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CARBURETER VALVE AND GOVERNOR.

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1,094,986. Patented Apr. 28, 1914.

Fig. 1.

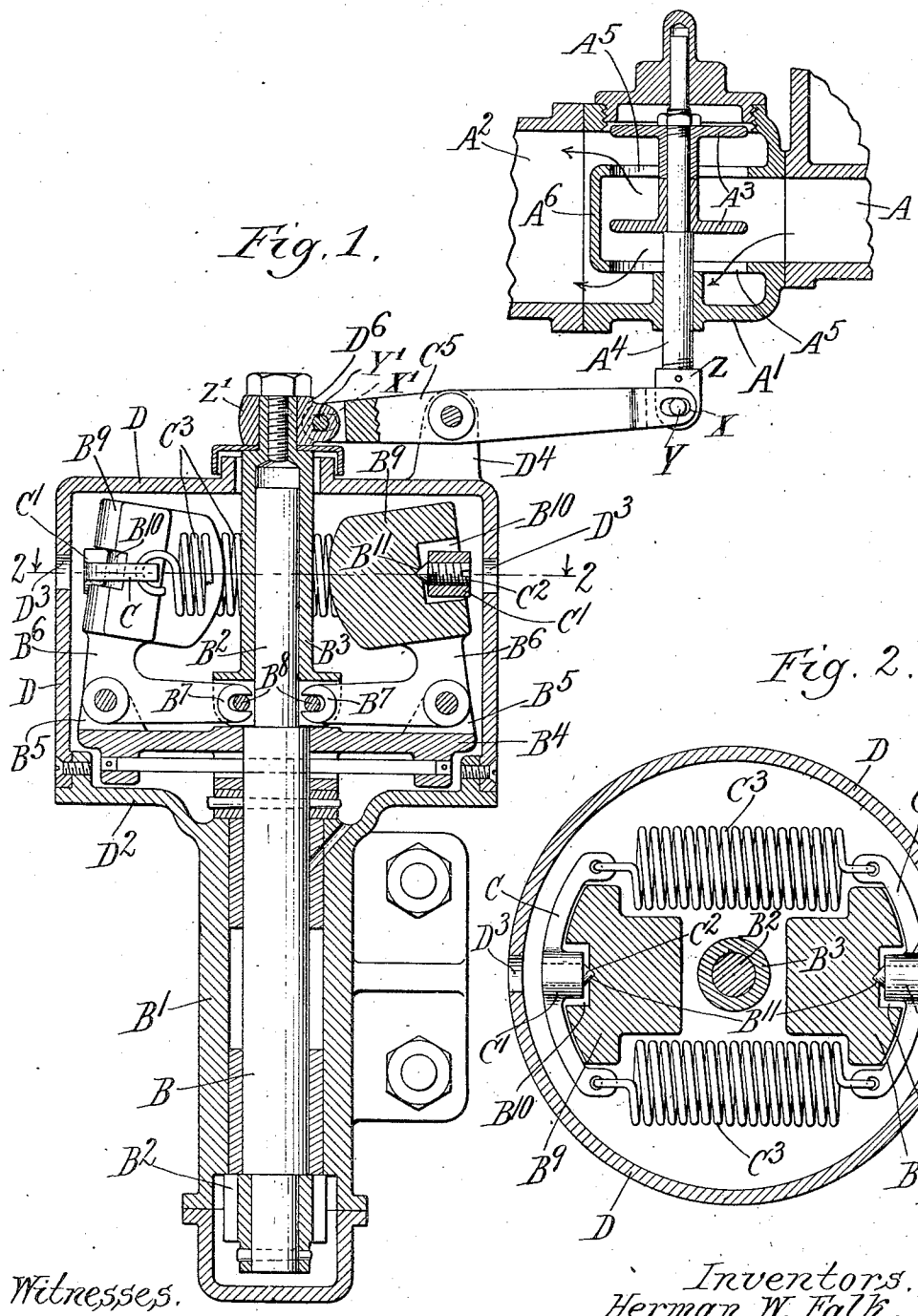


Fig. 2.

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Application filed October 27, 1911. Serial No. 657,020.

To all whom it may concern:

Be it known that we, HERMAN W. FALK and WILLIAM K. ANDREW, citizens of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Carbureter Valves and Governors, of which the following is a specification.

Our invention relates to improvements in governors for carbureters and is illustrated diagrammatically in one form in the accompanying drawing, wherein—

Figure 1 is a sectional view showing the governor and carbureter valves; Fig. 2 is a section on the line 2—2 of Fig. 1.

Like parts are indicated by the same letter in all the figures.

The mixture passes from the carbureter A through the valve chamber A^1 to the intake manifold A^2, being controlled by the balanced puppet valve A^3 rigidly carried on the reciprocating valve stem A^4 and working in opposition to the perforations A^5 in the top and bottom of the valve drum A^6. It will be seen that as the valve stem A^4 descends, the puppet valve A^3 will tend to close the perforations A^5 and cut down the supply of the mixture.

The governor shaft B is rotatably mounted in the bearing sleeve B^1 and provided at its lower end with the pinion B^2, which is driven by any suitable means not shown from the crank shaft of the engine. The shaft B is provided at its upper end with the reduced section B^2 upon which is slidably mounted the sleeve B^3. The disk B^4 is rigidly mounted on the shaft B and provided with the upstanding lugs B^5 in which are pivotally mounted the bell crank levers B^6, having each at one end the jaw B^7 engaging the pins B^8 on the sleeve B^3 and at the other end the counter-balance weights B^9. The weights B^9 are provided each with the cross-shaped recesses B^{10} having in their bottoms conical bearing surfaces B^{11}.

