

No. 816,347.

PATENTED MAR. 27, 1906.

G. MECHTERSHEIMER.

PROPELLER.

APPLICATION FILED MAY 1, 1905.

Fig. 1.

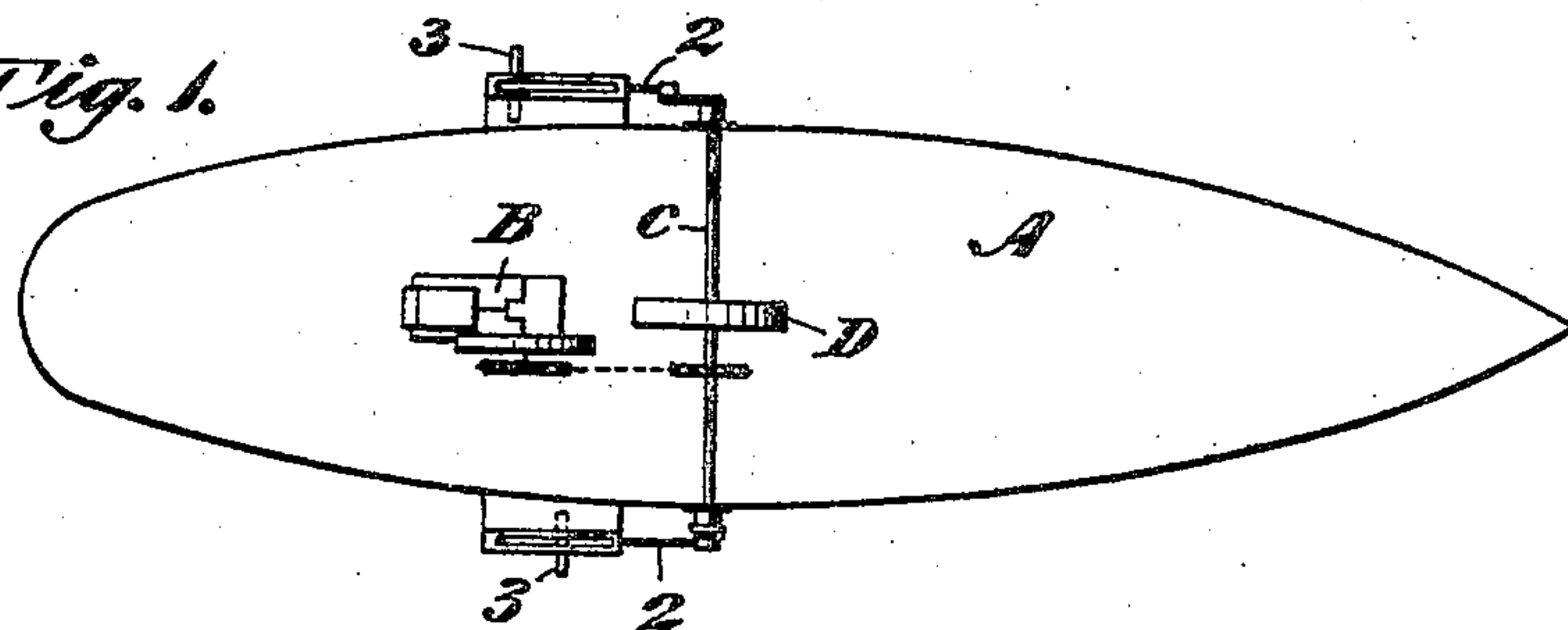


Fig. 2.

