

(No Model.)

J C. WITMER.

COMBINED STEERING DEVICE AND BRAKE FOR VESSELS.

No. 367,771.

Patented Aug. 2, 1887.

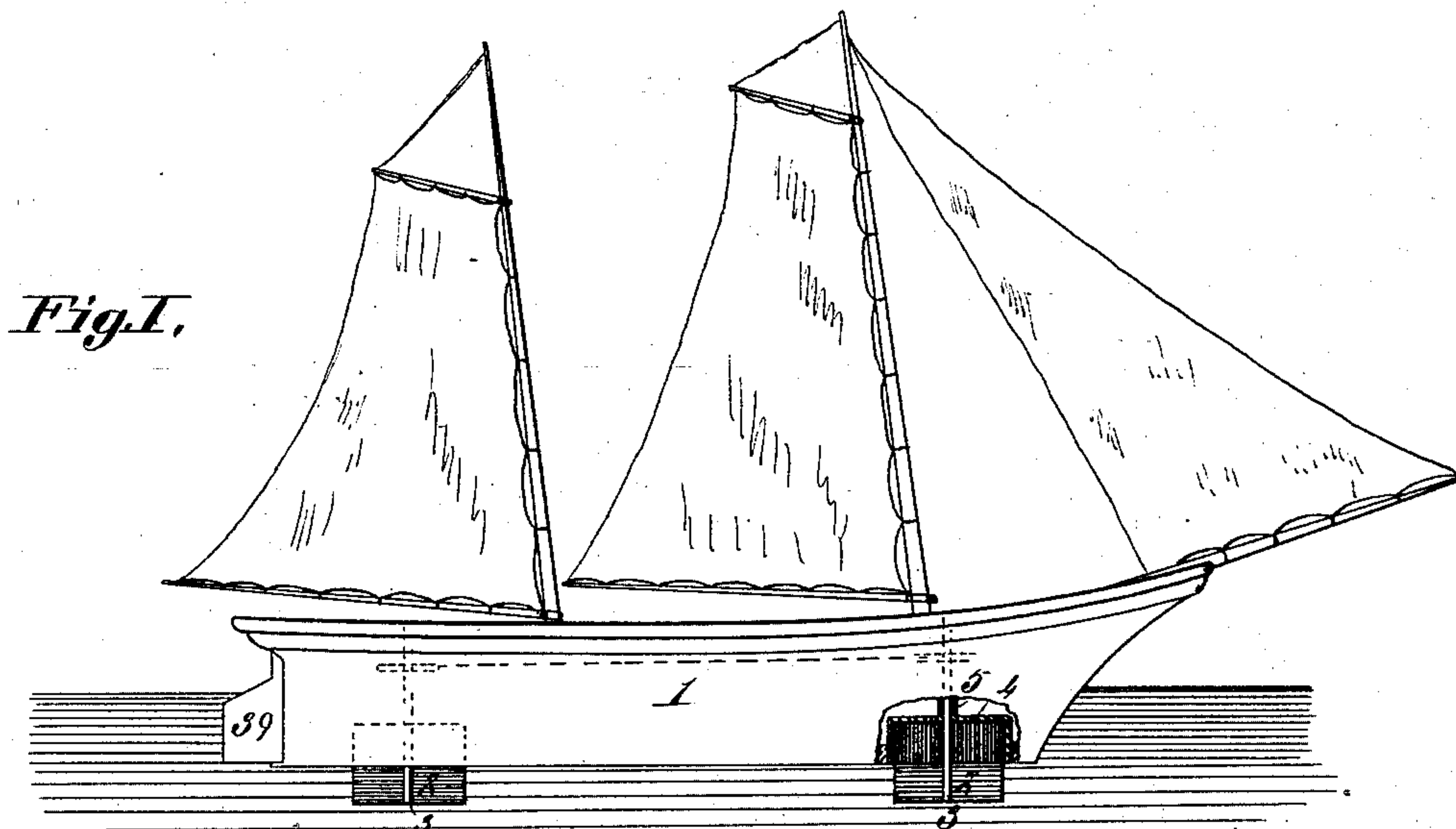


Fig. IV.

