Stromberg Carburetor Models "L" and "M"

The Stromberg models "L", "LB", "M", and "MB" are all called the "plain-tube carburetor", the principle of which is explained on page 134.

The "L" and "M" models are the same carburetor, except that model "L" has an "economizer" action. The "L" and "M" are made for vertical connections to the intake manifold.

The "LB" and "MB" models are of the same principle as "L" and "M", except that they are made for horizontal connections to the intake manifold. The "LB" has the economizer action, the same as "L".

Instructions for Stromberg "L" and "LB"

This carburetor differs from older styles in that is a plain-tube type, having the air passages fixed in size, while the gasoline is automatically and accurately measured by the air flow itself, at all speeds and loads. The mixture proportion is maintained constant by the "air-bled nozzle" construction, in which a small amount of air is mixed with the gasoline before it reaches the jets.

There are three adjustments, the high speed, the extremely low speed or idle, and the "economizer".

The high speed is controlled by the knurled nut (A) (Fig. 25) which locates the position of the needle past whose point is taken all the gasoline at all speeds. Turning nut (A) to the right (clockwise) raises the needle and gives more gasoline; to the left, or counter-clockwise, less.

If an entirely new adjustment is necessary, put economizer pointer (L) in 5th notch (or nearest to float chamber) as an indicator; turn nut (A) to the left, counter-clockwise, till the needle reaches its seat, as shown by nut (A) not moving when the throttle is opened and closed. When the needle is in its seat it can be felt to stick slightly when nut (A) is lifted with the fingers. Find adjustment of (A) where it just begins to move with the throttle opening, then give 24 notches to the right or clockwise (the notches can be felt). Then move the economizer pointer (L) back to (0) notch (away from float chamber). This will give a rich

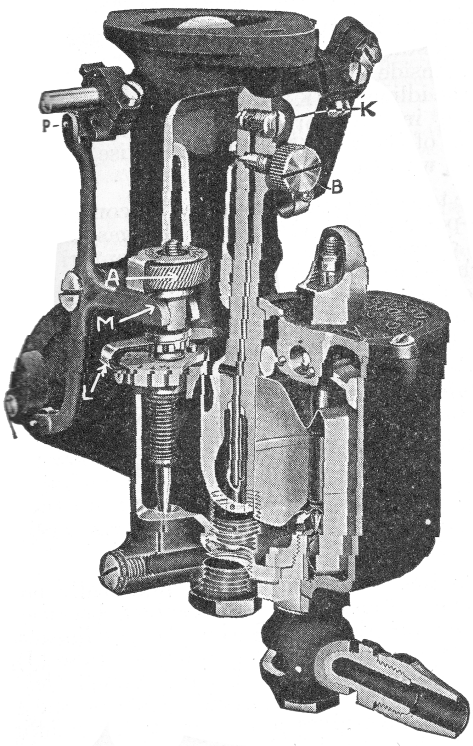


Fig. 25. Stromberg type "L". Note the vertical connection and economizer (the lever with roller P on it). This carburetor is adapted for high-speed multi-cylinder engines.

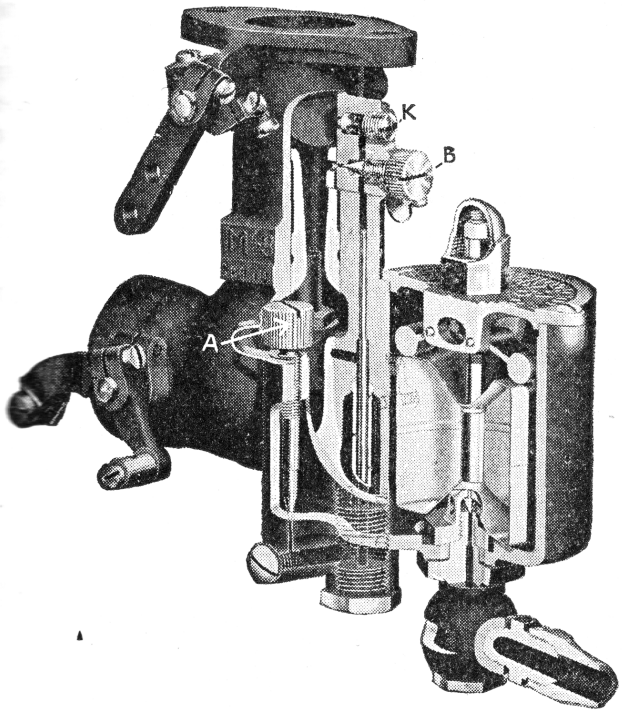


Fig. 26. Stromberg type "M", without economizer. Used on small 4-cylinger engines, trucks, tractors, etc.

adjustment. After starting and warming up the engine, thin out the mixture by turning (A) counter-clockwise, and find the point where the engine responds best to quick opening of the throttle, and shows the best power.