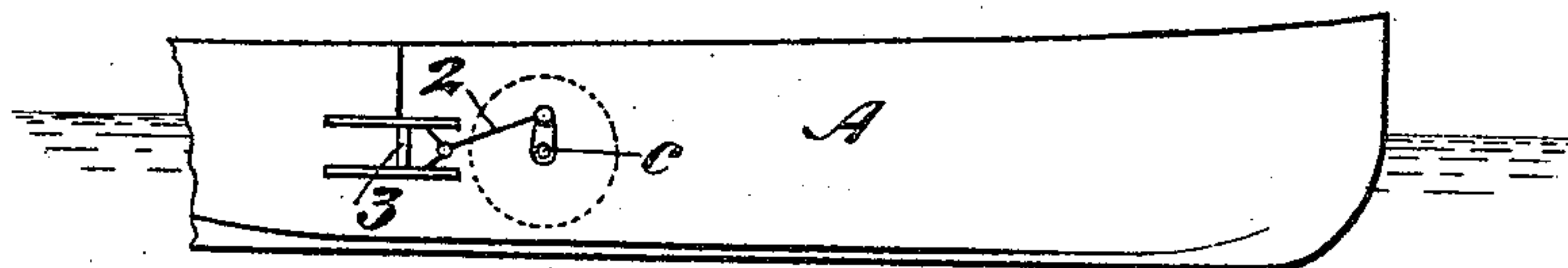


Fig. 3.

