L. BOORE.

GAS METER.

No. 32,747. Patented July 9, 1861.

Fig. 3

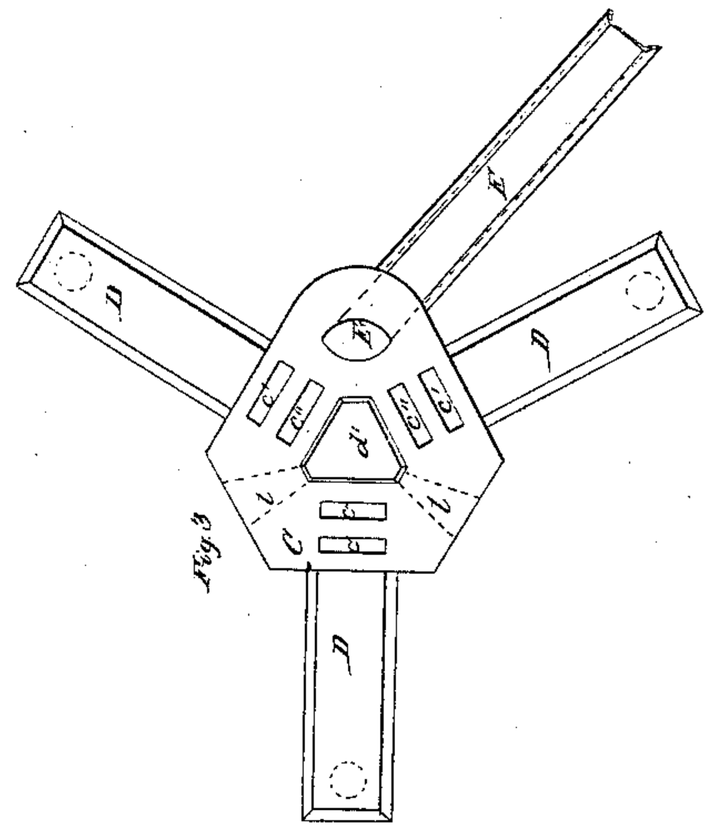


Fig. 4

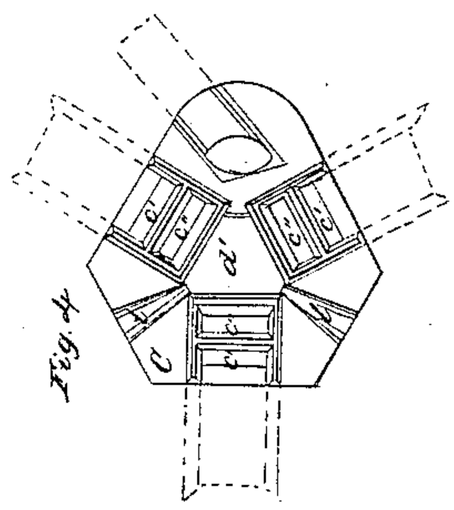


Fig. 4*

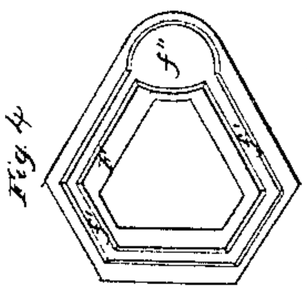


Fig. 5.

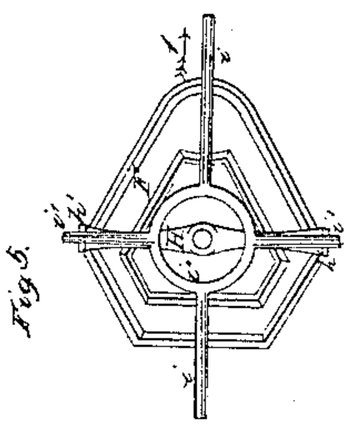


Fig. 1.

