W. B. MARBLE.

PROPELLING AND STEERING DEVICE FOR VESSELS.

APPLICATION FILED JUNE 19, 1909.

940,039.

Patented Nov. 16, 1909.

3 SHEETS—SHEET 1.

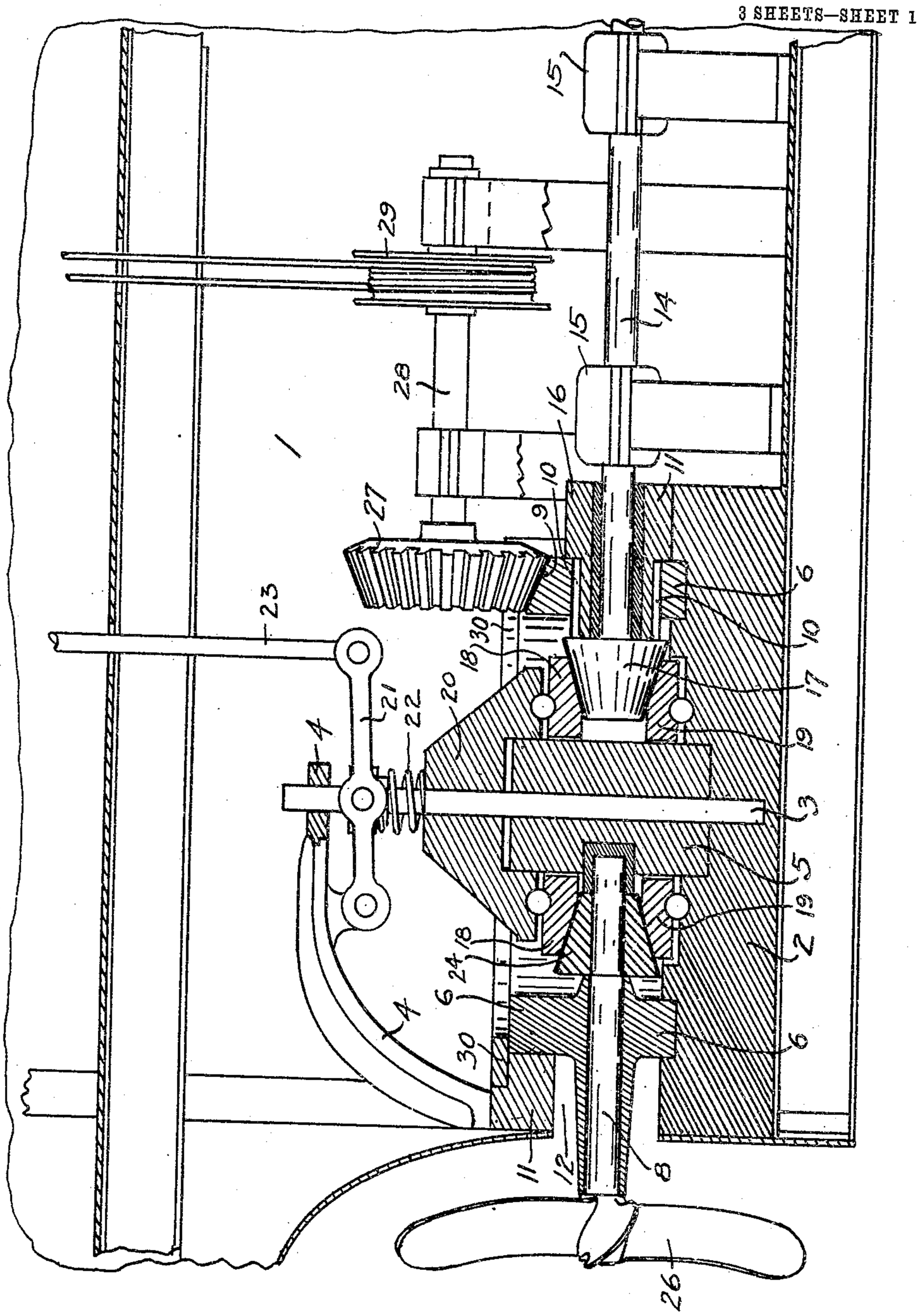

Fig. 1.

