

M. E. HUNTER.

CARBURETER.

APPLICATION FILED APR. 9, 1909.

944,867.

Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.

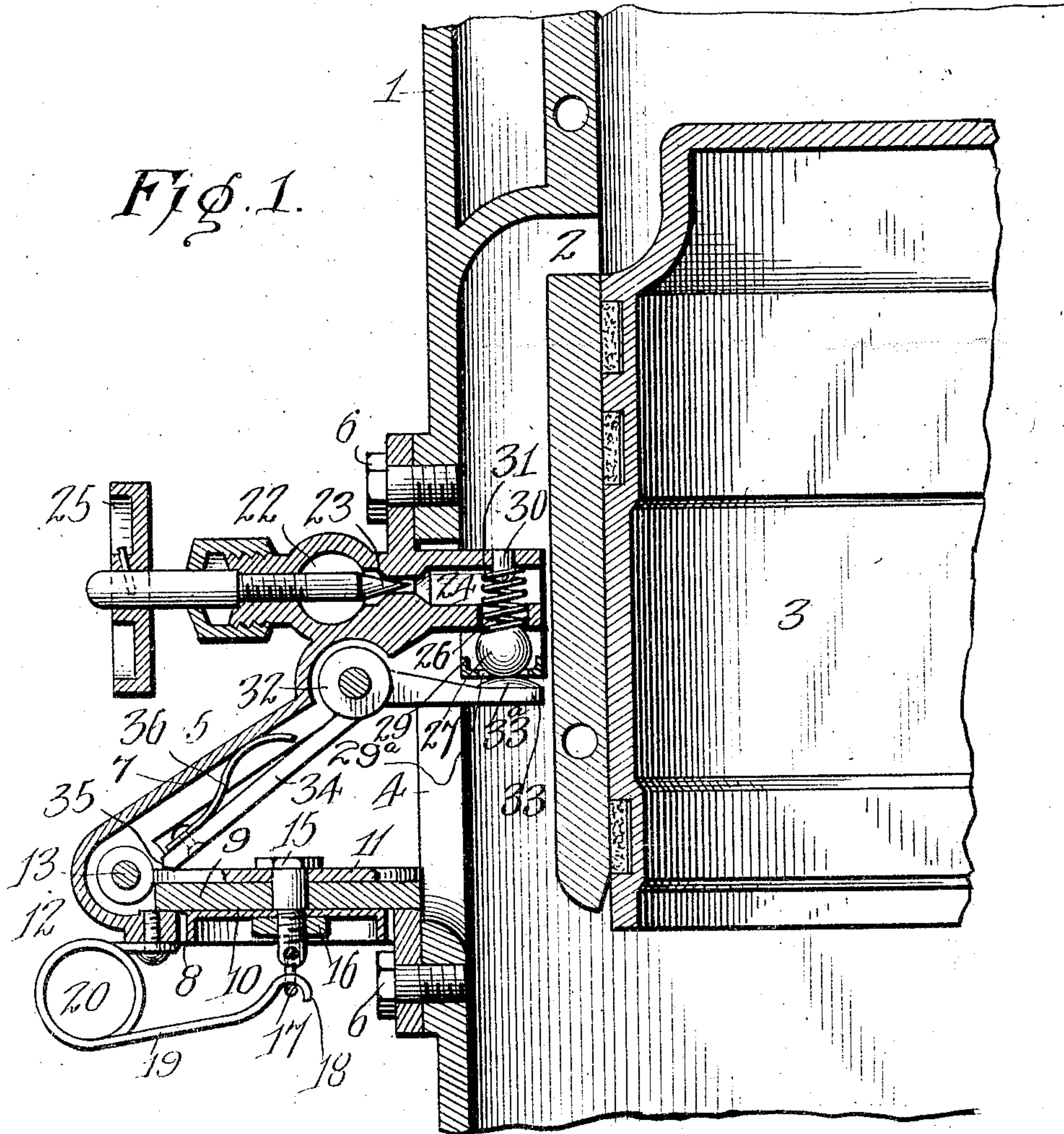
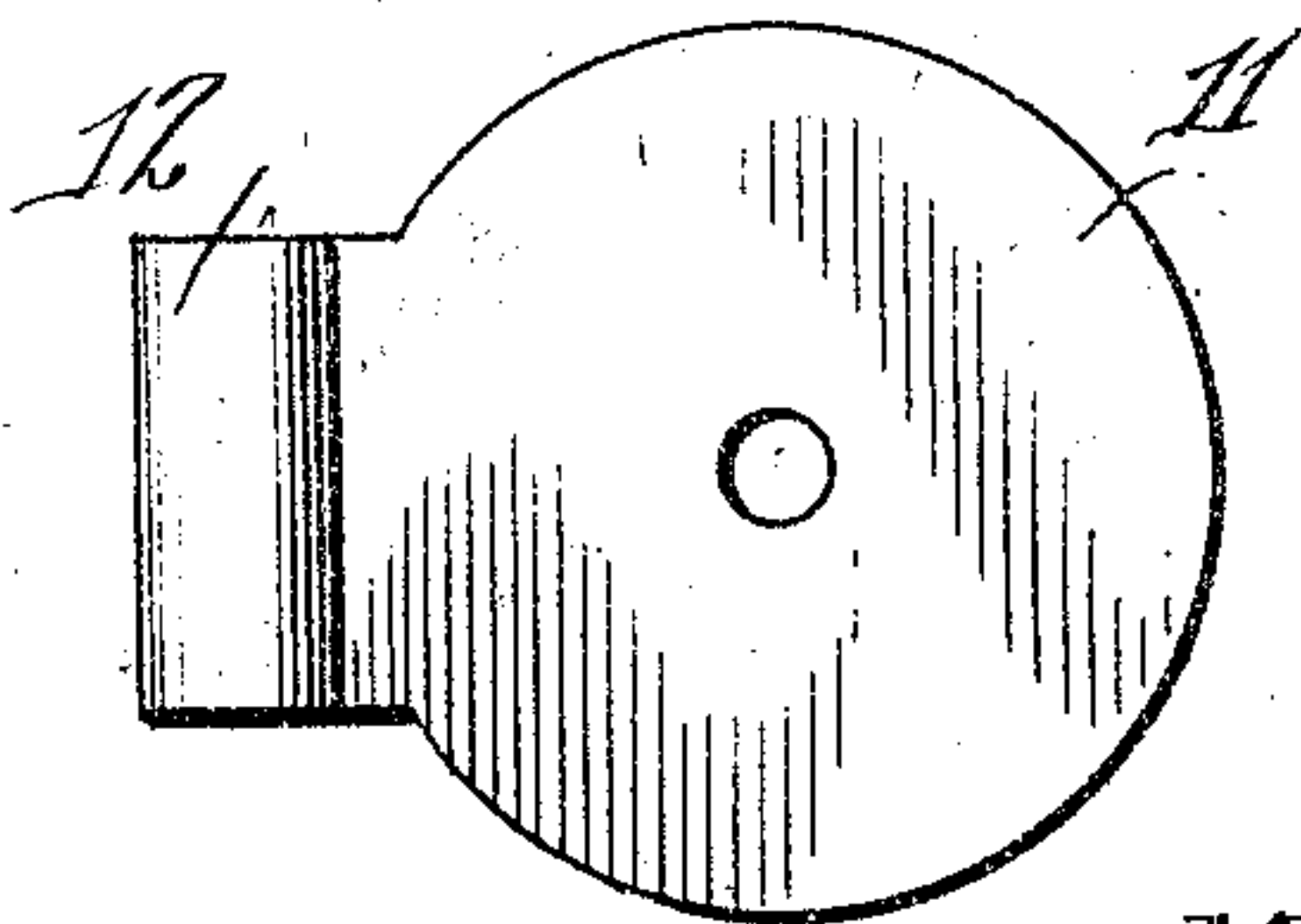


