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GOVERNOR OR SPEED REGULATOR.  
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933,367.

Patented Sept. 7, 1909.

*Fig. 1.*

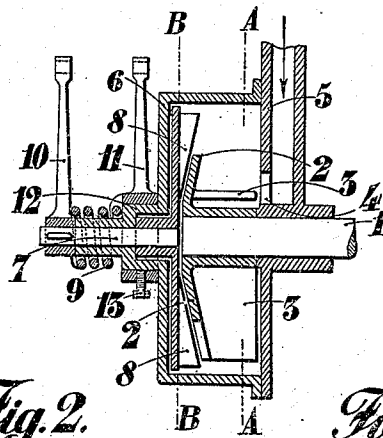


*Fig. 2.*

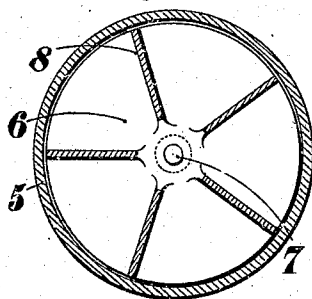


*Fig. 3.*

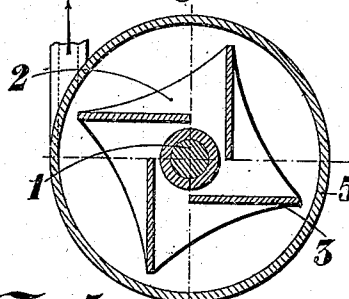
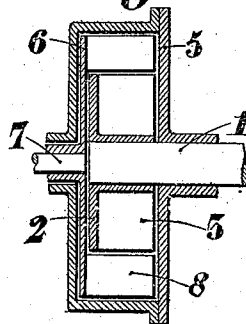


*Fig. 4.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

ALBERT DE DION AND GEORGES BOUTON, OF PUTEAUX, FRANCE, ASSIGNORS TO ETABLISSEMENTS DE DION-BOUTON (SOCIÉTÉ ANONYME), OF PUTEAUX, FRANCE, A CORPORATION OF FRANCE.

## GOVERNOR OR SPEED-REGULATOR.

933,367.

Specification of Letters Patent.

Patented Sept. 7, 1909.

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*To all whom it may concern:*

Be it known that we, ALBERT DE DION and GEORGES BOUTON, citizens of the French Republic, residing at Puteaux, Department of the Seine, in France, have invented certain new and useful Improvements in Governors or Speed-Regulators; and we 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 aims to provide an improved form of centrifugal pump, acting as a speed governor for the engine by which it is operated.

The invention also aims to provide a device of this kind which is particularly applicable to explosion engines, in which case it performs the double function of causing the water circulation, and acting as the governor or speed regulator of the engine.

In the accompanying drawing:—Figure 1 is a longitudinal section through a governor constructed in accordance with this invention, Fig. 2 is a transverse section on line A—A of Fig. 1, Fig. 3 is a similar section on line B—B of Fig. 1, and Fig. 4 is a view similar to Fig. 1 showing a modified construction.

Referring to the drawing, the shaft 1 of the engine enters at one end into a pump case 5, within which said shaft has keyed thereto a disk 2, preferably of substantially square shape, as shown. Said disk carries a number of blades or vanes 3, extending laterally to one side only of perpendicular diameters of the case, as shown in Fig. 3, these blades acting upon the fluid which enters the case by means of a tubular inlet passage 5<sup>x</sup> and an opening 4 in one side wall of the casing. The rotation of the shaft causes the rotation of the impelling disk 2 with its blades 3 and the fluid is sucked in through the inlet 5<sup>x</sup> and is discharged through the tangential outlet 5<sup>y</sup>, illustrated in Fig. 3, said outlet, in case the device is used on an explosive engine, being connected with the water jacket.

Located within the case 5, and acted upon by the body of fluid therein, is an oscillating adjusting disk 6 arranged with one face in close proximity to the side wall of the case and having upon its opposite face a series of radially directed ribs or vanes 8, the width of which increases toward the periphery of

said adjusting disk, viz. said vanes or ribs project farther toward the center of the case at their outer ends than at their inner ends. It will be noted that the impeller 2 is bent away from the engine shaft or dished in order to fit within the space defined by the radial vanes 8, said impeller thus rotating in close proximity to these vanes. The adjusting disk 6 is fixed to the end of shaft or spindle 7 which projects into the case through a hub 12 alined with the engine shaft, and at the outer end of the shaft 7 the same carries a lever 10, adapted to control the gas intake of the explosive engine. Said lever has connected to its hub portion a helical spring 9 which embraces the hub 12 and is connected at its opposite end with an adjusting lever 11 adapted to be angularly displaced on the hub 12 by means of a circular portion or sleeve fitting over said hub as shown in Fig. 1, said lever being adjustably clamped in position on the hub by means of a set screw 13.

