

No. 705,348.

Patented July 22, 1902.

C. HAYES.  
OSCILLATING PROPELLER.  
(Application filed Nov. 23, 1901.)

(No Model.)

3 Sheets—Sheet I.

Fig. 1.

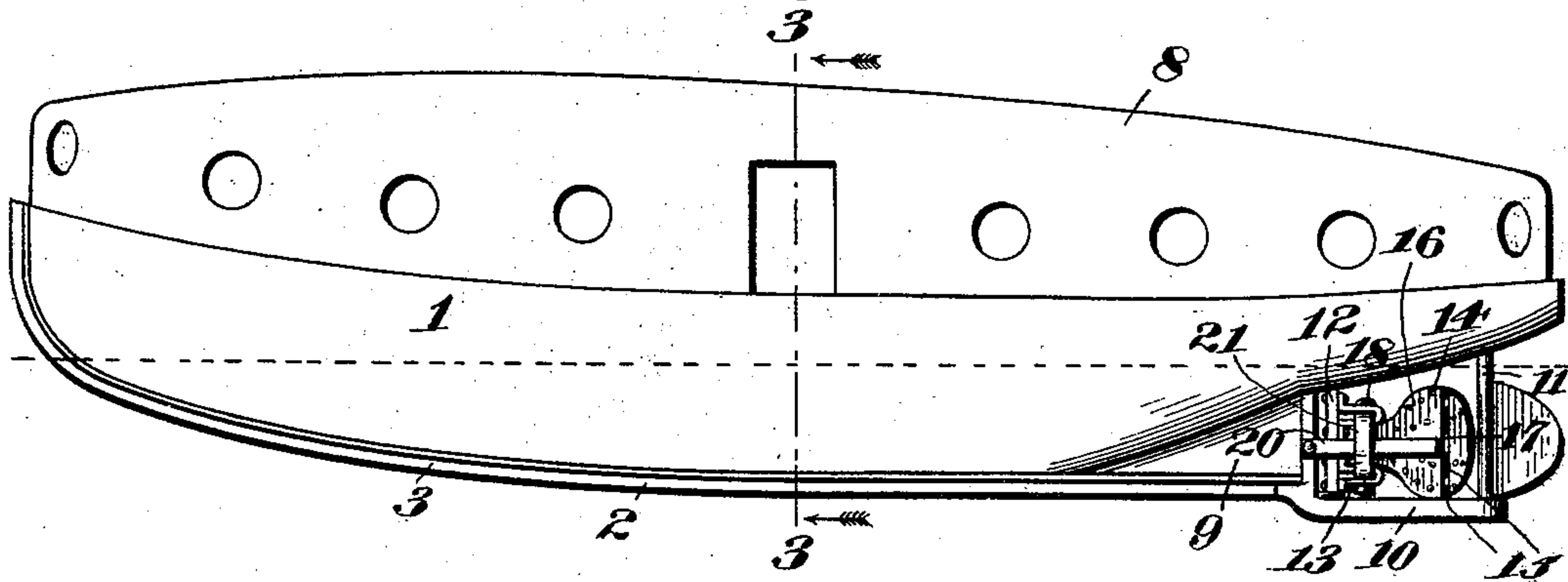


Fig. 2.

