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GOVERNOR

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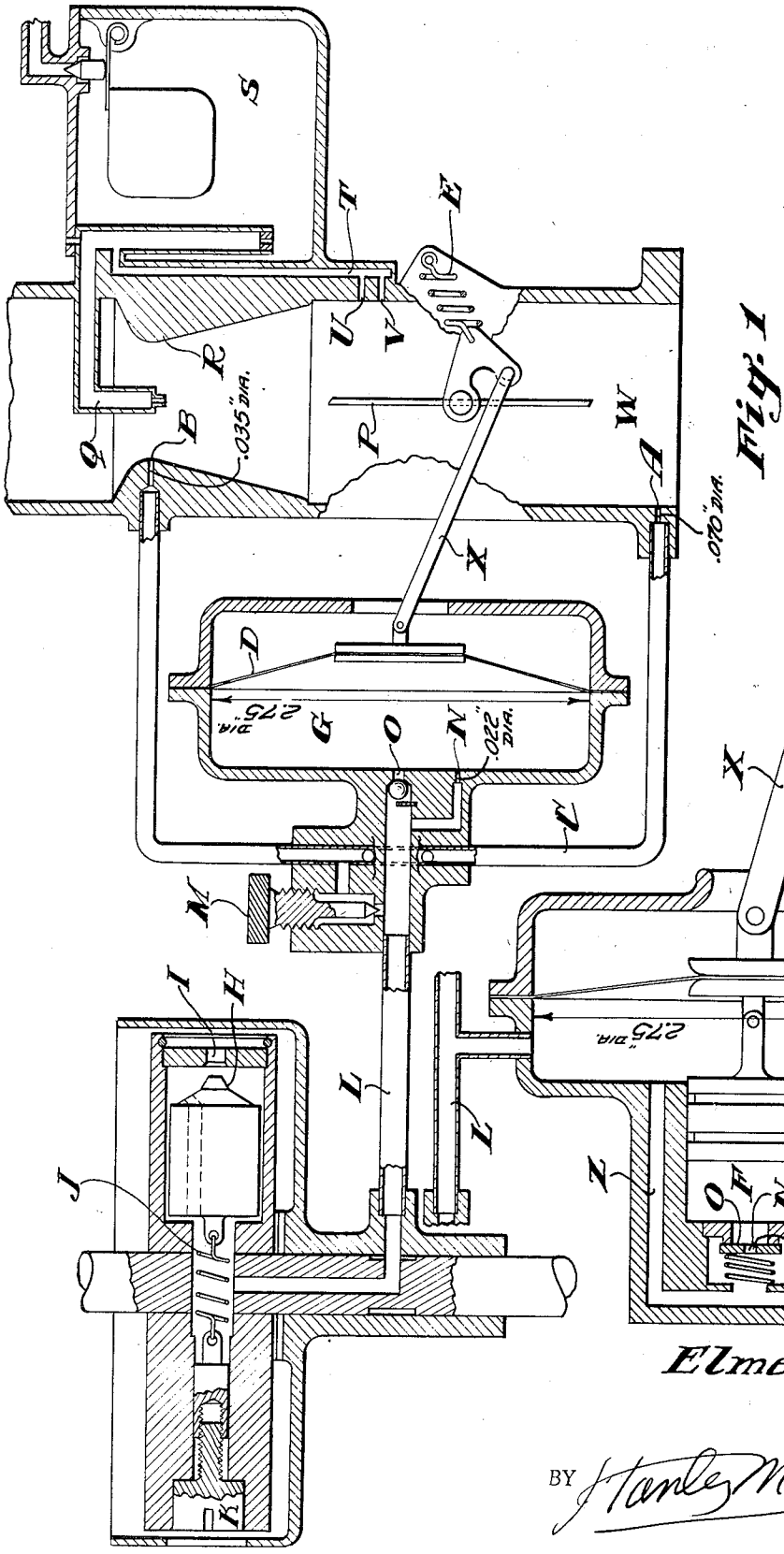


Fig. 1

Fig. 2

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GOVERNOR

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1 Claim. (Cl. 123—103)

The object of this invention is to provide a governor of the type in which a centrifugally operated weight closes the atmospheric vent so that the engine suction closes the throttle promptly when the speed is exceeded.