It is obvious that the adjustment of the lever 11 controls, through the spring connections described, the position and movement of the lever 10 with which the adjusting disk 6 is connected. When the device is in use and the fluid is being pumped out of the case 5 the rotating body of fluid within the case, impelled by the impeller, will act on the vanes 8 of the adjusting disk and move the latter in the direction in which the fluid is flowing. This movement of the adjusting or controlling disk varies in amplitude according to the force exerted by the impeller on the fluid, that is to say, such movement of the adjusting disk corresponds with the speed of the engine, and as the controlling lever 10 is in fixed relation with said disk, said lever will be operated to control the gas intake in correspondence with the speed of the engine, the gas being admitted in exactly the amount called for by the conditions which exist at any particular moment. It will be understood that the movement of the controlling disk by the body of fluid is opposed by the spring 9, which prevents the controlling disk from having anything but a limited angular movement. Thus the device not only causes the proper circulation of the water, in the explosive engine, but it also effectively controls the fuel supply at the same time.

When it is necessary to adjust the apparatus and place the adjusting disk in any particular position it is only necessary to loosen the set screw 13 and after angularly  
 5 adjusting the lever 11 to the required extent to tighten the set screw in order to hold said lever and its connected parts in their adjusted positions. In this way the angular position of the initial point from which the  
 10 controlling lever moves, can be regulated to a nicety.

Fig. 4 illustrates a modification of the device in which the ribs 8\* of the adjusting disk are arranged in a series extending  
 15 around the ribs 3\* of the centrifugal pump, the supply of fluid being partially or totally reduced in this case so that the power of the governor is correspondingly increased. This arrangement, however, can only be  
 20 used in engines when there is no circulation of liquid by means of a pump, and hence it is not adapted for use in explosive engines in the manner pointed out above.

We claim:—

25 1. In a governor or speed regulator, the combination of a pump case, an impeller rotatable in the case, an inlet through which fluid is sucked into the case by the impeller, an outlet through which fluid is pumped  
 30 out of the case, and an adjusting disk in the case which is moved angularly through different distances by the rotating body of fluid.

2. In a governor or speed regulator, the  
 35 combination of a pump case, an impeller rotatable therein, an adjusting disk within the pump case and having an exteriorly projecting shaft, a controlling lever mounted on said shaft, and means to vary the  
 40 initial position of said controlling lever.

3. In a governor or speed regulator, the combination of a pump case, an impeller rotatable therein, an adjusting disk within the case and having an exteriorly projecting  
 45 shaft, a controlling device mounted on said shaft, a spring surrounding the shaft and

connected with said controlling device, and an adjusting device to which said spring is connected.

4. In a governor or speed regulator, the  
 50 combination of a pump case having a hub, an impeller rotatable in the case, an adjusting disk mounted to turn angularly within the case and having an exteriorly projecting shaft journaled in said hub, a controlling  
 55 lever on said shaft exteriorly of the case, a spring embracing the hub and connected at one end with said lever, and an adjusting lever to which the opposite end of the spring is connected and which is angularly  
 60 adjustable upon said hub.

5. In a governor or speed regulator, the combination of a pump case, an adjusting or controlling disk mounted to turn angularly within the case and having exterior  
 65 connections, radial ribs or vanes on said disk increasing in width from the inner portion of the disk toward the periphery, and a dished impeller within the case conforming to and rotatable in the space defined by said  
 70 ribs or vanes.

6. In an explosive engine, the combination of a centrifugal pump which keeps up the water circulation, and an engine controlling device including a member within the pump  
 75 case acted on by the body of water therein.

7. The combination of a pump case, an impeller rotatable in the case, an inlet through which fluid is sucked into the case by the impeller, an outlet through which fluid is  
 80 pumped out of the case, and an engine-controlling member within the pump case and operated by contact with the rotating body of fluid therein.

In testimony whereof we affix our signatures, in presence of two witnesses.

ALBERT DE DION.  
 GEORGES BOUTON.

Witnesses:

H. C. COXE,  
 EMILE KLOTZ.