

No. 855,190.

PATENTED MAY 28, 1907.

C. E. LOETZER.  
TAMPER PROOF WATER METER.

APPLICATION FILED MAR. 13, 1906.

Fig. 2

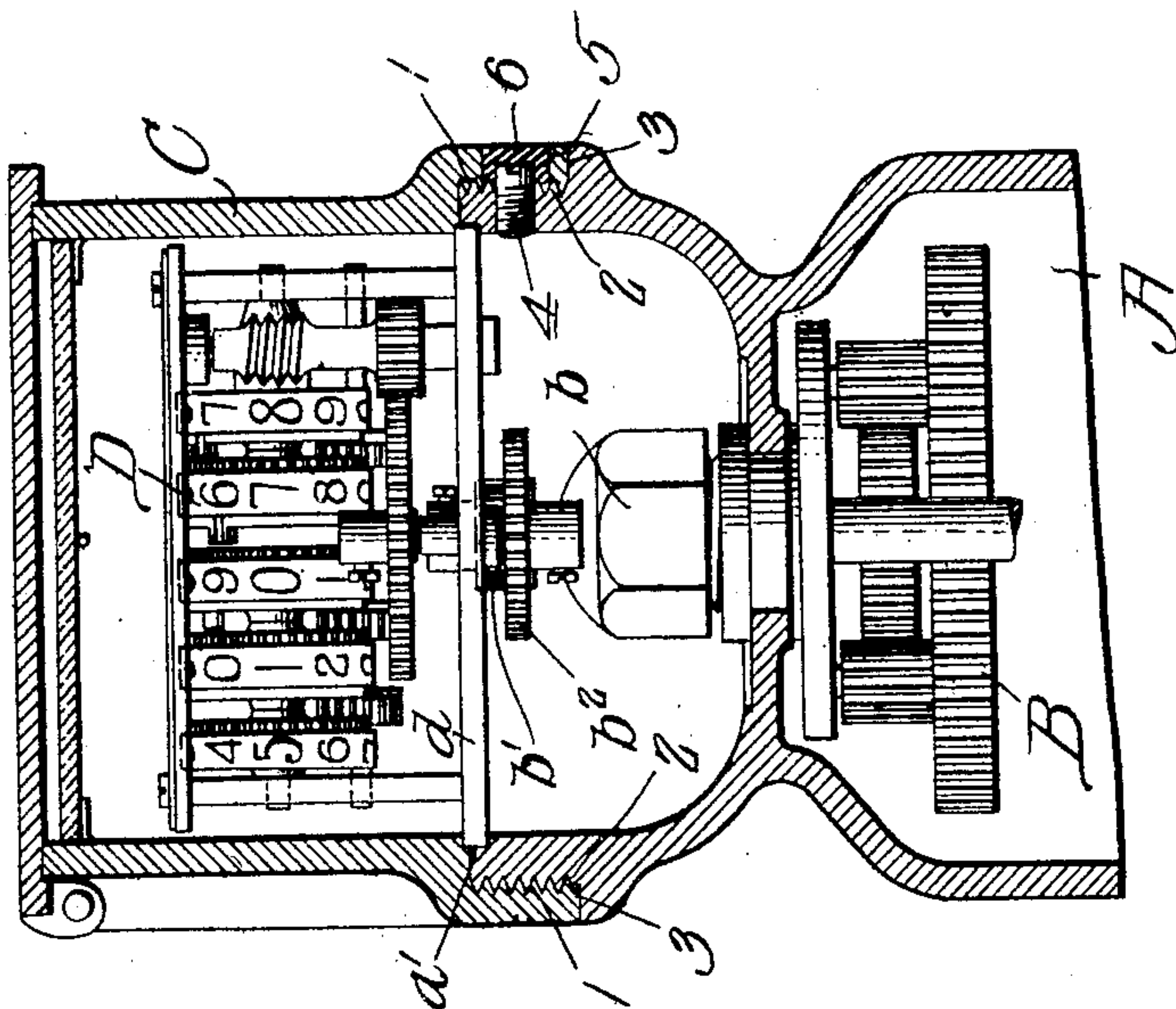
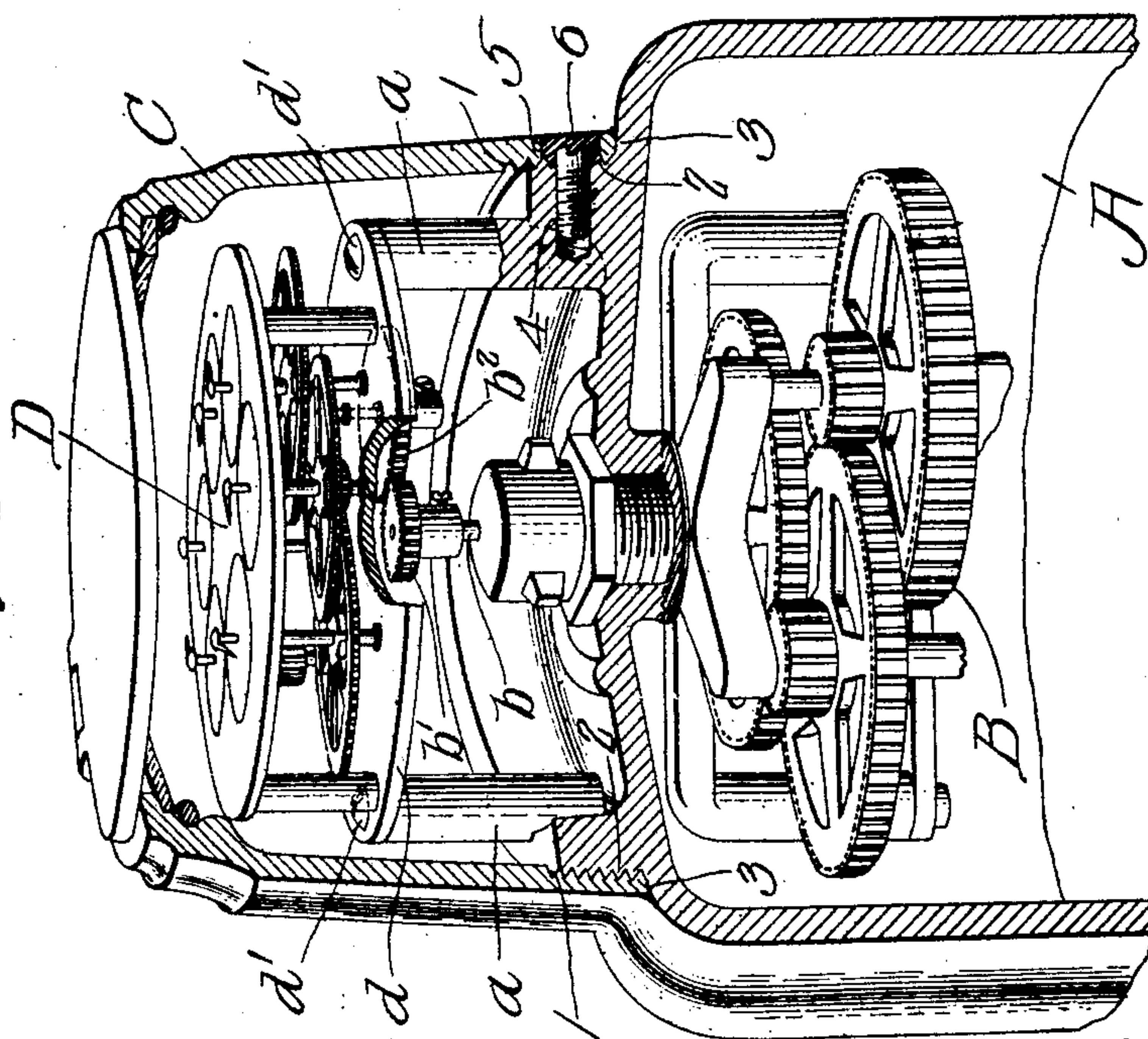


