

W. F. ETZEL.

GAS METER.

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919,841.

Patented Apr. 27, 1909.

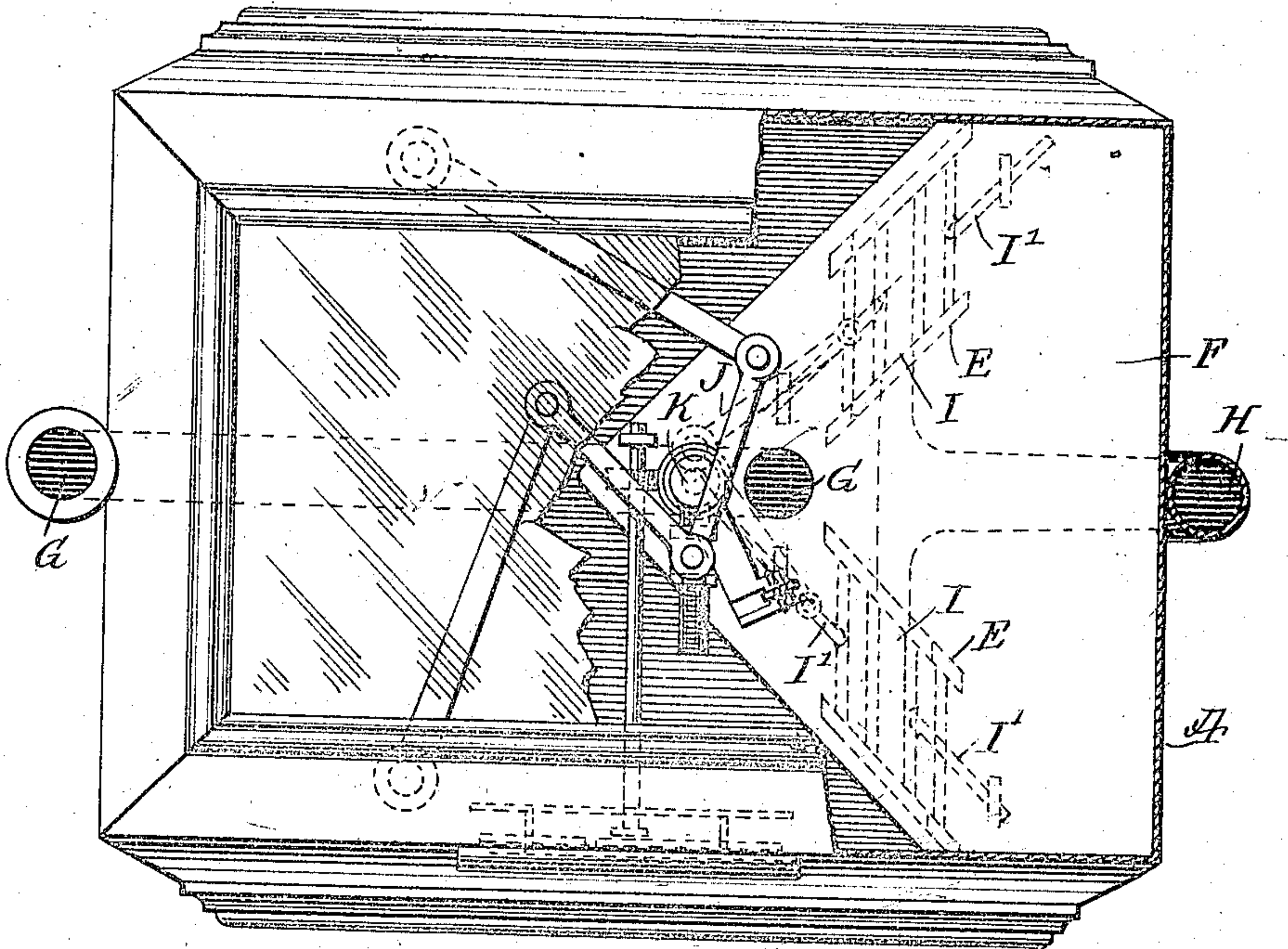
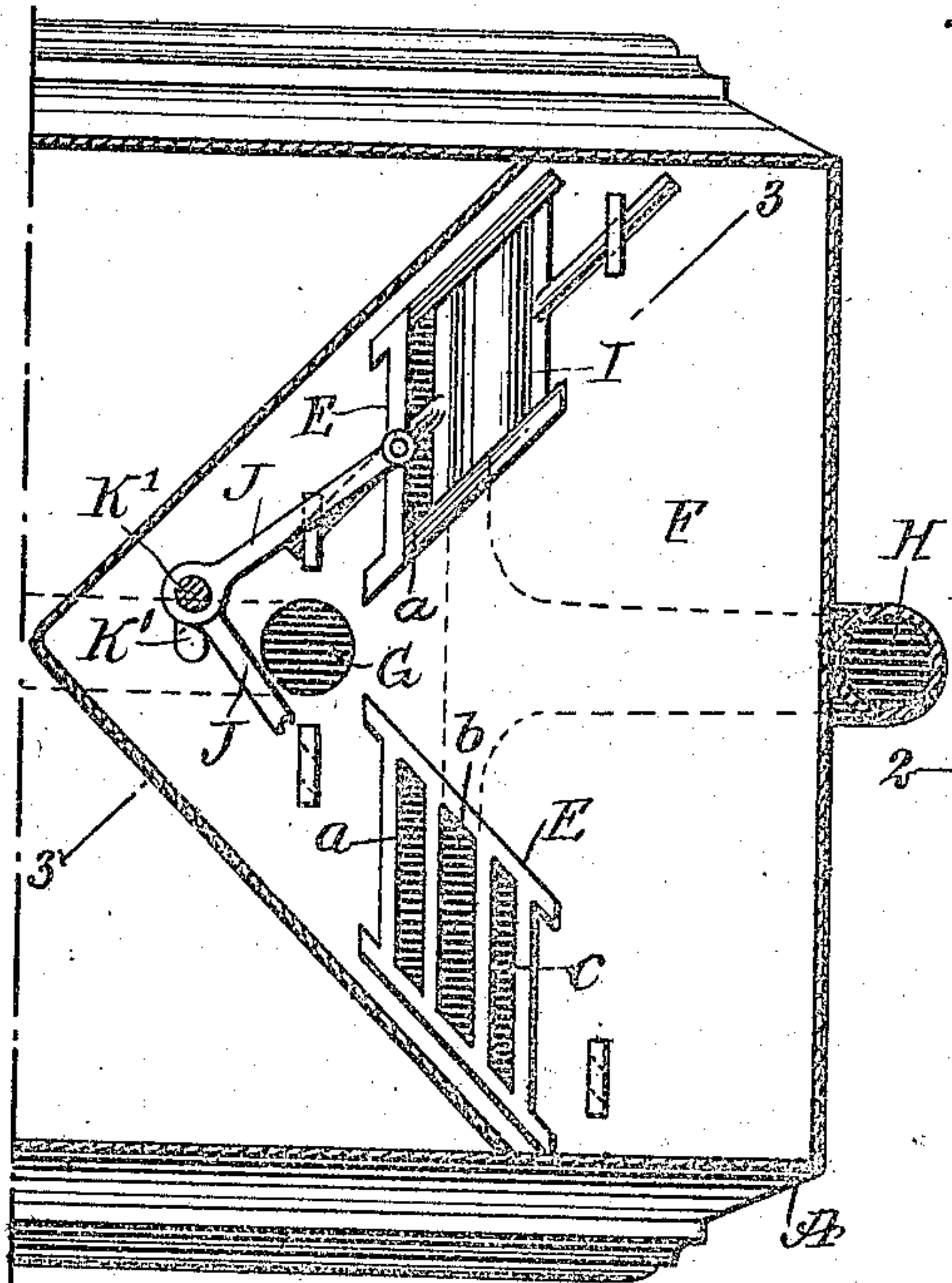


