

No. 791,044.

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J. M. MCPHEETERS.

METER DIALS.

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Fig. 1.

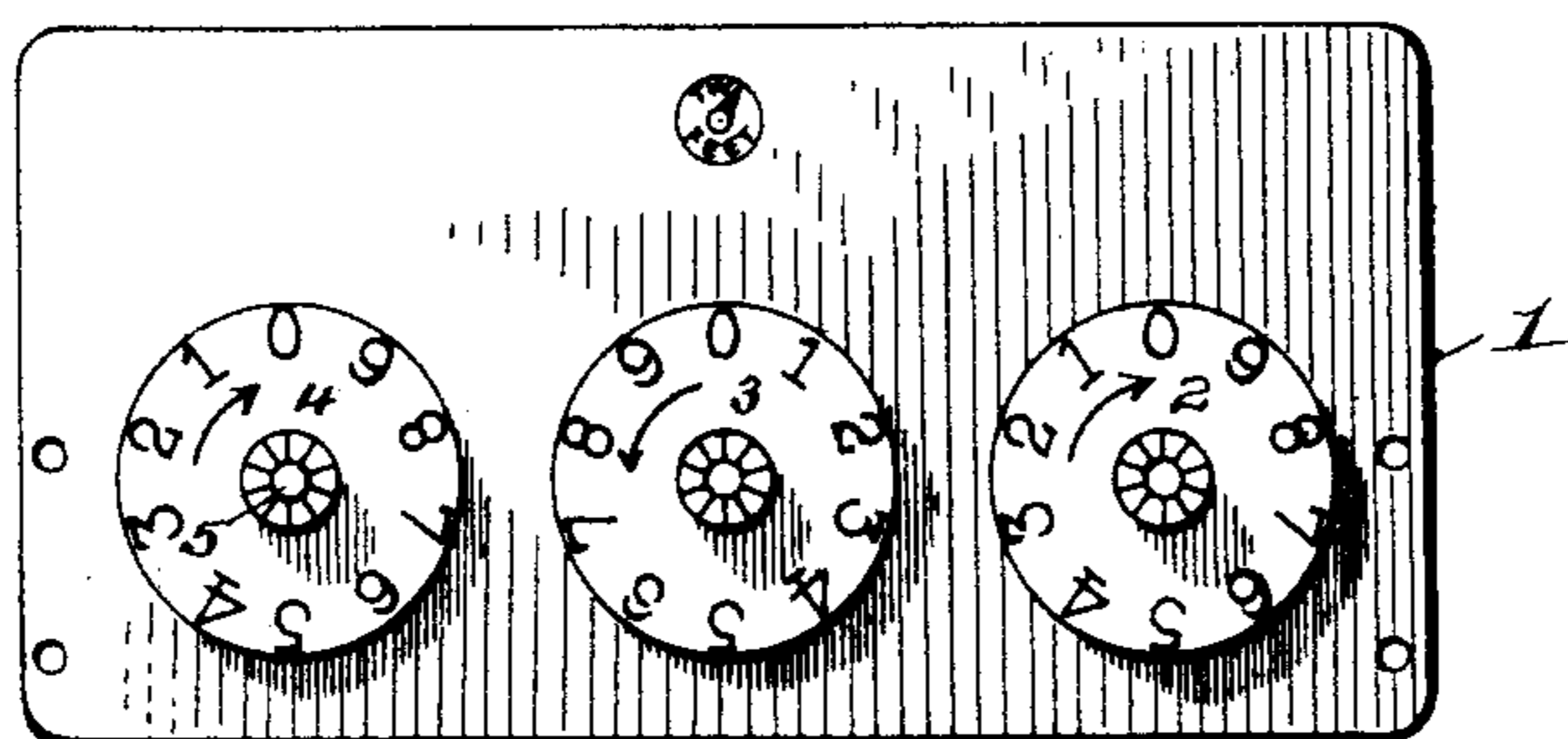


Fig. 2.

