

No. 851,759.

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A. KUNKEL.
CARBURETER.

APPLICATION FILED AUG. 2, 1906.

Fig. 1.

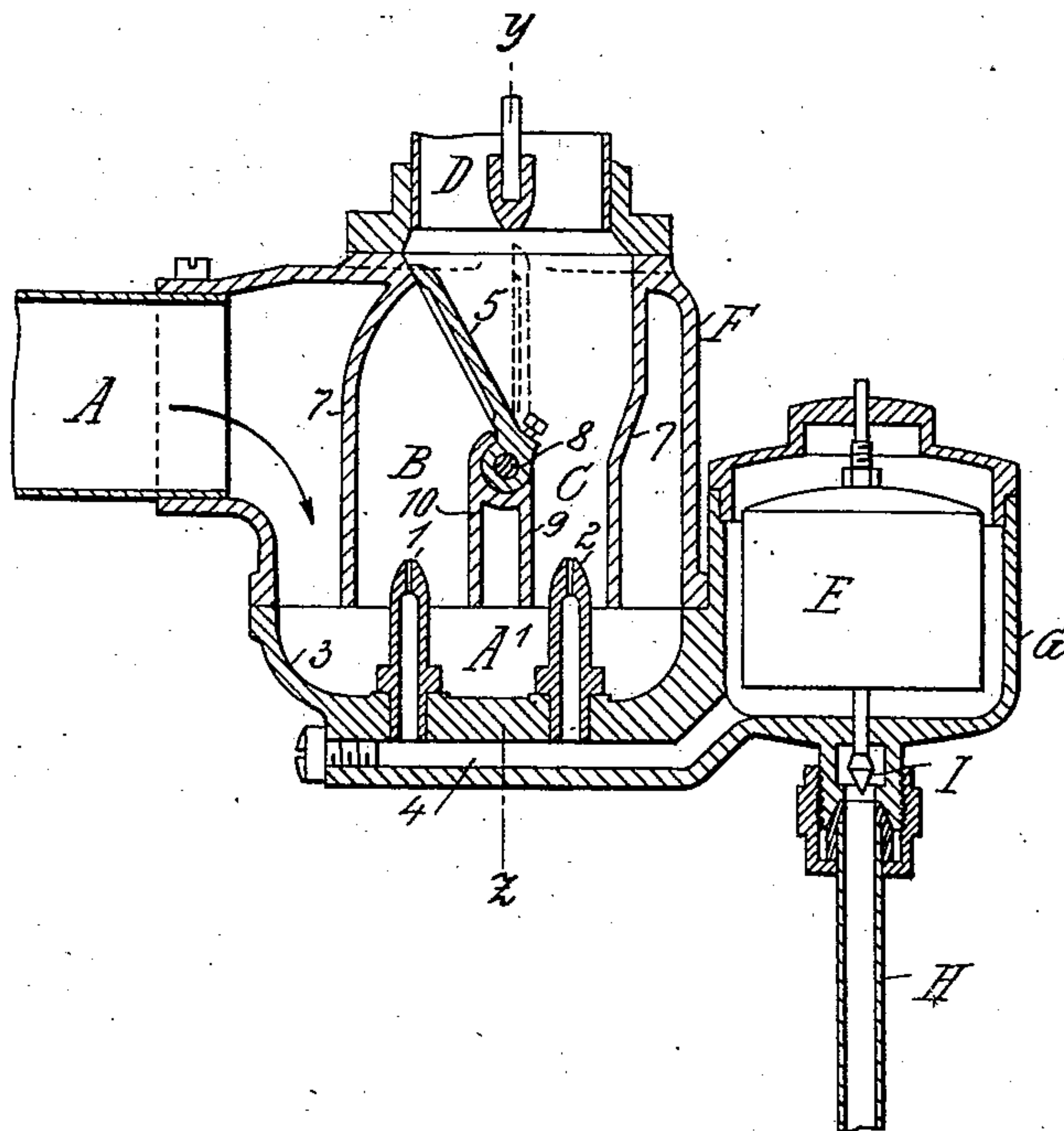
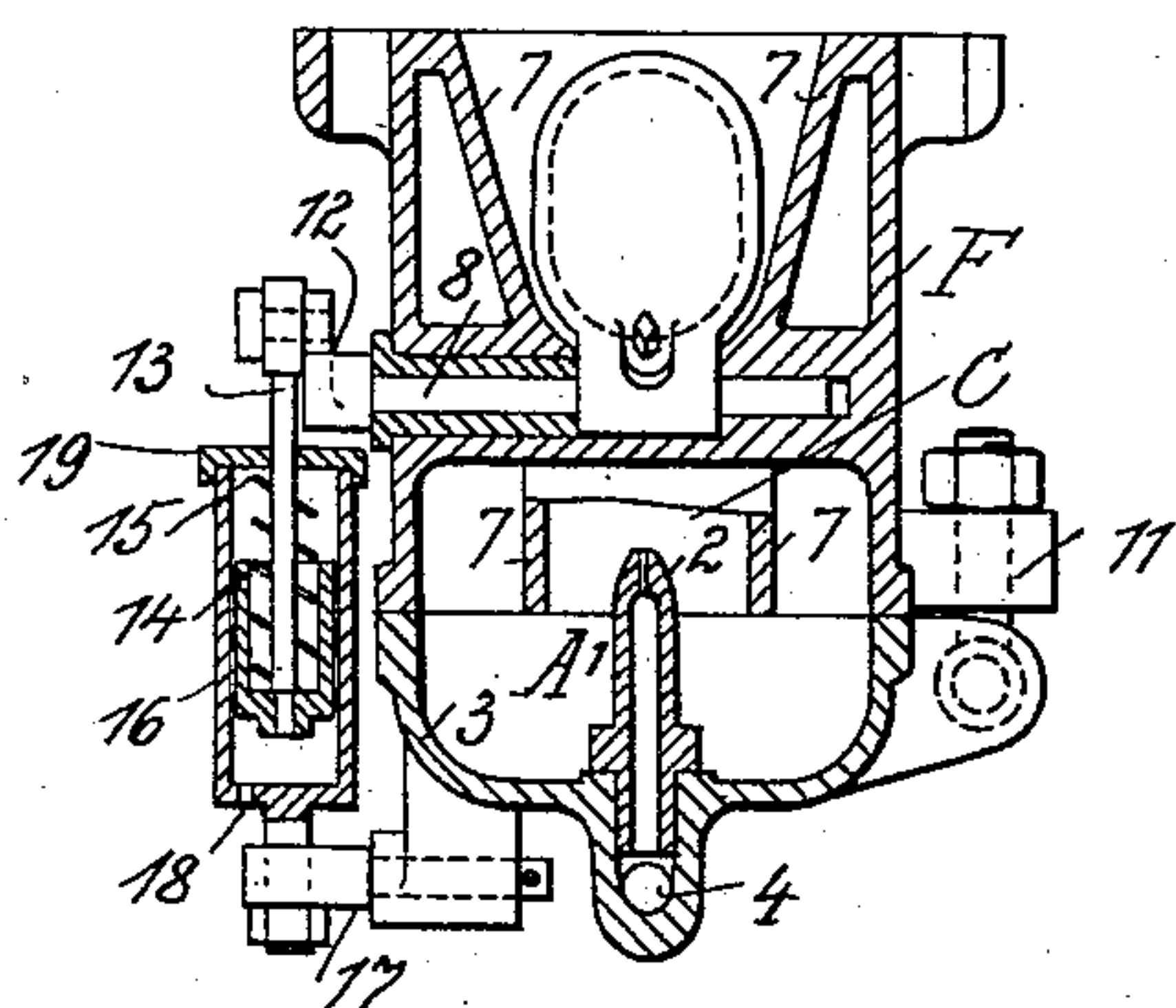


