

(No Model.)

2 Sheets—Sheet 1.

J. CULIN.
PROPELLER.

No. 548,041.

Patented Oct. 15, 1895.

Fig. 1.

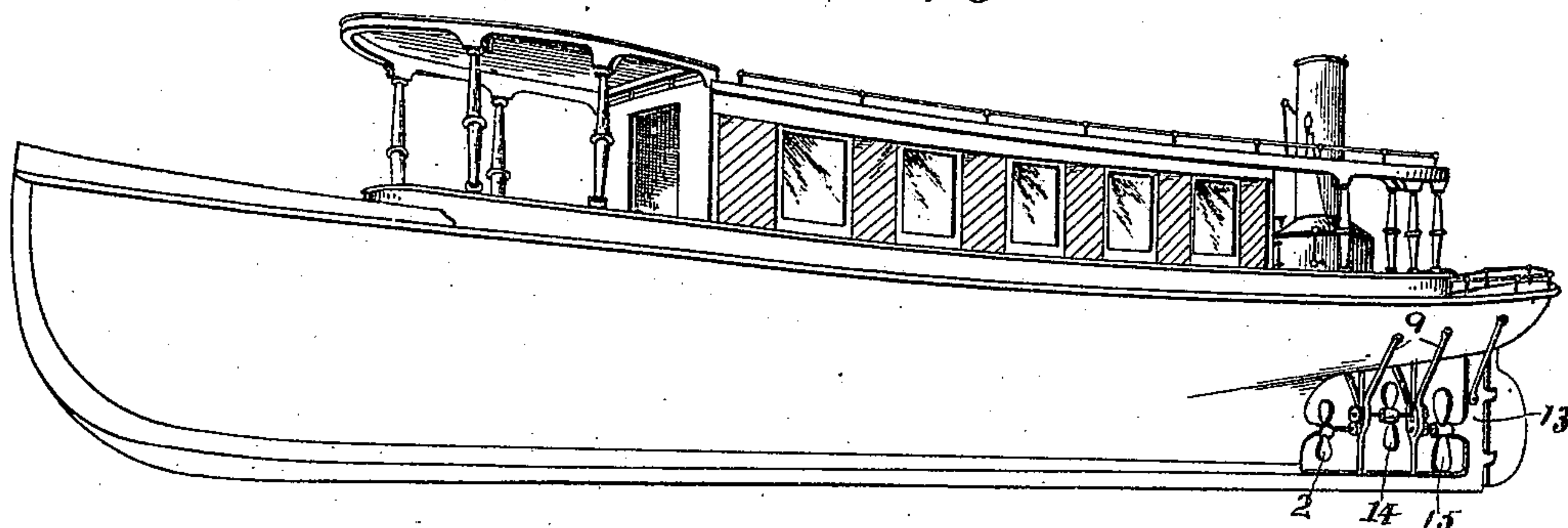
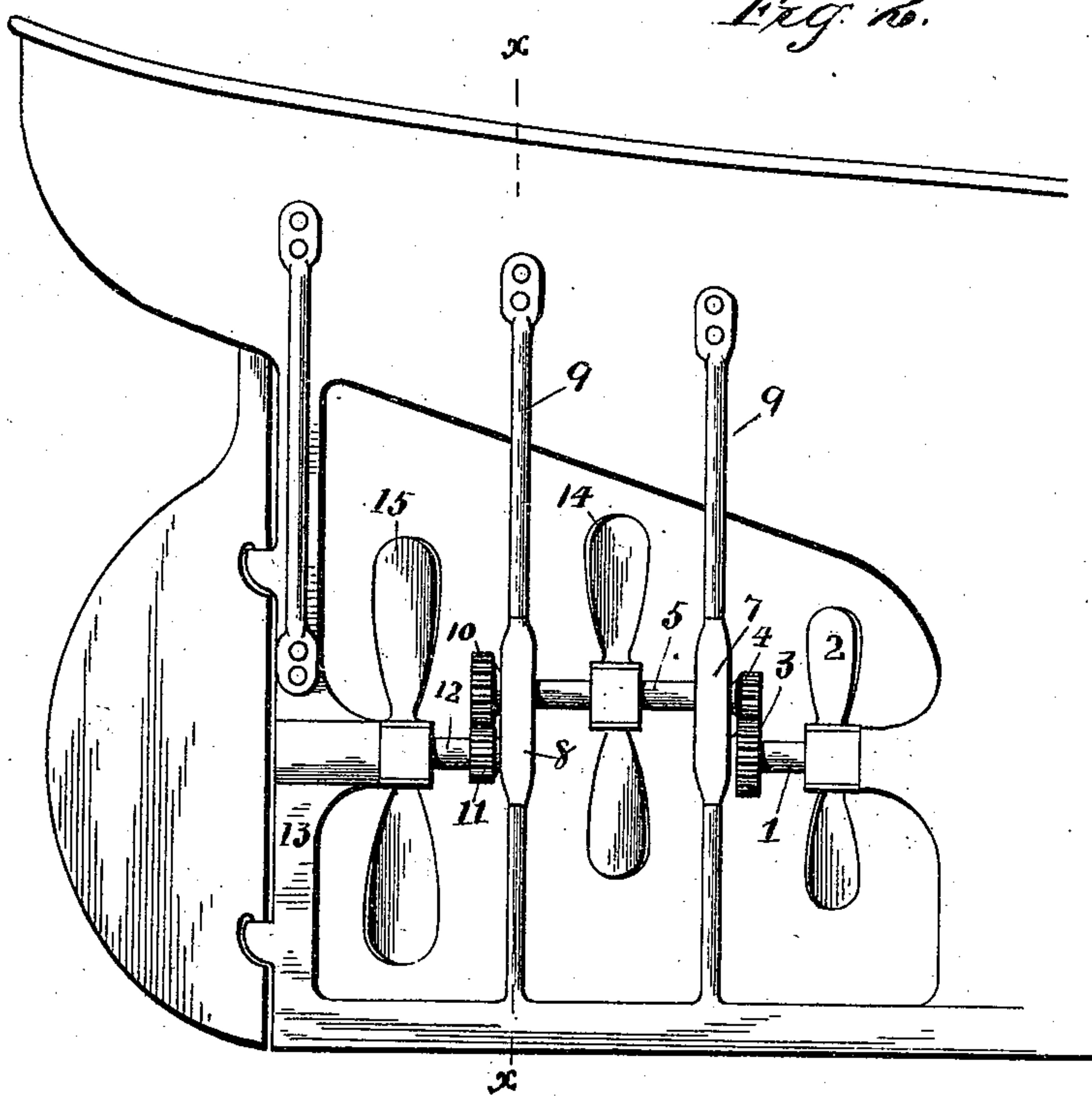


