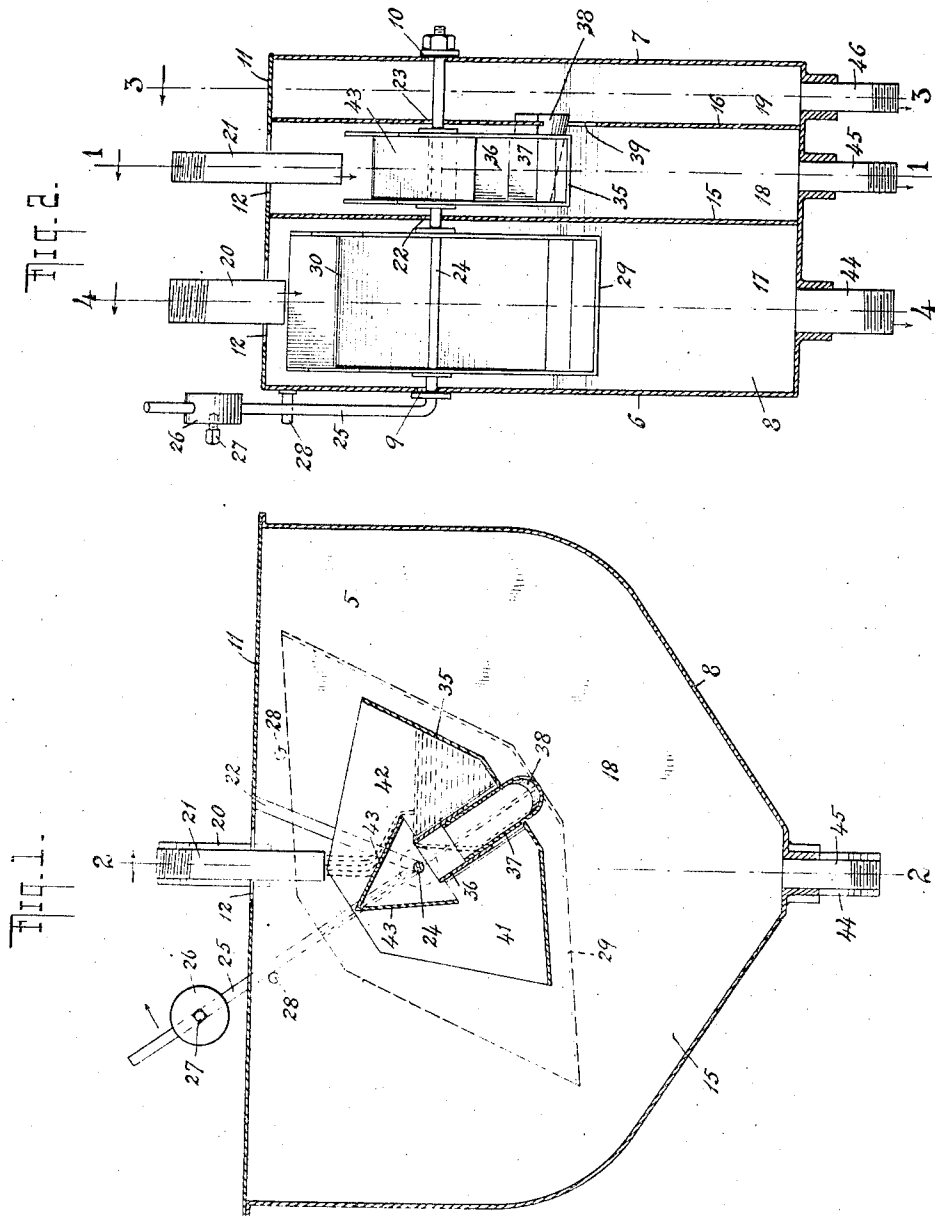


C. L. RILEY.
MEASURING APPARATUS.
APPLICATION FILED FEB. 19, 1918.

1,297,595.

Patented Mar. 18, 1919.
2 SHEETS—SHEET 1.



