G. MASON.

METER.

APPLICATION FILED JAN. 31, 1914.

1,104,688. **Patented July 21, 1914.**

2 SHEETS—SHEET 1.

Fig. 1.

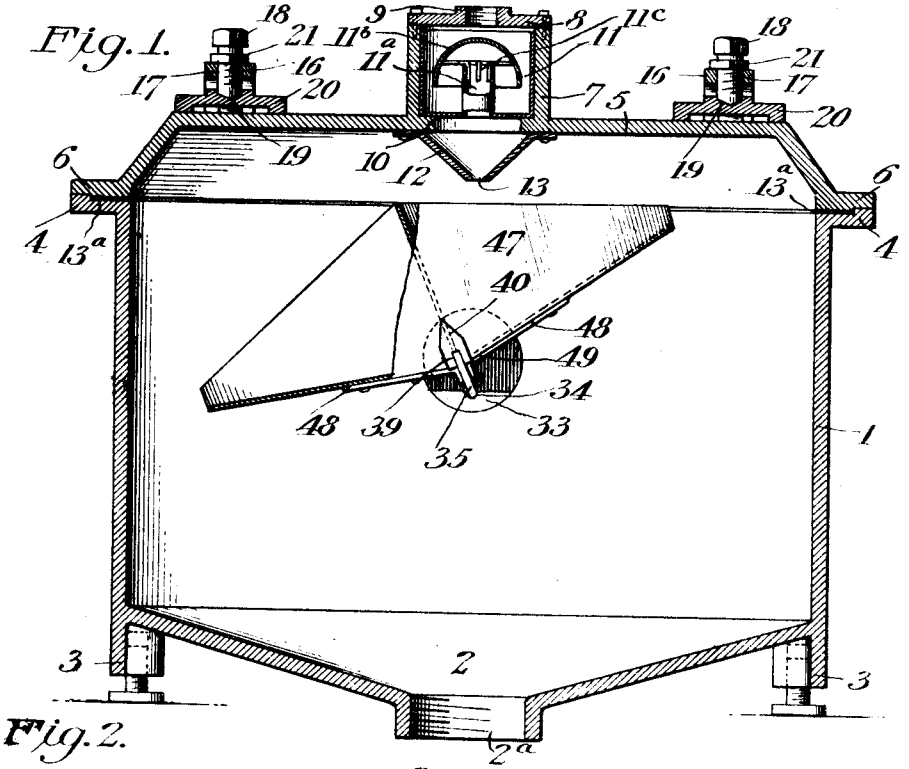
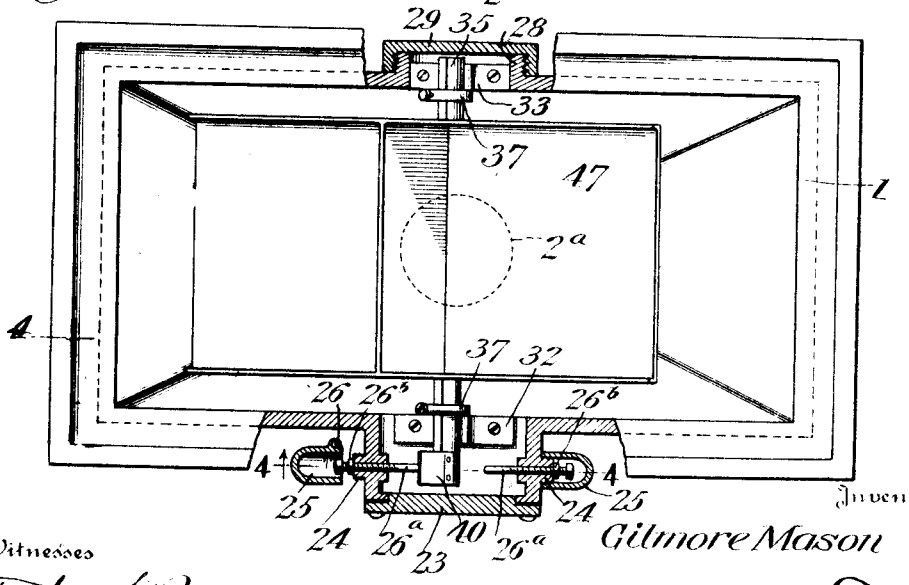


