

UNITED STATES PATENT OFFICE.

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MEASURING APPARATUS.

1,373,049.

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To all whom it may concern:

Be it known that I, JOHN E. BOETTCHER, a citizen of the United States, and resident of Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Measuring Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to new and useful improvements in measuring machines, particularly those for measuring liquids.

One important object of the invention is to provide an apparatus which can be readily associated with any suitable sort of container by means of which predetermined quantities of liquid or finely divided dry materials may be continuously delivered at a uniform rate.

An additional object is to provide a rotary measuring device which may be continuously and effectively actuated by any suitable hand or power means.

A further object is to provide an arrangement for automatically discontinuing actuation of the measuring device when the quantity of material in the container to which the invention is applied reaches a predetermined low level.

With these and other objects in view, the invention resides in certain novel features of construction, combination and arrangement of parts which will be hereinafter more particularly described and claimed and shown in the drawing wherein:

Figure 1 represents a central vertical section through an apparatus constructed in accordance with my invention.

Fig. 2 is a vertical transverse sectional view taken on the plane of the line 2—2 of Fig. 1, and

Fig. 3 is an end view with parts broken away and in section.

The materials or liquids which this invention is designed to measure and dispense are fed to the apparatus by gravity, preferably, being contained in a tank or bin 1 having an outlet opening 2 in its bottom. The parts of the invention are compactly arranged and the measuring element thereof is disposed in a housing 3, bolted or otherwise secured to the bottom of the container 1 and in the path of flow through the opening 2. The housing is provided with a vertical passageway 4 terminating in a discharge outlet at its lower end.

A rotary measuring member 5 is positioned transversely of the passageway 4 and is journaled in bearing openings 6 formed in the opposite end walls of the housing. The measuring member 5 comprises a pair of bearing disks 7, one of which is journaled in each of the bearing openings 6, and a plurality of radial ribs 8 which extend longitudinally of the member and have their opposite ends formed integrally with or otherwise connected with the bearing disks 7. From Fig. 2 it will be noted that the adjacent ribs 8 form pockets 9 to receive the liquid to be measured, and that the depicted embodiment contains four pockets of equal size formed by positioning the ribs at right angles to each other. By providing an additional number of ribs and locating the same at other than right angles, more pockets may be formed in the member. The outer longitudinal edge of each of the ribs 8 is provided with a lip 8' extending in the direction of rotation of the measuring member to increase the retaining efficiency of the pockets and to provide an increased bearing surface between the intermediate portions of the member and the arcuate side walls of the housing 3.

One of the bearing openings 6 is smaller than the other which is also the case of the disks 7, and the measuring member is tapered to compensate for wear between it and the surfaces with which it contacts. The member 5 is continuously urged into anti-leaking engagement with the side walls of the housing 3 and the bearing openings 6 by an expansile coil spring 10 disposed around a stem 11 that extends axially from the smaller bearing disk 7. One end of this spring bears against an end plate 12 disposed over the end of the smaller bearing opening and the other end contacts with an adjustable nut and washer 13 threaded on the outer end of the stem.

The other or larger bearing disk 7 has an outwardly and axially extending stub shaft 14 on which is loosely journaled a spur gear 15 and to which is slidably splined a sliding clutch element 16. The gear carries a cooperating clutch element 17, the teeth of the two elements being adapted to interlock to fix the gear to the stub shaft and consequently to the rotary measuring member 5. The spur gear is connected with any suitable sort of driving gear which may be either manually or mechanically operated.