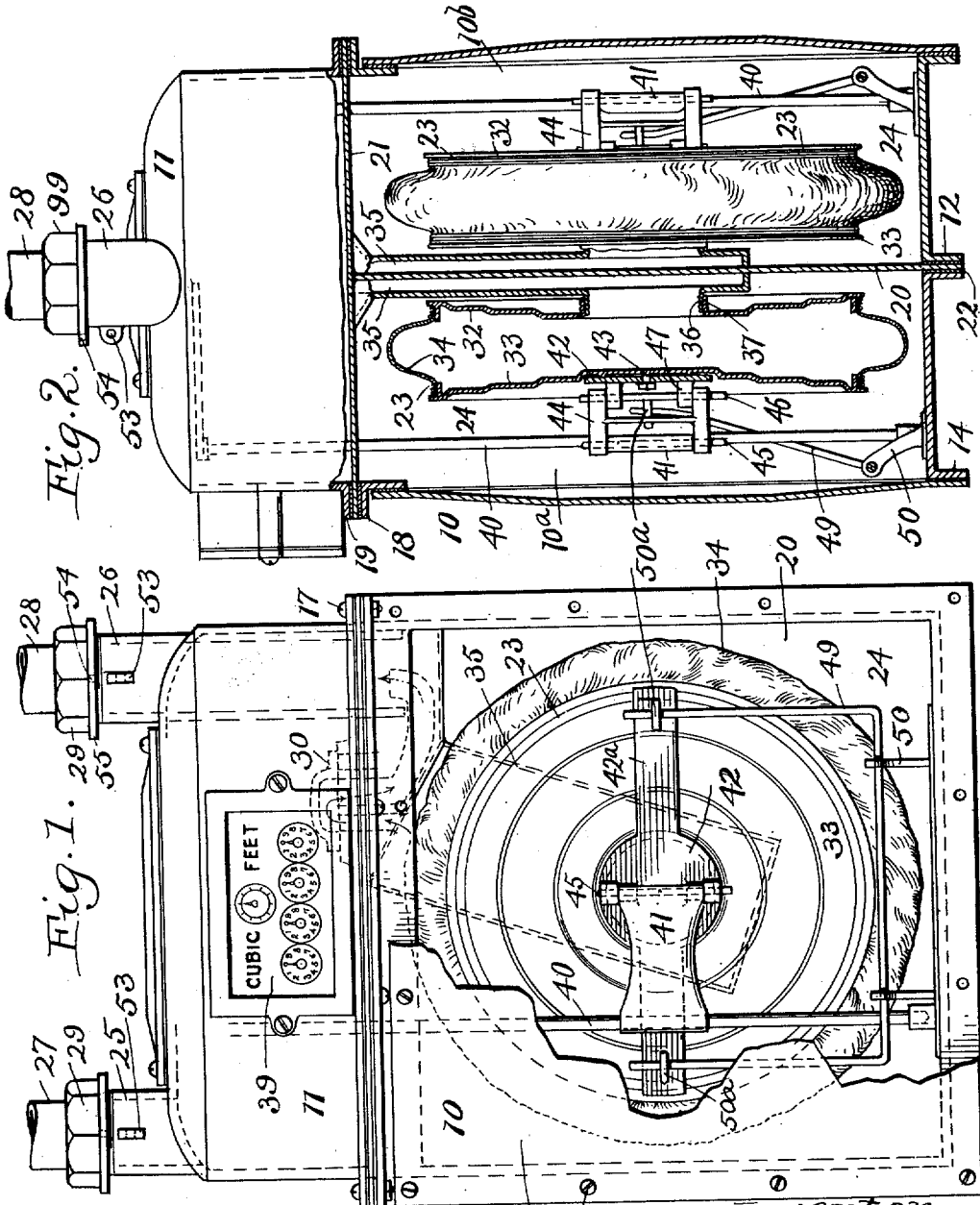


Patented Mar. 21, 1911.

2 SHEETS—SHEET 1.

987,379.



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GAS METER.

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2 SHEETS—SHEET 2.

987,379.