Fig. 6.



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Witnesses

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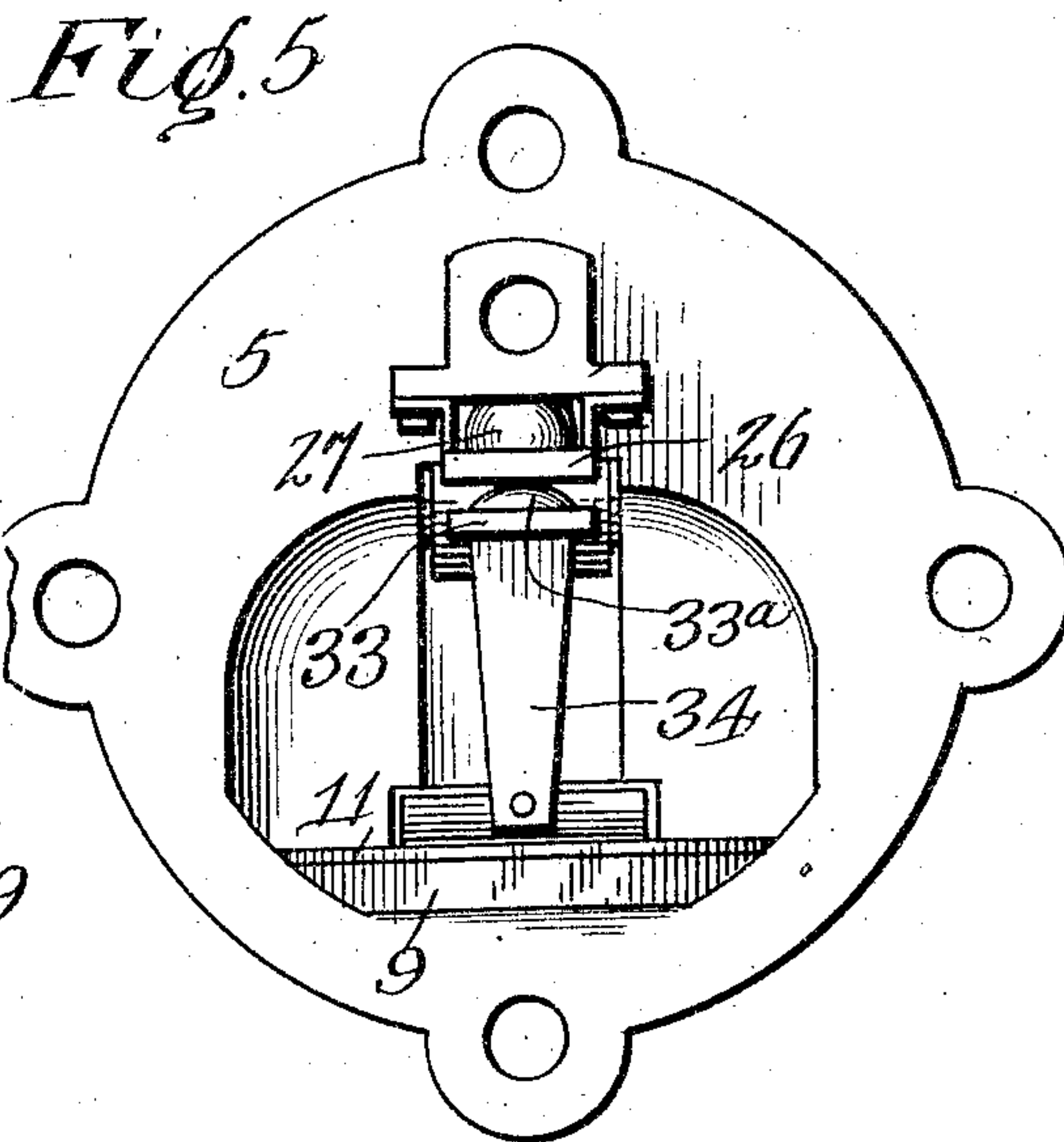
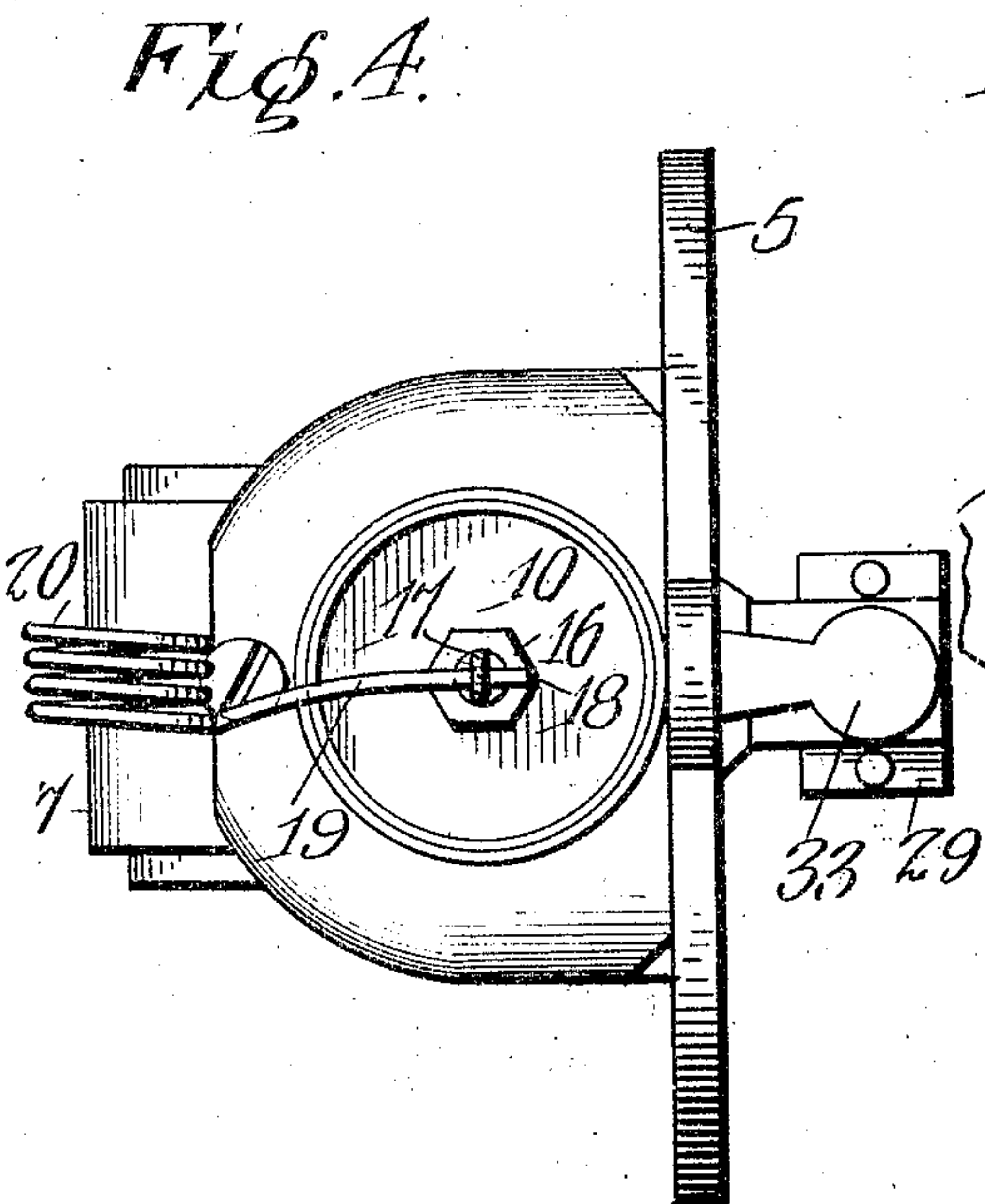
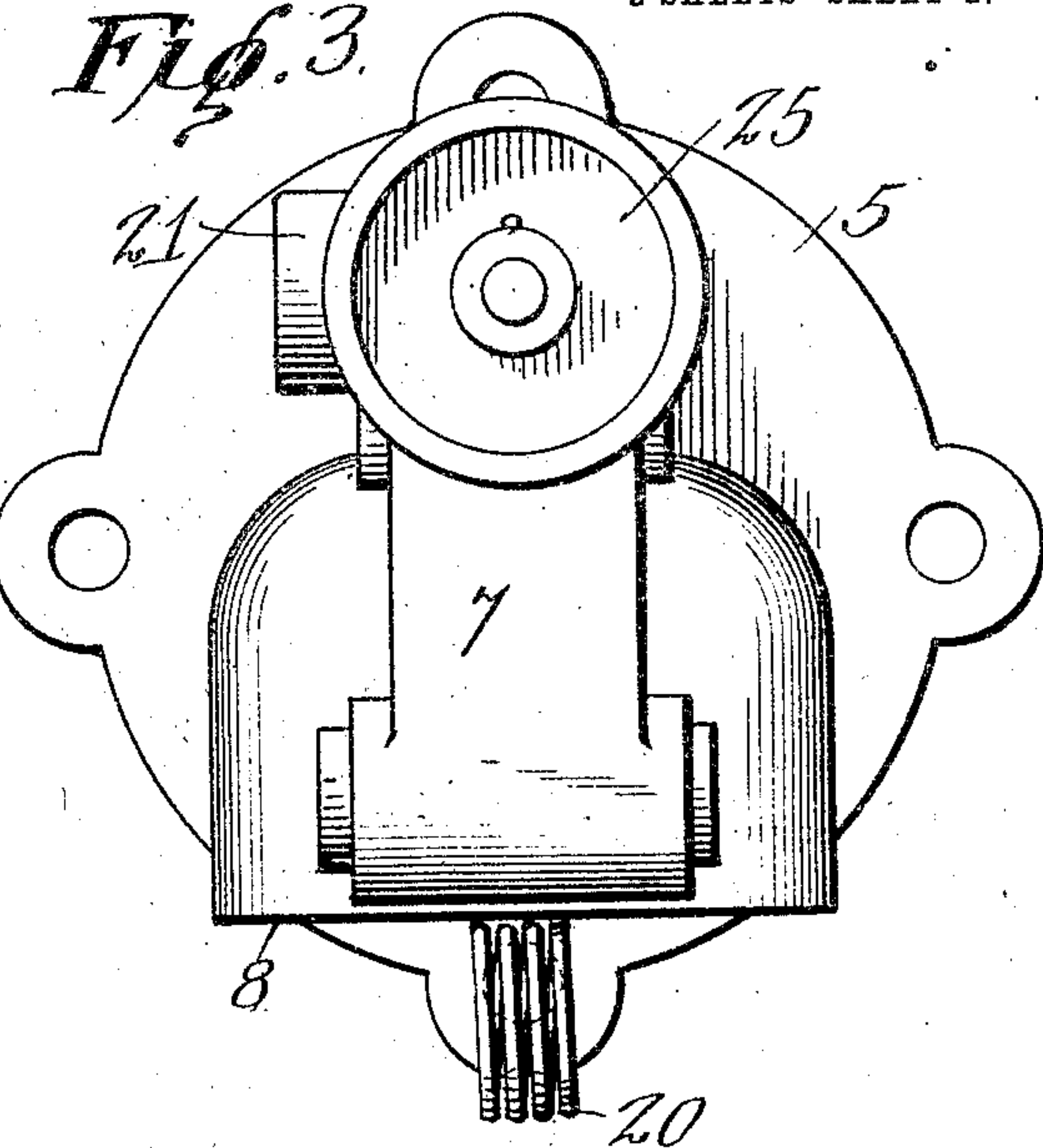
