No. 871,865. PATENTED NOV. 26, 1907.

A. J. FELTER.

MEASURING APPARATUS.

APPLICATION FILED MAY 21, 1906.

Fig. 2.

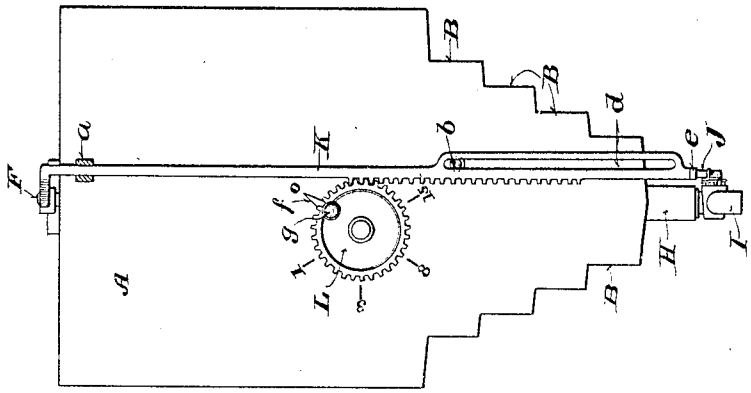
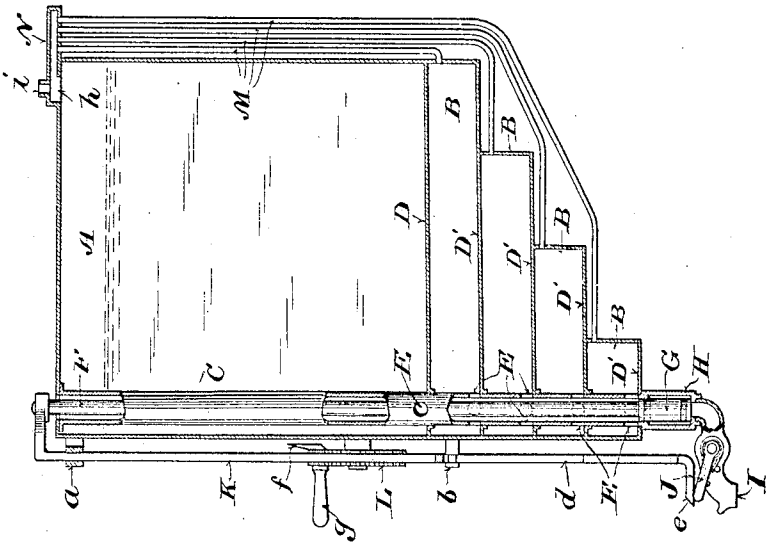



Fig. 1.




Witnesses:
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# UNITED STATES PATENT OFFICE.

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## MEASURING APPARATUS.

No. 871,865. Specification of Letters Patent. Patented Nov. 26, 1907.

Application filed May 21, 1906. Serial No. 317,849.

*To all whom it may concern:*

Be it known that I, AUGUSTUS J. FELTER, a citizen of the United States, and resident of Grand Rapids, in the county of Kent and State of Michigan, 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 has for its object to provide a simple, accurate and economical measuring apparatus for dispensing liquids or other substance in the fixed quantities of a measuring system, said invention consisting in certain peculiarities of construction and combination of parts as fully set forth hereinafter with reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1 represents a longitudinal section view of a measuring tank embodying the features of my invention, with parts broken away and parts in full to better show the details, the section being taken slightly to one side of the center of the tank, and Fig. 2, a front view of the same illustrating the indicating dial and its connection.

