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DRIFTING VALVE FOR EXPLOSION ENGINES.

APPLICATION FILED APR. 17, 1916.

1,215,381.

Patented Feb. 13, 1917.

2 SHEETS—SHEET 1.

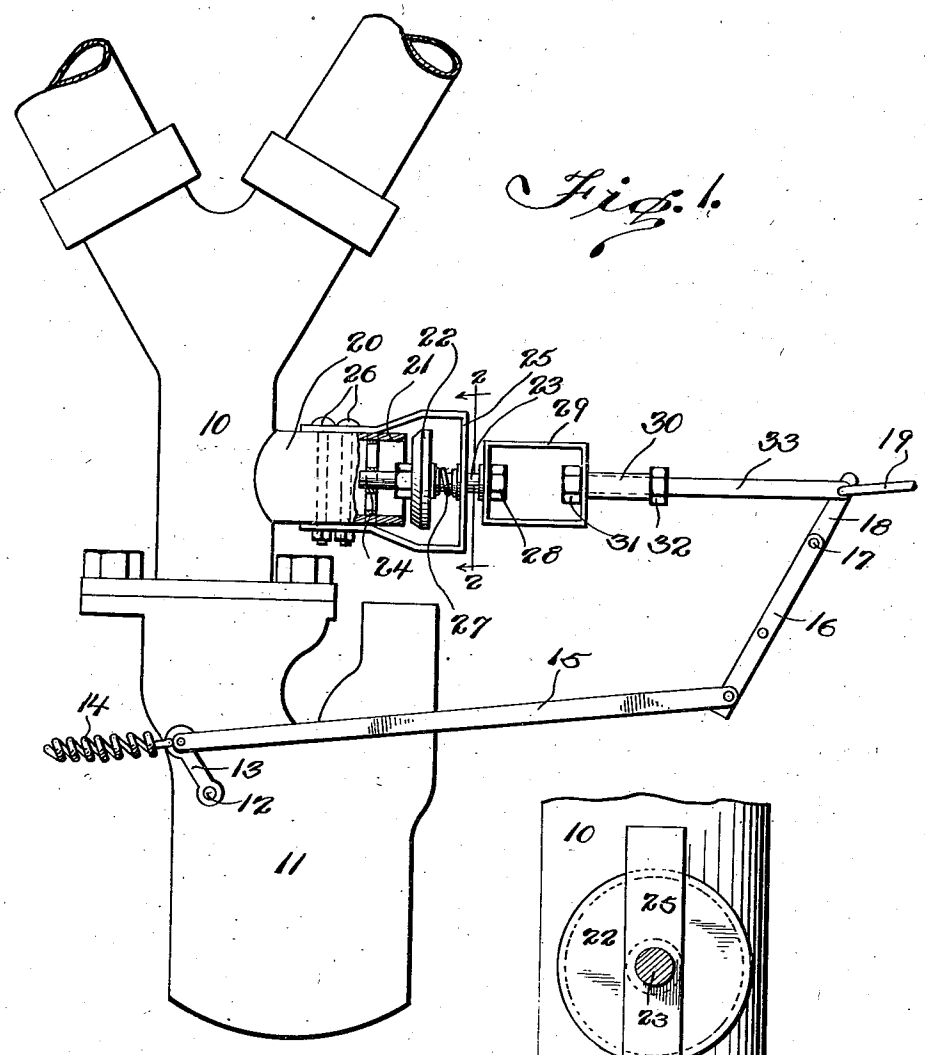


Fig. 1.

Fig. 2.

WITNESSES

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Fig. 3.