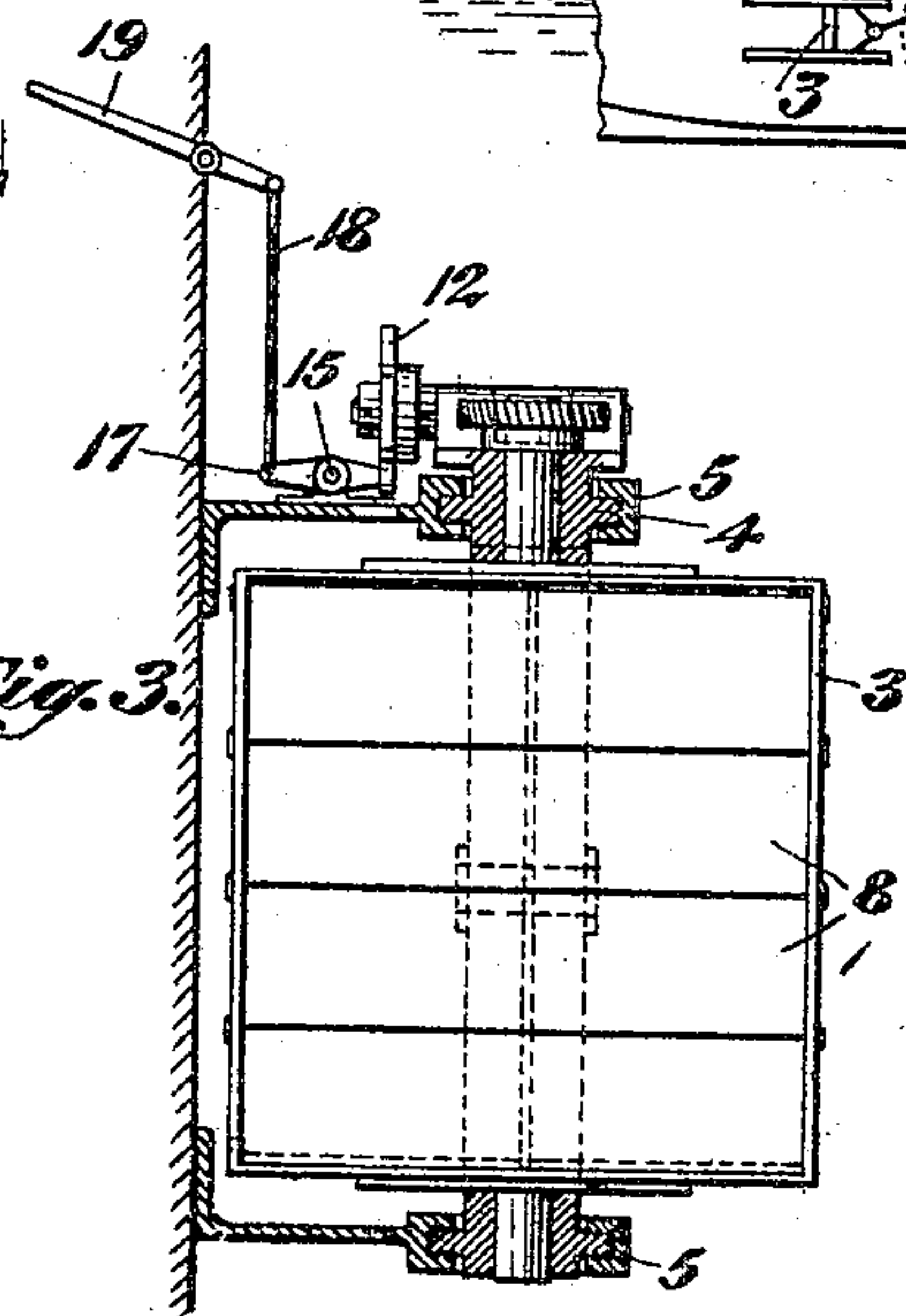


Fig. 4.

