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THROTTLE GOVERNOR FOR INTERNAL COMBUSTION ENGINES.

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1,094,167. Patented Apr. 21, 1914.

Fig. 2.

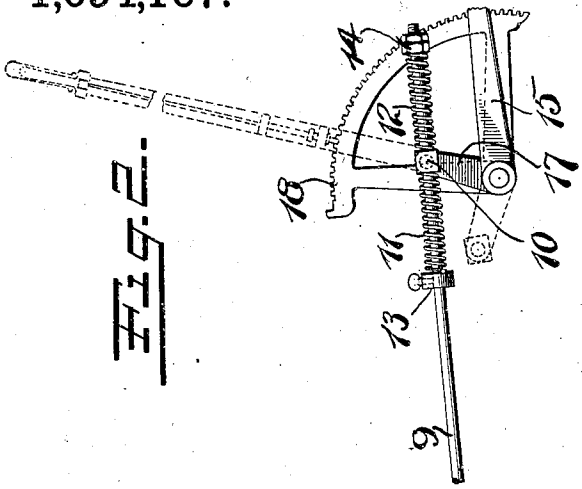
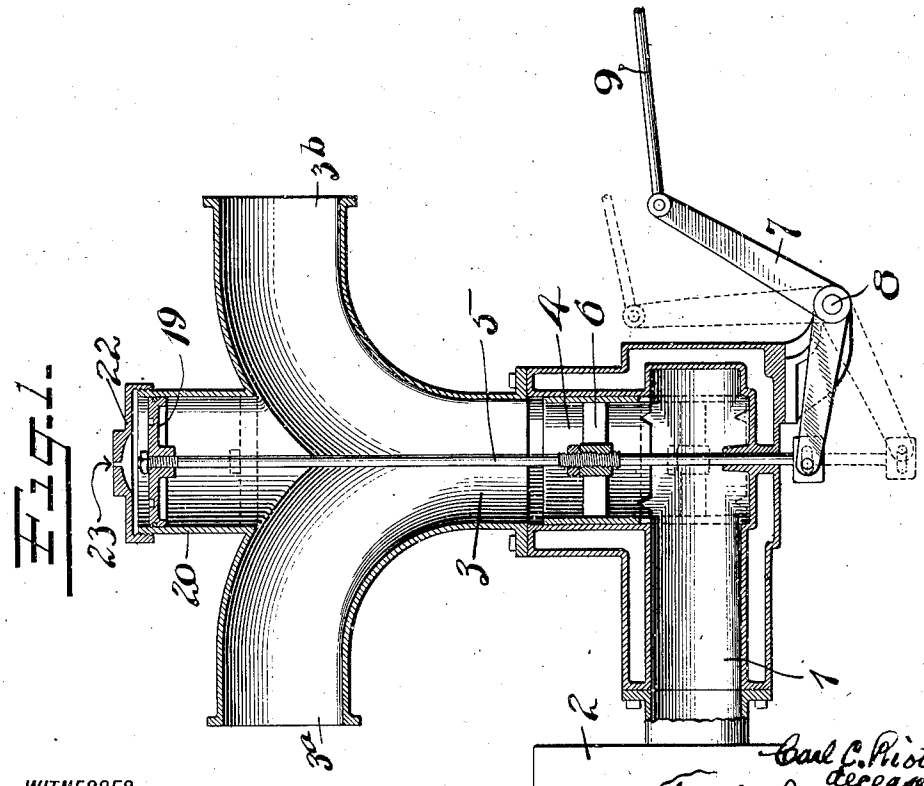


Fig. 1.



WITNESSES

Chas. A. Peard

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Carl C. Riotte, deceased.

Marie L. Riotte, Administratrix.

BY

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ATTORNEYS

UNITED STATES PATENT OFFICE.

CARL C. RIOTTE, DECEASED, LATE OF JERSEY CITY, NEW JERSEY, BY MARIE L. RIOTTE, ADMINISTRATRIX, OF YONKERS, NEW YORK, ASSIGNOR TO STANDARD MOTOR CONSTRUCTION COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

THROTTLE-GOVERNOR FOR INTERNAL-COMBUSTION ENGINES.