WITNESSES

G. V. Karmann
Ralph E. Clayton

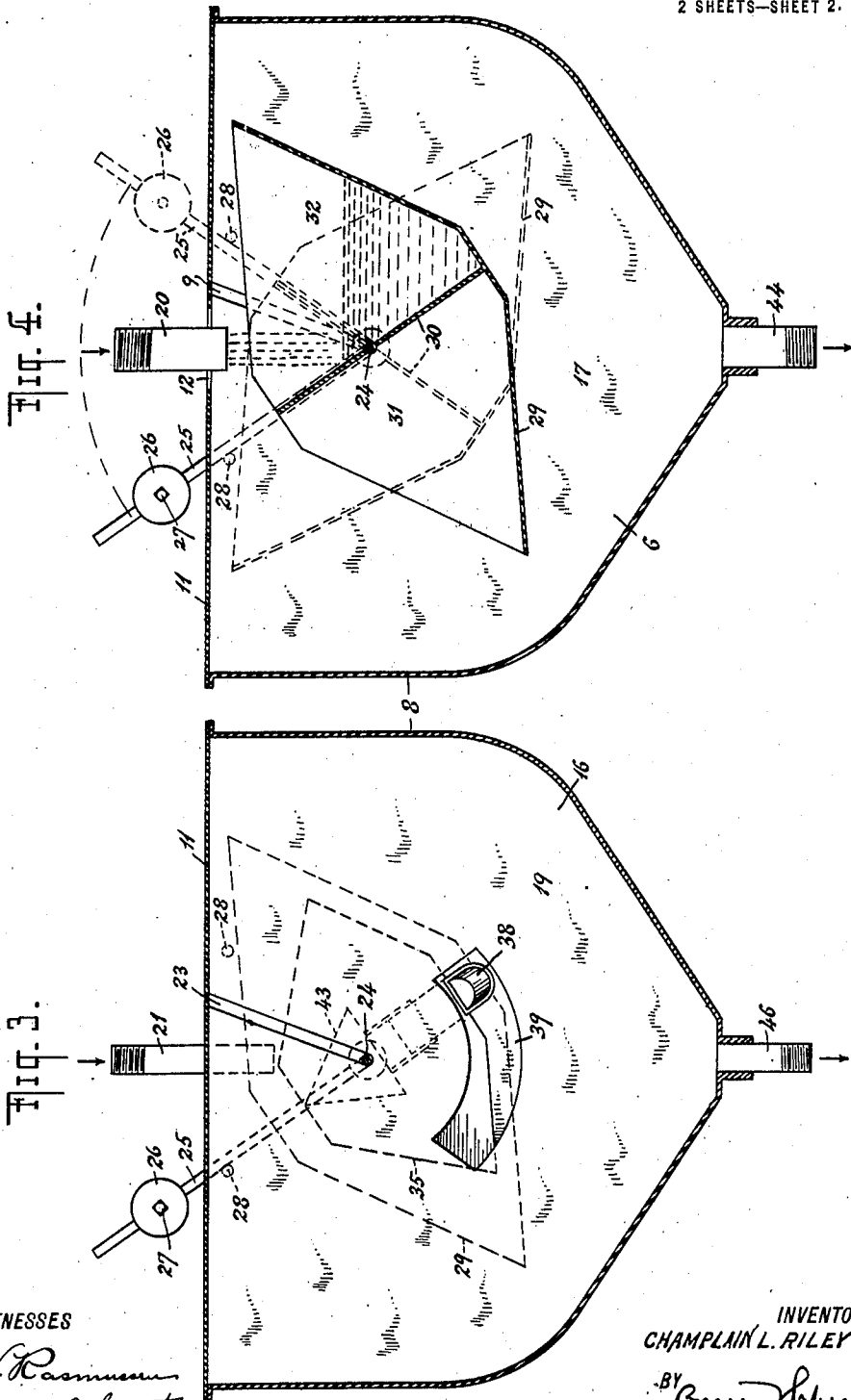
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CHAMPLAIN L. RILEY

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WITNESSES

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UNITED STATES PATENT OFFICE.

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MEASURING APPARATUS.

1,297,595.

Specification of Letters Patent.

Patented Mar. 18, 1919.

Application filed February 19, 1918. Serial No. 218,038.

To all whom it may concern:

Be it known that I, CHAMPLAIN L. RILEY, a citizen of the United States, and a resident of the township of North Plainfield, in the county of Somerset, in the State of New Jersey, have invented certain new and useful Improvements in Measuring Apparatus, of which the following is a specification.

My invention relates to apparatus adapted to deliver measured quantities of one or more materials and particularly to apparatus adapted to automatically deliver predetermined measured quantities of each of a plurality of materials, or a predetermined measured quantity of one material.

