

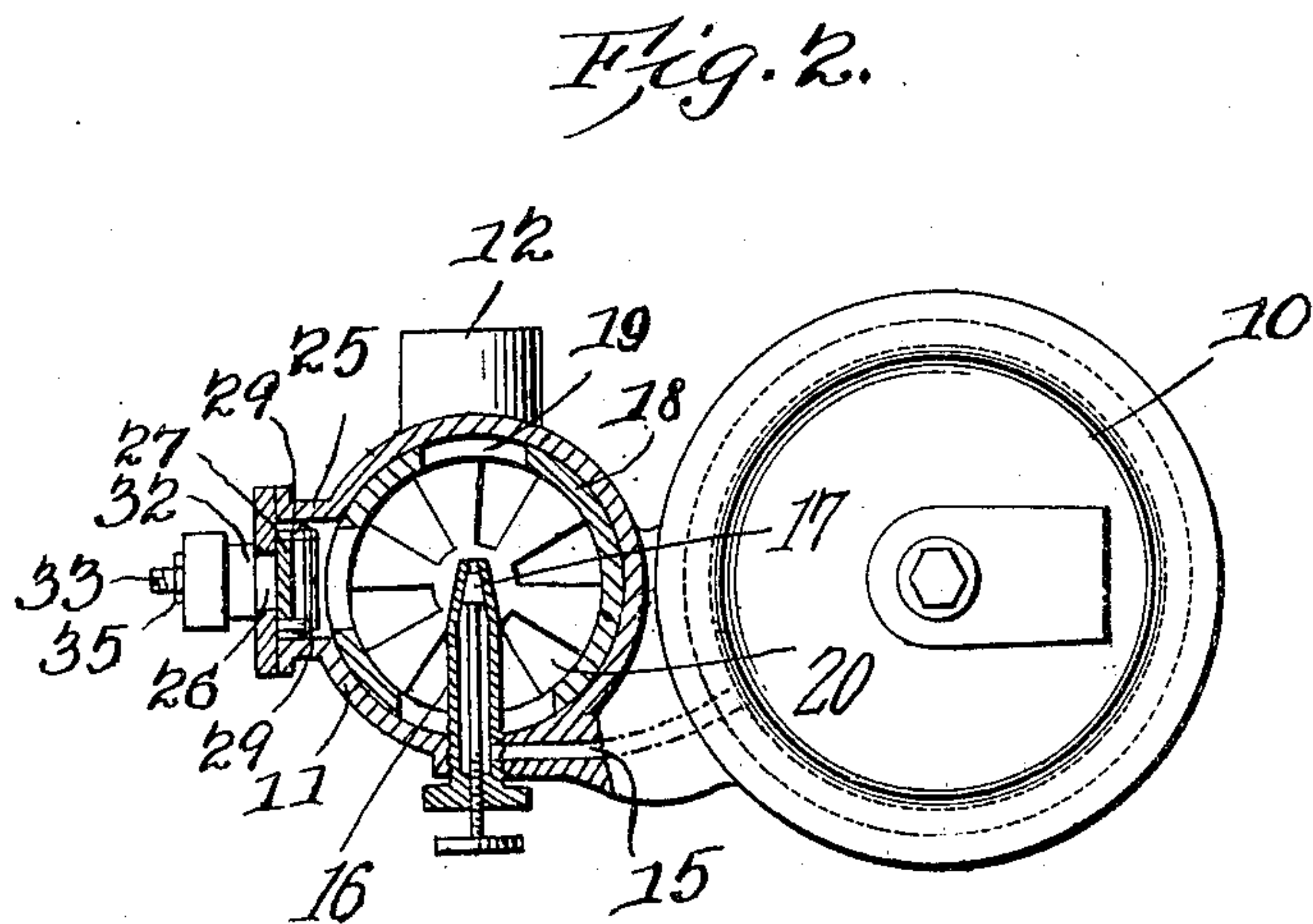