Fig. 1



WITNESSES

*John S. Sargent*  
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Fig. 2

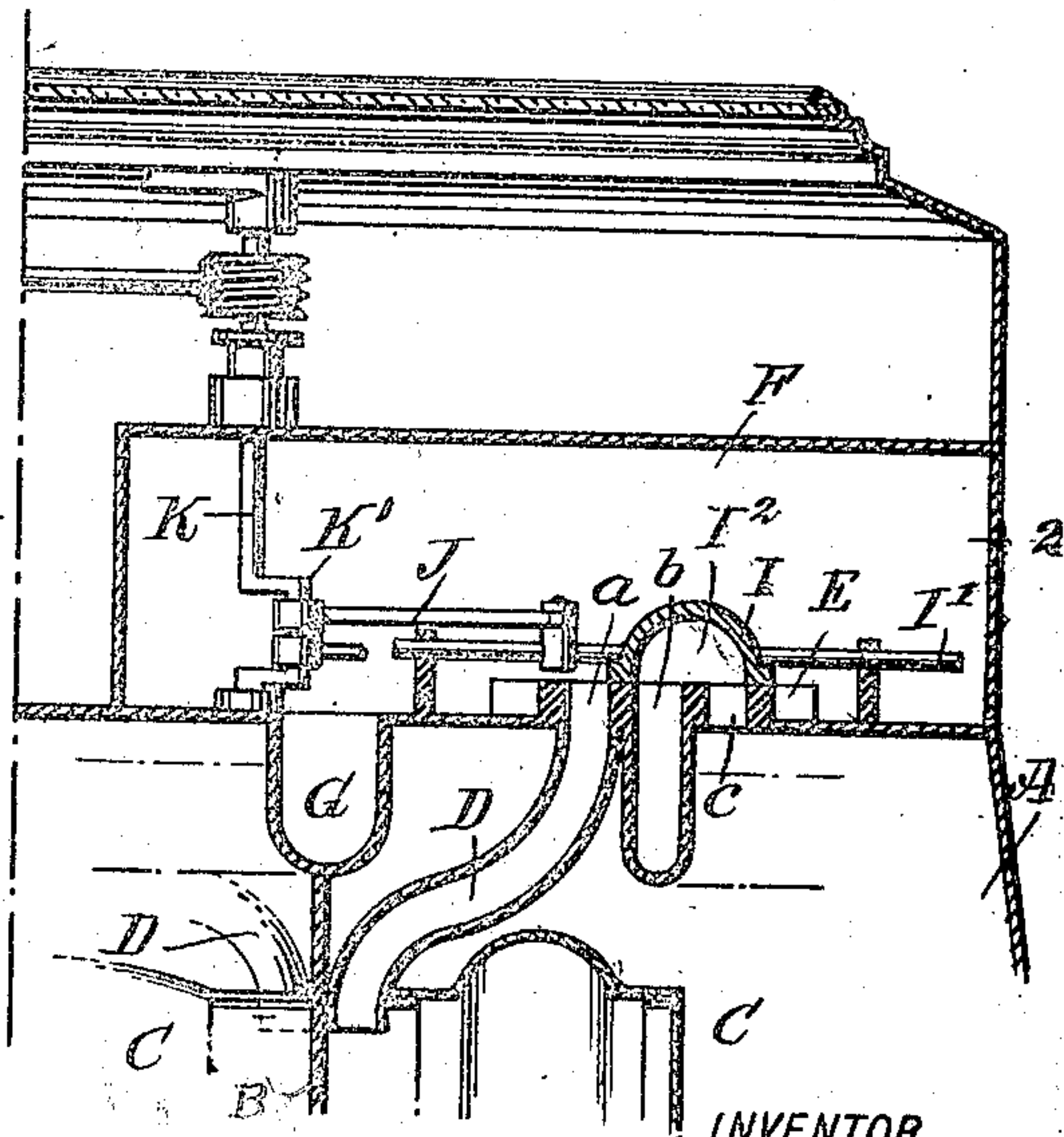


Fig. 3

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# UNITED STATES PATENT OFFICE.