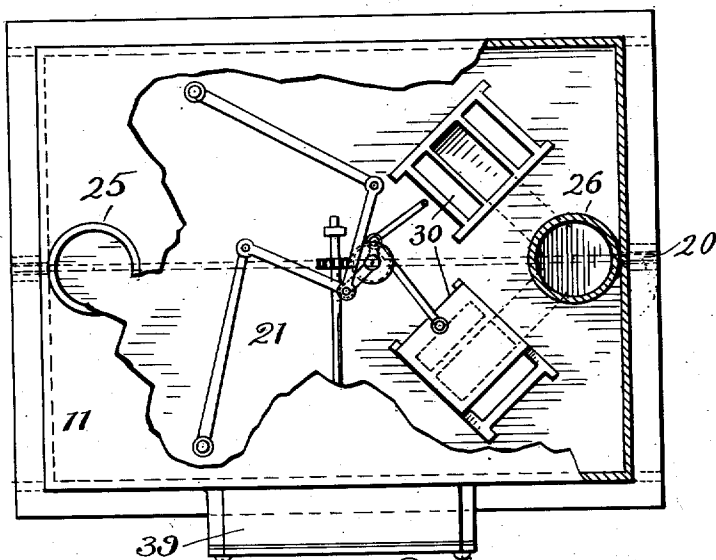
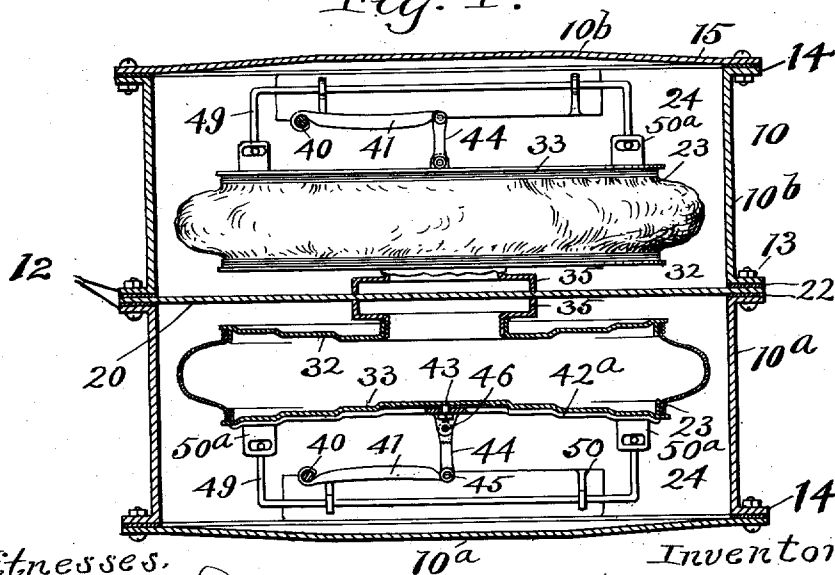


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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GAS-METER.

987,379.

Specification of Letters Patent. Patented Mar. 21, 1911.

Application filed October 7, 1910. Serial No. 585,762.

To all whom it may concern:

Be it known that I, WILLIAM H. KNIGHT, a citizen of the United States, residing at East Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Gas-Meters, of which the following is a full, clear, and exact description.

This invention relates to improvements in gas meters.

One of the objects of the invention is to do away with the necessity for soldering or otherwise permanently fastening many of the parts together and to provide a construction such that the meter can be easily and quickly assembled, and any of the parts that in time require repairs or replacement with new parts can be readily removed, without requiring the services of one skilled in this particular art or especially familiar with gas meter constructions.

A further object is to provide a gas meter which is strong, durable and accurate, and wherein there is little friction or retardation to the movements of the diaphragms and consequently an increase in the capacity of the meter.

These and other objects are accomplished by my invention which may be briefly summarized as consisting in certain novel details in construction and combinations of parts which will be described in the specification and set forth in the appended claims.

In the accompanying sheets of drawings, Figure 1 is a front elevation of a meter constructed in accordance with my invention, portions being broken away; Fig. 2 is a side view of the same with certain portions broken away and in section; Fig. 3 is a top plan view with portions broken away and in section; and Fig. 4 is a transverse or horizontal sectional view with certain parts in elevation, the section being taken through the measuring compartments of the meter.

The working parts of the meter are inclosed within a casing which in this case is formed of cast metal, preferably cast iron and includes a main or body portion 10 formed in two halves or parts 10^a and 10^b, and a top or gas receiving chamber 11 which receives the gas which is measured by the meter, and incloses the valve mechanism. The halves of the body portion 10 are provided along their adjacent faces with outwardly projecting vertical flanges 12 and

are fastened together by bolts or screws 13 passing through these flanges, and the outer faces of these two parts 10^a and 10^b are provided with flanges 14, to which caps or covers 15 are fastened by screws 16. The body portion 10 and the top portion 11 are fastened together by screws 17 which pass through horizontal outwardly extending flanges 18 and 19, provided respectively at the upper edges of the two parts of the body portion 10 and at the bottom of the top portion or receiving chamber 11. By thus constructing and fastening together the parts of the casing, not only can the parts be readily assembled or taken apart, but in case one portion of the casing is broken, the entire casing is thereby not ruined, as is the case when the casing is formed in one integral part, or in several parts permanently fastened together.

