D. C. JENKINS.

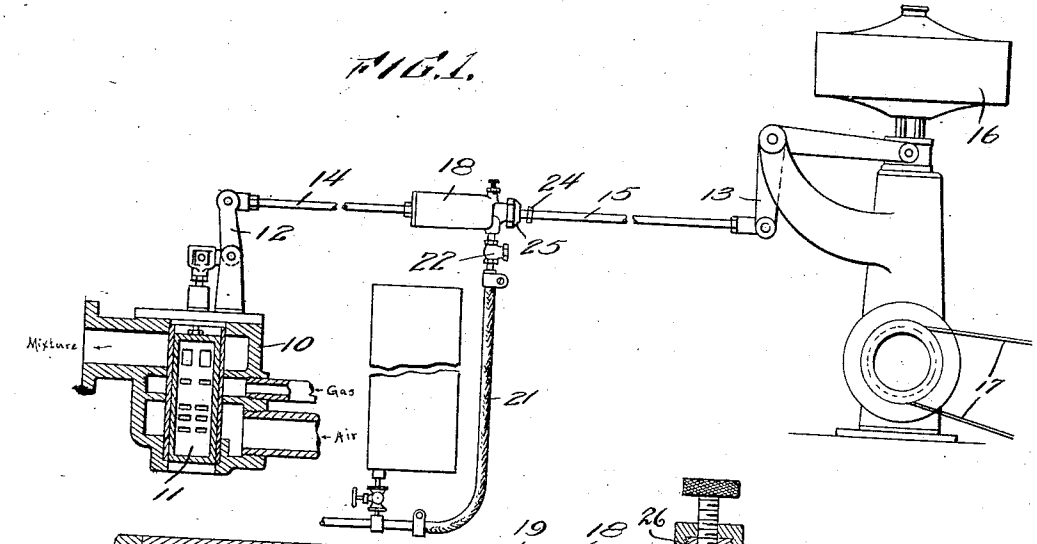
ENGINE REGULATOR.

APPLICATION FILED MAR. 6, 1916.

1,220,133.

Patented Mar. 20, 1917.

FIG. 1.



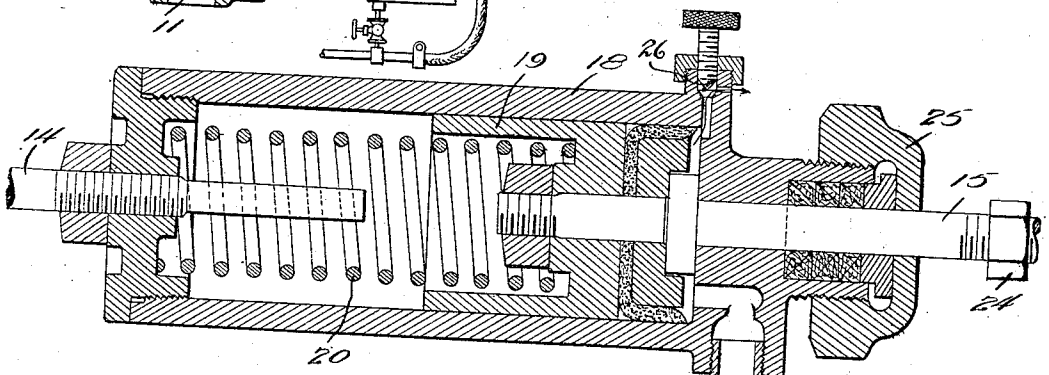
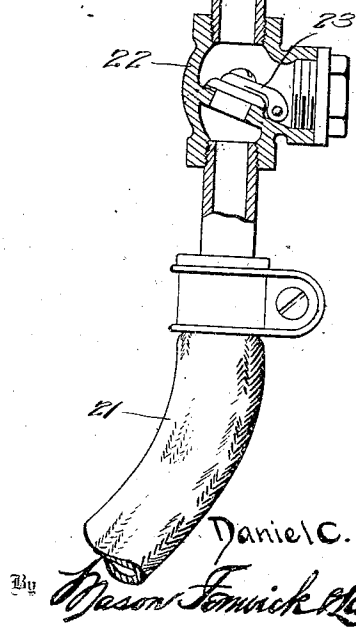


FIG. 2.



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ENGINE-REGULATOR.

1,220,133. Specification of Letters Patent. Patented Mar. 20, 1917.

Application filed March 6, 1916. Serial No. 82,478.

To all whom it may concern:

Be it known that I, DANIEL C. JENKINS, a citizen of the United States, residing at Clarksburg, in the county of Harrison and State of West Virginia, have invented certain new and useful Improvements in Engine-Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to engine regulators, and has for an object to provide a construction especially adapted for use in conjunction with internal combustion engines to prevent the introduction of the full charge of gas at starting and thereby eliminate the intense wasteful and damaging explosions at starting, and also facilitating starting by reason of the compression in the cylinder being less than the normal running compression.

A further object of the invention is to provide a governor in conjunction with an internal combustion engine for controlling the action of the valves as an ordinary speed regulator, with improved means interposed between the governor and the valves for temporarily partially closing the valves at starting, with means for gradually returning the parts to normal after the engine has started.

With these and other objects in view the invention consists in certain novel features of construction, combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawings:—

Figure 1 is a diagrammatic view showing the connection of the improved device with an internal combustion engine.

Fig. 2 is an enlarged detail sectional view of the regulator.

Like characters of reference designate corresponding parts throughout the several views.

The improved device which forms the subject-matter of this application is adapted to be connected and operated in conjunction with any usual and ordinary type of explosive engines, here shown conventionally only as a valve housing 10 with a valve 11 mounted therein. The valve 11 is actuated by a bell-crank lever 12 which in turn is actuated from a bell-crank lever 13 through connecting devices including a link composed of the two parts or sections 14 and 15. The bell-crank lever is controlled by a governor 16 of any usual and ordinary type, driven in any usual and ordinary manner as by the belt 17.