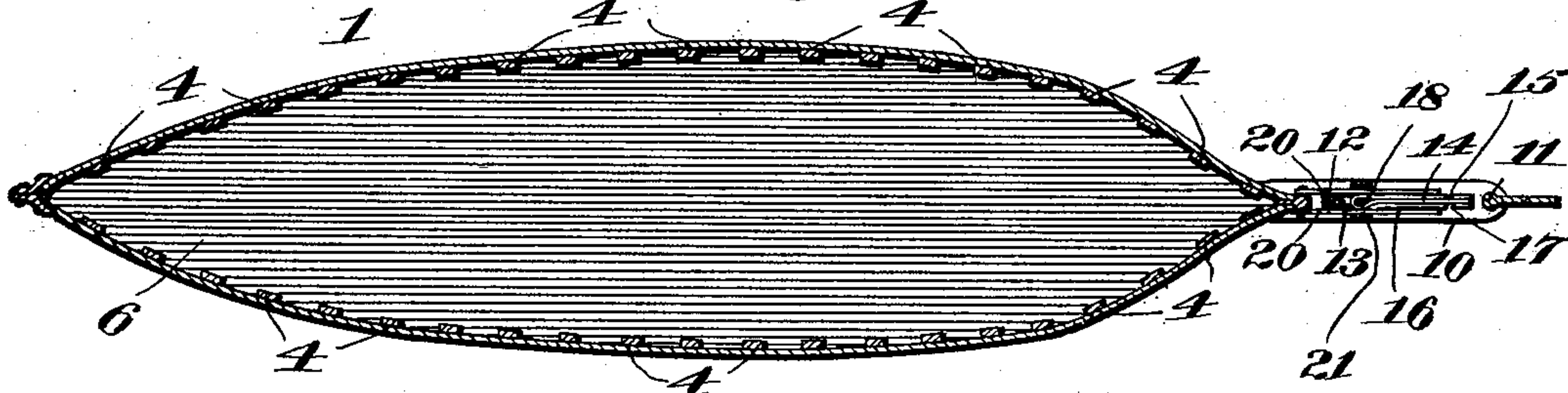
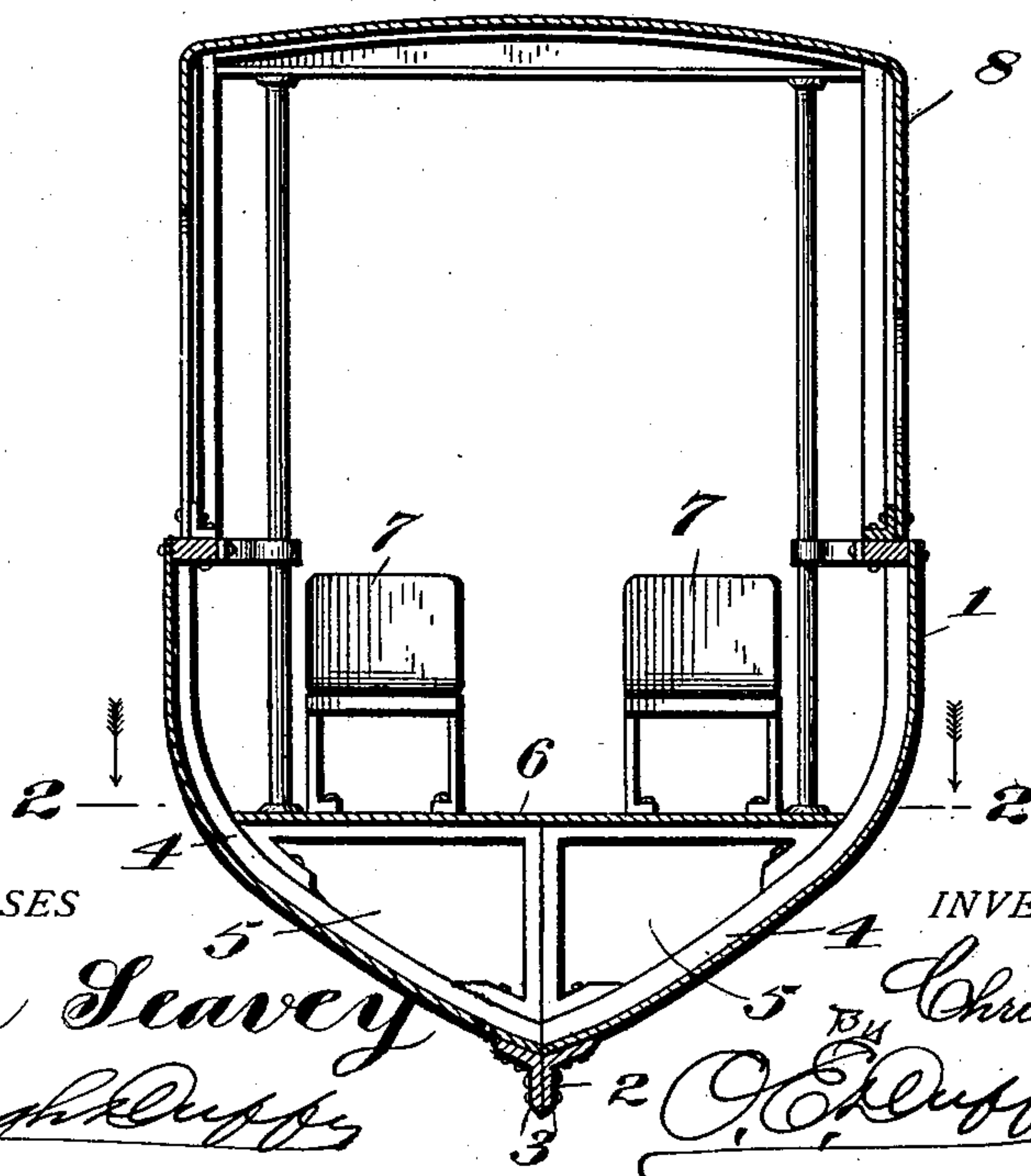


