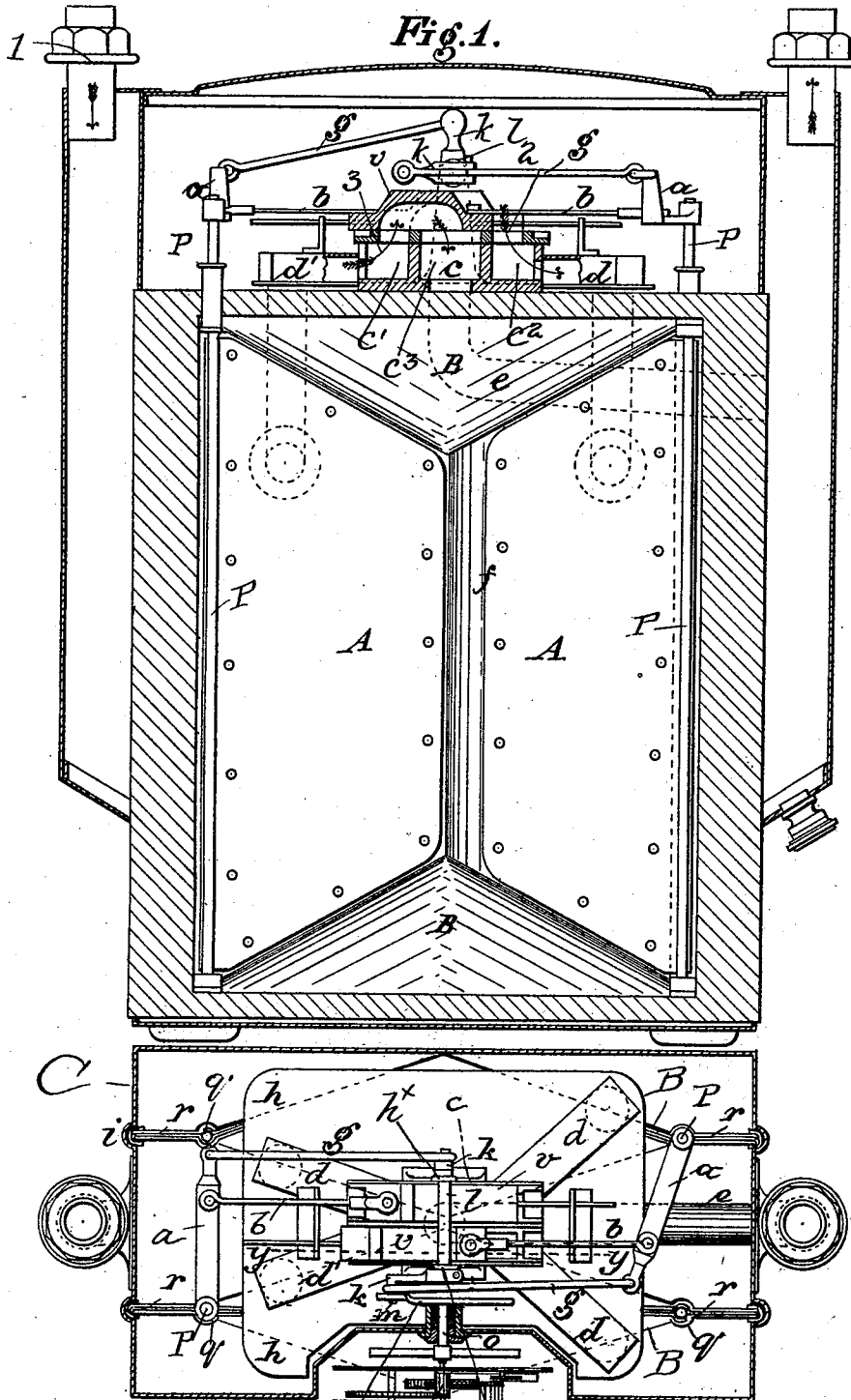


E. HAAS.
GAS METER.

No. 522,054.

Patented June 26, 1894.



Witnesses:
E. R. Bolton
A. S. Büsing

Fig. 2. By

Inventor:
Emil Haas
his Attorneys

(No Model.)