Low speed or idle adjustment: The gasoline for low speed is taken in above the throttle through a jet at (K), and is regulated by dilution with air as controlled by the low-speed adjustment screw (B). Screwing (B) in clockwise gives more gasoline; outward, less. The best adjustment is usually ½ to 3 turns outward from a seating position. Note that this is only an idling adjustment and does not affect the mixture above 8 miles per hour. When the engine is idling properly there should be a steady hiss in the carburetor; if there is a weak cylinder or a manifold leak, or if the idle adjustment is very much too rich, the hiss will be unsteady.

Economizer action and adjustment: The economizer device operates to lean out the mixture, by lowering the high-speed needle and nut (A) a slight but definitely regulated amount, at throttle positions corresponding to speeds from 5 to 40 miles per hour. The amount of drop and consequent leaning is regulated by the pointer (L).

After making the high-speed adjustment for best power, with pointer (L) in (0) notch, as above described, place the throttle lever on the steering wheel in the position giving about 20 miles per hour road speed. Then move pointer (L) clockwise (toward the float chamber), one notch at a time, till the motor begins to slow down; then come back one notch.

The amount of economizer action needed depends upon the grade of gasoline and upon the temperature. In the Mid-West, the best economizer adjustment will usually be the third or fourth notch. With Pennsylvania gasolines and tin the South, the second notch; while on the Pacific Coast no economizer is necessary unless Distillate (which should not be below 50° Baume) is used. Also fewer notches of economizer action will be necessary in summer then in winter.

Note: All Stromberg carburetors are supplied with hot-air attachments and a temperature regulator. When adjusting type ("L"), the dash control lever should be all the way down and the air-horn cam plunger (H) (Fig. 25), should clear the economizer lever so that this works freely as the throttle is opened and closed.

Adjustment of "M" and "MB"

The only difference between the types "L" and "M", is in the "economizer" action, or the lifting of the highspeed needle valve (A) automatically. This needle valve (A) on type "M" is hand regulated.

(1) Open throttle about one-quarter of the way, which will give about 20 miles per hour on a pleasure car (or one-third governor speed on a motor truck).

(2) Open idling screw (B) from its seat two turns, so that this cannot affect the high-speed adjustment.

(3) Adjust high-speed needle (A) at the leanest adjustment which will give the best engine speed for this throttle position. Inward for less and out for more gasoline.

(4) Close the throttle gradually and screw the idling screw (B) in as far as necessary to give adjustment for low speed and idle. Screwing inward, right hand, gives more gasoline; outward gives less.

This "plain tube" and "Pitot" principle is further explained on page 102.

Note. Never adjust the carburetor to a cold engine. Start the engine and allow it to run a short time until it is warm. Not until then should the adjustment of the carburettor be attempted.

In starting on a cold day it may begin "popping". Do not blame this on the carburetor and begin to adjust it. Wait until the engine has warmed up thoroughly, and then if the popping continues it is time to consider an adjustment.

Principle of Stromberg "Plain Tube" or "Pitot" Principle of Carburetor

This explanation also covers models "L", "LB", "M", and "MB", except that the economizer action, which is explained on page 132, is not used on the models "M" and "MB". The air passages and gasoline jet are of fixed sizes for all engine speeds.