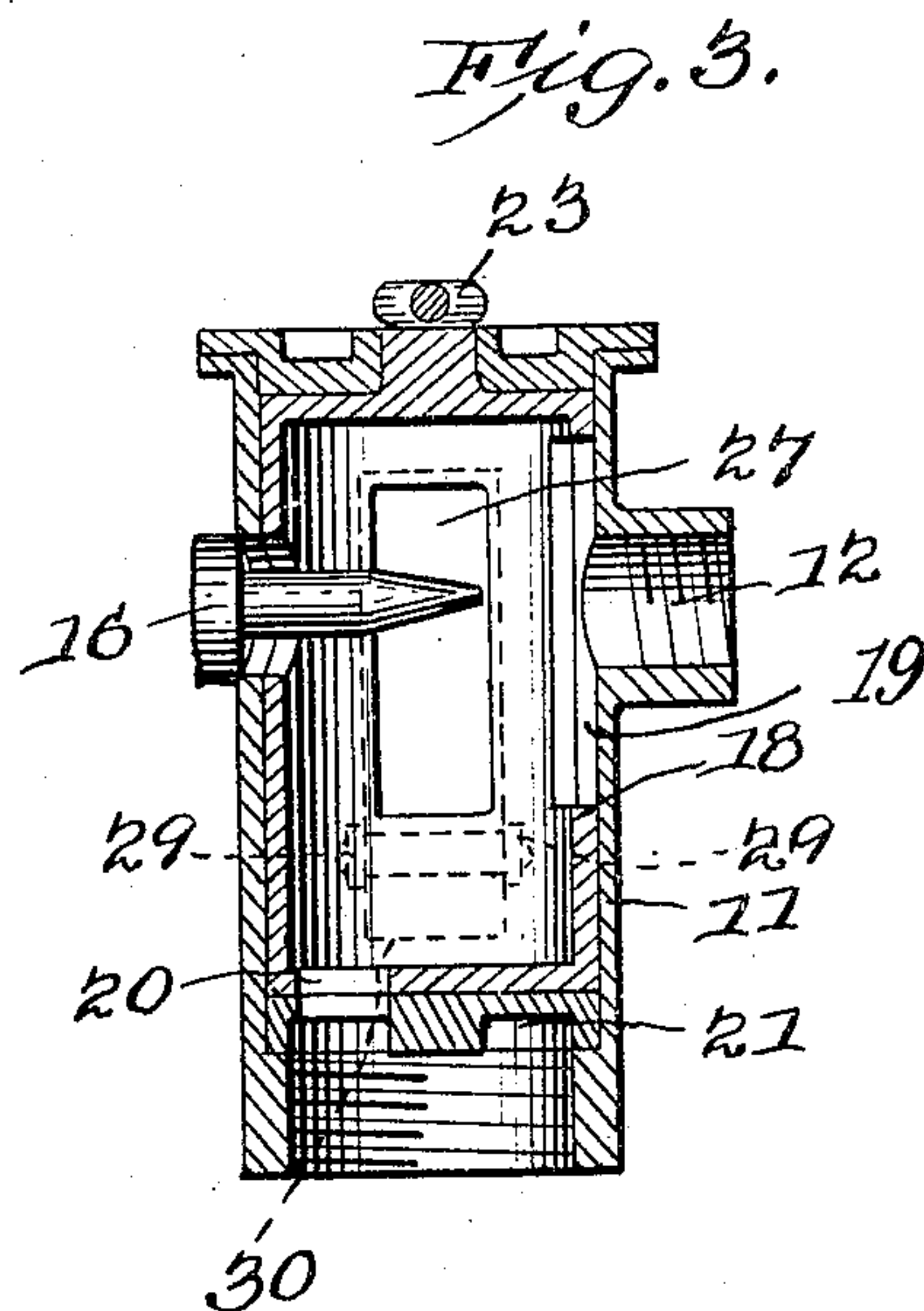
