No. 720,074. PATENTED FEB. 10, 1903.

C. SCHWANEBECK.

AUTOMATICALLY LOWERING MAST.

APPLICATION FILED MAR. 15, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig 1.

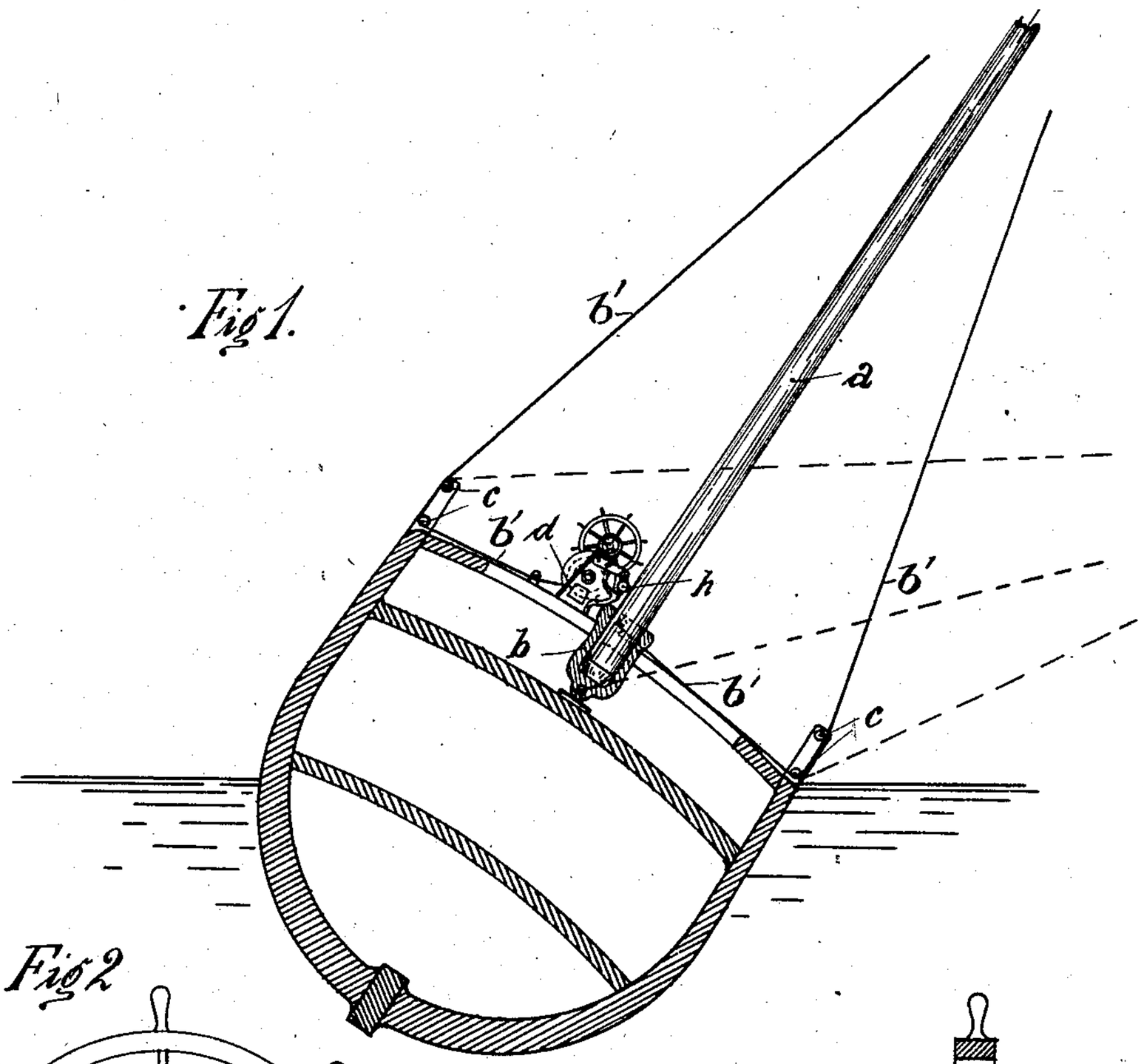


Fig 2.