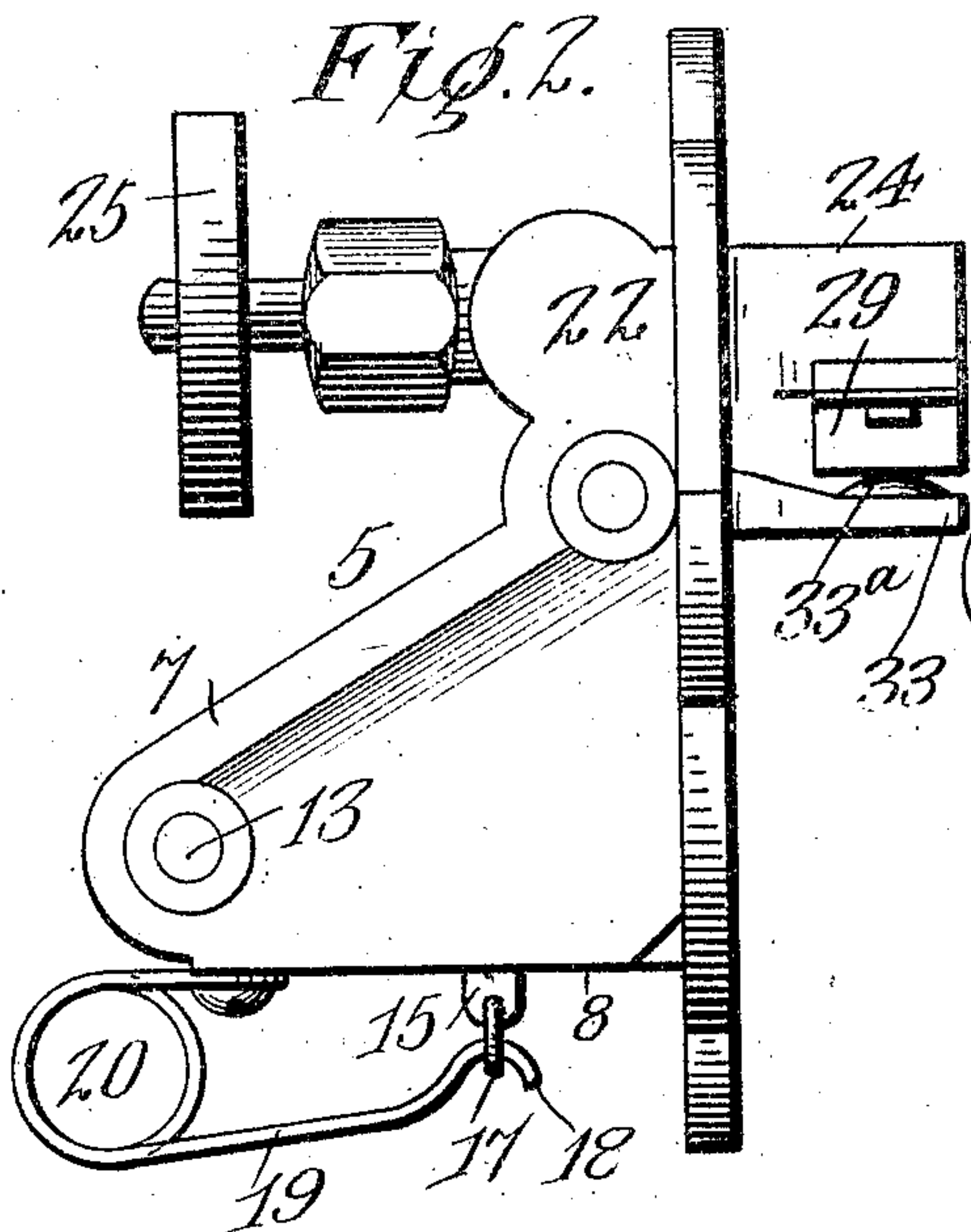
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2 SHEETS—SHEET 2.

