

UNITED STATES PATENT OFFICE.

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MARINE-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 582,715, dated May 18, 1897.

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To all whom it may concern:

Be it known that I, EDWIN D. BANGS, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Marine-Engine Governors; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its main object to prevent racing of a propeller-wheel when the same comes out of water while in rotation; and it consists in certain peculiarities of construction and combination of parts constituting a governor mechanism hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 represents a partly sectional view of a governor mechanism constructed according to my invention, and Fig. 2 a view taken on the plane indicated by line 2 2 in the preceding figure.

Referring by letter to the drawings, A represents a suitable support for a base B, and while this base is shown adjustably secured to said support it may be otherwise connected thereto. The base is provided with a hanger *b*, that extends through the support A, and a horizontal spindle C, having its bearing in the hanger, carries a pulley *c* for a belt D, that also runs on another pulley E, fast on the shaft F for a propeller-wheel. The spindle C also carries a bevel-pinion G in mesh with a similar pinion H, fast to a governor-shaft I, that turns in a bearing *d*, constituting part of the base B on the aforesaid support.

Splined on the shaft I is the usual sliding sleeve J, connected by links *e* with ball-carrying arms K in pivotal connection with a cross-head *f* on said shaft. Each of the governor-balls L is shown provided with a wing *g*, and a pivotal latch-bar M is held up by a spring *h* to come in the path of the wings when said balls are lifted to a predetermined elevation. In order that the ball-wings may operate upon the latch-bar at a greater or less elevation, any suitable provision may be made to vary the set of said bar, and, as herein shown, the base B may be adjusted on its support; but this operation necessitates a corresponding adjustment of the belt-pulley

E on the propeller-wheel shaft, and therefore I have also shown the aforesaid bar pivoted in a bracket N, adjustable on a flange extension *i* of the base-support. This bracket has an arm *j*, connected to the latch-bar M by the spring *h*, and a screw-stop *k* may be arranged in said bracket for the purpose of obtaining a fine axial adjustment of said bar.

The latch-shoulder *m* on bar M serves as a support for a lever P, connected by a link P' to a casing Q of a gate-valve R, that controls the passage of steam through a pipe S, employed in practice to connect a boiler with the engine by which the propeller-wheel shaft is driven, and the valve has a stem *n* in pivotal connection with the lever. A weight T is suspended from the lever, and a cord *p* or its equivalent, run over suspension-pulleys *q*, connects said lever with a drum U, having its arbor V arranged in bearings *r* on the base B above specified. A hand-cord *s* or its equivalent may be joined to the one *p* and suspended by pulley *t*, as herein shown. Fast on the drum-arbor V is a bevel-pinion W, and a similar pinion X on the governor-sleeve comes in and out of mesh therewith. Arranged on the arbor V intermediate of the pinion W and a washer *u*, adjacent to one of the bearings *r*, is a spiral spring *v*, and hence while said pinion is normally held in position to mesh with the one X provision is had for longitudinal yield of said arbor to automatically effect a disengagement of said pinions should the governor-sleeve J not lift at the time the valve-lever P is brought to normal position by the winding of cord *p* on the drum U above specified.

In practice, when the speed of the shaft F increases incidental to the propeller-wheel coming out of water, the governor-balls L will lift and thus bring their wings *g* in position to push back the latch-bar M, thus releasing the weighted lever P, whereby the valve R is run down to check the steam-supply from boiler to engine, it being preferable to notch said valve, as herein shown, so as to permit the passage of enough steam to keep said engine running. The steam-supply having been checked and the speed of shaft F decreased, the governor-sleeve pinion X will by gravity engage the arbor-pinion W and thereby cause a wind of the cord *p* to auto-

5 matically bring the valve and its lever into normal position, as shown in Fig. 1, or the same result may be obtained by an operation of hand-cord *s*, the latch-shoulder *m* of bar
5 M coming under said lever to support the same.

From the foregoing it will be understood that the reduction of steam-supply to the engine is always automatic and independent
10 of the throttle, the operation taking place whenever the propeller-wheel shaft attains a speed greater than what has been predetermined, even though said wheel should not come out of the water.

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

1. The combination of a propeller-wheel shaft, a speed-governor geared to the shaft,
20 a steam-supply pipe for the shaft-driving engine, a gate-valve for the pipe, a weighted valve-lever, a supporting-latch for the lever arranged to be retracted by action of the gov-
25 ernor-balls, a winding-drum having its arbor provided with a pinion, another pinion carried by the governor-sleeve to come in and out of mesh with the one aforesaid, and a suitably-suspended flexible connection between said valve-lever and drum.

30 2. The combination of a propeller-wheel shaft, a speed-governor geared to the shaft, a steam-supply pipe for the shaft-driving engine, a gate-valve for the pipe, a weighted valve-lever, a supporting-latch for the lever
35 arranged to be retracted by action of the governor-balls, a winding-drum having the arbor thereof arranged to have longitudinal play

in its bearings, a pinion on the arbor, another pinion carried by the governor-sleeve to come in and out of mesh with the one aforesaid, a
40 spiral spring arranged intermediate of an arbor-bearing and the arbor-pinion, and a suitably-suspended flexible connection between said valve-lever and winding-drum.

3. The combination of a propeller-wheel
45 shaft, a speed-governor geared to the shaft, a steam-supply pipe for the shaft-driving engine, a gate-valve for the pipe, a weighted valve-lever, a supporting-latch for the lever arranged to be retracted by action of the gov-
50 ernor-balls, a winding-drum cooperative with the governor-sleeve, a suitably-supported flexible connection between said lever and drum, and a suitably-supported hand-cord or
55 its equivalent joined to said flexible connection.

4. The combination of a propeller-wheel shaft, a speed-governor geared to the shaft,
60 a steam-supply pipe for the shaft-driving engine, a partial cut-off gate-valve for the pipe, a weighted valve-lever, a supporting-latch for the lever arranged to be retracted by ac-
65 tion of the governor-balls, and suitable mechanism cooperative with the governor-sleeve to effect automatic lift of the valve.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

EDWIN D. BANGS.

Witnesses:

EDWIN I. BANGS,
N. E. OLIPHANT.