

N. C. BASSETT.
GOVERNOR.

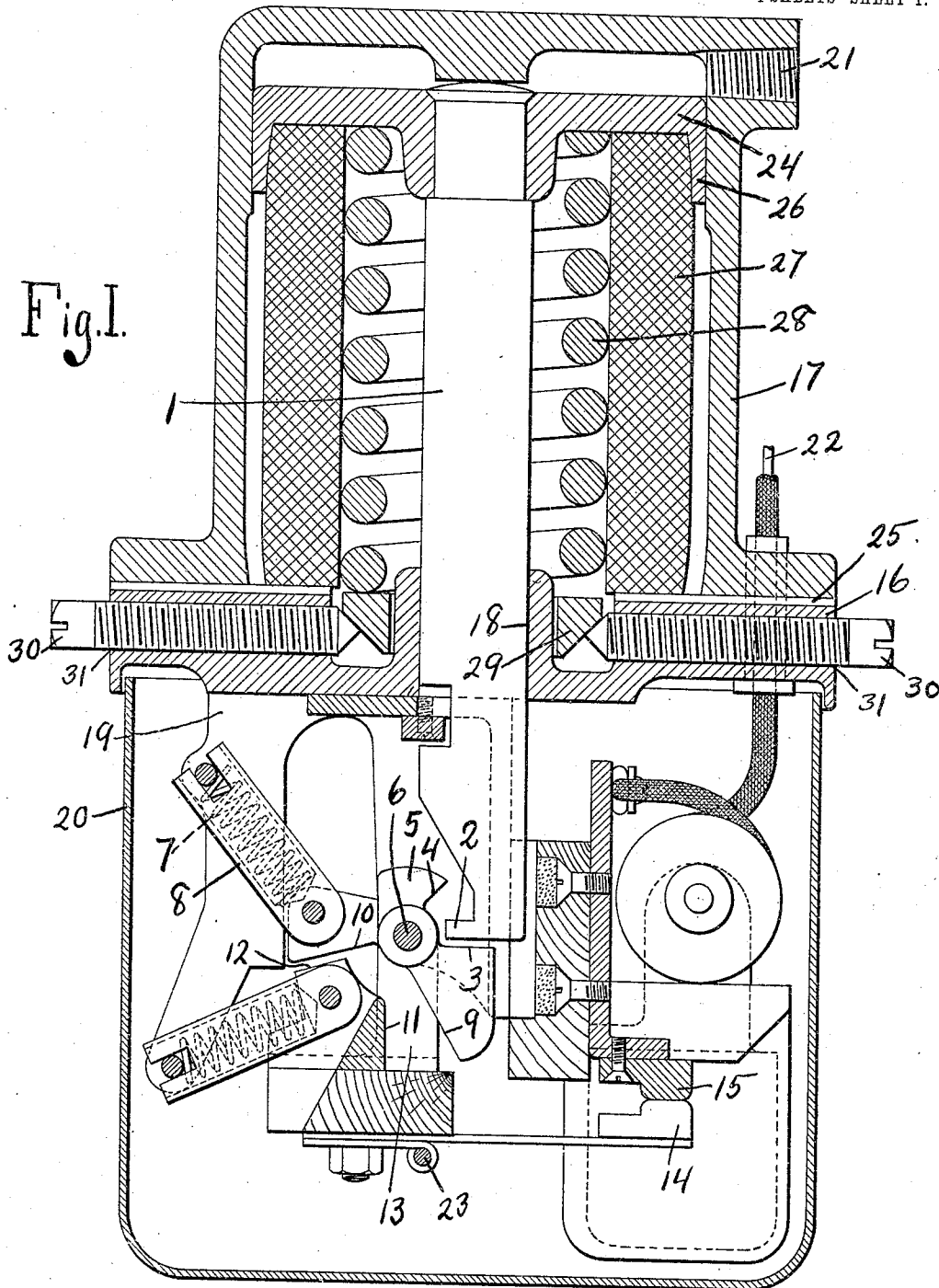
APPLICATION FILED JULY 22, 1907.