1,094,167. Specification of Letters Patent. Patented Apr. 21, 1914.

Application filed February 16, 1912. Serial No. 678,057.

To all whom it may concern:

Be it known that CARL C. RIOTTE, deceased, late a citizen of the United States and resident of Jersey City, Hudson county, New Jersey, did invent certain new and useful Improvements in Throttle-Governors for Internal-Combustion Engines and the like, of which the following is a full, clear, and exact description.

This invention relates to an improved throttle governor for gas engines of the internal combustion variety, the object being to provide a manually operable throttle with an exceedingly simple and effective means for automatically partially shutting off the same to reduce the volume of gas admitted to the engine so as to prevent racing whenever the load on the engine is quickly reduced.

In the drawings Figure 1 is a vertical sectional view of certain parts of the invention. Fig. 2 is a side elevation of other parts thereof.

In the form shown in the drawings, the apparatus is particularly adapted for operation in connection with engines having two or more cylinders, the gas pipe having two branches. This, however, is immaterial, since the invention is applicable to engines having any number of cylinders.

1 represents the feed pipe connected with a vaporizer, or other source of fuel supply, conventionally illustrated at 2.

3 is the distributing end of the feed pipe 1, in this instance arranged at an angle to the latter. The pipe 3 has the branches 3^a—3^b, which may lead to different cylinders (not shown) of a gas engine.

4 is a throttle, in this instance a sleeve, arranged with the pipe 3 and adapted to move up and down in the passage leading from the pipe 1 to pipe 3, so as to vary the size or area of said passage for the purpose of admitting more or less gas as demanded by the engine.

5 is a valve stem suitably connected, as by a spider 6, to the throttle 4. By moving the stem 5 up and down, the normal position of the throttle may be varied. The means for manually varying the position of the throttle may be constructed in any desired way, but in the form, it preferably comprises a bell-crank lever 7 pivoted at 8 and operatively connected with the lower end of the valve stem 5.

9 is a rod connecting one end of the bell-crank lever 7 with a hand-operated throttle lever. The manual controlling means in its preferred form comprises a block 10 slidable upon the rod 9 and held between two springs 11—12 surrounding the rod 9, which in turn are provided with adjustable abutments 13—14 respectively. The springs 11—12 will tend to hold the block 10 in a certain position on the rod 9.

15 is a pivoted throttle lever and having an arm 17 pivotally connected with the block 10.

18 is a segment rack which may be toothed in the usual way, and with which the throttle lever 15 may be locked at any desired position, one position being shown in solid lines Fig. 2, another position being shown in dotted lines in said figure.

By shifting the throttle lever 15, the bell-crank 7 is operated to shift the throttle 4 to the desired position to admit a certain predetermined volume of gas to the engine. To automatically control the throttle 4, or shut the same down, in the event the load should be taken off the engine momentarily or suddenly, I provide a piston 19 moving in a cylinder 20, the inner end of which is in direct communication with the interior of the gas pipe 3. The valve stem 5 is connected with the piston 19. In the event of any quick change in the tension of gas within the pipe 3, for example in case the vacuum should be suddenly increased, as by a tendency of the engine to race, from any cause, the piston 19 will be sucked downwardly, or in a direction to move the throttle 4 to shut off the gas. This movement is also transmitted through the bell-crank lever 7 and rod 9 to one of the abutments 13 or 14, in this instance the abutment 14, which latter will be caused to move toward the block 10, which is held stationary by the throttle lever 15. This movement of the abutment 14 compresses the spring 12. As soon as the engine resumes its normal work and the tendency to race ceases, the vacuum within

