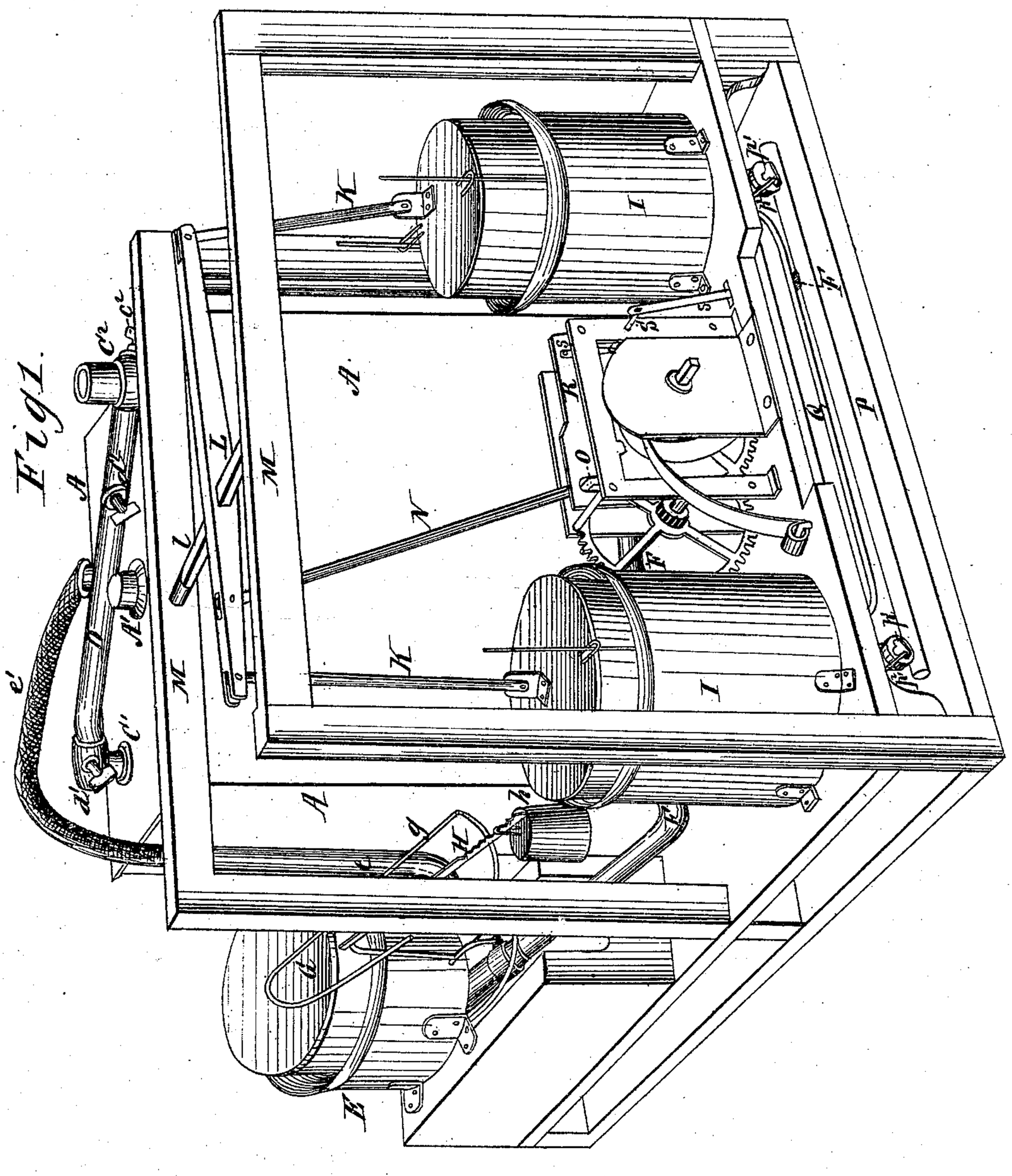
4 Sheets--Sheet 1.