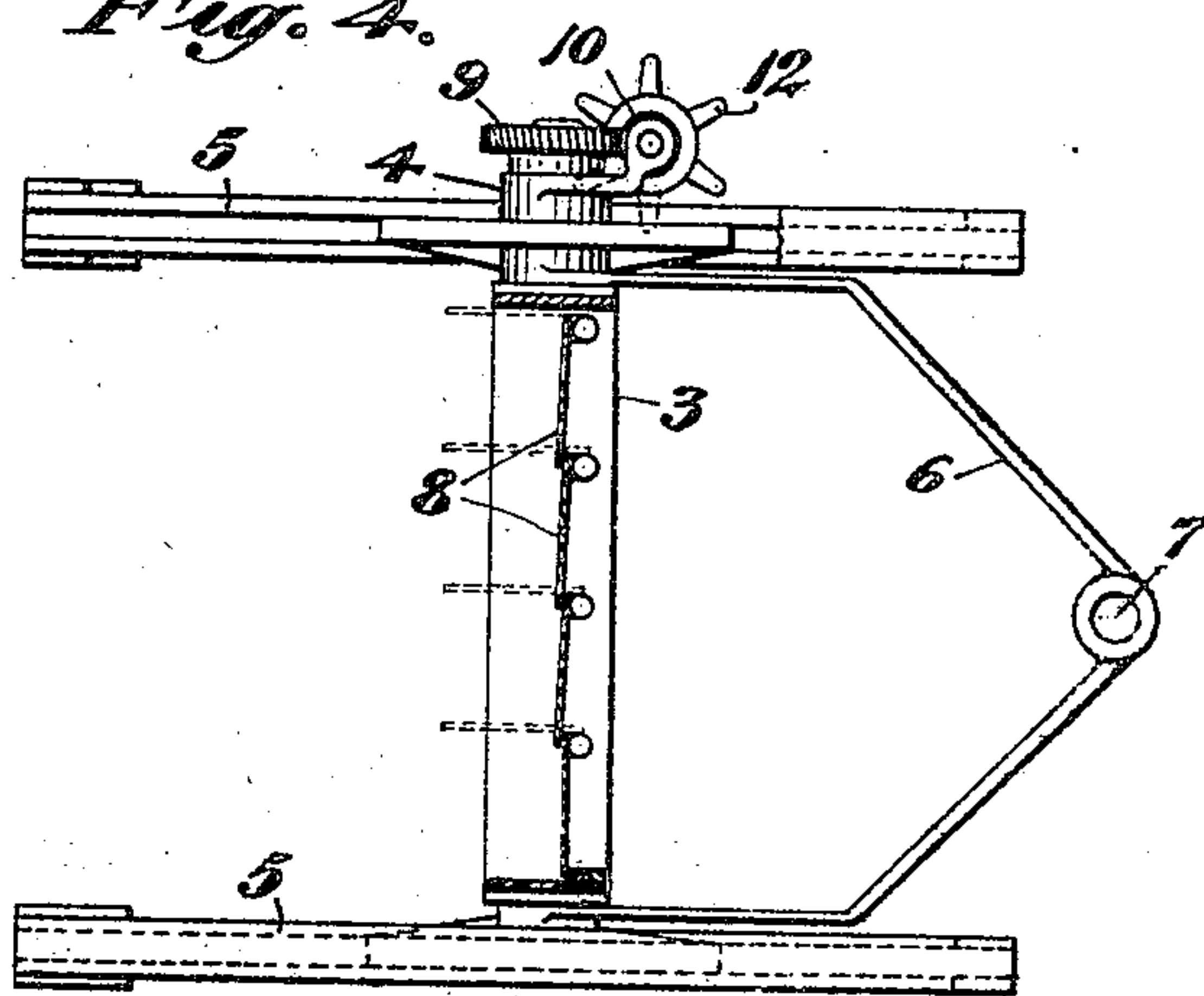


Fig. 5.