the pipe 3 will be lessened, whereupon the spring 12 restores the rod 9 to its normal position, and similarly the throttle 4 is also restored to its position of manual adjustment, whatever that may be. The cylinder 20 may be provided with a suitable protecting cap 22, having a proper vent 23 to permit the piston to move. This vent may be comparatively small, so as to guarantee a relatively slow movement of the piston, when it is desirable to have such slow movement, but in some cases it may be found that the cap 22 is entirely unnecessary. It will thus be seen that means is provided to automatically move the throttle in both directions without regard to the particular position at which the throttle has been manually adjusted. The first automatically effected movement is, of course, in a direction to reduce the area of the gas passage, while the second automatically controlled movement is merely a return movement, opening the passage to the desired or predetermined extent. The spring 11 acts as a yielding abutment at all times, and is only used by preference. By varying the adjustment of the abutment 14, the degree of tension required to operate the piston may be varied. The lower end of the valve 4 may have small notches or recesses to prevent the entire cutting off of gas.

What I claim is:

1. In a controlling apparatus for internal combustion engines, a gas pipe having a feeding end and a distributing end, a movable throttle between said ends, means for manually varying the position of the throttle and for yieldingly holding the same in an adjusted or normal position, in combination with means operated by an increase in air tension in the distributing end of said gas pipe for moving the throttle from its normal position in a direction to reduce the area of the passage controlled thereby, and means to return said throttle again to its normal position when said increase in tension in said distributing end above normal ceases.

2. In a controlling apparatus for internal combustion engines, a gas pipe having a feeding end and a distributing end, a movable throttle between said ends, means for manually varying the position of the throttle and for yieldingly holding the same in an adjusted or normal position, in combination with means operated by an increase in air tension in the distributing end of said gas pipe for moving the throttle from its normal position in a direction to reduce the area of the passage controlled thereby, and means to return said throttle again to its normal position when said increase in tension in said distributing end above normal ceases, said tension-controlled means comprising a cylinder and a piston, with means of connecting the piston and the throttle, said cylinder being in open and uniform communication at all times with the distributing end of the feed pipe.

3. In a controlling apparatus for internal combustion engines, a gas pipe having a feeding end and a distributing end, a movable throttle between said ends, means for manually varying the position of the throttle and for yieldingly holding the same in an adjusted or normal position, in combination with means operated by an increase in air tension in the distributing end of said gas pipe for moving the throttle from its normal position in a direction to reduce the area of the passage controlled thereby, means to return said throttle again to its normal position when said increase in tension in said distributing end above normal ceases, said tension-controlled means comprising a cylinder and a piston, with means of connection between the piston and the throttle, said cylinder being in open and uniform communication at all times with the distributing end of the feed pipe, said means for returning the throttle to its normal position comprising a spring.

4. In a controlling apparatus for internal combustion engines, a gas pipe having a feeding end and a distributing end, a movable throttle between said ends, means for manually varying the position of the throttle and for yieldingly holding the same in an adjusted or normal position, in combination with means operated by an increase in air tension in the distributing end of said gas pipe for moving the throttle from its normal position in a direction to reduce the area of the passage controlled thereby, means to return said throttle again to its normal position when said increase in tension in said distributing end above normal ceases, said tension-controlled means comprising a cylinder and a piston, with means of connection between the piston and the throttle, said cylinder being in open and uniform communication at all times with the distributing end of the feed pipe, said means for returning the throttle to its normal position comprising a spring carried and movable with the manually operable means for adjusting the throttle to the desired normal position.

5. In a controlling apparatus in internal combustion engines, a gas pipe having a feeding end and a distributing end, a movable throttle located between said ends, a cylinder, a piston movable therein, the interior of said cylinder being in communication with the gas pipe at a point beyond the throttle so as to be directly influenced by the air tension in the distributing end of the pipe irrespective of the position of

the throttle, a piston in the cylinder and means for connecting the piston with the throttle whereby the latter will be moved by the movement of the former, and means for varying the normal operative position of the throttle, said means including a yielding connection whereby the throttle may be moved automatically by the movement of the aforesaid piston without disturbing the normal setting of the throttle.

MARIE L. RIOTTE,
Administratrix of Carl C. Riotte, deceased.

Witnesses:
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GEO. J. SCHELZ, Jr.