My invention is peculiarly adapted for use where it is desired to combine a plurality of materials in definite proportions particularly where exact proportions are required, *e. g.* in the neutralization of acids by alkalis, the saponification of oils and fats and the like. In fact my invention fulfils the requirements of numerous arts, which uses will readily suggest themselves. The invention further contemplates the utilization of the material which is to be delivered as the medium for automatically actuating the delivery apparatus and hence is economical to operate and simple in construction.

Referring to the drawings which illustrate one example of my invention, Figure 1 is a section of Fig. 2 on the line 1—1; Fig. 2 is a section of Fig. 1 on the line 2—2; Fig. 3 is a section of Fig. 2 on the line 3—3 and Fig. 4 is a section of Fig. 2 on the line 4—4.

A tank is indicated in its entirety by 5 and has parallel front and rear walls 6 and 7, and side walls 8, having their lower ends converging to provide a neck-shaped bottom for the convenient attachment of outlet pipes to be described. The walls 6 and 7 are each provided with diagonal bearing slots 9 and 10 extending from the upper edge of the said walls and terminating approximately at the vertical median line thereof. The tank 5 may be provided with a cover 11 in which case enlarged openings 12 are provided for the convenient entrance of inlet pipes to be described and to permit the cover to be readily raised; or the cover may be dispensed with. Its use, however, is preferable to prevent the entrance of dirt. The tank 5 is further provided with a plurality of partition walls 15 and 16 positioned parallel to the front and

rear walls 6 and 7 and dividing the tank into three compartments 17, 18 and 19. The compartments 17 and 18 are each provided at the upper ends with inlet pipes 20 and 21 from which preferably flow uniform quantities of the materials to be delivered. Any number of partition walls can, of course, be used, depending on the number of materials to be delivered, in which case additional pipes, partitions and appurtenances are provided. The partition walls 15 and 16 are respectively provided with bearing slots 22 and 23 similar to those provided for the front and rear walls 6 and 7. A shaft 24 having an arm 25 extending substantially at right angles thereto is provided and is adapted to rest on the lower curved bearing surfaces of the diagonal slots. The slots are provided for the purposes of permitting the shaft 24 and its appurtenance to be readily removed for the purpose of cleaning them and the tank 5. The partition walls need not, however, extend above the shaft 24, in which case I would omit slots 9, 10, 22 and 23 and support the ends of the shaft in suitable bearings. The arm 25 is provided with a movable counterweight 26 provided, *e. g.* with a set screw 27 to hold it in position. The front wall 6 is provided with stop pins 28 to limit the swing of the arm 25. A spill bucket 29 is fixedly mounted on the shaft 24, in the compartment 17, and is provided with vertical partition 30, preferably parallel with the shaft 24, thus dividing it into two compartments 31 and 32, whose purpose will be described hereinafter. A second spill bucket 35 is mounted on the shaft 24 coaxial with the bucket 29 and located in compartment 18. Generally this bucket is of smaller cubic contents than the bucket 29. The bucket 35 comprises preferably a gable roof 43 secured to the walls of the bucket and telescopic members 36 and 37 and is provided with an overflow outlet 38. The telescopic members 36 and 37 divide the bucket 35 into the two compartments 41 and 42. The outlet 38 projects through a semi-circular slot 39 provided for it in the partition wall 16 whereby the excess material in said bucket is adapted to spill into the compartment 19, as will be more fully explained hereinafter. The roof 43 causes the material issuing from the pipe 21 to spill into either of the compartments 41 or 42

depending on the position of the bucket 35 relative to pipe 21 and at the same time prevents the material from pouring directly into the outflow member 38. Each of the compartments 17, 18 and 19 is provided with outlet pipes 44, 45, 46 respectively secured to the bottom of the chamber 5.

Instead of providing the telescopic members 36 and 37, I may omit the member 36, in which case the capacity of bucket 35 will be fixed.

