C. BEHRENS.

STOPPING DEVICE FOR SHIPS.

APPLICATION FILED APR. 7, 1913.

1,074,236. Patented Sept. 30, 1913.

Fig. 1.

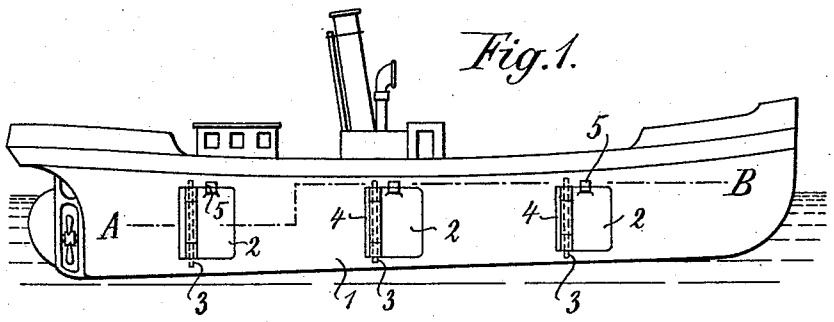


Fig. 2.

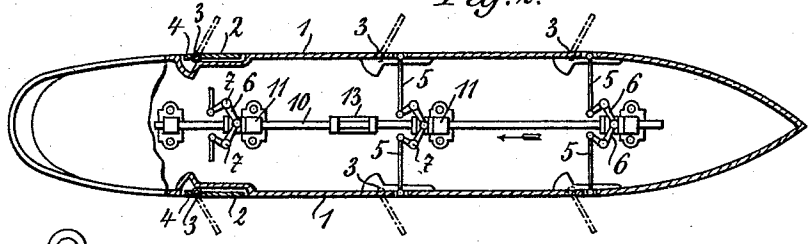


Fig. 5.

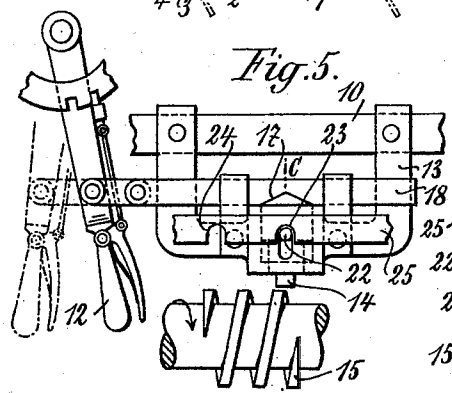


Fig. 7.

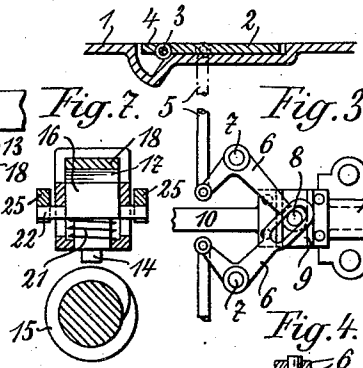


Fig. 3.

Fig. 4.

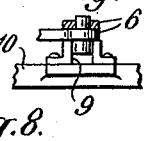


Fig. 6.

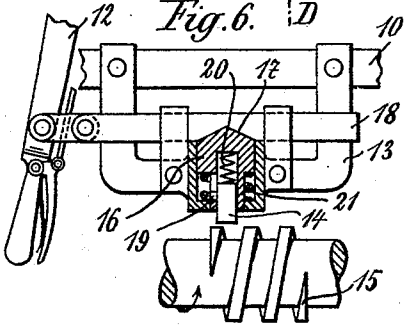
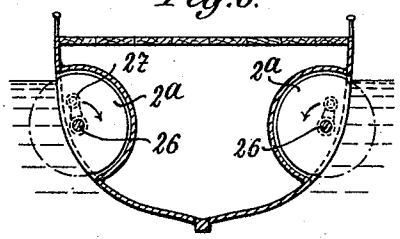


Fig. 8.



Witnesses:

Inventor:
Carl Behrens
per
Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CARL BEHRENS, OF JABELITZ, NEAR TRENT, GERMANY.

STOPPING DEVICE FOR SHIPS.

1,074,236. Specification of Letters Patent. Patented Sept. 30, 1913.

Application filed April 7, 1913. Serial No. 759,539.

To all whom it may concern:

Be it known that I, CARL BEHRENS, a subject of the German Emperor, and resident of Jabelitz, near Trent, Isle of Rugen, Germany, have invented a Stopping Device for Ships, of which the following is a specification.

This invention relates to means for stopping ships, the essential feature thereof consisting in the provision and arrangement at the sides of a ship of doors which, upon the reversing of the ship's machinery and by means of suitable gearing connected to the propeller shaft, are adapted to be opened until they are approximately at right angles to the hull of the ship thereby acting as brakes.