Fig. 3.



WITNESSES

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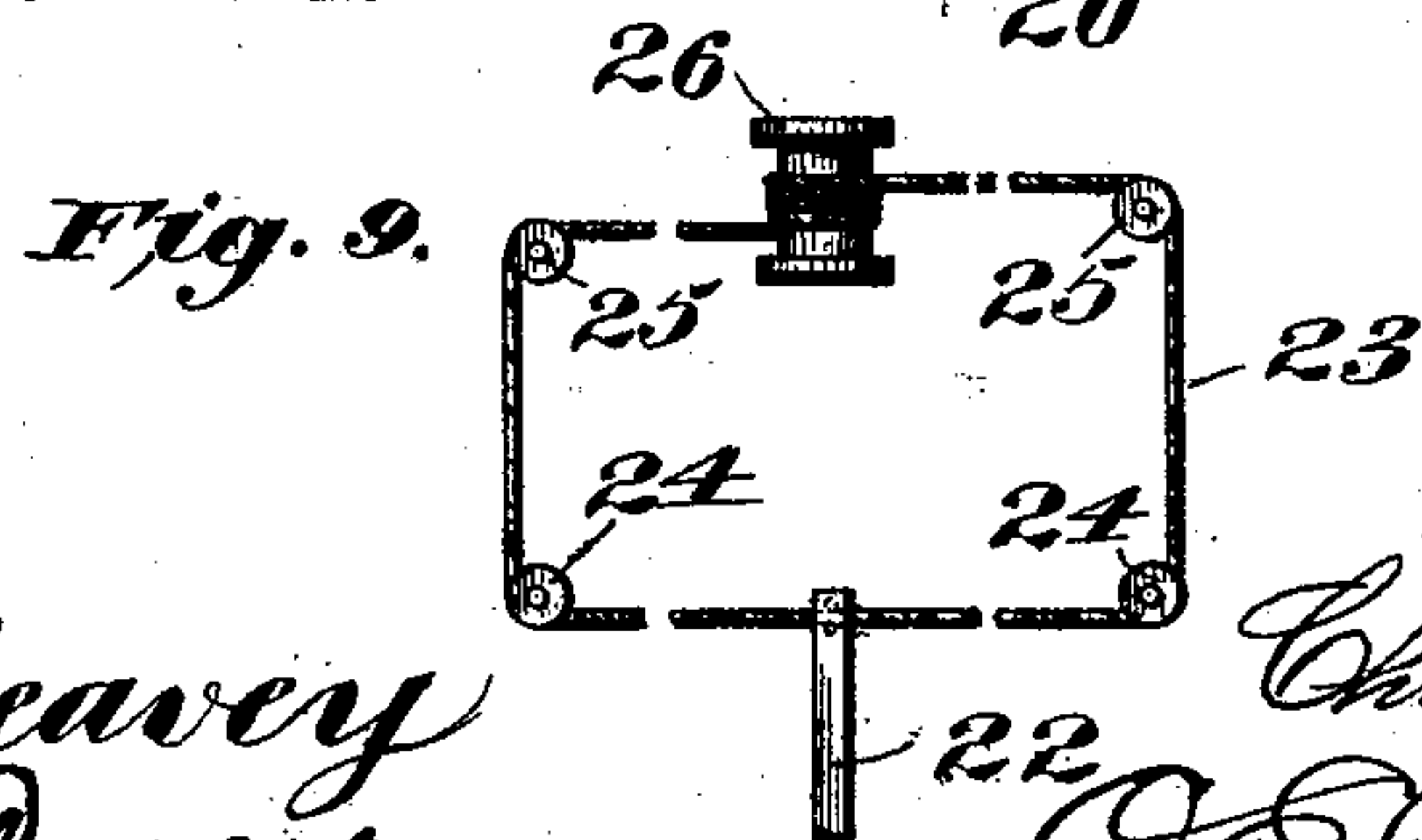
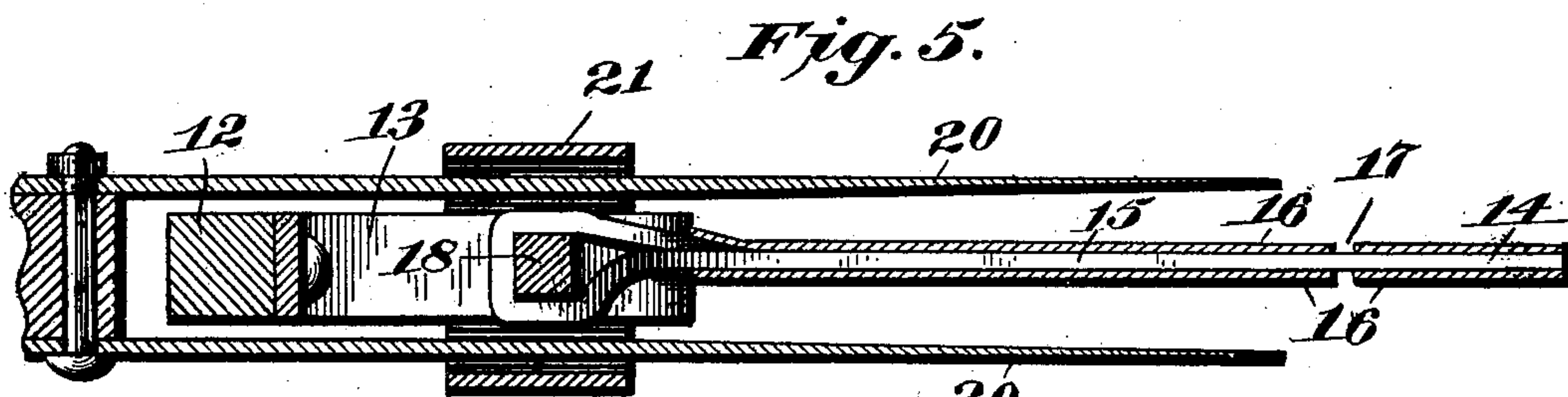
