Oct. 5, 1926. 1,601,862

A. S. LEGG ET AL

MEASURING DEVICE

Filed April 8, 1924 4 Sheets-Sheet 1

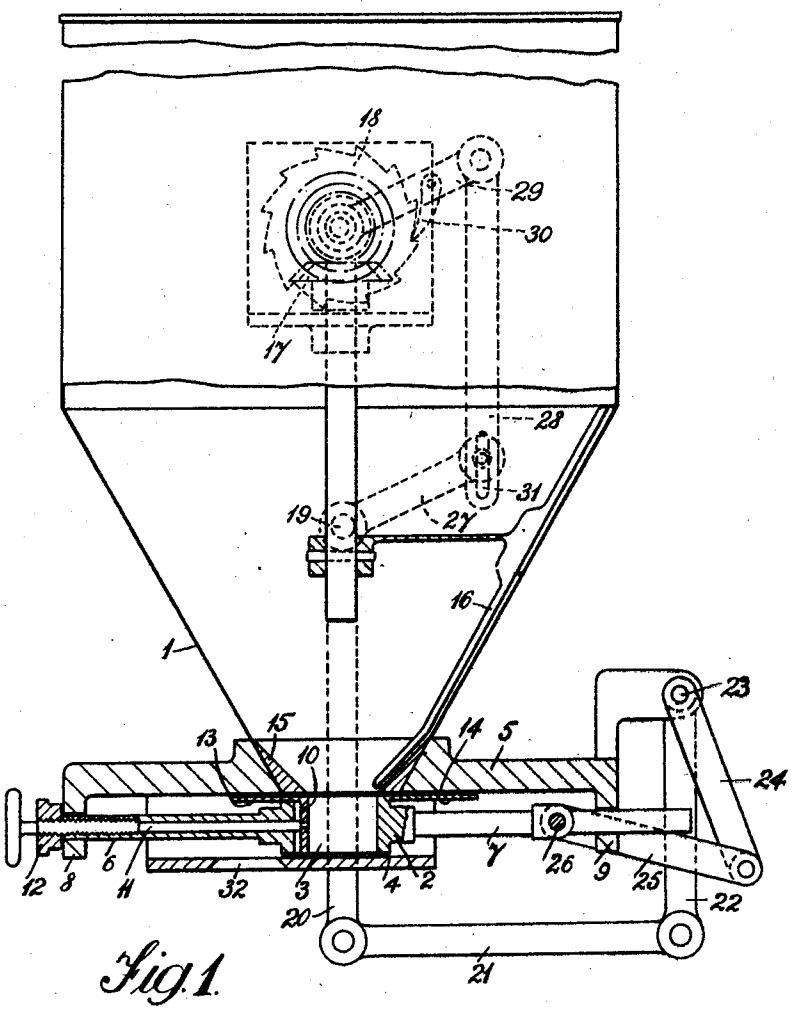


Fig. 1.

INVENTORS.
Arthur Samuel Legg & Albert Prime
by Austin J. Legg Jr.
Attorney.

