

A. HENNING.
Carbureting-Machine.

No. 209,479.

Patented Oct. 29, 1878.

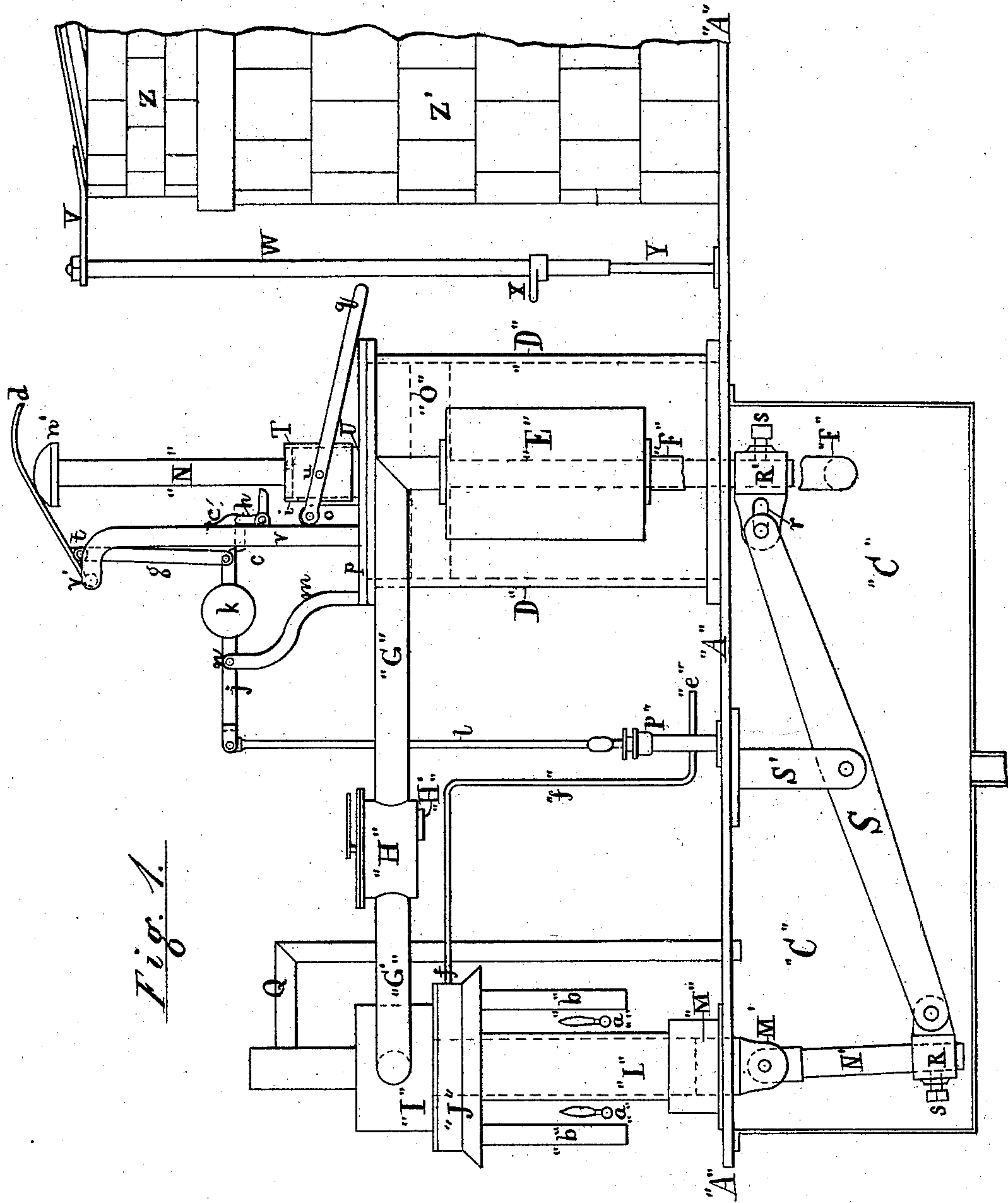


Fig. 1.

Attest:

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Inventor.

Abel Henning

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Fig. 3.

