

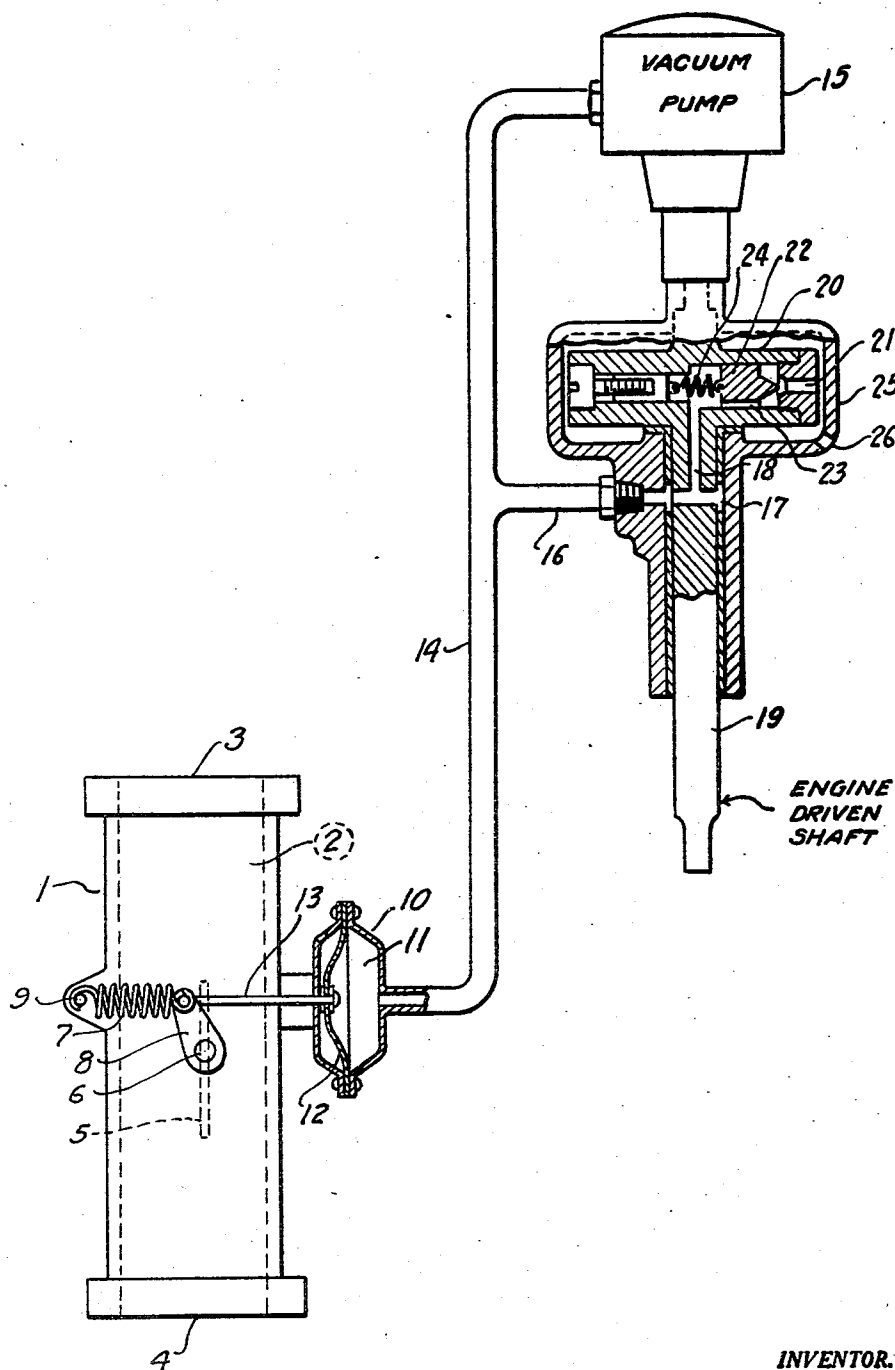
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ENGINE GOVERNOR

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ENGINE GOVERNOR

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6 Claims. (Cl. 123—103)

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This invention relates to a governor for an internal combustion engine and more particularly to a governor which controls the charge in the intake passageway of an internal combustion engine so as to govern the speed of the engine.

It is the object of this invention to produce a governor for an internal combustion engine which is simple in structure and efficient and dependable in operation.

The drawing shows an elevation partly in section of my governor.

The elements of my governor are as follows: governor housing 1, intake passageway 2, inlet 3, outlet 4 to the engine, governor valve 5 of the butterfly type, valve shaft 6, tension spring 7 connected at one end to crank 8 and at the other end to lug 9 and tending to hold valve 5 open, suction device 10, suction chamber 11, flexible diaphragm 12, rod 13 connecting diaphragm 12 with crank 8, conduit 14 connecting suction chamber 11 with vacuum pump 15, branch conduit 16 connecting conduit 14 with circular passageway 17 and T passageway 18 in the engine shaft 19, valve housing 20 having air bleed port 21, centrifugally unbalanced valve 22 controlling port 21, bypass passageway 23, tension spring 24 tending to hold valve 22 open, stationary housing 25, port 26.