The body portion 10, which may be termed the gas measuring portion is divided into two parts or chambers by a vertical dividing partition 20, and the receiving chamber 11 is separated from the measuring portion 10 by a so-called platform 21, to which the upper edge of the partition 20 may be secured by soldering. Instead of soldering or otherwise permanently fastening the partition 20 and the platform 21 to the walls of the casing, I secure them to the latter by extending the edges of the partition 20 between the flanges 12, by which the halves 10^a and 10^b of the body portion are fastened together, and by extending the edges of the platform 21 outwardly between the flanges 18 and 19 by which the body portion 10 and the receiving chamber 11 are fastened together, and these edges of the partition and platform are tightly clamped between these flanges by the fastening screws 13 and 17 extending through the flanges. Suitable gaskets 22 are preferably provided between the edges of the partition and platform and the adjacent flanges to prevent leakage of gas.

The meter which I have here shown is of a well known type having four gas measuring compartments, two on each side of the partition 20, and consisting of diaphragms 23 and the spaces 24 on the exterior of said diaphragms. The gas is delivered to the receiving chamber 11 and from the measuring compartments by a tubular inlet member 25, and a tubular outlet member 26 re-

spectively to which inlet and outlet pipes 27 and 28 are connected by coupling nuts 29. The gas is adapted to be delivered to the interior of the diaphragms 23 and to the spaces or chambers 24 on the exterior of the diaphragms on both sides of the partition 20 by the inlet ports and valve mechanism which may be designated as a whole by the reference character 30. As this valve mechanism forms no part of the present invention, a detail description of the same is believed to be unnecessary.

One of the important features of my invention resides in the means which I have provided for fastening the diaphragms in position and for conducting the gas to and from these diaphragms. In this case, each diaphragm consists of an inner disk 32 which is normally stationary, an outer movable disk 33 adapted to move toward and away from the disk 32, and a flexible connecting portion 34, preferably formed of leather. Instead of permanently fastening each diaphragm to the partition, such as by soldering, I connect it thereto in a manner such that it can be easily removed, in case the diaphragm is worn out,—this being accomplished in the following manner:—To carry the gas to and from each diaphragm, I employ channels 35 which are formed on opposite sides of the partition 20, and at their upper ends communicate by a suitable passageway with the valve ports. These channels 35 are extended downwardly a greater distance than in the usual constructions, and at substantially the center of the partition 20, each channel is provided with an outwardly extending annular flange 36 which is threaded on the exterior. Also the inner disk 32 of each diaphragm is provided with an annular flange 37 which is threaded on its interior, and the diaphragm is fastened in position by screwing the flange of the inner disk 32 onto the flange 36.

As in the usual gas meter constructions, the movement of each diaphragm is transmitted to the registering mechanism, which may be designated as a whole by reference character 39, by means of a vertical oscillatory shaft or so-called staff 40, and by means of a so-called flag 41, which is fastened to the staff and is pivotally connected to the outer diaphragm disk by means of a member called a carriage. In this case, instead of pivotally connecting the inner end of the flag directly to the outer diaphragm disk, I connect the flag to a swiveled plate or member 42 which at its center is swiveled to the center of the outer diaphragm disk by a pin or stud 43 which extends outwardly from the disk and may be secured thereto by soldering or other means. This swiveled member 42 is provided as shown in Figs. 1 and 4 with a pair of diametrically opposite arms or wings 42^a. The flag is connected to this

swiveled member 42 by a carriage 44, the outer portion of which is pivotally connected to the inner end of the flag by means of a pintle or pin 45, and the inner end of which is connected by a pintle 46 to outwardly projecting lugs or eyes 47 secured to the swiveled member 42. In this manner I secure a double pivotal connection between the outer diaphragm disk and the flag, whereas in the usual constructions the carriage is fixed to the outer diaphragm disk and is connected to the flag by a single pivotal connection. By providing the double pivotal connection, the flag has little tendency to incline or tip the outer diaphragm disk 33 as it is moved toward and away from the partition, or toward and away from the inner diaphragm disk 32. As a further means for causing the outer disk 33 of each diaphragm to move toward and away from the inner diaphragm disk in parallelism thereto, or without material inclination, I employ the usual guide wire 49 which is substantially U-shaped, as shown, and which is loosely mounted in supporting members 50 projecting inwardly from the casing and loosely engaging near its free ends guides 50^a which are secured to the wings 42^a of the swiveled member 42, instead of being fastened directly to the outer diaphragm disk 33, as has been done in the past.

