A. TACCHELLA.

GOVERNOR CONTROLLED COMBUSTION ENGINE.

APPLICATION FILED OCT. 5, 1917.

1,394,953. Patented Oct. 25, 1921.

Fig. 1,

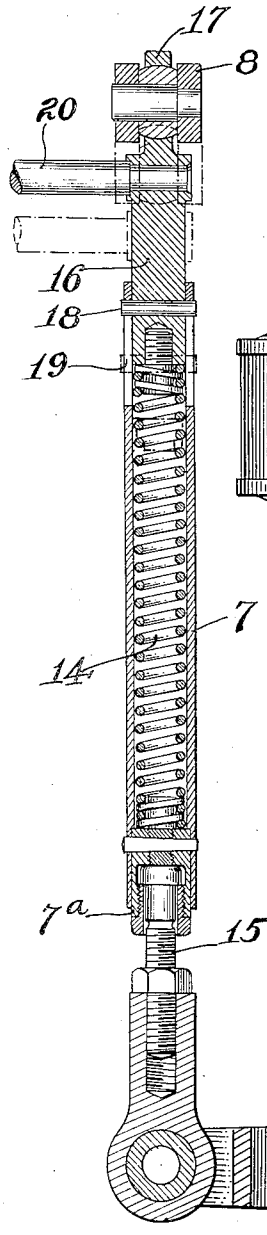


Fig. 2,

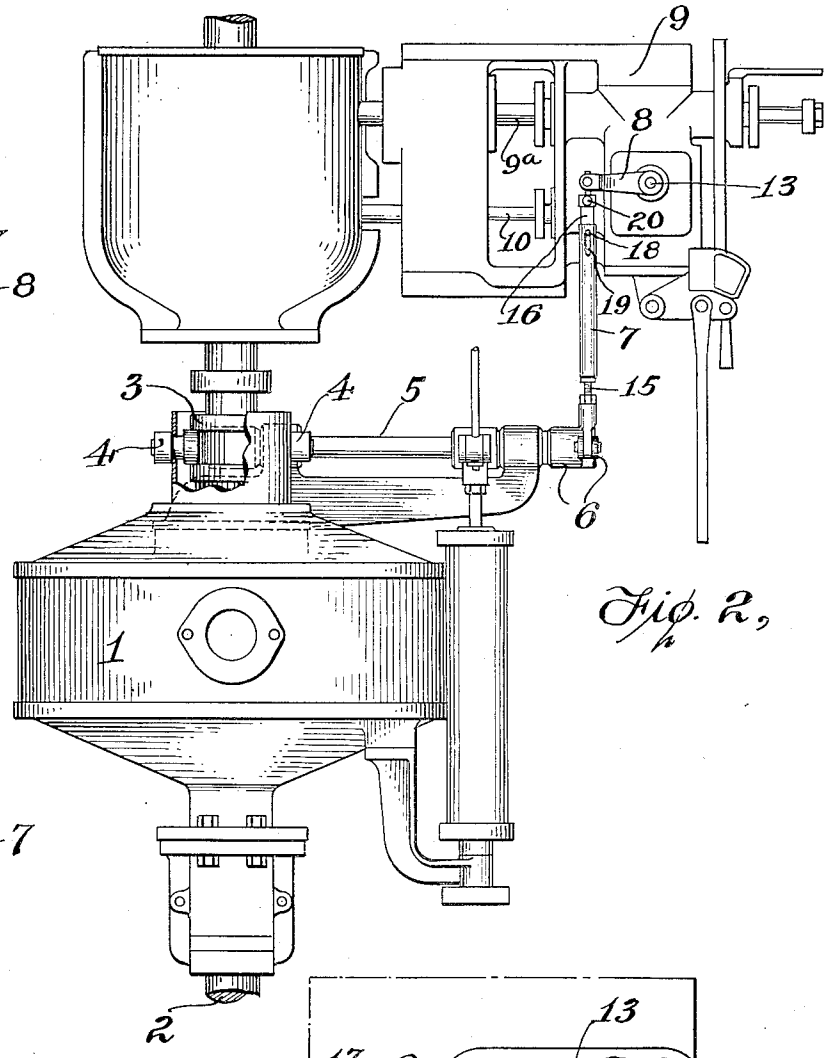
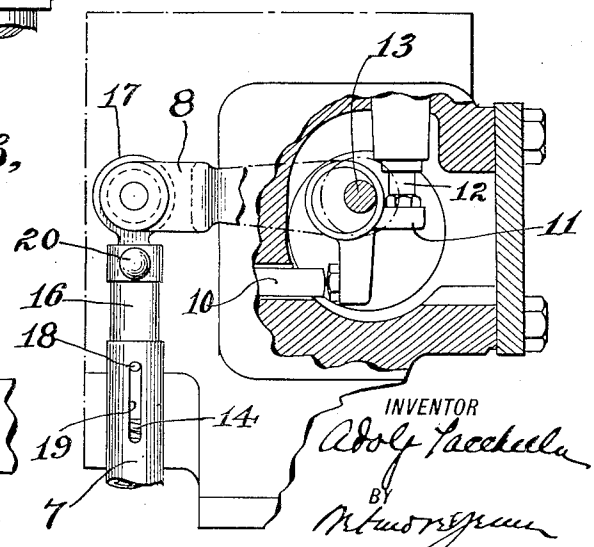


Fig. 3,



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GOVERNOR-CONTROLLED COMBUSTION-ENGINE.