The vertically disposed yokes C are provided with the cylindrical lugs C^1 in which are adjustably mounted the conical pointed screws C^2 in engagement with the bearing surfaces B^{10}. The springs C^3 connect the opposed ends of the yokes C. The cylindrical housing D is mounted upon the flange D^2 which projects outwardly from the sleeve B^1. The diametrically opposed perforations D^3 in the housing D are in opposition to the screws C^2 and a tool may be inserted through them to adjust the tension on the springs C^3 by turning the screws C^2. The lug D^4 projects upwardly from the housing D and carries the rocker arm C^5 pivotally mounted at one end of the lower end of the valve stem A^4 and at the other end of the cap D^6 on the top of the sleeve B^3. The slots X X^1 contain in slidable and rotatable contact therewith the pins Y Y^1 mounted respectively in the heads Z Z^1 on the rods A^4 B^2 to permit a relative movement of the parts when the lever C^5 rotates.

It will be evident that while we have shown in our drawing an operative device, still many changes might be made in the size, shape and arrangement of parts without departing materially from the spirit of our invention, and we wish, therefore, that our drawing be regarded as in a sense diagrammatic.

The use and operation of our invention is as follows: While the engine is in operation, it draws the combustible mixture from the carbureter through the controlling valve and exhaust manifold into the cylinder. The speed of the engine or the power developed by it is controlled by the amount of combustible mixture drawn past the controlling valve from the carbureter. When the valve is wide open, the engine delivers maximum power or speed, and as it closes the speed or power diminishes. The governor is rotated in response to the crank shaft by any suitable connection which is not here indicated, and as the speed rises above a certain predetermined point the centrifugal force acting on the counterbalance weights on the bell crank levers throws them outwardly against the tension of the springs, raising the sliding sleeve and closing down the valve. As the speed diminishes the springs draw the counterbalance weights in, lowering the sleeve and raising or opening the valve. The speed at which the engine will run depends upon the tension in the governor springs and this tension may be varied by rotating the adjusting conical pointed screws to carry the yokes farther away or allow them to approach more closely to the counter-balance weights. It will be observed that the connecting yokes are supported each at one central point and that the springs balance each other upon the two ends of the yokes. Therefore, a single adjustment of one of the screws might under some circumstances be

sufficient to adjust the tension on the springs and could not by any possibility throw the governor out of adjustment or put any torsion or strain on the bearings or any parts of them. Of course, for considerable variations of adjustment it may be necessary to change the position of both of the screws. The holes through the governor housing are provided in order that a tool may be readily employed to make this adjustment without taking down the governor.

It will be observed that the governor is very simple and is entirely self-contained, that all the rotating parts are completely covered up and that there is no opportunity for any parts to be interfered with or to get out of order. The balanced valve in the carbureter permits of the use of a very light and sensitive governor in view of the fact that under all circumstances the pressure of the gas on either side of the valve is the same and therefore the only load that must be carried by the governor is the friction load, and the work done by the governor will be the same no matter what the position of the valve. In other words, therefore, we provide a carbureter or governing valve in which the valve is at all positions and under all conditions quite independent in its action of conditions prevailing in the valve chamber. That is to say, changes in velocity or pressure of the combustible gases do not affect in any way the operation of the valve, and binding or locking owing to any such changes cannot take place.

We claim:

1. A governor having centrifugally separated balanced weights, yokes on the opposed sides of each of said weights, tension springs interposed between the opposed ends of each of said yokes, and means for varying the distance between each of said weights and its yoke, said means comprising a conical pointed screw centrally disposed in said yoke and a conical bearing surface in said weight in opposition to said screw, said yokes being movable relative to the governor weights about the pointed ends of the screws.

2. A governor having centrifugally separated balanced weights, yokes on the opposed sides of each of said weights, tension springs interposed between the opposed ends of each of said yokes, means for varying the distance between each of said weights and its yoke, said means comprising a conical pointed screw centrally disposed in said yoke, a conical bearing surface in said weight in opposition to said screw and a perforate housing for said governor, said perforation being in opposition to said screw, said yokes being movable relative to the governor weights about the pointed ends of the screws.

3. A governor having centrifugally separated balanced weights, yokes on the opposed sides of each of said weights, tension springs interposed between the opposed ends of each of said yokes, and means for varying the distance between each of said weights and its yoke, said means comprising a conical pointed screw centrally disposed in said yoke, and engaging the outer side of the weight, said yokes being movable relative to the governor weights about the pointed ends of the screws.

4. A governor having centrifugally separated balanced weights, slotted on their outer opposed sides, yokes located within slots and in engagement with the weights, and tension springs interposed between the opposed ends of each of said yokes and means carried by said yokes located within said slots and engaging said weights for varying the distance between them, said yokes being movable relative to the governor weights about a single point as a fulcrum.

5. A governor having centrifugally separated balanced weights, slotted on their outer opposed sides, yokes located within slots and in engagement with the weights, and tension springs interposed between the opposed ends of each of said yokes and means carried by said yokes located within said slots and engaging said weights for varying the distance between them, said means comprising a conically pointed screw centrally disposed within said yoke and in engagement with the weights, said yokes being movable relative to the governor weights about the pointed ends of the screws.

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