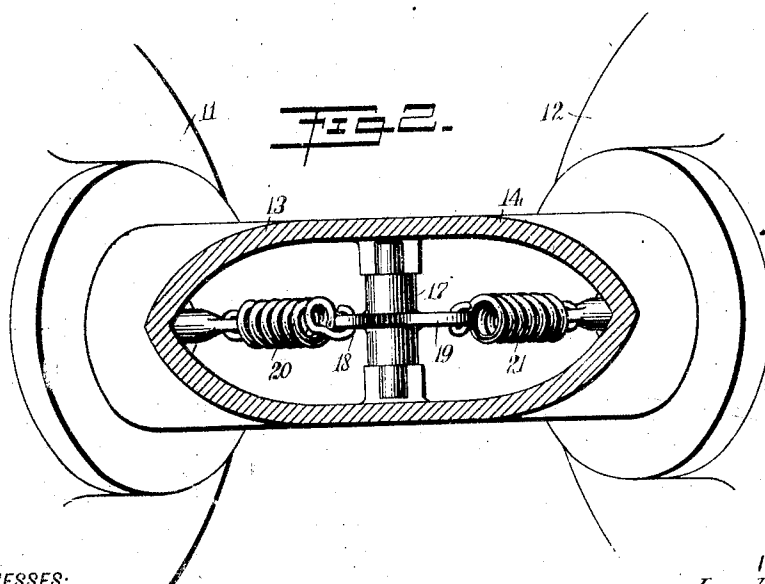
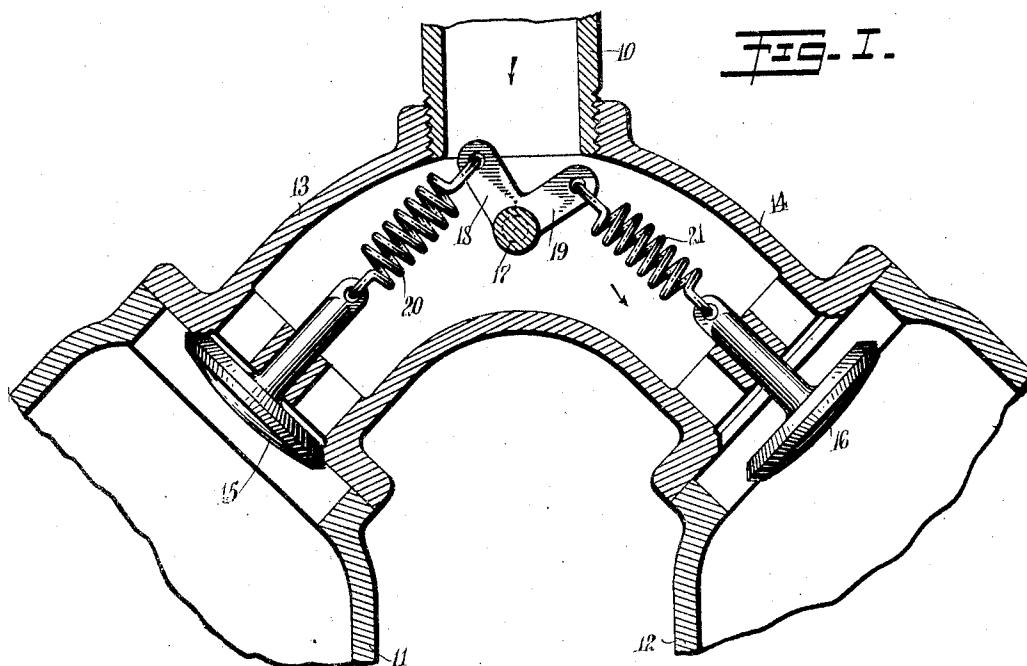


J. L. EDLAND.
VALVE CONTROLLING MECHANISM.
APPLICATION FILED JUNE 10, 1910.

1,056,518.

Patented Mar. 18, 1913.



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VALVE-CONTROLLING MECHANISM.

1,056,518.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed June 10, 1910. Serial No. 566,140.

To all whom it may concern:

Be it known that I, JOSEPH L. EDLAND, a citizen of the United States, and a resident of Bloomfield, in the county of Essex and State of New Jersey, have invented a new and Improved Valve-Controlling Mechanism, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in valve-controlling mechanism, and the object of the invention is to so control a plurality of valves that they may operate independently, yet in their operation will permit the passage of equal amounts of fluid.

