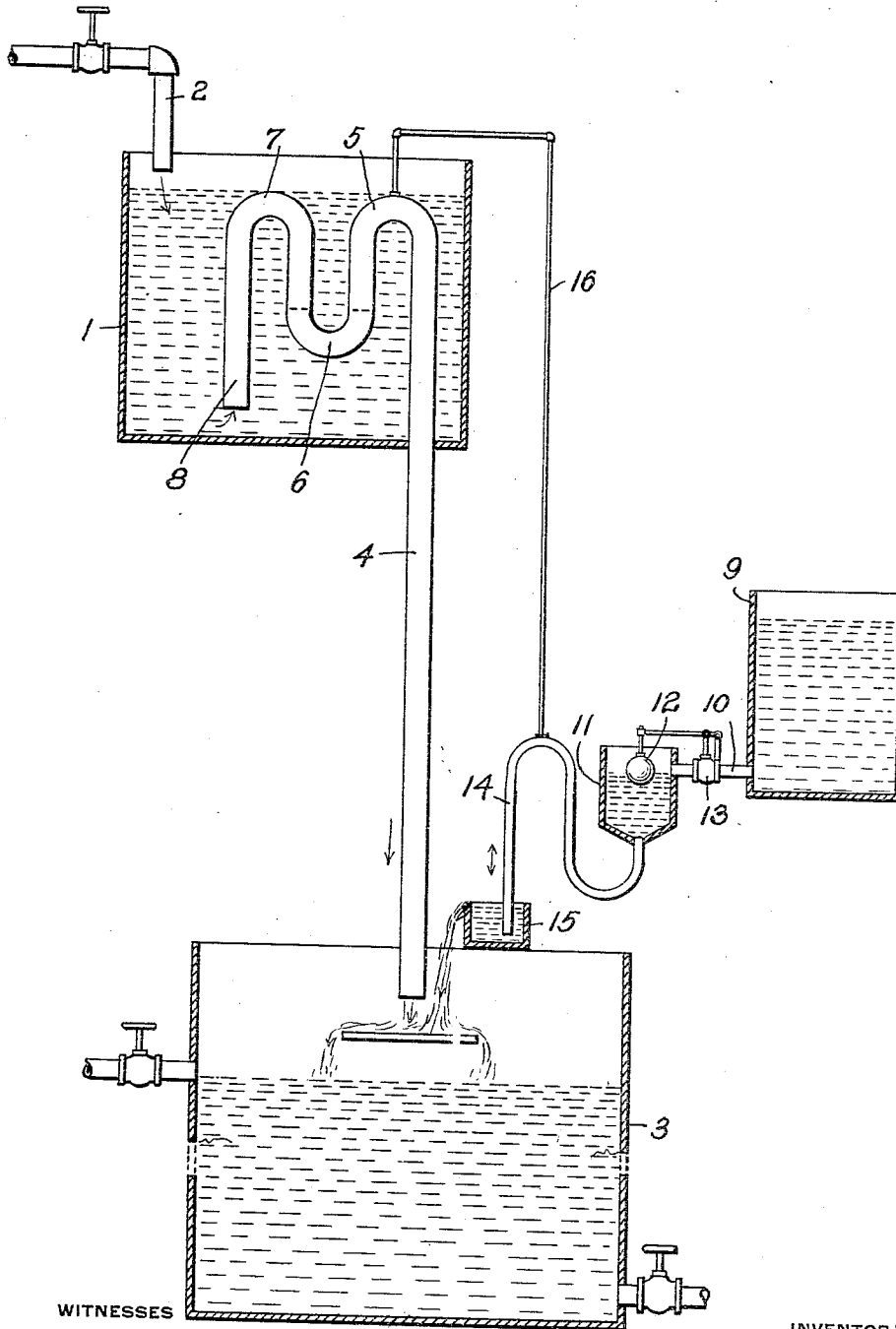


J. C. W. GRETH & M. F. NEWMAN.
 FLUID FEEDING APPARATUS.
 APPLICATION FILED JAN. 16, 1915.

1,150,673.

Patented Aug. 17, 1915.



WITNESSES

J. Robert Bradley
Edwin A. Jones

INVENTORS:

John C. W. Greth
Martin F. Newman
By J. W. H. Chas.

UNITED STATES PATENT OFFICE.

JOHN C. W. GRETH, OF PITTSBURGH, AND MARTIN F. NEWMAN, OF OAKMONT, PENNSYLVANIA, ASSIGNORS TO WM. B. SCAIFE & SONS COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FLUID-FEEDING APPARATUS.

1,150,673.

Specification of Letters Patent.

Patented Aug. 17, 1915.