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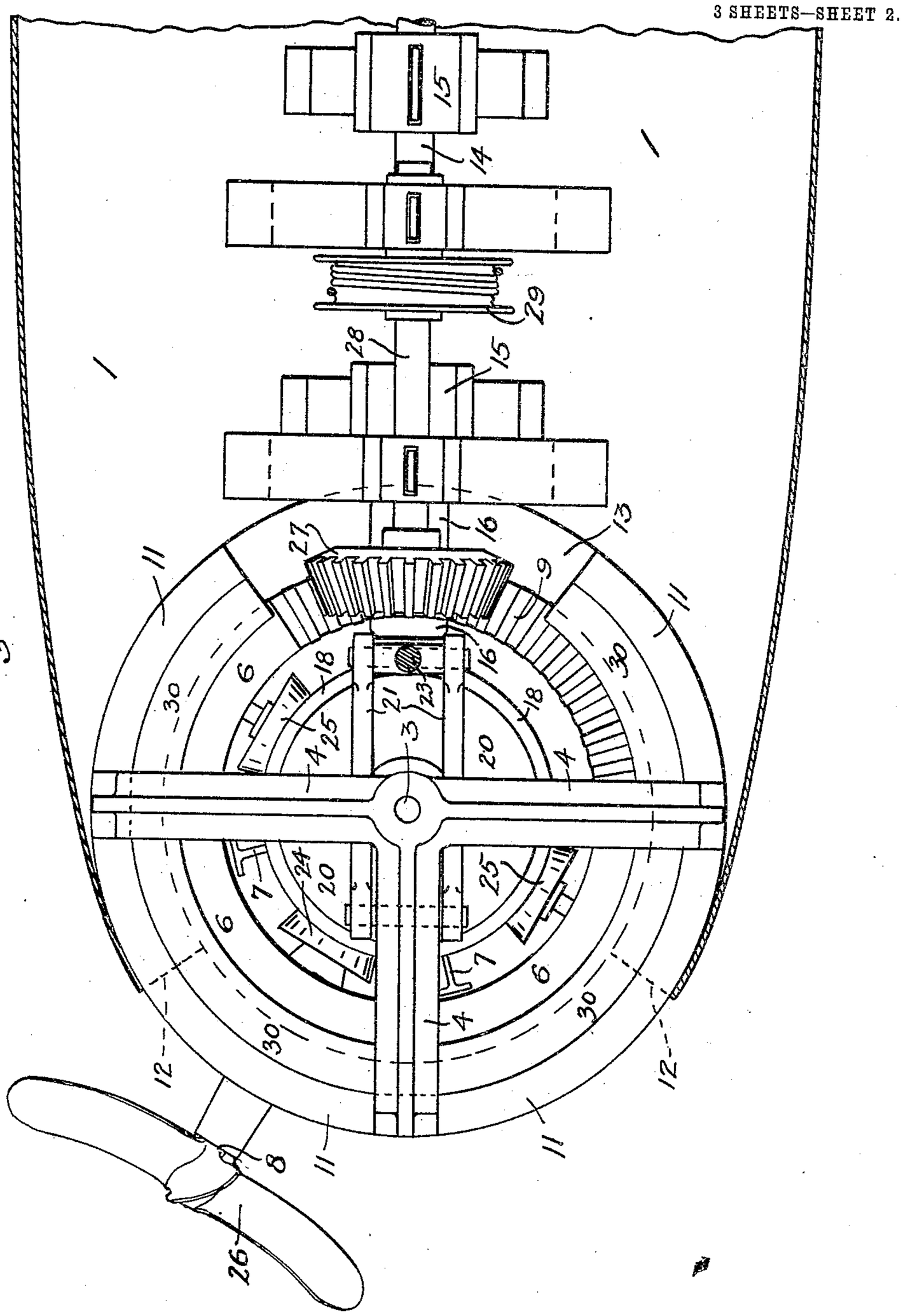
3 SHEETS—SHEET 2.