Fig. 2.



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CARBURETER.

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To all whom it may concern:

Be it known that I, ANTON KUNKEL, a citizen of the Confederation of Switzerland, residing at Arbon, in Switzerland, have invented a new and useful Carbureter, of which the following is a specification.

With benzin motors having several cylinders hitherto one or two or several benzin nozzles were employed for regulating the mixture of air and nebulized benzin sucked into either of the cylinders in proportion to the required larger or smaller speed and to the varying load of the engine. These benzin nozzles were so arranged, that either one or several or all of them could be turned on as might be necessary, the air passages around the nozzles being opened either automatically with the aid of valves or of drums with air-slots etc. or by hand by means of a lever and rod transmission controlled from the driver's seat.

My invention relates to improvements in such carbureters for benzin motors with several cylinders, whereby the mixture of air and nebulized benzin is rendered more constant than hitherto.

The objects of my improvement are, first to provide a separate air-passage for every benzin nozzle; second, to provide a spring-pressed trap or clack-valve for normally closing a part of the air-passages and for being more or less opened by the draft; and third, to provide an air-brake or a dash-pot for taking up any shocks, that may be produced by the air-currents acting upon the trap or clack-valve.

I will now proceed to describe my invention with reference to the accompanying drawing, which illustrates an example and in which—

Figure 1 is a vertical longitudinal section through an improved carbureter with two benzin nozzles, and Fig. 2 is a vertical cross section through the same on the line $y-z$ in Fig. 1, seen from right to left.

Similar letters of reference refer to similar parts throughout the several views.