J. M. CAYCE.
Carbureters.

No. 150,827. Patented May 12, 1874.

Fig 1.



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4 Sheets--Sheet 2.

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Carbureters.

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Fig. 2.

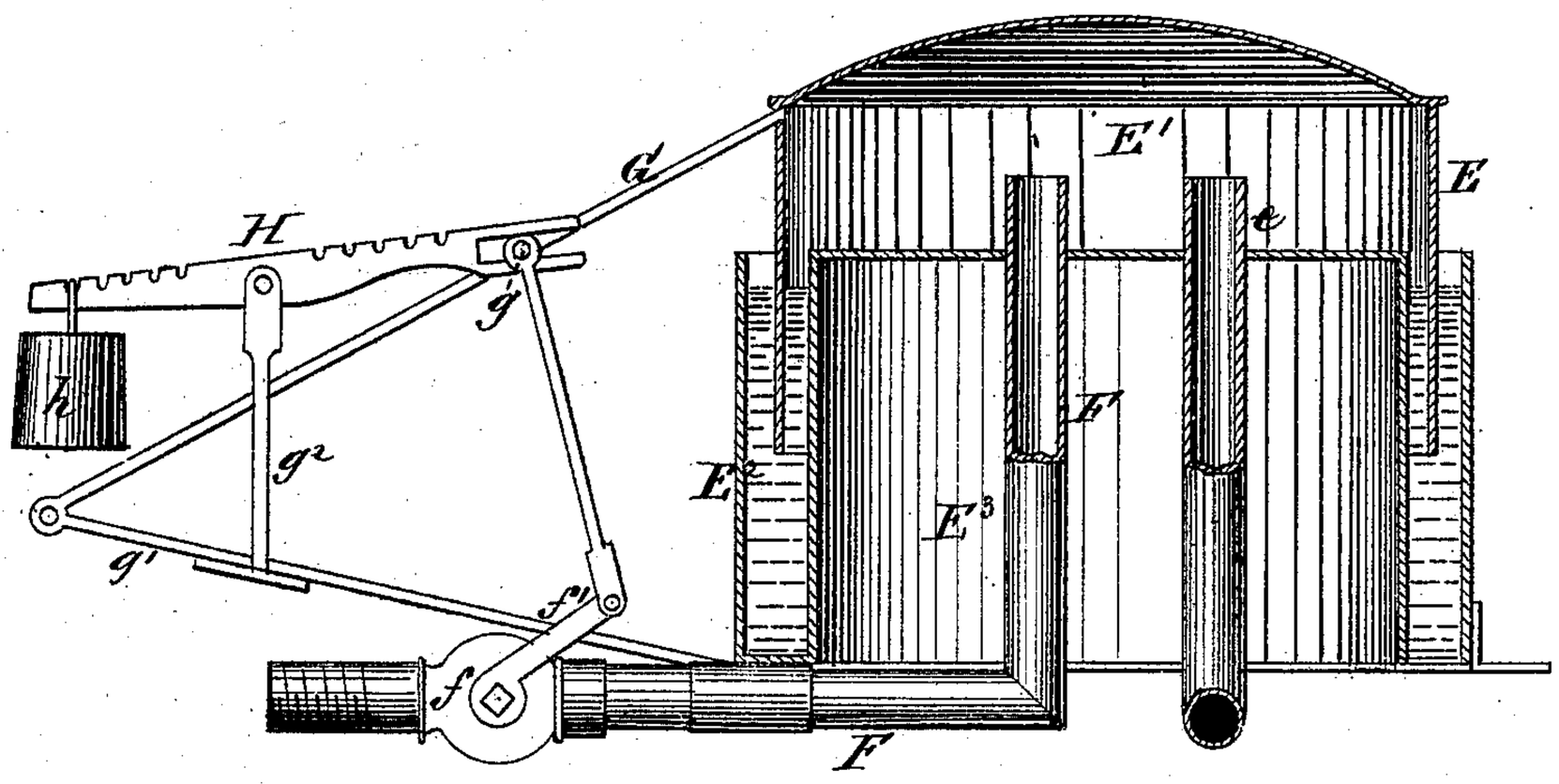
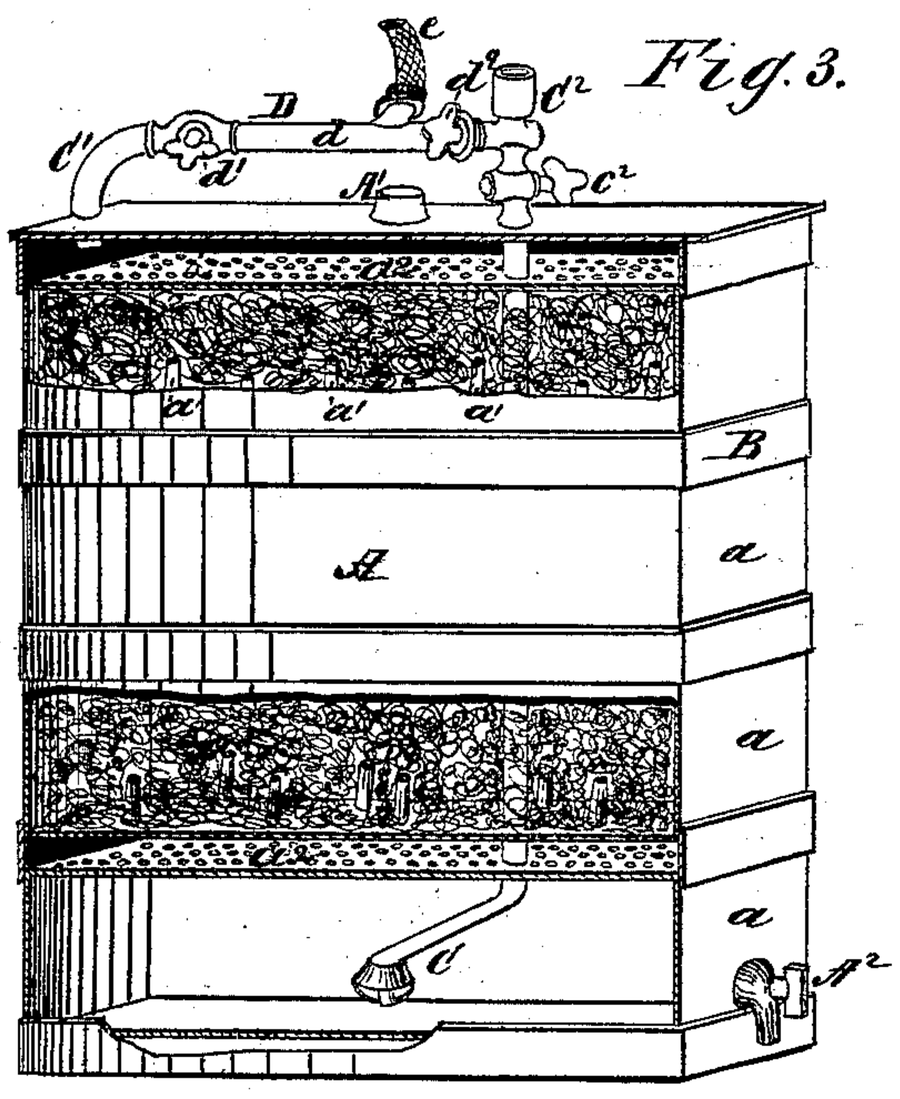