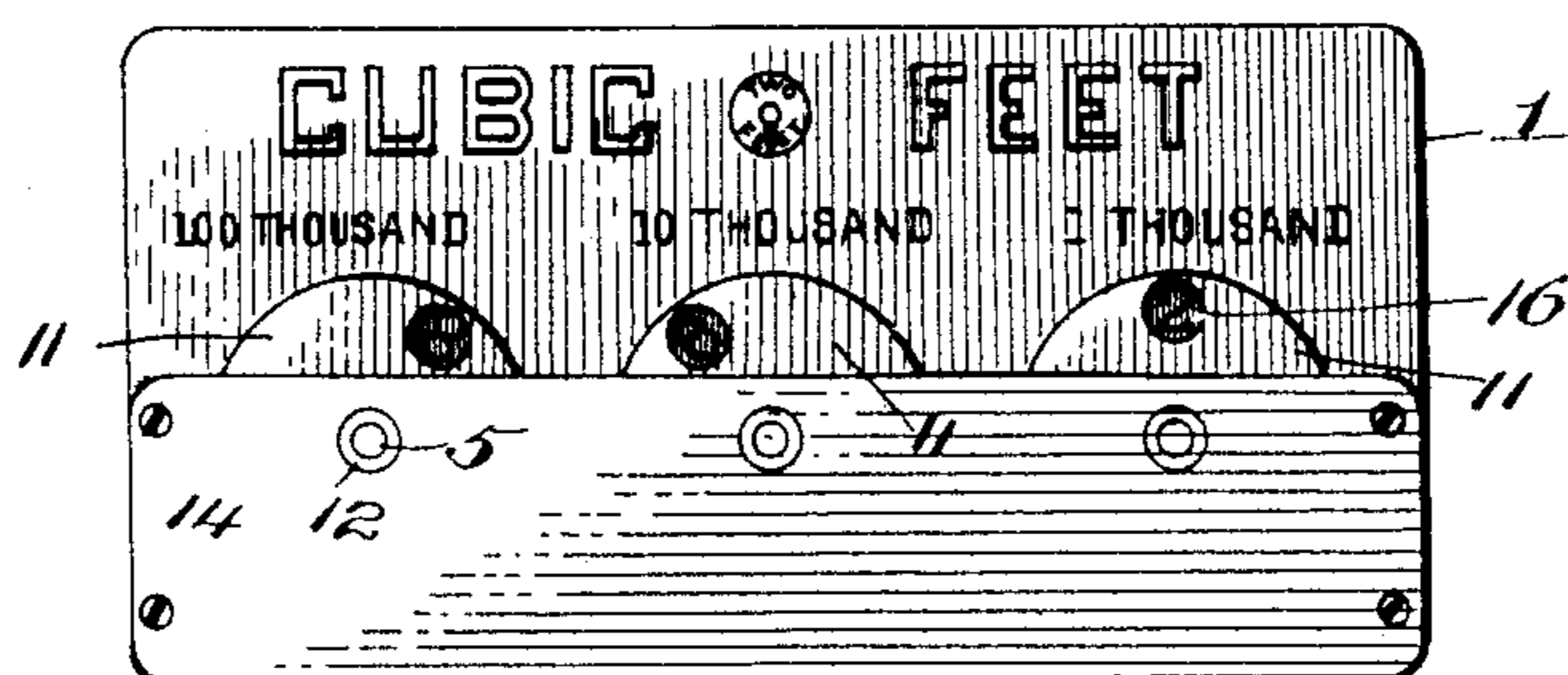
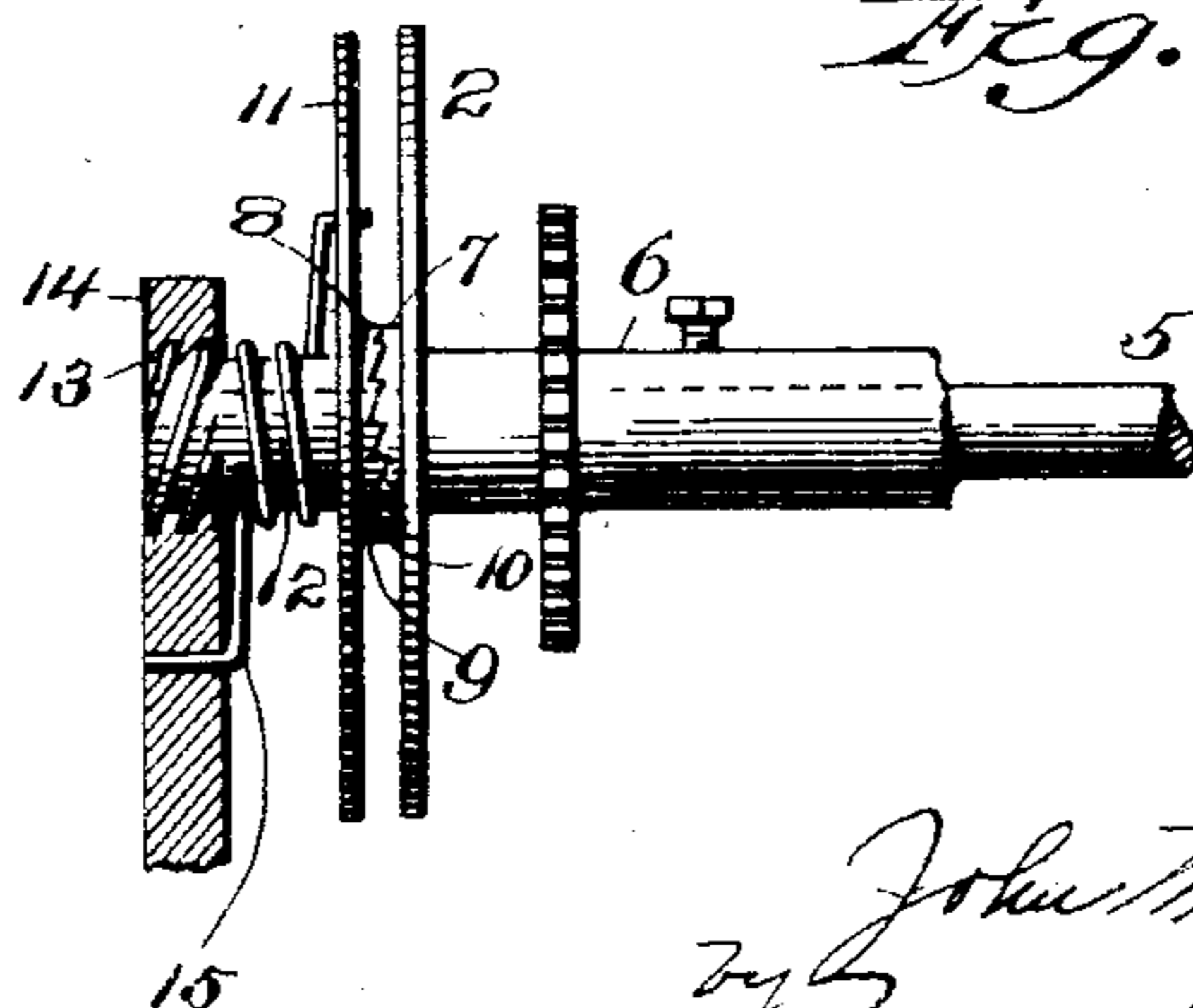