The removal of a diaphragm of my improved meter is a very simple matter as compared with the removal of a diaphragm of the usual soldered constructions. To remove a diaphragm, the inner end of the carriage 44 is disconnected from the lugs 47 by removing the pintle 46. Then by turning the swiveled plate first in one direction and then in the other, the ends of the guide wire 49 can be readily slipped out of the openings in the guides 50^a. Then to disconnect the diaphragm, the latter is simply unscrewed from the threaded flange of the corresponding channel 35.

I have also provided very effective means for sealing the meter, or for preventing the meter being tampered with. The provision for sealing the meter consists in this case of lugs 53 on the tubular inlet and outlet members 25 and 26, provided with openings for a sealing wire, and suitable openings 54 provided through flanges 55 on the nut couplers 29. To effectively seal the meter, two short sealing wires will be employed, and each will be passed through the opening in one of the lugs 53 and through the opening in the corresponding nut 29.

Having thus described my invention, what I claim is:

1. A gas meter casing composed of a body portion and a top or gas receiving portion secured thereto, the body portion being formed in separable halves having at their adjacent faces outwardly extending flanges

which are secured together, and the halves of the body portion and the top portion having outwardly projecting flanges which are secured together.

5 2. In a gas meter, a casing having a main or body portion formed in two sections secured together at their adjacent faces, a partition dividing the body portion of the casing into two separate gas measuring cham-
10 bers, the edges of the partition being extended between the adjacent faces of the two sections and being secured to the casing by being clamped between said faces.

3. In a gas meter, a casing having a main
15 or body portion formed in two sections secured together, and a gas receiving portion secured to the body portion, a partition dividing the said body portion into separate gas measuring chambers, and a platform
20 forming the base of the gas receiving chamber and separating the latter from the gas measuring chambers, the edges of the partition being clamped between the adjacent
25 faces of two sections of the body portion of the casing, and the edges of the platform being clamped between adjacent faces of the body portion and the gas receiving portion.

4. In a gas meter, a casing having a main or body portion formed in two sections pro-
30 vided with outwardly extending adjacent flanges secured together, and a gas receiving portion at the top of the body portion, said gas receiving portion and the top of the body portion having outwardly extending flanges
35 secured together, a vertical partition dividing the body portion into separate gas measuring chambers, and a horizontal platform forming the base of the gas receiving chamber and separating the latter from the gas
40 measuring chambers, the partition and platform being secured together at substantially right angles to each other, and the edges of the partition being clamped between the flanges of the two sections of the body por-
45 tion of the casing, and the edges of the platform being clamped between the adjacent

flanges of the body portion and of the gas receiving portion.

5. In a gas meter, a casing, a diaphragm within the casing and comprising a disk and
50 a flexible portion connected thereto, an oscillatory shaft or staff, a member swiveled to said disk, and means for transmitting movement between said diaphragm and staff comprising a member fastened to said staff and
55 means pivotally connecting said last named member to said swiveled member.

6. In a gas meter, a casing having a gas receiving portion, and a main or body portion, a partition dividing the same into gas
60 measuring compartments, diaphragms on opposite sides of the partition, each comprising a disk, and a flexible portion connected thereto, a plate swiveled to said disk, an oscillatory shaft, a flag fastened to the staff,
65 and means pivotally connecting said flag to said swiveled member.

7. In a gas meter, a casing, a diaphragm in said casing comprising a disk and a flexible portion connected thereto, a member
70 swiveled to said disk, an oscillatory staff, a flag connected to said staff, means pivotally connecting said flag to said swiveled member, guides on said swiveled member, and a guide
75 wire loosely connected to said guides.

8. In a gas meter, a casing, a diaphragm in said casing comprising a disk and a flexible portion connected thereto, a member
swiveled to the disk, an oscillatory staff, and means for transmitting movement between
80 the diaphragm and the staff comprising a flag fastened to the staff and a carriage pivotally connected to the flag, and means pivotally connecting the carriage to the swiveled member.
85

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

WILLIAM H. KNIGHT.

Witnesses:

H. R. SULLIVAN,
A. F. KWIS.