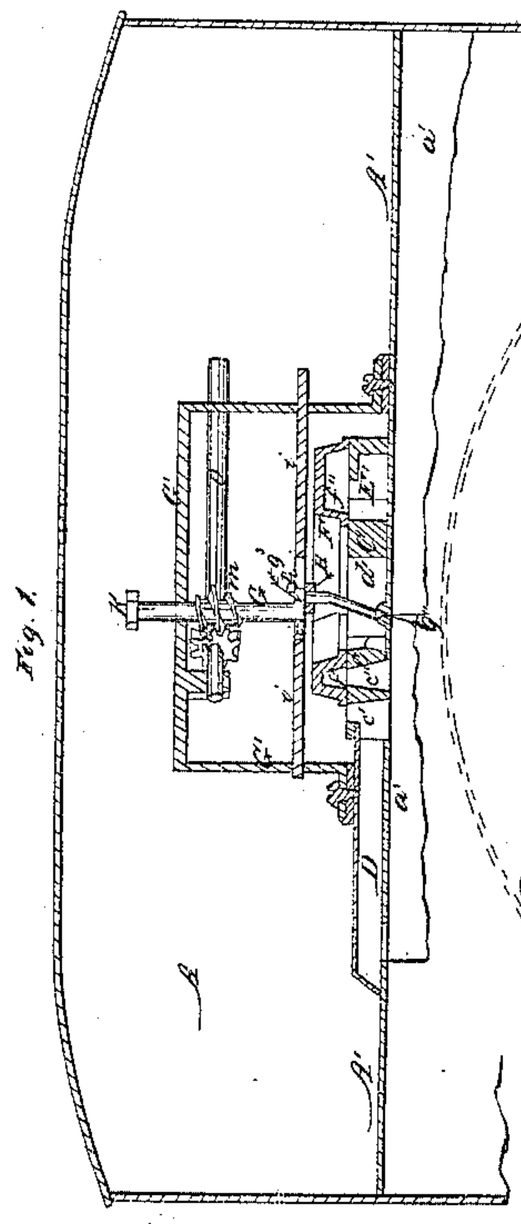
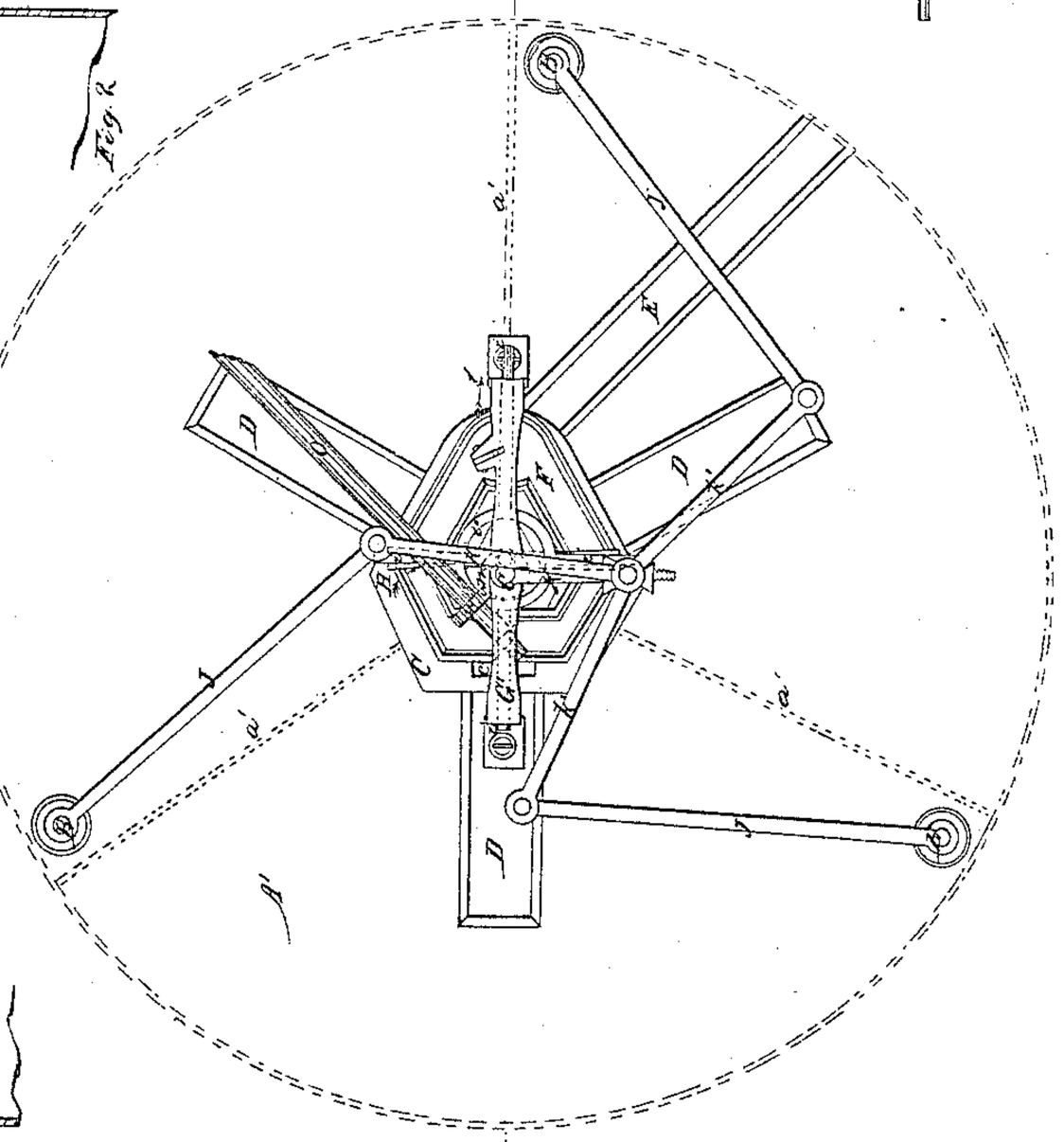