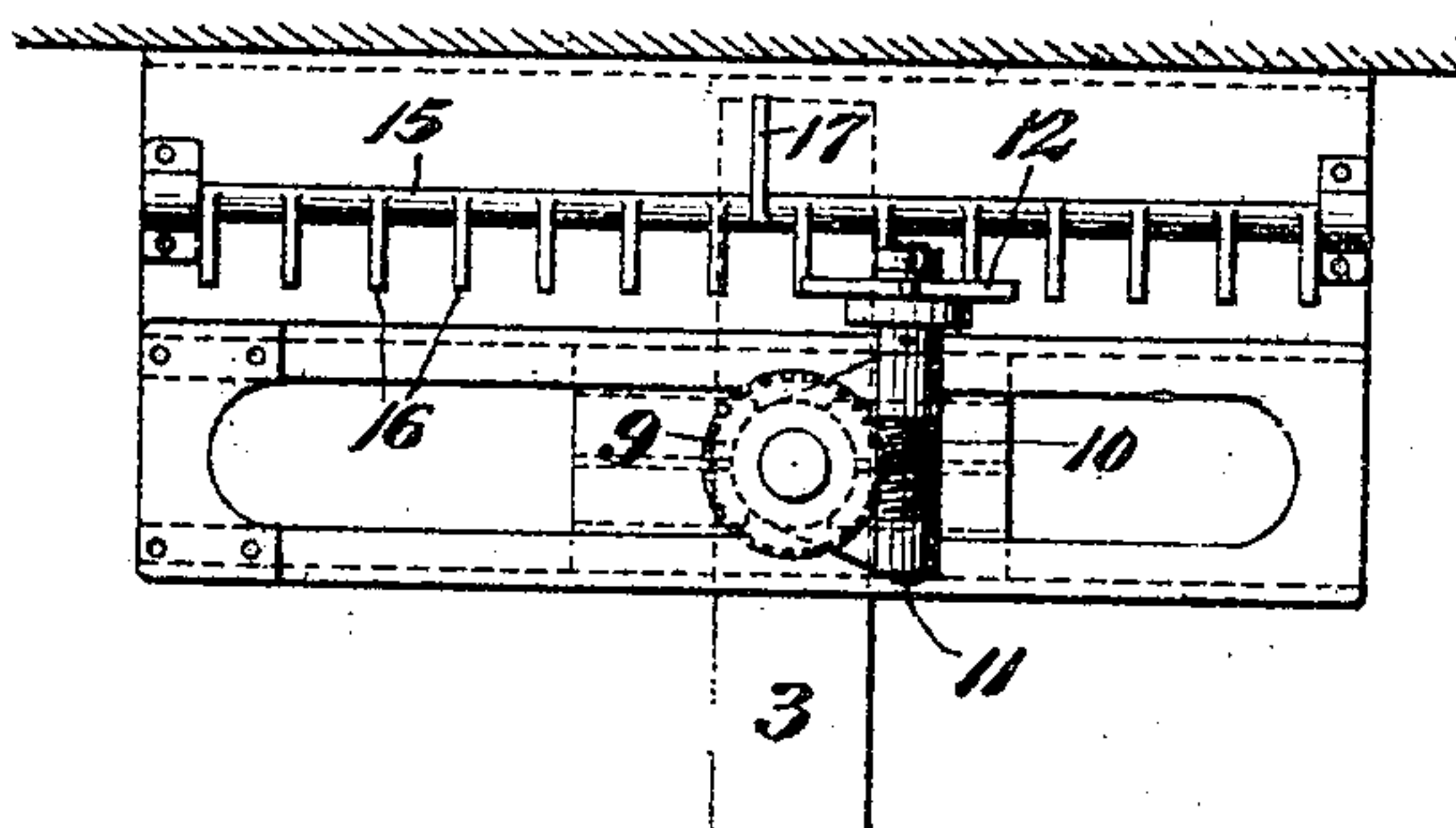
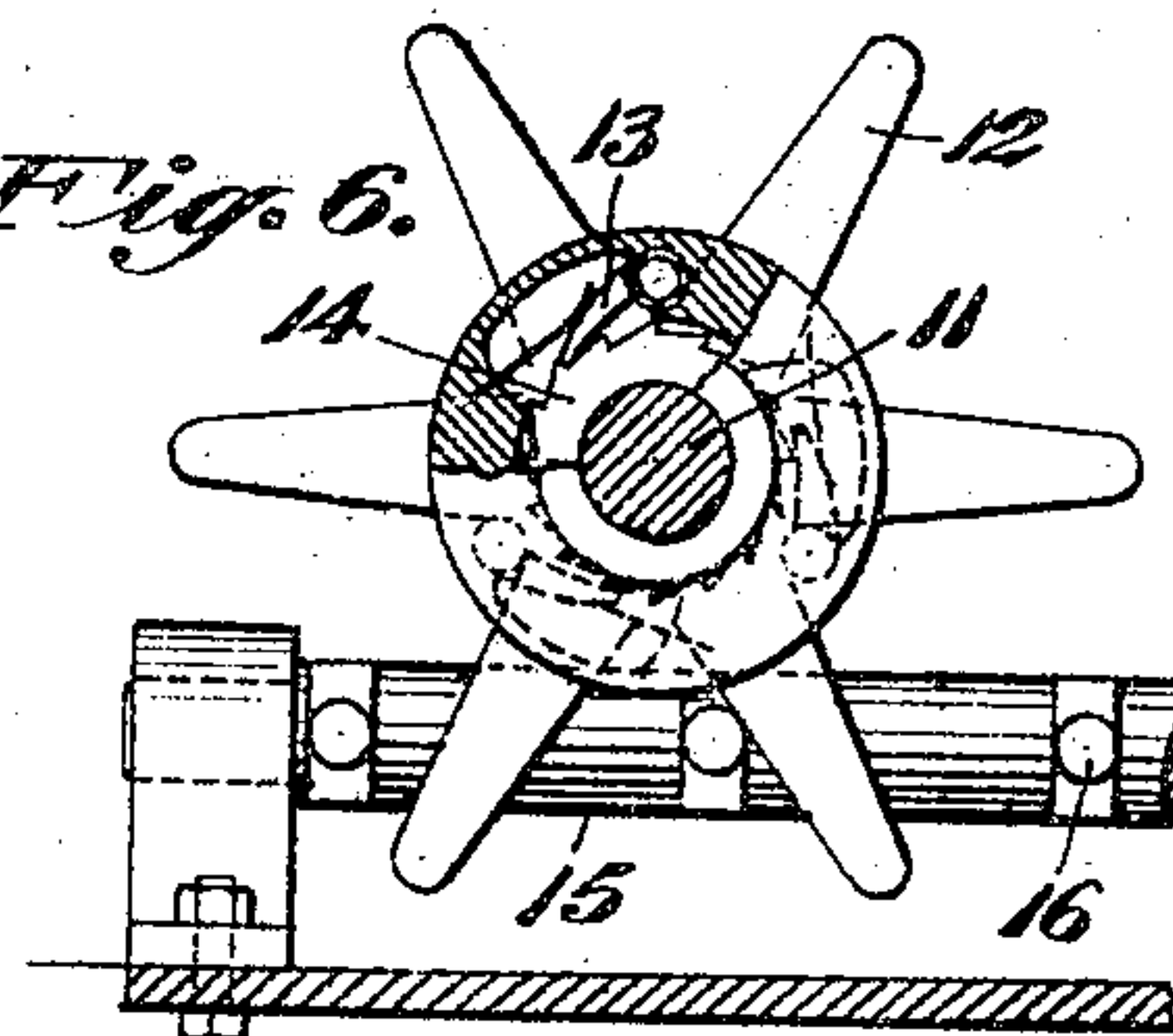