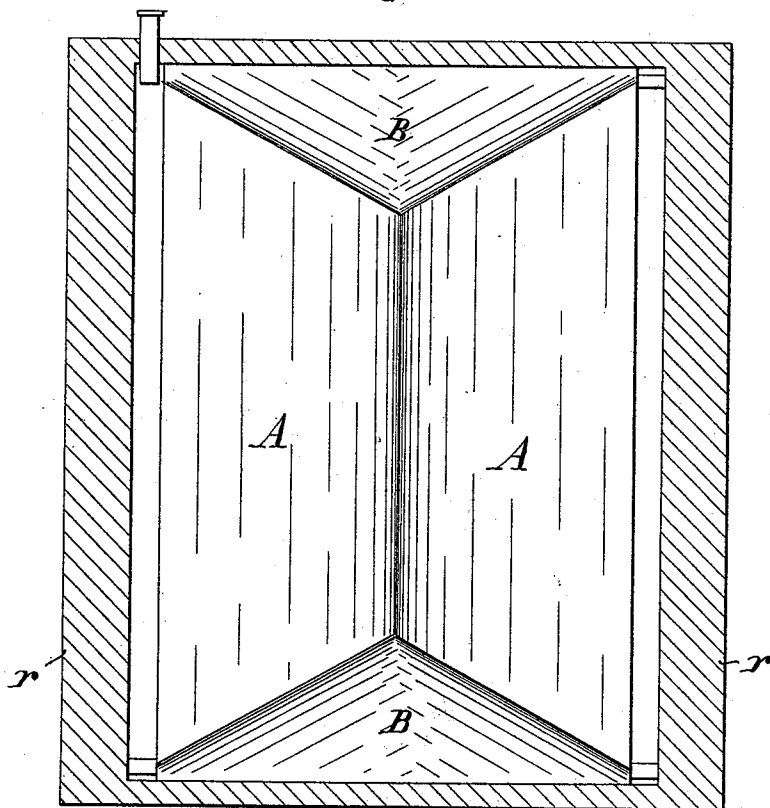
3 Sheets—Sheet 2.

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Fig. 3.



Witnesses:

E. B. Bolton

A. B. Bausing

Inventor.

Emil Haas

By

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his Attorneys.

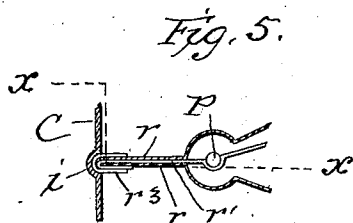
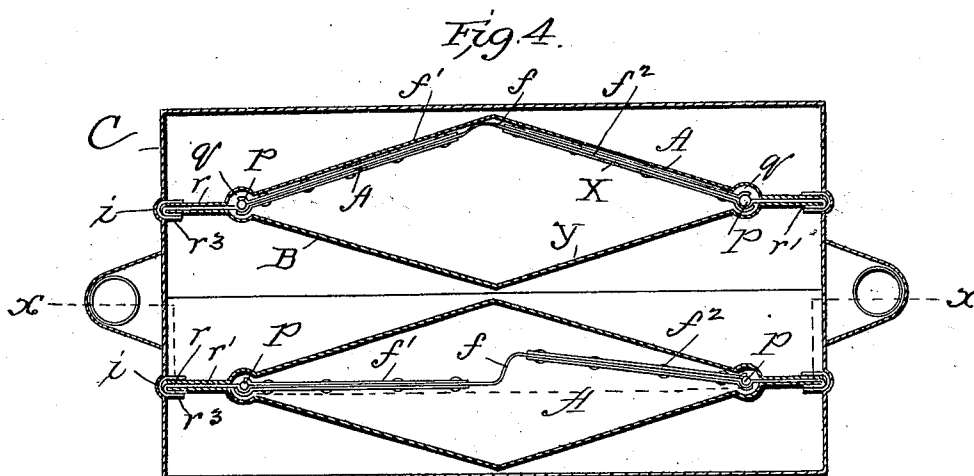
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Attest
F. L. Middleton

Inventor
Emil Haas
by Richards & Co
ATTYS

UNITED STATES PATENT OFFICE.

EMIL HAAS, OF MENTZ, GERMANY.

GAS-METER.

SPECIFICATION forming part of Letters Patent No. 522,054, dated June 26, 1894.

Application filed November 28, 1892. Serial No. 453,369. (No model.)

To all whom it may concern:

Be it known that I, EMIL HAAS, a subject of the German Emperor, resident at Mentz, Germany, have invented new and useful Improvements in Gas-Meters, of which the following is a specification.

My invention consists in the special combination and arrangement of elements hereinafter specifically pointed out.

10 In the drawings:—Figure 1, is a vertical section through the swinging vane case on line $x-x$ of Figs. 4 and 5, and through the valve chamber on line $y-y$ of Fig. 1 with some of the parts in side elevation. Fig. 2, 15 is a plan view of the meter with the top portion of the case removed. Fig. 3, is a vertical sectional view of one of the vane chambers and Fig. 4, is a sectional plan view of the vane chambers with the swinging vanes 20 therein. Fig. 5 is a detail view of the connection between the vane chambers and the outer casing.

