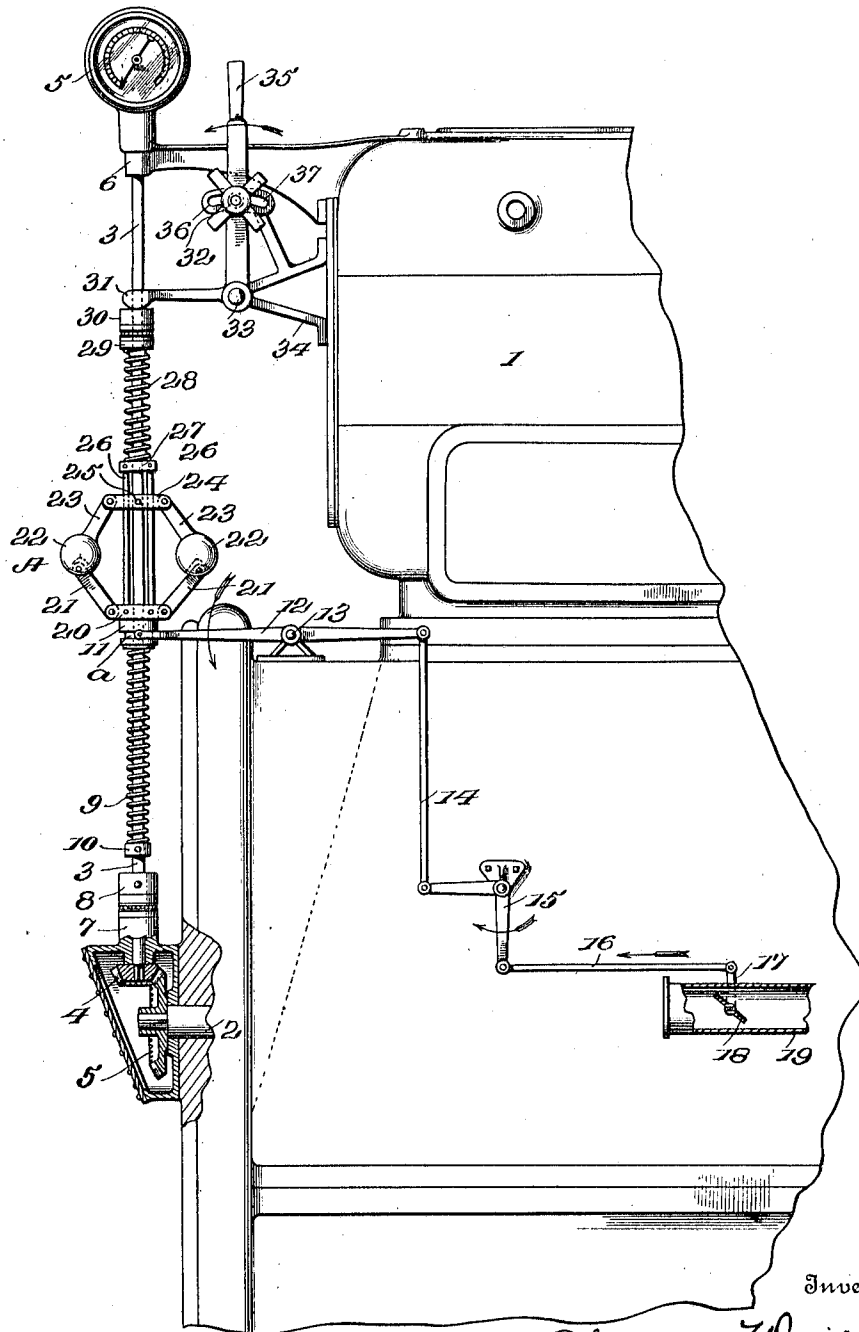


A. WINTON.
GOVERNOR FOR INTERNAL COMBUSTION MARINE MOTORS.
APPLICATION FILED APR. 11, 1911.

1,031,223.

Patented July 2, 1912.



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ALEXANDER WINTON, OF CLEVELAND, OHIO.

GOVERNOR FOR INTERNAL-COMBUSTION MARINE MOTORS.

1,031,223.

Specification of Letters Patent.

Patented July 2, 1912.

Application filed April 11, 1911. Serial No. 620,464.

To all whom it may concern:

Be it known that I, ALEXANDER WINTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Governors for Internal-Combustion Marine Motors, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in governors for internal combustion marine motors, the object of which is to prevent the racing of the motor when it is started without load; when the load is relieved by reason of the propeller being out of the water in a heavy sea; and when the load is removed by passing from forward to reverse of the propeller through a transmission mechanism as usual in such controls, and when the load is removed by placing the transmission mechanism at "neutral" and the propeller is not revolving.

My present invention pertains to a governor which automatically controls the speed of the engine and consequent injury by racing thereof, whenever the load is removed therefrom as hereinafter stated.

In the accompanying drawing is a side elevation of my improved governor, shown partly in section.

Referring now to the drawings, 1 represents one of the cylinders of an internal combustion motor, and 2 the cam-shaft thereof, which as is well known revolves at half the speed of the crank-shaft (not shown) of the engine.