939,656.

Patented Nov. 9, 1909.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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Frank E. Dennett

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4 SHEETS—SHEET 2.

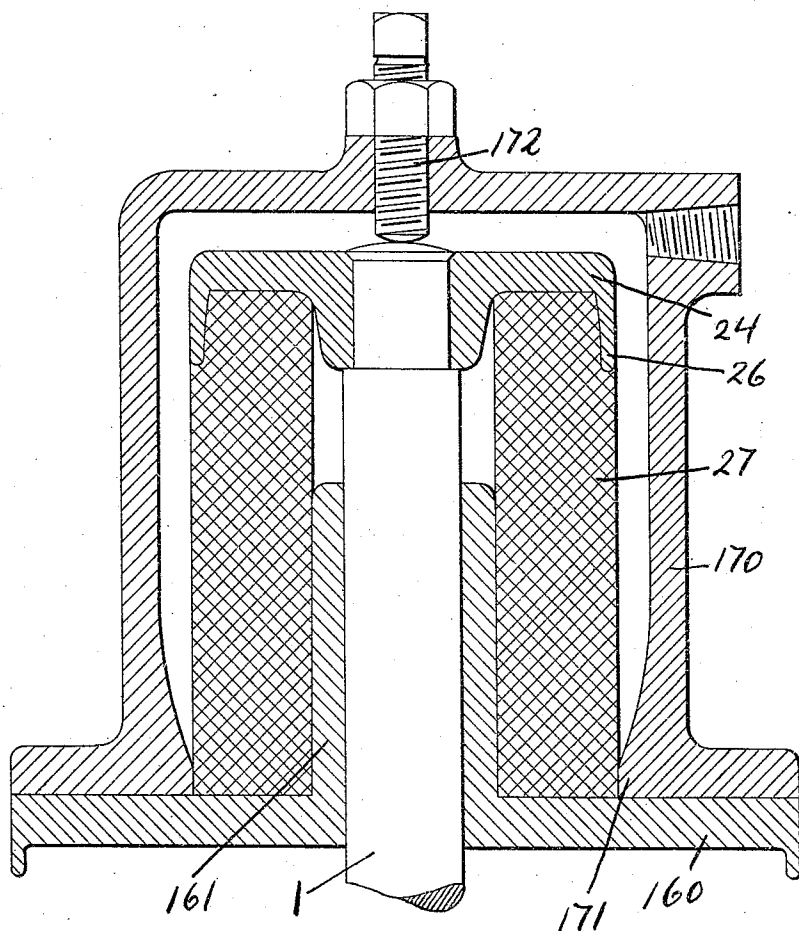


Fig. II.

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4 SHEETS—SHEET 3.