My apparatus operates as follows:—One of the materials, *e. g.* oil, (in case *e. g.* it is desired to saponify oil) is introduced into compartment 32 of the bucket 29 through pipe 20 and starts filling it, at the same time that the material which it is desired to mix with the oil, *e. g.* a caustic alkali, is entering the chamber 42 (when the buckets are in the position as shown in Fig. 1) of the spill bucket 35 through the pipe 21 until the material reaches the upper edge of the wall of the outflow member. Any excess (*i. e.* more than the predetermined quantity) overflows through the outlet 38 into the chamber 19 and from 5 thence through the pipe 46 to a caustic tank (not shown) for further use. The telescopic member 36, in case it is employed, is adjusted prior to use so that the bucket takes a predetermined quantity at each filling. The capacity of the bucket 35 at each filling is thus fixed, I need not necessarily employ an adjustable member as I can substitute buckets having outflow means of various height. The weight 26 is moved on the arm 16 to balance the predetermined weight of oil plus caustic, and when sufficient oil has entered the bucket 29, their total weight will overcome the weight 26 and automatically permit the spill buckets to rotate on the shaft 24 and empty their contents into the chambers 17 and 18 respectively. The now proportioned contents of the chambers 17 and 18 pass out through the pipes 44 and 45 which may communicate with any suitable mixing tank. The weight 26 may be adjusted by unloosening the set screw 27 and thus vary the total quantities of material in the spill bucket which will operate the bucket. The proportion between the materials spilling into the tanks 17 and 18 may be regulated by raising or lowering the telescopic member 36, as above explained. My apparatus automatically provides the requisite proportions of materials and automatically acts when such proportions are provided.

In case one material is to be delivered only one spill bucket and its appurtenances is used, the others remaining idle. When more than two materials are to be mixed, additional tanks with adjustable overflow means are provided with, of course, additional compartments and inlet and overflow pipes.

Various changes and modifications may

be made without departing from the spirit of the appended claims.

I claim:

1. In an apparatus of the character described, the combination of a plurality of spill buckets mounted on a rotatable shaft, an arm secured to said shaft, a movable counterweight on said arm to maintain said buckets in a non-spilling position until a predetermined weight of material has entered said buckets which automatically causes the buckets to spill, and adjustable overflow means for some of said buckets to regulate the proportionate weight of material in the latter buckets to the weight of the material in the other bucket.

2. In an apparatus of the character described, mechanism comprising a plurality of pivoted spill buckets, a connection whereby said buckets spill simultaneously, the pivots being so located with respect to the buckets plus their contents and the center of gravity of the mechanism that the center of gravity is shifted to cause the moment when the spill buckets turn, to set in after one of the buckets is full to overflowing but before the other is full, and regulatable means for causing the turning moment of the buckets to be advanced or retarded according as there may be a predetermined higher or lower level in the last named bucket.

3. In an apparatus of the character described, mechanism comprising a plurality of pivoted spill buckets, a connection whereby said buckets spill simultaneously, the pivots being so located with respect to the buckets plus their contents and the center of gravity of the mechanism that the center of gravity is shifted to cause the moment when the spill buckets turn, to set in after one of the buckets is full to overflowing but before the other is full, and regulatable means for causing the turning moment of the buckets to be advanced or retarded according as there may be a predetermined higher or lower level in the last named bucket, said regulating means consisting of an arm carried by an element of the turning mechanism, a movable counterweight on said arm and means to set the weight at any desired position thereon.

4. In an apparatus of the character described, mechanism comprising a plurality of pivoted spill buckets, a connection whereby said buckets spill simultaneously, the pivots being so located with respect to the buckets plus their contents and the center of gravity of the mechanism that the center of gravity is shifted to cause the moment when the spill buckets turn, to set in after one of the buckets is full to overflowing but before the other is full, and regulatable means for causing the turning moment of the buckets to be advanced or retarded according as there may be a predetermined

higher or lower level in the last named bucket, said regulating means comprising adjustable means connected with said first named bucket for regulatably changing the overflow level of said bucket.

5. In an apparatus of the character described, mechanism comprising a plurality of pivoted spill buckets, a connection whereby said buckets spill simultaneously, the pivots being so located with respect to the buckets plus their contents and the center of gravity of the mechanism that the center of gravity is shifted to cause the moment when the spill buckets turn, to set in after one of the buckets is full to overflowing but before the other is full, and regulatable means for causing the turning moment of the buckets to be advanced or retarded according as there may be a predetermined higher or

lower level in the last named bucket, said regulating means comprising adjustable means connected with said first named bucket for regulatably changing the overflow level of said bucket and an arm carried by an element of the turning mechanism, a movable counterweight on said arm and means to set the weight at any desired position thereon.

6. A spill bucket provided with a fixed outflow member, an adjustable telescopic member to vary the depth of the bucket, the said fixed and adjustable members dividing the bucket into two compartments, overflow means therefor and a gable roof substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand.

CHAMPLAIN L. RILEY.