In another model Fiat carburettor the economizer has a milled screw and slot to alter the adjustment.

The Weber Carburettor.—This modern Italian carburettor is used on certain Fiat and Lancia cars—and as an economy replacement on various American car engines.

The Model 30-32-34 DR SP (Fig. 62) is a single downdraught type for inlet manifold diameters of 30 to 34 mm. (at the butterfly throttle). The device for governing the fuel mixture consists of a throttle valve that is controlled by the accelerator pedal, by means of a lever attached to the throttle shaft.

The carburettors embody an economy and fuel boost device consisting of an air-and-fuel mixer, having three fixed positions; these may be selected, at will, by the driver actuating the control knob on the dashboard. It is provided with two climatic settings. This device is in effect a secondary carburettor independent of but incorporated in the main instrument and it enables the basic mixture, supplied by the latter, to be modified according to the running requirements, such as: engine starting, economical running and power boost.

This type is fitted with a boss on the body casting for vacuum pipe connection to the vacuum ignition control.

The principle and operation of this carburettor are as follows:—Referring to Fig. 62 the air from above flows through the small venturi, or choke, (21) and then through the larger choke (20), and *via* the throttle butterfly valve (18), to the engine.

From the fuel line, the fuel flows through the needle valve (6) into the bowl (10), where the float (9), hinged to the pivot (8), controls the opening of the needle (7) and maintains a constant fuel level.

From the bowl the fuel, controlled by the main calibrated jet (12) reaches the emulsioning tube (14), from which, after having been mixed with the air coming from the calibrated air bleed screw (23), it reaches the carburetion area, (consisting of the auxiliary venturi (21) and the choke (20), through the emulsioning holes (13), and the discharge tube (22). The purpose of the auxiliary venturi (21) is to increase the vacuum around the discharge tube (22), and to carry the air-fuel mixture to the centre

of the choke at its narrowest diameter (20), so as to provide a more even mixture and obtain a better distribution to the cylinders.

While idling, the fuel is carried from the emulsioning tube (14) to the calibrated idling jet (11), where it is mixed with the air coming from the tube (5) and carried through holes in the wall of the idling jet. The mixture thus formed travels through the idling

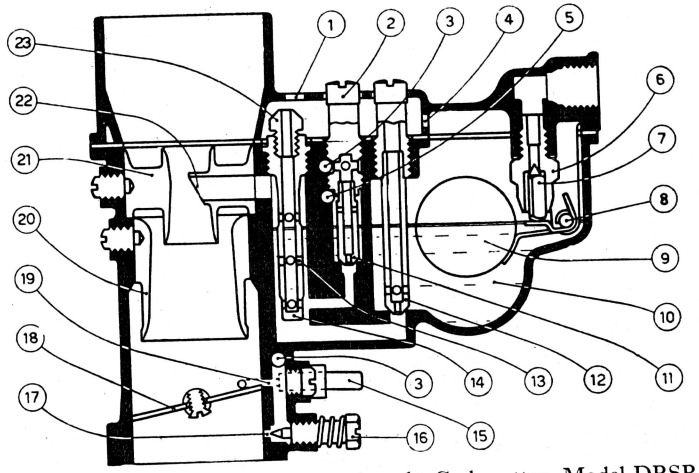

Fig. 62.—The Weber Single Downdraught Carburettor, Model DRSP.

(1) Air intake. (2) Idling jet holder. (3) Idling mixture tube. (4) Air intake to the bowl. (5) Air intake for idling mixture. (6) Needle valve seat. (7) Needle valve. (8) Float fulcrum pivot. (9) Float. (10) Carburettor bowl. (11) Idling jet. (12) Main jet. (13) Emulsioning holes. (14) Emulsioning tube. (15) Tube for connecting automatic spark advance. (16) Idling mixture adjusting screw. (17) Idling hole to the throttle chamber. (18) Throttle butterfly. (19) Progression hole. (20) Choke tube. (21) Auxiliary venturi. (22) Discharge tube. (23) Emulsioning tube air bleed screw.

jet holder (2), through the tube (3) and the idling feed hole (17) (adjustable by means of the conical headed screw (16)), to the carburettor throttle chamber below the throttle, where it is further mixed with the air drawn in by engine vacuum through the small opening between the throttle chamber wall and the butterfly when in idling position.

