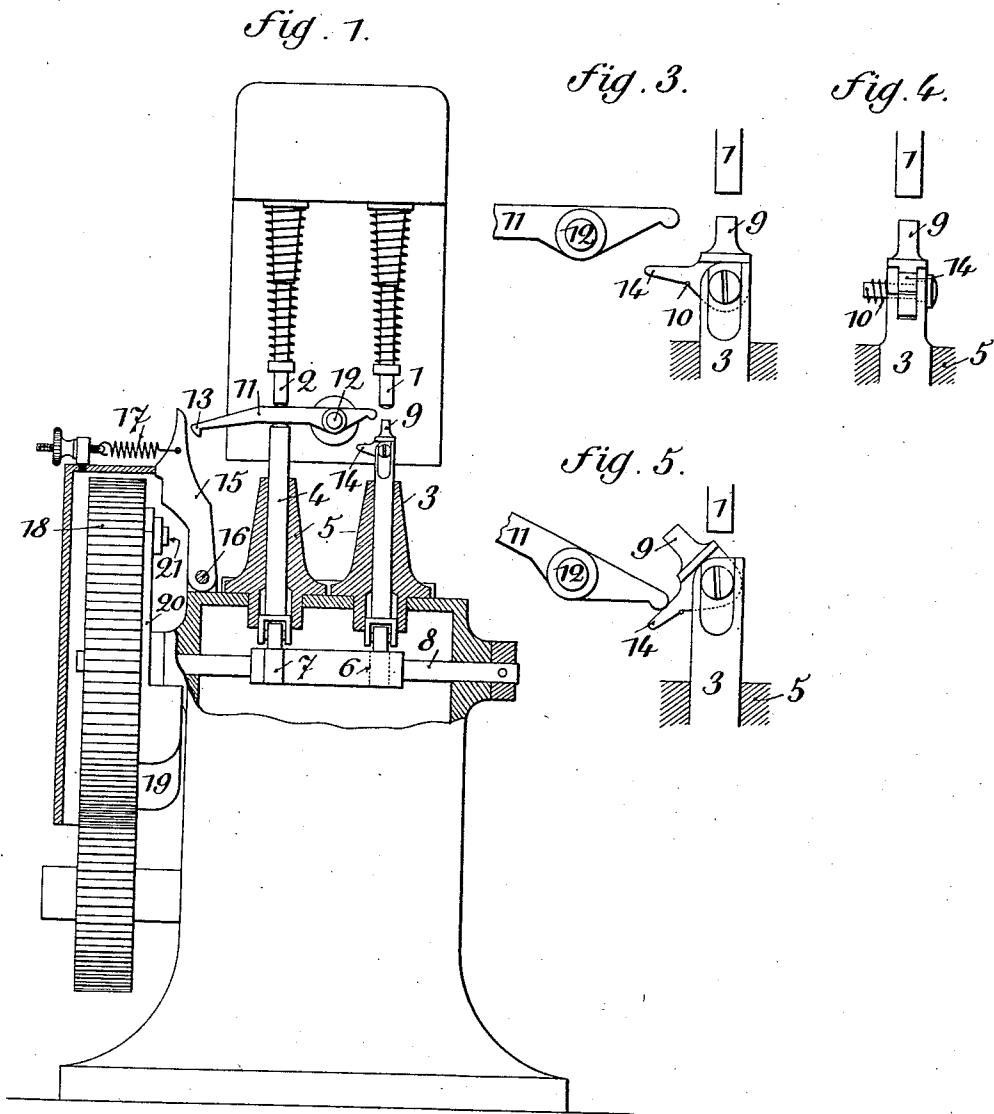


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 APPLICATION FILED JAN. 6, 1909.

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Patented July 25, 1911.

2 SHEETS—SHEET 1.



WITNESSES :

