

C. I. CARRICO & B. HAWKINS.

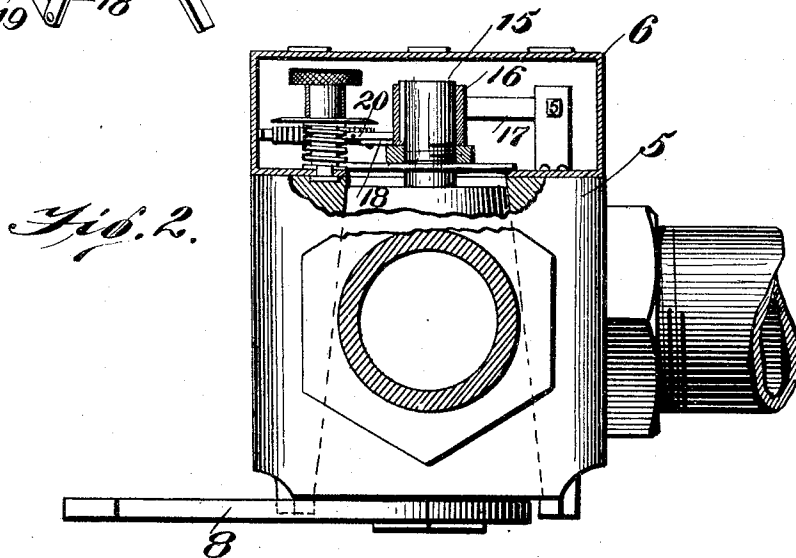
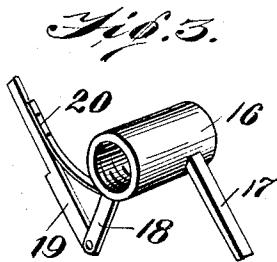
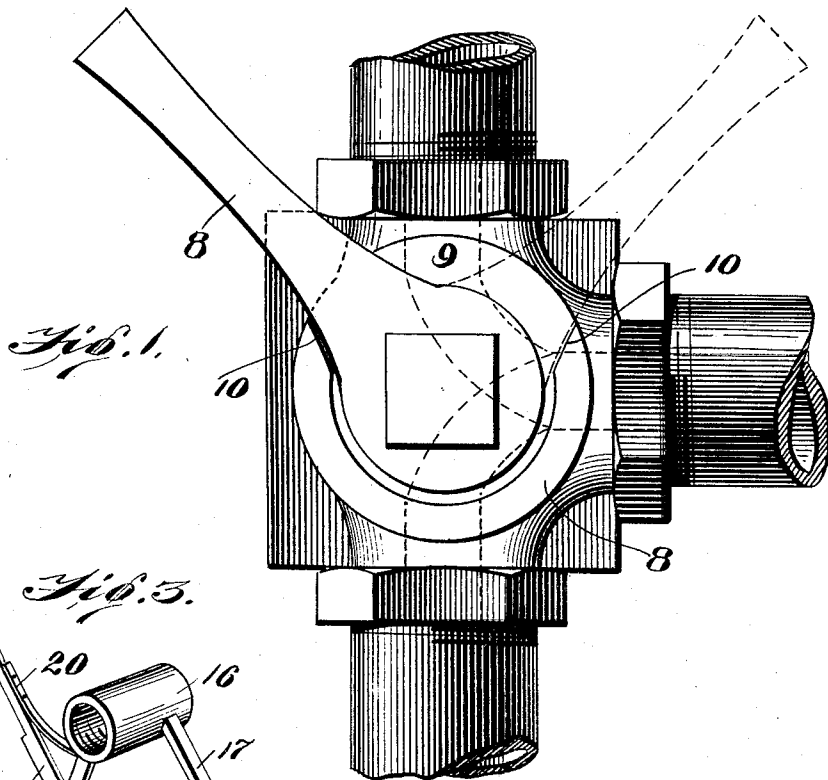
LIQUID VOLUME RECORDER.

APPLICATION FILED MAR. 19, 1909.

941,008.

Patented Nov. 23, 1909.