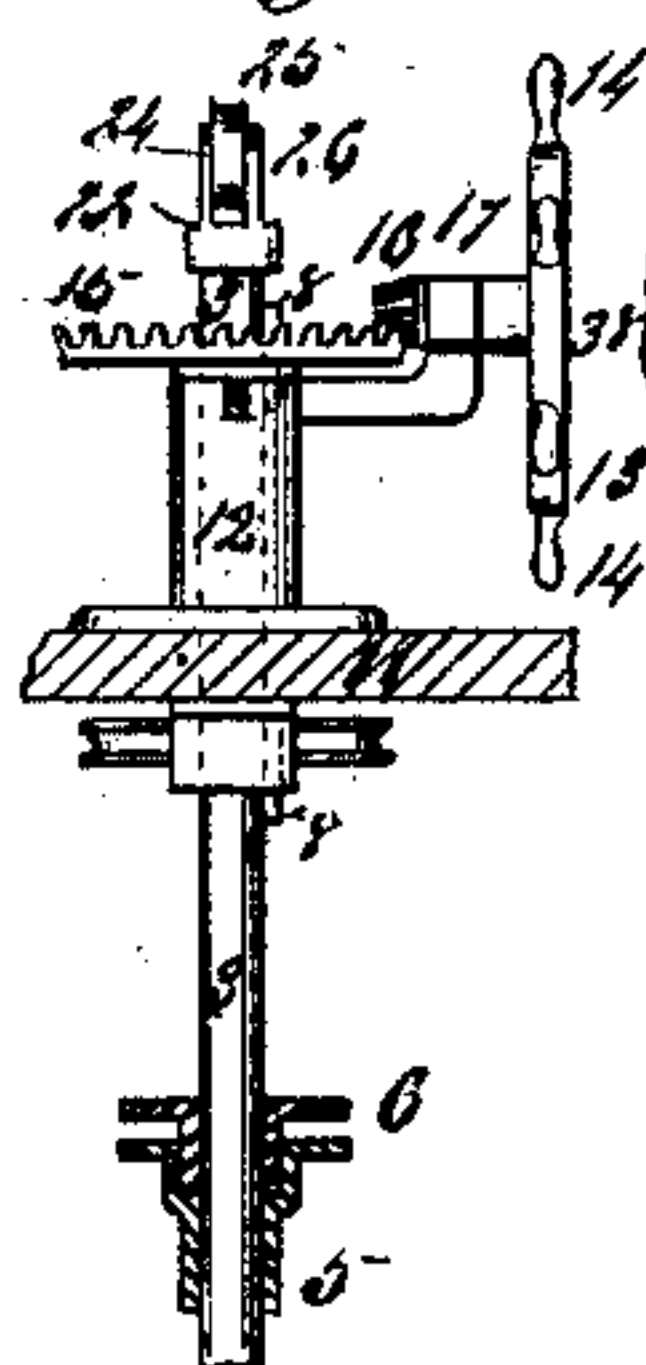


Fig. II.

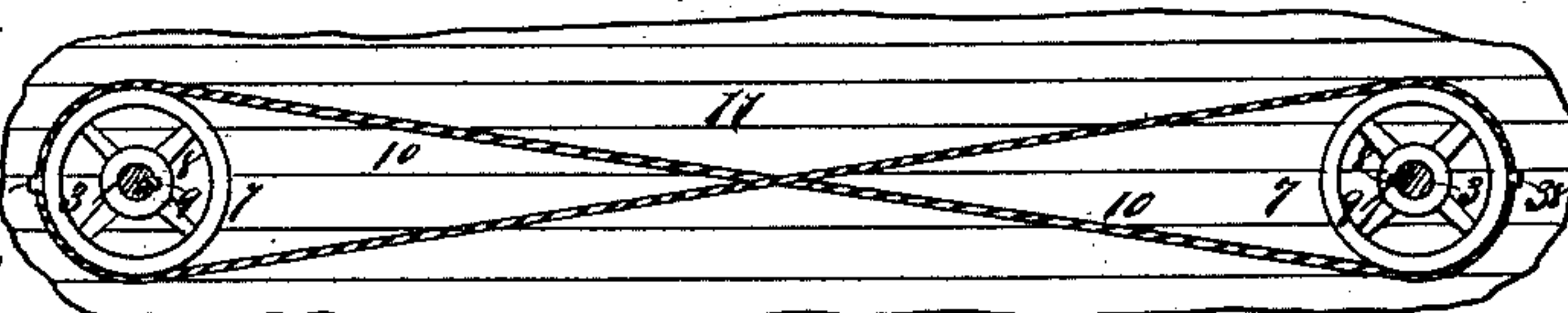


Fig. III.

