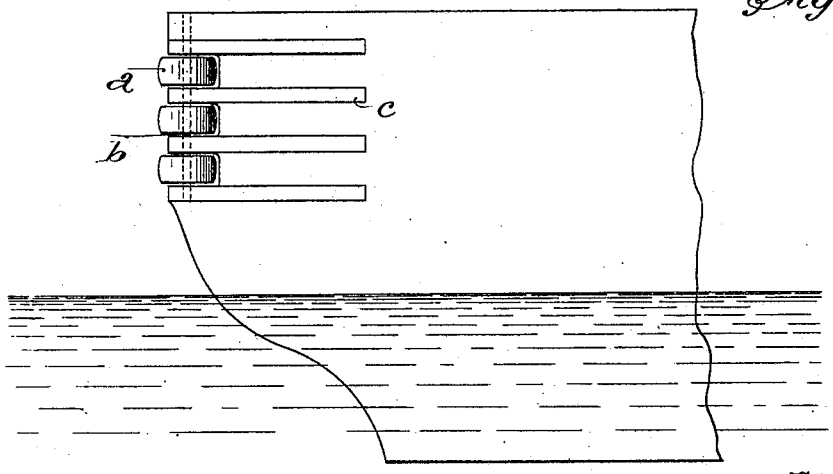
No. 807,959. PATENTED DEC. 19, 1905.

M. PADOVANI.

DEVICE FOR LESSENING THE SHOCK OF COLLISIONS BETWEEN SHIPS.

APPLICATION FILED JULY 21, 1904.

Fig. 1.



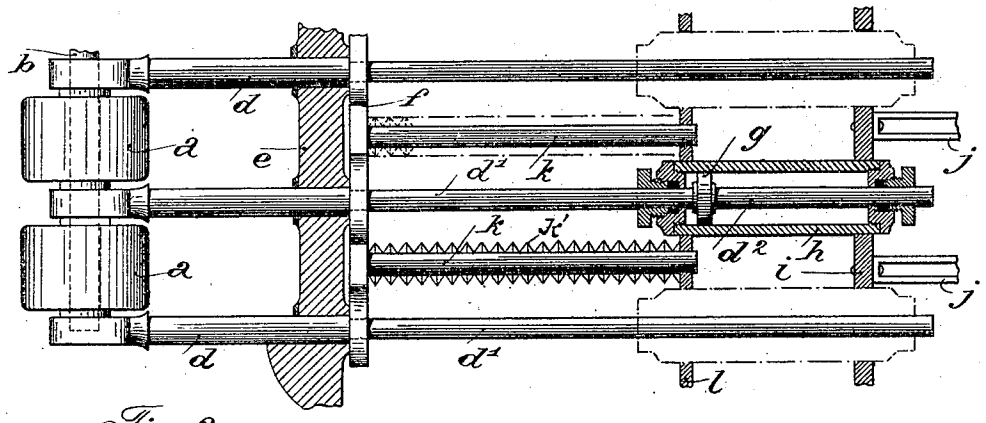


Fig. 2.

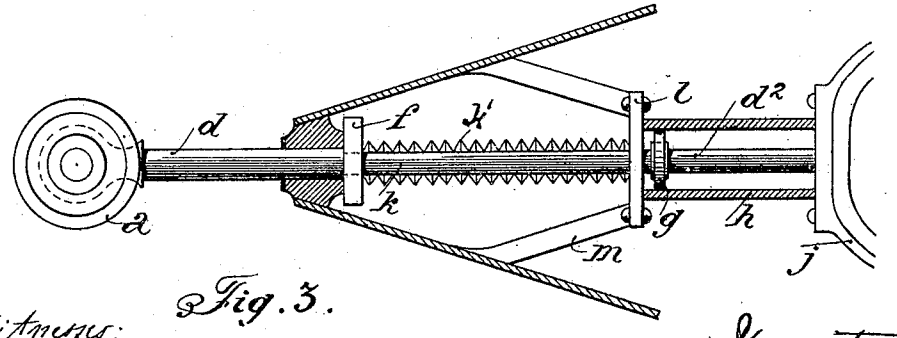


Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

MATHIEU PADOVANI, OF BASTIA, CORSICA, FRANCE.