Oct. 5, 1926. 1,601,862

A. S. LEGG ET AL

MEASURING DEVICE

Filed April 8, 1924 4 Sheets-Sheet 2

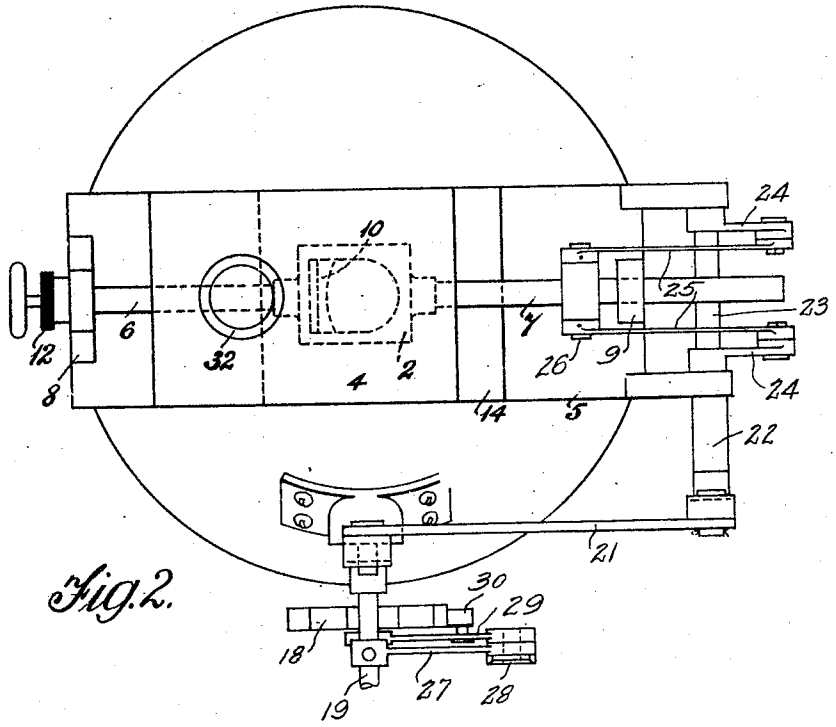


Fig. 2.

INVENTORS.
Arthur Samuel Legg & Albert Prime
by Arthur J. Carruthers
Attorney.

Oct. 5, 1926. **1,601,862**

A. S. LEGG ET AL

MEASURING DEVICE

Filed April 8, 1924 **4 Sheets-Sheet 3**

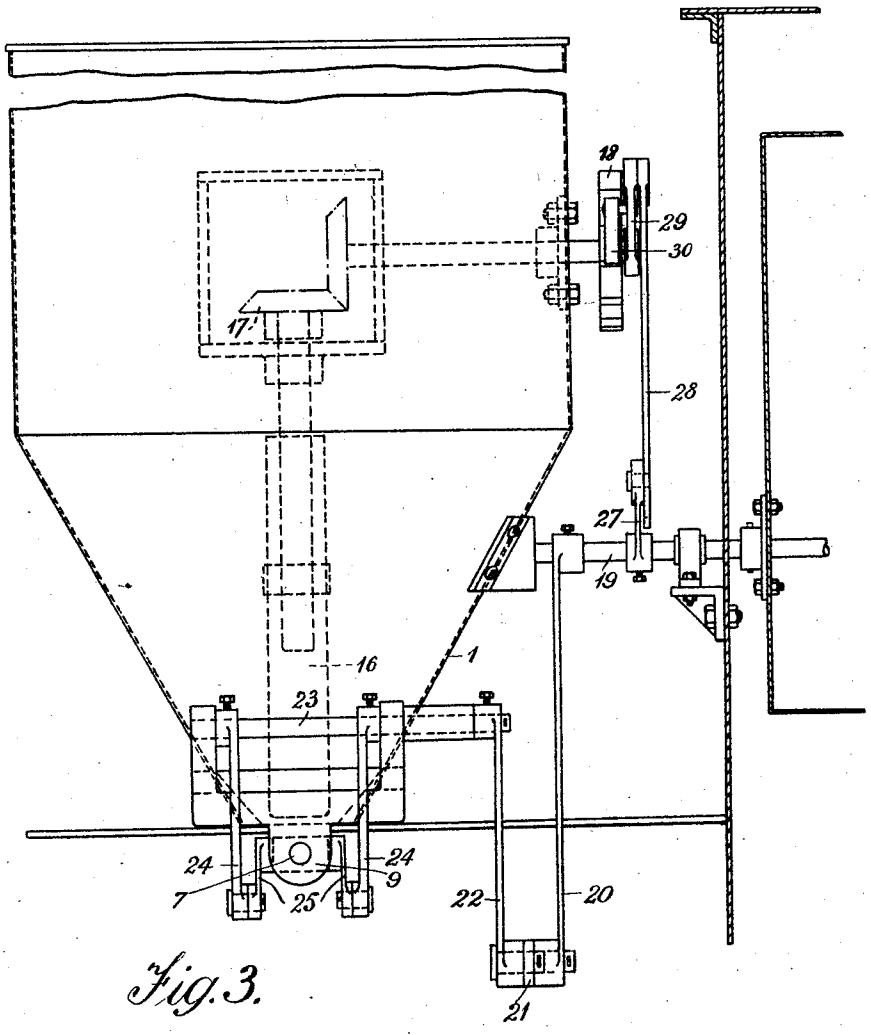


Fig. 3.

INVENTORS.
Arthur Samuel Legg & Albert Prime.
by:- Arthur Saphus
Attorney.