When a governor is subjected to a sudden release of load or accelerated to wide open throttle with no load, the speed goes up very rapidly and an "over-run" results, so that the speed reached by the engine is considerably in excess of the governed speed. To prevent this "over-run" from being excessive, it is necessary to apply the forces responsive to airflow rapidly so that in the pressure responsive chamber that controls the throttle, the pressure must fall very rapidly as the air flow increases. A check valve delays the opening of the throttle in such a way as to have the throttle partially closed when governed speed is reached. This contributes to the prevention of "hunting."

Fig. 1 shows the preferred form of my invention.

Fig. 2 shows a more elaborate version.

In Fig. 1, a restriction A communicates with the carburetor mixture outlet W. A nozzle Q discharges into the throat of a venturi R and is supplied with fuel from a float chamber S having a low-speed fuel passage T and low-speed fuel outlets U and V. A pipe C constitutes a bypass connecting the two restrictions A and B. The vacuum in the passage C is applied to the diaphragm D which moves to the left, stretching the tension spring E and decreasing the volume of the chamber G.

At low engine speeds when it is desirable to have the governor inoperative, atmospheric air is admitted through a restricted opening I to the chamber G to the left of the diaphragm D. This opening for atmospheric air is controlled by the centrifugal weight H which engages with the atmospheric vent I. The centrifugal weight H is pulled to the left by the tension spring J, the position of which is adjusted by the adjusting screw K. By this means the speed at which the valve H moves to the right and restricts the vent I determines the speed at which the governor becomes operative.

Passage C communicates with the pipe L through the needle valve M. The pipe L communicates with the chamber G through the restricted passage N. There is a check valve O which allows air to escape freely into passage L but prevents air from entering the chamber G when the chamber G increases in volume except through passage N. The result is that the diaphragm D can quickly move to the left but only slowly to the right. A throttle P is closed, being connected to the diaphragm D through a link X. The throttle P can not, however, open quickly because when the throttle P opens under the influence of the spring E, it turns counterclockwise, moving the diaphragm D to the right and increasing the volume of the chamber G so that air has to enter the chamber G, but a check valve O delays this. Air can then only enter chamber G slowly through a restricted passage N. The result is that although the "over-run" is held down to a reasonable value as chamber G is quickly evacuated, the tendency of the governor to "hunt" is prevented by the check valve O which prevents and delays the expansion of the chamber G and the throttle P can not open until this chamber G expands.

In Fig. 2, only the diaphragm elements are shown, neither the governor nor the carburetor being illustrated.

L is a pipe connecting the governor with a carburetor. Passage L is in free communication with a chamber G in which there is a diaphragm D connected through the link X with the throttle (not shown). The piston Y acts as a dashpot and a restriction N is now located in the center of the check valve O. A passage Z communicates the suction in the chamber G to act on a piston Y. Obviously the build-up of pressure in a chamber F to the left of piston Y when the load is applied and the throttle is open is delayed because when air flows from chamber G into chamber F it has to flow through a passage Z and through a restriction N in a check valve O before it can enter chamber F and act on piston Y. Hence, the opening of the throttle is delayed. On the other hand, a sudden increase in speed when the load is decreased causes the suction in chamber G to compress the air in chamber F and thus unseat the valve O and suction is applied immediately to the left side of piston Y. The important dimensions are shown on the drawing.

What I claim is:

A governor for an internal combustion engine having a carburetor which incorporates a venturi acting as the main air passage to said engine, a throttle valve controlling the air flow through said venturi to the engine inlet passage, said governor comprising a rotating chamber, a weight therein, yieldable means engaging with said weight so as to oppose the action of the centrifugal force imparted to said weight, an atmospheric opening leading into said chamber, a variable restriction adapted to be moved by said

centrifugal weight so as to decrease the area of said opening as the speed increases, a moving wall, a chamber associated therewith, a passage connecting said rotating chamber with said chamber, a connection from said moving wall to said throttle whereby the volume of said chamber increases when the throttle opens, spring means adapted to open said throttle so as to oppose the movement of said moving wall when the stationary chamber is subjected to suction, a bypass connecting the engine inlet passage with the throat of said venturi, a passage connecting said bypass with said chamber, a non-return check valve in said passage, a restricted connection acting as a bypass around said check valve whereby the action of the governor to close the throttle is immediately effective upon an increase in speed and upon a decrease in speed there is a delayed action when the spring means operates to open the throttle and to increase the volume of said chamber.

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