No. 811,416. PATENTED JAN. 30, 1906.

A. LAUBER.

REGISTER.

APPLICATION FILED JAN. 14, 1905.

Fig. 1.

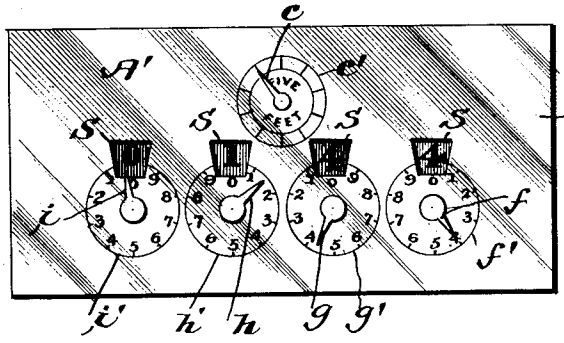


Fig. 2.

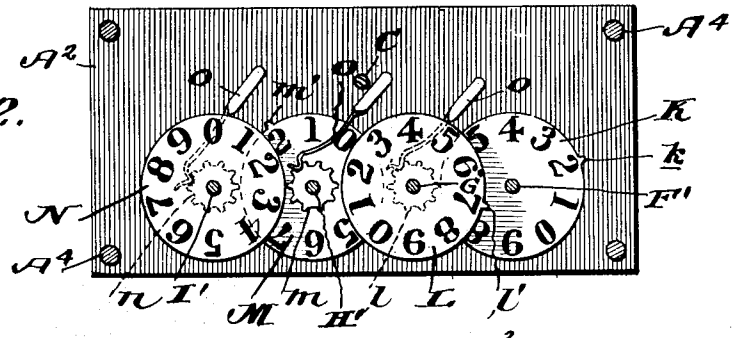


Fig. 3

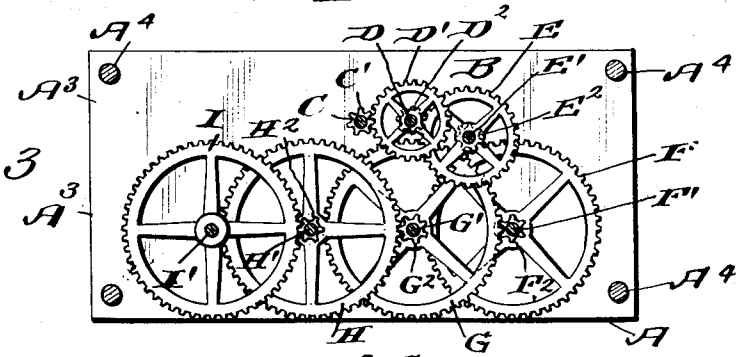
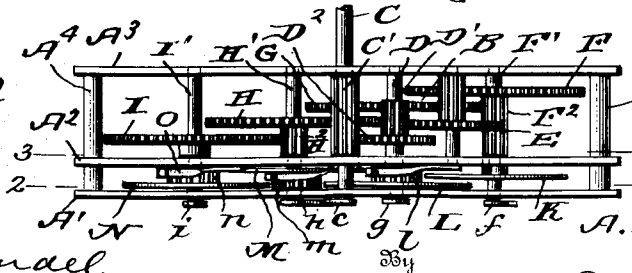


Fig. 4



Witnesses

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REGISTER.

No. 811,416. Specification of Letters Patent. Patented Jan. 30, 1906.

Application filed January 14, 1905. Serial No. 241,151.

To all whom it may concern:

Be it known that I, ALBERT LAUBER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improvement in Gas or Water Meter Registers, of which the following is a specification.

This invention relates to an improvement in gas or water meter registers, and particularly to the Beal type, which are known as "straight-reading" registers; and the object of my invention is to provide a device by which the actual registration of the amount of fluid used may be indicated and the objectionable feature of guessing at the fractional amounts of the fluid used avoided.

Heretofore and by the registers now commonly in use the hands and dials are operated through a train of gears to cause an intermittent movement of the hands and dials which causes them to jump, as it were, from one space to another, and neither the hands nor the dials indicate fractions of the amount of the fluid used, and a person reading the meter cannot obtain an accurate reading, as more or less of the fluid is used before the several dials and hands are operated. By my invention I seek to overcome these objections by providing a construction in which all of the hands are continuously operated when the fluid is being used, which, moving around their respective dials, show to a fraction of a foot the amount of fluid consumed, and at the same time I provide a series of intermittently-operated disks which carry a series of numerals, and which disks are operated by the preceding disk, or the one representing a lower denomination, which indicate by hundreds and by thousands the amount of fluid consumed. This arrangement not only enables a person to see how many thousand of feet of fluid have been used, but also enables him to read the exact amount, even to a fraction of a foot, which thus enables an accurate reading, and consequently an exact charge by the gas or water company to the consumer.