Fig. 2.



Witnesses

E. W. Wurdeman
S. T. Williamson

Inventor

Jacob Culin

By *Geo. H. Holgate*
Attorney

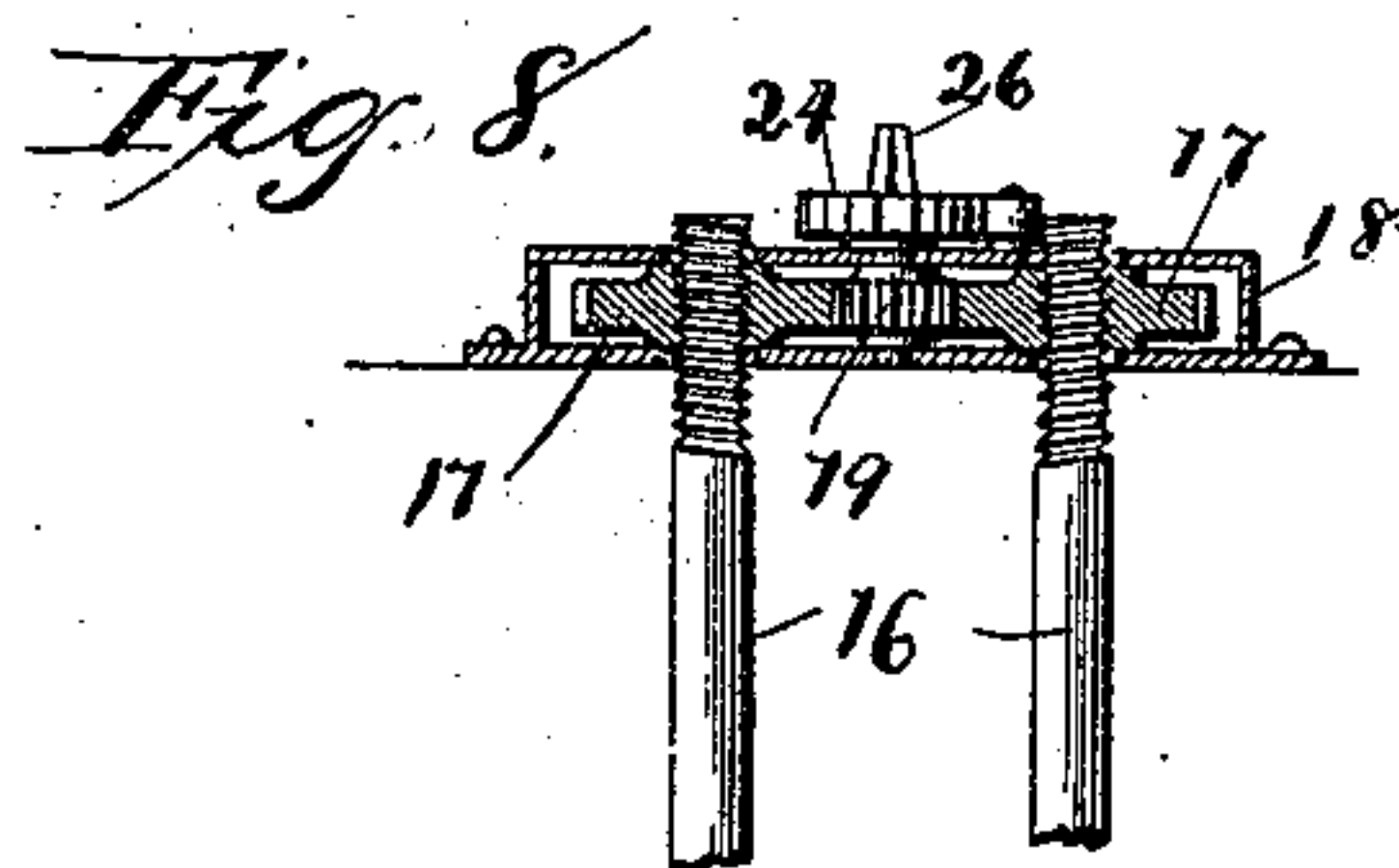