The flow of gas to and from the vane chamber B is controlled by the elongated slide valves $v v$ arranged side by side on the valve chest c to move parallel with the major axes of the vane chambers B which, it will be noticed, are diamond shape in horizontal cross section and are arranged side by side in the 30 outer casing C. The valves are operated by rods b connecting them with levers a on vertical shafts P arranged at the ends of the diamond shaped valve chambers. As the valves are elongated, ports can be provided in the 35 valve chest larger than ordinarily and also in the valves themselves and these openings can thus be proportioned to the sizes of the other passages in the gas meter and there will be less loss of gas pressure which is likely to occur through the use of valves which are too small. The elongated character of the slide 40 valves and the fact that they are moved longitudinally enable them to be guided more accurately and thus the liability of loss of gas due to short wide valves is reduced. The valve chest c is connected with the vane chambers by the conduits $d d'$, there being one pair of conduits for each vane chamber and valve, the valve chest having two compartments $c' c^2$ for each valve thrown into 50 connection alternately with the central ex-

haust compartment c^3 from which the gas is led through the outlet pipe e from the vane chamber. The rock shafts P are connected to and operated by the swinging vanes A A 55 arranged in the diamond shaped chambers and the movement of the shafts in addition to being transmitted to the valves through the levers a is also transmitted to the crank shaft l extending over the slide valves by the 60 rods g and the cranks $k k$ set at right angles to each other. From this crank shaft the movement is transmitted to the registering mechanism Z through the pin m , crank arm n , Fig. 2, and the shaft O. The shaft l is 65 journaled in two bearings h^x projecting up from the plate h .

The registering mechanism is arranged in a separate case Z' Fig. 2, outside of the main case. By reason of the diamond shape of the 70 vane chambers the vanes A which comprise the two side parts $f' f^2$, Fig. 4, pivoted in the ends of the chambers on the shafts P P and connected at their meeting ends by the flexible portion f may lie close against the sides 75 of the diamond shaped chamber as shown in the upper part of Fig. 4, and by this arrangement the space within the measuring chambers B is reduced to that which is necessary only for the movements of the vanes. This 80 arrangement also prevents irregularities in the vanes themselves as when they are moved to the extreme limit in either direction they will be supported through their length and will not bulge or distort in shape which is 85 often the case where the vanes move in a chamber of different shape from that shown. In order to best secure this effect of the vanes swinging close up against the walls of the measuring chamber I pivot the vanes or arrange 90 the shafts P P which form said pivots axially at the point at which the converging sides of the diamond shaped chamber would meet if extended and in order to do this I form tubes or pockets q at the apexes of the 95 converging sides, the axial line of the pockets being at the point where the sides would meet. It will be noticed, Fig. 4, that these tubes or pockets q form enlargements at the extreme angular corners of the chamber and 100 that the sides of this chamber converge toward the center of the tubular enlargement

as above stated. By this the vane can lie close against the side of the chamber throughout its extent as the said vane is pivoted in an enlargement or tube forming an extension beyond the end of the chamber. The same result could not be secured were the diamond shape of the chamber made complete by bringing the converging sides together in a point and then locating the pivot of the vane entirely within the corner thus formed.

The measuring chambers B have extensions r projecting from the tubular enlargements q and these tubes receive the projecting edges r' of the vane membrane and also serve as means of connection between the vane chambers and the grooves i in the outer case C of the meter by which the vane chambers are held and steadied in position. Clips r^3 are applied to the edges of the extensions r so as to inclose the same together with the vane membrane.

In operation the gas enters the apparatus at 1, Fig. 1 into the outer casing C and in the position of the slide valve shown, it enters the measuring chambers by the pipes d see the arrow 2 on the right in Fig. 1. The gas then acts on one side of the movable vane, that is, the side marked X in Fig. 4, and impels the same to the opposite side of the chamber forcing out at the same time the gas on the said side y of the vane which has been escaping through the pipe d' , see arrow 3 on the left of Fig. 1, and thence through the escape pipe e . This movement of the vane also reverses the slide valve and shifts it to the right, Figs. 1 and 2 so that the gas will now escape through the right hand pipes d while entering the vane chambers through the pipes d' on the left. The movement of the vane just described turns the shaft P at

its end and this movement is communicated through the lever a on the shaft and the link b to the slide valve and also to the crank of the registering mechanism by the rod g .

I do not claim herein the broad feature of a vibrating vane in a diamond shaped chamber, said vane having connections at its end extending to a slide valve.

I claim—

1. In a gas meter the combination of the outer casing having the interior grooves i , the measuring chambers having swinging vanes therein, said chambers also having extensions or flanges inclosing the edges of the vane membranes and being seated in the channels i , substantially as described.

2. In combination, the diamond shaped chamber having the tubular extensions or enlargements q at its ends communicating with the interior of the chamber, the vane in the chamber the vane shafts in the tubular extensions for holding the said vanes, the valve and the connections between the valve and the vane shafts, substantially as described.

3. In combination, the two chambers arranged side by side, the vibrating vanes in said chambers, the two slide valves arranged side by side, the arms a connected with the vane shafts, the crank shaft extending over the slide valves and the rods g and b for connecting the arms a with the crank shaft and slide valves respectively, substantially as described.

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

EMIL HAAS.

Witnesses:

FRANZ HASSLACHER,
FRIEDRICH CORRELL.