

S. SIMPSON.
 DRY METER.
 APPLICATION FILED MAR. 20, 1906.

953,864.

Patented Apr. 5, 1910.

Fig. 1.

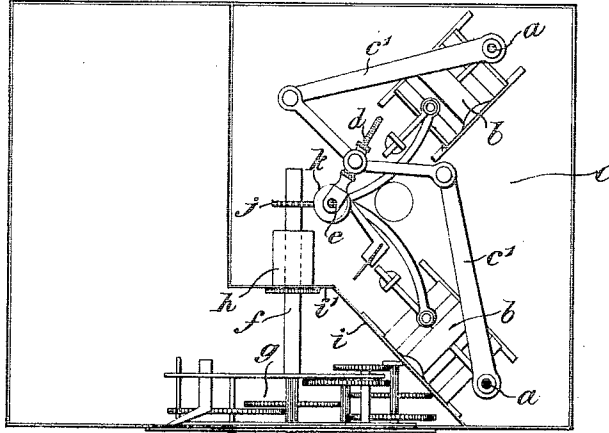


Fig. 2.

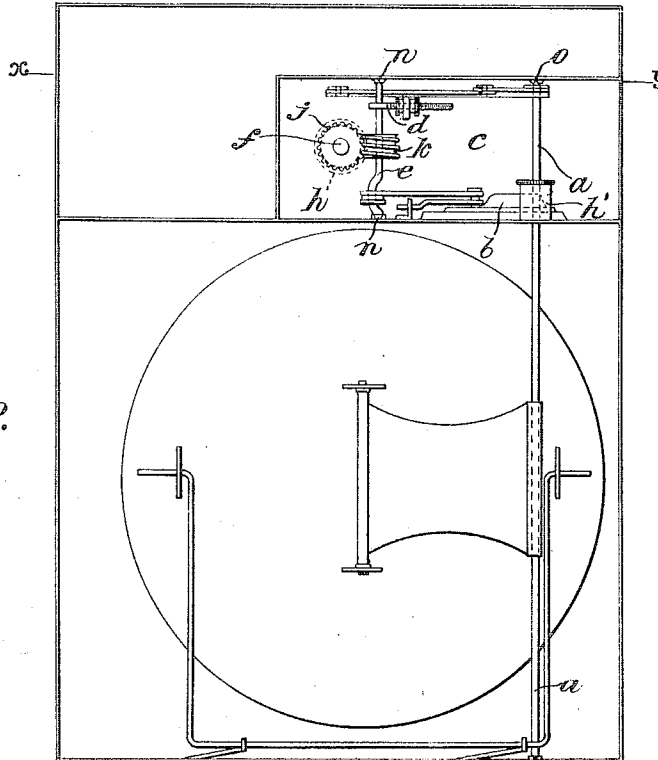
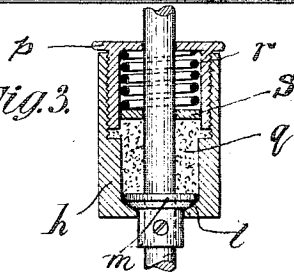


Fig. 3.



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UNITED STATES PATENT OFFICE.

STEPHEN SIMPSON, OF EXETER, ENGLAND.

DRY METER.

953,864.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, STEPHEN SIMPSON, a subject of the King of Great Britain and Ireland, residing at "Tregear," Spicer Road, Exeter, in the county of Devon, England, have invented certain new and useful Improvements in and Relating to Dry Meters, of which the following is a specification.

This invention relates to dry meters, and has for its object to minimize the liability of escape of gas from the meter, and also to minimize the amount of friction of the mechanism generally and particularly upon the flag wires, by which a strain is put upon the leather diaphragms which tends to make them porous.

According to the invention I mount the valve mechanism wholly within the valve chamber, that is to say, instead of arranging the crank spindle to which the respective valves of the meter are connected by links, to protrude through the top of the valve chamber, and the flag wires brought up to the top of the meter outside the valve chamber, and the connecting mechanism arranged outside the valve chamber, by which a stuffing box is necessary to provide for each flag wire and for the crank spindle, the whole of this mechanism is mounted within the valve chamber and the flag wires are brought up into position within the valve chamber in such manner that it is necessary only to provide a stuffing box to carry the transmission spindle by means of which the movement of the valve mechanism is transmitted to the index; and inasmuch as this spindle rotates slowly, a very small amount of friction is occasioned, and for that reason and inasmuch as only one stuffing box is necessary, the liability to leakage is thus considerably minimized.