My improved governor comprises a shaft 3, and this shaft is operatively connected with the motor in any desired manner. As here shown the shaft 3 is provided with a bevel gear 4, which meshes with a bevel gear 5 on the cam-shaft 2, but twice the size of the gear 4, so that the gear 4 and the shaft 3 are driven at a speed corresponding with the speed of the motor crank-shaft (not shown).

To enable the speed of the shaft 3, and thereby the speed of the motor to be determined at all times, a tachometer 5 is operatively connected with the shaft 3. This forms no part of my governor, but enables the engineer or operator to cause the motor to run at any adjusted speed by means of the governor as will appear fully hereinafter. The said shaft 3 is journaled at its

ends in suitable bearings 6 and 7. A ball thrust collar or bearing 8 is attached to the lower end of the shaft 3, and between it and the bearing 7, of any well known form. A spring 9 surrounds the lower portion of the shaft 3, having its lower end connected with the shaft by means of a collar 10. The upper end of this spring bears against the under side of a grooved ring or base 11. The outer end of a lever 12 engages the groove *a* in said ring 11, is intermediately pivotally supported at 13, and has pivoted to its inner end a link 14. A bell-crank lever 15 has one end pivoted to the opposite end of said link 14, and the other end of the bell-crank lever is pivoted to a link 16, the opposite end of the link being pivoted to the throttle lever 17 of a throttle 18, which controls the speed of the motor in the well known way. This throttle is located in a pipe or passage 19 through which the explosive mixture passes to the motor cylinders.

A centrifugally actuated weight governor A is provided and in which the lower head 20 is either attached to or rests upon the grooved ring 11, and to which the lower ends of the lower toggle levers 21 are pivoted, the upper ends of said levers being pivoted in the weights 22, as shown. These weights 22 are formed as a part of the upper toggle levers 23, and the upper ends of these upper toggle levers are pivoted to the ends of a head 24, and this head 24 is made fast to the rod 3 by a transverse pin 25. Located above the head 24 is a cross-head 27, which slides on the rod 3, and this cross-head is connected to the head 20, by means of the rod 26. The heads 20 and 27 are both loose and slidable upon the rod 3. A spring 28 surrounds the rod 3 above the head 27 and has its lower end resting on the head 27, with a ball thrust bearing 29 resting on the upper end of the spring. The other member 30 of this ball thrust bearing is engaged by the lower end 31 of an L-shaped controlling lever 32 intermediately pivoted at 33, in a suitable support or bracket 34. A handle 35 is formed on the end of this lever, and the lever is adapted to be locked in its adjusted positions in any suitable manner. As here shown this locking is effected by the well-known thumb-screw 36, which passes through the lever and a curved slot 37.

The upper spring 28 is much stronger or

stiffer than the lower spring 9, while the latter is just strong enough to lift the ring 11 and the weighted arms when relieved of the pressure of the stronger spring 28 above.

5 The operation of the governor is as follows: The motor is started with the throttle 18 almost closed. To effect this, the lever 32 is moved over to the right, (directly opposite to that indicated by arrow), which re-
10 lieves the downward pressure of the heavy spring 28, and the lower spring 9, through the ring 11, forces the toggle levers and weights outward to their limit of movement and nearly closes the throttle. With
15 the parts in this position, the toggle levers can not move outward farther under centrifugal action, nor fall downward, and the parts are thus held and the motor prevented from racing when it is started. After the
20 motor is started the lever 32 is moved in the direction indicated by arrow, which puts a pressure on the strong spring 28, which in turn forces the heads 27 and 20 downward, compressing the lighter spring
25 9, and drawing inward on the weighted toggle levers. This movement of the parts opens the throttle 18 (as indicated by arrows) and the lever 32 is adjusted until the tachometer indicates the desired speed of
30 the motor, for instance, 350 R. P. M. The motor will now be held at this regulated speed, with and without load. If a load is put on the motor and it is slowed up any, the heavy spring 28 will force the heads 27
35 and 20 down and open the throttle more to take care of the load. On the other hand, if the load is removed for any of the reasons hereinbefore mentioned, the parts will
40 move in the opposite direction and close the throttle and prevent the motor from

racing. By reason of this operation, the governor will keep the motor approximately at a uniform speed with and without load. It will also be understood that when it is desired to suddenly or gradually either increase or decrease the speed of the motor above say, the regulated speed of 350 R. P. M., it is accomplished through the movement of the L-shaped controlling lever 32 in the proper direction to effect the desired result.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A governor of the type described, comprising a rotating shaft, a centrifugal governor on said shaft, a manually adjustable spring acting in opposition to the centrifugal action of the governor, and a relatively lighter spring acting in the direction of the centrifugal action of the governor.

2. A governor of the type described, comprising a rotating shaft, a centrifugal governor having one end connected with said shaft, a heavy spring acting against the free end of the governor and in opposition to the centrifugal movement thereof, a relatively lighter spring also acting against the free end of the governor and in the direction of the centrifugal movement of the governor, and means for adjusting the pressure of the heavy spring against the free end of said governor.

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

ALEXANDER WINTON.

Witnesses:

W. J. WARD,
W. H. DODDRIDGE.