Fig. 2.



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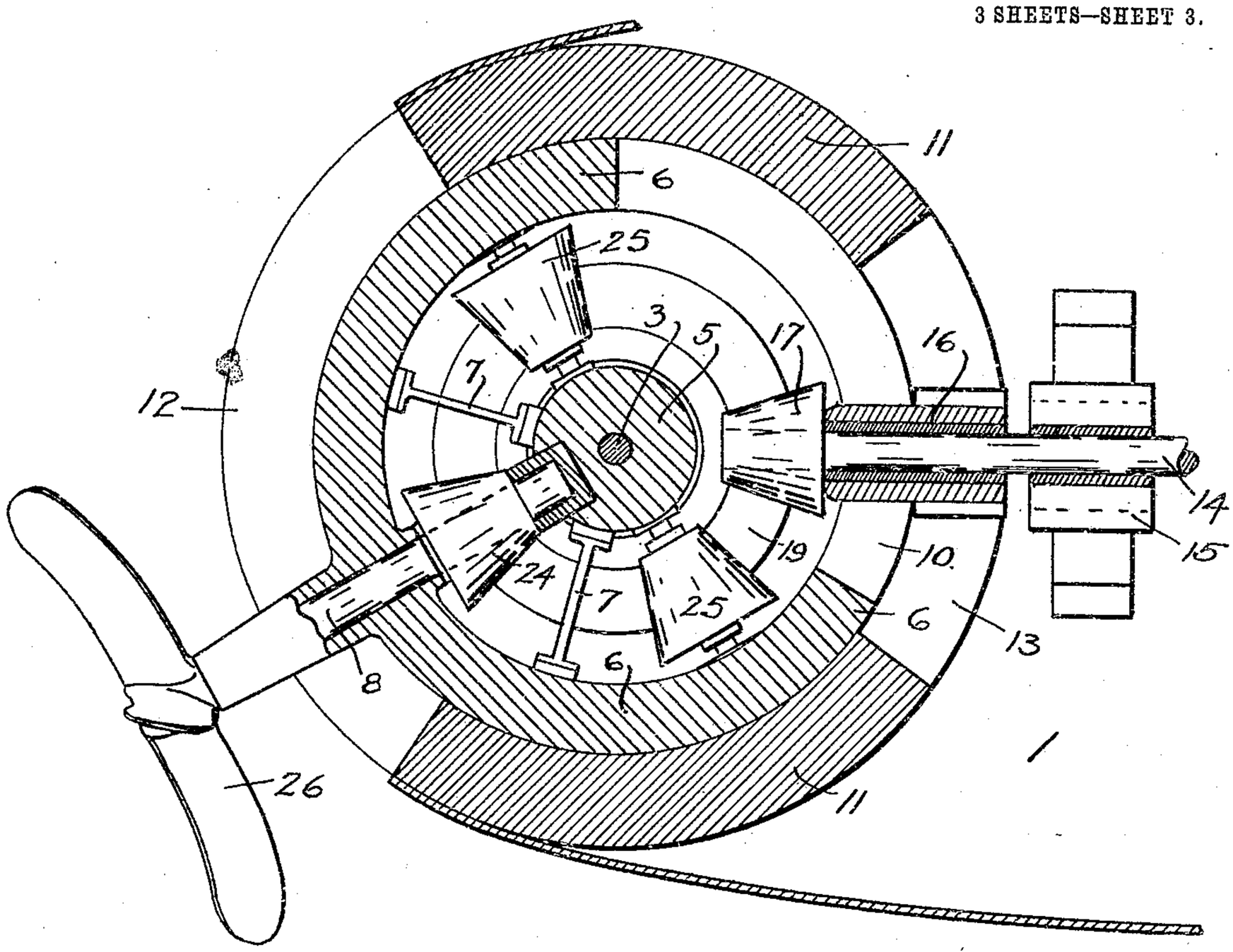

Fig. 3

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UNITED STATES PATENT OFFICE.