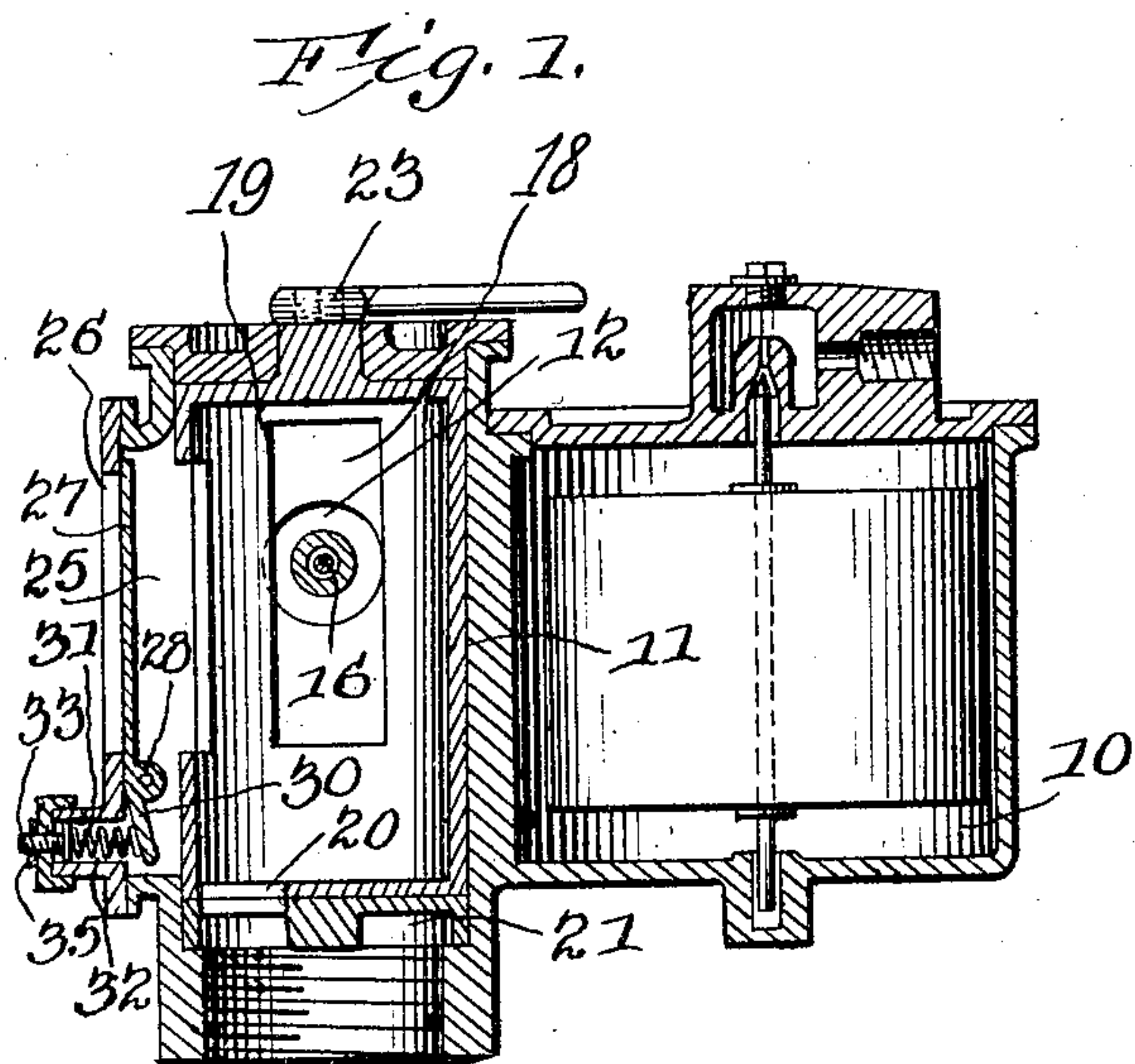
No. 861,438.