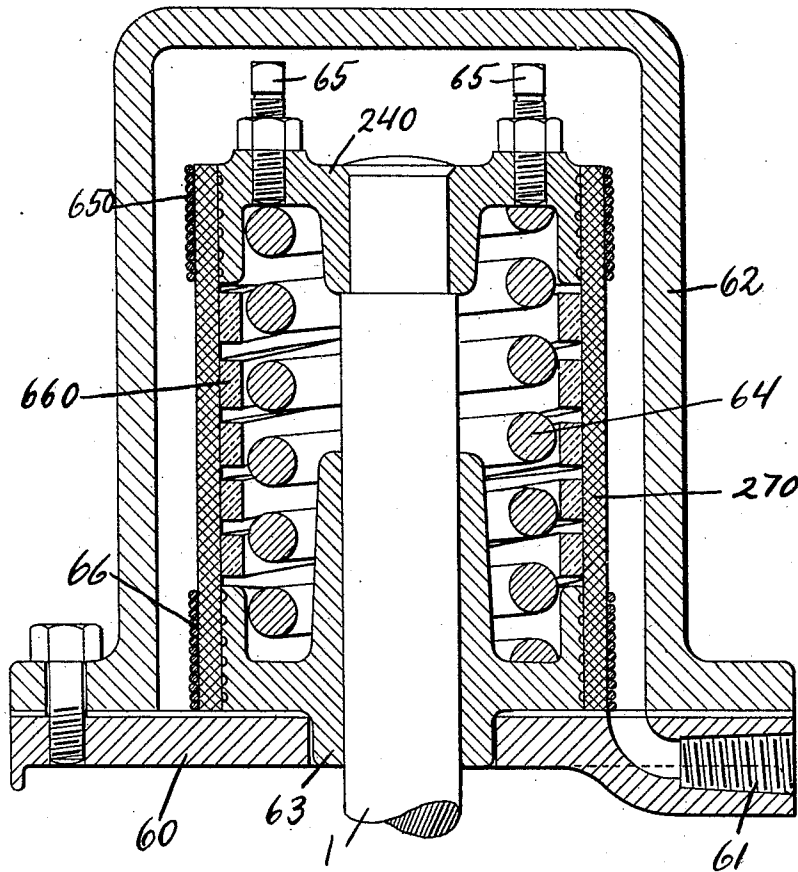


Fig. III.

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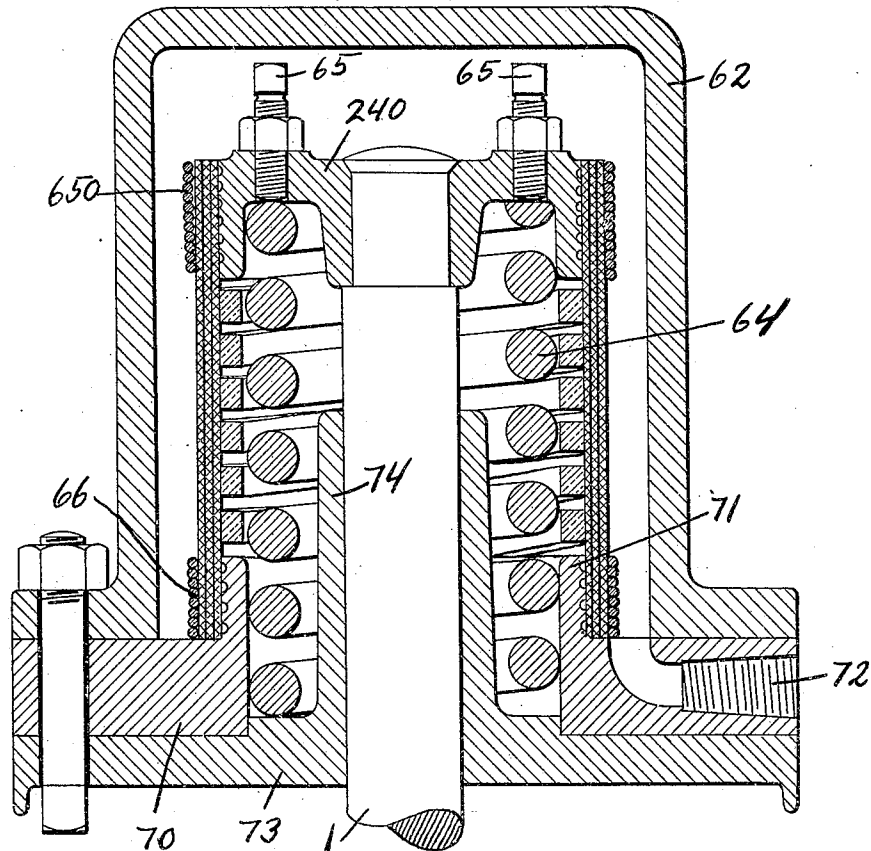


Fig. IV.

WITNESSES:

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UNITED STATES PATENT OFFICE.

NORMAN C. BASSETT, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF NEW JERSEY.

GOVERNOR.

939,656.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed July 22, 1907. Serial No. 384,843.

To all whom it may concern:

Be it known that I, NORMAN C. BASSETT, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Governor, of which the following is a specification.

This invention relates to governors of the fluid pressure type, and specifically it relates to the structure of an apparatus provided with a movable member adapted to respond to changes in the pressure of a fluid to which it is exposed, the purpose being to simplify existing types of apparatus and to render apparatus of this nature more sensitive as well as more durable.

