Jan. 2, 1923. 1,440,930.

C. W. MOTT.

CARBURETOR.

FILED AUG. 5, 1919.

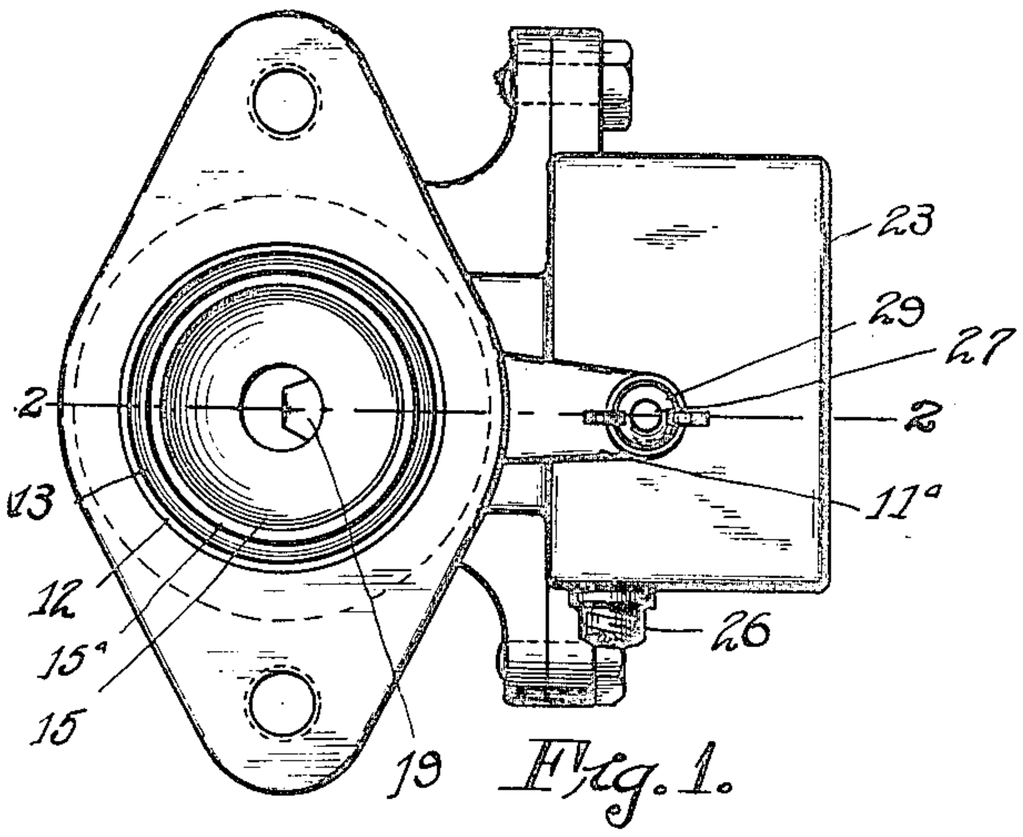


Fig. 1.

Fig. 4.

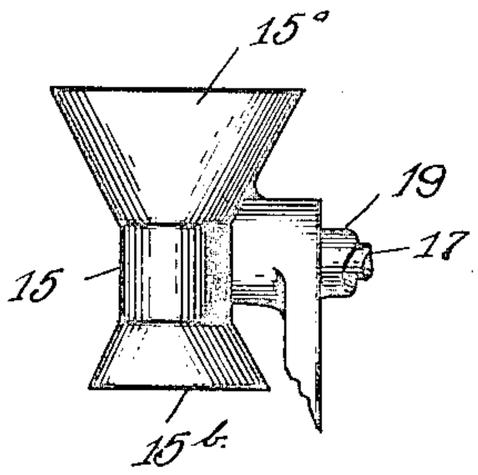


Fig. 2.