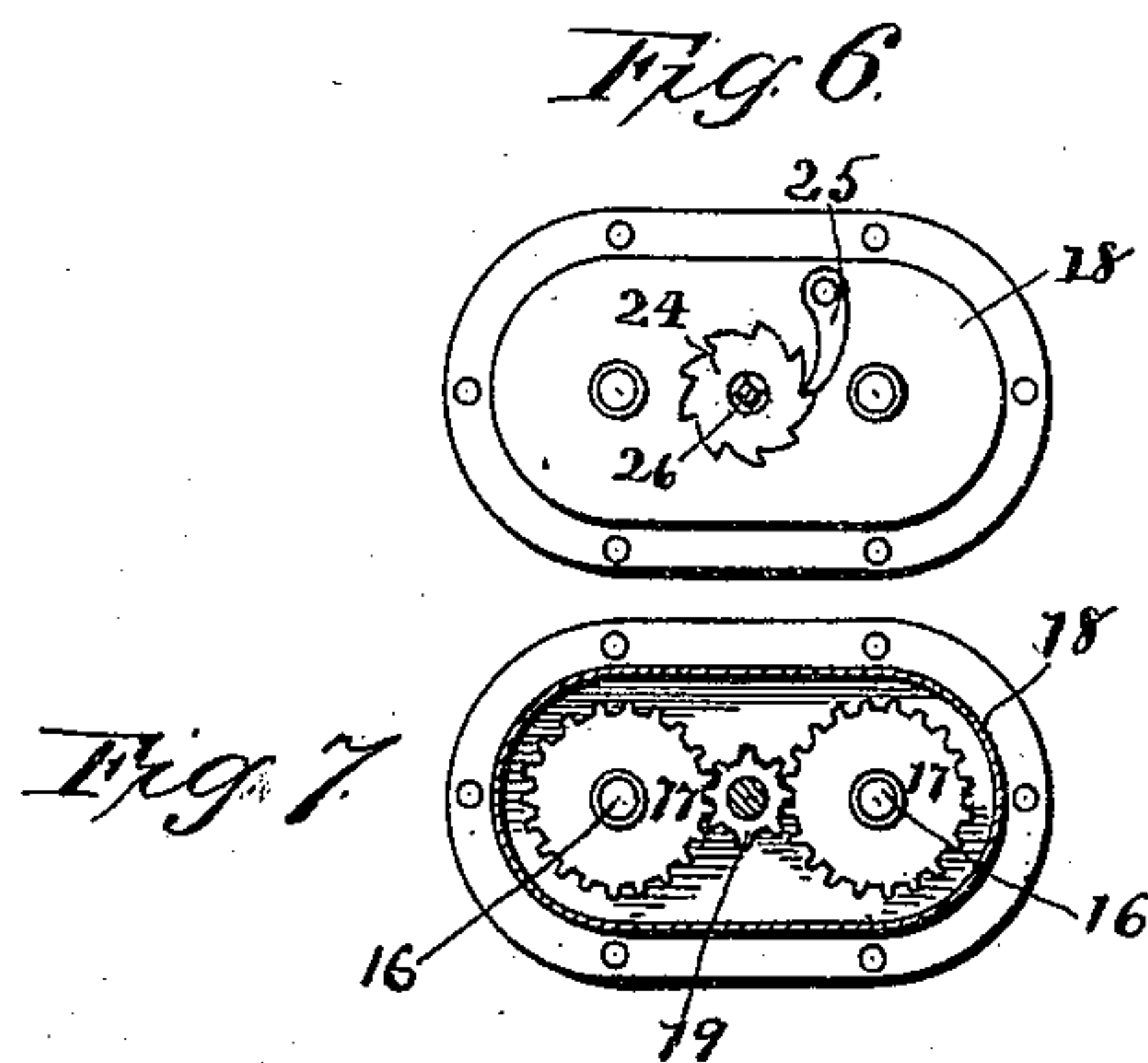