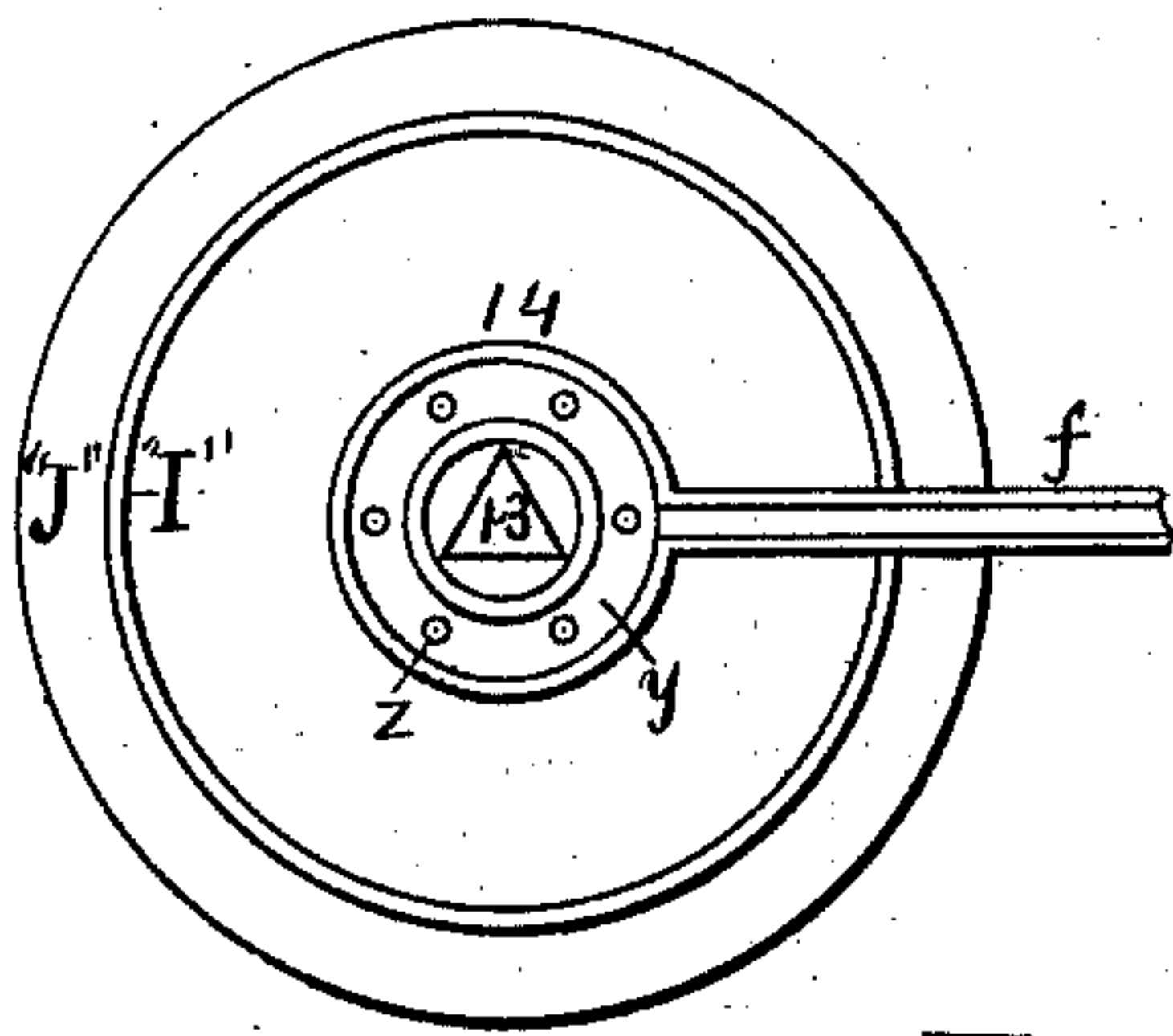