2 SHEETS—SHEET 1.



Witnesses
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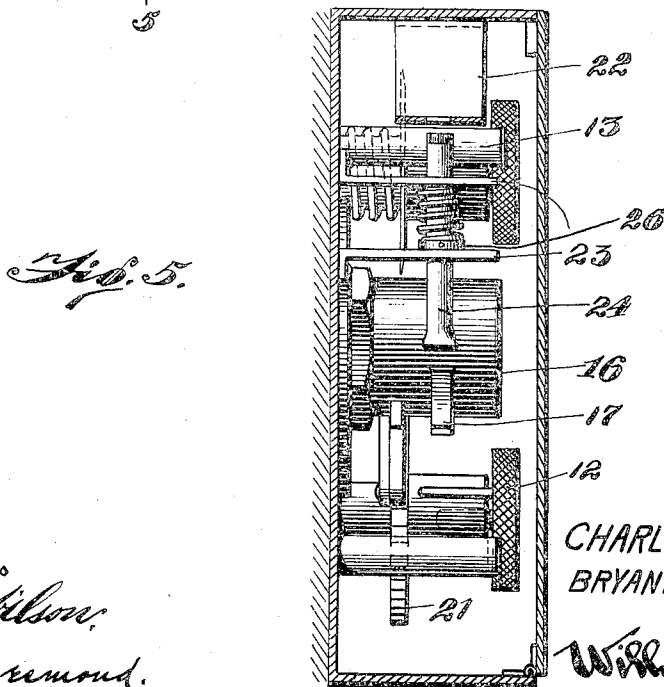
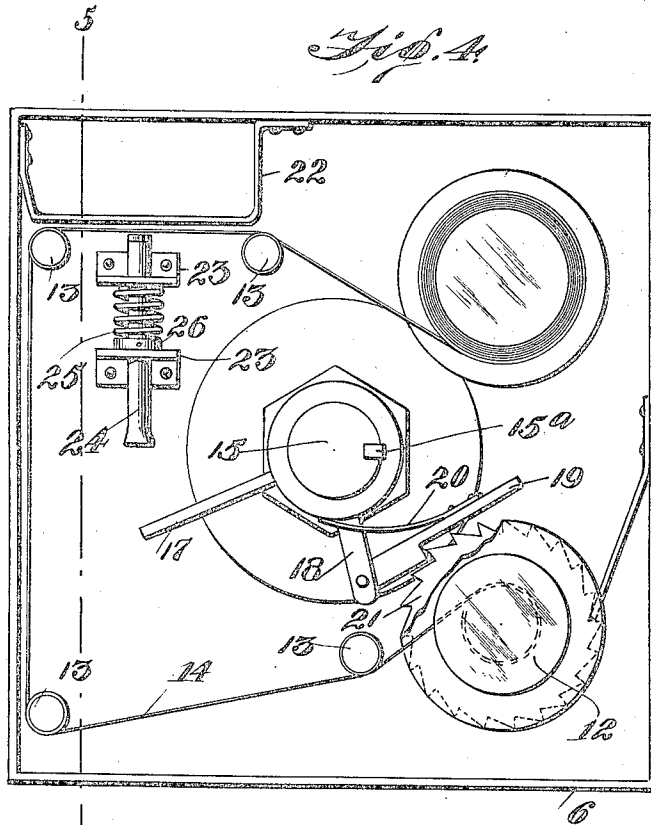
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CHARLES IVO CARRICO AND BRYANT HAWKINS, OF OWENSBORO, KENTUCKY, ASSIGNORS OF THREE FIFTHS TO SAID CARRICO AND TWO-FIFTHS TO SAID HAWKINS.

LIQUID-VOLUME RECORDER.

941,008.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed March 19, 1909. Serial No. 484,356.

To all whom it may concern:

Be it known that we, CHARLES IVO CARRICO and BRYANT HAWKINS, citizens of the United States, residing at Owensboro, in the county of Daviess and State of Kentucky, have invented certain new and useful Improvements in Liquid-Volume Recorders, of which the following is a specification.

Our invention relates to an apparatus for measuring and recording quantities of liquid drawn from receptacles.

Broadly, the invention contemplates an improvement of our invention which forms the subject matter of an application for U. S. Letters Patent, Serial No. 478,473, filed Feb. 17, 1909, whereby an oscillatory valve and coöperative registering mechanism are used in lieu of the rotary valve and co-acting recording mechanism, to minimize the space required for the operation of the valve as well as the manual manipulation thereof.

To the accomplishment of the recited objects, and others coördinate therewith, the preferred embodiment of our invention resides in that arrangement and construction of parts hereinafter described, illustrated in the accompanying drawings, and embraced within the scope of the appended claims.

In said drawings:—Figure 1 is a side elevation of the apparatus, embodying our invention. Fig. 2 is a top plan view of the apparatus, the recording casing being shown in longitudinal section. Fig. 3 is a detail perspective view of the sleeve carried by the valve stem and adapted to actuate the recording mechanism. Fig. 4 is a side elevation of the recording mechanism, the cover plate of the casing being removed to more clearly illustrate the working parts, and Fig. 5 is a vertical sectional elevation taken along lines 5—5 of Fig. 4.

Similar references designate corresponding parts throughout the several views.