Fig. 2



Witnesses.

C. B. Forbush

W. H. Forbush

Inventor.

Lewis Boore

U. S. PATENT OFFICE.

No. 1,743. 1861. Whole No. 32,747.

Dry Gas Meters.

LEWIS BOORE, OF BUFFALO, N. Y.

Letters Patent No. 1,743, *dated July* 9, 1861.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known, that I, Lewis Boore, of the city of Buffalo, county of Erie and State of New York, have invented certain new and useful improvements in Gas Meter Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon, in which—

Fig. I is a vertical section through the upper chamber of a gas meter on the line *x y* of fig. II.

Fig. II is a plan of the valve, and the operating mechanism connected therewith.

Fig. III is a plan of the valve seat.

Fig. IV is a bottom plan of same.

Fig. V is a plan of the valve and cross.

Fig. VI is a bottom plan of the valve.

Letters of like name and kind refer to like parts in each of the figures.

A represents the upper chamber of a dry meter, in which is placed the valve and operating mechanism. It is separated from the lower chambers (in which are placed the diaphragms) by the floor partition A′. That part of the meter below this partition is constructed in a common and well known manner. It is divided into three equal sized chambers by the vertical radial partitions shown by the dotted line *a′*, fig. II. In these chambers are placed diaphragms constructed and operating in a common manner, and giving motion to the vertical rock shafts B, and through them, by means of a combination of levers, to the valve.

Boore's Improvement in Dry Gas Meters.

C represents the valve seat placed upon the floor partition A′. There are two ports *c′* & *c″* opening into each of the diaphragm chambers; the ports *c′* through the passages D opening into the chambers outside of the diaphragms, and the ports *c″* opening into the chambers inside of the diaphragms. These ports are arranged parallel to the sides of a supposed equilateral triangle, (two upon each side.)

E represents the supply passage, and E′ the supply port.

A triangular space *d′* is cut out at the centre of the valve seat to prevent the gummy matter which may condense from the gas from banking up on the valve seat, and cause an unequal wear of the valve and valve seat.