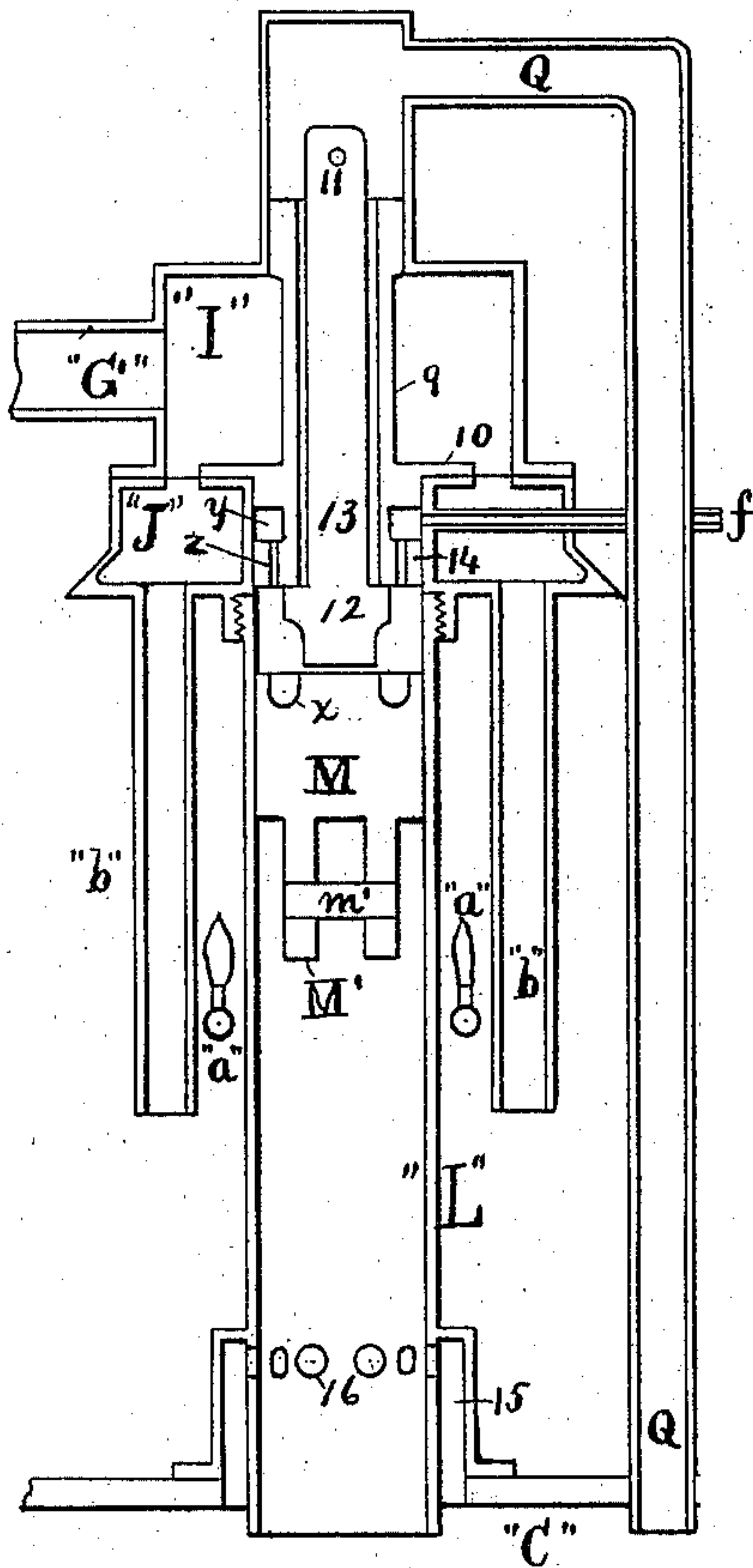


