

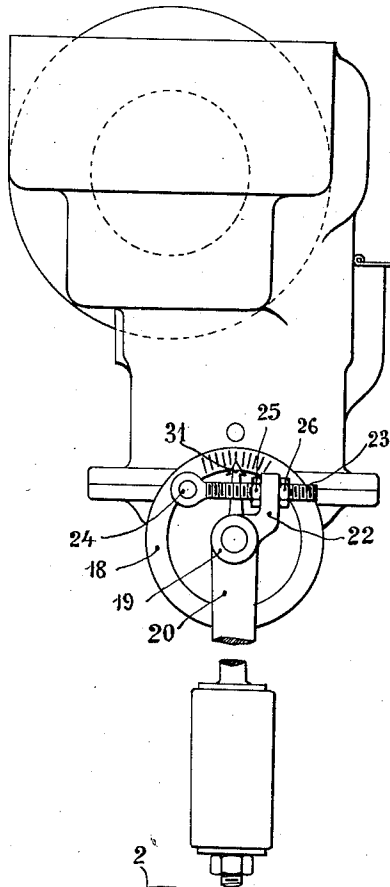
E. BROUQUIÈRE.
 PENDULUM GOVERNOR FOR SHIPS' ENGINES.
 APPLICATION FILED DEC. 26, 1911.

1,058,540.

Patented Apr. 8, 1913.

2 SHEETS—SHEET 1.

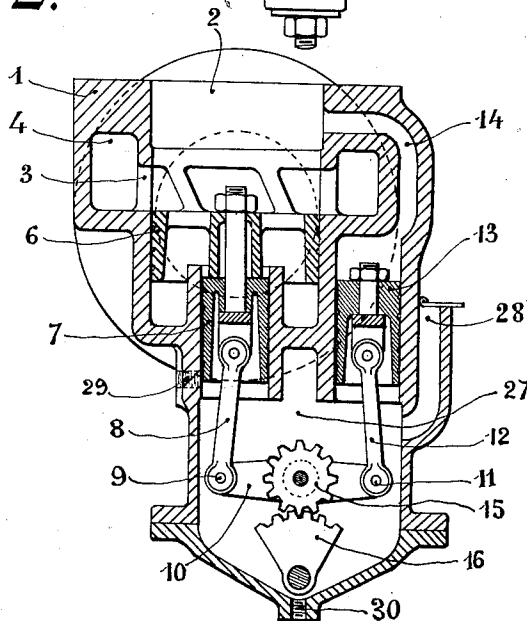
Fig. 1.



← R

N →

Fig. 2.



Witnesses:
Pend. H. H. H.
W. H. H.

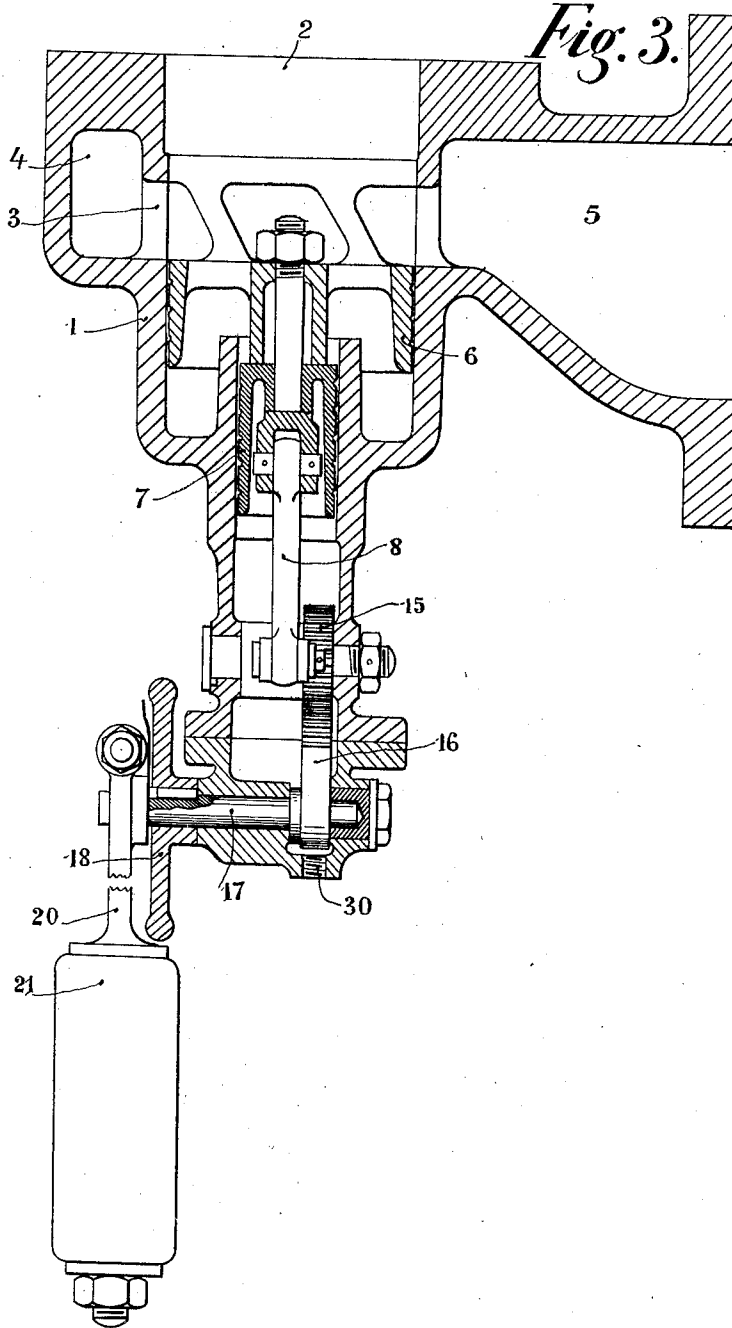
Inventor:
Eugène Brouquière
by F. J. H. H.
Attorney