The invention relates particularly to automatic valves operated by variations in the fluid pressure, and the invention is particularly useful in cases where it is desired to deliver a fluid from a common reservoir or passage past a plurality of separate valves.

By way of illustration, the invention may be considered as applied to a multiple cylinder internal combustion engine, and in this case the separate inlet valves of the several cylinders would be automatically opened in succession by suction pressure. The utilization of my invention insures the opening of the several valves to exactly the same extent, so that the same amount of gas, air, vapor or explosive mixture delivered to one cylinder upon the opening of its inlet valve, will be delivered to each of the other cylinders upon the opening of their inlet valves.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures, and in which—

Figure 1 is a central longitudinal section through a portion of two cylinder heads, showing the inlet valves controlled by mechanism constructed in accordance with my invention; and Fig. 2 is a top plan view of the parts shown in Fig. 1, a portion of the conduit being broken away.

The invention is illustrated as applied to a two-cylinder internal combustion engine in which the air, gas, vapor or explosive mixture, is delivered through a conduit 10 from a carbureter or any other suitable source to the two engine cylinders 11 and 12. The conduit 10 has two branches 13 and 14 leading to the inlet ports of the two cylinders and these inlet ports are controlled by

corresponding valves 15 and 16. The valves illustrated are of the puppet type and move inwardly against spring pressure during the suction strokes of their corresponding engine pistons. In common practice, each of these inlet valves is provided with its own spring for normally holding the valve in closed position, and the springs are independently regulated or adjusted so that about the same tension will be exerted by each. It is nearly impossible to get exactly the same tension on two independent springs, and as the parts become worn the difference will increase, so that often a far greater tension is exerted on one valve than on another, even though both valves control the supply to similar cylinders.

In my improved construction, I provide an equalizing mechanism, so that at any and all times one valve will be held against its seat with exactly the same force as is each of the other valves controlled by said mechanism.

In the specific form illustrated, I provide a rock shaft 17, extending transversely of the two branches 13 and 14, adjacent their intersection, and mounted in suitable bearings. This rock shaft has two arms 18 and 19 of equal length and disposed substantially at an angle of ninety degrees to each other. One arm 18 is connected to the valve 15 by a spring 20, while the other arm 19 is connected by a similar spring 21 to the valve 16. The rock shaft 17 is free to turn so that as the valve opens, the opening movement will be resisted, not simply by its own spring, but by both of the springs acting in series. As the rock shaft is between the two valves and the arms 18 and 19 extend substantially at right angles to the directions of movement of their corresponding valves, the rocking of the shaft will exert a substantially straight pull upon the valve stems. In Fig. 1, I have illustrated the valve 16 as being partially open under the suction pressure exerted during the suction stroke of the piston in the cylinder 12, and it will be noted that when this valve is open, the rock shaft is tilted so as to distribute the strain equally upon the two springs.

By means of my invention, equal charges will enter two or more valve passages into the cylinders from a common source or receptacle, and this delivery of equal charges

will insure explosions of equal force in the several cylinders.

It is of course evident that the particular arrangement of springs and bell crank lever illustrated need not be employed, as various other forms may be employed which will insure the equal displacement of separate valves when they are independently subjected to the same conditions of gas pressure.
10 Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In an internal combustion engine, a conduit having a plurality of outlets, valves
15 controlling said outlets, a series of spring connections within said conduit one for each valve, said connections tending to hold all of said valves in predetermined positions and a rock shaft formed with a pair of projections
20 for receiving one end of each of said springs whereby the tension of the springs is varied as the rock shaft is moved.

2. In an internal combustion engine, a conduit having a plurality of outlets, valves
25 controlling each of said outlets, a rock shaft having a plurality of arms projecting therefrom positioned above said outlets, and a

spring connection between each of said valves and one of said arms whereby said valves are held in a predetermined position. 30

3. In an internal combustion engine, a conduit having a plurality of outlets, valves positioned in and adapted to close each of said outlets, a rock shaft positioned adjacent
35 said outlets, arms projecting from opposite sides of said shaft, and a spring connection between each of said arms and one of said valves, whereby said valves are held in a predetermined position.

4. In an internal combustion engine, a
40 conduit having a pair of outlets, a pair of valves, one for each outlet, a rock shaft having a pair of arms rigidly mounted thereon, and a pair of springs, each spring forming the sole connection between one of said
45 arms and the adjacent valve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH LAWRENCE EDLAND.

Witnesses:

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