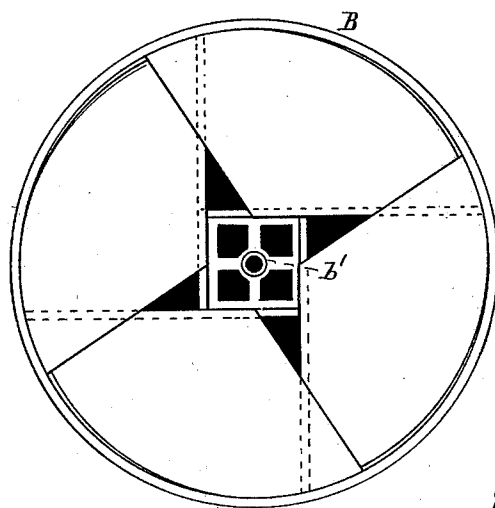
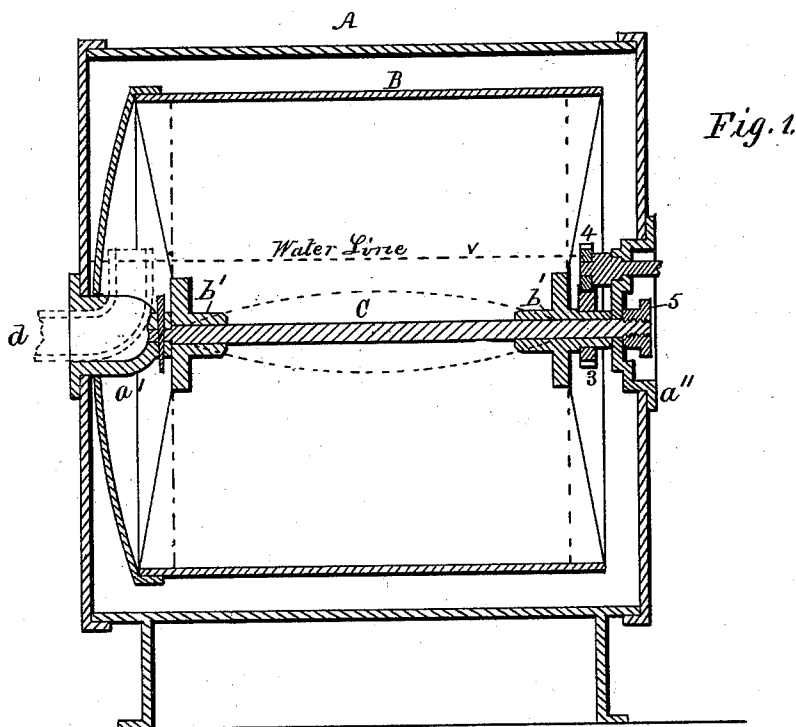


C. C. LLOYD.
GAS METERS.

No. 175,865.

Patented April 11, 1876.



Witnesses:
Wm. Morrison
W. H. Morrison

Inventor:
Chas. C. Lloyd

UNITED STATES PATENT OFFICE.

CHARLES C. LLOYD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
THOMAS C. HOPPER, OF SAME PLACE.

IMPROVEMENT IN GAS-METERS.

Specification forming part of Letters Patent No. **175,865**, dated April 11, 1876; application filed
March 3, 1876.

To all whom it may concern:

Be it known that I, CHARLES C. LLOYD, a resident of the city of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Gas-Meters, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is twofold—first, to prevent any variation in the distance between the two ends of the case within which the drum rotates, and, second, to provide against the creaking noise or tremulous and thumping motions of the drum which frequently occur during the rotary motion of the same in its journal-bearings; and these desirable and important results I obtain by a construction whereby the drum is permitted to be rotated freely on a stationary cylindrical shaft, which passes longitudinally through the center of the drum, and has its two ends fixed rigidly in the respective centers of the two end plates or heads of the containing-case, as will now be described.