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE MECHTERSHEIMER, OF SAN FRANCISCO, CALIFORNIA.

PROPELLER.

No. 816,347.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed May 1, 1905. Serial No. 258,317.

To all whom it may concern:

Be it known that I, GEORGE MECHTERSHEIMER, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Propellers, of which the following is a specification.

My invention relates to a propeller for vessels.

It consists of a guided gate or frame and a means for reciprocating it, said gates having hinged automatically opening and closing shutters whereby power is applied to impel the vessel and mechanism by which the gate may be reversed and the operation continued in the opposite direction.

It also comprises details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a plan view of a vessel, showing application of my device. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is an end view of my propeller and partly in section. Fig. 4 is a side view of same. Fig. 5 is a plan view of same. Fig. 6 is a side view of star-wheel and ratchet, partly in section.

It is the object of my invention to provide a novel means for applying power to drive a boat through water and means by which the application of said power may be reversed whenever required.

In the drawings I have indicated a vessel, as at A, having a motor of any suitable description, as at B, and a crank-shaft C and fly-wheel D, connected either directly or indirectly with the motor, and through which crank-shaft power is applied by means of cranks and connecting-rods 2 to reciprocate a frame or gate 3. Two of these gates are shown in the present device, one upon each side of the vessel, and they are here shown as turnably mounted in supports 4, having flanges slidable in guides, as shown at 5.

The support 4 is here shown as being central, so that the gate may be turned or reversed, as will be hereinafter described.

The standard is connected by a yoke 6 with a central pin or journal, as at 7, with which the rods or pitmen 2 are connected, so that the effort of the motor will be applied substantially midway between the sides of the gate 3. Transversely across this gate extend leaves or shutters 8, so disposed that they normally hang vertically and close the space within the gate, and when pressure is applied

to force the gate forward, sliding in its guides, these shutters will be pressed against the body of water in the rear and the gates remain closed and impel the vessel forward.

When the gate is again moved forward in its reciprocation, the pressure of the water in front will open the shutters, thus allowing the structure to move freely forward. Thus each backward impulse of the gates acts to force the vessel forward, and the forward movements of the gates through the water are comparatively free.

In order to reverse the gate, so that the operation will be such as to drive the vessel backwardly, they must be turned around a half-revolution. This I effect as follows: Upon the upper shaft of the gate 3 is fixed a worm-gear 9, which is engaged by the corresponding worm 10, carried by the horizontal shaft 11, having upon one end a star-wheel 12. This wheel is turnable loosely in one direction and has within it spring-pressed pawls, as at 13, adapted to engage a corresponding ratchet 14 when turned in the opposite direction, so that when the star-wheel comes in contact with any fixed point it will turn freely when moved in one direction, because the pawls will slide over the ratchet-teeth; but when turned in the other direction the pawls will engage the ratchet-teeth and the shaft 11 will be revolved, and with it the screw 10, which engaging the worm-gear 9 will turn the star-wheel and the gate 3. This turning takes place by short intervals and may be effected without interfering with the movement of the motor, as follows: It will be seen from the construction that the star-wheel and worm-gear devices being reciprocated in unison with the movements of the gate when nothing is interposed the frame or gate will not be turned. In order to reverse the gate, I have shown a shaft 15 journaled parallel with the line of travel of the gate and having projecting arms 16 upon one side and a lever-arm 17 upon the other side. This lever-arm is connected by rod 18 with a hand or other lever 19, fulcrumed to some stationary part, and through which the shaft 15 may be partially rotated. When the gates are set so that their reciprocation will propel the vessel in one direction, the shaft 15 is rotated so that the arms 16 are disengaged from the star-wheel 12, and the latter then reciprocates with the gate and without any rotary motion of its own.