My invention also comprises certain details of construction and peculiar combination and arrangement of parts, as will be fully described in the following specification, and pointed out in the claims, reference being had to the drawings, in which—

Figure 1 is a face view of my improved register. Fig. 2 is a sectional view drawn back of the face-plate on the line 2 2 of Fig. 4. Fig. 3 is a sectional view drawn on the line 3 3 of Fig. 4, and Fig. 4 is a plan view.

In carrying out my invention I employ a frame A, comprising a face-plate A′, a front plate A^2, and a rear plate A^3, all being spaced apart and held together by means of posts or pillars A^4. These plates form suitable journals for the shafts of a train of gears B, by which a series of hands and disks are operated in the following manner:

The shaft C is the power-shaft and is connected to the operating-diaphragms of the meter in the usual manner, and as the manner of connecting this shaft is substantially the same as all other meters and forms no part of this application a detail illustration is thought unnecessary. A hand *c* is fixedly held upon the front end of the shaft C and turns around a dial *c′* upon the face-plate, and each revolution of the hand indicates five feet of the fluid consumed, and between the plates A^2 and A^3 the shaft C is provided with a pinion C′, which meshes a gear D′, fixed upon a shaft D, and upon the shaft D is fixed a pinion D^2, which meshes a gear E, carried by a shaft E′, which also has a pinion E^2, that meshes a large gear F, carried by a shaft F′, which projects through the plates A′ and A^2 and carries an indicating-hand *f*, which works around a dial *f′* upon the face-plate A′. This hand and dial indicate the amount of fluid consumed by hundreds of feet.

The shaft F′ carries a pinion F^2, which meshes a gear G, carried by a shaft G′, upon the front end of which is an indicating-hand *g*, which works around a dial *g′* to indicate thousands of feet, and upon the shaft G′ is a pinion G^2, which meshes a gear H, carried by a shaft H′, the front end of which carries a hand *h*, working around a dial *h′*, that indicates ten thousands of feet. This shaft H′ carries a pinion H^2, which engages a gear I, fixed upon a shaft I′, the front end of which carries an indicating-hand *i*, which works around a dial *i′*, and which indicates hundred thousands of feet. Of course it will be understood that a complete revolution of each hand takes place before the full amount represented by the numerals upon the dial is consumed—that is to say, on the dial representing one thousand feet, for instance, each space represents one hundred, and when the hand has turned completely around one thousand feet will have been used and which is then indicated by the hand pointing to the numeral

"1" upon the second dial, this hand upon the second dial having been moved by the pinion F^2, meshing the gear G, and this operation also takes place with the remaining hands, and the same rule for reading the dials follows. This arrangement enables a person to read the actual amount of fluid consumed and which has of course passed through the meter, and in order to provide an arrangement by which a straight reading may be had I provide a series of disks having numerals corresponding to the numerals on the dials and which are brought opposite a sight-opening S, arranged in the face-plate A', directly in front of each dial and, as shown in the drawings, directly above each shaft carrying an indicator-hand. These disks are arranged and operated as follows: Upon the shaft F' is fixedly held a disk K, having a single tooth *k* upon its periphery, which is designed to engage at every complete revolution a toothed wheel *l*, carried by a disk L, loosely mounted upon the shaft G', which is the shaft adjacent the shaft F', and when the disk K is about to complete its revolution the tooth *k* will engage the toothed wheel *l* and turn the disk L one space, which will bring the numeral thereon that corresponds to the numeral reached by the hand *g* opposite the sight-opening, where it will remain until the disk K has made another revolution, and in the meantime while the hand *g* is traveling between the space of the numeral indicated and the next numeral.

Upon the periphery of the disk L is arranged a single tooth *l'*, which engages a toothed wheel *m*, fixed upon a disk M, loosely mounted upon the shaft H', by which the disk is revolved one space when the disk M completes its revolution similar to the disk L. Upon the disk M is also arranged a single tooth *m'*, which engages a toothed wheel *n*, carried by a disk N, loosely mounted upon the shaft I'. By this arrangement it will be seen that as the hands turn around the dials they will indicate the amount of fluid consumed, and the disk K, being continuously moved with the hand *f*, the same number upon the disk opposite the sight-opening will correspond with that pointed to by the hand *f*, and as the disk K makes a complete revolution the tooth *k* will engage the toothed wheel upon the disk L and turn it one space to indicate the numeral that has been reached by the indicator-hand *g*, and through a continued operation of the disk K the disk L will be caused to make a complete revolution, and the tooth carried thereby will operate upon the toothed wheel of the disk M and turn it to bring the numeral thereon opposite the sight-opening similar to that described about the disk L. This operation also takes place between the disk M and the disk N, and it will be understood that as the disks are intermittently operated the hands *f*, *g*, *h*, and *i* are continuously operating around their respective dials and are timed by the size of the gears and pinions, so that an accurate registration may be had. This arrangement, it will be observed, permits a person to see at a glance from the large numerals exactly how many hundreds of thousands, tens of thousands, and also thousands of feet have been consumed, and then by examining the indicator-hands the exact amount of fluid consumed can be readily calculated.