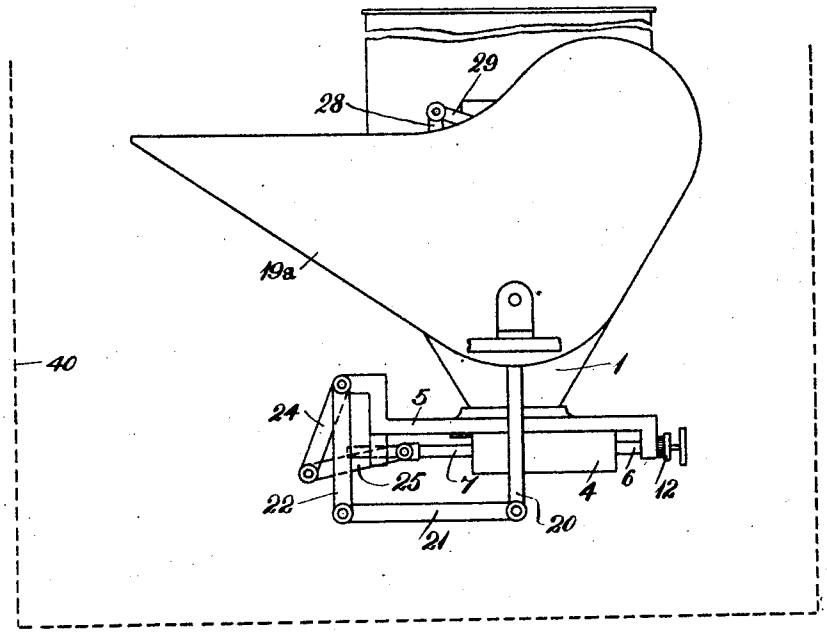
Oct. 5, 1926. 1,601,862

A. S. LEGG ET AL

MEASURING DEVICE

Filed April 8 1924 4 Sheets-Sheet 4

Fig. 4.



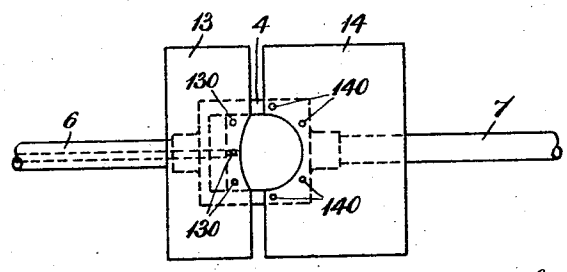


Fig. 5.

INVENTORS.
Arthur Samuel Legg + Albert Prime.
by: Arthur D Stephens
Attorney.

Patented Oct. 5, 1926.

1,601,862

UNITED STATES PATENT OFFICE.

ARTHUR SAMUEL LEGG AND ALBERT PRIME, OF THORNTON HEATH, ENGLAND.

MEASURING DEVICE.

Application filed April 8, 1924, Serial No. 705,122, and in Great Britain May 14, 1923.

This invention relates to apparatus of the kind in which definite quantities of pulverulent or other solid material are added to definite quantities of fluid by the action of a tipping vessel which measures the fluid and which operates by means of a ratchet gear a sliding door beneath a reservoir containing the material, the door being provided with a measuring pocket the size of which may be varied by a screw operated partition, and the hopper also being provided with a stirrer operated by the tipping vessel to loosen the material. The invention consists in certain improvements in apparatus of this kind.

Examples of construction according to the invention are shown in the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of the complete mechanism.

Figure 2 is a view taken from below of the mechanism shown in Figure 1.

Figure 3 is a side view at right angles to Figure 1.

Figure 4 is a view of the mechanism shown in Figure 3 coupled to the tipping vessel.

Figure 5 is a detail plan view of the measuring door.

