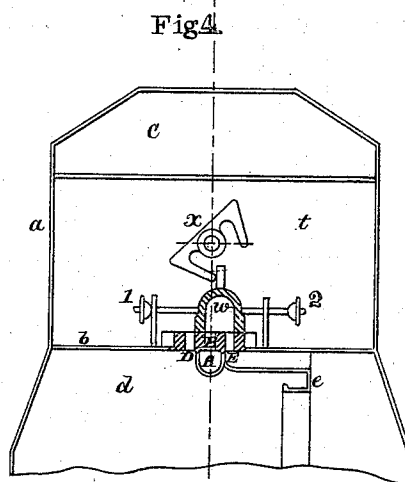
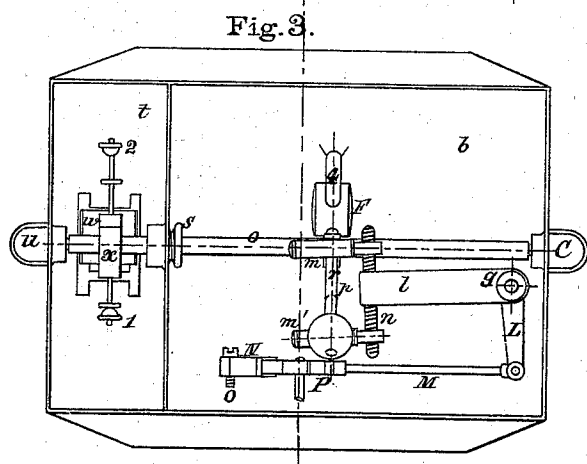
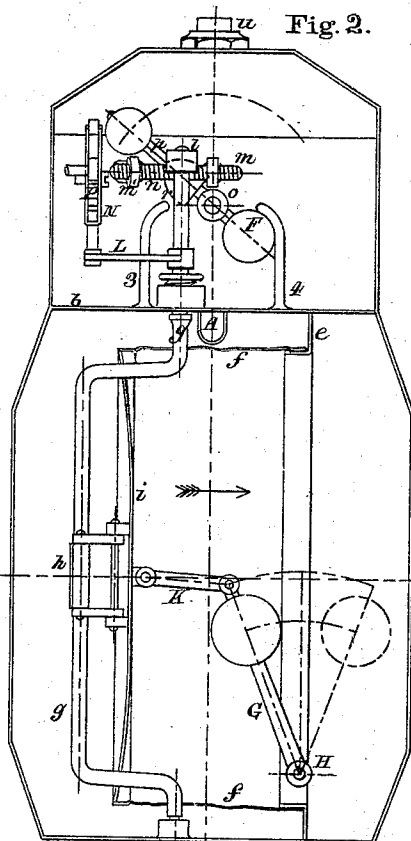
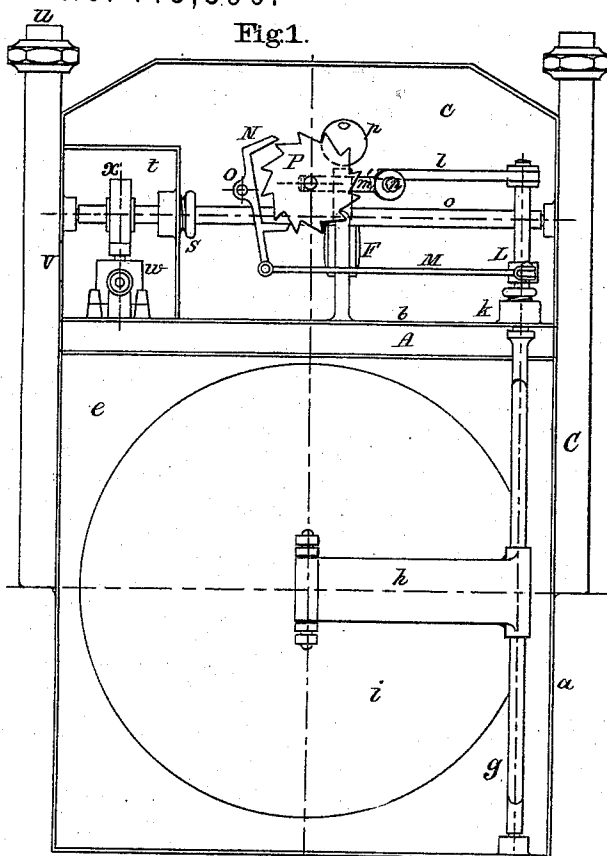


W. A. TELLING & S. JOHNSON.
Gas Meters.

No. 143,390.

Patented September 30, 1873.



WITNESSES:

Edmund Edwards.
Charles James Wintergill.

INVENTORS:

William Alfred Telling.
Samuel Johnson.

UNITED STATES PATENT OFFICE.

WILLIAM A. TELLING AND SAMUEL JOHNSON, OF WOOD GREEN, LONDON, ASSIGNORS TO THE IMPERIAL METER COMPANY, OF LONDON, ENGLAND.

IMPROVEMENT IN GAS-METERS.

Specification forming part of Letters Patent No. **143,390**, dated September 30, 1873; application filed July 7, 1873.