Fig. 3.



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UNITED STATES PATENT OFFICE.

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METER-DIALS.

SPECIFICATION forming part of Letters Patent No. 791,044, dated May 30, 1905.

Application filed February 2, 1904. Serial No. 191,686.

To all whom it may concern:

Be it known that I, JOHN M. MCPHEETERS, a citizen of the United States, residing at Everett, in the county of Snohomish and State of Washington, have invented certain new and useful Improvements in Meter-Dials; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in meter-dials, by means of which uniform accuracy of reading is insured, thereby avoiding errors of reading, which are common to the ordinary dial arrangement in general use, the object being to expose for reading only such figures as are properly countable in determining the number of cubic feet of fluid which has passed through the meter.

The invention consists in certain features of novelty in the detail construction and arrangement of parts, as are hereinafter fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a view of a face of a meter provided with dial-faces used with my improved device. Fig. 2 is a face view of the same, showing the invention complete as to the readable numbers and co-operating covering features. Fig. 3 is a side elevational view, partly in section, showing a single operating-shaft with its indicating-dial and covering-plate and connecting mechanism thereon.

Referring to the drawings, 1 is the ordinary fixed plate of a meter, upon which is carried the indicating-dials 2, 3, and 4, which are respectively the thousand, ten-thousand, and one-hundred-thousand dials carried upon shafts 5.