Figure 1, is a sectional plan view of the invention taken on the line *x-y* of Fig. 2; Fig. 2, is a sectional elevation of the same; Fig. 3 is a detail sectional view of the stuffing box employed.

In carrying the invention into effect, I mount the flag wires *a* upon the same sides of the meter as the valves *b*, and I advantageously dispose them so that they come up into the valve chamber *c* immediately behind the valves *b*, and I mount the levers *c'* upon their upper extremities and connect the outer extremity of the respective levers *c'* with a lever or arm *d* mounted upon the crank spindle *e* which is also disposed

within the valve chamber *c*, the mechanism being otherwise substantially the same as that usually provided in dry meters.

The transmission spindle *f*, by means of which the movement of the crank spindle *e* is transmitted to the index mechanism *g*, I carry within a stuffing box *h* mounted on the vertical wall *i'* of the valve chamber *c*, a worm wheel *j* on the inwardly projecting extremity of this transmission spindle *f* engaging with a worm *k* upon the crank spindle *e*, by which the movement of the latter is communicated to the index mechanism *g*. It will thus be understood that the shape of the transverse vertical wall *i* of the valve chamber *c* is modified to accommodate the whole of the valve mechanism within the valve chamber, and that this wall is advantageously provided at *i'* in a position transverse to the axis of the transmission spindle *f* for convenience in mounting the stuffing box or bearing *h* for the transmission spindle *f* upon the wall, the relative position of the valves *b*, crank spindle *e*, and index mechanism *g*, is thus not modified from that usual in dry meters of the ordinary construction. According to the invention moreover, I advantageously provide the flag wires *a* with a bearing *h'* upon the bottom of the valve chamber similar to the construction shown in Fig. 3, by which the weight of the flags may be taken, and a substantially frictionless and gas-tight joint secured, and this I conveniently effect by providing a metallic plate *l* or seat upon the base of the valve chamber *c*, through which the respective flag wire *a* passes, and upon the flag wire I preferably provide a collar *m* advantageously with a conical under-face to seat within a conical recess formed around the flag wire and upon the metallic plate or seat *l* aforesaid, but instead of providing a seat of metal, this may be formed of flexible or elastic material such as leather, so that in any event the joint is such as to be substantially frictionless, and to provide a bearing that will wear gas-tight.

The preferred form of stuffing box, as disclosed in Fig. 3 of the drawings, is composed of two cylindrical casings *n* and *p* interiorly and exteriorly screw-threaded respectively, the casing *n* having a conical recess *l* adapted to receive the collar *m* by its corresponding face. The said casings are also filled with a suitable packing *q*, which is forced against the collar by the action of

the coil spring *r* on the washer *s*, thereby forming a perfectly air tight joint.

In the arrangement hereinbefore described it will be understood that the crank spindle *e* is advantageously provided with a bearing *n* at the bottom and the top of the crank chamber, and that the flag wires, in addition to having the bearing hereinbefore described at the bottom of the valve chamber *c*, may have a bearing *o* at the top of the chamber by which side strain may be taken off the stuffing box or the conical bearing that may be provided at the bottom of the valve chamber *c* in the manner hereinbefore described.

It will of course be understood that instead of providing a conical seat for the flag wires, I may provide a stuffing box as usual, as well as an additional bearing at the upper part of the flag wire in combination with the stuffing box.

What I claim as my invention and desire to secure by Letters Patent is:—

A gas meter comprising a casing proper, a horizontal partition wall dividing said casing into an upper and lower chamber, an auxiliary chamber in the uppermost chamber, said auxiliary chamber being formed by inclosing walls having a vertical portion proper extending at right angles from the casing, part of said vertical portion being bent at an obtuse angle to said right angular

extended portion and then extended transversely to the casing proper, a valve controlling mechanism located in said auxiliary chamber, a clock work mechanism located within the upper chamber adjacent to the wall extended at an angle, a transmission shaft connecting said mechanisms, said transmission shaft passing through said transversely extended wall and having a stuffing box bearing in said wall, flag wires, said flag wires having stuffing box bearings in the bottom wall of said auxiliary chamber, said shaft and flag wires having collars fixed thereto with conical under faces, the aforesaid stuffing boxes, each comprising two casings in screw-threaded engagement, one casing of each stuffing box having a beveled seat corresponding to and receiving one of said collars, a packing within said casings, a coil spring within the other casing of each stuffing box and a washer slidable on each shaft and flag wire, within the casings and adapted to be forced against said packing by the spring.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

STEPHEN SIMPSON.

Witnesses:

WILLIAM EDWARD EVANS,
F. COLLINS.