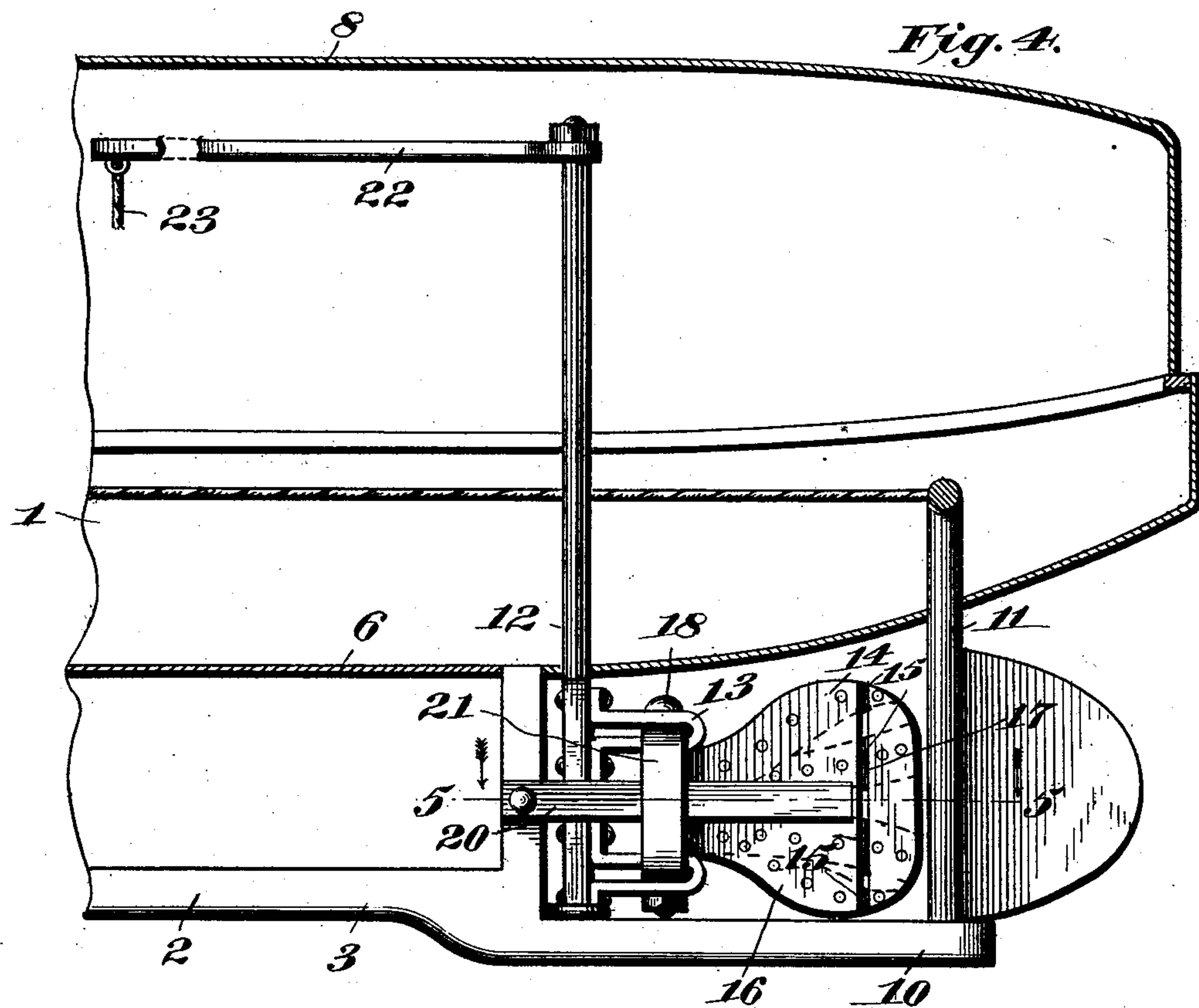
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