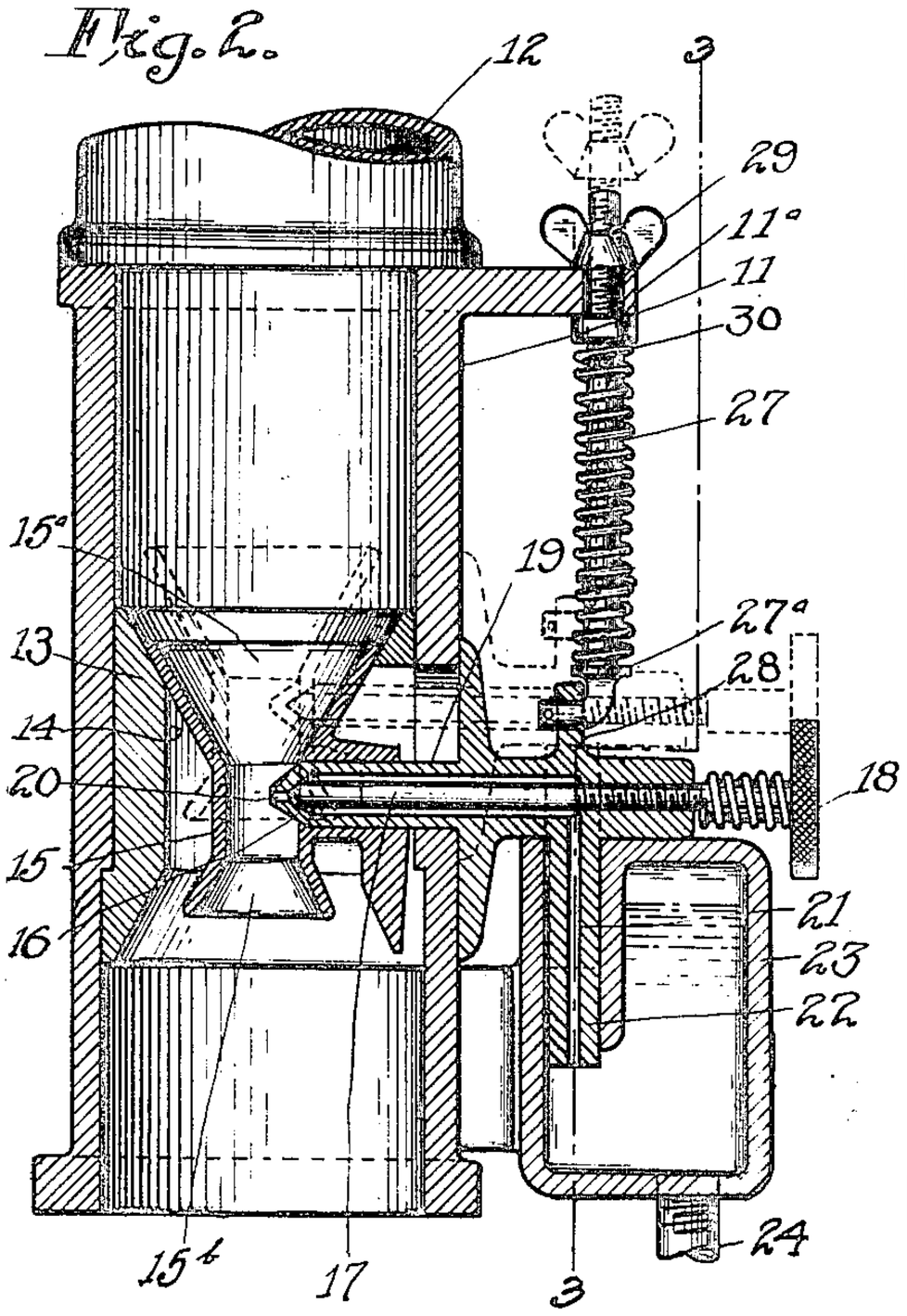
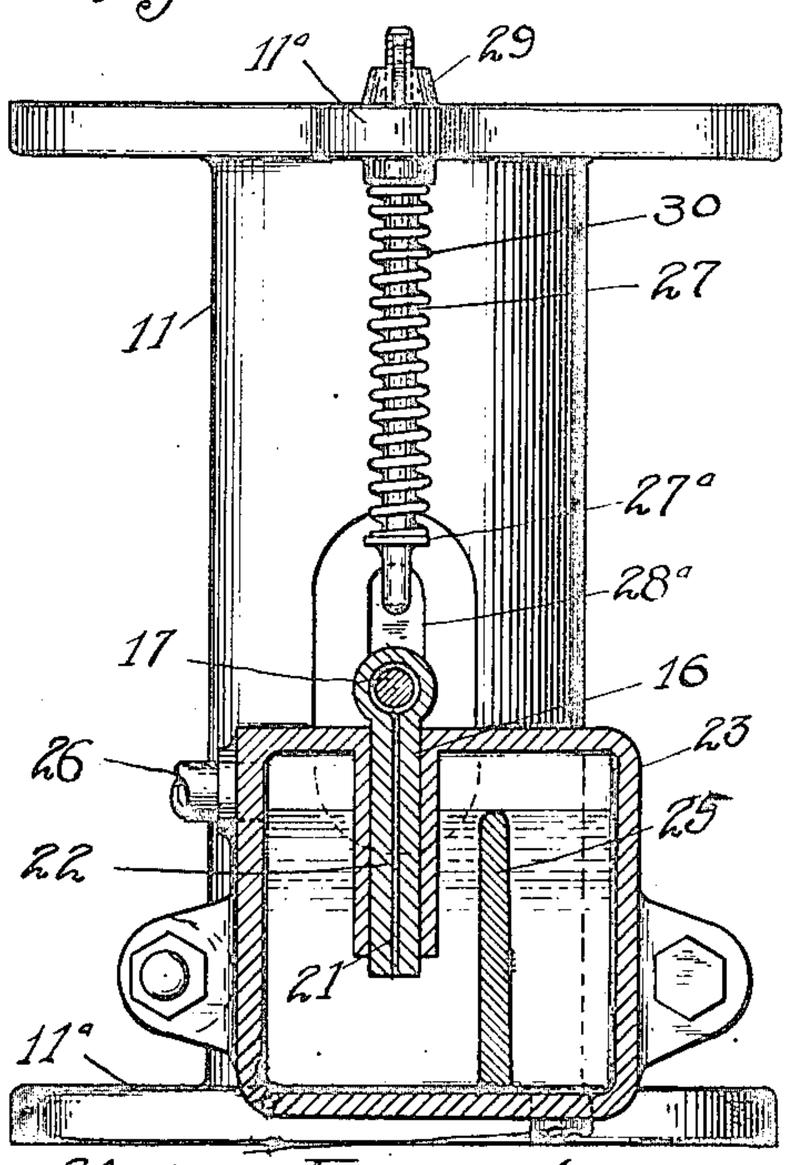