From the tube (3) the mixture can also reach the carburettor throttle chamber through the progression hole (19), located in

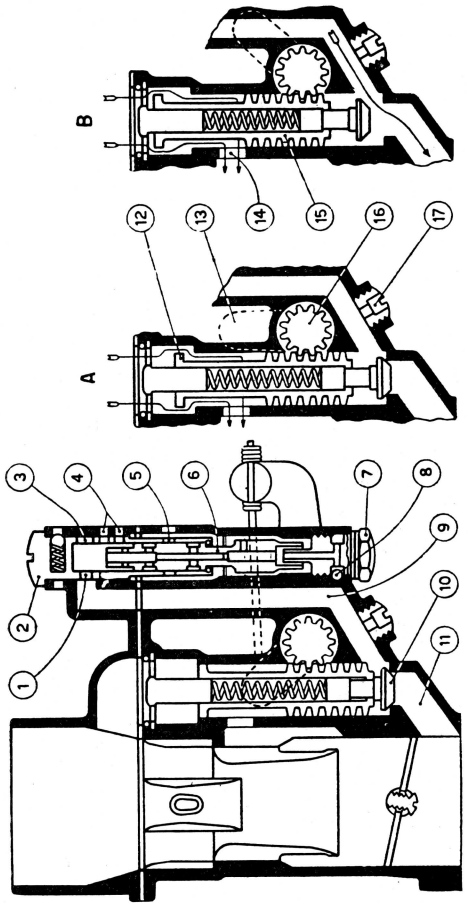

Fig. 63.—The E.S.A. Device on Weber Carburettor.
(1) Hole for summer mixture. (2) E.S.A. control. (3) Hole for winter mixture. (4) Emulsioning holes. (5) Supplementary air hole. (6) Sliding tube. (7) E.S.A. jet. (8) Fuel tube. (9) Mixture tube. (10) E.S.A. valve. (11) E.S.A. mixture tube. (12) Sliding valve cylindrical. (13) E.S.A. control lever. (14) Supplementary air tube. (15) Rack. (16) Pinion. (17) E.S.A. air screw.

exact relation to the throttle. The purpose of this progression hole is to permit the engine to accelerate smoothly from idling speed when the throttle is opened.

The Weber E.S.A. Device.—This device is provided to ensure quick engine response when cold; as an economizer—for fuel saving—and as a power boost.

Fig. 63 shows how the fuel flowing from the bowl reaches this device through the tube (8), thence through the E.S.A. calibrated jet (7), the sliding tube (6), the summer hole (1) or the winter hole (3) of the E.S.A. control (2), the tubes (9), the E.S.A. valve (10), the tube (11), and finally reaches the carburettor throttle chamber below the butterfly valve.

To obtain proper operation of the E.S.A. device the letter engraved on the control (4), referring to the weather (E = "Estate" = Summer—I = "Inverno" = Winter) should be in correspondence with the index (7) cast on the carburettor cover.

The mixture formed by the fuel flowing from the jet (7) and by the air drawn in by the holes (4) and (5), is thus controlled by the calibrated hole (1)—summer position—or by the calibrated hole (3)—winter position—drilled in the E.S.A. control (2) so that the best mixture for the respective weather conditions can be supplied

Other Model Weber Carburettors.—The Weber carburettor is made in several other models, including some with an accelerating pump. Also, a model, known as the D.C.O. with twin choke horizontal air flow, an accelerating pump and high speed automatic device. The main inlets of this twin carburettor unit work independently of one another and each is a separate single choke carburettor. This type is fitted on the larger six-cylinder car engines.

The Memini Carburettor.—This design has been used on Italian racing and touring cars. It belongs to the submerged well class, with separate pilot jet for slow running, operated by a single lever. Fig. 64 shows the carburettor in cross-section, through the float chamber and venturi-tube; the axis of the latter is perpendicular to the plane of the paper. Referring to this illustration, *A* is a plain diffuser tube which is surrounded by an annular sleeve *B*. Between *A* and *B* is a space, connecting *via* small holes *C* in diffuser to passage *D*; this connects through the small passage *E* to space *F*. Here is found the maximum or main jet *G*. The diffuser tube *A* is in communication with the main jet *via* passage *H*, which is larger than passage *E*. *J* is a pilot or slow-running jet which communicates *via* passage *K* to the by-pass at the butterfly throttle. *L* is the needle valve