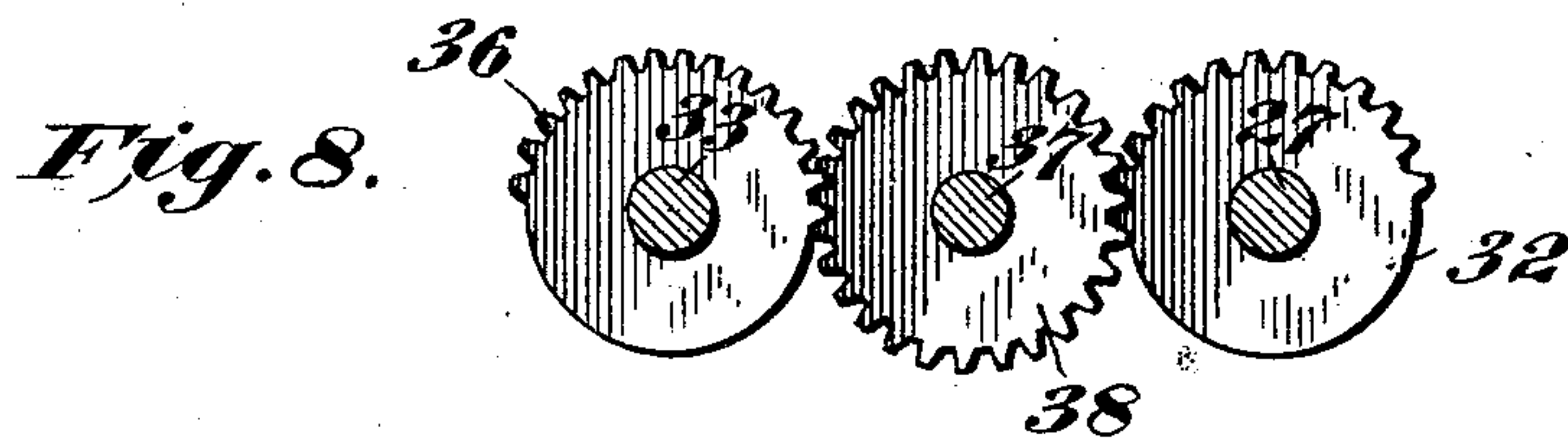
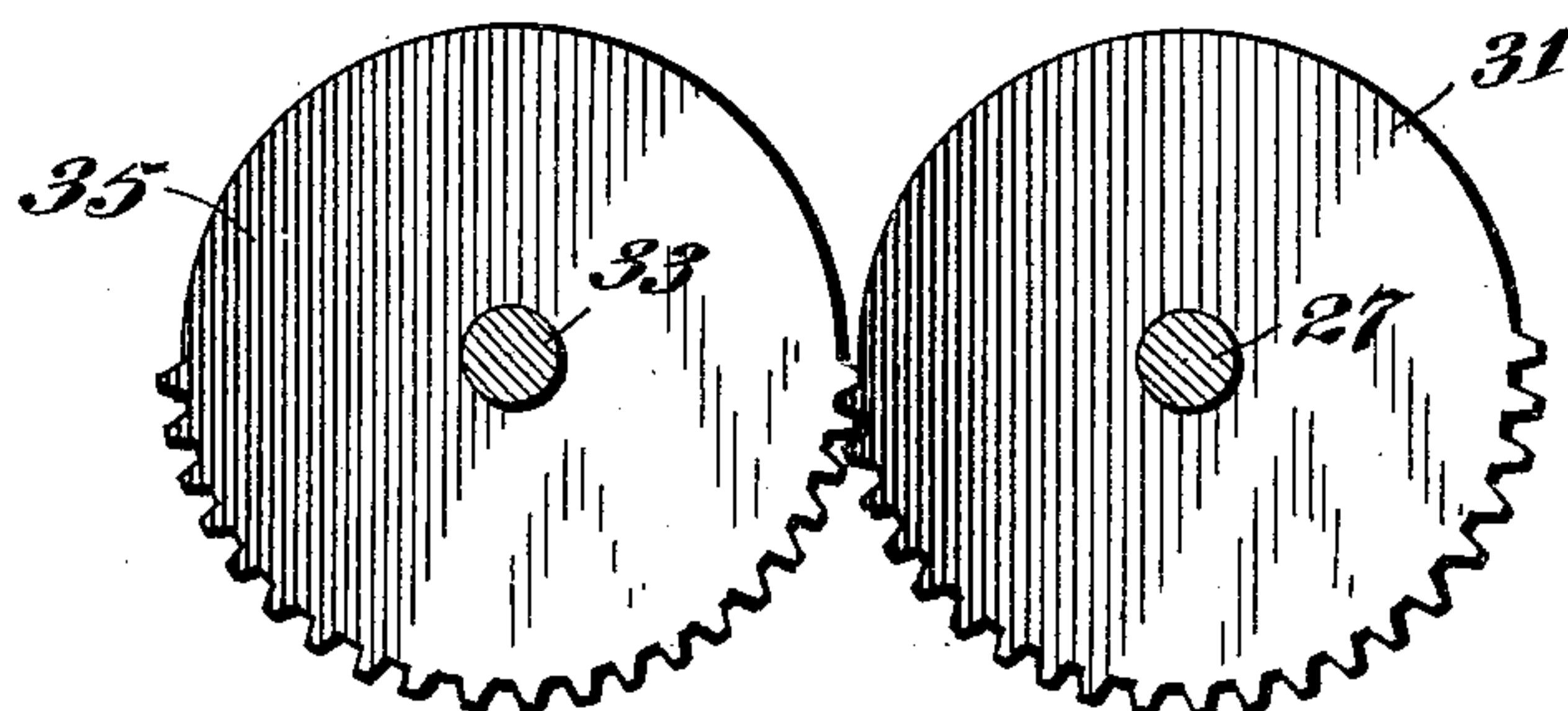