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UNITED STATES PATENT OFFICE.

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CARBURETER.

944,867.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MURRAY E. HUNTER, a citizen of the United States, residing at Vincennes, in the county of Knox and State of Indiana, have invented certain new and useful Improvements in Carbureters, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to explosive engines, and has especially in view a fuel feeding and carbureting device therefor in which provision is made for preventing the blowing back of the fuel and also preventing the possibility of base explosions.

15 The invention is especially adapted for use in connection with two cycle, two port explosive engines in which the air is compressed in the base or crank case, and the invention contemplates the employment of automatically operating valves and valve operating mechanism whereby the gasoline is prevented from gaining access to said base or crank case, but is met by the rush of air therefrom and carried with said air to the firing cylinder.

20 In carrying out the invention as generally stated above it will, of course, be readily understood that the same is susceptible of changes in details and structural arrangements, but one preferred and practical embodiment thereof is shown in the accompanying drawings, wherein—

25 Figure 1 is a central vertical sectional view of a portion of an explosive engine showing the present invention applied thereto. Fig. 2 is a detail side elevation of the improved fuel feeding and carbureting device. Fig. 3 is an end view of the same. Fig. 4 is a bottom plan view. Fig. 5 is a view of the end of the device opposite to that shown in Fig. 3. Fig. 6 is a detail view of the air valve.