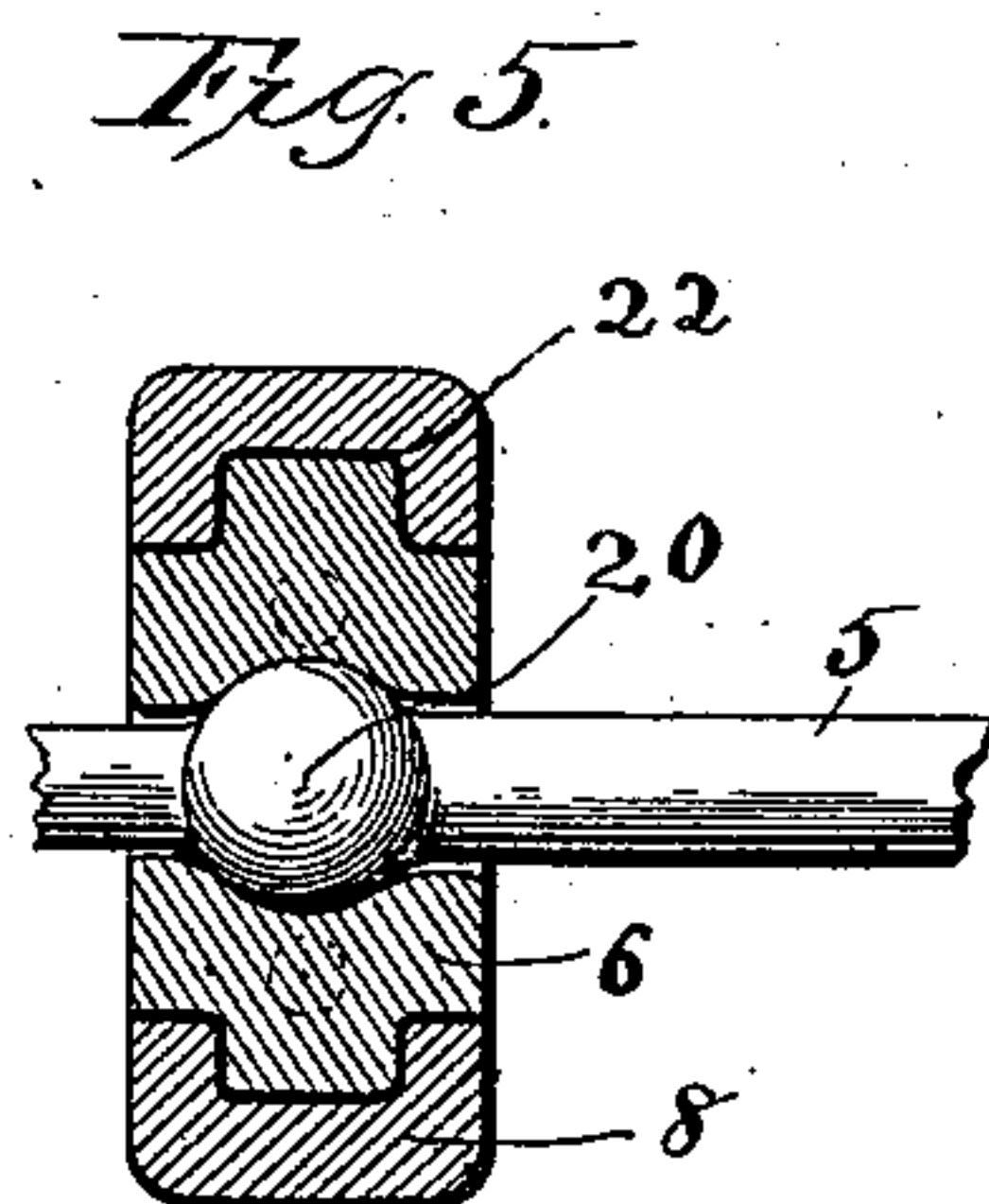
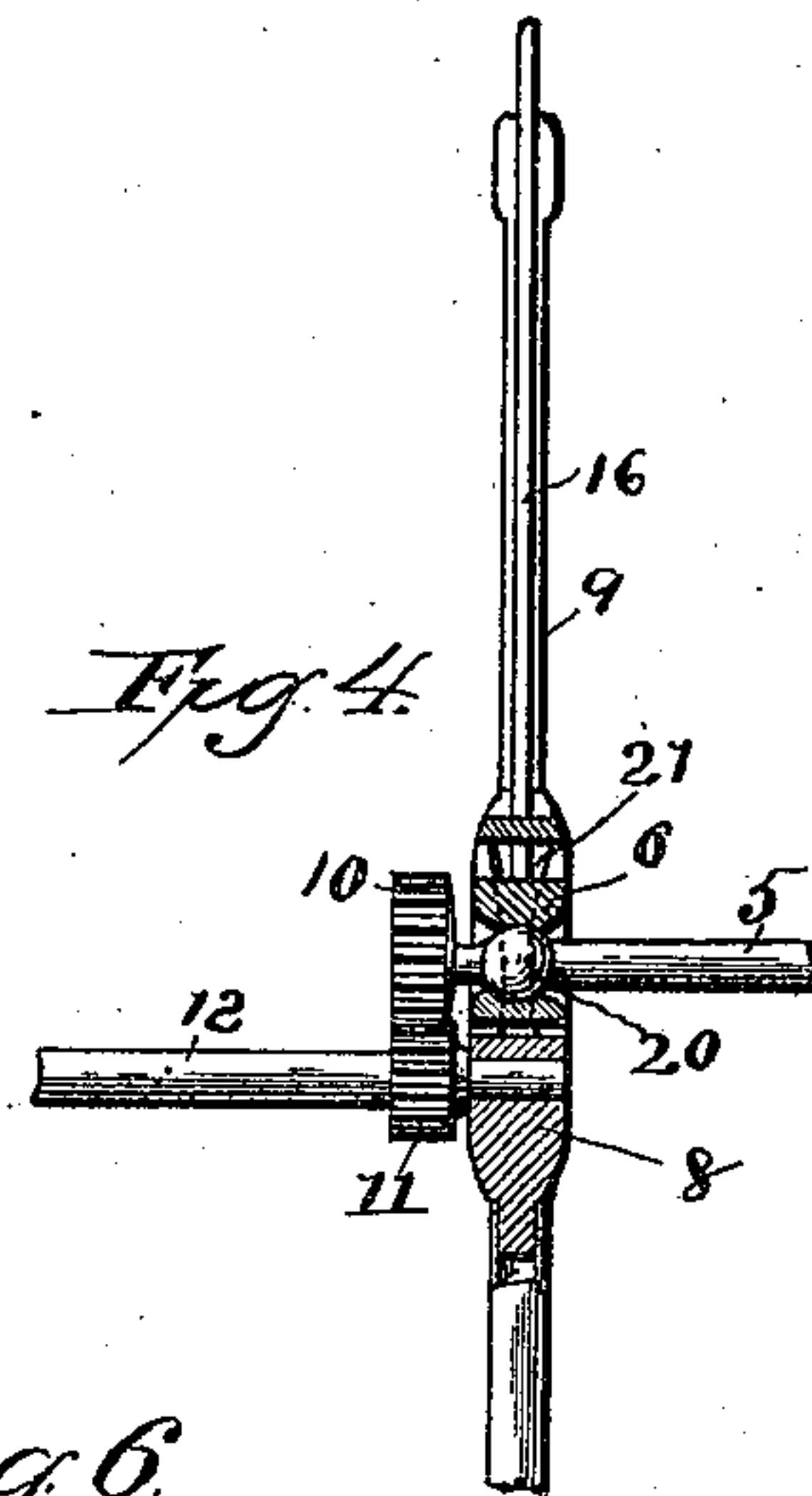