As in our previous invention, we assemble a valve casing 5 and a casing 6 designed to contain the recording mechanism. The valve casing differs somewhat from our previous disclosure of casing, in that, means are provided thereby for establishing communication with the various systems of inlet and outlet passages by a simple oscillation of the valve 7 through the medium of the handle 8. The means for attaining this result is accomplished by rabbeting or cutting away

a portion of the annular flange 8' to form an arcuate depression 9, the opposite ends 10 of which serve to limit the movements of the handle 8, and are otherwise formed slightly curvilinear to receive the corresponding enlarged base portion of said handle. It will appear manifest that the depression 9 is devised not only to limit the oscillations of the handle, but provide means for securing a perfect guidance of the latter.

Referring now to the recording mechanism, it will be observed that the feed-reel 11 and the take-up reel 12 are arranged in vertical alinement within the casing 6, and that the guide rollers 13 for the tape 14 are disposed to define a trapezoid. Mounted upon the upper terminal of the valve stem 15 and secured thereto by screw-threads and a key 15^a, is a sleeve 16 which carries a lower outwardly projecting arm 17, and an upper arm 18, to the outer end of which is pivoted a pawl 19, the latter having a leaf-spring 20 secured thereto with its free end bearing against the periphery of said sleeve 16, whereby the pawl 19 is held in engagement with the ratchet wheel 21 of the take-up reel 12.

In the present instance, the bridge 22 is positioned in one corner of the casing 6, in juxtaposition to the tape as it travels intermediate the upper pair of guide rollers 13. Approximately medially of the bridge which as in the former case, constitutes a die, we mount a pair of opposed brackets 23 for supporting the punch 24, a coil spring 25 being interposed and secured at its base to the collar 26 to normally hold said punch from engagement with the tape 14.

The operation of our invention will now be described.

Upon oscillating the valve 7, the arm 17, carried by the sleeve 16 impinges against the outer extremity of the punch 24, and forces the same, rectilinearly through the tape 14 and into the die of the bridge 22, in this manner indicating the amount of liquid drawn from a given receptacle. Upon releasing pressure on the handle 8 of the valve, the retractile force of the coil spring 25 causes the outer end of the punch 24 to strike the arm 17, whereupon the valve and its appurtenances assume their normal positions. Simultaneously with this retrograde movement the pawl 19 engages one tooth of the ratchet 21 of the take-up reel 12 and

thereby advances the tape to receive the next cut of the punch. This operation is continued in proper sequence until the tape has been utilized when the same may be readily

5 detached and examined.

It should be understood that in its broader aspect the invention comprehends the employment not only of the various means described, but of equivalent means for performing the recited functions. While the arrangement shown is thought, at the present time, to be preferable, it is desired to reserve the right to effect such modifications and variations thereof as may come

15 fairly within the scope of the appended claims.

What we claim is:

1. The combination with an oscillatory valve and a casing therefor, of a tape feed reel, a take-up reel, a sleeve movable with said valve and having a pair of projections, one of said projections having a pivoted spring pawl, and means actuated by said projections for advancing the tape and recording thereon the actuations of the valve.

2. The combination with an oscillatory valve and a casing therefor, of a tape feed reel, a take-up reel, means for recording the actuations of the valve on the tape, and means operated by said recording means for automatically returning the valve to normal position and simultaneously advancing the tape.

3. The combination with an oscillatory valve and a casing therefor, of a tape feed reel, a take-up reel, means for recording the actuations of the valve on the tape, and common means operated by said recording means for automatically returning the valve to normal position and simultaneously advancing the tape.

4. The combination with an oscillatory

valve and a casing therefor, of a tape feed reel, a take-up reel, punch and die mechanism, and means adapted to operate said mechanism and record the actuations of the valve on the tape, said mechanism being designed to return the valve to its normal position and simultaneously advance the tape.

5. The combination with an oscillatory valve and a casing therefor, of a tape feed reel, a take-up reel, a spring controlled punch, a die, and means adapted to operate said punch and record the actuations of the valve on the tape, said punch being designed to return the valve to normal position and simultaneously advance the tape.

6. The combination with an oscillatory valve and a casing therefor, of a tape feed reel, a take-up reel, punch and die mechanism, a sleeve movable with said valve and having a pair of projections, one of said projections adapted to operate said mechanism and record the actuations of the valve, and the other projection being designed to advance the tape when the valve is returned to normal position.

7. The combination with an oscillatory valve and a casing therefor, of a tape feed reel, a take-up reel, a die, a pair of brackets, a punch supported by and movable in said brackets, a coil spring encircling said punch intermediate said brackets, and means carried by said valve adapted to operate said punch to record the actuations of the valve and simultaneously advance the tape.

In testimony whereof we affix our signatures, in presence of two witnesses.

CHARLES IVO CARRICO.
BRYANT HAWKINS.

Witnesses:

LA VEGA CLEMENTS,
H. A. BIRKHEAD.