30 Referring to said drawings by numerals, 1 designates the engine casing, 2 the port thereof, and 3 a piston therein. Said engine casing 1 has an opening 4 formed in its side over which an outstanding casing 5 is fitted and held in rigid engagement with said engine casing by means of four bolts or screws—of which two are shown in Fig. 1—the upper and lower bolts or screws 6. Said outstanding casing 5 has an inclined outer side 7 and an open bottom 8. An air valve 35 controls the feeding of air through said open bottom 8, said air valve being formed of an

intermediate disk 9 of leather or similar material, a lower flanged disk 10, and an upper metal disk 11 having a hinge ear 12 which is in pivotal or hinge engagement with a pintle 13 carried by the lower outer corner of said casing 5. A screw bolt 15 projects through said disks and holds the same in rigid relation by means of the lock nut 16. The lower end of said bolt 15 carries a link 17 which is in engagement with a hook-shaped end 18 of an arm 19 projecting from a coiled spring 20 connected to the bottom of said casing 5. The tension of said spring 20 is exerted to retain the valve in a closed position. The upper portion of said casing 5 is provided with a fuel port 21 which communicates with a valve chamber 22 having a passage way 23 which communicates with a fuel chamber 24. A needle valve 25 controls the passage way 23. The fuel chamber 24 is provided with an opening 26 in its bottom, the lower surface of which forms a valve seat for a valve 27, said valve being preferably a ball. A cage 29 provided with a bottom opening 29^a surrounds the bottom opening of the fuel chamber, said cage being held in a pendent position from said fuel chamber. The upper portion of the fuel chamber carries a lug 30 which acts as a guide for a spiral spring 31 housed within chamber 24 and projecting through the opening 26 and normally forcing said ball valve 27 from its seat and to a position where it will close the opening 29^a of the cage 29. A rocking lever 32 is pivotally mounted adjacent to the upper portion of said casing 5 and has one arm 33 projecting under the cage 29 and provided with a lug 33^a which raises the ball valve 27 from the opening 29^a when said lever is rocked in one direction. Said lever is also provided with a downwardly inclined arm 34 which projects adjacent to the inclined outer side of the casing 5 and has its end beveled as indicated at 35 and resting slightly above the top disk of the air valve. A spring 36 has one end fastened to the arm 34, its other end bearing against the inclined side of said casing 5 and exerting a tension to force said arm 34 outwardly to cause the arm 33 to project its lug 33^a through the opening 29^a of the casing cage 29 to remove the ball 27 therefrom and cause it to seal the valve seat 26.

The operation of the invention is as follows:—Assuming the piston to be at its lowermost position, and the air valve closed, it will be seen that on the upstroke of the

piston a vacuum will be created in the crank case and also that the suction will raise the air valve and permit air to pass through the casing 5 and pass down to the crank case. As the air valve opens, lever arm 34 will be rocked and cause the arm 33 to release the ball 27 which assisted by the spring 31 will seat itself at 29^a allowing the fuel to enter the cage 29 and hold it in suspense until the piston has reached the limit of the upstroke. On the downstroke of the piston, the air valve will immediately close, and the rocking lever will engage the ball valve, project its lug 33^a through the bottom of cage 29, lift valve 27 against the tension of spring 31 and cause said valve to close the outlet from the fuel chamber and at the same time permit the fuel in the cage to flow through the bottom opening 29^a. Said downstroke of the piston also compresses the air in the crank case and when the limit of such stroke has been reached, the port 2 will open so that the compressed air will rush upwardly toward the cylinder and meet the fuel which has flowed from the cage and carry it along with such force as to thoroughly vaporize the same by the time the cylinder is reached. This operation, is of course, continued with the strokes of the piston.

It will be seen from the foregoing that as the ball valve 27 is located on the outside of the fuel chamber it prevents the pressure from the crank case blowing the fuel back. And it will also be seen from the foregoing that as the gasoline or other fuel never reaches the crank case, all danger of base explosions are obviated.

What I claim as my invention is:—

1. A device of the character described comprising an engine casing, an automatically operating air valve therefor, a rocking lever having an arm held in the path of movement of said valve, a fuel chamber in said casing, a cage carried by said chamber, said chamber and cage being provided with discharge outlets, a valve in said cage and controlling said outlets, and a second arm carried by said lever and adapted to retain said valve in a position to close the outlet from the fuel chamber when the air valve is closed.