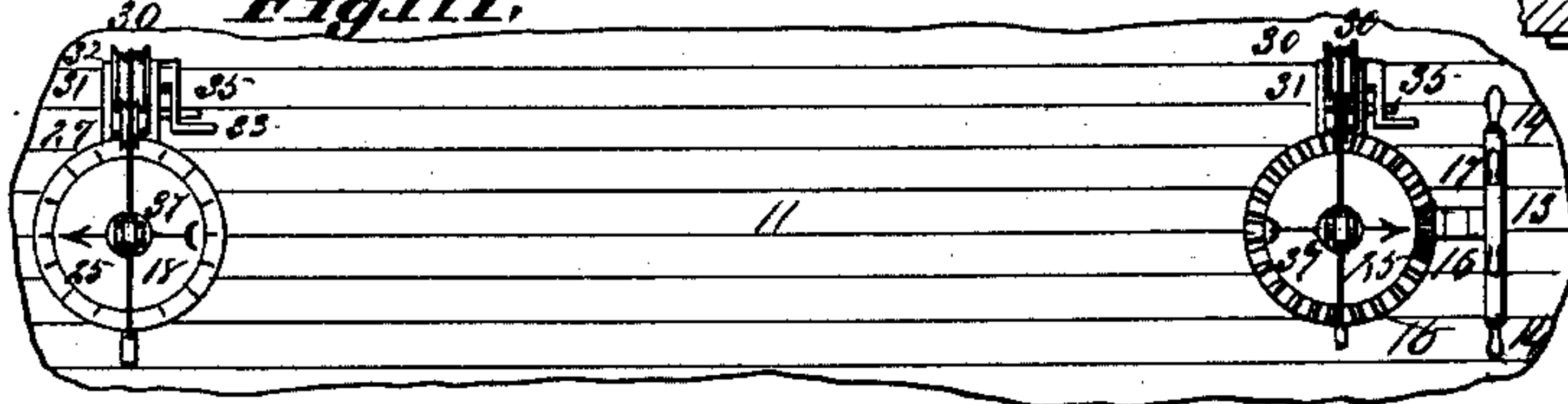


Fig. V.