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*Henri de La Valette*

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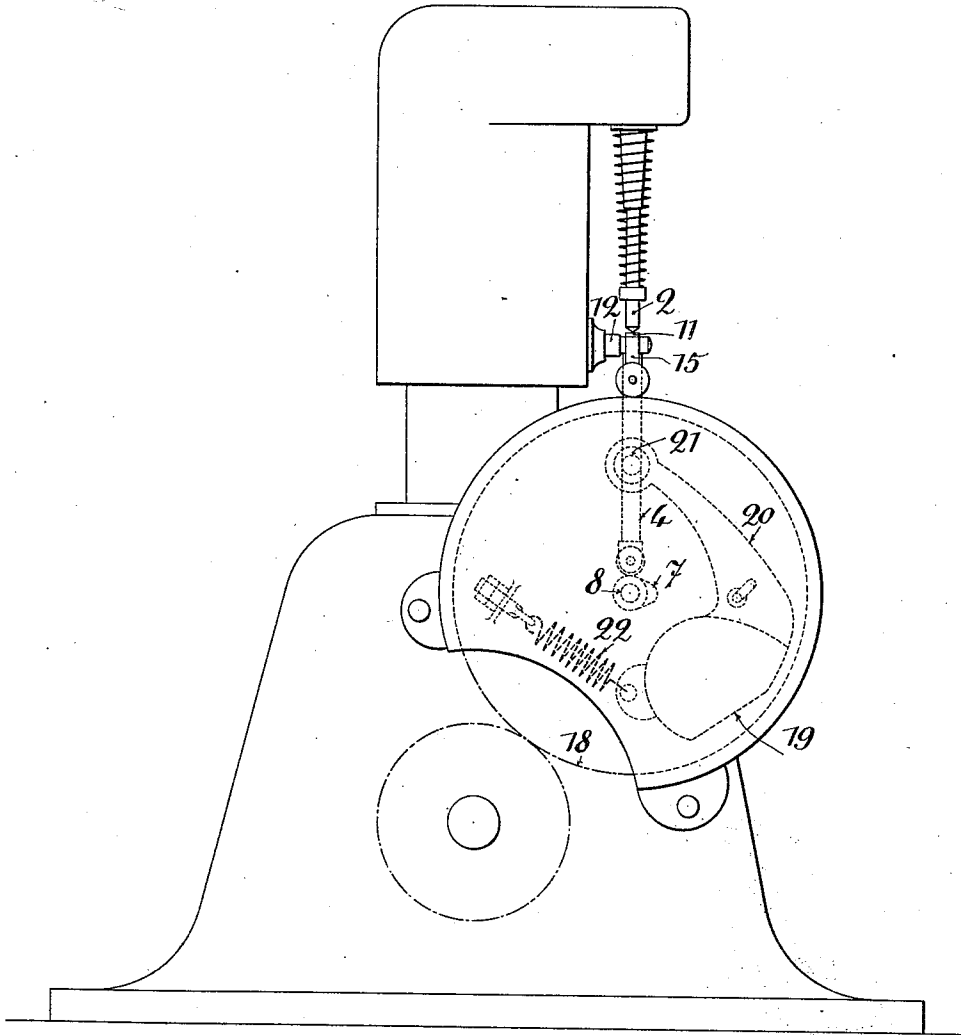
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*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

HENRI DE LA VALETTE, OF PARIS, FRANCE.

MECHANISM FOR GOVERNING EXPLOSIVE-ENGINES.

999,046.

Specification of Letters Patent. Patented July 25, 1911.

Application filed January 6, 1909. Serial No. 470,948.

*To all whom it may concern:*

Be it known that I, HENRI DE LA VALETTE, a citizen of the Republic of France, residing at 175 Avenue de Choisy, Paris, in the Republic of France, engineer, have invented certain new and useful Improvements in Mechanism for Governing Explosion-Engines, of which the following is a specification.

This invention relates to an arrangement for governing explosion engines working on the hit and miss principle under the influence of a centrifugal governor.

Certain known governing arrangements act on the admission valve of the engine without acting on the exhaust valve. The result is, that when the admission stops there is produced in the cylinder during the suction stroke a vacuum which uselessly absorbs a part of the working power. Other known arrangements act on the exhaust valve, but leave the suction valve free; in this case, the partial vacuum which is produced in the cylinder during the suction, notwithstanding the opening of the exhaust valve, is sufficient to cause the suction valve to open slightly and thus cause a useless consumption of fuel.

According to this invention the governing arrangement acts on the two valves at once which are both operated; when the speed exceeds a predetermined limit, a lever is automatically engaged by a centrifugal governor in such a position that it keeps the exhaust valve constantly open notwithstanding the action of its return spring and prevents the admission valve, which is normally closed by the action of another spring, from being opened by the controlling mechanism. With this combination, the above mentioned objections are avoided while there is the advantage of being able to use two controlled valves similar to each other. An example of this arrangement is shown in the accompanying drawings.

Figures 1 and 2 are elevations of the complete arrangement. Figs. 3 to 5 show details of the governing devices.