WILLIAM F. ETZEL, OF LOWELL, MASSACHUSETTS.

## GAS-METER.

No. 919,841.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed October 23, 1902. Serial No. 469,016.

*To all whom it may concern:*

Be it known that I, WILLIAM F. ETZEL, a citizen of the United States, and a resident of Lowell, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Gas-Meters, of which the following is a full, clear, and exact description.

The invention relates to dry gas meters having alternately expanding and contracting measuring chambers, and its object is to provide certain new and useful improvements in gas meters, whereby gas passes freely through the ports of the slide valve seats to and from the measuring chambers, thus reducing the decrease of the gas pressure, incident to its flow through the meter, to a minimum.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improved gas meter, parts being broken out; Fig. 2 is a sectional plan view of the same on the line 2—2 of Fig. 3 and with one of the slide valves omitted; and Fig. 3 is a sectional side elevation of the same on the line 3—3 of Fig. 2.

The casing A of the dry gas meter is divided by the usual partition B into separate compartments, each containing a measuring chamber C capable of expanding and contracting in the usual manner. The measuring chambers C, C are connected by pipes D, D with the ports *a, a*, in the valve seats E, E, arranged in the chamber F connected by a pipe G with the gas supply, as indicated in the drawings. Each of the valve seats is provided, besides the port *a*, with ports *b* and *c*, of which the port *b* is connected with the gas outlet pipe H and the port *c* opens into the corresponding compartment of the casing A.

On the valve seats E, E are mounted to reciprocate the slide valves I, I having their stems I' connected by pitmen J with the crank arm K' of a vertically disposed shaft K, driven from the measuring chambers C, C in the usual manner, so that further de-

scription of the connecting mechanism between the shaft K and the said measuring chambers C, C is not deemed necessary.

By reference to Figs. 1 and 2, it will be seen that the line of movement of the valves I, I is radial relatively to the axis of the shaft K, but the length of the ports *a, b* and *c* in each valve seat ranges at an acute angle relatively to the line of movement of the valves I, I, and the corresponding ports *a, a, b, b* and *c, c* are in alinement with each other, as plainly indicated in Figs. 1 and 2. Each of the valves I, and its cavity I' conform to the shape given to the ports *a, b* and *c* of the corresponding valve seat E, and by arranging the valve seats E and the valves I in the manner described, exceedingly long ports are provided within the chamber F, to allow free flow of the gas through the ports, thus preventing decrease of the gas pressure incident to the flow of the gas through the meter.

It is understood that in gas meters as heretofore constructed the ports in the valve seats are at right angles to the line of movement of the slide valves, but in my improved gas meter the ports in the valve seats are arranged at an acute angle relative to the line of movement of the valves, and consequently the ports provide larger areas without occupying more space in the chamber F.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. A dry gas meter comprising a divided main casing, expanding and contracting measuring chambers in the said main casing, a valve chamber having valve seats, a crank shaft, means connecting the crank shaft with the measuring chambers whereby the expansion and contraction of said chambers will operate the shaft, slide valves reciprocating on the valve seats for controlling the passage of the gas to and from the measuring chambers, connections between the slide valves and the crank shaft for operating the same, the center lines of the said valves and valve seats being arranged transversely at an acute angle relative to the line of movement of the said valve.

2. A dry gas meter provided with valve seats, and reciprocating valves for controlling the flow of the gas through the meter, the openings in the said valve seats and the



cavities in the said valves having their length ranging transversely at an acute angle relatively to the line of movement of the said valves.

- 5 3. A dry gas meter provided with valve seats, and reciprocating valves for controlling the flow of the gas through the meter, the openings in the said valve seats and the cavities in the said valves having their length  
10 ranging transversely at an acute angle relatively to the line of movement of the said

valves and the corresponding valve seat openings of the valve seats being in alignment.

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

WILLIAM F. ETZEL.

Witnesses:

JOHN H. KELSEY,  
SANFORD P. LEARY.