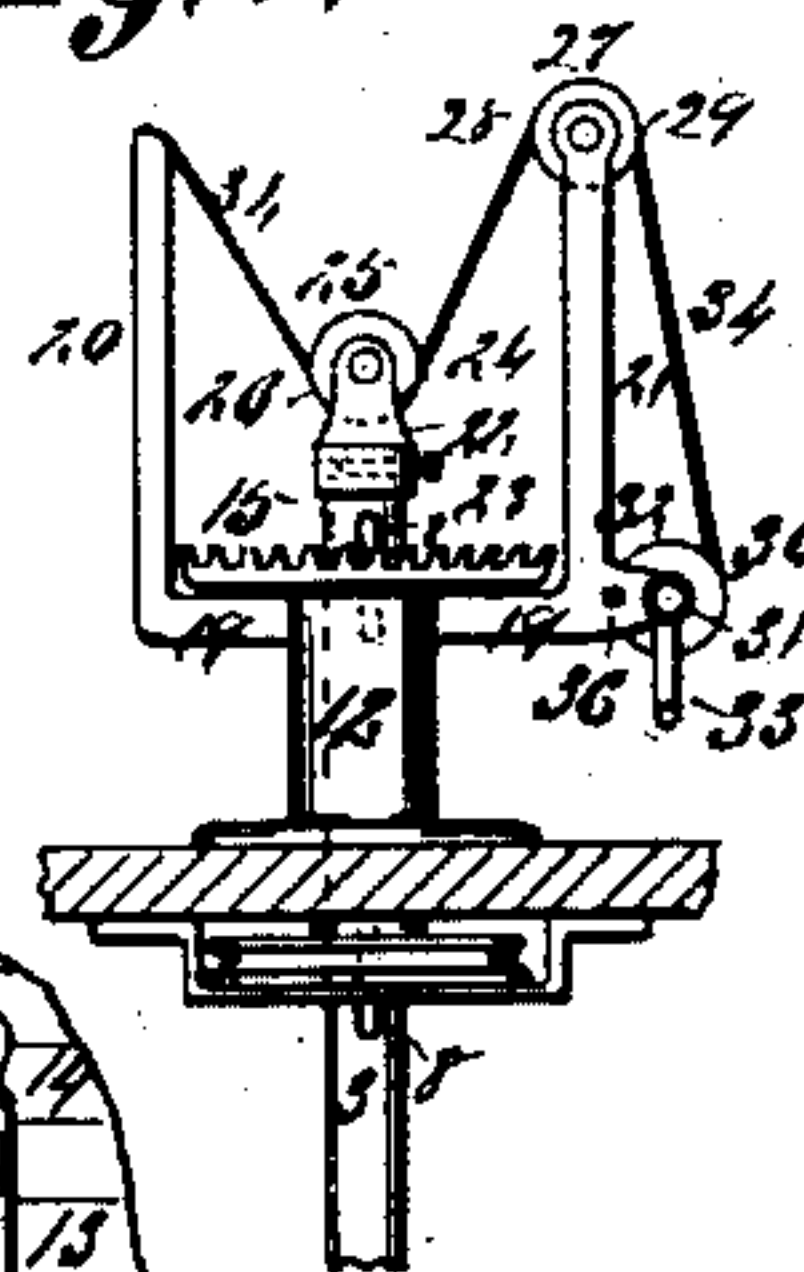


Fig. VI.

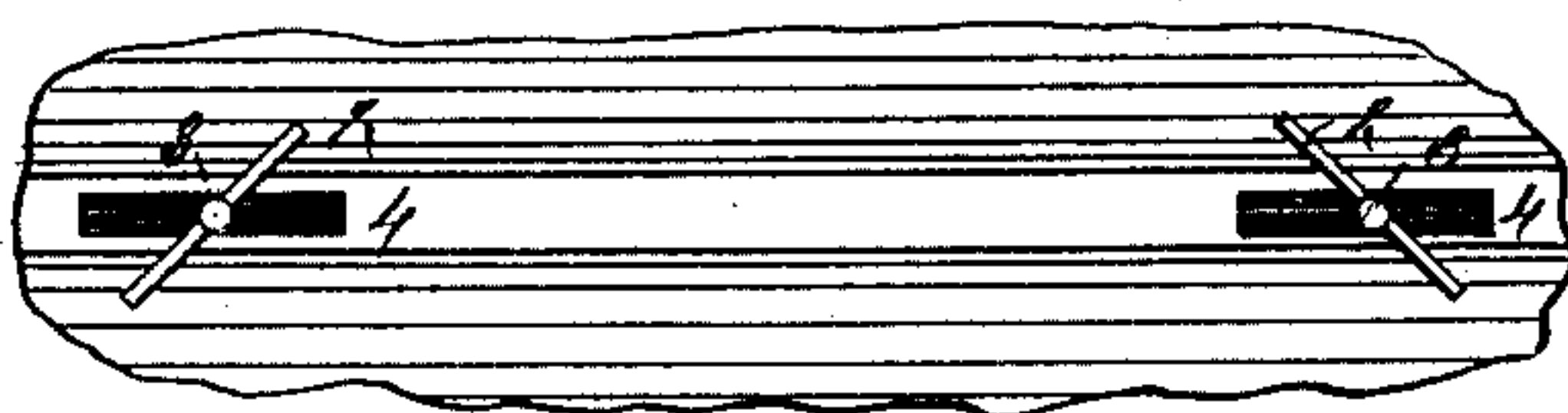
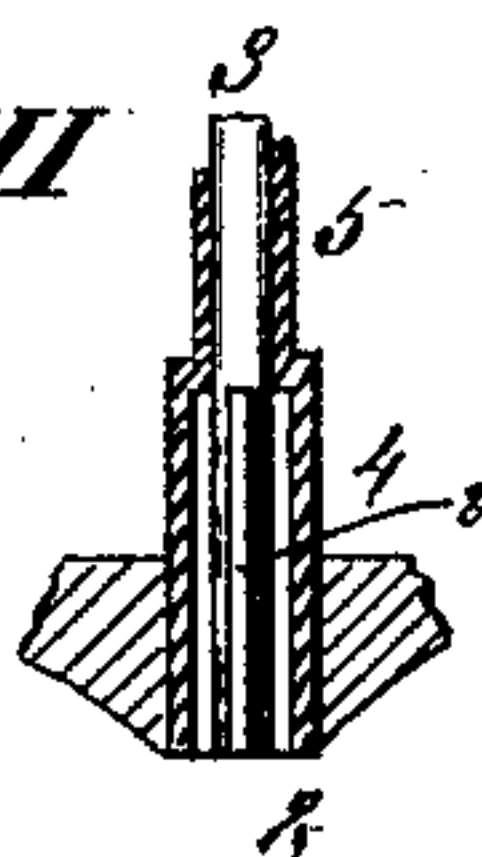


Fig. VII.