When it is desired to reverse the gates, the

shaft 15 is rotated by its connection until the arms 16 are brought into line with the teeth of the star-wheel. It will be seen that when this occurs the teeth of the star-wheel will be engaged by the stationary arms 16, and each reciprocation of the gate will cause the star-wheel to revolve a distance depending upon each number of arms and the length of the reciprocation. Each movement of the star-wheel in one direction will be transmitted through the worm-gear and partially turn the gate upon its vertical supports. The return movement of the gate is made, as previously described, without rotary motion of the shaft 11, the star-wheel turning freely. The next stroke of the apparatus turns the gate still farther, and so on, until it is entirely reversed, when the reciprocations will cause the shutters to open and close in the direction opposite to that previously described, and the reversed movement of the vessel will take place.

It will be seen that if this propelling mechanism is auxiliary to sail-power it will be only necessary to turn the gates to stand parallel to the vessel's keel, when the sail-power could be used without material friction of the gates as the vessel moves through the water.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An apparatus for the propulsion of vessels, said apparatus consisting of turnably-mounted gates or frames, slides in which said gates are guided, and reciprocable hinged shutters extending transversely across said gate and opening freely in one direction and closing when moved in the opposite direction, and means by which the gates may be reversed.

2. In an apparatus for the propulsion of vessels, guides fixed upon opposite sides of the vessel parallel with the keel, with gates opening and closing and having central vertical columns or standards with collars or flanges slidable in the guides, a yoke fixed to the standard connections with cranks, and a motor whereby power may be applied to reciprocate the gates.

3. In an apparatus for the propulsion of

vessels, guides fixed upon each side of the vessel parallel with the keel, gates having hinged opening and closing shutters, vertical columns extending above and below the central portion of the gates having flanges slidable in the guides, shafts connected with the gates and turnable in the standards, gear-wheels mounted and fixed upon the outer ends of the shafts, and worms or screws engaging said gears and mechanism by which the worm-gear is actuated to revolve and reverse the gate with relation to the direction of motion.

4. In an apparatus for the propulsion of vessels, horizontally-guided reciprocating gates with hinged alternating opening and closing shutters, standards extending above and below the central portion of the gate and slidable in guides carried upon the vessel-shafts connected with the gates and extending through said standards, worm-gears fixed to the shafts, transverse shafts carrying worms to engage said gears, and star-wheels turnable loosely upon the shafts with pawl-and-ratchet mechanism whereby said star-wheels are engaged with the shaft and prevented from turning in one direction, and mechanism interposed in the line of travel of the star-wheel, teeth whereby said wheel and connected parts are rotated at each reciprocation of the gates.

5. In an apparatus for the propulsion of vessels, horizontally-guided reciprocating gates having hinged opening and closing shutters extending transversely across their opening, centrally-fixed standards extending upwardly and downwardly from the gate and slidable in guides fixed to the vessel, worm-gears and star-wheel, whereby said gears revolve, a shaft parallel with the line of travel of the gates having arms and a device whereby said arms are moved into or out of the path of travel of the star-wheel.

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

GEORGE MECHTERSHEIMER.

Witnesses:

S. H. NOURSE,

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