Fig. 2.



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UNITED STATES PATENT OFFICE.

ABEL HENNING, OF BELLEVILLE, NEW JERSEY.

IMPROVEMENT IN CARBURETING-MACHINES.

Specification forming part of Letters Patent No. 209,479, dated October 29, 1878; application filed July 22, 1878.

To all whom it may concern:

Be it known that I, ABEL HENNING, of Belleville, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Carbureting-Machines, of which the following is a specification:

Figure 1 is a view of all the parts connected, the receiver "C," beneath the bed "A," being shown in section. Fig. 2 is a sectional view of the generator. Fig. 3 is a plan of the pressure-cylinder, generator, and the heater combined.

My invention relates to certain improvements in carbureting-machines, which are presented in this specification partly in combination with other improvements for which I have made an application for Letters Patent, the said application having been filed at the Patent Office April 19, 1878, and allowed July 1, 1878.

My new improvements are shown in the drawings hereto annexed, and the parts described in my former application are indicated by the same letters there used, and distinguished by quotation-marks attached thereto—as the air-pump "D" with air-chest "E."

My invention consists in a new mode of combining the various parts already used to constitute a self-acting gas-machine, and in several modifications of the construction employed for those parts.

The feed-pump is operated by a new connection to the air-pump rod. The delivery of the oil into the generator from the feed-pump is effected in a novel manner. The piston of the generator-cylinder is constructed in a peculiar manner to retain and evaporate the oil. The generating-cylinder already patented by me, or allowed to me in combination with an air-heater, I have now constructed with a piston for operating the air-pump; and I have devised a peculiar mode of forming an adjustable connection between the generator and air-pump.

The pressure-cylinder and generator "L" (shown in Fig. 1) performs the same function as the pressure-cylinder "L" before shown in my application referred to above; so, also, do

the regulator "H," air-pump "D," oil-pump "P," and heater "I."

The pressure-cylinder "L" is in the former application; but I have improved the mode of connecting it to the piston of the air-pump "D," as also the valve-seat, around which I inject the oil into the inside of "L," and I have combined therewith the heater "I," formerly described by me.

I have also devised a new motion or tipping device for operating the oil-pump "P" by the rod "N" of the air-pump "D."

The bed-plate of the machine is shown at "A." "I" is the heater, constructed with flange "J" and pipe "b," and discharging a current of hot air through pipe "G'" and the regulator "H" into the pipe "G" and air-chest "E."

At the regulator the hot air is mingled with cold air admitted at pipe "H'," and the air is then pumped through the cylinder D by piston "O" into the receiver "C," where it is mingled with the vapors from the generator.

Each motion of the air-pump causes the pump "P" to inject a supply of oil through pipe *f* into a groove, *y*, formed in the metal around the seat of the escape-valve 12 in the pressure-cylinder "L," Fig. 2, and a number of fine holes, *z*, extend from this groove or annular channel *y* to the surface of the valve-seat, through which holes the oil is thrown downward into the chamber below in the shape of spray or fine particles, which are much more easily vaporized than a jet of liquid oil.

The piston M is provided to transmit motion to the air-pump, and it is formed with ears M' and a link-pin, *m'*, to which a link or rod, N', is attached beneath the piston; and a coupler, R, is secured to rod N' by a set-screw, *s*, so that connection can be made to a lever-beam, S, pivoted beneath the bed-plate inside the receiver "C," and the piston M be adjusted at pleasure in the pressure-cylinder "L." This adjustment is rendered necessary by the construction of the valve 12, (shown in Fig. 2,) which is designed to be closed by each upward movement of piston M. The other end of beam S is connected, by a pin working in a

slot, r , in coupler R' , (similar to R ,) to the lower end of the piston-rod "N," attached to the piston "O" of the air-pump.

A set-screw, s , secures the coupler R' to the rod, and permits of the requisite adjustment, while the slot r compensates for the curved motion of the beam S , which is hinged or pivoted at S' .

The construction and operation of the escape-valve 12 are as follows: The heater I being formed, as formerly described, with a flange, J , the escape-pipe 9 is secured by a flange, 10, to the top of J , and projects upward through the heater I into a passage furnished with a pipe, Q . A pin, 11, prevents the valve from falling too far when open; and the stem 13 being smaller than the bore of pipe 9, the vapors in cylinder "L" have a free escape when the valve is open.

The piston M , after each impulse of the contained vapor, is forced upward by the superior weight of the piston "O," acting through the beam S , as described above, and, coming in contact with the bottom of valve 12, forces it against its seat 14, which is formed by thickening the lower end of the pipe 9. The vapor generated at the next injection of oil is thus confined in the cylinder L , and presses upon its piston until the latter, in its descent, passes the holes 16 formed in the sides of the cylinder near the bottom, which, connecting by the passage 15 with the receiver, afford an escape to the vapor from the cylinder.

