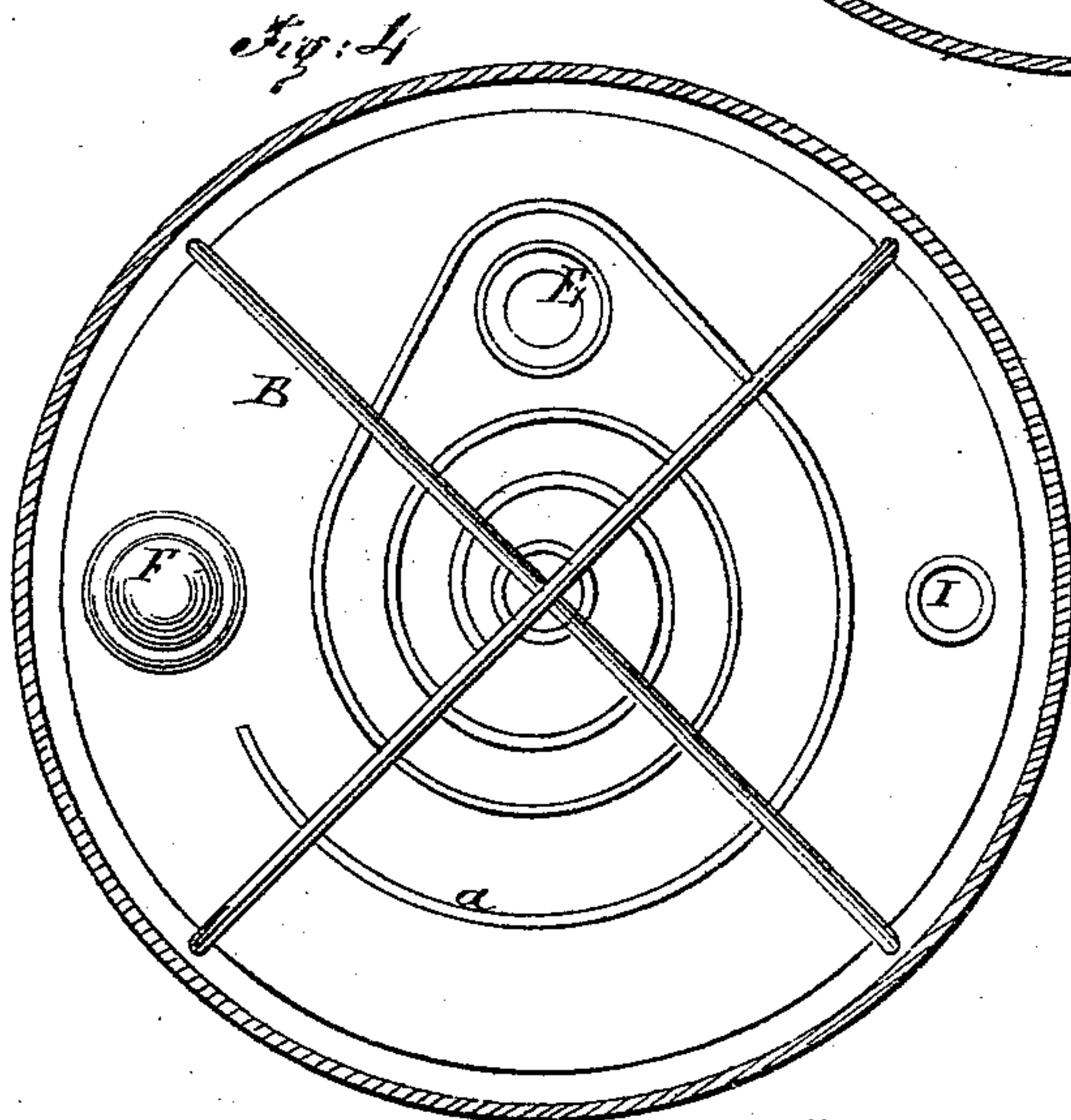