In order to prevent an accidental movement of the disks L, M, and N and to prevent them being moved farther than one space at each revolution of its succeeding or operating disk, I provide a series of spring-pawls O, preferably arranged upon the plate A^2 and extending down to and engaging the toothed wheels. These pawls also prevent accidental movement of the disk, which would otherwise be apt to occur through the jarring or vibrations accidentally given the support of the meter.

From the foregoing description, taken in connection with the drawings, it will be readily seen that I provide a device which not only indicates the fractional amount of the fluid consumed, but also an arrangement in which a straight reading-register is provided by which a person may see at a glance the approximate amount of fluid consumed, and it will be particularly noted that as the disks K, L, M, and N are mounted upon the continuously-operating shafts F', G', H', and I', respectively, the bearing parts between the disks and shafts are kept free of rust or corrosion through atmospheric or other conditions, which permits of them being operated by the least possible power. Of course it is understood that the pressure of the spring-pawls O upon the disks is very slight and only sufficient to prevent accidental movement of the disks through the movement of the shafts. Particular attention may be drawn, however, to the fact that in order to reset the register to zero-marks, which is often necessitated when the meter for any purpose is removed—for instance, for repairs—it is only necessary to reverse the movement of the gears when they will all be operated until finally the hands and dials attain the position where the zero-marks will be reached. It will also be understood that the pawls permit this movement, and it is not necessary to disconnect any of the gears or other parts of the device.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a register of the kind described, the combination with a series of continuously-operating shafts carrying indicator-hands, of a continuously-operated indicator-disk, a series of intermittently-operating disks loosely mounted upon the said shafts carrying the

indicator-hands, gears for operating the shafts and disks, a power-shaft having a pinion for imparting motion to the gears, the said power-shaft being operated by the fluid being measured.

2. In a register of the kind described, the combination with a series of continuously-operating indicator-hands, of shafts for supporting the hands, intermeshing gears carried by the shafts, a train of gears, and a power-shaft having a pinion for operating the shafts carrying the hands, said power-shaft being actuated by the fluid being measured, a continuously-moving disk carried by one of the shafts, a series of intermittently-operated disks loosely mounted upon the remaining shafts carrying the hands, said intermittently-operated disks being actuated through the medium of the continuously-moving disk.

3. In a device of the kind described, the combination with a series of continuously-operating shafts carrying indicator-hands, a continuously-operating disk carried by one of the shafts, disks loosely mounted upon the remaining shafts and operated through the medium of the said continuously-moving disk, intermeshing gears carried by the shafts, a power-shaft operated by the fluid being measured, a pinion carried by the power-shaft, a train of gears meshing with the pinion and one of the gears of the said continuously-moving shafts, and an indicator-hand carried by the power-shaft.

4. In a register of the kind described, the combination with a series of continuously-operating shafts, each carrying an indicator-hand, of gears for operating the shafts, said gears being actuated by the fluid being measured, a continuously-operating disk, and a series of intermittently-operated disks, said continuously-operating disks engaging one of the intermittently-operating disks, and means carried by the remaining intermittently-operated disks by which they are operated, substantially as specified.

5. In a device of the kind described, the combination with a series of continuously-operated shafts carrying indicator-hands, of a disk fixed upon one of the shafts, a disk loosely mounted upon each of the other shafts and having toothed wheels connected thereto, a tooth arranged upon the continuously-moving disk and adapted for engagement with the toothed wheel carried by the disk positioned adjacent thereto, a tooth arranged upon each of the loosely-mounted disks and adapted for engagement with the toothed wheel of its respective preceding disk, gears for operating the said shafts, and a power-shaft for operating the gears, said power-shaft being actuated by the fluid being measured, all substantially as specified.

6. In a device of the kind described, the combination with a frame having a series of continuously-operating shafts journaled therein, each shaft having an indicator-hand fixed upon its forward end and adapted to travel around a dial upon the face of the frame, a disk fixed upon one of the shafts and having a series of numerals upon its face, a disk loosely mounted upon each of the remaining shafts, the said loosely-mounted disks having toothed wheels which are adapted for engagement by a tooth carried by each preceding disk, spring-pawls carried by the frame and engaging the toothed wheels, gears for operating the shafts, a power-shaft for imparting motion to the gears, said power-shaft having an indicator-hand which is designed to travel around a dial arranged upon the frame, said shaft being actuated by the fluid being measured, all substantially as specified.

7. In a register of the kind described, the combination with a frame, of a series of shafts journaled therein, each shaft having an indicator-hand which is designed to travel around a dial upon the face-plate of the frame, a disk fixed upon one of the shafts and having numerals upon its face, a disk loosely mounted upon each of the remaining shafts, said disks also having numerals upon their faces, means carried by the fixed disk for operating the adjacent disk, and means carried by the latter disk for operating its adjacent preceding disk and also means carried by this latter disk for operating its adjacent preceding disk, intermeshing gears carried by the shafts, a power-shaft carrying a pinion, and a train of gears for imparting motion from the power-shaft to the gear of the shaft upon which the fixed disk is held, and an indicator-hand carried by the power-shaft, all substantially as specified.

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