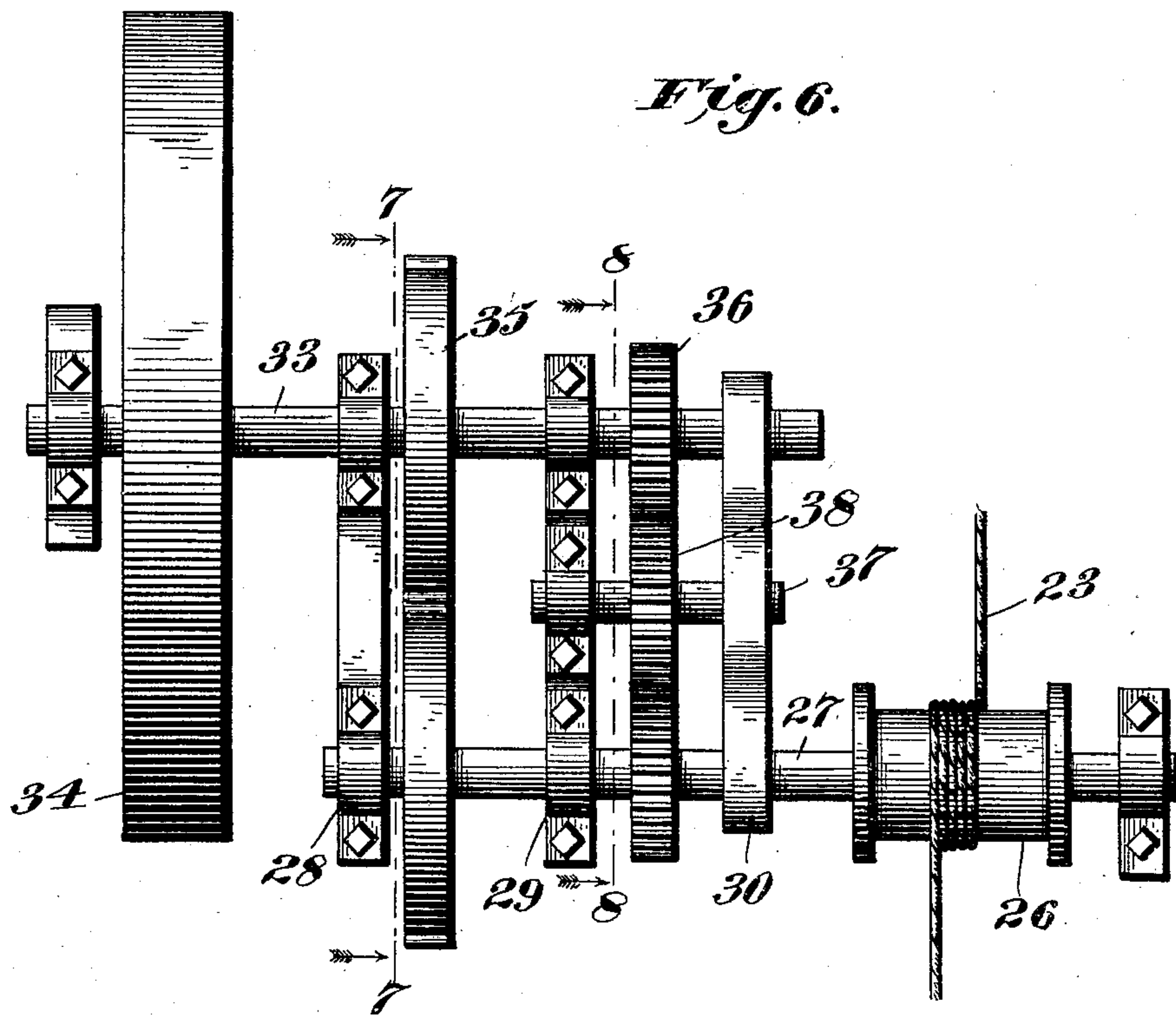
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