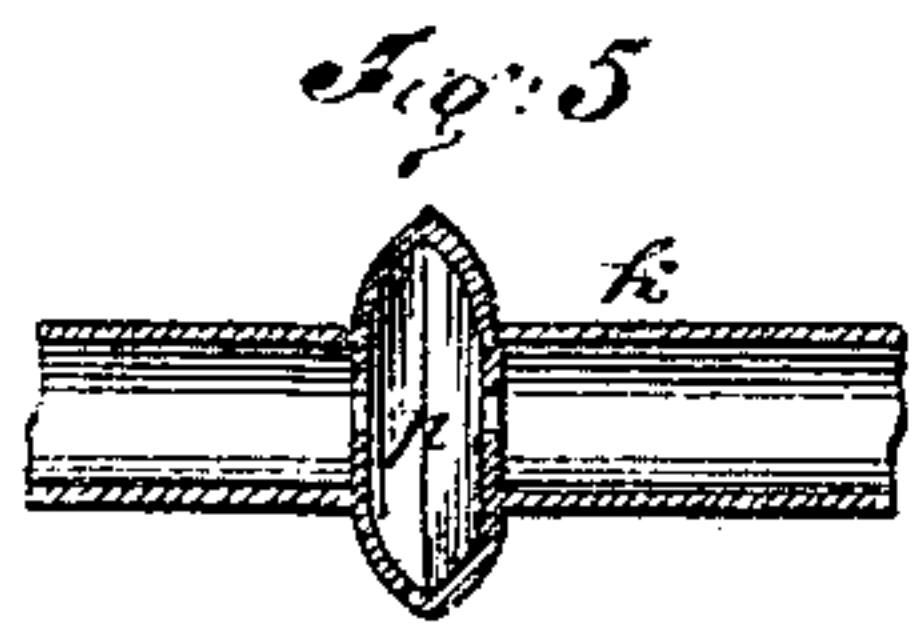
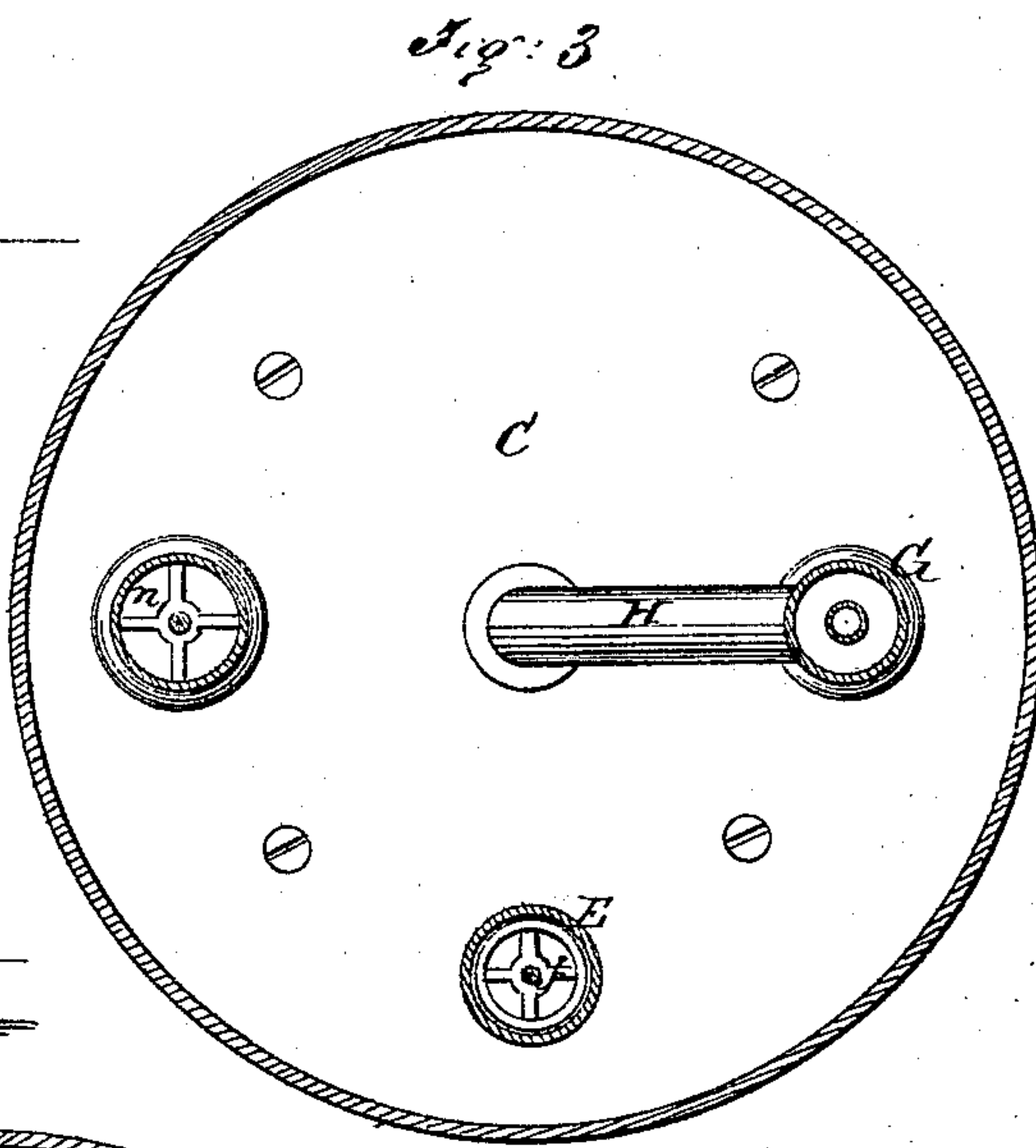