In order that my invention may be more clearly understood, reference is made to the accompanying drawings, in which:—

Figure 1 shows a ship in side elevation with the device applied; Fig. 2 shows a plan, partly in section, the line of section being indicated by A—B in Fig. 1; Figs. 3 to 7 show a number of details; Fig. 4 being a side elevation of parts of Fig. 3, and Fig. 7 representing a section through line C—D in Fig. 5; Fig. 8 shows a modification.

In carrying out my invention I provide on each side of the ship 1 a series of doors 2, in this case three, which are hinged to the hull at 3 and so devised that, when closed, they lie in suitable recesses and flush with the said hull. Each of these doors has an extension 4 which serves to limit the movement of the former, and each of the doors, by means of a rod 5, is connected with one end of a double armed lever 6 pivoted at 7, Figs. 2 and 3. The other ends of the levers 6 have pins 8 mounted thereon, the latter engaging guiding plates 9 which in turn connect the separate parts of a longitudinally disposed flat rod 10 slidably arranged in bearings 11. These bearings are suitably fixed at or near the bottom of the ship and the rod, when made to slide in the direction of the arrow, Fig. 2, causes the doors 2 to open. The sliding movement is effected by the mechanism hereinafter described. The rod 10, Figs. 5, 6 and 7, has attached to one end, that is the end which extends into the engine room, a U-shaped plate 13 bearing a slidable pin 14. This pin is adapted to engage the threads of a worm 15 formed integrally with the propelling shaft and is operated by means of a cap 16 which is conical at one end 17 and has a recess at the other for the reception of a spring 20 acting on the said pin 14. The cone 17 fits into a corresponding recess provided in a rod 18 the latter being pivoted to the engine operating lever 12 and guided in suitable extensions on the plate 13. The aforesaid spring 20 has a tendency to press the pin 14 into engagement with the threads of the worm 15 while, in order to prevent its falling out of the cap, it is fitted with a small projection 19 guided in a vertical and corresponding slot of the cap. The cap itself is under the influence of a spring 21 which rests with one end on the base of the hollow head of the plate 13 and with its other end presses the cone of said cap into the conical recess of the rod 18. The cap 16 moreover has two oppositely arranged pins 22 which project through suitable openings in the hollow head of the plate 13 and engage in one or the other of two grooves 23 and 24 of a stationary rod 25, according to the position of the rod 10.

Assuming the ship is propelled forward and the propelling shaft rotated in the direction of the arrow, Fig. 5; and further assuming that the ship is to be stopped and that the reversing gear is operated in the known manner by pulling the operating lever 12 from the position shown in Fig. 5 into that shown in dotted lines, the rod 18 is consequently moved thereby causing a sliding movement of the cap 16 toward the head of the plate 13 and simultaneously causing the pins 22 to become disengaged from the groove 23. The displacement of the cap 16 results in the engagement of the pin 14 with the threads of the worm 15 and, owing to the reversing movement of the propelling shaft, that is a movement in the opposite direction to that indicated by the arrow, Fig. 6, the said pin 14 and with it the rod 10 is carried along until the cone 17 of the cap 16 again engages with the conical recess in the rod 18. The pins 22 have simultaneously moved along the underside of the rods 25 and through the pressure of the spring 21 dropped into the groove 24. The movement of the rod 10 described has meantime, by means of the double armed levers 7 and dependent mechanism, caused the doors 2 to open, in which position the latter are held by the engagement of the pins 22 in the grooves 24. It is obvious that, as soon as the doors are beginning to open, the pres-

sure of the water will assist in the further opening of said doors until their movement is arrested by the projections 4 abutting against a corresponding wall formed in the recesses hereinbefore mentioned.

According to the modification, Fig. 8, the doors are made in the form of semi-circular disks 2^a which are adapted to be rotated on shafts 26, the said shafts being mounted near and longitudinally of the sides of the ship. The rotary movement of the doors is effected by means of cranks 27 which in turn may be operated by mechanisms similar to that already described.

Having now fully described my said invention what I claim and desire to secure by Letters Patent is:—

In the herein described stopping device for use with ships, having a series of recesses in the sides of the hull, the combination with a corresponding number of doors hinged to the sides of the vessel and fitting in said recesses, of a longitudinally disposed slidable rod mounted in the middle of the ship, a pair of double armed levers and links connecting each oppositely arranged pair of doors, a U-shaped plate having a hollow head attached to the said rod at a place where the latter extends into the engine room of the ship, a second rod having a conical recess slidably mounted on the said plate and connecting with the reversing lever operating the engine, a spring influenced recessed cap mounted within the hollow head of the plate and terminating in a cone adapted to engage with the said conical recess, a spring influenced pin bearing in the recess of said cap, and a worm formed integrally with the propelling shaft, the said spring influenced pin being adapted to engage the threads of the worm, all substantially as and for the purpose specified and shown.

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

CARL BEHRENS.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."