6 is a sleeve upon the shaft 5, which sleeve, with its appurtenant connections, is duplicated in each instance where a numbered dial is used, and a description of one will answer for all. Carried by the sleeve 6 is one of said dials, as 2, the said dial and sleeve being connected rigidly upon the shaft 5, so as to rotate with said shaft. Connected with the dial 2 is a ratchet-sleeve 7, having outwardly-projecting ratchet-teeth 8, adapted to turn with the dial 2. Upon said shaft 5 and opposing the

ratchet-sleeve 7 is a second ratchet-sleeve 9, having ratchet-teeth 10 engaging with the first-mentioned ratchet-teeth 8, whereby upon rotation of the shaft 5 the sleeve 6, dial 2, ratchet-sleeve 7, and ratchet-sleeve 9 will be coincidentally rotated when starting from a normal position of rest. The disk 11 is connected rigidly with the ratchet-sleeve 9, so as to be movable therewith. Connected with the disk 11 is a sleeve 12, upon the outer end of which is a coarse screw-thread 13, engaging with a corresponding screw-thread in the cover-plate 14, so that as the disk 11 is caused to move in either direction the said screw-threads 13 and 14 will cause a longitudinal shifting of said sleeve 12.

Connected at one end with the disk 11 and wound thence around the sleeve 12 and extending into and seated in cover-plate 14 is a spring 15, which permits a limited rocking movement of said disk 11, but which has a tendency to limit the play thereof under the influence of the screw-threads before referred to.

The function of the ratchet-sleeve before mentioned is as follows: Assuming that one of the dials 2, 3, or 4 is moved sufficiently to indicate an increase of number through the orifice 16 in said disk 11, it is desired that the disk 11 shall move with the numbered dials for at least a part of their rotation, as it is convenient that the reading of the numbers shall be as near as may be along a vertical line substantially parallel with the upper edge of the cover-plate 14. It is desirable that the orifice 16 in the disk 11 shall not pass below the upper edge of said cover-plate 14. Therefore the construction is such that as the shaft 5 rotates, carrying with it the dial 2, and by means of the ratchets before mentioned also carries the disk 11, the screw-threads before mentioned will cause a longitudinal shifting of the sleeve 12, which thereby gradually withdraws the said ratchet-teeth from engagement with each other, whereby the spring 15 will retract the disk 11 to its normal position, so that the orifice 16 therein will be returned to a normal position of rest substantially vertically above the axis of the shaft 5, whereby the numbers on the dials are conveniently

read through the orifices 16 in said disk 11, which are always above the upper line of the cover-plate 14. The pitch of the screw 13 and the ratchet-teeth should be so proportioned
 5 that the dial 11 in the ordinary construction of meter may move only for one-tenth of a complete revolution, or slightly beyond that degree of rotation, so that there shall always be exposed through the orifices 16 one and
 10 only one number of the numbered dials.

It is obvious that the shafts 5 carrying the numbered dials shall be connected by means of suitable gearing with the usual strike-pins and a common decimal arrangement of teeth,
 15 so that a complete rotation of the dial 2 will cause an advanced movement equal to one-tenth of the rotation of the dial 3, and carry this arrangement of progression throughout the series of numbered dials, as is commonly
 20 incident to meter constructions now in the market, but not shown. It is obvious that the disk 11 should be in close proximity to the numbered dials of the meter and that the orifice 16 should be sufficiently large to ex-
 25 pose a complete number upon said dials and also a portion of the contiguous surface of said dials, so as to positively insure the exposing of one of the numbers thereon at all times, and as fractions are not counted in
 30 meter reading it is obvious that the numbers exposed through the orifices 16 in disks 11 will represent the consumption of the fluid registered by the meter—as, for instance, in the drawings “862.00” are the indicated cubic
 35 feet measured by the meter-dials herein shown.

The frames of the meters now in common use are generally of sufficient capacity to permit the new revolving dials herewith shown
 40 to be slipped onto the spindles or axles thereof and also to permit the disks 11 to be placed on the same spindle, but not fixed thereto, and thereafter the cover-plate 14 may be secured by means of screws or solder over the
 45 lower half of the space now occupied by the dials; but this plate is thicker than now in use and forms at the ends of the spindle a nut carrying a screw-thread or worm in which the sleeves of disks 11 will mesh, as heretofore described. The most common difficulty
 50 in using the ordinary meters of commerce is to be able to read the same accurately. The hands on the triple dials or greater multiple when standing near to any given figure may
 55 be on either side thereof, and the reader frequently charges the customer the quantity shown by the figure in advance of the hand and the figure in front of the hand, believing that the hand has already passed over this
 60 figure. This is done by experts when not carefully considering in which direction the hand is moving. It is understood that the hands on the different dials move in different directions oppositely on each adjacent dial,
 65 necessitating the reader first considering in

which direction the particular hand is moving the reading of which he desires to take before he can be sure of the amount of fluid which has passed through the meter and is indicated by the different dials. This diffi- 70
 culty is overcome by the use of the rockable but non-rotatable disk 11, herewith shown, which is positively returned to a normal position of rest upon completion of the movement of one-tenth of a complete cycle of each 75
 dial.