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Witness:
Peroffsky
Willy Hark

Inventor:
Eugène Brouquière
by Gustave Hark
Attorney

UNITED STATES PATENT OFFICE.

EUGÈNE BROUQUIÈRE, OF SALÉCHAN, FRANCE.

PENDULUM-GOVERNOR FOR SHIPS' ENGINES.

1,058,540.

Specification of Letters Patent.

Patented Apr. 8, 1913.

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To all whom it may concern:

Be it known that I, EUGÈNE BROUQUIÈRE, a citizen of the French Republic, residing at Saléchan, Hautes-Pyrénées, France, have
5 invented certain new and useful Improvements in Steam-Supply Valves with Pendulum-Governors for Ships' Engines, of which the following is a specification.

Upon the steam pipes which feed a ship's
10 engines there exists near the slide valve of the engines a steam parallel slide stop valve or gate valve or regulating flap valve which regulates the steam admission. When the
15 sea is rough, it frequently happens that the propellers get out of the water and turn in the air where they find scarcely any resistance. The speed of the engines consequently considerably increases so that it becomes dangerous for the moving parts of the en-
20 gines. Generally, this inconvenience is overcome by operating the regulating flap valve by hand so as to reduce the steam supply or even to shut the steam off. This operation is, however, very delicate and difficult.
25 It therefore has been proposed to use mechanical means for automatically producing the desired effect. None of the devices of known construction gives, however, complete satisfaction.

30 This invention relates to a slide valve combined with a pendulum governor. The pendulum is arranged so that it swings in the longitudinal axis of the ship. It drives the slide valve through the intermediary of
35 an equilibrated beam. The principal condition to be fulfilled if this apparatus has to work properly is the reduction of friction and the good equilibration of the beam so that all the energy of the pendulum is rapidly transmitted to the slide valve or to the
40 flap valve. The connection between the pendulum and the slide valve is adjustable so that the normal position of the pendulum corresponds with an initial position of the
45 slide valve which can be modified according to the draft of the ship and to the amplitude of the oscillations resulting from the pitching. The pendulum can further be separated from the slide valve which thus can
50 be directly driven by a hand-wheel as is ordinarily the case.

In the drawings the improved apparatus is shown by way of example.

55 Figure 1 is an elevation of the improved steam supply valve with pendulum regulators. Fig. 2 is a vertical section through

Fig. 1. Fig. 3 is a vertical section taken at right angles to the section shown in Fig. 2.