The vacuum pump 15 can be of any conventional type such as a rotary vane type vacuum pump, a centrifugal vacuum pump, or a rotary blade type pump.

The operation of the device is as follows: When the engine is not running, the parts are in the position shown. As soon as the engine is started the speed of the engine accelerates. As the speed of the engine increases, the speed of shaft 19 correspondingly increases. As the speed of shaft 19 increases, the vacuum created by pump 15 will increase in accordance, or substantially in proportion to the increase of engine speed, but pump 15, line 14 and suction chamber 11 will be air bleed through ports 26, 21 and passageways 23, 18, 17 and 16. As soon as the engine reaches its governed speed, valve 22 will close port 21 shutting off the air bleed to suction chamber 11 so that vacuum pump 15 will now establish a vacuum in chamber 11 which will cause diaphragm 12 to move toward the right and move throttle valve 5 toward closed position to control the charge to the engine in accordance with the load so that the engine will run at its governed speed. Valve 22 closes against the suction created by pump 15 and will only close momentarily because as soon as the speed of the engine decreases even slightly, valve 22 will open slightly and, in a sense, ride the vac-

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uum or bleed down the suction in chamber 11 so that spring 7 will move valve 5 toward open position to increase the charge sufficient to maintain the speed of the engine. In other words, centrifugally unbalanced valve 22 acts as a controller which bleeds chamber 11 more or less so that suction device or servo-motor 10 responds to open or close throttle valve 5 to supply sufficient charge to the engine to maintain its governed speed under varying loads.

I claim:

1. A governor for an internal combustion engine having an intake passageway comprising a throttle valve in said passageway, a pressure responsive device connected to said throttle valve, engine driven vacuum producing means in communication with said pressure responsive device and adapted to be actuated so that the vacuum produced by said means will vary substantially in accordance with the speed of the engine, an air bleed to atmosphere for controlling the effective pressure at said pressure responsive device, and a speed controlled valve for said air bleed responding at the governed speed of the engine and tending to close said air bleed whereby the pressure responsive device responds to the vacuum created by said means and tends to move said throttle valve toward closed position to decrease the charge entering the engine.

2. A governor for an internal combustion engine having an intake passageway comprising a throttle valve in said passageway, a pressure responsive device connected to said throttle valve, vacuum producing means in communication with said pressure responsive device and adapted to be driven by the engine so that the vacuum produced by said means will vary substantially in accordance with the speed of the engine, an air bleed to atmosphere for controlling the effective pressure at said pressure responsive device, and a centrifugally controlled valve for said air bleed responding at the governed speed of the engine and tending to close said air bleed whereby the pressure responsive device responds to the vacuum created by said means and tends to move said throttle valve toward closed position to decrease the charge entering the engine.

3. A governor for an internal combustion engine having an intake passageway comprising a throttle valve in said passageway, a pressure responsive device connected to said throttle valve, a vacuum pump adapted to be actuated in accordance with the speed of the engine so that the vacuum produced by said means will vary substantially in accordance with the speed of the

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engine, a conduit connecting said vacuum producing means with said pressure responsive device, an air bleed to atmosphere for controlling the effective pressure at said pressure responsive device, and a speed controlled valve for said air bleed responding at the governed speed of the engine and tending to close said air bleed whereby the pressure responsive device responds to the vacuum created by said means and tends to move said throttle valve toward closed position to decrease the charge entering the engine.

4. A governor for an internal combustion engine having an intake passageway comprising a throttle valve in said passageway, a pressure responsive device connected to said throttle valve, engine driven vacuum producing means adapted to be actuated in accordance with the speed of the engine so that the vacuum produced by said means will vary substantially in accordance with the speed of the engine, a conduit connecting said vacuum producing means with said pressure responsive device, a valve housing rotated in accordance with the speed of the engine and having an air bleed orifice therein, a conduit connecting said air bleed port with the pressure respon-

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sive device, and a centrifugally unbalanced valve mounted in said housing and tending to close said air bleed port as the engine reaches its governed speed whereby the pressure responsive device responds to the vacuum created by said means and tends to move said throttle valve toward closed position to decrease the charge entering the engine.

5. The combination as set forth in claim 4 wherein the centrifugally unbalanced valve itself constitutes a centrifugal weight which responds to changes in the engine speed and wherein the closing of said air bleed valve is opposed by the vacuum created by said vacuum producing means.

6. The combination as set forth in claim 4 wherein the centrifugally unbalanced valve itself constitutes a centrifugal weight which responds to changes in the engine speed and wherein the closing of said air bleed valve is opposed by the vacuum created by said vacuum producing means, and resilient means tending to hold said centrifugally unbalanced valve open in opposition to the centrifugal force tending to close the centrifugally unbalanced valve.

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