Fig. 1.



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Witnesses

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# UNITED STATES PATENT OFFICE.

CHRISTIAN E. LOETZER, OF SAYRE, PENNSYLVANIA.

## TAMPER-PROOF WATER-METER.

No. 855,190.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed March 13, 1906. Serial No. 305,852.

*To all whom it may concern:*

Be it known that I, CHRISTIAN E. LOETZER, a citizen of the United States, residing at Sayre, in the county of Bradford and State of Pennsylvania, have invented a certain new and useful Tamper-Proof Water-Meter; 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.

In cities and towns where water is supplied and charged to consumers by measure, the water companies or municipalities are often defrauded of revenue by unscrupulous persons tampering with the water-meters or setting back the registers thereof to record a flow of water less than the actual consumption. This deceit is comparatively easy to accomplish with the meters in ordinary use, in which the register is contained in a movement-box or cap detachably-mounted upon the shell or casing of the meter, being usually fastened thereto by bolts or screws. To steal water, one has only to detach the movement-box, disconnect the register-mechanism from the actuating mechanism of the meter, and then set back or reverse the register to any desired extent; whereupon the register-mechanism may be again connected or geared with its actuating-mechanism and the movement-box or cap replaced, leaving the meter in substantially the same condition, so far as appearances are concerned. To detect such unscrupulous practices, recourse has been made to sealing the joint between the movement-box and shell of the meter, or to affixing seals over the bolts, screws or other fastenings between the movement-box and shell, so as to make it impossible to detach the movement-box without destroying the seal. But obviously the breaking of the seal, which might be accounted for in various ways, affords evidence simply that the seal has been broken, and hence this measure is by no means sure and is certainly not preventive.

The object of this invention, therefore, is to provide practicable means for preventing access to the register and improper manipulation thereof by dishonest consumers, by protecting the movement-box or cap con-

taining the register against detachment from the meter; this result being attained by means substantially as hereinafter described and particularly pointed out in the claims.

The invention being applicable to the various styles of water-meters now in use, and susceptible of embodiment in different forms, I have illustrated two desirable embodiments of the invention in the accompanying drawings, which form a part of this specification, showing the contrivance applied to two different well-known styles of water-meters.

Figure 1 is a sectional perspective view of the upper part of one style of meter, in which the movement-box or cap containing the register is mounted directly upon the top of the shell or casing which contains the measuring chamber and disks or other acting mechanism (not shown) and gearing for transmitting motion to the register. Fig. 2 is a similar view of the upper part of another style of meter, in which the movement-box is mounted upon a cup-shaped extension at the top of the shell or casing of the measuring-mechanism.

The registers and other internal mechanism of the two meters are different, the meter illustrated in Fig. 1 having what is known as a circular register, and the meter illustrated in Fig. 2 having what is known as a straight-reading register. However, the construction of the register and of the other interior mechanism of the meter is not concerned in the present invention, and therefore further explanation of the same is unnecessary.

In each of the figures, A denotes the upper part of the shell or case, which contains the usual measuring-chamber and working parts (not shown), together with the intermediate gearing for actuating the register, a portion of such gearing being indicated at B.

The letter C designates the movement-box or cap, with its cover and dial glass, and containing the register D. It is understood by those familiar with such apparatus that the register D is actuated from the measuring-mechanism within the shell or case A through the medium of the intermediate gearing B and its spindle *b*, said spindle *b* extending up through a stuffing-box in the top of the shell and having a pinion *b'* meshing with a pinion or gear *b''* of the register-mechanism.



In Fig. 1, the bottom plate *d* of the register frame is supported on the studs or posts *a* rising from the top of the shell A within the movement-box or cap C, said plate *d* being fastened to the studs by the screws *d'*; while in Fig. 2 the said bottom plate *d* of the register frame is fitted in an annular seat or rabbet *a'* in the top of the cup-shaped upper part of the shell A, and is secured therein by the bottom edge of cap C when mounted in place.

