

Dec. 1, 1931.

C. E. STEERE

1,834,435

LIQUID REAGENT FEEDER

Filed Oct. 5, 1929

2 Sheets-Sheet 1

Fig. 1.

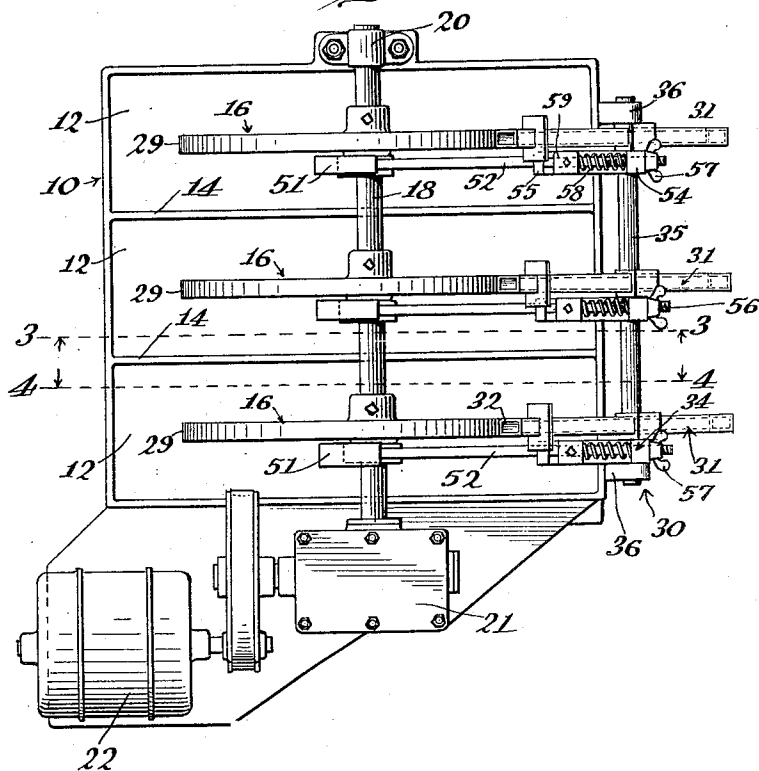
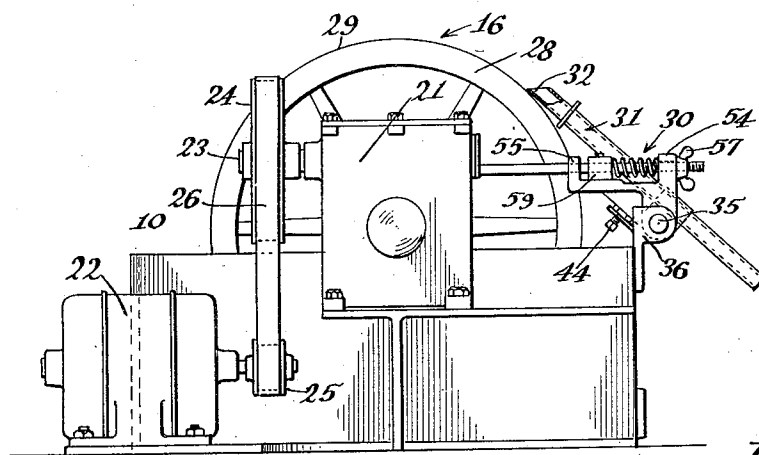


Fig. 2.



Inventor.
Clarence E. Steere

Edmund A. Steere.
Attorney.

UNITED STATES PATENT OFFICE

CLARENCE E. STEERE, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO SOUTHWESTERN ENGINEERING CORPORATION, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA

LIQUID REAGENT FEEDER

Application filed October 5, 1929. Serial No. 397,547.

This invention relates generally to feeders more particularly to a device of the character adapted to feed liquid reagents.

In certain industries and chemical laboratories where liquid reagents are employed it is essential that they be fed to the element being treated in exact quantities, for example, one drop or more per minute to several ounces according to requirements.

The object of this invention is to provide a liquid feeder capable of continually and accurately feeding a required amount of liquid.

Another object of this invention is to provide a liquid feeder having adjustable means whereby the feed of liquid may be varied to meet given requirements.

Other objects and advantages will be apparent from the following description of the accompanying drawings, in which:

Fig. 1 is a top plan view of the feeder;

Fig. 2 is an end elevation of the feeder;

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 1 in the direction indicated by the arrows;

Fig. 4 is a sectional view similar to Fig. 3 taken on line 4—4 of Fig. 1.