WALTER B. MARBLE, OF TACOMA, WASHINGTON.

PROPELLING AND STEERING DEVICE FOR VESSELS.

940,039. Specification of Letters Patent. Patented Nov. 16, 1909.

Application filed June 19, 1909. Serial No. 503,057.

To all whom it may concern:

Be it known that I, WALTER B. MARBLE, a citizen of the United States of America, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Propelling and Steering Devices for Vessels, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to devices for propelling and steering vessels and has for its object to control the direction of the vessel without retarding its progress as is necessarily done when the ordinary rudder is used.

Other objects are to provide means for transmitting the power from the fixed engine shaft to the revolubly adjustable propeller shaft without changing the speed of the shaft; means for controlling the position of the propeller shaft; and means for taking up the thrust on the propeller in whatever position it may be placed.

I attain these and other objects by the devices and mechanisms illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of my improved mechanism mounted in the stern of a vessel; Fig. 2 is a plan thereof; and Fig. 3 is a horizontal section thereof taken on the plane of the axis of the shafts.

Similar numerals of reference refer to similar parts throughout the several views.

My invention comprises a circular stationary frame; an interior annular frame carrying the propeller shaft and adjustable about its axis; a rotating friction cone driven by the engine; a similar cone mounted on the propeller shaft; and a pair of conical rings engaging both of said cones and transmitting the energy from one to the other.

Referring now to the drawings, the vessel 1 is provided at the stern with a heavy bed piece 2, which is circular in form, having its axis vertical. A central vertical post 3 is securely fastened in the center of the bed piece 2. The upper end of the post 3 passes through the boss of the frame or spider 4 whose legs are removably secured to the sides of the main frame. A strong central column 5 is mounted in a circular recess in the center of the bed piece 2 and fits neatly therein but can be turned therein on its axis. The column 5 fits over the central post 3 and can be turned thereon. The carrier ring 6 is mounted in a circular recess in the bed piece 2, concentric with the column 5. The ring 6 and the column 5 are secured together at intervals by means of the arms 7. The ring 6 carries the propeller shaft 8 in a suitable sleeve and bearing formed thereon. A segment of beveled gear teeth 9 are cut in the upper surface of the ring 6 at a point opposite to the propeller shaft, and a slot 10 is cut out of the ring 6 under the teeth 9. Outside of the ring 6 is a stationary ring 11 secured to the bed piece 2. The ring 11 has a slot 12 cut in its stern portion and adapted to allow the propeller shaft 8 and its sleeve to pass therethrough and to be circumferentially adjustable therein, while another section or slot 13 is cut away at the opposite side of the ring to allow access to the interior of the ring 6.

The engine shaft 14 is driven by any suitable engine and passes through bearings 15 and 16, secured respectively to the hull 1 of the vessel and to the stationary ring 11, within the slot therein, and also carries a cone friction wheel 17 on its end. This shaft 14 has only a rotatory motion in the fixed bearings 15 and 16. A pair of conical faced friction rings 18 and 19 engage above and below the cone wheel 17. These rings 18 and 19 are concentric with the column 5, and the lower ring 19 is supported on ball bearings on the bed plate 2. The upper ring 18 is pressed down on the cone 17 by means of the weight 20 mounted above the column 5. A set of ball bearings are interposed between the weight 20 and the ring 18. The weight is regulated by means of the twin levers 21 pivoted to the spider 4 and engaging the weight 20 through a spring 22. The position of the levers 21 is controlled by the operating rod 23. The propeller shaft 8 has a cone 24, corresponding with the cone 17, mounted on its inner end and located between the rings 18 and 19 on the opposite side of the column 5 from the said cone 17. This cone 24 can be shifted about the center of the column 5 with the shaft 8 as above described.