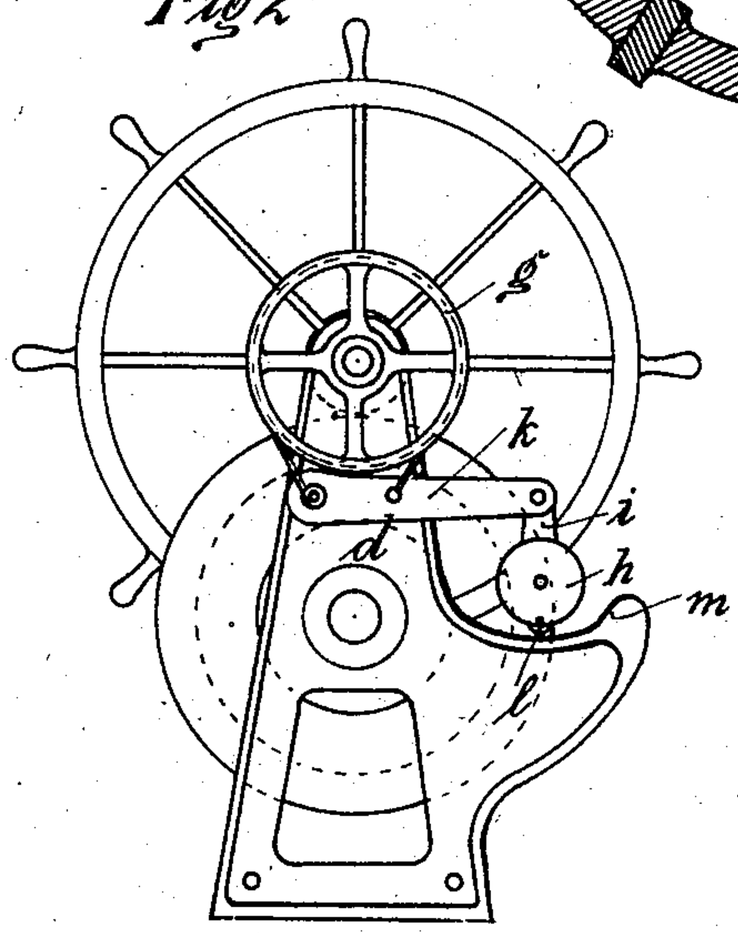
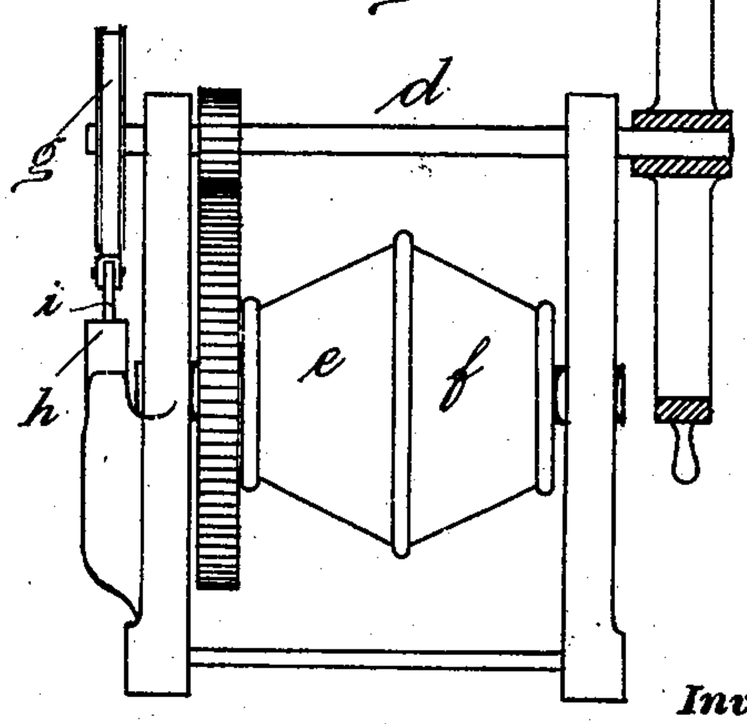


Fig 3.



Witnesses.
Hiroshi Mori
E. Hannuch.

Inventor.
Carl Schwanebeck
by B. Singer
Att'y.