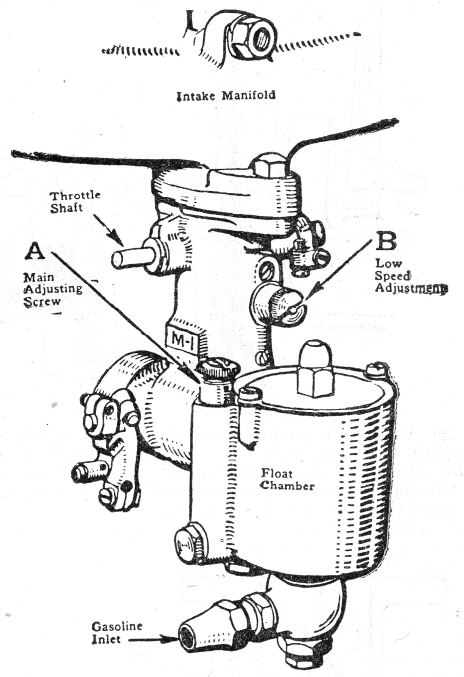


Fig. 27. Stromberg model "M", Vertical type, shown connected with the intake manifold.

This carburetor is termed a "plain tube" type, because the whole air supply is taken through a single unobstructed channel of fixed size through the jet. Air valves, metering pins, and dash pots have been dispensed with. The Pitot principle, explained on page 102, is used to provide air at sufficient pressure to force fuel from the well in the carburetor.

How the desired mixture can be maintained is answered in the principle of introducing a small amount of air into the gasoline jet at (G) before it sprays out into the main air passage, forming what is known as an "air-bled" jet or "Pitot" principle.

Principle of operation: The level of the gasoline in the float chamber of the carburetor is maintained constant by the float and the valve which is operated by it. From the float chamber

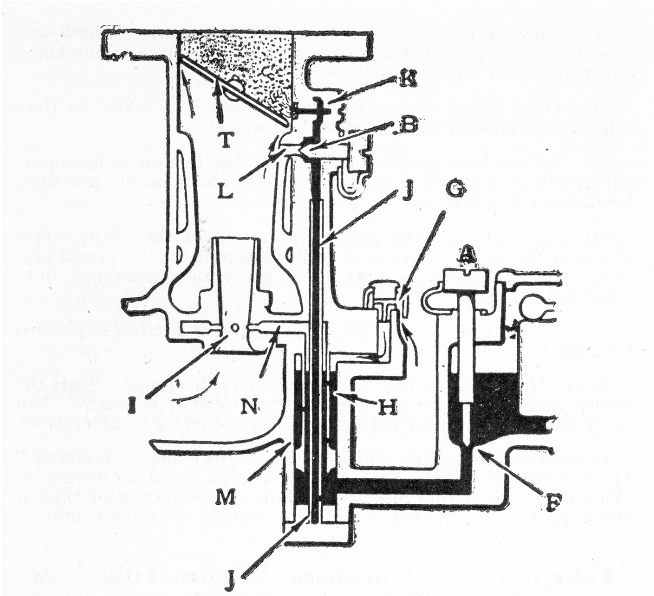


Fig. 28. Idling position. When idling, all the gasoline is drawn up the tube (J), through the idling jet (K) and sprayed above the throttle valve (T).

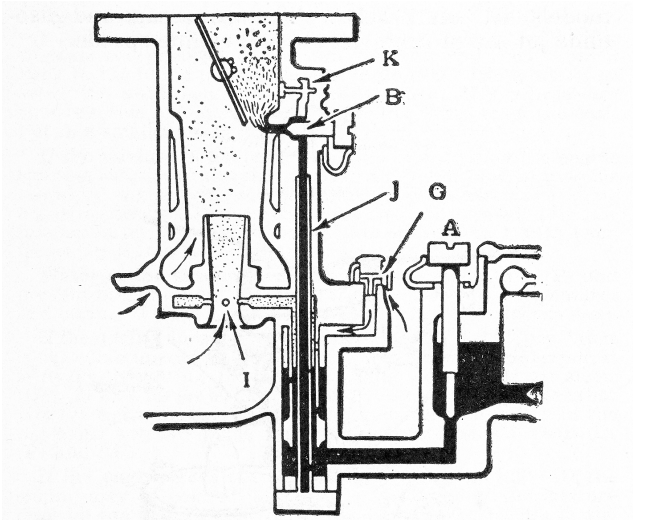


Fig. 29. Low and medium speed: At intermediate speeds the gasoline is drawn past the low-speed adjusting screw (B) from the tube (J). As the throttle is opened, more mixture is drawn through the small venturi tube (I) and augments that drawn from the opening (L) (Fig. 28).