2. A device of the character described comprising an engine provided with an opening, a casing surrounding said opening and provided with an open bottom, a spring-held valve for closing said opening in the bottom of the casing and adapted to be drawn to an open position by the upstroke of the piston, a lever mounted in said casing and provided with two arms one of which is held in the path of movement of said air valve, a fuel chamber carried by said casing and projecting through the opening of the engine, a cage depending from said fuel chamber, a valve in said cage and control-

ling the discharge from said fuel chamber, said valve being held to a chamber closing position by one of the arms of said rocking lever when the air valve is closed, and a spring for returning said ball to the cage when the pressure of the said arm is removed therefrom.

3. A device of the character described comprising an air controlling valve operated by an upstroke of the piston to admit air, a fuel chamber provided with an exterior valve seat, a cage surrounding said valve seat, a valve in said cage, and a rocking lever operated by said air valve to hold the valve to its seat when air is being compressed in the crank case.

4. A device of the character described comprising an engine casing, a piston therein, an outstanding casing carried by said engine casing, an air valve carried by the outstanding casing and adapted to be opened by the upstroke of said piston, a fuel chamber projecting into said engine casing and provided with a bottom opening and surrounding valve seat, a spring carried by said fuel chamber and projecting through said opening, a cage depending from said fuel chamber and surrounding the bottom opening therein, a ball valve seated in said cage and normally held away from the opening in the fuel chamber by said spring, and a rocking lever operated by the opening movement of said air valve to cause said ball valve to open the outlet from said fuel chamber.

5. A device of the character described comprising an engine casing, an air valve therefor, a fuel chamber in said casing and provided with a discharge outlet, a cage depending therefrom and surrounding said outlet, said cage also being provided with an outlet, a valve in said cage and controlling said outlets, means for normally holding said valve away from the outlet of the fuel chamber and closing the outlet of the cage to permit fuel to flow into the cage, and means operated by the opening of the air valve to reverse the position of said cage valve.

6. A device of the character described comprising a casing, a fuel chamber therein provided with a bottom outlet, a cage depending from said fuel chamber and surrounding said outlet, a valve in said cage and normally sealing the discharge outlet therefrom, and means for causing said valve to seal the outlet from the fuel chamber while air is being compressed in the base of said casing.

7. A device of the character described comprising a casing, a fuel chamber therein and provided with a discharge outlet, a cage depending from said fuel chamber and provided with an opening in its bottom, a valve in said cage, a spring carried by said fuel chamber and normally holding said

valve in position to close the opening of the cage, an air valve carried by said casing, and a rocking lever operated when said air valve is admitting air to cause the valve to open the outlet from the fuel chamber.

8. A device of the character described comprising an engine casing, an air controlling valve in said casing and operated by an up-stroke of a piston to admit air thereto, a fuel chamber, a cage carried by said chamber and in which the fuel is held in suspension, a valve in said cage, and means operated by the air valve and controlling the outlet therefrom and the outlet of the fuel chamber for controlling said cage valve.

9. A device of the character described comprising an engine casing, air feeding means therein, a fuel chamber in said casing, a cage receiving the fuel from said chamber and holding the same in suspension during the cycle of the engine, and a valve controlling the discharge from said chamber and cage, said valve being operated by the air feeding means.

10. A device of the character described comprising an engine casing, an outstanding casing carried thereby and communicating therewith, an air valve in said outstanding casing, a fuel chamber carried by the out-

standing casing and projecting into the engine casing, a cage carried by said chamber and held within the engine casing, said chamber and cage being provided with aligned discharge outlets, a valve in said cage for controlling said outlets, means for normally holding said valve in position to close the outlet of said cage, and means operated by said air valve to cause said cage valve to open the cage outlet and close the fuel outlet.

11. In a device of the character described the combination with the engine casing and air valve, of a fuel chamber projecting into said casing and provided with a discharge outlet, a cage depending from said chamber and receiving fuel therefrom and holding the same in suspension during one cycle of the engine, a valve in said cage, and means operated by said air valve for causing said cage valve to close the fuel chamber outlet when the air valve is closed and close the cage outlet when the air valve is open.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

MURRAY E. HUNTER.

Witnesses:

MABEL TAYLOR,
M. B. HORAN.