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APPLICATION FILED MAR. 15, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig 4.

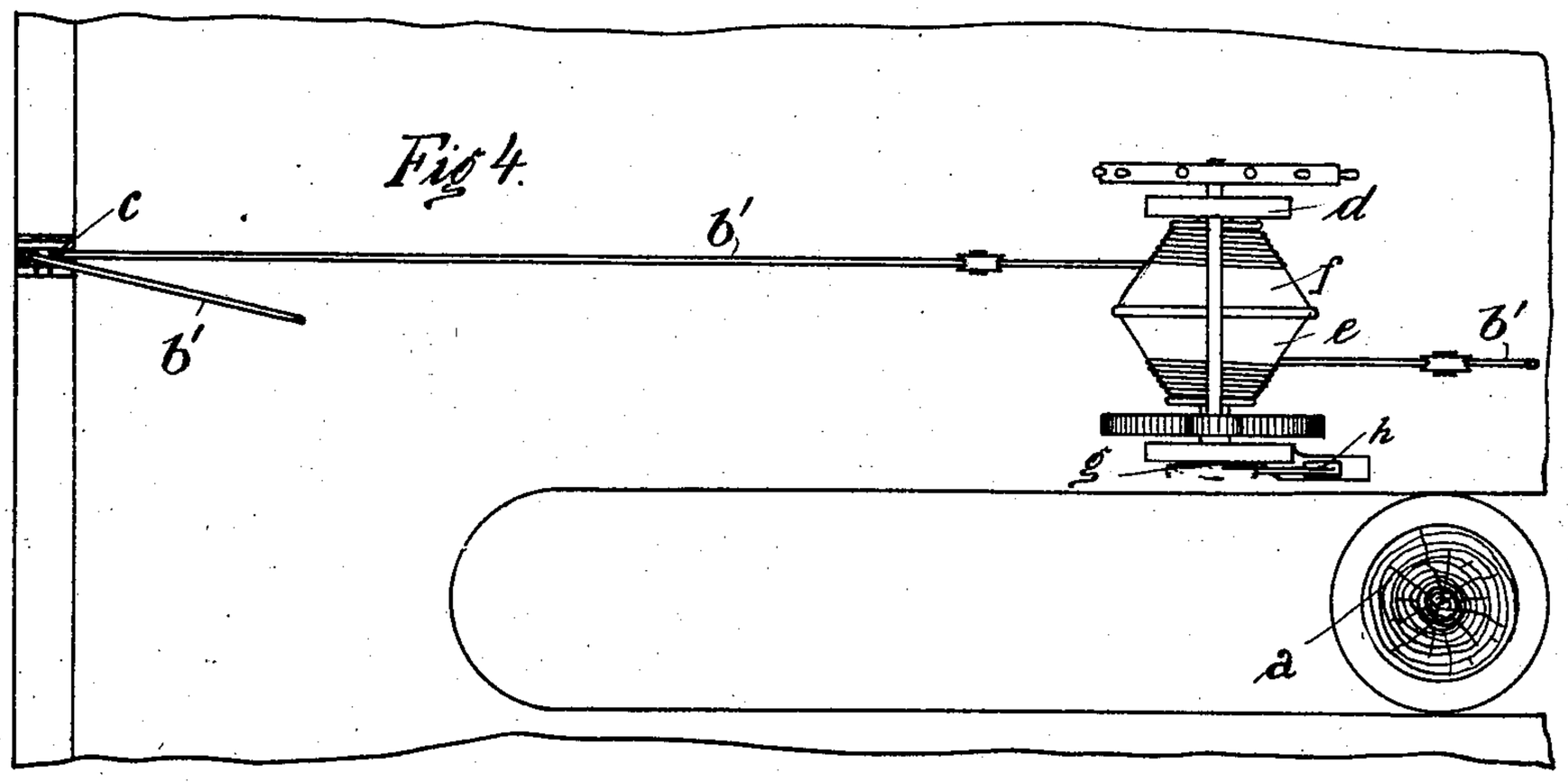
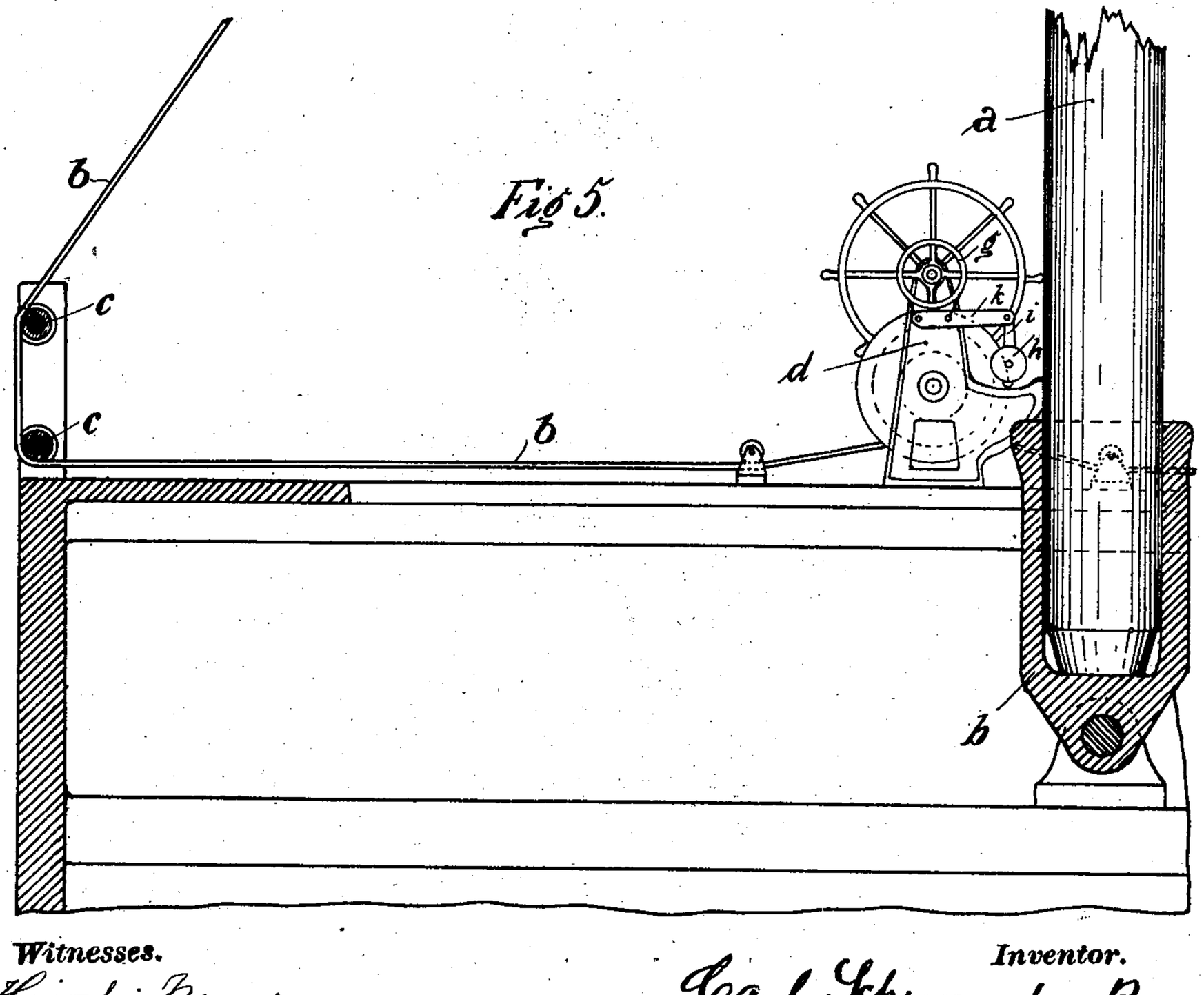