Instead of providing the sleeves 7 and 9 with the opposing ratchets thereon it is evident that oppositely-disposed ratchets may project laterally from the dial 2 and disk 11, 80
 so as to be brought into engagement when said members are in close proximity, and any suitable arrangement of ratchet connection which will accomplish the function hereinbefore described will answer the required pur- 85
 pose.

Having now described the nature of my invention, what I claim, and desire to secure by Letters Patent, is—

1. A meter-indicator comprising a plurality 90
 of numbered dials, perforated face-plates mounted adjacent to the dials, means between the dials and the face-plates for moving the face-plates along their axes in one direction, and means outside the face-plates for forcing 95
 them along their axes to their normal positions again.

2. A meter-indicator comprising numbered dials, perforated cover-plates therefor, means carried by the dials and cover-plates for moving the dials in one direction, and means outside the cover-plates for increasing the distance between the cover-plates and the dials and permitting of their return to their normal positions. 100
 105

3. A meter-indicator comprising rotating dials and rocking cover-plates mounted adjacent thereto, engaging ratchets carried by the dials and plates and arranged between them for moving the cover-plates in one direction with the dials, and means for pulling the cover-plates away from the dials to separate the ratchets and permit of the cover-plates returning to their original positions. 110

4. A meter-indicator comprising a number 115
 of rotating numbered dials, rocking covers for each dial, mechanical engaging means carried by the dials and covers and arranged between them for moving the covers with the dials in one direction, and mechanical means 120
 bearing upon the covers only for returning them to their normal positions.

5. In a meter-indicator, the combination with an actuating-shaft of a sleeve thereon, a number-dial secured to the sleeve, a rocking 125
 perforated cover movably mounted adjacent to the dial-ratchet, mechanism mounted between the dial and the cover-plate, and means outside the cover-plate for drawing it away from the dial and disengaging the ratchet 130

mechanism and permitting of the return movement of the cover.

6. In a meter-indicator, an actuating-shaft, a numbered dial movable therewith, a laterally-facing ratchet upon one surface of said dial, a rockable member on said shaft, said member having an orifice therein, a laterally-facing ratchet on one face of said rockable member, and means for moving the ratchets of the rockable member along the axes of the dials for causing the engagement and disengagement of said ratchets at predetermined times.

7. In a meter-indicator, an actuating-shaft, a numbered dial thereon, a ratchet movable within said dial, a rockable member adapted to engage said dial at predetermined times, means for increasing the space between the dial and the rockable member to disengage the ratchet and release the rockable member from its engagement with the said ratchet, and means for returning the rockable member to its normal position.

8. In a meter-indicator, an actuating-shaft, a numbered dial thereon, a ratchet-sleeve movable with said dial, a rockable disk, a ratchet-sleeve movable therewith, an oppositely-projecting screw-threaded extension connected with said disk, a screw-threaded bearing therefor, and a spring connected with said disk and with a convenient fixed member.

9. A meter-indicator comprising a plurality of numbered dials, means for rotating the same, perforated cover-plates movably mounted adjacent to the dials, means for moving the covers in one direction when they are close to the dials, and means for moving them in the other direction when they are separated from the dials.

10. A meter-indicator comprising a plurality of numbered dials, means for rotating the same, covers pivotally mounted adjacent to the dials, means interposed between each dial and its cover for moving it in one direction and means outside each cover for moving it in the opposite direction.

11. A meter-indicator comprising a number of indicators or dials and mechanism for actuating the same, perforated covers operating in conjunction with the said dials, means connected with the cover for moving it away from or toward its respective dial, and means for moving the covers with the dials when they are close to each other and means for moving the covers in the opposite direction when the covers are separated from the dials.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JOHN M. MCPHEETERS.

Witnesses:

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