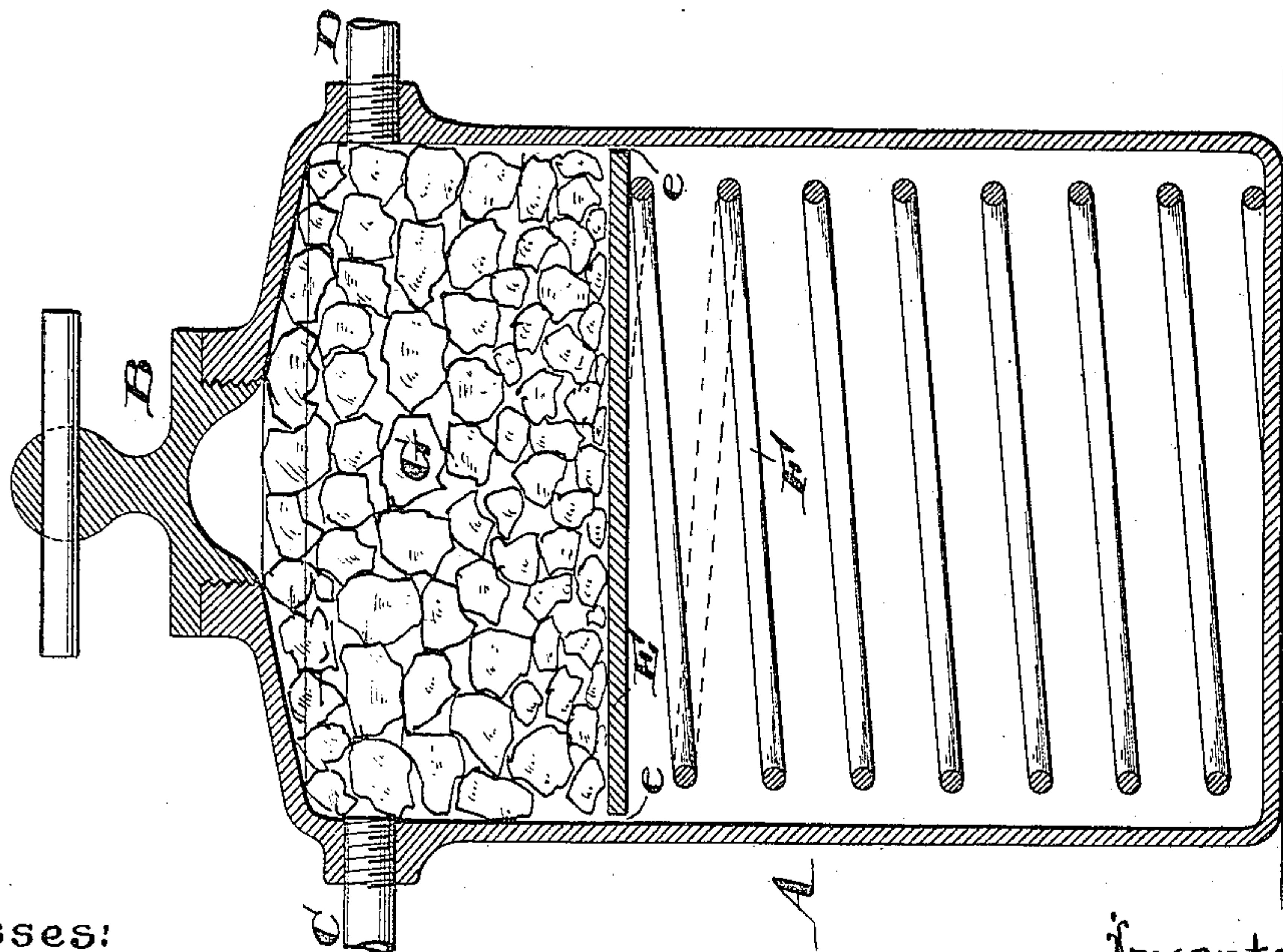


FIG. 1.



Witnesses:

Henry D. King
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Inventor:

Barton H. Coffey
by his attorney
Francis T. Chambers

UNITED STATES PATENT OFFICE.

BARTON H. COFFEY, OF PHILADELPHIA, PENNSYLVANIA.

CHEMICAL-FEEDER FOR FILTERS.

SPECIFICATION forming part of Letters Patent No. 441,284, dated November 25, 1890.

Application filed March 7, 1890. Serial No. 342,957. (No model.)