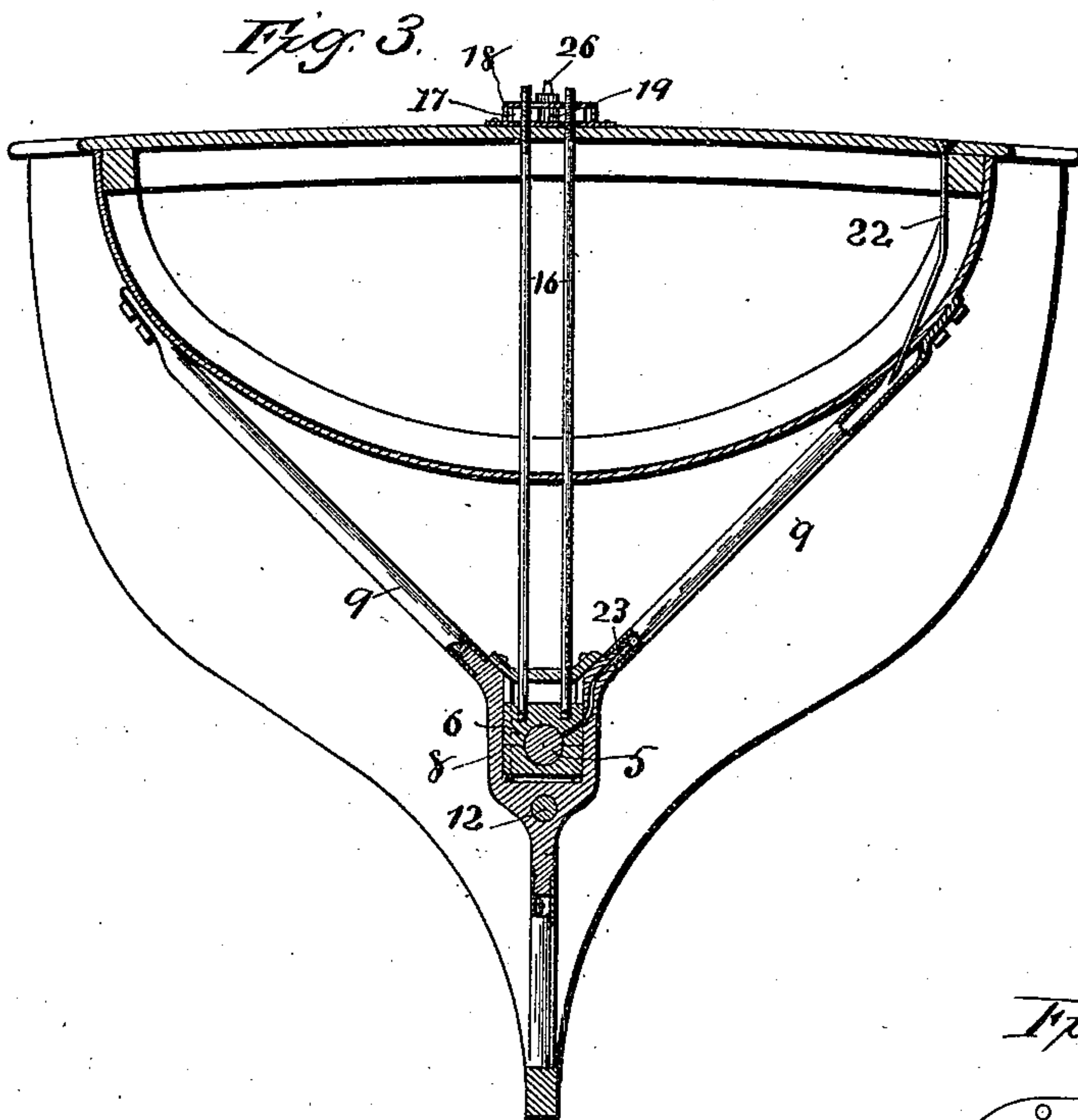
(No Model.)