In order to keep the upper ring 18 level at all times I provide two idler cones 25, one on each side of the cone 24, each mounted on a rod or shaft fixed in the carrier ring 6 and in the column 5, and therefore each turning with the said ring and column about their common axis. The arms 7 come between the two transmitting rings 18 and 19.

The bearing sleeve for the propeller shaft 8 preferably extends out to the propeller 26, which is mounted on the end of said shaft 8.

The position of the carrier ring 6 is controlled and adjusted by means of the bevel-gear 27, engaging the teeth 9 cut in the upper surface of said ring 6, and said gear 27 is mounted on the end of the steering shaft 28 which is rotated by any suitable means, such as a drum 29 with rope wound thereon as is illustrated in the drawings. As the drum 29 is turned by the rope, it turns the steering shaft 28 and the bevel gear 27, which in turn causes the carrier ring 6 to turn on its vertical axis, carrying with it the propeller shaft 8 and propeller 26, the idlers 25 and the column 5.

A removable segment of a ring 30 is mounted on the upper surface of the stationary ring 11 and extends over the upper surface of the carrier ring 6. The thrust from the propeller is transmitted to the vessel, in every position to which the propeller may be adjusted, through the sleeve of the shaft 8, to the ring 6 and thence to the bed piece 2 through the socket therein, in which said ring 6 fits, and through the stationary ring 11 in which said ring 6 also fits; it is also transmitted through the shaft 8 directly to the column 5, in which the shaft is journaled, and transmitted to the bed piece 2 through the socket in which the column 5 is mounted and through the fixed post 3, the spider 4, and fixed ring 11 to the bed piece 2. It is evident that none of the thrust is transmitted to the engine shaft 14.

In the drawings I have omitted all bolts and similar fastening devices as it is readily understood that such devices will be used wherever it is found necessary or advisable to use them.

Having described my invention, what I claim is,

1. In a propelling and steering mechanism, the combination with a fixed rotating engine shaft; an angularly adjustable propeller shaft; a set of beveled friction cones and rings adapted to drive the propeller shaft from the engine shaft irrespective of the angular relation therebetween; and means for controlling the angular position of the propeller shaft.

2. In a propelling and steering mechanism, the combination of a stationary bed piece having vertical cylindrical walls with a stern slot therethrough; a concentric carrier ring mounted within and engaging said walls and having a forward slot therein; a propeller shaft, with propeller thereon, mounted on said carrier ring opposite to the slot therein and extending through the slot in the stationary walls; means for adjusting said carrier ring about the axis thereof; an engine shaft extending through the stationary walls and through the slot in the carrier rings; and means for transmitting the rotation of the engine shaft to the propeller shaft irrespective of the angular relation therebetween.

3. In a propelling and steering mechanism, the combination of a stationary bed piece having vertical cylindrical walls with a stern slot therethrough; a concentric carrier ring mounted within and engaging said walls and having a forward slot therein; a propeller shaft, with propeller thereon, mounted on said carrier ring opposite to the slot therein and extending through the stern slot in the stationary walls; means for adjusting said carrier ring about the axis thereof; an engine shaft extending through the stationary walls and through the slot in the carrier ring; and a set of beveled friction cones and rings adapted to drive the propeller shaft from the engine shaft irrespective of the angular relation therebetween.

4. In a propelling and steering mechanism, the combination of a stationary bed piece having vertical cylindrical walls with a stern slot therethrough; a concentric carrier ring mounted within and engaging said walls and having a forward slot therein; a propeller shaft, with propeller thereon, mounted on said carrier ring opposite to the slot therein and extending through the stern slot in the stationary walls; a beveled gear formed on the carrier ring; a controlled beveled gear engaging the gear formed on the carrier ring and adapted to adjust said carrier ring about the axis thereof; an engine shaft extending through the stationary walls and through the slot in the carrier ring; and a set of beveled friction cones and rings adapted to drive the propeller shaft from the engine shaft irrespective of the angular relation therebetween.

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

WALTER B. MARBLE.

Witnesses:
M. F. McNeil,
N. J. Austin.