PATENTED JULY 30, 1907.

E. B. & L. S. CUSHMAN.

CARBURETER.

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Everett B. Cushman
Leslie S. Cushman
INVENTORS

WITNESSES:

E. J. Stewart
Geo. E. Parker

By *C. A. Snow & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

EVERETT B. CUSHMAN AND LESLIE S. CUSHMAN, OF LINCOLN, NEBRASKA.

CARBURETER.

No. 861,438.

Specification of Letters Patent.

Patented July 30, 1907.

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To all whom it may concern:

Be it known that we, EVERETT B. CUSHMAN and LESLIE S. CUSHMAN, citizens of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented a new and useful Carbureter, of which the following is a specification.

This invention relates to carbureters, and particularly to the construction of jet carbureters employed in connection with internal combustion engines. In ordinary carbureters of this general class where the liquid, such as gasoline, benzene, naphtha, or alcohol is drawn into the mixing chamber of the carbureter by the partial vacuum created by the movement of the piston, the quantity of liquid drawn from the feed chamber at each operation increases in proportion to the increase in speed of the engine, and in many cases the quantity of liquid is greatly in excess of that necessary for the work, resulting in waste and in fouling the cylinder, as well as rendering it difficult to control the speed.

The principal object of the present invention is to provide a carbureter which will give a constant mixture of air and gasoline or other liquid at all loads and speeds of the engine, and which may be properly adjusted to secure a given maximum speed, while at the same time it insures the delivery of precisely the same amount of liquid for the formation of each explosive charge.

A further object of the invention is to provide a carbureter in which the mixing chamber is provided with an adjustable valve which will open automatically to admit a quantity of air when the speed of the engine increases and the effect of the suction becomes abnormal.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings:—Figure 1 is a sectional elevation of a carbureter constructed in accordance with the invention. Fig. 2 is a plan view of the same showing the mixing chamber and valve in section. Fig. 3 is a sectional elevation of the mixing chamber, the section being at a right angle to the plane of the section shown in Fig. 1.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The carbureter comprises a float feed chamber 10 and a mixing chamber 11, the latter being connected

through a port 12 with the inlet port of the engine cylinder. The float feed chamber is provided with a discharge passage 15, leading to a jet nozzle 16 within the mixing chamber, and through which the gasoline or other liquid is drawn by the partial vacuum created within the crank case of the engine on the out or compression stroke of the piston. The jet nozzle is provided with a needle regulating valve 17 which may be adjusted to control the quantity of liquid fed at each operation.

Arranged within the chamber 11 is a hollow throttle valve 18, having a port 19, immediately opposite the port 12, and the lower end of the valve is provided with air inlet ports 20 through which air may enter from the open lower end of the casing, and this portion of the casing contains an adjustable disk valve 21 which may be turned to the desired position for the purpose of controlling the quantity of air admitted to the lower portion of the valve. To the top of the valve is connected a handle 23, which is operated in the usual manner for controlling the cut off and throttle the engine.

It is found that in operating carbureters of this general type, a rapid increase in suction when the engine is running at very high speed will result in the delivery of increased quantities of gasoline or other liquid, resulting in considerable waste and fouling of the cylinder. To obviate this, the casing is provided with a laterally extended chamber 25 having an air inlet port 26 that is normally closed by an inwardly opening valve 27. This valve is pivoted on a pin 28 carried by ears 29 projecting inward from the casing, and the valve has a pendent arm 30 against which bears one end of a compression spring 31, the latter being seated in a pocket 32 that forms part of said casing. At the outer end of the pocket is a screw 33 which bears against the outer end of the spring 31, so that the stress of the spring may be adjusted for the purpose of controlling the opening of the valve, and when so adjusted the screw may be locked in place by a nut 35.

The spring is normally placed under such stress that the valve will not be allowed to move to open position when the engine is running at normal speed, but if the speed increases to such an extent as will tend by increasing suction to draw larger quantities of liquid from the jet nozzle than necessary, the valve will be opened, allowing a quantity of atmospheric air to enter the mixing chamber, thus diluting the explosive mixture, and at the same time preventing the withdrawal of an undue quantity of gasoline or other liquid, thus keeping the explosive mixture of uniform quality without regard to variations in the speed or load of the engine.

We claim:—

1. The combination with a carbureter having a casing provided with an offset or extended portion, in which an

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auxiliary air port is located, of a pivotally mounted valve normally closing said port, a spring tending to maintain the valve in closed position, a spring pocket, an adjusting screw arranged at the outer end of the pocket and bearing
5 against the spring, and means for locking said screw in adjusted position.

10 2. The combination in a carbureter, of a casing, a hollow throttle valve arranged therein, said valve being provided with bottom openings, a valve disk on which said valve is seated, the disk being, also, provided with openings, whereby the turning of the valve may regulate the normal inflow of air to the interior of the valve, a fluid fuel jet nozzle extending into the interior of the valve at a point above the bottom thereof, said casing being provided at one

side with a recess, the outer wall of which has an opening 15 forming an auxiliary air port, an inwardly opening valve closing the auxiliary air port, a spring tending to maintain the valve in closed position, and means for adjusting the stress of the spring.

In testimony that we claim the foregoing as our own, we 20 have hereto affixed our signatures in the presence of two witnesses.

EVERETT B. CUSHMAN.
LESLIE S. CUSHMAN.

Witnesses:

A. O. TAYLOR,
GRACE E. MILLS.