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

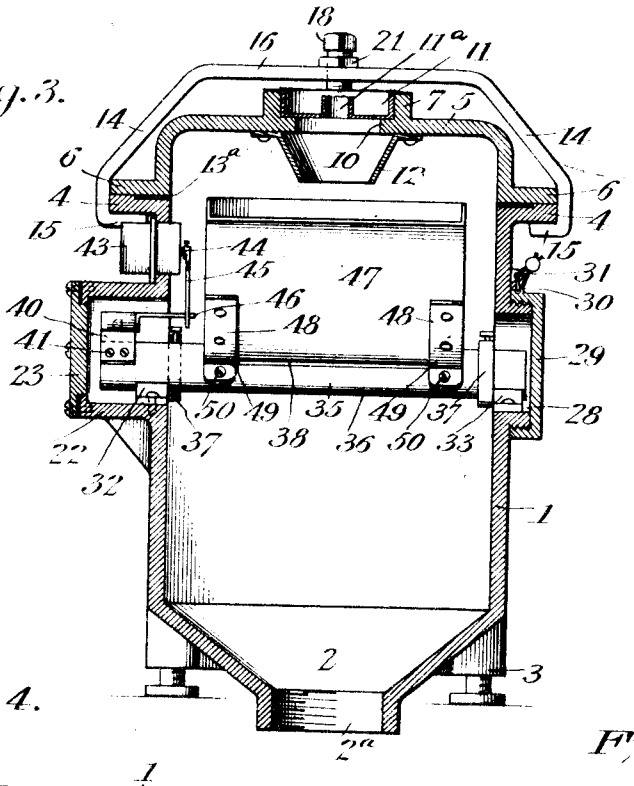


Fig. 4.

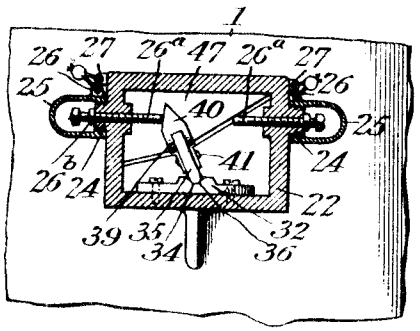


Fig. 5.

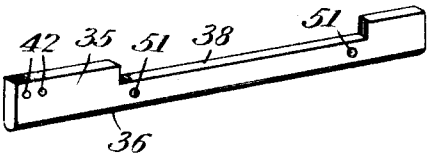


Fig. 6.

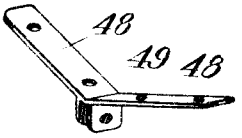


Fig. 7.



Fig. 8.



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UNITED STATES PATENT OFFICE.

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METER.

1,104,688. Specification of Letters Patent. Patented July 21, 1914.

Application filed January 31, 1914. Serial No. 815,670.

To all whom it may concern:

Be it known that I, GILMORE MASON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Meters, of which the following is a specification.

This invention relates to the subject of meters for measuring fluids and the like, the main object being the production of a meter that may be utilized in connection with the measuring of the condensation of steam supplied to users from a central station.

The invention has especially in view improvements in the type of meters known as "oscillating buckets" in which the fluid is discharged into one or the other of two compartments of a bucket, the bucket being mounted to have oscillatory movements, the arrangement being such that while one compartment is discharging, the other compartment is being filled, such improvements residing in the type of bucket used; the manner of reducing the "head" of the water fed to the bucket; the manner of mounting the bucket; and in the manner of adjusting the oscillatory movements of the bucket, by means of which a positive, automatic, and noiseless operation of measuring fluids is accomplished.

The invention also contemplates improvements in the meter casing by means of which the same is normally sealed against unauthorized opening, yet which can be readily opened to permit access to the counting or measuring actuating mechanism so that such mechanism can be readily removed, replaced, repaired, or adjusted.

Other objects and advantages of the invention will be apparent from the following description, when taken in connection with the accompanying drawings wherein one simple and practical embodiment of the improved meter has been shown.

Referring to the accompanying drawings—Figure 1 is a vertical longitudinal sectional view of the improved meter. Fig. 2 is a top plan view, partly in section. Fig. 3 is a vertical transverse sectional view. Fig. 4 is a detail sectional view taken on the line 4—4 Fig. 2. Fig. 5 is a detail perspective view of the rocking bar or lever upon which the oscillating bucket is mounted. Fig. 6 is a detail perspective view of one of the bucket clips. Fig. 7 is a detail perspective view of one of the spacing collars for the rocking bar. Fig. 8 is a detail perspective view of one of the spiders used in connection with the cover clamps.