Referring by letter to the drawing, A indicates a liquid reservoir or tank provided with a tier of cells B below its bottom, the dimensions of the cells being progressively decreased in area downward from the tank bottom; for example in this case the last cell would be of one pint capacity and so on up to the largest, which would be one gallon. A tube C extends from a point below the bottom cell up through the entire series, and terminates at the top wall of the tank, which wall is provided with an opening coincident with the tube, the latter forming a channel between the reservoir and each cell. The tube at its junction with the bottom D of the tank and each partition wall D′ of the cells is provided with ports E through which communication is had with said tank and cells for the purpose of filling and discharging the liquid. A reciprocative rod F is loosely fitted into the said tube having at its lower end a valve member, comprising a cylindrical head G, which is suitably packed so as to prevent leakage between its face and the inner wall of the aforesaid tube, the position of the valve being normally below the bottom wall of the last cell and in a pocket H formed by the extension of the tube. Threaded or otherwise secured to the pocket extension of said tube is a cock I, which in this instance is provided with a spring-controlled handle J, which handle, when freed, will by means of the spring open the cock.

The upper end of rod F projects through the top wall of the tank and has secured thereto a rack-bar K, said bar extending forward and downward on the face of the said tank to which it is connected by upper and lower guides *a*, *b*, the latter being arranged to fit the slot *d* of a length sufficient to permit reciprocation of the aforesaid bar, the end of which bar is bent to form a foot *e*, that normally rests upon the handle of the cock I and holds the latter closed. Meshing with the toothed rack-bar K is a toothed wheel L, which wheel is pivoted to the face of the tank and provided with a pointer *f* and handle *g*, there being graduation marks upon the face of the tank in the path of the pointer, corresponding to the capacity of the cells B thereof. Each cell B is provided with a vent pipe M, which connects with a chamber N at the top of the tank, the chamber having an opening *h* into said tank and also a vent-mouth *i*, which if desired may be utilized to fill the tank with liquid when necessary.

When the tank is filled and the ports in position, as shown in the drawings, the valve head G will prevent any leakage; now should it be desired to draw off, for instance three pints of liquid, the operator would revolve the gear wheel in the direction indicated by the arrow until the pointer thereon registered with the three pint mark, the rotation of the wheel in the meantime, through its rack engagement, will have caused the rod F to lift its valve head to a position, the bottom of which is above the ports E communicating with the quart cell, thus allowing its contents, together with the contents of the pint cell below to flow through the cock, which cock had previously been opened by the spring-controlling handle when the latter was released by the lift of the rack-bar. The operator now pushes the valve rod back to its normal position by reversing the gear-wheel, which instantly places all of the cells in communication with the tank or reservoir, and they will again fill up, the liquid finding its way through the ports and down between the rod and inner wall of the tube. Should a displacement of the liquid occur by reciprocation of the rod when the tank is filled, overflow from the vent tubes will return through the chamber N to said tank.

I may without departing from the spirit of my invention employ any form of reciprocative valve in connection with ports for each cell, the number and sizes of the cells being regulated by the requirements of the dispensing tank, it being understood that the apparatus is applicable to any bulk substances which would flow by gravity. It is also within the scope of my invention to make the tier of cells of the same size if desired.

I claim:—

1. A measuring apparatus, comprising a reservoir, a tier of cells below the same, vents for the cells and reservoir, a tube having ports opening to the reservoir and each cell, a cock secured to the lower end of the tube, a valve fitted in the tube, a rod extending from the valve, a rack-bar connected thereto exterior of the reservoir, a toothed indicator wheel in mesh with the rack-bar, and means in connection with the latter and said cock, whereby the latter is automatically controlled in conjunction with said valve.

2. A measuring apparatus comprising a reservoir having a series of cells, a tube in the reservoir, port-openings in the tube for the reservoir and each cell, a valve fitted in the tube, a stem extending from the valve, a cock secured to the lower end of said tube, and means in connection with the valve-stem and cock whereby the latter is automatically controlled in conjunction with said valve.

In testimony that I claim the foregoing I have hereunto set my hand at Grand Rapids in the county of Kent and State of Michigan in the presence of two witnesses.

A. J. FELTER.

Witnesses:
W. R. RACE,
B. F. ORSLA.