2 Sheets—Sheet 2.

J. CULIN.
PROPELLER.

No. 548,041.

Patented Oct. 15, 1895.



Witnesses
E. C. Wurdeman
S. T. Williamson

Inventor
Jacob Culin
By *Geo. H. Holgate*
Attorney

UNITED STATES PATENT OFFICE.

JACOB CULIN, OF PHILADELPHIA, PENNSYLVANIA.

PROPELLER.

SPECIFICATION forming part of Letters Patent No. 548,041, dated October 15, 1895.

Application filed March 12, 1895. Serial No. 541,391. (No model.)

To all whom it may concern:

Be it known that I, JACOB CULIN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Propellers, of which the following is a specification.

My invention relates to a new and useful improvement in propellers for vessels, and especially to that class in which two or more propellers are used, and has for its object to adapt two or more propellers to a vessel in such manner as to permit the disengagement of the secondary from the primary propeller, and also to greatly increase the effectiveness of the propellers when in use.

With these ends in view my invention consists in certain details of construction and combination of elements hereinafter set forth, and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will proceed to describe its construction and operation in detail, referring by numbers to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective of a vessel with my improvement adapted thereto; Fig. 2, a side elevation of my improved device, showing its connection with the stern of the vessel. Fig. 3 is a cross-section at the line *xx* of Fig. 2; Fig. 4, a vertical section of one of the sliding boxes and bearings; Fig. 5, a longitudinal section of the same, on an enlarged scale; Fig. 6, a plan view of the casing which contains the gearing for operating the sliding bearings, showing a ratchet and pawls in engagement therewith; Fig. 7, a horizontal section of the same, showing the gears in their relative position; and Fig. 8 a, vertical cross-section thereof.

Similar numbers denote like parts in all the figures of the drawings.

1 is the main propeller-shaft, carrying the propeller 2, both of ordinary construction and arrangement, and at the outer end of the shaft 1 is secured a gear 3, which revolves with said shaft and is adapted to mesh with the pinion 4, secured on the inner end of the shaft 5, which latter has its bearing in journaled boxes 6, which are adapted to slide in

housings 7 and 8, supported by the stern of the vessel through brace-rods 9, for a purpose hereinafter to be explained.

10 is a gear-wheel secured on the outer end of the shaft 5 and meshing with the pinion 11, secured on the inner end of the shaft 12. One end of this shaft has its bearing in the housing 9, immediately beneath the sliding box 6, and its other end is journaled in the stern-post 13, so that it will be seen that any rotary motion of the propeller-shaft 1 revolving the propeller 2 will cause the shaft 5 and the propeller 14 carried thereby to revolve in an opposite direction, and the shaft 5 will in turn, through the gear 10 and pinion 11, cause shaft 12 and propeller 15 carried thereby to revolve in an opposite direction from itself and a like direction with shaft 1. By these reverse motions of the propellers the thrust of propeller 2 will be utilized by propeller 14 to enable it to take a better hold upon the water, and a similar action exists between propellers 14 and 15, so that the nest of propellers when in operation will never be caused to "race" or "churn" the water, as is the case when a propeller is compelled to take its hold upon the water when said water is moving only in one direction; and, further, the pinion 4 being smaller than the gear 3, shaft 5 will be caused to revolve faster than shaft 1, and the gear 10 being larger than the pinion 11 a like difference of speed between shaft 5 and shaft 12 is imparted to the latter, so that the propeller 2, running at a comparatively low speed, is enabled to exert a maximum force upon the water, causing it to be thrust rearward when the propeller 14, which is larger than the propeller 2 and running at a higher rate of speed, will act upon said water with its maximum force, and in turn the propeller 15, being larger than the propeller 14 and revolving at a higher rate of speed, will also be enabled to act upon said water with its full efficiency. Thus any power transmitted to the propellers will be completely absorbed in forcing the water rearward and the vessel forward, and none of said force will be lost by "racing," "churning," or side "thrusts."