The improved meter comprises in its general organization a casing 1 which may be rectangular or any other convenient shape and which is preferably cast. The bottom 2 of the casing slopes downward toward the center to direct the outflow to a pendent tubular discharge outlet 2^a located at that point and which is preferably threaded so that it may be readily coupled to a suitable connection (not shown) leading to a sewer or other waste receptacle. The ends of the casing may be equipped with the supporting legs 3, preferably composed of pendent internally threaded tubular projections with which the feet or rest that have threaded shanks engage the arrangements being such that vertical adjustments of the casing may be readily made. The open top of the casing is surrounded by the flat outwardly projecting seating ledges or flanges 4.

The cover 5 is provided with outwardly projecting flat base flanges 6 which seat on the ledges 4. The cover 5 is provided with a central upstanding tubular neck 7 upon which a removable cap or closure 8 is seated. The neck closure is provided with a central upstanding boss 9 that is threaded, said boss being provided with an opening through which communication is had with the interior of the neck 7. An internal flat annular ledge 10 is formed in the base of the neck 7 and forms a seat for a receptacle 11 that fits snugly, but removably, within the neck. The receptacle 11 is provided with a central upstanding discharge or overflow tube 11^a the upper, or inlet, end of which is in a plane lower than the upper end of said receptacle, and a semi-spherical deflector 11^b has radial arms 11^c which engage the inlet end of said tube to hold the deflector in position to inclose, in spaced relation, the said inlet end of the overflow tube. A discharge nozzle 12 has upper flanges suitably fastened to the under surface of the cover 5 directly below the lower or outlet end of tube 11^a. The nozzle 12 is preferably in the form of a hopper to provide a pendent outlet end 13 that contracted so that it will discharge the fluid in the form of a thin contracted, or flat stream.

The boss 9 is threaded so that it may be readily coupled to a source of fluid supply, and the incoming fluid falls onto the de-

flector 11[b] and is spread thereby. The initial spreading of the fluid forms a seal in the receptacle 11 and the continued flow of the fluid causes the same to overflow the tube 11[a], and passing through said tube, discharges into and through the nozzle 12 and is thereby delivered to the counter-actuating mechanism, to be described. It is to be understood, of course, that the described manner of feeding the fluid through the neck 7, causes a reduction of the pressure of the fluid.

The ledges 4 of the casing may be recessed for the reception of a gasket 13[a] to seal the joint between the flanges 6 and said ledges, and the cover is detachably locked to the casing by means of clamps having arms 14 that straddle the cover and which are provided with hooks 15 at their free ends that engage under ledges 4, as shown in Fig. 3 of the accompanying drawings. The bodies 16 of the clamps have threaded openings 17 through which set screws 18 project and engage sockets 19 in spiders 20 that rest on the cover 5. Lock nuts 21 may be used on the screws 18 to hold the same in the desired "set" positions. By using the clamps, it will be seen that the cover 5 is normally locked in position to seal the open upper end of the casing, yet such clamps can be readily removed when it is desirable, or necessary to gain access to the interior of the said casing.

The casing 1, at a point preferably above the horizontal center thereof, is provided with an external laterally projecting housing 22 the outer end of which is recessed for the reception of a cover 23 that is held in position by means of screws or other removable fasteners. A gasket or other sealing medium may be interposed between the cover 23 and its seat. At each side, the housing 22 is provided with an external boss 24 that is threaded for the reception of a cap 25, each cap and the housing being provided with complemental ears 26, 27, respectively, so that the cap may be locked to the housing by utilizing a seal that engages said ears. Alined threaded openings are formed through the bosses 24 and the sides of the housing 22, and adjusting screws 26[a] extend through such openings and project into the housing 22. The heads of the screws are inclosed by the caps 25, as shown in Figs. 2 and 4. Lock nuts 26[b] may be employed for holding the screws 26[a] in the desired "set" positions.

Directly opposite the housing 22, the casing 1 is provided with an external laterally projecting neck 28 that is threaded for the reception of a cap 29 equipped with an ear 30 that coöperates with a similar ear 31 carried by the casing 1 and a seal, not shown, to lock the cap to the said neck.