F represents the valve. The sides of the valve which cover and uncover the ports, are sides of an equilateral triangle. The width of these sides should be a trifle greater than the sum of the widths of the two ports *c′* & *c″* and the space between them. A groove *f″* is made in the under side of the valve, extending entirely around it, which groove is in width equal to the space between the ports *c′* & *c″*.

That part of the valve which covers the supply port, is chambered out as shown at *f‴*.

This chamber *f‴* is of such size and form, that in the movement of the valve the supply port will always remain open, and the gas always be free to pass through the groove *f″* to the diaphragm chamber, through the ports which may be open.

Motion is given to the valve by the following described mechanism:

G is a vertical crank shaft, which has a bearing in the footstep *g″* placed in the centre of the triangular space *d′* upon the partition A′, its upper end being supported in the frame G′.

The crank g^3 passes through the cross-piece H, connected to the valve at its centre, which is the centre of the crank, and the rotary motion of the crank is caused to give a longitudinal reciprocating motion to the valve in the direction of the arrow 1, and at the same time an equal transverse reciprocating motion at right angles to the reciprocating longitudinal motion, by means of a cross, the four arms *i i* & *i′ i′* of which meet in a central ring *i″*, the arms *i i* passing through holes in the frame G′, and the arms *i′ i′* resting in forks *h′*, bent upward from the ends of the cross-piece H.

Thus the rotary motion of the crank causes all points of the valve to describe circles, the radii of which are equal to the radius of the crank, which radius should first equal the width of the ports *c′* & *c″*.

This movement of the valve causes it to move over the whole surface of the valve seat and rub off the gummy matter which may condense from the gas upon the valve seat, that which falls into the space *d′* being conducted off into the chamber outside of the valve seat, through the passages shown at *l*, fig. IV, and by the dotted lines *l*, fig. III.

The peculiar movement of the valve will thus wear evenly upon all parts of the

valve seat, and prevent its gumming up, so that at all times the movement of the valve will be perfectly smooth and even.

Motion is given to the crank shaft G by means of a combination of levers, which is common and well known, the diaphragms, of course, being the prime movers.

Upon the upper ends of the rock shafts B (to which the diaphragms give motion, as before mentioned,) is secured an arm or lever J, and these arms J are connected to the crank or arm K, placed upon the upper end of the crank shaft by means of the shorter connecting arms K′, the arrangement being common and well known.

The operation may be summed up as follows:

The gas, entering through the supply passage and port E & E′, and passing through the groove *f″* in the valve, will enter through the open ports into the diaphragm chambers, giving motion to the diaphragms which operate the combination of levers J K & K′, and give motion to the valve. The movement of the valve will alternately open and close the ports *c′ c″*, thus admitting the gas into the diaphragm chambers alternately inside and outside of the diaphragms. As it enters through one port upon one side of the diaphragm, it issues out into the chamber A through the other port from the other side of the diaphragm.

The gas is taken from the chamber A, by pipes, to the burners. All the gas which passes into the chamber A has been measured and registered. The arrangement of the ports and movement of the valve will prevent more than one of the diaphragms from reaching the extent of its movement, either out or in, at the same time, and consequently two of the diaphragms will always be acting to operate the valve, though during the greater part of its movement all three will act. The movement of the diaphragms is registered in a common manner. The crank shaft G has a worm *m*, which meshes in with the teeth of the worm wheel *n* upon the end of the shaft *o*, upon the other end of which shaft, outside of the meter case, is a pinion, which operates the registering mechanism, this arrangement being common and well known.

Claims.

1st. I claim so operating the valve as that an equal longitudinal and transverse movement will be given to it, so that all points of the valve will move over equal surfaces and describe equal circles, for the purposes and substantially as described.

2d. I claim the cross *i i′ i″* in combination and arrangement with the valve F and operating crank, for the purposes and substantially as described.

LEWIS BOORE.

Witnesses:

E. B. FORBUSH,

W. H. FORBUSH.