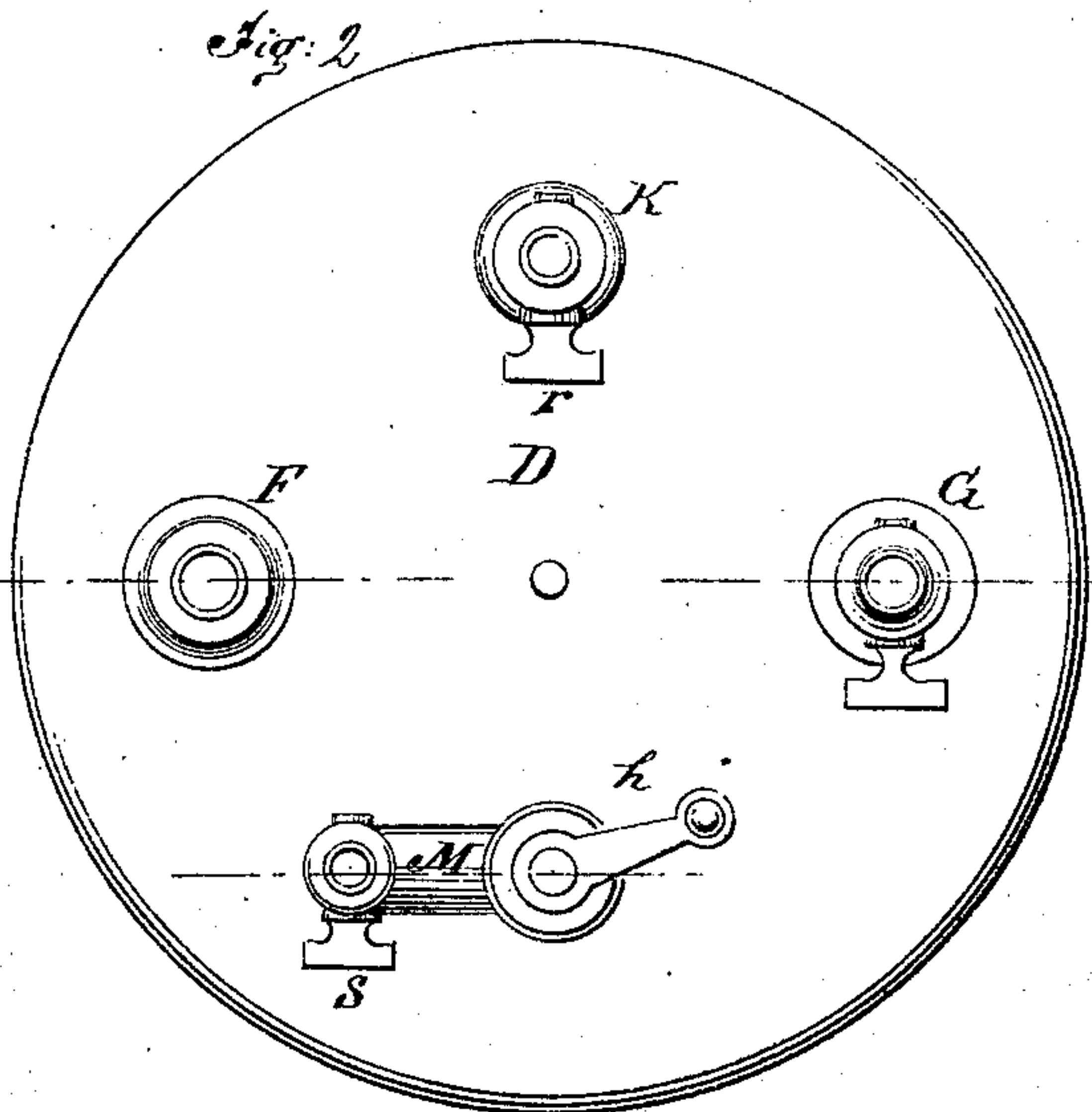
