March 30, 1926.

T. M. OWEN

1,578,356

REAGENT FEEDER

Filed May 9, 1924

2 Sheets-Sheet 1

Fig. 1

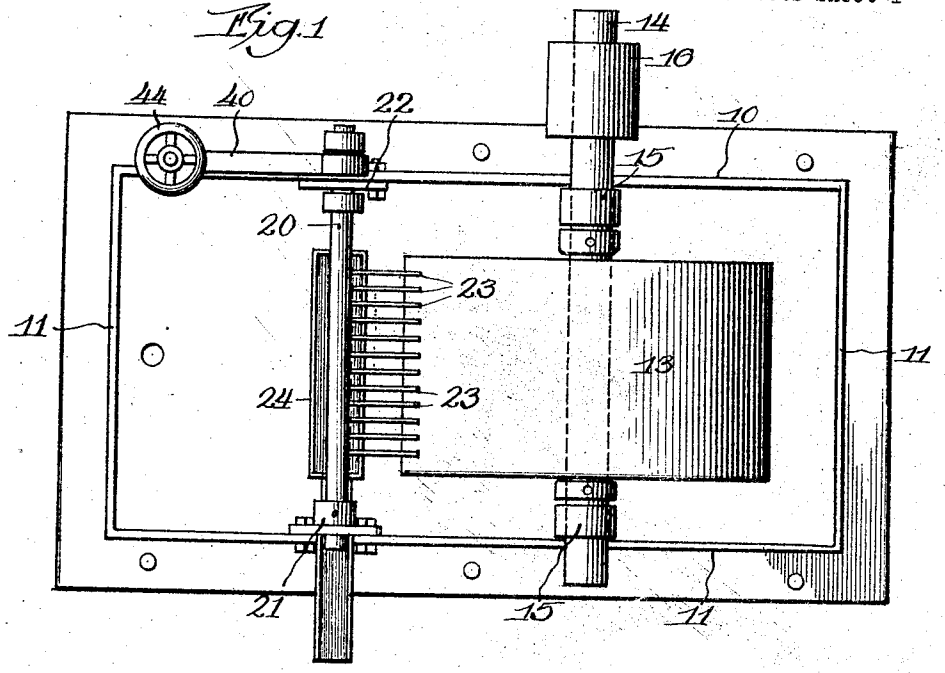
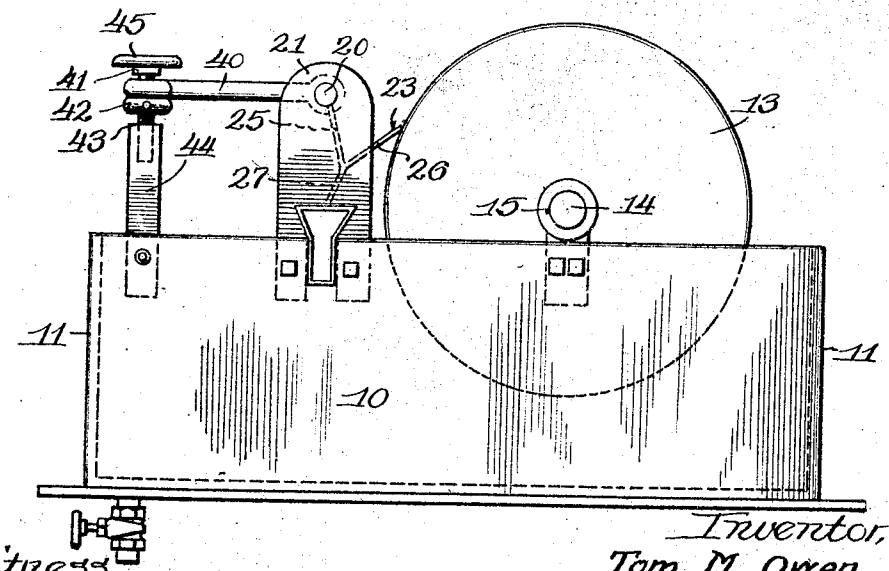


Fig. 2



Witness
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March 30, 1926.

