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CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

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Fig. 1

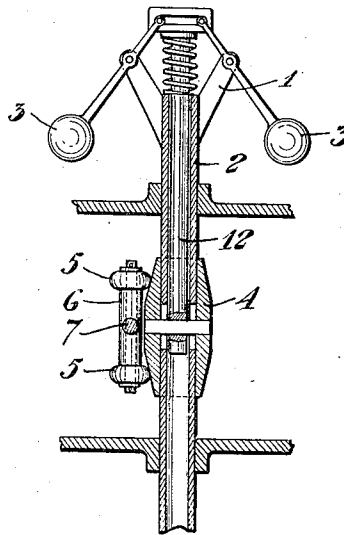
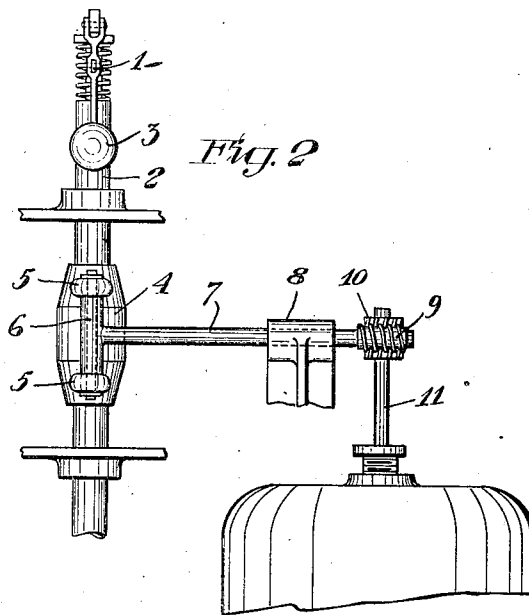


Fig. 2



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CONTROL DEVICE FOR INTERNAL-COMBUSTION ENGINES.

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The present invention refers to that type of internal combustion motors where the fuel valve is such as to permit of being adjusted, in order to effect spreading of the fuel during injection, in a higher or lower degree according to the varying speed or load of the motor. Hitherto, such adjustment only could be effected manually, that is to say the motor attendant had to watch as accurately as possible the moments when adjustment was to take place, and to endeavour to bring about the most suitable degree of adjustment for the time being. Even when performed with a certain degree of skill, such adjustment must of course always be relatively inaccurate. The arrangement, which at any rate has necessitated constant presence and attention on the part of the motor attendant, could be applied without too much inconvenience in boat motors where, as a rule, the motor attendant always stays beside the motor, but in stationary motors, where this is not the case, the arrangement could not be made use of to any greater extent.

Now, therefore, the present invention has for its object to bring about an automatic adjustment of the fuel valve, such adjustment being effected by the motor itself, and the arrangement provided according to the invention is essentially distinguished by the fact that the fuel valve of the motor adapted to be adjusted for the control is connected with the motor or any part therewith in such a manner that a change in the speed or load of the motor results in the adjustment of the fuel valve, whereby the spreading action is altered.

In applying the invention, a centrifugal governor driven by the motor is preferably made use of, and the annexed drawing illustrates by way of diagrammatic representation one embodiment of the invention provided with a governor of the said type. Fig. 1 shows the arrangement viewed from the side, and Fig. 2 is an elevation taken at right angles to Fig. 1.

According to the drawing, a common centrifugal governor 1 is used, the spindle 2 of said governor being driven directly from the motor. The member 12, slidably mounted in the spindle 2 and actuated by the governor weights 3, is rigidly connected with a sleeve 4 adapted to be displaced on

the spindle 2, said sleeve 4 being preferably shaped as a double cone and having two rollers 5 bearing on the conical parts thereof, said rollers being journalled in a sleeve 6 forming a cross piece on a shaft 7, which is journalled as at 8, and carries a worm 9 co-operating with a worm wheel 10 on the spindle 11 of the fuel valve. The spindle 11 is rotatable in known manner for the purpose of effecting the control in question.

When the governor weights are deflected so as to displace the sleeve 4, the latter with its one conical part actuates the one roller 5 so that it will be moved from the spindle 2, while at the same time the other roller following its corresponding cone is approached to the spindle. This will result in turning of the sleeve 6 and the shaft 7 which latter transmits the turning movement onto the spindle 11 of the fuel valve through the medium of the worm gear 9, 10.

The mechanical connection between the governor spindle and the spindle of the fuel valve may evidently be devised in a number of ways other than herein shown and described. The arrangement with the double conical sleeve 4 and the cross piece 6 as described and illustrated is, however, particularly advantageous, in that it practically eliminates all dead working between the parts, while being eminently easy-operating. The arrangement will therefore be found to be very sensitive and quick-acting.

What I claim as new and desire to secure by Letters Patent of the United States of America is:—

1. In an arrangement of the character described, a governor including a rotatable spindle, a double conical sleeve slidably mounted upon the spindle and responsive in movement to the governor, a rotatably supported operating shaft, a cross piece on said shaft, and rollers upon said cross piece adapted to bear against the conical surface of said sleeve so that when the sleeve is axially displaced on the governor spindle the rotatable shaft receives a rotary movement.

2. In an arrangement of the character described, a governor including a rotatable spindle, a vertically slidable member within said spindle, governor arms mounted on the spindle and operatively connected with the

member for imparting slidable movement thereto, a double conical sleeve slidably mounted on the spindle and rigidly connected with the member so as to be movable therein relative to the spindle, a rotatably supported shaft, gearing between the shaft and the part to be operated, a cross piece on said shaft, and rollers upon said cross piece adapted to bear against the conical surface of said sleeve so that when said sleeve is axially displaced the rotatable shaft is operated. 10

In testimony whereof I affix my signature.
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