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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

TECHNICAL MEMORANDUM

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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

1724 STREET, N.W.

WASHINGTON, D. C.

GRAETZIN SPECIAL CARBURETOR.

From "Flug-Woche," December 7, 1921.

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for Aeronautics
Washington, D. C.

GRAETZIN SPECIAL CARBURETOR.*

The Graetzin Special Carburetor, in the formation and regulation of the combustible mixture, may be regarded as a new solution of the carburetor problem. The wide range of regulation of the fuel mixture and the simple, reliable construction of the carburetor characterize this new creation of the Graetzin Company as another step in the direction of reliability and economy in the field of small engine construction.

Corresponding to practical requirements, this carburetor (especially the smaller sizes) may be regarded as the smallest form of a float carburetor and is adapted for use with all small engines, including auxiliary bicycle and similar engines.

The Graetzin Special Carburetor is made in both horizontal and vertical form and, on account of the central position of the float, is well adapted to give excellent results with even the smallest engines.

The regulating mechanism can be readily operated from the outside. The simplicity of the carburetor feed and the small fuel consumption go to prove that the products of the Graetzin Company are the results of experience and meet all requirements.

After the fuel pipe is connected with the nipple of the carburetor (by hard soldering, if possible), the engine, with suitably adjusted fuel delivery, should start immediately, when the throttle is opened just a little. No special idling speed is provided for in these types. In larger types, the idling speed is obtained in a very simple manner by regulating the air

* From Flug-Woche, December 7, 1921, pp. 525-526.

supply. For this purpose, a nozzle of variable size, according to need, can be screwed into the front side of the carburetor, by means of which an easy start and an economical idling speed can be obtained.

When the throttle is opened a little wider, the fuel is drawn through nozzle 1 (which is gaged and must be selected to correspond to the particular engine type) and through the spraying tube 2 into the forward spray chamber 3. Here, at a low revolution speed, the fuel enters the forward chamber 5, without the addition of much air. When the throttle is wide open, the fuel, mixed with air drawn through the opening 4, enters chamber 5 in the form of a spray. A more uniform mixture and distribution of the fuel is produced by the rebounding from the conical part and by passing through numerous small openings 6. The fuel mixture is then drawn through slot 7 of the spraying head into the main airstream, which enters through the sieve 8, past the atomizing funnel 9 (which must be chosen, once for all, for each engine) and past the throttle valve into the cylinder.

The most favorable regulation of the fuel mixture is obtained by varying the relative sizes of the mixing chambers 3 and 5 by means of an adjusting knob 11, after loosening the lock-screw 12. The influence of the negative pressure (partial vacuum) in the vaporizing chamber is varied at need by varying the distance of the opening 13 from the spraying nozzle 2 and thereby strengthening or weakening the suction effect of the added air.

The relative sizes of chambers 3 and 5 are varied by moving partition 14 horizontally by means of screw 15, against which the adjusting knob 11 bears. For instance, decreasing chamber 5 and increasing chamber 3, by turning the knob to the left, gives a fuel spray mixed with a larger proportion of air (poorer mixture). The opposite result is obtained by turning the knob to the right. Moreover, the center of pressure, located in the opening 13, is brought nearer the spraying nozzle 2, thereby increasing the suction effect on the latter and increasing the richness of the mixture.

In short, after the suitable fuel nozzle 1 and atomizing funnel 9 have been chosen for the particular type of engine, the carburetor is adjusted simply by means of knob 11 for the main fuel supply and by means of the additional air nozzle for the idling speed. Both can be operated while the engine is running, thus giving the simplest and most convenient method of regulation imaginable.

The simple method of operation, as well as the accurate construction of this carburetor make it fill a long-felt want in the field of small engine construction.

Translated by the National Advisory Committee for Aeronautics.