Referring to the drawings, A is the case; B, the measuring-drum; and C, the shaft. The rear end of the shaft C is keyed fast in a socket in the inner end of a hollow, flanged casting, *a'*, which is fixed to project inward from a central opening in the rear end of the case A, and is provided with an opening through its upper side for the introduction and sealing of the usual supply-pipe, (indicated by the dotted lines *d* in Fig. 1,) which extends upward in the usual manner above the water-line indicated by the dotted line *r*. The front end of said shaft C extends forward and passes through a corresponding hole in the center of another casting, *a''*, which projects inward and is secured by an outside flange in the center of the front end plate of the case A. The projecting end of said shaft is screw-cut to receive a screw-nut, 5, whereby said end of the shaft is firmly secured in the center of said front end of the case A. (See Fig. 1.) The drum B has fixed permanently in the center of each of its two ends a tubular bearing, *b'*, which fits accurately around the shaft C, like a sleeve, and extends inward so as to afford a lengthy bearing whereby the said drum will

rotate smoothly upon the stationary shaft C during the operation of the meter. In building the drum B, the tubular bearings *b' b'* are first slipped upon the cylindrical shaft C and adjusted at the requisite distance apart to fit the case A, and then the hoods and other requisite parts secured to said bearings *b' b'* in a permanent manner, and consequently a permanent and accurate alignment of the two said tubular bearings *b' b'*, in respect to each other, is obtained. In finally putting the two completed parts A and B together, the drum B is slipped upon the shaft C, and the rear end of the latter keyed rigidly and firmly to the casting *a'*, in the center of the rear end of the case A, and the front end of said shaft inserted through the hole in the center of the casting *a''* of the front end or head of the case A, the spur-wheel 3 applied to gear into the pinion 4, and, finally, the screw-nut 5 applied to the shaft C and screwed up firmly against the casting *a''*, as represented in Fig. 1. In the construction of the station-meters now in use the shaft of the drum is rigidly fixed longitudinally through the center of the drum with the two ends of said shaft projecting so as to form short journals for supporting the said drum in correspondingly short bearings rigidly fixed in the respective ends of the case; and as these meters are required to be of large capacity, or capable of holding, say, from twenty to thirty tons of water, and the said case to be constructed in two or more transverse sections, subsequently bolted together, it is difficult to bring the two end-bearings, which support the journals of the drum, into perfect alignment with each other, and consequently a binding effect is produced between the bearings and journals; and, moreover, as the surface-line of the water is but a few inches above the end bearings in which the respective journals of the drum rotate, the end pressure of the water is mainly against the lower half of each of the end plates or heads of the case, springing their lower halves outward, and consequently still further forcing the said end bearings out of alignment with each other, and causing the creaking noise and tremulous thumping motions during the operation of the meter, especially after the

water has been impregnated with the ammonia of the gas which acts as an anti-lubricant. Another defect arises in these old meters from the fact that the journals and their bearings are necessarily very short, and therefore the surface-bearings are still further shortened by the pressure of the water in springing outward the ends or heads of the case.

All the objections above referred to are entirely obviated by my invention, because the shaft C serves as a tie-bar and effectually prevents the ends or heads of the case A from being sprung outward by the pressure of the contained water, and the shaft being rigidly fixed, the alignment of its bearings in the ends of the case A is of no importance; and because the drum B turns or rotates upon the shaft, and has tubular bearings *b' b'*, which can be extended inward indefinitely, and thus afford ample bearing-surfaces between them and the shaft, which, being smooth, accurately fitted, and in perfect alignment, all creaking, thump-

ing, and tremulous motions of the drum will be avoided.

I claim as my invention—

1. The combination, in a gas-meter, substantially as described, of the fixed or stationary shaft C, with the ends of the case A, for the twofold purpose of supporting the rotary drum B and preventing the said ends of the case from being sprung outward by the pressure of the water therein.

2. The tubular bearings *b' b'* of the rotary drum B, in combination with a fixed or stationary shaft in the case A, substantially as described, for the purpose of supporting the drum and allowing a perfectly free, steady, and noiseless rotary motion of the same upon the fixed or stationary shaft, as hereinbefore explained.

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Witnesses:

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