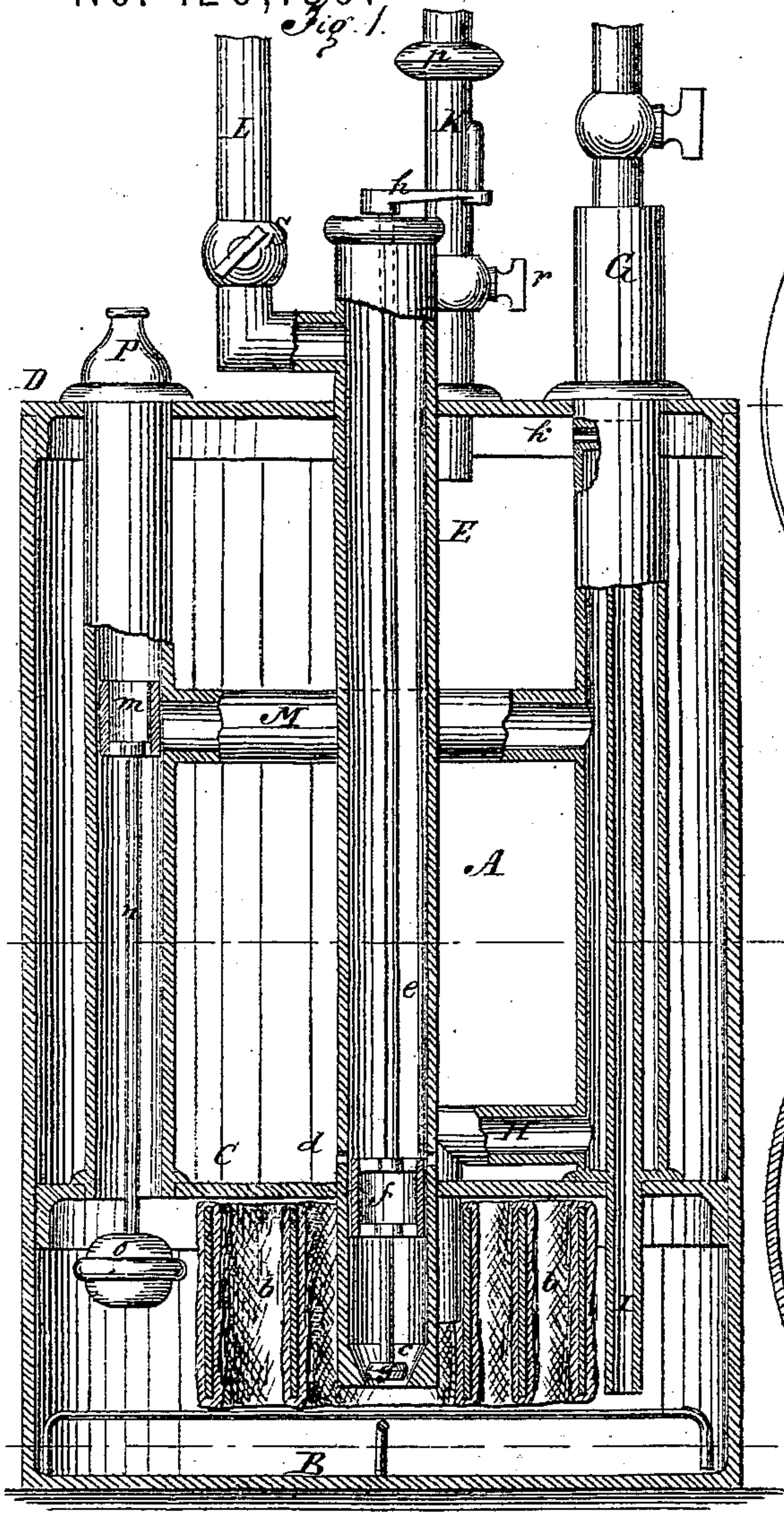


