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W. K. QUEEN

1,893,597

METHOD OF MAKING ROD PACKING

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Fig. 1.

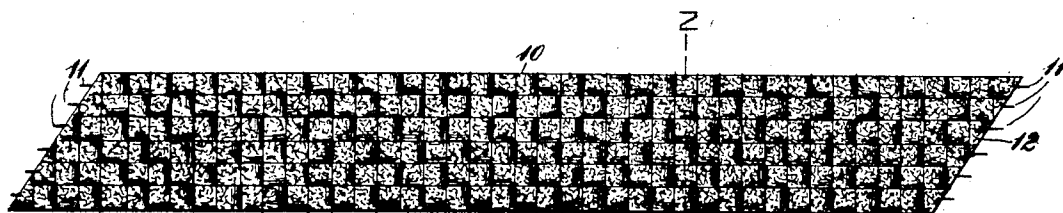


Fig. 3.

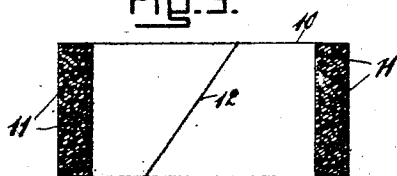


Fig. 2.



Fig. 4.

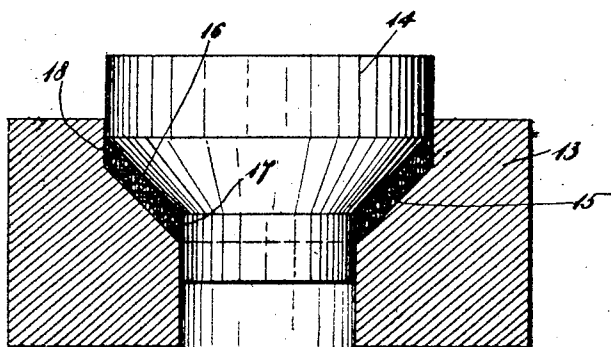


Fig. 5.



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AUTOMATIC DEVICE FOR LIMITING THE SPEED OF INTERNAL COMBUSTION ENGINES,
MORE PARTICULARLY OF TRACTOR ENGINES OR THE LIKE

Application filed May 28, 1930, Serial No. 456,469, and in Italy October 28, 1929.

It has been proposed to adopt automatic devices for governing the speed of internal combustion engines, more particularly of tractor engines and the like, said devices being placed in the cooling water circulating system and partly closing, when the water speed and pressure exceed a predetermined limit, the suction pipe of the carburetor thus reducing the speed of the engine.

It has been ascertained that when the water level in the radiator sinks, a certain quantity of air is carried along in circulation together with the water from which it cannot separate owing to the speed in the circulating conduits. The density of this mixture is however smaller than that of water, so that the pressure exerted on the adjusting device is decreased independently of the speed of the engine.

The above mentioned drawbacks are eliminated by the invention by arranging the devices usually employed for said automatic adjustment of the engine speed, in a closed chamber, unaffected by the usual water circulation and communicating with a small pump, preferably coupled with the ordinary water pump. This chamber has a blind bottom and the water therein does not circulate. The water air and steam mixture circulates through the main conduits without affecting the bellows of the adjusting device, this latter undergoing therefore only the deformations depending from the speed of the auxiliary pump and of the engine by which this latter is driven.

The accompanying drawing shows diagrammatically by way of example a constructional form of the object of this invention.

Figure 1 is a horizontal section of a device according to this invention employed in connection with an engine of the type mentioned above.

Figure 2 is a vertical section on a smaller scale showing a detail.

Referring to the drawing, 1 is an internal combustion engine provided with an adjusting device of a known type comprising expanding bellows 2 acting through a slidable arm 3 on a throttle valve 4 (Figure 2)

mounted capable of oscillating in the suction pipe 5 of the carburetor.

According to this invention the bellows 2 are placed within a metallic chamber 6 secured in a suitable manner within the water jacket or in another suitable position. Into the chamber 6 opens a pipe 7 traversing said jacket through a connecting pipe provided with a packing gland 8 and ends on the pump body 9.

The shaft 10 is driven by the engine through a suitable transmission and carries two wheels 11 and 12, of which the former feeds the usual cooling water circulation, while the latter is of considerably smaller size and forces the water through a gland 8a into the tube 7 and successively into the chamber 6. The wheel 12 is provided in proximity to its hub with a plurality of openings 12' through which flows the water sucked by the wheel 11 from the conduit 13 and conveyed into the circulating conduit 14.

A vent 15 is preferably arranged on the top of the chamber 6 and is connected with the engine cooling jacket. This vent discharges the air bubbles collected in said chamber in order to ensure a more reliable action of the water on the bellows 2.

The device is adapted to operate as follows: When the pump 11 rotates, the refrigerating liquid is circulated and in flowing from the conduit 13 to the conduit 14 a portion of the liquid column is deflected by the auxiliary pump 12 into the conduit 7 and conveyed into the chamber 6. The air carried along by the liquid into the chamber 6 is immediately discharged to the outside through the vent 15. In this manner the variation of the pressure in said chamber is no longer affected by the air carried along in circulation, but depends exclusively from the speed of the auxiliary pump 12 and therefore from the engine speed. The barometric box 2 and the throttle valve 4 are consequently submitted to a force depending exclusively from variations in the engine speed.

What I claim is:

1. In combination with an internal combustion engine, an automatic speed limiting

device comprising an expanding box acting on the engine suction, a chamber in which said expanding box is placed, a pipe connecting said chamber with the cooling water circulating system of the engine, and a small auxiliary pump for generating a water pressure in said chamber.

2. In combination with an internal combustion engine, an automatic speed limiting device comprising an expanding box acting on the engine suction, a chamber in which said expanding box is placed, a pipe connecting said chamber with the cooling water circulating system of the engine, and a small auxiliary pump for generating a water pressure in said chamber, this latter being provided above with a vent to discharge the air bubbles therein.

3. In an internal combustion engine, in combination with a cooling water circulation of said engine, an automatic speed limiting device comprising an expanding box acting on the engine suction, a chamber communicating with said water circulation and in which said expanding box is placed, a small auxiliary pump for generating a water pressure in said chamber, said pump being mounted on the same shaft as the usual cooling water circulation pump.

4. In an internal combustion engine, in combination with the cooling water circulation of said engine, comprising a pump, an automatic speed limiting device comprising an expanding box acting on the engine suction, a chamber communicating with said water circulation and in which said expanding box is placed, a small auxiliary pump for generating a water pressure in said chamber, said pump being coupled with the main circulation pump and provided on its wheel with openings through which the cooling water flows.

In testimony that I claim the foregoing as my invention, I have signed my name.

TRANQUILLO ZERBI.