To all whom it may concern:

Be it known that we, WILLIAM ALFRED TELLING and SAMUEL JOHNSON, both of Wood Green, London, England, have invented Improvements in Gas-Meters; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a longitudinal section of a gas-meter embodying our invention. Fig. 2 is a transverse section, and Fig. 3 a horizontal section, of the same. Fig. 4 is a transverse section of part of the meter, through the slide-valve by which the passage of the gas is regulated.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to novel improvements in that form of gas-meter known as the "dry" meter, in which the quantity of gas passing through it is measured by the alternate expansion and contraction of a flexible diaphragm formed of thin leather or other suitable material. The objects of our invention are to simplify the construction of such gas-meters, to apply a balance-weight to the flexible diaphragm, by means of which the flow of gas is rendered more equable, to reduce the friction upon the parts of the apparatus which drive the regulating-valve and the registering apparatus.

In the accompanying drawing, *a* represents the body of a meter, divided by the plate *b* into the upper part *c* and the lower part *d*, and the part *d* is itself divided into two parts (which may be equal or unequal) by the plate *e*, to which the edge of the flexible diaphragm or bag *f*, Fig. 2, is attached. The vertical wire or spindle *g* is connected to the diaphragm *f* by means of connecting-links between the arm *h* and the plate *i*, and its upper part passes through the stuffing-box *k* in the plate *b*, and carries the arm *l*, at the end of which is fixed the screw *n*, upon which the pins *m m'* are adjusted. These pins may be fitted with friction-rollers, preferably of glass. The rocking-shaft *o* carries the weighted lever *p*, which is thrown over from side to side by the pins *m m'* as

they travel backward and forward by the movement of the diaphragm *f*. The part of the weighted lever *p* which is struck by the pins is made of a curved or cycloidal shape, as shown at *r*, Fig. 2, in order to reduce its downward pressure upon the pins *m m'*. One end of the rocking-shaft *o* passes through the stuffing-box *s* into the separate chamber *t*, to which the gas is admitted from the inlet-pipe *u* by the opening *v*, and in which the slide-valve *w* works. This slide-valve *w* is driven from one end of its stroke to the other by the bent arm *x* fixed upon the rocking-shaft *o*. *A* is a pipe communicating from the center post *B* covered by the valve (as shown in Fig. 4) to the gas outlet-pipe *C*. The parts *D* and *E*, Fig. 4, communicate, respectively, with the two parts into which the meter is divided by the plate *e* and the diaphragm *f*, and the gas is admitted into them alternately by the action of the slide-valve. The stroke of the valve *w* is limited by the stops *1 2*, and the movement of the weighted lever *p* is limited by the stops *3* and *4* and the buffer *F*. In the lower part of the meter *G*, Fig. 2, is a weighted balance-lever turning upon a center, *H*, and connected to the plate *i*, and the diaphragm *f* by the link *K*. *L* is an arm or lever fixed upon the wire or spindle *g*, and connected by the rod *M* to the pallet *N*, which oscillates upon the center *O*, and at each oscillation in either direction drives forward the pallet-wheel *P*, by which are driven the indices of the registering apparatus, (not shown in the drawing,) but which may be constructed in the usual manner.

The operation of the gas-meter is as follows: The gas is admitted from the inlet-pipe *v* into the valve-chamber *t*, whence, by the action of the valve *w*, it is admitted to either side of the diaphragm *f* alternately, and thus drives the diaphragm, and the plate *i* which covers it, from side to side, the gas being forced during each return stroke of the diaphragm back through the valve *w* and the passage *A* to the outlet-pipe *C*. The vertical cranked wire *g* being connected to the diaphragm by means of the arm *h* is made to make a partial revolution at each stroke of the diaphragm, and the lever *l* fixed upon its upper end thus carries

backward and forward the pins m m' , which strike the weighted lever p . When the diaphragm f is traveling in the direction shown by the arrow in Fig. 2, the pressure of the gas has not only to move the diaphragm, but also to lift the weighted balance-lever G , which is so adjusted that it has reached its highest point at the moment when the pin m' strikes the weighted lever p , and by its subsequent descent it aids the pressure of the gas to lift the latter. The pins m m' are so adjusted that the weighted lever p falls over and instantaneously reverses the action of the valve at the moment when the diaphragm has traveled sufficiently far to measure the exact quantity of gas required. It then instantly commences its return stroke, during which it has to lift the weighted lever G , which falls over at the moment that the pin m commences to lift the lever p . The movement of the diaphragm is thus continuous and equable, and the steadiness of the escaping gas is not effected by the sudden reversal of its movements. The cycloidal curve r upon the lever p reduces the friction of the pins m m' upon it. The action of the lever N upon the pallet-wheel P , by moving the latter forward at each oscillation of the

diaphragm in either direction, reduces the friction required to drive the registering apparatus.

Having now described our invention, what we claim as new, is—

1. The combination, with the diaphragm in a dry gas-meter, of the weighted balance-lever G , arranged so that it assists in lifting the weighted lever p used for reversing the slide-valve w , and thus renders the action of the diaphragm continuous and equable, substantially as described and shown in the drawing.

2. The combination, with the pins m m' driven by the diaphragm, of the curved or cycloidal-shaped weighted lever which drives the slide-valve w , so that the downward pressure upon the pins is reduced, substantially as described and shown in the drawing.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM ALFRED TELLING.
SAMUEL JOHNSON.

Witnesses:

EDMUND EDWARD,
CHARLES JAMES WINTERSGILL.