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To all whom it may concern:

Be it known that we, JOHN C. W. GRETH, residing at Pittsburgh, Pennsylvania, and MARTIN F. NEWMAN, residing at Oakmont, Pennsylvania, have invented certain new and useful Improvements in Fluid-Feeding Apparatus, of which the following is a specification.

Our invention relates to the proportional feeding of several liquids, and is more particularly applicable to the feeding of liquids reagents in water purifying apparatus, though it is of course applicable to many other uses.

Its principal object is to efficiently employ a siphon feed, and more particularly to operate a siphon with certainty, and to avoid the introducing of chemical reagents into the inlet pipe of the water.

We have shown a form of our invention applied to such use, in the accompanying drawing, which represents in side elevation and partial section, the parts of the apparatus necessarily involved.

There have been heretofore intermittent water feeding siphons arranged to start and stop a simultaneous feed of the liquid chemical reagents.

Our more specific object is to avoid the connection of the reagent feeding siphon with the water inlet pipe, since we have found by experience that there is a gradual deposit at the outlet end of the feed water pipe, caused by the settling or evaporation of solid matter out of the water from precipitation due to action on impurities by the chemical reagent solution, which consequently restricts the orifice of the pipe. Thus in the drawing assuming the tank (1) to be a receiving vessel fed by raw water from the valved pipe (2), and the tank 3 is, for example, a treatment tank. We provide a siphon pipe (4) preferably having in addition to the usual apex bend (5) an additional downward slope (6) and a second apex bend (7) connected to the short leg (8). The pipe (4) being larger than the pipe (2) the vessel (1) will be periodically supplied by action of the siphon, and meantime there will be left in the bend (6) a plug of water and a body of air, which will prevent the siphon "leaking", or running a small amount of water over the apex when

the tank (1) becomes again filled to the level thereof. We also provide a supply of reagents in the vessel (9), emptying by pipe (10) into a small receptacle (11) where the level is maintained by the use of a float (12) operating the valve (13). This vessel (11) is connected by the siphon (14) to a receiving vessel (15), wherein it dips nearly to the bottom, while in operation the vessel (15) overflows into the chamber (3), thus delivering the chemical reagent without passing through any part of the water siphon pipe (4). We connect the apex of the siphon pipe (14) by a small air pipe (16), to the main siphon (4) at any operative point and preferably near the top of the long leg. It will be plain then that the siphon (4) will discharge the vessel (1) intermittently, and that when the flow starts through the long leg of siphon (4), the pressure will be reduced in the top of the bend (5) and in turn will reduce the pressure in the siphon (14), allowing part of the liquid in the small receptacle (15) to be drawn up into the siphon (14): thereupon the siphon (14) will begin to discharge from the constant level tank (11). When the siphon (4) breaks, of course the pressure in pipe (16) will be re-established, and the air will enter the top bend of siphon (14), and break that siphon, stopping also the inflow of the reagent. Thus the reagent is introduced without passing through the water pipe (4), and meanwhile the bottom end of the long leg of siphon (14) is not exposed, and there is nowhere any opportunity for reaction and the consequent evaporation and accumulation and deposit of solid matter to interfere with the proportional introduction of water and reagents. Of course when several reagents are to be introduced, a series of such siphons (14) may be used, each connected by one of the tripping air tubes (16) to the long leg of the main water siphon. And of course it will be clear that the reagent siphon can be operated by water flowing at any point in the system through a siphon pipe.

The many advantages of this device will occur to those familiar with the art.

Having thus described our invention and illustrated its use, what we claim is the following:

1. A fluid feeding device including a main siphon for water, and a siphon for feeding reagent controlled by the action of the main siphon, the two siphons having independent outlets, substantially as described.
2. The combination of receiving tank, a siphon therein adapted to intermittently empty the same, a receiving vessel, a fluid reagent supply vessel, and a siphon adapted to empty the same, an air pipe connecting the two siphons, and means to prevent entry of air in the long leg of the reagent siphon.
3. The combination with water supply vessel, a receiving vessel and a siphon adapted to intermittently empty the supply vessel, of a second supply vessel for liquid reagents, a siphon adapted to empty the same, a supplementary vessel in which is immersed the long leg of said reagent siphon, and means to start and stop the reagent siphon by the action of the water feeding siphon.

4. The combination with a water supply vessel, a receiving vessel, and a siphon adapted to intermittently empty the supply vessel into the receiving vessel, of a reagent tank, a connected constant-level reagent feeding tank, a siphon connected to said reagent feeding vessel, a supplementary receiving vessel, and having the long leg of the siphon constantly immersed therein, and an air pipe connecting the apex of the reagent feeding siphon with the water feeding siphon, substantially described.

In testimony whereof we have hereunder signed our names in the presence of the two subscribed witnesses.

JOHN C. W. GRETH.
MARTIN F. NEWMAN.

Witnesses:

EDWEN O. JOHNS,
F. W. H. CLAY.