JOHN R. CROSS.  
Improvement in Carbureters.

No. 126,189.

Patented April 30, 1872.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. 126,189, dated April 30, 1872.

*To all whom it may concern:*

Be it known that I, JOHN R. CROSS, of the city, county, and State of New York, have invented a new and useful Improvement in Carbureters, and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

This invention is in the nature of an improvement in apparatus for carbonizing gas, or charging the ordinary street gas with hydrocarbon, thereby increasing its illuminating power, and reducing the cost thereof to the consumer. The invention mainly consists in providing the carbonizing apparatus with an appliance that will allow an uninterrupted flow of street gas to the consumer; if, by accident, the carbureter shall become "flooded," in the means of regulating the "feed" to the capillary-chamber; the alarm whereby the complete filling of the tank is determined; and finally the combination of the several parts constituting the carbonizing apparatus, as hereinafter described.

In the accompanying sheet of drawing, Figure 1 represents a vertical section of carbureter; Fig. 2, a plan view; Fig. 3, a top view of diaphragm; Fig. 4, plan view of bottom, showing spiral form of capillaries; Fig. 5, a view of alarm-whistle in section.

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

A represents a tank or vessel of any desired size and shape, made of any desirable material. This tank or vessel is provided with a tightly-fitting bottom, B, and at about one-third the distance between the bottom and top is also tightly fitted a diaphragm, C. The top of the tank or vessel has also fitted to it a top or cover, D, which, like the diaphragm C, is fitted and sealed to the tank or vessel in a manner that shall be absolutely air or gas-tight. Into the space between the bottom of the vessel or tank and the diaphragm (which for convenience I shall call the capillary-chamber) is placed a wire frame, *a*, of scroll-form, (see *a*, Fig. 4,) which is closely wound and covered with cotton lamp-wicking *b*, the whole being slightly raised from the bottom of the tank, as shown in Fig. 1. Through the top or cover D is in-

serted a tube, E, which passes down and through the diaphragm C into the capillary-chamber and between the coils of lamp-wicking. Into the lower end of this tube is fitted a conical valve-seat, *c*, and at a point just above the upper surface of the diaphragm it is perforated with a series of holes, *d*. Passing through the tube is a rod, *e*, having screw-threads formed thereon, fitting into corresponding screw-threads in the cap *i*. To this rod is fitted a sleeve, *f*, and onto the prolongation of the rod *e*, at its lower end, is secured a conical valve, *g*, so that as the rod *e* is revolved by means of the crank *h* the sleeve *f* will cover or uncover the holes *d*, and at the same time raise or lower the valve *g* from or into the seat *c*. The rod *e* at its upper end passes through a stuffing-box formed in the tube E, making a gas-tight joint. Passing through the top or cover D into the tank or vessel A is a second tube, F, the lower end of which is secured to the diaphragm C; an opening, however, being made in said diaphragm, so that free communication is had between the capillary-chamber and the interior of said tube. A third tube, G, is also inserted into the tank or vessel through the top or cover D to the diaphragm, where it is secured. Passing from the tube G, immediately above the diaphragm is a tube, H, which is bent at right angles, and passes through the diaphragm into the center of the scroll of lamp-wicking or capillaries. Into the interior of the tube G is placed another tube, I, of much smaller diameter than the first-named tube. One end of this tube I passes through the diaphragm into the capillary-chamber to about two-thirds of the depth thereof, the upper end opening into a vent-hole, *k*, formed into the tube G. Between the tubes F and G extends a connecting or cross-tube, M, and fitted into the tube F is a sleeve, *m*, which is operated by the stem *n* and float *o*, in the manner hereinafter recited. A fourth tube, K, also passes through the top or cover D, and into the tank or vessel to a distance just below the vent *k*.