Fig. 3.



Inventor:
Carl W. Mott,
By Chas. E. Lord
Atty.

Patented Jan. 2, 1923. 1,440,930

UNITED STATES PATENT OFFICE.

CARL W. MOTT, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

CARBURETOR.

Application filed August 5, 1919. Serial No. 315,540.

To all whom it may concern:

Be it known that I, CARL W. MOTT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Carburetors, of which the following is a full, clear, and exact specification.

My invention relates to fuel mixers for carburetors.

When a fuel spray nozzle is placed in an air passage, such as a straight pipe or a venturi, and the nozzle is directly connected to a fuel reservoir and is maintained at a constant height above the level of the fuel therein, the proportion of fuel to air will not be constant with varying speeds of the air through the air passage when connected to the intake passage of an internal combustion engine. On the contrary, the proportion of fuel will increase as the speed of air passing the fuel nozzle is increased.

It is an object, therefore, of my invention to provide means for proportioning the mixture of fuel and air so that the mixture will be maintained substantially constant for varying quantities of air passing the fuel nozzle in a given time.

Another object is to provide a carburetor which will keep the proportion of fuel and air substantially constant for varying loads, and which will do this automatically. These and other objects are accomplished by the carburetor hereinafter described and illustrated in the accompanying drawing in which:

Fig. 1 is a plan view of my carburetor;

Fig. 2 is a vertical section on the line 2—2 of Fig. 1;

Fig. 3 is a vertical view partly in section on the line 3—3 of Fig. 2; and

Fig. 4 is a detail view of the floating venturi.