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2 Sheets-Sheet 2

Fig. 3

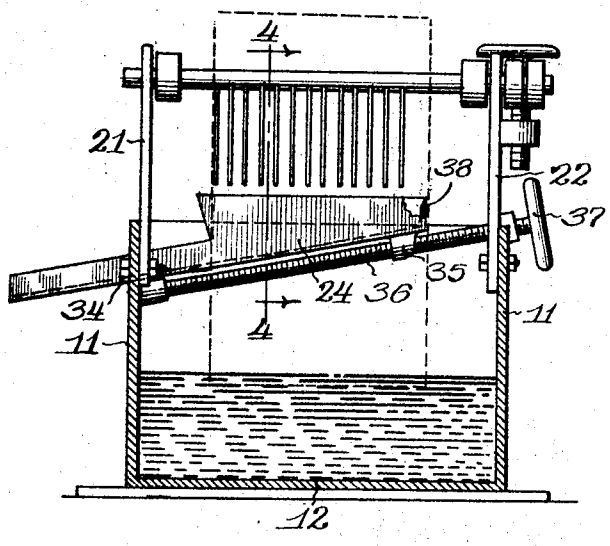


Fig. 4

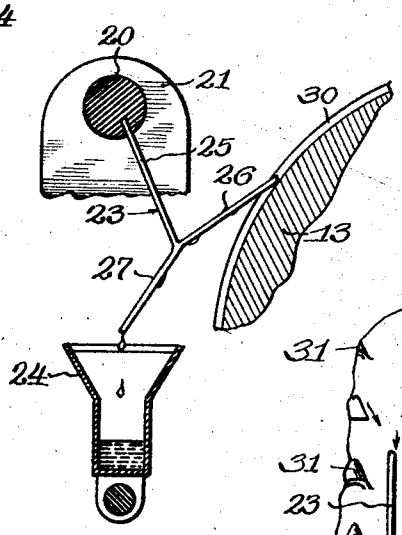
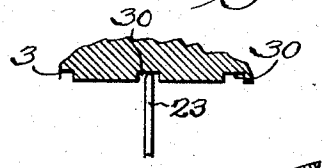


Fig. 5



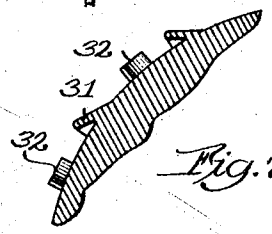


Fig. 7

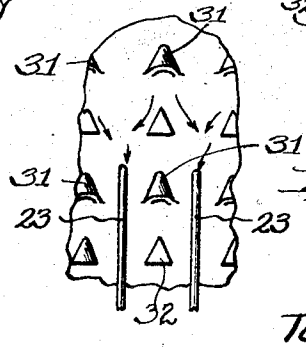


Fig. 6

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Patented Mar. 30, 1926. 1,578,356

UNITED STATES PATENT OFFICE.

TOM M. OWEN, OF WALLACE, IDAHO.

REAGENT FEEDER.

Application filed May 9, 1924. Serial No. 712,111.

To all whom it may concern:

Be it known that I, TOM M. OWEN, a subject of the King of Great Britain, and a resident of Wallace, Shoshone County, Idaho, have invented a certain new and useful Improvement in Reagent Feeders, of which the following is a specification.

This invention relates to improvements on reagent feeders particularly adapted for use in connection with flotation apparatus, although not necessarily limited to such use.

The object of the invention is to provide an improved apparatus for supplying predetermined quantities of reagent or other liquid materials, with means for varying the supply in minute proportions as required for the purpose to which the material is to be used.

The invention may best be understood by reference to the accompanying drawings illustrating certain preferred forms in which my invention may be embodied. In the drawings

Figure 1 is a plan view of an apparatus constructed in accordance with my invention;

Figure 2 is a side view of the apparatus shown in Figure 1;

Figure 3 is a transverse sectional view of the apparatus shown in Figure 2.

Figure 4 is an enlarged detailed section taken on line 4—4 of Figure 3.

Figure 5 is an enlarged detail of one form of grooved surface of the feeding pulley.

Figure 6 is an enlarged fragmentary view of one form of surface of feeding pulley which may be utilized in connection with my invention.

Figure 7 is a sectional view of the pulley surface illustrated in Figure 6.

Referring now to the details shown in the drawings, my improved feeder consists of a suitable receptacle for the liquid, such as a reagent, which in the form shown comprises a rectangular tank having side walls 10—10, end walls 11—11 and bottom 12. Rotatably mounted on the tank is a pulley 13 on shaft 14 having bearing supports at opposite ends on bearings 15—15 on the side walls 10—10. The arrangement is such that the lower portion of the periphery of the pulley 13 revolves within the reagent or other liquid material which it is desired to supply, the pulley having a surface to which the liquid material is adapted to adhere, and be elevated thereby during the feeding operation. In the form shown in Figures 1 and 2, the pulley is provided with a plain surface which would be suitable for many types of liquids. The pulley may be driven in any suitable manner, as for instance, by power applied to a driving pulley 16 on one end of the shaft 14.

A shaft 20 extends across the tank parallel with the axis of the pulley 13, this shaft being supported at its ends in brackets 21—22 on opposite side walls 10—10 of the tank. Extending from the shaft 20 is a plurality of contact members 23—23. These contact members each have an end portion adapted to engage the surface of the pulley 13 at an upwardly inclined angle and another portion extending downwardly over a transverse receiver or trough 24.

In the form shown they comprise a series of wires each having a supporting portion 25, an upwardly extending end portion 26 engaging the pulley and a third portion 27 branching downwardly from the meeting point of the portions 25 and 26, so as to convey separate streams of material into the trough 24 as clearly shown in Figure 4. In case a larger supply is desired, of course, these contact members may be made in the form of plates having a wider surface for conducting the reagent from the surface of the pulley into the trough.