To all whom it may concern:

Be it known that I, BARTON H. COFFEY, of the city and county of Philadelphia, State of Pennsylvania, have invented a certain new and useful Improved Coagulator-Tank for Filters, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the tanks used in connection with filters to hold a coagulating-salt, a solution of which is fed gradually into the water passing into the filter for the purpose of coagulating certain of the impurities held in solution therein, so that they will be eliminated by filtration. The most common coagulating material in use is alum, and with this and most of the salts used for the same purpose the solution is very dense and heavy, and the coagulator-tanks usually contain what might be called a "series of strata of different densities," the saturated solution being at the bottom, while at the top of the tank the solution is exceedingly weak. The outlet-pipe through which the solution passes to the filter, or to a part of the water-conduit immediately adjacent to the filter, if led from the top of the tank will therefore draw off but a weak solution of the coagulating-salts; and if the mouth of this pipe opens at the bottom of the tank, so as to draw off the saturated solution, the column of fluid in the pipe being of greater density than the column of fluid in the tank will overbalance it and restrict and impair the nicety with which the solution is fed into the water to be filtered. This difficulty is a serious one, as it is important that only enough of the coagulating material should be supplied to the water by the filtration, and it is highly desirable that the solution in the tank should be of a uniform density, so that it will balance the column in the outlet-pipe.

My invention is designed to overcome the above-noted difficulties, and will be best understood as described in connection with the drawings, in which it is illustrated, and in which the two figures illustrate two modifications of my device.

A is a filtering-tank; B, a removable lid, by removing which the alum or other coagulating-salt is placed in the tank; C, the pipe

through which the water passes to the tank, and D the pipe through which the water or solution of coagulating-salt passes from the tank.

In Figure 1 the pipe D is shown as opening in the upper part of the tank, while in Fig. 2 it is provided with an extension D', reaching to or near the bottom of the tank.

E is a diaphragm or false bottom placed in the tank and supported by a spring F, which rests upon the bottom of the tank and acts to press the said diaphragm upward toward the top of the tank. Preferably I form its diaphragm with perforations *e'*, as shown in Fig. 2, though it is sufficient if a slight clearness is left between the diaphragm and the sides of the tank, as shown at *e*.

G indicates the alum or other coagulating-salt, which is placed upon the diaphragm E and by the action of spring F always held in the top of the tank, the diaphragm moving upward as the action of the water gradually dissolves the solid salt.

By keeping the soluble coagulating-salt always at the top of the tank, I preserve a substantially uniform solution in the tank. The water passing into the top thereof comes at once into contact with the salt and remains in contact with it until the solution becomes sufficiently dense to sink to the bottom—that is, I insure a substantially saturated solution in the whole tank. The height of the uppermost point or level of the exit or outlet pipe should be substantially the same as that of the upper part of the tank. It may be led out directly from the upper part of the tank, as shown in Fig. 1, or extended down to the bottom of the tank, as shown in Fig. 2, though I prefer with my new construction to have it open into the top of the tank, as shown in Fig. 1.

The spring F shown in the drawings is given as one of the many well-known devices for automatically forcing a device in a given direction, and it will be understood that I do not intend to limit my claim to the use of that device to the exclusion of its well-known equivalents.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A coagulator-tank for filters, having in

combination a water-inlet pipe, a water-outlet pipe, a diaphragm arranged to support the coagulating-salt, and means, as specified, arranged to thrust the diaphragm upward, all
5 substantially as specified, and so as to keep the salt always at the top of the tank.

2. A coagulator-tank for filters, having in combination a water-inlet pipe opening into the upper part of the tank, a water-outlet pipe,
10 a diaphragm arranged to support the coagulating-salt, and means, as specified, arranged to thrust the diaphragm upward, all substantially as specified, and so as to keep the salt always at the top of the tank.

15 3. A coagulator-tank for filters, having in combination a water-inlet pipe opening into the upper part of the tank, a water-outlet pipe having its uppermost level substantially even

with the top of the fluid in the tank, a diaphragm arranged to support the coagulating-salt, and means, as specified, arranged to thrust the diaphragm upward, all substantially as specified, and so as to keep the salt
20 always at the top of the tank.

4. A coagulator-tank for filters, having in
25 combination a water-inlet pipe, a water-outlet pipe opening from the upper part of the tank, a diaphragm arranged to support the coagulating-salt, and means, as specified, arranged to thrust the diaphragm upward, all
30 substantially as specified, and so as to keep the salt always at the top of the tank.

BARTON H. COFFEY.

Witnesses:

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