1 indicates the stem of the suction valve and 2 that of the exhaust valve. In the axial line of these stems other stems or control rods 3 and 4 are arranged to slide in guide sockets 5 and are subject to the action of the cams 6 and 7 mounted on the cam shaft 8. The upper part of the stem 3 has an oscillating support or stud 9 which is

normally kept vertical by the action of a spring 10 and which, in this position, transmits to the stem 1 the pressure of the stem 3 when it is raised by the cam 6.

Between the stems 2 and 4 is engaged a lever 11 oscillating upon a fixed pivot 12. At one end of this lever is a downwardly extending divided hook 13 and its opposite end is in the path of a finger 14 fixed to the stud 9. The frame of the motor has, besides, a support 15 oscillating upon a pivot 16 and designed to be moved forward under the lever 11 when the latter is raised in order to prevent it from falling back. Under the action of its weight and of an adjustable spring 17, this support tends to incline into the position shown in Fig. 1, leaving the lever 11 free to oscillate.

The support 15 is near the toothed wheel 18 fixed on the cam shaft, and can be actuated by a part, forming a cam 19, of a counter weighted lever 20, pivoted at 21 on the said wheel. When the centrifugal force moves this lever away from the center of the wheel against the action of an adjustable spring 22, the part 19 approaches a corresponding inclined part of the support 15 and when the predetermined limit of speed is reached, the latter is thus pushed back laterally beyond the hook 13 of the lever 11. The lever 20 is mounted on the wheel 18 in such a position that it acts on the support 15 at the moment when the lever 11 is raised by the cam 7.

As long as the speed is excessive, the support 15 is prevented from falling back and consequently keeps the lever 11 raised and the exhaust valve open. At the same time the end of the lever 11 opposite the hook 13 is kept lowered and forces the support 9 to rock each time that the cam 6 raises the stem 3. The opening of the admission valve is thus prevented as long as the speed exceeds the required limit. When the speed again becomes normal, the lever 11 no longer prevents the support from inclining under the action of the spring 17 at the moment when the hook 13, which is always periodically slightly raised above this support, allows it to escape. Thereupon, the normal working of the valve recommences.

The tension of the spring 17 can be regulated while the engine is working and, consequently, the limit of speed for which the admission is stopped and the exhaust kept constantly open can be varied.

The tension of the spring 22 can also be regulated during stoppage.

It is to be understood that this invention is not limited to the precise construction hereinbefore described and, without departing from its principle, the arrangement can be varied of the lever, of the valve-stem supports, and of the governor etc. and these members may even be replaced by any other equivalent devices for the proposed object.

Claims—

1. In an explosion engine having a regulator of the admission and exhaust valves, and cams operating such valves alternatively, the combination of a slidable rod for actuating the admission valve, an oscillating stud pivoted to the said rod and adapted to actuate the said valve normally, and means controlled by the regulator whereby to cause the said oscillating stud to swing in such a manner that it no longer opens the said valve and also that it holds the exhaust valve in the open position.

2. In an explosion engine, the combination of admission and exhaust valve, of two slidable controlling rods, adapted to actuate such valves respectively, a cam shaft actuating the said rods, a two-arm lever one arm of which is interposed between the exhaust valve and the corresponding controlling rod, a swinging member on the controlling rod of the admission valve, the said member having a branch adapted to act on the said valve and a branch adapted to meet the second arm of the said lever, and means

for holding the said lever in such a position that it prevents the exhaust valve from closing and that it prevents the said swinging member from acting on the admission valve.

3. In an explosion engine, the combination of admission and exhaust valves, of two slidable controlling rods, located respectively in front of the valves, a cam shaft actuating the said rods, a two arm lever one arm of which is interposed between the exhaust valve and the corresponding controlling rod, a swinging member on the admission valve controlling rod, the said member having a branch adapted to act on the said valve and a branch adapted to meet the second arm of the said lever, a swinging stud adapted to prevent the two-arm lever from swinging, and a governor adapted to actuate the said stud.

4. In an explosion engine, the combination of admission and exhaust valves, controlling means for opening the valves, a governor, a lever adapted to render inoperative the said controlling means, and a swinging stud adapted to be engaged by the said lever, the said lever having a stop projection for holding the said stud in its engaged position.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

HENRI DE LA VALETTE.

Witnesses:

DEAN B. MASON,  
MAURICE ROUX.

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