The valve 12 opens when the pressure falls too low to sustain its weight, the pipes 9 and Q then affording a vent for the inclosed vapor while the piston M is rising at the next stroke.

I provide a number of cavities, x , in the top of the piston M , to receive any oil that may not be vaporized at first, the contact with the hot piston securing its evaporation when retained in the pocket x for a little time, while the oil would be diffused over the whole side of the generator and work down into the receiver if not thus retained.

Having described my improvements in the generators, I will explain the construction of the mechanism devised to operate the oil-pump "P."

My purpose was to avoid securing any of the operative parts to the bed-plate "A," and I have thus made them so compact in form that they may all be secured upon the top p of the air-pump "D."

I have also provided a sliding sleeve, T , arranged upon the gland around the rod "N," where it passes through the top plate of the air-pump, to be moved by the rising of the gas-holder, if desired, and stop the action of the entire machine.

The lever for working pump "P" is shown at j , pivoted by its middle, n , to a standard, m , secured to the top of the air-pump; and it is provided with a weight, k , which depresses

the end of the lever opposite that connected to the pump-rod l when not sustained by the slide c .

The sliding catch c works in a horizontal slot made in a standard, r , at the level of n ; and a bell-crank, h , is hinged to the standard, and connected by its vertical arm to the slide c .

The horizontal arm projects nearly to the piston-rod "N," and is pushed downward upon each descent of the rod by a collar or head, n' , upon the top of "N." When thus pushed the crank h draws the slide c away from j , and permits the weight k to fall and operate the pump "P," as desired.

To lift the lever and weight k , a link, g , is attached to the lever near the standard r . An arm, d , is so pivoted to the top of this standard at v' that the rod "N" raises it at each stroke, and lifts the link g , pinned to it at t , as well as the lever j and weight k . The slide c is then pushed under the lever j by a spring, c' , and the whole pumping mechanism is reset.

To stop the action of the machine when the gas-holder Z is full, I provide a lever, q , hinged at o close to the gland U , and, after connecting it to the sleeve T at u , extend the longer end beyond the side of the air-pump "D," to be moved by a tappet, X , attached to the gas-holder.

I secure an arm, V , to the top or side of the holder Z , (which is shown in the drawing as elevated slightly above the tank Z' ,) and hang therefrom a pipe, W , which is kept vertical by a rod, Y , secured to the bed-plate "A."

When the gas-holder rises, the tappet X lifts the sleeve T and arrests the descent of the rod "N" before it has tripped the bell-crank h . The injection of oil being stopped the machine comes to rest. At i a notch is cut in the sleeve, to permit the rise of the same without pushing crank h before it.

I am aware that various devices have been used to perform certain of the operations described herein; and I do not therefore claim, broadly, either the use of the adjustable couplers R and R' , or the method shown of operating the feed-pump by power derived from the generator, which in its turn receives its supply of oil from the pump to generate such power; but,

Having shown fully the special construction and operation of the parts that I have invented, I claim the same as follows, in the combinations described:

1. The combination of the standards v and m , supporting the levers j and d , the weight k , link g , slide c , with its spring c' , and bell-crank h , operated by head n' on rod N , as and for the purpose set forth.

2. The combination of the beam S with the coupler R , secured by set-screw to the rod N' , for operating piston M in cylinder L , and coupler R' , secured by set-screw to rod N , for

operating piston O in air-pump D, all constructed and operated as herein shown and described.

3. The piston M, having cavities x , for retaining and evaporating oil, in combination with the generator L.

4. The combination of the feed-pipe f and pipe 9, having channel y and perforations z , with the vaporizing-chamber of the generator L, substantially as and for the purpose set forth.

5. The combination, with the generator L, having piston M arranged within it, and burners a arranged without it, as herein described, of a heater, I, as herein set forth.

ABEL HENNING.

Witnesses:

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E. P. ROBERTS.