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UNITED STATES PATENT OFFICE.

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COMBINED STEERING DEVICE AND BRAKE FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 367,771, dated August 2, 1887.

Application filed March 3, 1887. Serial No. 229,637. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. WITMER, of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Combined Steering Devices and Brakes for Vessels, of which the following is a full, clear, and exact description, having reference to the drawings forming part of this specification, and in which—

Figure I is a side view of a schooner with my improved double-action steering and brake device. Fig. II is a section on line II II, Fig. I, showing the co-operative pulleys key-seated to the vertical rudder-shafts and the endless band or chain that gives them simultaneous co-operation. Fig. III is a top view showing the tiller-wheel with the bevel pinion-gear for turning the rudders and the index-vanes to denote their position. It also shows the crank and lifting device that elevate the rudders into their boxing, and so retires them from danger in shallow water. Fig. IV is a section on line IV IV, Fig. II, showing the operation of the tiller-wheel and bevel-pinion gearing in turning the rudders, and the keys on the rudder-shaft that seat themselves in the bevel gear-wheel that turns the shaft, and the pulley-wheel that, with its corresponding pulley, carries the band. It also shows the position below deck of the co-operative pulleys that, with the endless band that connects them, give simultaneous action to both rudders, and the stuffing-box that closes the top of the water-tight sleeve around the rudder-shaft. Fig. V is a section on line V V, Fig. III, showing the crank and pulley device for elevating the rudder and the keys on the shaft that seat themselves in the bevel-gear wheel and pulley when the shaft is lowered into operative position. Fig. VI is a bottom view showing relative positions of the double-action rudders; and Fig. VII is a detail section on line VII VII, Fig. I, showing the position of the rudder within its boxing and the tubular sleeve that surrounds its vertical shaft to prevent leakage in connection with the rudder-chamber.

My invention relates to devices for combined double-action rudders and brakes for vessels; and the invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, in which similar figures of reference indicate like parts in all the views, 1 represents a schooner to which is attached my double-action combined rudders and brakes. 2 are the rudders; 3, the rudder-shafts; 4, the rudder chambers; 5, the water-tight casings or sleeves around the shafts, and 6 the stuffing-box that closes the top of the water-tight sleeve around the rudder-shaft.

It will be observed that the rudder-chambers 4 are located in the line of the keelson and between the stem and the stern-post of the vessel, so that when the rudders 2 are in their lowermost position, as shown in Fig. I, they will project below the keel of the boat.

7 are co-operative pulleys on the rudder-shafts, and 8 8 are projections on said shafts that, when they are lowered to their operative positions, key into recesses 9 9, relatively in the bevel-gear wheels and co-operative pulleys, thus at each time rigidifying the connection of the shaft to said geared wheel and pulleys. An endless band or chain (either may be used) has cross connection with the co-operative pulleys, so that when the tiller-wheel is turned it not only operates the rudder-shaft, with which it directly connects by its bevel-gearing, but also, through said co-operating-pulleys and their drive-band, simultaneously operates the other rudder-shaft in a reverse direction, so as to have a twofold action in wearing the vessel, and when turned transversely with its line of progress a twofold brake to arrest its progress and prevent collisions, &c.

The endless belt may either be run altogether loose on the pulleys, or it may be secured by staples 38 to each pulley, as then it would still have full latitude for the action of the rudders or the brakes.

11 is the deck of the vessel, immediately beneath which the pulleys with their drive chain or band work. The vertical rudder-shafts pass through the deck and ascend through short tubular pedestals 12, that are seated on said deck.

13 is the tiller-wheel, and 14 the handles by which said wheel is worked. On the pedestal in connection with which the tiller-wheel works there rests a horizontal bevel-gear wheel, 15, in which meshes a bevel-pinion, 16,

located on the end of the tiller-wheel shaft 17. On the other pedestal, through which the co-operative rudder-shaft passes, is an ungeared stationary wheel or disk, 18.