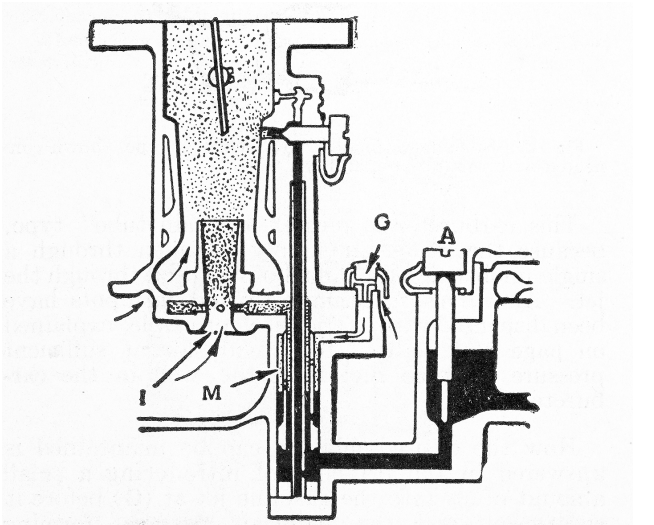


Fig. 30. High speed: At high speed practically all the gasoline is drawn through the small venturi tube (I) mixed with air, drawn through the opening (G) above the well (M).

the gasoline flows to the accelerating well (M) through the needle valve (F) (Fig. 28) which is adjustable.

There are two tubes in the accelerating well, one a sort of standpipe (H) and the other a smaller one that is inside of the standpipe and which connects with the idling jet (K). The latter tube has a small opening in the bottom that connects with the bottom of the well (M), but otherwise has no connection with the well.

The top end of the standpipe (H) connects with a cross-passage (N) that feeds the gasoline to the eight discharge holes in the small venturi tube (I), which is located just below the main venturi tube (note that there are two venturi tubes). A rich mixture and not raw gasoline is fed through passage (N), because of the small air intake opening (G), which enters the top of the well (M), and supplies a certain amount of air with the gasoline that is drawn up the standpipe to the passage (N).

Holes in the side of the standpipe below the level of the fuel feed gasoline into the standpipe, while holes above the fuel level add air from the top of well (M), thus making a rich mixture to discharge into the small venturi passage.

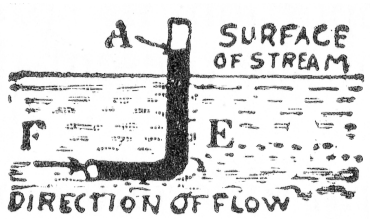
At low and idling speeds, practically no fuel is drawn through the small venturi, because of the closed throttle. At this time the gasoline is through the hole in the bottom of the small tube (J), up to the idling needle valve (B), and through the passage (K), into the intake manifold above the throttle valve. This gives a rich mixture for idling and slow-speed running, but is cut out at about eight miles per hour when the throttle is opened more, and thus does not affect the running mixture at all.

The Pitot or Plain-Tube Principle

The "Pitot" or "plain tube" type of carburetor differs from other principles. It is the principle now being used to a considerable extent and derives its action as well as its name from a Pitot tube.

A Pitot tube is a very old instrument for measuring velocities of flowing streams of water, invented by Henri Pitot in 1730. It consisted of a vertical glass tube with a right-angled bend as show at (E).

The impact of the flowing water against the open end (F) of tube (E) caused a column to rise above the surface of the stream as at (A), and by this small difference in height, the velocity of the steam was calculated. A similar principle, but to provide air, is embodied in the carburetor using this principle.



The Pitot tube is also used for measuring pressure in moving streams of gas or liquids. It can be used facing in any direction, but, as applied to the carburetor, faces down stream.

The Pitot tube has been used for years for measuring fire streams, chimney drafts, etc. In the carburetor it is simply used to provide air at sufficient pressure to force the fuel from the well to be enclosed in the carburetor.

The Pitot function as applied to a carburetor is simply to provide air at sufficient pressure to force the fuel from a well inclosed in the carburetor. The intake of the Pitot tube is inside the carburetor where the air pressure is quite low, but, owing to the Pitot action explained above , the pressure of the air delivered to the well from (A) is increased so that it is about as high as the pressure of the atmosphere. See Index for explanation of "plain tube" carburetor.

This article is excepted from "Dyke's Automobile and Gasoline Engine Encyclopedia", by A. L. Dyke, 14th Edition, Goodheart-Willcox Company Publishers, 1925.