Fig. 3.



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4 Sheets--Sheet 3.

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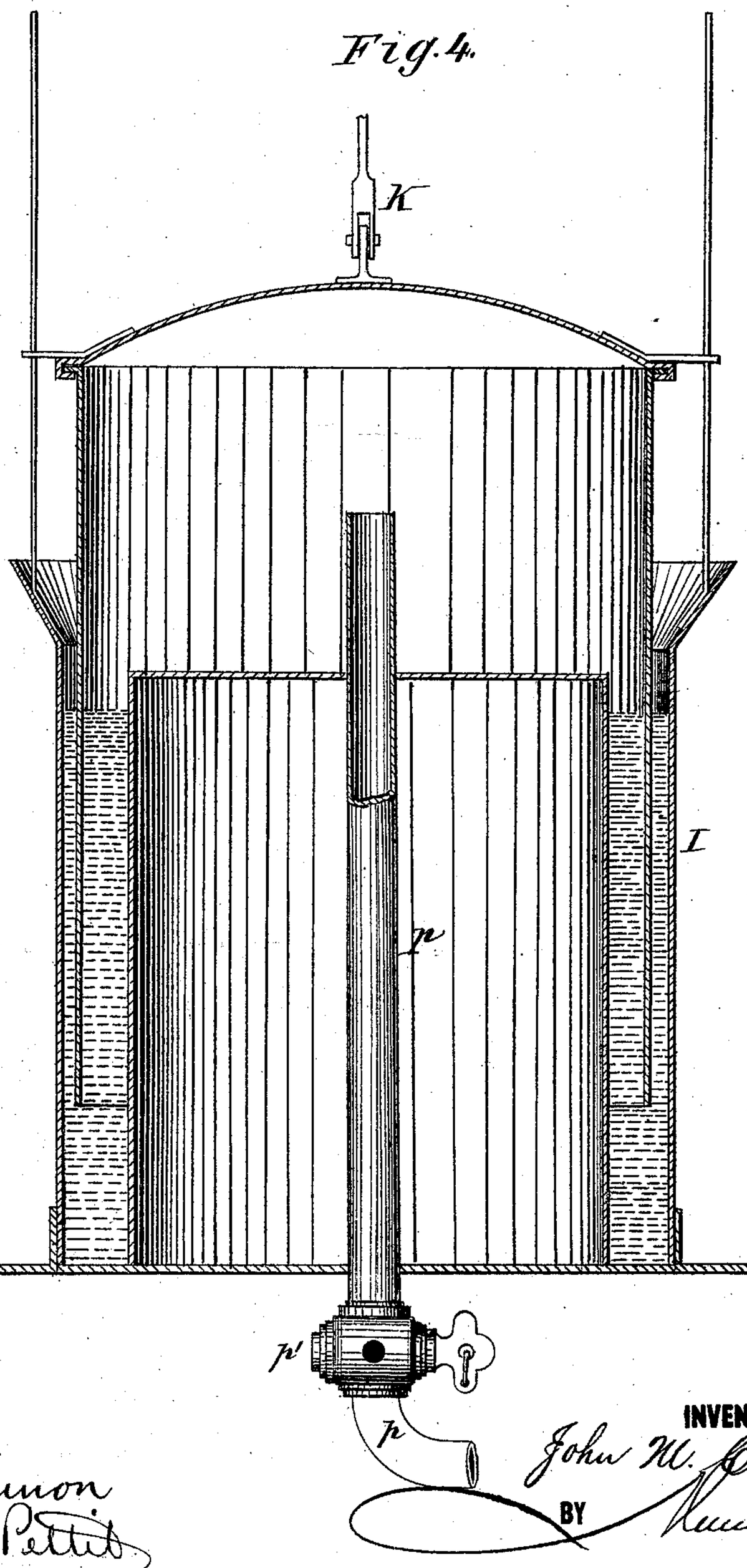
Carbureters.

No. 150,827. Patented May 12, 1874.

Fig. 4.



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Carbureters.

No. 150,827. Patented May 12, 1874.

Fig. 5.