5 When the rudder-shafts are in operative position, they are key-seated in the bevel-gear wheel 15 and also in the pulley-wheels 7; and as the endless band connects the two pulleys, it follows that by turning the tiller-wheel both rudders are simultaneously turned to wear the vessel relatively to either the star-board or larboard tack, and by turning the tiller-wheel still farther the brakes are set by the rudder-blades being brought straight across the track.

15 Frames 19, secured in the pedestals 12, have two vertical arms, 20 and 21, and carry the devices for elevating the rudders within their retiring-chambers 4 when it is desired to protect them from accident in shallow water. Collars or caps 22, which are secured by screw-bolts 23 to the upper ends of the rudder-shafts, have vertical arms 24, which carry pulley-wheels 25, that run in bearings 26 within the arms of said caps. Similar pulley-wheels, 27, run in bearings 28 in the forked arms 29 of the vertical posts 21 of the elevating-frames. Windlass-reels 30 have bearings 31 in arms 32, that extend horizontally from the feet of the elevating-frames and are turned by hand-cranks 33.

Bands, cords, or chains 34 (either may be used) are securely attached to the tops of the vertical arms 20 and pass under the pulleys 25 and over the pulleys 27, and from them around the windlass-reels 30. As the windlass-reels are turned by the hand-cranks, they wind up the cords 34 and thus elevate the rudders and their shafts. When the rudders have been elevated, they are locked in that position by placing the pin 35 in the hole 36 in the elevating-frame. Arrows or vanes 37, attached to or passing through near the upper end of the rudder-shaft and on line with the rudder-blades, indicate the exact position of said blades when it is desired to place them in line with the boxings 4 preparatory to elevating them therein.

39 is a supplemental rudder of usual make, for use when the drop-rudders have been withdrawn in consequence of the vessel's coasting in shallow water, or from any other cause. This extra rudder, being seldom used, may be arranged to be unshipped and taken aboard in open seas.

It will be seen that my double-action rudders, turning simultaneously in both directions, both fore and aft, will wear the vessel round very quickly. Again, it will be seen that by turning the rudders around transversely to the track a powerful brake is provided, which, as is also the quick action in turning the vessel, are valuable features to prevent collisions with other vessels or with ice, rocks, sand-bars, &c. In order to ac-

complish this result, it is necessary that the rudder-post should be capable of turning at least one hundred and eighty degrees—*i. e.*, ninety degrees on either side of its normal position, or a position parallel with the keel. The rudders also serve as center-boards, and so add to the sailing qualities of the vessel, and when sailing in shallow water or over bars or sand-banks (where with a stationary keel the vessel would be aground) my vertically-adjustable rudders can be elevated or will elevate themselves; also, it will be seen that not only has my invention, as the title implies, a twofold function as a steering apparatus and brake, but, also, it combines therewith the functions of a keel and center-board.

I have shown and described my invention operated by hand-power; but I do not confine myself only to such means of operating it, as it is evident that my improved steering and brake devices can and are sometimes intended to be worked by a donkey-engine or by any other suitable means.

I am aware that it is not new to connect by cross-cables the posts of two rudders, one situated in advance of the stem and one situated in rear of the stern-post, so that both may be operated simultaneously. I am also aware that it is not new to form chambers beneath the keelson and between the stem and stern-post, and to place in them center-boards mounted upon stems having means for elevating and lowering them, and also means for turning said stems a limited number of degrees, so as to bring the center-board to a position not quite parallel with the keel, whereby the resistance which the center-board offers to the pressure of the wind on the sail will be increased, and I do not claim any feature or features which my invention may possess in common therewith.

I claim as my invention—

1. The combination, with the rudder 2 and the vertically-movable rudder-shaft 3, of the pedestal 12, the gear-wheel 15, supported thereby, the tiller-wheel 13, having pinion 16, gearing with the wheel 15, and the spline and groove for connecting the wheel 15 and shaft 3, substantially as and for the purpose set forth.

2. The combination, with the rudder and the vertically-movable rudder-shaft 3, of the pulley 25, secured to the top of the shaft, the frame 19 20 21, having the pulley 27 journaled to one arm thereof, the cable 34, secured to one of the arms of the frame, passing under the pulley 25 and over the pulley 27, and the windlass to which said cable is attached, substantially as set forth.

JOSEPH C. WITMER.

In presence of—

BENJN. A. KNIGHT,
SAML. KNIGHT.