In use propellers often become "fouled," and either disabled or rendered partly useless, often leaving the vessel helpless, compelling her to depend upon sail, but I dimin-

ish this liability by so constructing the mechanism of my improved propellers as to enable one or more of them to be thrown out of gear, which is accomplished in the following manner: To each of the boxes 6 are attached two rods 16, as clearly shown in Fig. 3, and these rods extend upward to the deck of the vessel, or other convenient location, and are threaded at their upper ends, which latter pass through threaded hubs of gears 17, inclosed within the casing 18 in such manner as to prevent their vertical movement. 19 is an idle-pinion interposed between the gears 17 and meshing therewith, so that any rotation of said pinion will cause said gears to revolve, thereby raising or lowering rods 16, so that should it become necessary to disengage the propeller 15 from the remaining two it would only be necessary to revolve the pinion 19 in the proper direction, when the corresponding box 6 would be elevated and the gear 10 withdrawn from engagement with pinion 11, allowing the propellers 2 and 14 to revolve without affecting the propeller 15, and to disengage propellers 14 and 15 from propeller 2 the elevating mechanism connected with the forward box 6 will be operated. Thus, should the propeller 14 or 15, or both, become disabled by being entangled with wreckage or from other cause, they may be thrown out of gear and the whole force of the vessel's engines be exerted upon the propeller 2, which, being of a smaller diameter than the remaining two, it is obvious that the vessel would be enabled to safely proceed, though at a reduced speed. The shaft 5 is provided with enlargements 20 and the boxes 6 made to correspond thereto, so as to permit a slight rocking movement of said shaft when the front end thereof is raised; also, the guideways 21, formed in the housings 7 and 8, in which slide the boxes 6, are flared upward, so as to permit a slight go and come in order to accommodate said box to the swinging movement of the shaft 5 when raised or lowered, as before described. In order to facilitate the oiling of the boxes 6, I connect tubes 22 with the hollow brace-rods 9 and form an oil-passage 23 in the housings and boxes, so that oil poured in said tube 22 will pass down and to the bearing in said

boxes. 24 is a ratchet secured on the same shaft with the pinion 19, with which the pawl 25 engages to retain said pinion, and consequently the rods 16 in the position they may be elevated to, and 26 is a wrench-hold for operating said pinion.

Having thus fully described my invention, what I claim as new and useful is—

1. In a device of the character described, the primary shaft and its propeller, the propeller 14 adapted to receive its motion from said shaft and capable of being swung upward at either end, in combination with means for accomplishing said swinging movement and the propeller 15 adapted to receive its motion from the shaft 5, as shown and for the purpose set forth.

2. In a propeller mechanism of the character described, the shafts 1 and 12, revolving in stationary bearings, in combination with the shaft 5, geared to said shafts 1 and 12, and means for swinging either end of said shaft 5 upward, whereby it is disengaged from shaft 1, or shaft 12, or both, as shown and for the purpose set forth.

3. In a device of the character described, the shafts 5 and 12, adapted to rotate in unison, in combination with the sliding boxes 6, rods 16, and mechanism for elevating said rods, whereby said shafts are disengaged from or connected with the shaft 1, as shown and for the purpose set forth.

4. In a device of the character described, the shafts 1, 5, and 12 adapted to be rotated by a common power, in combination with sliding boxes in which the shaft 5 is journaled, vertical rods 16 secured to said box, gear wheels which receive the upper ends of the rods, a pinion to drive the gear wheels, ratchet and pawl for retaining the pinion against rotation in one direction and means for conveying oil from the vessel to the bearings in said boxes 6, as and for the purpose specified.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

JACOB CULIN.

Witnesses:

SAMUEL L. TAYLOR,
S. S. WILLIAMSON.