Fig 5.



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UNITED STATES PATENT OFFICE.

CARL SCHWANEBECK, OF GLÜCKSTADT, GERMANY.

AUTOMATICALLY-LOWERING MAST.

SPECIFICATION forming part of Letters Patent No. 720,074, dated February 10, 1903.

Application filed March 15, 1902. Serial No. 98,316. (No model.)

To all whom it may concern:

Be it known that I, CARL SCHWANEBECK, smith, residing at Kleine Nübelstrasse 5, Glückstadt, Province of Schleswig-Holstein, Kingdom of Prussia, in the German Empire, have invented certain new and useful Improvements in Self-Adjusting Masts, (for which I have made application for patent in Germany, filed September 23, 1901,) of which the following is a specification.

The object of this invention is to provide a mast for sailing vessels which renders capsizing difficult, if not entirely impossible, the mast inclining bodily and automatically on an axis of its own as soon as the inclination of the vessel attains a certain degree, thus withdrawing the sails from the pressure of the wind.

The invention is shown in its details in the drawings, in which—

Figure 1 is a cross-section of a vessel provided with a mast yielding laterally and independently of the ship. Fig. 2 is a device for disengaging the mast at a certain inclination of the ship. Fig. 3 is a front elevation of windlasses required for the automatic giving way of the mast in case of danger of capsizing. Fig. 4 is an enlarged plan of a portion of the deck and bulwarks to illustrate the connection of the shrouds to the windlass; and Fig. 5 is an elevation in transverse section, embracing said portion of the deck and bulwarks for the same purpose.

The mast *a* is stepped in a metal socket *b*, pivoting at its lower end upon an axis parallel with the keel, so that it may swing in such a way as to permit the mast to incline athwart the ship at right angles with said keel to either side. The ropes or shrouds *b'* holding the mast in its place are led to the drums of a windlass *d*, passing over suitable rollers *c* in the bulwarks. As in consequence of the giving way of the mast the shrouds on the lee side become somewhat shorter than those on the other or windward side with, on the contrary, increase in length in the latter, a constant tension of the ropes even during this movement is obtained by making the winch-drums *e* and *f* for the adjustment of the ropes cone-shaped. The degree of this coning is determined by the length of the shrouds, the difference between the shortening and the lengthening of the ropes growing with the increased length of the mast. When the mast is in its normal position, the windlass is prevented from paying off by a brake *g*, operated upon by the brake-weight *h*, which is connected rotatably with the brake-lever *k* by means of the link *i*. The brake-weight is equipped with a roller *l*, traveling on a curved path or track *m*, provided on the winch-frame. This curved track is shaped so that its two ends are bent upward.

This device acts in the following manner: When a sailing vessel fitted with the apparatus of this invention has by the pressure of the wind attained an inclination such as to bring the vessel near capsizing, the brake-weight *h* on the winch, which inclines with the inclination of the vessel, will swing toward the lee side and its roller will travel up the rise in the track at that side, lifting the weight *h*, the link *i*, and actuating the brake-lever *k*, whereby the brake will be disengaged. Thereupon the windlass will pay off on the windward side and take up on the lee side and the mast will lower, going down until the wind spills out, and upon the ship or boat righting into horizontal position the brake-weight swings sufficiently back to cause the brake to be reëngaged. If hereafter the mast is to be raised again, the brake need only be disengaged and the mast restored to its original position by turning the windlass in the reverse direction.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the mast, the socket in which it is stepped, hinged to swing athwart the ship, the shrouds, the rollers in the bulwarks around which the shrouds are led, and the windlass to which the ends of said shrouds are connected in such manner that while those on the windward side are paid off, those on the lee side are proportionately taken in.

2. The combination of the mast, the socket in which it is stepped, hinged to swing athwart the ship, the shrouds, the rollers in the bulwarks around which the shrouds are led, the windlass to which said shrouds are connected in such manner as to be paid off on the windward side and taken in on the lee, and means for automatically locking and un-

locking said windlass with the roll of the ship.

3. The combination of the mast, the socket in which it is stepped, hinged to swing athwart the ship, the shrouds, the rollers in the bulwarks around which said shrouds are led, and the automatic windlass, to which the ends of said shrouds are connected, comprising the drums, the brake acting to lock and release said drums, the brake-lever for setting and releasing the brake, the link connected to the power-arm of said lever for operating the latter, the weight and its roller connected to the lower end of said link, and the curved track for said roller, rising at each end, whereby as the vessel swings and the roller follows the track the weight is lifted and the brake operated.

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

CARL SCHWANEBECK.

Witnesses:

OTTO W. HELLMUTH,

T. CHRIST. HAFERMANN.