The carbureter shown is provided with two vertical benzin nozzles 1 and 2, which are disposed in the bottom piece 3 and are arranged to be supplied with benzin through the common channel 4 from a supply tube H by means of a valve I under the control of a known float E within a box G. I do not

further describe the construction of the float E, as it is immaterial. The casing F can be connected with the bottom piece 3 in any known manner, for example by means of turnable bolts 11 and nuts shown. The casing F is cast in one piece with internal partitions 7, 9 and 10, whereby two separate air-passages B and C of any suitable cross section, for example of an oval section, around the mouths of the two nozzles 1 and 2 are formed. The one larger air-passage B is normally closed with an inclined trap or clack-valve 5 fastened on a cross shaft 8, which latter is mounted in the casing F to rock, as is clearly shown at Fig. 2. At the external end of the shaft 8 a lever 12 is fastened, which is pivotally connected with an air-piston 14 by means of a connecting rod 13. The air-piston 14 is mounted to reciprocate in a cylinder 16, which latter may be arranged to swing around the horizontal axis of a pin 17 rocking in an eye of the bottom piece 3. An air-hole 18 is provided in the bottom of the cylinder 16, through which air may be sucked in and forced out respectively. A helical spring 15 is inserted between the cover 19 of the cylinder 16 and the air-piston 14 and is arranged for normally closing the trap or clack-valve 5. A suitable tube A may be connected with the casing F for the admission of air from without and above the trap or clack-valve 5 a valve D of any known construction is disposed on the casing F, which leads to the inlets of the several cylinders of the motor.

The carbureter operates as follows: The float E is arranged for admitting benzin from the tube H to the box G and to the common channel 4, so that the level of the benzin will be near the mouths of the two nozzles 1 and 2, as may be determined according to trials or experience. Each time, when during the suction period in either of the several cylinders the respective piston exerts a sucking action, air will enter the annular space in the casing F through the tube A in the direction of the arrow and will pass upward through the small air-passage C, when the air-current will suck in benzin from the one nozzle 2, so that the benzin is nebulized and mixes with the air, whereupon the explosive mixture will pass upward through the valve D to the respective cylinder. Should the draft increase, more air will be sucked in, so that the

trap or clack-valve 5 is more or less opened, while the pressure of the helical spring 15 is overcome. For the maximum draft the trap or clack-valve 5 will occupy a vertical position indicated by dotted lines in Fig. 1. When the draft ceases, of course the trap or clack-valve 5 will be again closed by the helical spring 15 and no air will pass upward through the small air-passage B, nor will it suck in any benzin from the nozzle 2. For the maximum speed and power of the motor the suction periods in the several cylinders will follow each other so quickly, that the trap or clack-valve 5 is prevented from closing and is maintained almost permanently in its vertical position. It would, however, be very apt to vibrate, which defect is now mostly removed by the air-brake or dash-pot 16 and piston 14. When the speed of the motor is diminished or when its load is reduced, of course a smaller quantity of mixture will be sucked in by either of the several pistons in the cylinders, so that the speed of air around the nozzles 1 and 2 will decrease and consequently it will suck in less benzin through the nozzles. Should the decrease of the speed of the motor exceed a certain limit, the draft will no longer be able to open the trap or clack-valve 5, so that the passage of air along the nozzle 1 will be stopped and only through the small air-passage C will air pass and suck in benzin from the nozzle 2.

As the two air-passages B and C and the bores of the two nozzles 1 and 2 are so proportioned, that a proper proportion between the air and the nebulized benzin in the explosive mixture is obtained, the improved carbureter will present the advantage, that nearly the correct proportion between the air and the nebulized benzin will be always maintained, no matter, whether the quantity of explosive mixture admitted to the respective cylinder be large or small. Thus the trap or clack-valve 5 serves for automatically regulating the mixture admitted to the motor. In opposition to known carbureters with several nozzles the improved apparatus described above also presents the advantage, that it works very smoothly and that its trap

or clack-valve 5 is much less subjected to the action of vertical shocks or jerks, in case the motor is disposed in an automobile, since all the shocks or jerks are taken up by its shaft 8.

I claim:

1. In a carbureter for a benzin motor with several cylinders, the combination with a casing provided with an air-inlet and with an opening in the cover, of two benzin nozzles disposed vertically on the bottom of said casing, partitions in said casing reaching from the cover opening downward to a point above the bottom and forming two air-passages which surround the mouths of said two benzin nozzles, means for supplying benzin to said two benzin nozzles, and a spring-pressed trap or clack-valve normally closing one of said two air-passages and adapted to be more or less opened by the draft from either cylinder.

2. In a carbureter for a benzin motor with several cylinders, the combination with a casing provided with an air-inlet and with an opening in the cover, of two benzin nozzles disposed vertically on the bottom of said casing, partitions in said casing reaching from the cover opening downward to a point above the bottom and forming two air-passages which surround the mouths of said two benzin nozzles, means for supplying benzin to said two benzin nozzles, a shaft mounted in said casing to turn and extending to without, a trap or clack-valve fastened on said shaft for normally closing one of said two air-passages and adapted to be more or less opened by the draft from either cylinder, an arm fastened on the external end of said shaft, a cylinder mounted to rock on said casing and provided with air-holes in its bottom, a piston reciprocating in said cylinder, a rod connecting said piston with the free end of said arm, and a spring inserted between said piston and the cover of said cylinder and adapted to press said trap or clack-valve on its seat.

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