While the apparatus disclosed by this specification is adapted to be used in any situation and under any conditions where it is desirable to effect some movement, for governing purposes or otherwise, according to an increase or decrease in the pressure of a fluid, it is specially adapted and designed for use in connection with air compressors for brake service upon cars and similar vehicles; and for the purpose of illustrating the invention it is shown and described as used in connection with a circuit making and breaking electric switch of the type disclosed by a co-pending application of Norman C. Bassett, filed Feb. 23, 1907, Serial Number 358,766.

Referring to the drawings which accompany this specification and form a part thereof and on which the same reference characters are used to designate the same elements wherever they may appear in each of the several views,—Figure 1 illustrates, in longitudinal section, a governor embodying this invention; and Figs. 2, 3 and 4 illustrate modified forms of the invention.

Referring to Fig. 1 of the drawings, the numeral 1 designates a reciprocable rod provided with a projection 2, which projection is adapted to engage either with the face 3 or the face 4 of the pivoted member 5, whereby it will swing said pivoted member about its pivot 6, the movement of said member being opposed during the first part of its swing by the spring 7, seated in the hollow link 8, and being accelerated by said spring during the latter part of its movement, so that the face 9 or the face 10 of the pivoted member 5 will strike against the face 11 or the face 12 of the member 13,

which is also pivoted on the pivot 6, whereby said member 13 will be swung about said pivot either to withdraw contact 14 from contact 15, or to press contact 14 against contact 15, in the manner fully described in the application above referred to.

The numeral 16 designates a base upon which is secured a cap 17, the base being provided with an aperture 18 through which the stem 1 extends, and to this base is secured the frame 19, which carries the circuit making and breaking apparatus, a thin metal cup or cover 20 being provided to inclose these parts if desired. The cap 17 is provided with a screw-threaded aperture 21 to which may be connected an air pipe leading from the air receiver of the brake system and the wires 22 and 23 are to be included in a circuit which also includes the motor for operating the compressor pump, these parts not being shown as their general construction and arrangement are well understood.

Secured to the end of spindle 1 is an abutment 24, which is in the nature of a piston, though it is not necessary, and in fact it is preferred that it should not fit with any degree of tightness within the cap 17, thereby avoiding friction.

The numeral 25 designates a suitable packing material, as of fiber, or any preferred substance, by which a tight joint is secured between the base 16 and the cap 17. The abutment 24 is provided with the flange 26, and between said abutment and the base 16 is secured the hollow cylinder 27, of rubber or other suitable material, the wall of the cylinder being made thick enough to withstand the external pressure of the air without collapsing, but yielding readily lengthwise to the pressure of the air upon the abutment 24. This rubber cylinder can be made quite thick and yet it will yield lengthwise readily for the short play required to open or close the contact 14.

The numeral 28 designates a spiral spring bearing against the abutment 24 at one end and against a beveled washer 29 at its other end, this spring being adapted to resist movement of the abutment due to the pressure of the air, and to move the abutment back as the air pressure falls thus permitting free extension of the hitherto compressed cylinder 27, the adjustment of the governor to act at any predetermined pres-

sure being effected by bevel-ended screws 30, which are received within screw-threaded apertures 31 in the base 16. It is preferred that this spiral spring be placed substantially as shown by Fig. 1 of the drawings, and if it be made with an external diameter substantially equal to the internal diameter of the rubber cylinder 27, the thickness of the wall of said cylinder can be materially reduced, as the spring will prevent its being collapsed inwardly by the air pressure on the exterior thereof. The advantage of this construction is due to the fact that rubber deteriorates very rapidly when exposed to the atmosphere, but by employing a considerable mass of rubber, while the exterior of the mass loses the characteristics which render it useful, the interior of the mass is preserved from the action of the atmosphere and retains its usefulness for a great many years, this fact being shown by the condition of rubber car springs after years of use. Rubber diaphragms are short lived for the reason that they must be comparatively thin to respond readily to the changes of pressure under which they are required to operate. Metal diaphragms are short lived. Pistons require to be packed, causing friction. The tighter they are packed, the more friction results. In the apparatus disclosed there is retained the sensitiveness of the rubber diaphragm with the accuracy of working of the piston while doing away entirely with the friction of the piston.