The casing 1 (Fig. 1) has a feed nozzle 2 which communicates, by means of ports 3, 60 with an annular space 4 which is connected with a pipe 5 fixed upon the slide valve box of the engines. The ports 3 can be covered, more or less, by a slide valve 6 which is rigidly connected with a piston 7. 65 This piston is connected by a connecting rod 8 with the end 9 of a beam 10, the other end 11 of this beam being connected by means of a connecting rod 12 with a second piston 13 of the same diameter as the first 70 piston, but of a weight which is equal to that of the piston 7, plus the weight of the slide valve 6. A passage 14 serves for connecting the space above the piston 13 with the steam nozzle 2. In the top part of the slide valve 75 6, perforations are provided through which the steam can get at the piston 7. The beam carries a pinion 15 which meshes with a toothed segment 16 keyed upon a shaft 17 which further carries a hand-wheel 18. 80 In front of this hand-wheel 18 the rod 20 of the pendulum 21 is loosely mounted upon said shaft 17. The rod 20 has a lateral arm 22 which is slotted and serves as guide for a threaded connecting rod which is fixed 85 with the other end to the pin 24 of the hand-wheel, and which is secured in its position by two regulating nuts 25 and 26.

The lower part of the casing 1 forms an oil reservoir 27 adapted to be filled by a lateral 90 channel 28. An air hole 29 serves for the escape of the air from said oil reservoir. At the bottom of the oil reservoir 27 a valve controlled blow-off port 30 is arranged which also serves for blowing off the water 95 from condensation.

This apparatus operates as follows:—The plane of oscillation of the pendulum coincides with the longitudinal plané of the ship. The apparatus is arranged in such a 100 manner that when the stern of the ship gets out of the water, the corresponding movement of the pendulum makes the slide valve 6 move upward and throttle the steam ports. In Figs. 1 and 2 of the drawings 105 the bow of the ship is supposed to be at the right hand side of the figure and the stern at the left hand side of the same.

The slide valve 6 is not in contact with the wall of the cylindrical boring in which 110 it moves so that even if the steam ports 3 were completely closed, there will always

flow a sufficient amount of steam which, together with the action of the vacuum condenser, prevents the stopping of the engines.

The diameter of the pistons 7 and 13 is slightly shorter than the inner diameter of the cylindrical boring in which they are located. Said pistons are made tight by means of circular grooves arranged the one above the other and forming corresponding chambers for the steam.

The lower part 27 of the casing 1 is completely filled with oil so that the pistons and all the gearing are completely immersed in the oil. The journal of the shaft 17 is very long and it also has circular grooves whereby the escape of oil is prevented.

The initial position of the slide valve 6 corresponding to the vertical position of the pendulum 21 can be regulated by means of the nuts 25 and 26 and of the hand 31. When the position of the slide valve is regulated the actual draft of the ship has to be taken into account which, of course, varies according to the load of the ship. When the sea is calm the connecting rod 23 can be disconnected from the pendulum 21 when the hand wheel 18 alone serves for the operation of the slide valve as with an ordinary steam admission. The rolling of the ship has no influence upon this apparatus owing to the arrangement according to which, the plane of oscillation of the pendulum coincides with the longitudinal plane of the ship.

I claim:

1. Steam supply valve with pendulum governor for ships' engines comprising in combination a slide valve for the steam supply, a piston rigidly connected with said slide valve, a beam pivotally mounted in the valve casing under the said piston, a connecting rod connecting said piston with one end of said beam, a second piston of the same diameter as the first but a weight

equal to the sum of the weights of the first piston and of the slide valve, a connecting rod connecting said second piston to the other end of said beams, a passage connecting the steam supply with the end of said second piston most remote from the beam, a pinion keyed upon the axle of said beam, a toothed segment meshing with said pinion, a shaft for said segment, a hand wheel upon said shaft, a pendulum loosely mounted upon said shaft and means for connecting said hand wheel with said pendulum, substantially as described and shown and for the purpose set forth.

2. Steam supply valve with pendulum governor for ships' engines comprising in combination a slide valve for the steam supply, a piston rigidly connected with said slide valve, a beam pivotally mounted in the valve casing under the said piston, a connecting rod connecting said piston with one end of said beam, a second piston of the same diameter as the first but of a weight equal to the sum of the weights of the first piston and of the slide valve, a shaft mounted in the lower part of the valve casing, a hand wheel fixed upon one end of said shaft, a pendulum having its rod loosely mounted upon the said shaft, a lateral slotted arm on said rod, a screw bolt located in said slotted arm and fixed to said hand wheel, nuts for securely fixing said arm to said screw bolt substantially as described and shown and for the purpose set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

EUGÈNE BROUQUIÈRE.

Witnesses:

C. MARMOINE,
JEAN SOULIÉ.