DEVICE FOR LESSENING THE SHOCK OF COLLISIONS BETWEEN SHIPS.

No. 807,959. Specification of Letters Patent. Patented Dec. 19, 1905.

Application filed July 21, 1904. Serial No. 217,568.

To all whom it may concern:

Be known that I, MATHIEU PADOVANI, a citizen of the Republic of France, residing at Bastia, on the island of Corsica, France, have invented certain new and useful Improvements in Devices for Lessening the Shock of Collisions Between Ships, of which the following is a specification.

The present invention relates to a yielding fender or buffer for a ship's bow provided with rollers and adapted to yield under pressure for the purpose of lessening the shock when a vessel runs with its bow against the sides of another.

In the accompanying drawings, Figure 1 shows in elevation a roller-fender which is not resilient or movable. Fig. 2 shows in a vertical section the arrangement of a roller-fender mounted on sliding rods with hydraulic buffers. Fig. 3 is a plan view thereof.

The device shown in Fig. 1 is simply provided with several rollers a, mounted on a vertical axle b, which is rigidly secured to the fore part of the ship on strengthening-rails c, secured to the hull inwardly and outwardly, in order to offer as much resistance as possible.

According to the more complete device shown in Figs. 2 and 3, the rollers a are mounted on a vertical axle b, which is supported in the outer ends of rods d, traversing the stem e of the ship, and being rigidly connected to a movable cross-bar f, so that a solid and stout frame is formed by the parts b, d, and f. The rods d are prolongated beyond the cross-bar f, and the extensions d' d^2 form hydraulic brakes, the ends d^2, carrying pistons g, playing in the known manner in cylinders h, which are secured to plates i, being reinforced by stays j, firmly connected to the hull of the ship.

Supplementary rods k are securely fastened to the cross-bar f between the rods d' and parallel to these rods, and on the same washer-springs k' are mounted. These washers bear at the front end against the movable cross-bar and at the rear end against a fixed cross-bar l, which is steadied by braces m. Said cross-bar l forms the bearing for the front end of the cylinders h.

The washer-springs, known as "Belville springs," will not be described, as forming no part of this invention.

Instead of using cylinders h with hydraulic pressure, coöperating with pistons g on the extension of rods d, a series of washer-springs may be employed on said extension similar to those on the rods k, giving similar results.

With devices of the described kind the collisions between ships will be considerably lessened. A collision under an angle approaching a right angle will produce a receding of the rollers, and as their revolving allows of a gliding along of the hull which is struck a staving-in will be avoided. When the collision takes place under an acute angle and between two ships running in the same direction, the effects are less dangerous and the shock is less sensible, the rollers turning under the action of the ship which has the highest speed. In the most frequent cases when ships are running in opposite directions the rollers will turn rapidly as soon as the bow of one vessel strikes the hull of the other. At the same time the rollers will yield and recede toward the stern, and thus the hulls will gradually deviate from their direction of motion.

Having thus described my invention, what I claim is—

1. A vessel provided with a fender at the bow which is composed of a plurality of sliding rods d, d', d^2 rigidly secured to a cross-bar f within the hull in the rear of the stem of the vessel, and to a shaft b outside of the hull, forming together a stout sliding frame, said shaft b carrying rollers and said rods d, d', d^2 being slidably mounted in the stem of the ship and in the heads of compression-cylinders h, well secured in the front part of the vessel and having a piston secured to the rods within said cylinders, substantially as described and for the purpose set forth.

2. A vessel provided with a fender at the bow which is composed of a plurality of sliding rods d, d', d^2 rigidly secured to a cross-bar f within the hull in the rear of the stem of the vessel, and to a shaft b outside of the hull, forming together a stout sliding frame, said shaft b carrying rollers and said rods d, d', d^2 being slidably mounted in the stem of the ship and in the heads of compression-cylinders h, well secured in the front part of the vessel and having a piston secured to the rods within said cylinders, with supplementary spring-supported sliding rods k, secured to the cross-bar f between the rods d, d', d^2, substantially as described and for the purpose set forth.

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

MATHIEU PADOVANI.

Witnesses:
EUGÉNE PINCINELLI,
JEAN FRANCESCHI.