The modified form of governor shown by Fig. 2 retains the flanged abutment 24 of Fig. 1, but the base 160 is provided with an extended boss 161 which fits rather closely the interior of the rubber cylinder 27, the cap 170 being provided with an inwardly projecting flange 171 which fits against the exterior of the rubber cylinder. The cap 170 is further provided with a screw 172, for adjusting the governor to act at a predetermined pressure, the resistance of the rubber to compression and its elasticity being depended upon both for resisting compression and for returning the abutment 24 when the pressure is lowered.

The modification illustrated by Fig. 3 comprises the same general structure as those already described. In this structure the base 60 is provided with the screw-threaded aperture 61, through which the air under pressure is admitted to the interior of the cap 62. A collar 63 surrounds the spindle 1, and between this collar 63 and the abutment 240 is secured a spiral spring 64, bolts 65 being provided which bear upon the spring at one end by which its tension may be adjusted. The rubber cylinder 270 is secured to the collar 63 and to the abutment 240 by wire wrappings 650 and 66, or by any other preferred clamping mechanism. The rubber cylinder 270 may be made with com-

paratively thin walls, in which case a flat spiral 660 is placed inside thereof to prevent the wall of the cylinder being forced in by the air pressure on the exterior thereof.

The modification shown by Fig. 4 is the same in all essential particulars as that shown by Fig. 3, except that the collar 63 (Fig. 3), to which the rubber cylinder is secured at one end, is replaced by the ring 70, provided with the flange 71, and the screw-threaded aperture 72, through which air under pressure is admitted to the interior of cap 62, is located in this ring, the base 73 being provided with an apertured boss 74, in the aperture of which is located the spindle 1, while the spring 64 rests at one end against the base 73, instead of against the collar 63 (Fig. 3). The rubber cylinder is secured to the abutment 240 and to the flange 71 by wire wrappings 650, 66, as in the apparatus disclosed by Fig. 3, but the rubber cylinder instead of being formed as an integral mass, as is the case with each of the other structures shown, is disclosed by this figure as formed from a sheet of rubber rolled to a cylindrical form and then wrapped several times around, so that a cylinder is formed composed of superposed sheets of rubber.

What I claim is,—

1. The combination in a governor, of a cap having an inwardly projecting wall at its opening, a rod extending within said cap, an abutment on said rod and loosely slidable within said cap, a compressible fluid-imperious member surrounding said rod and in free contact with said abutment and said projecting wall of said cap forming a pressure chamber without and surrounding said member, and separate elastic means tending to permit free extension of said member when compressed.

2. The combination in a governor, of a cap having an inwardly projecting wall at its opening, a rod extending within said cap, an abutment on said rod and loosely slidable within said cap, a hollow rubber cylinder surrounding said rod and in free contact with said abutment and said projecting wall of said cap forming a pressure chamber without and surrounding said cylinder, and a spring within said cylinder and surrounding said rod and tending to permit free extension of said cylinder when compressed.

3. The combination in a governor of a base member, a cap, a reciprocable rod provided with an abutment extended within said cap, and a hollow rubber cylinder and a spring both retained between said abutment and said base member and both located within said cap.

4. The combination in a governor of a base member, a cap, a reciprocable rod provided with an abutment extended within said cap, a hollow rubber cylinder and a

spring both retained between said abutment and said base member and both located within said cap, and means for varying the pressure exerted by said spring.

- 5 5. The combination in a governor of a base member, a cap, a reciprocable rod provided with an abutment extended within said cap, a hollow rubber cylinder and a spring both retained between said abutment
10 and said base member and both located with-

in said cap, means for varying the pressure exerted by said spring, and means to prevent the collapsing of said rubber cylinder.

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

NORMAN C. BASSETT.

Witnesses:

H. C. CASE,
FRANK E. DENNETT.