The surface of the pulley may also be varied depending upon the character of the material and the amount which it is desired to be fed,—for instance, in Figure 5 a modified form is shown in which the ends of the contact members 23 engage in grooves 30 formed about the surface of the pulley 13. In another modified form shown in Figures 6 and 7, a plurality of cups 31—31 are provided, said cups being spaced apart to provide a continuous smooth section of the pulley face therebetween against which the contact members 23—23 engage. In order to divert the reagent spilled from these cups as they pass over the top of the pulley a plurality of diverting projections 32—32 may be placed intermediate the cups 31—31

each having diverging side walls sloping away on opposite sides thereof immediately below the superimposed cup 31.

When in operation a portion of the material carried up on the pulley face is diverted to each of the contact members 23 and thus divided into a number of small streams, one stream dropping from the lower point of each wire. These streams may be varied in size depending upon several varying factors, such as the size of the contact member, the speed of rotation of the pulley, the conformation of the pulley surface, or the character of the reagent or material to be fed. Under ordinary conditions a liquid material may thus be fed at a very slow rate or drop by drop from each contact member as desired.

In order to provide further adjustment of the feeding rate I provide a laterally adjustable receiving trough. In the form shown, the discharge spout 34 of the trough is mounted to slide through the side wall 10 and bracket 21, while the other end of the trough is provided with a bracket 35 threaded on an inclined screw 36 having supports on opposite sides of the receptacle and provided with an adjustable hand wheel 37 on the outside of said receptacle. The trough may thus be removed horizontally by means of the threaded shaft 36 and hand wheel 37 so as to receive the stream of reagent from a varying number of wires. In order to provide a further minute adjustment; one end of the trough is sharpened to a knife edge, as indicated at 38. This edge can be moved into position so that the stream of globules dropping from any particular wire will fall directly on this knife edge and be supplied in any proportion desired, one portion being diverted into the trough and the other portion falling on the outside and returning to the bath. Means are also provided for adjusting the position of the shaft 20 and contact members carried thereby. As herein shown this means consists of an arm 40 fixed to one end of the shaft 20 and having its outer end mounted between a pair of oppositely disposed stops 41—42 carried on an adjustable screw 43 mounted in the support 44. This adjustable screw may be raised or lowered by operating its hand wheel 45 thus raising or lowering the arm 40 and rotating the shaft 20 accordingly to vary the tension of the contact members 23 as desired.

Although I have illustrated and described one particular embodiment of my invention, it will be understod that I do not wish to be limited to the exact construction shown and described, but that various changes and modifications may be made without departing from the spirit and intent of my invention.

I claim:

1. In a feeder device, a receptacle, elevating means provided with a surface affording adhesion thereto of liquid material, members mounted adjacent and extending into contact with said elevator surface at an inclined angle to divert a portion of material therefrom, and a trough beneath said contact members adapted to receive material by gravity from said contact members, said trough being horizontally adjustable relative to said contact members to register with varying numbers thereof.

2. In a feeder device, a receptacle, elevating means provided with a surface affording adhesion thereto of liquid material, a member mounted adjacent and extending into contact with said elevator surface at an inclined angle to divert a portion of material therefrom, and a trough beneath said contact member adapted to receive material by gravity from said contact member, one end of said trough having a knife-edge partition adapted to divide a stream from said contact member, and means for adjusting said trough horizontally.

3. In a feeder device, a receptacle, elevating means provided with a surface affording adhesion thereto of liquid material, a series of aligned carrying devices on said surface, members mounted adjacent and extending into contact with said elevator surface intermediate adjacent series of aligned devices and arranged at an inclined angle to divert a portion of material therefrom, and a trough beneath said contact members adapted to receive material by gravity therefrom.

4. In a feeder device, a receptacle, a pulley having a surface affording adhesion thereto of liquid material, a supporting member parallel with said pulley, a series of contact members carried by said supporting members and arranged in inclined contacting position relative to said pulley to divert a portion of liquid material therefrom, a receiving trough beneath said contact members, and means for adjusting said trough longitudinally of said pulley.

5. In a feeder device, a receptacle, a pulley having a surface affording adhesion thereto of liquid material, a supporting member parallel with said pulley, a series of contact members carried by said supporting members and arranged in inclined contacting position relative to said pulley to divert a portion of liquid material therefrom, a receiving trough beneath said contact members, and means for adjusting said trough longitudinally of said pulley, comprising a screw shaft mounted transversely of said receptacle, and having threaded connection with said trough.

6. In a feeder device, a receptacle, a pulley having a surface affording adhesion thereto of liquid material, a supporting member parallel with said pulley, a series of contact members carried by said supporting members and arranged in inclined contact-

ing position relative to said pulley to divert a portion of liquid material therefrom, a receiving trough beneath said contact members, one end of said trough having a knife edge partition adapted to divide a stream from contact members registering therewith, and means for adjusting said trough longitudinally of said pulley, comprising a screw shaft mounted transversely of said receptacle, and having threaded connection with said trough.

Signed at Wallace, Idaho this first day of May 1924.

TOM M. OWEN.