A saddle bearing 32 is detachably fastened to the base of housing 22 and a similar bearing 33 is detachably fastened within the neck 28. The bearings 33—32 are provided with raised centers in which grooves 34 are formed with beveled sides and semi-circular bases. A flat, elongated rocking bar or lever 35 has its lower longitudinal edge 36 rounded and mounted in the grooves 34 of bearings 32 and 33. Adjustable collars 37 are mounted on the bar 35 to limit lengthwise movements of the said bar. The upper edge of the bar 35 is flat and at its center is cut-away longitudinally to form a seat 38. One end of bar 35 projects into housing 22 and its flat upper edge is straddled by the bifurcated lower end 39 of a stop 40 having its free upper end beveled on opposite sides. The stop 40 is rigidly but removably fastened to bar 35 by means of bolts 41 that pass through the bifurcated end 39 and the openings 42 in the said bar 35. The stop 40 projects upwardly in housing 22 between the screws 26[a], so that the rocking movement of the said stop is limited by contact with said screws. The stop 40 being fast on bar 35 and the screws 26[a] being adjustable, it will be seen that by manipulating said screws, the range of rocking movements of the bar 35 may be regulated. A counter 43 is suitably mounted in casing 1 and its actuating shaft 44 carries a pendent operating rod 45 the free lower end of which straddles or otherwise engages the free end of an arm 46 carried by the stop 40, such connections obviously causing the counter to be actuated by the rocking movements of stop 40.

A two-compartment bucket 47 equipped with the usual inclined bottoms for the compartments, has the transverse center of its under-surface straddled and reinforced by the flat flanges 48 of the bifurcated clips 49. Such clips 49 are disposed adjacent each end of the bucket 47, and the flanges 48 are riveted or otherwise rigidly fastened to the bottom thereof. The bifurcated portions of the clips straddle the seat 38 in bar 35 and are rigidly but removably fastened thereto by the set screws 50 that pass through said bifurcations and the openings 51 in bar 35. The bucket 47 is of a size to snugly fit within the seat 38 of bar 35 and such seating arrangement and the clips 49 that are fastened to the bar 35, obviously prevent the bucket having any movements relative to the bar 35.

It will be apparent from the foregoing description that by removing the cover 5, the bucket 47 may be overturned far enough to give access to the screws 50 whereby the bucket may be readily released from bar 35, to permit said bucket to be removed from the casing. Similarly by removing cap 29 and lifting bar 35 from its bearings 32—33 said bar may be bodily shifted lengthwise to remove it from the casing through neck 28 or by shifting said bar sufficiently to re

move the stop 40 from housing 22, the bar may be tilted, and then removed from the casing 1 through the open top thereof. In addition, the provision of the removable cover 5 and cap 29 facilitates lubricating parts, inspection, &c. The removable cover for the housing 22 permits inspection and the like of stop 40, and the removable caps for the heads of screws 26ª give access to the same for the purpose of adjusting said screws to regulate the "fall" or rocking movements of stop 40.

A distinctive feature of this invention is that the stop 40 is so mounted, and the abutment screws 26ª so disposed, that the "fall" or rocking movement, of the stop 40 is very slight. This is of value in connection with the inclined bottom type of buckets in that but the slightest "fall" of such buckets beyond a horizontal plane is sufficient to quickly empty the lowermost compartment. In addition, the slight "fall" of the stop 40, and the practically sliding contact between its beveled sides and the abutments 26ª, prevents such contact being noisy.

What I claim as my invention is:—

1. A meter comprising a casing, a rocking bar mounted therein, an oscillatory bucket removably fastened on the bar, a stop fast on one end portion of the bar, said casing having an inlet discharging into the bucket and an outlet, and adjustable means carried by the casing and in the path of movement of the stop.

2. A meter comprising a casing provided with an inlet and an outlet, a rocking bar journaled in the casing and having a cut-out portion forming a bucket seat, a bucket rigidly but removably fastened to the seat and disposed beneath the inlet, a stop fast on the bar, and adjustable abutments carried by the casing and oppositely disposed and located in the path of movement of the stop.

3. A meter comprising a casing provided with an inlet and an outlet, a bearing at each side of the interior of the casing, a flat rocking bar mounted in the bearing, a bucket carried by the bar, a stop having a bifurcated end straddling the bar, means for rigidly fastening the bifurcated end of the stop to the bar, and adjustable abutments carried by the casing and in the path of movement of the stop.

4. A meter comprising a casing having an inlet, a pressure reducer in the inlet, a rocking bar journaled in and extending across the casing, a bucket seated on the bar beneath the inlet, a stop at one end of the bar, and oppositely disposed adjustable abutments carried by the casing and in the path of movement of the stop.