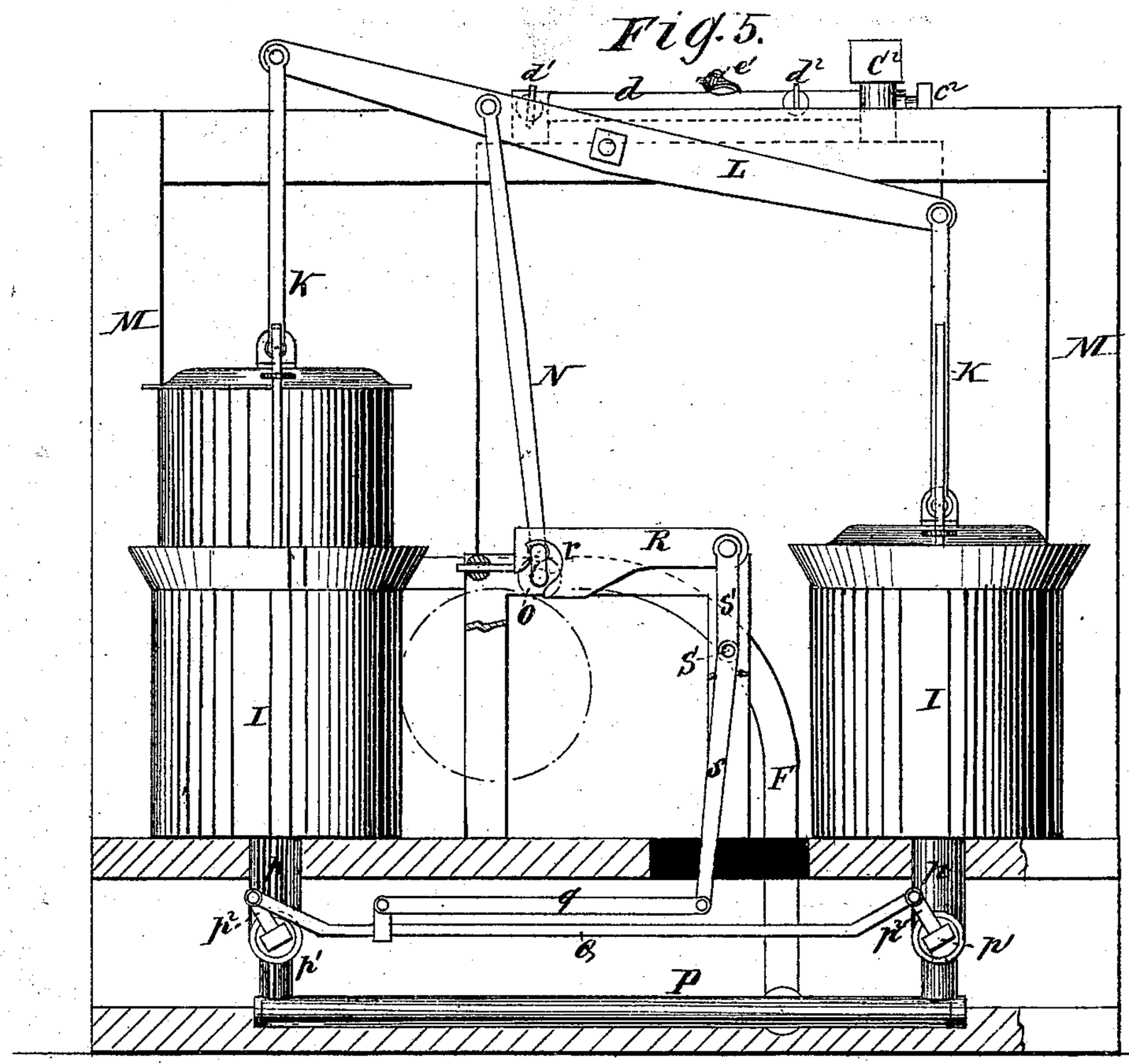


Fig. 6

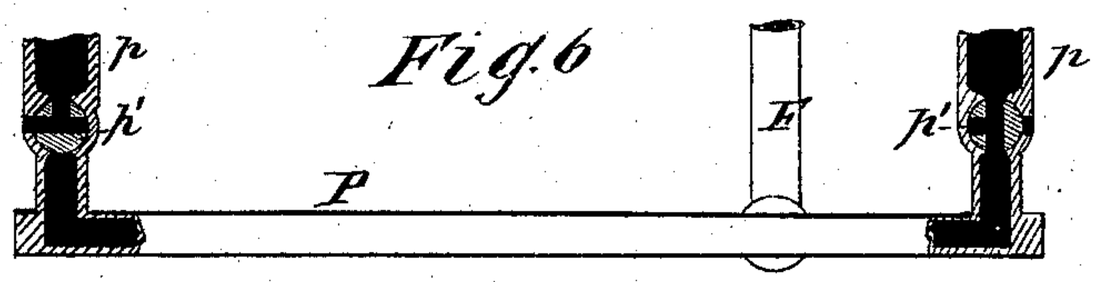
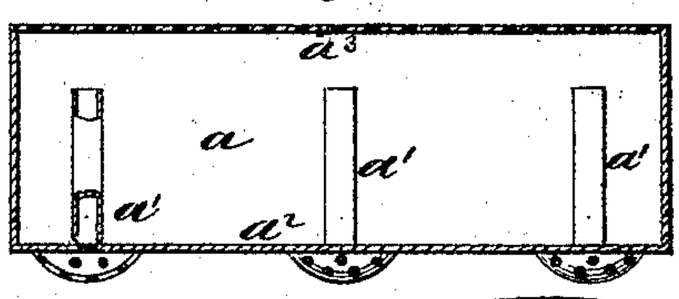


Fig. 7.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN M. CAYCE, OF FRANKLIN, TENNESSEE.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **150,827**, dated May 12, 1874; application filed April 28, 1874.

To all whom it may concern:

Be it known that I, JOHN M. CAYCE, of Franklin, in the county of Williamson and State of Tennessee, have invented a new and Improved Carbureter and Air-Feeder; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a perspective view of the whole apparatus; Figs. 2, 3, 4, sectional elevations of the governor, carbureter, and pump; Fig. 5, a side elevation; and Figs. 6 and 7 are sectional detail views of pump-valves and compartments of carbureter.

This invention relates to and consists in means whereby air may be carbureted and supplied to burners in a novel and economical manner, as hereinafter fully described, and pointed out in the claims.