Interposed in the run of the link 14—15 is mechanism for varying its length. This is here shown as a cylinder 18 rigidly connected with one of the sections, as the section 14, with a piston 19 slidably mounted within the cylinder 18 and rigidly connected with the other section, as 15, of the link. Within the cylinder 18 is a spring 20 normally tending to hold the piston at the extreme of its movement and the link 14—15 at its greatest length. Means is provided, however, as the flexible pipe 21 for actuating said mechanism pneumatically by admitting air to the cylinder 18 against the piston 19 to move the piston within the cylinder against the tension of the spring 20. The air from the flexible pipe 21 passes through the valve housing 22 lifting the check valve 23. It is well known, of course, that compressed air is used in starting large internal combustion engines, and at the time the compressed air is employed for this purpose it is by my invention also admitted through the pipe 21. As soon as the engine starts the compressed air is shut off, and the air is trapped by the valve 23 in the cylinder 18, holding the piston with the combined link 14—15 shortened and the adjustable stop 24 against the gland 25. When, however, the air is shut off the trapped air leaks through the bleeder 26 under the pressure of the spring 20, permitting the piston 19 to return slowly to normal and the combined link 14—15 therefore to return to its normal length gradually as the engine starts, thereby returning the valve 11 to its normal position.

Throughout the specification reference has been made to admitting air to the cylinder 18. It is to be understood that the air is used only as illustrative of any fluid under pressure conveniently at hand for actuating the piston within the cylinder.

I claim:—

1. The combination with an engine valve, a centrifugal governor, devices connecting said valve and governor; of mechanism interposed in said devices to temporarily vary the length thereof, and means receiving fluid pressure simultaneously with a starter and connected to said mechanism.

2. The combination with a valve, a governor, and a connection between them; of

mechanism to decrease the length of said connection, and means to gradually restore the connection to normal length.

3. The combination with an engine valve, a governor, and devices connecting them; of mechanism to vary the length of said devices, pneumatic means for actuating said mechanism, and means to automatically restore the devices to normal.

4. The combination with an engine valve and a governor therefor; of a link composed of alined sections connected respectively to the valve and governor, members connected with the sections and telescopic on each other, and means receiving air pressure simultaneously with a starter, operative to slide said members by said pressure to reduce the length of the link, and means to gradually restore the parts to normal after starting has been accomplished.

5. The combination with an engine valve and a governor therefor; of a link connecting the valve and the governor composed of sections slidable relative to each other, means, receiving air pressure as utilized for starting the engine, to vary the length of the link, and means to gradually restore the parts to normal after starting has been accomplished.

6. The combination of a valve and a governor therefor, a link connecting the valve and governor composed of sections, a cylinder carried by one section, a piston carried by the other section slidable within the cylinder, a spring tending to hold the piston at one end of the cylinder, means to admit air to the cylinder to move the piston against the tension of the spring, means to trap the air within the cylinder, and means to permit the air to gradually bleed out of the cylinder under the expansion of the spring.

7. The combination with a valve and a governor therefor, a link connecting the valve and governor and composed of sections, a cylinder carried by one section, a piston carried by the other and slidable within the cylinder, a spring tending to hold the piston at one end of the cylinder, a flexible pipe to admit air to said end of the cylinder to move the piston against the tension of the spring, a check valve in said pipe to trap the air within the cylinder, and a bleed opening to permit the air to gradually escape from the cylinder under the expansion of the spring.

8. The combination with an engine valve, a governor therefor; of a link connecting the valve and the governor composed of sections, members connected with the sections and slidable relative to each other, and means, receiving fluid pressure passing to the engine for starting purposes, operative to slide the members at starting to vary the length of the link.

9. The combination of a valve and a governor therefor, a link connecting the valve and governor and composed of sections, a cylinder carried by one section, a piston carried by the other section and slidable within the cylinder, means to admit air to the cylinder to move the piston in one direction, means to trap the air within the cylinder, and means to permit the air to gradually bleed out of the cylinder and the piston to move in the other direction.

10. The combination with a valve and a governor therefor, a link connecting the valve and governor and composed of sections, a cylinder carried by one section, a piston carried by the other and slidable within the cylinder, a spring tending to hold the piston at one end of the cylinder, and a flexible pipe to admit air to said end of the cylinder to move the piston against the tension of the spring.

11. The combination with a valve, a centrifugal governor, and a link between them composed of sections; of yielding means for holding the contiguous ends of said sections spaced a predetermined distance, and pneumatic means independent of the governor for moving such ends toward each other at will to shorten the link.

12. The combination with a valve, a centrifugal governor, and a link between them composed of sections; of yielding means for holding the contiguous ends of said sections spaced a predetermined distance, means independent of the governor for moving such ends toward each other at will to an extent to shorten the link, and means for adjusting the possible extent of such movement.

13. The combination with an actuable member, and a speed-controlled governor therefor; of a link between said elements, pneumatic means independent of the governor for reducing the length of the link at will, and means to automatically restore such link gradually to normal length, for the purpose set forth.

14. The combination with an actuable member, and a speed-controlled governor therefor; of a link between said elements and composed of sections each operatively connected to one of them, pneumatic means moving the sections with respect to each other and changing the length of the link at will, and means to automatically restore such link gradually to normal length, for the purpose set forth.

In testimony whereof I affix my signature.

DANIEL C. JENKINS.

Copies of this patent may be obtained for five c[illegible] each, by addressing the "Commissioner of Patents, Washington, D. C."