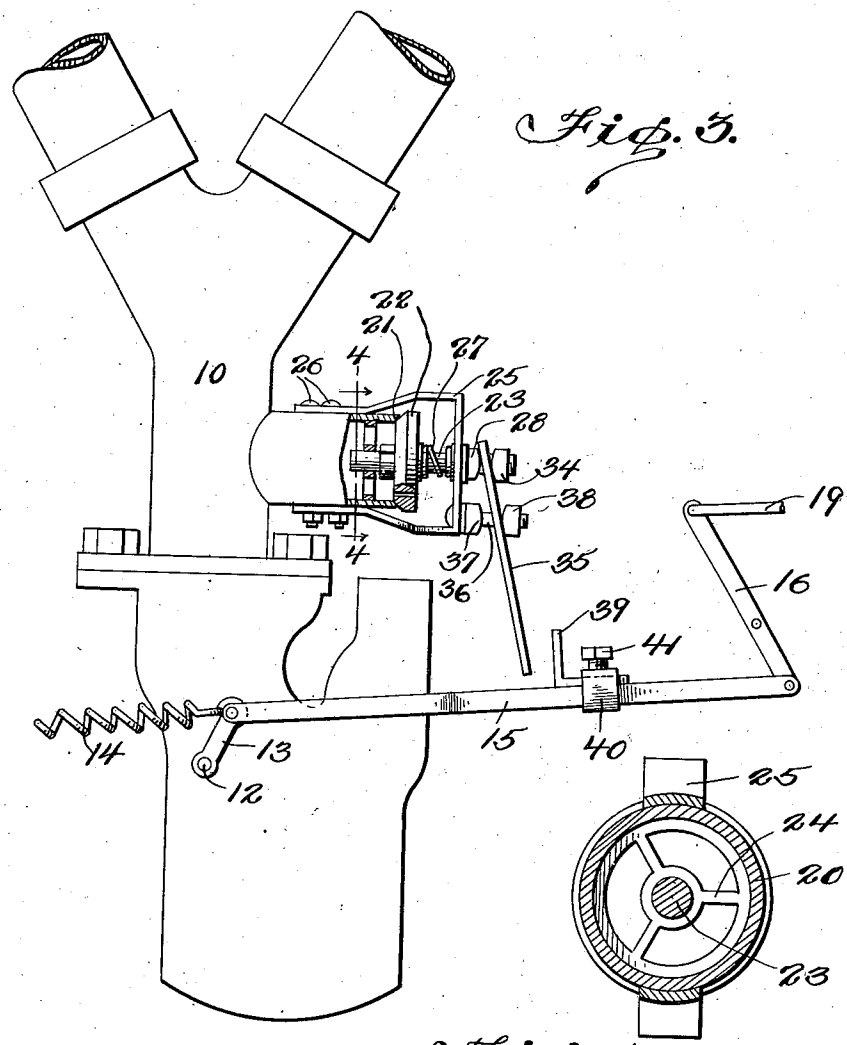


Fig. 4.

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DRIFTING-VALVE FOR EXPLOSION-ENGINES.

1,215,381. Specification of Letters Patent. Patented Feb. 13, 1917.

Application filed April 17, 1916. Serial No. 91,785.

To all whom it may concern:

Be it known that I, WILLIAM KEMP, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Drifting-Valves for Explosion-Engines, of which the following is a specification.

This invention relates to a valve for explosion engines and particularly to such engines as are used to drive motor vehicles and has for its object to provide a valve on the intake side of the cylinders that is operated automatically when the throttle valve is closed and opened to open and close a port by which direct communication between the intake pipe and the outside air is governed for the purpose of permitting the engines to run freely without suction or taking up gasolene when running free as is the case with automobile motors when the cars are running down hill.

A further object of the invention is to provide in such a valve commonly known as a drifting valve, a simple connection with the lever mechanism for operating the throttle valve whereby said drifting valve will always be opened and closed at the proper time.

A still further object is to provide said drifting valve connecting and operating means with a simple adjustment for regulating the extent to which the valve is to be opened and time of closure of said valve.

With these as the principal objects in view the invention consists in the novel construction, combination and arrangement of parts as will be hereinafter described, and illustrated in the accompanying drawings, in which:

Figure 1 is an elevation of the preferred form of my invention showing the same applied to the intake pipe of an explosion engine,

Fig. 2 is a sectional view on the line 2—2 of Fig. 1 looking in the direction of the arrow,

Fig. 3 is an elevation similar to Fig. 1 showing a modified form of the invention, and,

Fig. 4 is a sectional view on the line 4—4 of Fig. 3 looking in the direction of the arrow.

Referring to the drawings by numerals, 10 indicates the intake pipe of an explosion engine connected at its lower end to the carbureter 11 containing the usual throttle valve mounted on pivot 12 projecting through the side of the carbureter and having attached to one end thereof an operating lever 13. A spring 14 tends to hold the valve closed while a link 15 connected to the lever 13 at one end has its other end pivoted to a lever 16 depending from a shaft 17. An arm 18 extends upwardly from the shaft and by means of a connecting rod 19 pivoted to the lever 18 the throttle valve is opened and closed.

Projecting from one side of the intake pipe 10 is a horizontal tubular extension 20 in the end of which is formed a valve seat 21 for a valve 22 that closes thereupon whenever the engine is working. The valve 22 is mounted upon a valve stem 23 the inner end of which moves longitudinally in a valve guide 24 placed a suitable distance within the extension 20. The outer end of the valve stem slides in a bearing yoke 25 fastened to the extension 20 by bolts 26 passing therethrough and through the ends of the bearing yoke. Between the valve 22 and the bearing yoke 25 is a spiral spring 27 surrounding the valve stem 23 and tending to force said valve to its seat.

Secured to the valve stem 23 by a nut 28 is a link 29 here shown as of rectangular form but this is not necessary as a link of any other shape that will perform the desired function is all that is necessary. The opposite end of the link is perforated for a bushing 30 that is adapted to slide freely therein in a longitudinal direction the limit of free movement of said bushing through the link being limited and regulated by nuts 31 and 32, the former being within the link at one end of the bushing and the latter without the link at the opposite end of said bushing. The bushing is mounted on the end of a rod 33 pivotally connected to the lever 18 and operated by said lever when the throttle valve is actuated.