A represents a carbureter, composed of light and easily-handled sections, held together by bands B, whose joints are united by some cohesive material which will melt under a moderately high temperature. The object of this is to enable the parts to be separately and readily removed in case of a fire on the premises, or in the building where the carbureter may be used. Each section *a* is provided with open tubes a^1, projecting from a close bottom, a^2, has a reticulated top, a^3, and is filled with cotton or other absorbent. The several sections are separated by the bands B, so as to have an intervening space between the bottom a^2 of one and the top a^3 of the next subjacent one. The oil, being poured through a top opening, A^1, spreads over the reticulated top plate a^3, saturates the absorbent in the highest chamber, and rises to the top of tubes a^1, then passes through to the next section *a*, and in the same way to the lowest. Here it is only permitted to rise to a level with an opening, or indicator and opening, A^2, which notes a sufficiency of supply. The object of these several compartments is to prevent a difficulty incident to a single-chambered vessel, namely, that when the hydrocarbon is entered, gravity causes it to percolate in streams, through the absorbent, to the bottom of the vessel, thereby not saturating the absorbent thoroughly in all parts, and also indicating a sufficiency of supply at the indicator-opening A^2 before it has been attained. This has had the effect hitherto of causing the air to be unequally and imperfectly carbureted. C is the pipe that receives the carbureted air at its bottom *c*, the latter, as well as the bottoms of the tubes, being prevented from filling or being clogged with cotton by an interlaced wire or other analogous protector. The air is forced by pressure into the carbureter through inlet-pipe C^1, and therefrom through outlet-pipe C^2, from the latter of which it finds its way to the burner, the supply being regulated by a cock, c^2. These two pipes are connected by a short T-pipe, D, whose stem *d* leads to the air-supply, and which is also provided with the cocks d^1 d^2, one on each side. The object of this connecting-pipe and this arrangement of cocks is to overcome another difficulty in air-carbureting machines, namely, the oversupply of the air with hydrocarbon, which causes the light to smoke, and lessens its clearness of illumination. When the light is found to smoke, I close partially the cock *d*, and open the cock d^1 more or less, thereby allowing a portion of the air to mix with that which has been carbureted, and thus varying the proportion of oxygen and carbon to suit my purpose. By observing the flame I can thus adjust the relative proportions until I obtain a clear, strong, and beautiful light. E is the governor, which communicates with the T-pipe D by means of the pipes *e e'*, and consists of the inverted cup E^1 and tubes E^2 E^3, the latter two conjoined at the bottom, and the one E^3 having a close top. The space between the parts E^2 E^3 is filled with water or other liquid, and the whole forms a liquid-valve. The air-chamber is thus made to increase or diminish in size, according to the weight which is brought to bear upon it. Of course, as soon as the air fills the chamber, it is forced through pipe *e*. F is the pipe through which a double-action pump forces the air into vessel E. To the top of inverted cup E^1, I attach rods G, having the cross-bar *g*, and pivot them to fixed bars g^1 g^1; and on a rigid vertical rod, g^2, I pivot a lever, H, which has a slot or bifurcated end, in which is held the cross-bar *g*, while on the other side of fulcrum is placed an adjusta-

ble weight, *h*. With the cross-bar I connect the cock *f* of air-pipe F by a pivoted rod, *f'*. By this means I govern or regulate the pressure of carbureted air at the burner, and prevent the blowing, flickering, and irregularity of the flame, the said pressure being always first felt upon the valve E^1, which rises and limits, by the cock *f*, the supply of air, and consequently the pressure. If, from any cause, the latter tends to fall, the valve opens to a suitable extent, so that the pressure is always preserved about or nearly at what is indicated by the position of the movable weight *h*. I I represent the air-pumps, constructed upon the same principle as the governor, connected by the pivoted rods K K and centrally-fulcrumed lever L, whose fulcrum-bar *l* rocks in and between the frames M M. This is vibrated by a pitman, N, on the crank-shaft O, that is rotated by clock or other mechanism, driven by a weight or spring. P is a pipe, which connects the short-valved pipes *p p* of the two air-pump cylinders at the bottom. The valves p^1 p^1 are rocked in their seats by the arms p^2 p^2, which are connected by a rod, Q, and the latter is connected with the sliding yoke-bar R by the pivoted bar *q* and rock-shaft S, having arms *s s'*. The bar R is hollowed out at *r* to form a yoke, within which works the drive-crank O. When the latter is off the dead-points and has a tendency to move suddenly and more rapidly, thus producing a jerking motion, it is required to move this slide, its impulse is relieved, and its motion thereby made more uniform; at the same time it opens and closes the air-inlet valves alternately and with great regularity.

Having thus described my invention, what I claim as new is—

1. The carbureter A, made in sections *a*, conjoined by bands B, and jointed to said bands by an easily-fusible cohesive material, as and for the purpose specified.

2. The combination, with a carbureter's air inlet and outlet pipes, C C^1, of a T-pipe, D, leading to the air-supply, and having cocks *d* d^1, arranged as and for the purpose specified.

3. The combination, with a governor, E, of the pivoted bars G *g*, the weighted lever H, the pivoted rod *f'*, and air-pipe cock *f*, as and for the purpose described.

4. The sliding yoke-bar R, connected by mechanism, substantially as described, with the air-inlet valves p^1 p^1, and operated by the drive-crank O of a double-action pump, all combined as and for the purpose specified.

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Witnesses:

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