I have illustrated my invention in connection with a mixing chamber having a casing 11 which is connected to the intake manifold 12 by means of bolts. In the casing 11 I have placed a sleeve 13 having a bore 14 which is outwardly flared at each end, thereby forming a venturi. Within this venturi I have placed a floating venturi 15 which has a widely flaring upper portion 15^a normally resting upon the upper flared portion of the sleeve 13 and a slightly flared lower portion 15^b of less diameter than the bore of the sleeve 13. A fuel feeding nozzle 16 secured to the floating venturi at its throat is regulated by means of a needle valve 17 and a thumb screw 18. The tube 19 which carries the spray nozzle 16 has a hole 20 which is larger than the needle valve 17, forming a passage which connects with the passage 21 in the vertical arm 22. This arm extends down into the fuel reservoir 23 which is bolted or otherwise secured to the casing 11. The fuel in this reservoir may be maintained at a constant level by any suitable means, but I prefer to do this by means of the overflow pipe 24 and a weir 25, the latter dividing the fuel reservoir into two sections, one of which is supplied with fuel through a supply pipe 26. The floating venturi 15 together with the tube 19, needle valve 17 and the vertical arm 22 are so constructed that they will all be raised and lowered together. A guide pin 27 is connected to all of these members through the lug 28. This pin extends up through a hole in an extension 11^a of the casing 11 and is threaded at the upper portion for a wing nut 29. I have also provided a spring 30 which bears against the lower portion of the extension 11^a and a shoulder 27^a of the pin 27, thereby tending to maintain the venturi in the closed position, as shown in full lines in Fig. 2.

When operating under light loads, the floating venturi 15 will maintain the position shown in full lines. When, however, the load upon the engine is increased, the suction and the resultant increased flow of air will cause the floating venturi 15 to be raised somewhat off its seat, thereby allowing air to pass around the venturi 15 and through the passage 14. At the same time, the fuel nozzle 16 will be raised, thereby increasing the distance through which fuel must be raised to bring it up to the fuel nozzle, and consequently decreasing the amount of fuel fed by the fuel nozzle relative to the amount that would have been fed if the nozzle had not been raised. By a proper proportioning of these venturis, as well as of the weights of the parts and the strength of the spring 30, I am able to produce a carburetor which will keep the ratio of fuel to air substantially constant over quite a wide range of air velocities. If desired, the thumb nut 29 may be turned so as to raise the floating venturi 15, even

at light loads, thereby allowing some air to pass around the venturi and through the passage 14 at all times. Also, if desired, the load on spring 30 may be adjusted by the nut 29 so that the ratio of fuel to air will be a maximum under light loads or for starting and will decrease uniformly as the venturi is raised with increased speed of the engine.

While I have shown and described but a single embodiment of my invention, it is to be understood that it is capable of many modifications and is not to be limited to a carburetor for internal combustion engines, but is capable of use in any device for providing a mixture of two or more fluids. Changes, therefore, in the construction and arrangement of parts may be made which do not depart from the spirit and scope of my invention as defined by the appended claims.

I claim:

1. In a carburetor, the combination of a mixing chamber having an air inlet and an outlet, a floating venturi therein, a fuel nozzle movable with the venturi and discharging into the throat thereof, a constant level fuel reservoir, a connection between the reservoir and nozzle whereby movement of the floating venturi will vary the distance of the fuel nozzle from the fuel level in the reservoir.

2. In a carburetor, the combination of a mixing chamber having a passage therethrough and an opening in its wall, a floating venturi therein adapted to lift as the flow of air therethrough increases, means for returning the venturi as the flow of air decreases, a fuel nozzle extending through said opening and secured to the venturi, a constant level fuel reservoir in connection with the intake end of the nozzle, whereby the nozzle will move with the venturi and its distance from the level of the fuel in the reservoir will vary with the air flowing through the intake.

3. In a carburetor, the combination of a mixing chamber having an opening in its wall, a floating venturi therein adapted to lift with an increased flow of air, a constant level fuel reservoir in fixed relation to the mixing chamber, a nozzle having a horizontal arm extending through said opening and secured to the venturi to move therewith and a depending arm movable in the reservoir, whereby the height of the nozzle above the fuel level in the reservoir will vary with movements of the venturi.

In testimony whereof I affix my signature.

CARL W. MOTT.