In operation, when the engine is at rest

and the throttle valve cut off, the drifting valve 22 will stand open in the position shown in Fig. 1, being drawn into this position by the lever 18 pulling upon the rod 33 and drawing the nut 31 into contact with one end of the link 29 which in turn slides the valve stem 23 outward against the tension of the spring 27. When the engine is to start the connection 19 is moved in a direction to pull on the link 15 and swing the lever 13 so as to open the throttle valve thereby tensioning the spring 14. The same operation of the connection 19 moves the rod 33 toward the intake 10 and causes the bushing 30 to slide through the link 29. The link being thus left free the spring 27 presses the drifting valve 22 to its seat thereby sliding the valve stem 23 in its bearing and drawing the link 29 with it. The drifting valve is now closed and the engine operates in the usual manner taking gas from the carbureter 11 and will continue to do so as long as the engine is driving the car. When however the car has such headway, as for instance while descending a hill, that power is not required the connection 19 is operated to close the throttle valve and open the drifting valve so that the car will run the engine and the latter will take in air through the valve seat 21 and tubular extension 20, no gasolene passing into the engine.

The advantages obtained by the employment of a drifting valve are many, among which may be mentioned the fact that the air drawn into the cylinders will cool the motor; a saving of gasolene will be effected as none will enter the cylinders; there will be a saving also in lubricating oil as the cylinders will be filled with air at atmospheric pressure instead of having a vacuum therein as is usually the case whereby an excess of oil is drawn up by the packing rings and the elimination of most of the carbon by the flow through the cylinders of air. The car will ride better when drifting or with the valve 22 open because the compression stroke of the piston will keep the machinery tightened and as stated the motor being run by the car, a saving will be effected in the brake band lining as less power will be required to hold the car.

In the modified form of the invention illustrated in Figs. 3 and 4 the valve stem 23 has in addition to the nut 28 a second nut 34 spaced a short distance away from the nut 28 and adjustable to and from the same. Between the nuts 28 and 34 is one end of a lever 35 that is fulcrumed on an outwardly projecting stem 36 having a shoulder 37 below the nut 28 and an adjusting nut 38 on the opposite side of the lever 35. The lower end of the lever 35 extends downwardly a short distance above the link 15 that operates the throttle valve upon which link is adjustably mounted a lug 39 secured to said link by a sleeve 40 and set screw 41. A link 15 is operated by a lever 16 and connecting rod 19 in substantially the same way as in the preferred form of the device. In the modified form of the device when the throttle valve is in open position the lug 39 is withdrawn from the lower end of the lever 35 thus enabling the spring 27 on the valve stem to close the valve, but as soon as the throttle valve is closed the lug strikes the lower end of the lever 35 and opens the valve. The proper operation of the valve as to time of opening the drifting valve the extent to which it is opened and other details of the kind are regulated by adjusting the screws 34, 38 and the lug 39.

Through the drifting valve 22 is a very small port 42 that is always open to the atmosphere and serves to clear the tubular extension 20 of any gasolene or gas that would accumulate therein when the motor is driving the car.

I claim:

1. In an explosion engine having a throttle valve, a drifting valve adapted to control the admission of air directly into the cylinder of the engine, means for positively operating the throttle valve, resilient means tending to hold the drifting valve closed, means provided with lost motion for opening the drifting valve, and means carried by the throttle valve operating means for opening the drifting valve when closing the throttle valve.

2. In an explosion engine, a port opening into the intake pipe direct from the atmosphere, a valve controlling said port, a throttle valve also opening into the intake pipe, means for positively operating said throttle valve, a lost motion connection between said first-named valve and the throttle valve operating means to open said valve when the throttle valve is closed, and means for adjusting the degree of lost motion in said connection.

3. In an explosion engine having a port opening into the intake pipe direct from the atmosphere, a valve controlling said port, a carbureter connected to said intake pipe and having a throttle valve therein, means for positively operating said throttle valve, resilient means tending to maintain the air controlling valve closed, a connection between said air-controlling valve and the throttle valve operating means having slip connection to provide lost motion therein, and means for adjusting the degree of lost motion in said section.

4. In an explosion engine having an intake pipe, a port in said pipe opening to the atmosphere, a valve adapted to close said port, a carbureter, a throttle valve between said carbureter and the intake pipe, means for

operating the throttle valve, a spring for closing the air controlling valve, a link connected to the stem of the valve, a bushing slidable freely in said link, a connection between said bushing and the throttle valve operating means, and nuts on said bushing to limit the length of its sliding movement.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM KEMP.

Witnesses:
CHARLES W. KEPHART,
JAMES E. O'KEIFF.