5. A meter comprising a casing provided with a housing at one side and a neck opposite said housing, a removable cap for the neck, a removable cover for the housing, said casing being provided with an inlet and a discharge, adjustable abutments extending through opposite sides of the housing, caps inclosing the heads of the abutments, a rocker shaft journaled in the casing and having one end projecting into the housing and its other end disposed adjacent said neck, a bucket mounted on the bar, and a stop on the end of the bar within the housing and limited in its movements by contact with the abutments.

6. A meter comprising a casing having a flanged upper end provided with a gasket seat, a gasket in said seat, a cover having a flange adapted to seat on the flanges of the casing, said cover being provided with a fluid inlet and said casing being provided with a fluid outlet, clamps having arms provided with hooks for engaging the flange of the casing, said clamps having threaded openings, spiders seated on the cover beneath the clamps and provided with sockets, screws engaging said threaded openings and sockets, and counter actuating mechanism within the casing and operated by the fluid discharged through said fluid inlet.

7. A meter comprising a casing provided with a cover having a fluid inlet, said casing having a fluid outlet, a rocker shaft journaled within the casing beneath the inlet and provided with a cut-out portion forming a bucket seat, a bucket engaging the seat and having clips embracing the shaft, a stop at one end of the shaft, and adjustable abutments carried by the casing and in the path of movement of the stop.

8. A meter comprising a casing provided with a cover having a fluid inlet, said casing having a fluid outlet, a rocker shaft journaled in the casing, a bucket seated on the shaft, a stop fast on the shaft and having its free end provided with beveled sides, and adjustable abutments carried by the casing and located in the path of movement of the stop and adapted to have sliding contact with said beveled sides.

9. A meter comprising a casing provided with an inlet and an outlet, said casing having an outwardly projecting external neck and a housing disposed opposite said neck, a removable closure for the neck, a removable closure for the housing, adjustable abutments projecting through opposite sides of the housing, caps inclosing the outer ends of the abutments, a rocking bar journaled in the casing and having one end projecting into the housing and its other end disposed adjacent the neck, a bucket removably mounted on the bar, and a stop removably mounted on the end of the bar within the housing and projecting between and limited in its rocking movements by said abutments.

10. A meter comprising a casing provided with an inlet and an outlet, bearings in said

casing provided with bearing grooves having beveled sides and a semi-circular base, a rocking bar having a base longitudinal edge that is rounded and seated in the base of said groove, means carried by the bar and actuated by the incoming fluid for imparting a rocking movement thereto, and means for limiting the rocking movements of the bar.

11. A meter comprising a casing provided with a fluid inlet and a fluid outlet, bearings within and disposed on opposite sides of the casing, a rocking bar mounted in the bearings, a stop mounted on one end portion of the bar, and abutments carried by the casing and disposed on opposite sides of and in the path of movement of the stop for engaging the stop to limit the movements of the bar.

12. A meter comprising a casing provided with a fluid inlet and a fluid outlet, a rocking bar journaled in the casing, means actuated by the fluid from the inlet for imparting a rocking movement to the bar, a stop carried by the bar and having a free end provided with inclined sides, and adjustable abutments carried by the casing and engaging the inclined sides of the stop to limit the movements of said stop.

13. A meter comprising a casing provided with a fluid inlet and a fluid outlet, counter actuating mechanism therein operated by the fluid from the inlet and including a rocking bar, a stop mounted on one end portion of the bar, adjustable abutments having external heads, said abutments extending through one side of the casing and having their inner ends disposed in the path of movement of the stop, and external means carried by the casing and normally inclosing the heads of the abutments.

14. A meter comprising a casing having an outlet, a cover for the casing provided with a neck and a depending nozzle that projects into the casing, a closure seated on the neck and provided with an inlet opening, a receptacle seated in the neck, an overflow pipe mounted in the receptacle, a deflector having radial arms engaging the pipe and adapted to spread the fluid coming through the opening of the closure and cause the same to overflow through said pipe and discharge into the receptacle through the nozzle, and counter actuating mechanism within the casing and actuated by the flow of fluid from the nozzle.

15. A meter comprising a casing provided with an outlet, a cover therefor provided with an inlet, a nozzle depending from the inlet, an overflow pipe in the inlet, a deflector having arms engaging the pipe to support the deflector over and in spaced relation to the upper end of said pipe, and counter actuating mechanism in the casing and actuated by the flow of fluid from the nozzle.

In testimony whereof I have affixed my signature in presence of two witnesses.

GILMORE MASON.

Witnesses:
NORMAN DENZER,
MAUD RESCH.