Referring to the drawings, 10 generally designates a tank or receptacle having a plurality of compartments 12 formed by partitions 14; if desired one tank only may be employed. Each compartment is adapted to hold a quantity of liquid L in which a wheel or disk 16 is partly submerged, the wheels being secured to a shaft 18 extending across the top of the tank, one end of which is mounted in a bearing 20, the other end extending into the case 21 of a suitable reduction gear mechanism not shown.

Rotation of the shaft 18 is effected by an electric motor 22 adapted to impart rotation of the shaft 23 of the reduction gear mechanism through a pulley 24 thereon and pulley 25 of the motor by means of a belt 26. The shaft 18 may be driven directly from a line shaft or from any suitable source of power running at a constant speed.

The rims 28 of the wheels have flat faces 29 and are machined in order that the faces will be concentric with the center of the shaft 18. During rotation a film of liquid

will collect on the rims of the wheels 16 which is removed therefrom in required amounts by collecting devices generally designated at 30 carrying tubes 31 square shape in cross section, the liquid on the faces 29 of the wheels entering the ends 32 of the tubes, it being understood that the wheels revolve at a speed great enough to carry the liquid adhering to the face of the rim into the tubes but not great enough to throw it from the rim by centrifugal force.

Each tube 31 is carried by an individual bracket 34 rotatably mounted on a fixed shaft or rod 35 supported by boxes 36 secured to the side wall 37 of the tank 10. The tubes 31 are slidably mounted in openings 39 of housings 40 formed integral with the brackets and are held in place therein by set screws 42, the under sides 43 of the tubes resting on jack screws 44 threaded into brackets 45 secured to the side wall of the tank.

By moving the tube in the housings 40 and manipulating the jack screw 44 the tube may be adjusted so that the end 32 of the tube will touch the face 29 of the wheel rim without wear.

From the foregoing it will be seen that during rotation of the wheels the liquid collecting on the faces of the rims will enter the ends of the tubes and be removed therefrom as long as the tubes engage the wheels, thus giving a constant or maximum flow of liquid from the wheels through the tubes.

However in order to reduce the feed of liquid the tubes are arranged to engage the wheels during a fraction of each revolution, this action being accomplished by eccentrics 50 secured to the shaft 18 and adapted to engage blocks 51 on the ends of the levers 52 which tilt the brackets and lift the ends of the tubes out of engagement with the faces of the wheels during part of each revolution.

The levers 52 extend through openings 53 in lugs 54 and 55 formed on the brackets 34 and have threaded ends 56 engaged by thumb nuts 57 adapted to move the block toward the eccentric against the action of an expansion coil spring 58 surrounding the lever between the lugs 54 and fixed collars 59.

From the construction it will be seen that

by manipulating the thumb nut, the distance between the face 60 of the eccentric and the tapered face 61 of the block may be varied, hence when the face of the block is beyond
5 or out of the path traversed by the eccentric the tube will bear on the face of the wheel during each revolution, thereby giving a constant and maximum feed. By drawing the block into the path of the eccentric the tubes
10 will be raised from the face of the wheels during part of each revolution, thereby cutting off the feed during this interval, hence the feed may be varied from a constant flow to a few drops per minute or any required
15 amount between the maximum and minimum.

I claim:

1. A device of the character described comprising a tank adapted to hold a quantity of liquid, a shaft extending across the top of
20 said tank, means for rotating said shaft, a wheel secured to said shaft and partially submerged in the liquid in said tank, a tube having one end thereof engaging the rim of said wheel, a rod parallel with said shaft, a
25 bracket pivotally mounted on said rod supporting said tube, a lever connected to said bracket, a block on the end of said lever, an eccentric on said shaft adapted to engage the block on said lever and lift said tube out of
30 engagement with the rim of said wheel, and means for adjusting the position of said block in relation to the path traversed by said eccentric for the purpose of varying the time of contact of said tube on the rim of
35 said wheel during each revolution of said wheel.

2. A device of the class described comprising a liquid holding tank, a shaft mounted on said tank and means for rotating the same,
40 a wheel fast to said shaft for collecting liquid on its rim from said tank during its rotation, a rod mounted on said tank and parallel with said shaft, a bracket fast to said shaft, a liquid collecting tube adjustably secured to said bracket, one end of said tube
45 engaging the rim of said liquid collecting wheel, a lever connected to said bracket, its free end disposed over said wheel carrying shaft and provided with a lever lifting block, an eccentric on said shaft for engaging the
50 lifting block to lift the liquid collecting tube out of contact with said liquid collecting wheel, and spring actuated means on said bracket for adjusting the lifting block with
55 relation to said eccentric for varying the time of contact of the tube with the liquid collecting wheel during each revolution of the wheel.

In testimony whereof I affix my signature.

60

CLARENCE E. STEERE.