1,394,953. Specification of Letters Patent. Patented Oct. 25, 1921.

Application filed October 5, 1917. Serial No. 194,910.

To all whom it may concern:

Be it known that I, ADOLF TACCHELLA, citizen of the Confederation of Switzerland, residing in the city of St. Louis, Missouri, have invented the following described Improvements in Governor-Controlled Combustion-Engines.

The invention provides a simple means to assist the starting of governor controlled internal combustion engines of the fuel-injected class and consists in an organization of the connections between the governor and the fuel delivery mechanism whereby such delivery of fuel may be manually and temporarily increased to enable the engine to pick up speed and is thereafter automaticall restored to its normal rate and within the control of the governor. By such means large sized engines of the class referred to can be quickly started in action without uncoupling parts or changing permanent adjustments of the pump mechanism which when properly set should not be disturbed.

In the accompanying drawings illustrating the principle of the invention in its preferred form—

Figure 1 shows the governor link in longitudinal section;

Fig. 2 an elevation of the principal parts of the engine governor and fuel pump; and

Fig. 3 a detail partly in section of a common means of pump control.

Referring to Fig. 2 the engine governor is indicated at 1 and is driven by a governor shaft 2 understood to be geared to the crank shaft of the engine. The governor collar 3 is engaged with a yoke 4 fast on a rock shaft 5. The crank arm 6 on the end of this rock shaft is connected by a link 7 to the control lever 8 of the fuel pump 9. In normal operation variation of the position of the governor collar 3 rocks the shaft 5 and thereby varies the position of the lever 8 so as to prescribe a fuel discharge from the pump in predetermined and proper amounts for all conditions of load and speed. A common means of effecting such automatic regulation is by the positive control of the time of closing the suction valve or valves of the pump and is illustrated in Fig. 3 wherein 10 is a push rod reciprocating in unison with the pumping plunger (9^a Fig. 2), and acting through an eccentrically fulcrumed bell crank 11 upon the stem of the suction valve 12. The eccentric fulcrum is carried on the shaft 13 of the fuel control lever above mentioned so that, according to the position of the latter, the suction valve is allowed to close earlier or later correspondingly affecting the pump delivery. It will be noted that depression of the fuel control lever shifts the bell crank away from its controlling push rod so as to increase the delivery of fuel. All of this arrangement and its mode of operation is well known to the art. The present invention is applied to the foregoing, or to equivalent organizations, at some point in the line of control between the governor and the pump delivery and consists of means, broadly speaking, for temporarily displacing one or more of the operating or controlling elements against the action of a restoring force so as to increase the fuel delivery for the purpose above stated. As herein shown this means is incorporated in the governor link 7 which is made tubular and contains within itself the restoring spring 14. The tubular body of the link is fast at its lower end to a threaded ferrule 7^a in which is swiveled the head of a bolt 15 constituting an adjustable connection between said tube and the governor lever arm 6. The upper end of the link body is telescoped over the shank 16 of the eye 17 by which it is connected to the fuel control lever 8 and the telescopic motion is limited by a pin 18 in the shank 16 playing in the slots 19 in the tube 7. The internal spring 14, thrusting against the ferrule 7^a at one end and the shank 16 at the other, maintains the several link parts in a distended relation so that under the normal strains to which it is subjected the link acts quite like a rigid or one piece member, transmitting the governor movement with equal positiveness in both directions. The spring 14 however, is adapted to yield and permit telescoping under such degree of downward pressure as can be conveniently applied by hand to the hand lever 20 which is secured in the shank 16. The dotted lines in Fig. 1 illustrate the telescoped relation. When the link is thus telescoped the fuel control lever will be turned in the direction to increase the fuel delivery from the pump and the increased delivery will be maintained until the engine is well under way, being automatically and instantly reduced to the rate determined by the governor whenever the operator withdraws his hand from the handle 20 and

thereby allows the link to restore itself to the fixed initial position of normal running shown in full lines in Fig. 1.

The particular means for accomplishing the results just described will be recognized to be subject to very considerable variation in respect to location, construction and mode of operation and various changes, modifications and reversals may obviously be made therein without departing from the principle of the invention as described in the following claim:

In a governor controlled internal combustion engine of the fuel-injected class, means connecting the governor to the fuel injecting means to vary the fuel delivery, comprising two relatively movable telescopic parts, and a spring housed therein and normally holding said parts in a non-changing relation for positively transmitting the governor motion to said means, said spring being arranged to urge said parts in the direction to decrease the fuel delivery, whereby said connections may be moved by the hand to increase the fuel delivery and instantly act, on removal of the hand, to decrease such delivery.

In testimony whereof, I have signed this specification.

ADOLF TACCHELLA.