Referring now to the drawings, the powder is contained in a canister 1 of substantially conical form and is delivered by means of a sliding door 2 provided with a slot 3 passing through it so as to form a measuring pocket. The door slides in a box 4 formed in a base casting 5 secured to the canister 1. It is guided by a pair of rods 6, 7, working in bearings 8, 9 on the base 5. In order to vary the quantity measured by the door 2, the slot 3 is provided with a sliding vertical partition 10 adjusted by a screw 11 which passes through the rod 6 which is made hollow for this purpose. A locknut 12 is provided for security. The partition 10 is provided with a cover plate 13, secured thereto by means of screws 130 (Figure 5) or by soldering, which prevents powder from falling into the space behind it, and the door 2 is provided with a cover plate 14, secured thereto by screws 140 (Figure 5) or by soldering, which closes the opening of the canister when the door is moved over the position of delivery but which is shaped so that it does not cover the slot in the door. The opening of the canister is provided with a removable cone-piece 15. The door 2 has a slot 3 of such a size as to cover the range of delivery required and the cone-piece 15 is of corresponding size. The canister is provided with a stirrer 16 operated through bevel wheels 17 from a ratchet wheel 18. The bevel wheels are enclosed in a casing to protect them from the powder.

As shown in Figure 4 both the stirrer 16 and the door 2 are operated by the tipping vessel 19^a from its trunnion shaft 19. This shaft has secured on it a crank arm 20 which operates through a link 21 an arm 22 on a shaft 23 carried in bearings on the base 5. The door is moved by crank arms 24 and connecting rods 25 pivoted to the rod 7. To prevent side thrust, the arms 24 and connecting rods 25 are arranged on either side of the rod 7 as shown in Figure 2, the connecting rods 25 being pivoted to a cross piece 26 on the rod 7.

The stirrer is operated from a second crank arm 27 on the shaft 19, through a link 28 pivoted to a radial arm 29 carrying a pawl 30 working on the ratchet wheel 18. Since considerable resistance may be offered to the stirrer owing to packing of the powder, the tipping vessel must be allowed to gather power before operating the stirrer as otherwise too much water will be measured out, or it may not hold sufficient water to provide power to operate the stirrer. To permit the vessel to acquire the necessary power, lost motion is allowed in the stirrer operating mechanism. This may comprise a slot 31 in the link 28, but by designing the parts so that the stroke of the pawl 30 is almost sufficient to pass over two teeth of the ratchet wheel 18 sufficient lost motion will be allowed at this point and the slot 31 can be omitted. This is preferable since the slot 31 is a bad feature mechanically.

The whole mechanism works in the following manner. The canister is mounted adjacent to the tipping vessel over the vessel 40 into which both the water from the tipping vessel 19^a and the powder from the slot 3 are delivered. In this way a definite quantity of powder is added to a definite quantity of water, as is necessary for instance in water softening plants.

The measuring pocket is adjusted to the required size and the corresponding cone-piece 15 inserted and the canister filled with powder, the pocket in the door immediately filling.

As soon as the tipping vessel operates, the

door is moved to the left and the contents of the pocket fall into the treating vessel through a hole or pocket 32 in the bottom of the box 4. During the displacement of the door the opening in the canister is closed by the plate 14 so that no powder falls out. Some time after the commencement of the tipping when the end of the lost motion is reached and the vessel has acquired sufficient momentum, the stirrer is operated so that the powder is loosened sufficiently to fill the pocket when the door is returned by the recovery of the tipping vessel after emptying.

What we claim is:—

1. In apparatus of the type described comprising a pivotally mounted tipping vessel and a powder container mounted therein, the combination of a guideway secured at the base of said container, a measuring door slidably carried within said guideway, coaxial guide rods slidably carried in the base of said container centrally supporting said door, a partition within the measuring pocket of said door, a plate on said partition extending rearwardly thereof, an adjusting screw carried concentrically within one of said guide rods for adjusting said partition, link work for operating said door connected with the pivot of said tipping vessel, a stirrer within said powder container and means operated by said tipping vessel for operating said stirrer.

2. In apparatus of the type described comprising a pivotally mounted tipping vessel, and a powder container mounted therein, the combination of a guideway secured at the base of said container, a measuring door slidably carried within said guideway, coaxial guide rods slidably carried in the base of said container centrally supporting said door, a partition within the measuring pocket of said door, a plate in said partition extending rearwardly thereof, an adjusting screw carried concentrically within one of said guide rods for adjusting said partition, levers pivoted to the base of said container on either side of one of said guide rods, links connecting said lever and said guide rod, link work for operating said levers connected with the pivot of said tipping vessel, a stirrer within said powder container and means operated by said tipping vessel for operating said stirrer.

In testimony whereof we have signed our names to this specification.

ARTHUR SAMUEL LEGG.
ALBERT PRIME.