Ordinarily, where the movement-box or cap is secured to the shell by bolts, screws or similar fastenings, a person desiring to get at the register and set back the dial would simply have to unfasten the bolts or screws of the cap C, take off said cap, and disconnect the gear *b*<sup>2</sup> from the pinion *b'*; which, in the case of a meter of the style shown in Fig. 1, would be accomplished by taking out one of the screws *d'* and turning the register to disconnect said gears *b*<sup>2</sup> and *b'*; while, in the case of a meter in the style shown in Fig. 2, the register would only have to be raised to lift the gear *b*<sup>2</sup> out of mesh with the pinion *b'*. To prevent this tampering, the movement-box or cap C is, according to my invention, rigidly and practically permanently secured upon the shell A by a concealed fastening, such as to elude the efforts of any ingenious or prying individual, and is given virtually the appearance of an integral construction or formation with the shell itself. The cap has at its lower end an internal screw-threaded portion or female screw 1, desirably left-handed, engaging an exteriorly-threaded boss or male screw 2 on the shell, preferably at the top of the shell; and when the cap is screwed down in place its lower end fits flush against an annular shoulder 3 around the base of said male screw 2, the outer surfaces of the cap and shell being flush or continuous all around, so that no fastening is visible, except the fine joint between the cap and shell. Any transexion or other equivalent construction may be adopted, the cap having a reduced male screw engaging in a female screw at the top of the shell. A small pin or screw 4, preferably a headless screw, is inserted through the lower part of the cap and the threaded boss 2, so as to transfix the screw fastening between the cap and shell; in the present instance the screw 4 being inserted through a lateral aperture in the lower part of the cap and tapped into a threaded bore in the boss 2; thereby providing a positive lock to prevent the unscrewing of the cap. The aperture 5 is desirably larger than the diameter of the screw 4, in order to admit a tool for engaging and inserting or withdrawing the screw 4 at the factory or shops, and for the further purpose of receiving a seal, plug or disk 6, of lead, putty, or other

suitable material, which is forced into said aperture to fill the same and seal the pin or screw 4, the outer surface of the seal 6 being smooth and continuous with the outer surface of the cap itself. The whole shell and cap are painted or enameled so as to present the appearance of an integral structure, the coating of pigment completely hiding the seal 6 as well as the close joint between the cap and shell, which joint may be filled with white lead or other suitable material if needed.

It will be seen that this contrivance, which makes the cap substantially a permanent fixture and conceals the mode of its attachment, will effectually elude the inquisitiveness of an ordinary person and thwart his efforts to obtain access to the register-mechanism, thus virtually insuring the register against improper manipulation. In the first place, the close fitting joint between the shell and cap, as well as the outer surface of the seal 6, being smooth and hidden by the coat of paint or enamel, there is no clue to enable the consumer to detect the contrivance. But should he believe the movement-box or cap to be a separate part, and endeavor to ascertain whether it could be unscrewed from the shell, he would be thwarted in his efforts by reason of the small pin or screw 4 transfixing the threaded connection between the cap and shell. Should he perchance discover the seal 6, and have sufficient insight to investigate its meaning, he must then break and tear out the seal, giving very strong evidence of an attempt to cheat the meter, not explainable by any of the excuses usually offered, and even then, should he detect the fastening pin or screw 4, he could detach it only with great difficulty. And finally, after detaching the fastening pin or screw 4, assuming that he also finds out that he must unscrew the cap, the chances are that he will attempt to unscrew it in the usual manner, and the screw-threads being preferably left-handed, his efforts will only serve to screw up the cap all the tighter. Thus the contrivance presents such obstacles against the detachment of the cap as to practically insure the register against improper manipulation, while yet providing means for detachment of the cap in the factory or shops, in case of repair, it being understood that the meters are always repaired at the shops, after which they are reassembled and repainted before installing them again.

It will be understood that various modifications may be made in details of construction and arrangement without departing from the scope of my invention, which, as before noted, is susceptible of embodiment in various forms.

Having thus fully described my invention,



what I claim as new and desire to secure by  
Letters Patent of the United States is:—

In a water-meter, the combination with  
the shell or case for the actuating mechanism,  
5 said shell having an annular threaded boss  
thereon, of the movement-box or cap mount-  
ed on said shell and having an annular  
threaded portion engaging with said boss,  
the female screw-member being provided  
10 with a lateral hole, and a fastening pin in-

serted through said hole and into the male  
screw-member, and a seal or plug in said hole  
covering the head of said fastening-pin.

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

CHRISTIAN E. LOETZER.

Witnesses:

GEO. E. LUCE,

GEO. D. BONFAEY.