Having thus accurately described the several parts of my carbureter, its operation is as follows: Gasoline or other hydrocarbon is poured by means of the connection L through the tube E. The sleeve *f* having been forced down, in the manner hereinbefore described,



until the holes *d* are uncovered and the valve *g* seated, the hydrocarbon finds exit through said holes, the displaced air finding vent through the tube *K*, until the lower end of said tube is closed by the hydrocarbon rising up to the same; when the pressure being equalized no more fluid can be introduced. During the filling an alarm-whistle, *p*, is continuously sounded by the escaping air until the end of the tube *K* is closed, as before-mentioned, when the alarm ceases. The cocks *r* and *s* then being closed, all communication with the outer air is shut off, and the tank *A* is filled with hydrocarbon. The sleeve *f* is now raised, as before mentioned, until the holes *d* are partially opened and the valve *g* raised from its seat. The fluid in the tank *A* at once percolates through said holes and valve onto the lamp-wicking *b* or capillaries, which absorbs it and becomes saturated therewith. When the lamp-wicking thus becomes thoroughly saturated, the surplus fluid drops to the bottom of the capillary-chamber, displacing the air therein, which finds exit through the pipe *I*, and out of the vent *k* into the tank *A*; but, the capillary-chamber can only be filled up to a level that will cover the lower end of the tube *I*, when the filling will cease. The lamp-wicking or capillaries being in this way charged with hydrocarbon, street gas is introduced through the tube *G*, which, passing through the tube *H*, enters the capillary-chamber, surrounds the capillaries or lamp-wicking, (which by reason of its scroll-shape presents large surface to the gas,) and is charged with carbon vapor, and passes through the tube *F* into the building for consumption.

If, from any unforeseen accident, the capillary-chamber should become entirely flooded, (as oftentimes occurs) it is clear that the tube *H* would be closed by fluid, and the supply of gas cut off, in this way putting out the lights. To obviate this difficulty (and therein lies the chief merit of my invention) I introduce in the tube *F* a stem, *n*, the lower end of which is secured to the float *o*, and the upper end to the sleeve *m*, so that as the fluid rises in the cap-

illary-chamber, with a tendency to flood the same, the float is forced upward, the sleeve *m* forced past the mouth of the cross-tube *M*, and the pure street-gas will then find easy passage through said cross-tube *M* into the building, and the lights will continue to burn, although the gas will be uncarbonized. It is scarcely necessary to say that, under ordinary circumstances, the weight of the float *o* keeps the mouth of the cross-pipe *M* effectually closed until it is opened in the manner above recited.

The vent *K* answers a double purpose, inasmuch as it not only acts as a vent, but it also allows the gas to escape from the surface of the hydrocarbon in the tank *A*, when the same is being filled through the tube *I* to the capillary-chamber, and thence by the tube *F* to the burners.

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

1. A carbureter, provided with an appliance by means of which the supply of gas is maintained, when the carbureter is flooded, as described.

2. A carbureter, with an alarm denoting that the same is filled.

3. In a carbureter, the tube *I* and vent *K*, in combination with the tank and capillary-chamber, as a means of allowing vapor to flow from the tank into and through the capillary-chamber to the burners, and for regulating the height of fluid in the capillary-chamber.

4. A carbureter, having the fluid supply to both the tank and capillary-chamber, regulated by a sleeve and valve, in one tube, and adjusted by one crank.

5. In a carbureter, the combination of an automatic feed-tube with an independent cut-off tube, whereby the supply of gas is maintained in the event of flooding.

6. A carbureter, having an independent supply-pipe, *M*, in combination with a float.

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Witnesses:

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