CHRISTOPHER HAYES, OF JUNEE, NEW SOUTH WALES, AUSTRALIA.

## OSCILLATING PROPELLER.

SPECIFICATION forming part of Letters Patent No. 705,348, dated July 22, 1902.

Application filed November 23, 1901. Serial No. 83,411. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTOPHER HAYES, a subject of the King of England, residing at Junee, in the county of Clarenton, New South Wales, Australia, have invented certain new and useful Improvements in Life-Boats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to life-boats, but more particularly to the propelling mechanism, and has for its object to provide a boat which is simple in its construction and composed of a minimum number of parts.

My invention consists in the novel arrangement of a life-boat and in the propelling arrangement.

My invention also consists in certain other novel features of construction and combination of parts, which will be hereinafter fully described, and afterward specifically pointed out in the appended claims.

Referring to the accompanying drawings, Figure 1 is an elevation of a life-boat constructed in accordance with my invention. Fig. 2 is a cross-section taken on the lines 2 2 of Fig. 3. Fig. 3 is a vertical section along the lines 3 3 of Fig. 1. Fig. 4 is a fragmentary sectional view of the after portion of the boat, showing the propelling arrangement. Fig. 5 is a transverse section taken on the lines 5 5 of Fig. 4. Fig. 6 is an elevation of the gearing for the propelling mechanism. Fig. 7 is a vertical section taken along the lines 7 7 of Fig. 6. Fig. 8 is a vertical section taken along the lines 8 8 of Fig. 6. Fig. 9 is a detail plan view of the spool and cable and propeller-post lever.

Like numerals of reference indicate the same parts throughout the several figures, in which—

1 is a boat; 2, the keel, composed of angle-irons 3, securely bolted or riveted together. The body or planking of the boat is preferably of iron or steel, secured in the ordinary manner to the ribs 4.

5 indicate water-compartments upon which the floor 6 is formed. I provide seats or bunks 7 above said floor, and I provide a cabin or covering 8 over the entire length of the boat,

having a suitable door and windows or port-holes.

Right aft the skeg 9 I provide a bracket 10, within the end of which the rudder-post 11 is seated. Forward of said rudder-post I provide a propeller-post 12, to which is securely bolted the double-looped piece 13.

14 indicates my propeller, formed substantially like a fish-tail and constructed of a springy steel core 15 and a sheathing of copper or other suitable metal 16. It will be noticed by referring to Figs. 1, 4, and 5 that there is a vertical space or opening 17 in said sheathing for the purpose of preventing the sheathing from cracking by reason of the elasticity of the inner core.

I provide a square bolt 18 through the double-looped piece 13, around which the propeller-fin is secured.

Bolted to the bracket forward of the propeller-post are two spring-buffers 20, extending aft horizontally and parallel. Around said buffers opposite the square bolt and within the loops of the double-looped piece I provide a band 21, through the top and bottom of which passes the square bolt.

Securely fastened to the top of the propeller-post is a lever-arm 22, closely resembling a tiller. Attached to said lever-arm is a cable 23, which passes outwardly over two pulleys 24, then forwardly over two pulleys 25, thence inwardly to around the drum or spool 26, Fig. 9.

Referring now to Fig. 6, it will be seen that the drum or spool 26 is secured on a shaft 27, which is journaled in three standards 28, 29, and 30. Keyed on said shaft are the cogs 31 and 32, having teeth on only half their peripheries, the toothed portions of the cogs being on opposite sides, as shown in Fig. 6. Journaled in the standards 28, 29, and 30 is the power-shaft 33, which carries a fly-wheel 34 and a pair of cogs 35 and 36, identical with cogs 31 and 32. Journaled in the standards 29 and 30 is a shaft 37, carrying a cog-wheel 38 intermediate the cog-wheels 32 and 36 and meshing therewith.

Having thus described the several parts of my invention, its operation is as follows: The power-shaft is turned by any approved means, which of course causes the cogs 35 and 36 to revolve. As said cogs revolve, we will sup-



pose in the direction of the hands of a watch, said cog 35 will mesh with cog 31 and turn said cog half a revolution. Cog 36 being on the same shaft as cog 35 also turns in the direction of the hands of a watch, but does not mesh with the intermediate cog 38 by reason of the smooth portion of its periphery. While, however, cog 31 is being turned half a revolution in the direction contrary to the hands of a watch, cog 32, being on the same shaft, is also being turned half a revolution in the same direction. When therefore cogs 31 and 32 have completed their half-revolution in the direction contrary to the hands of the clock, the cog 36 has completed its half-revolution in the direction of the hands of a watch and commences to mesh with the intermediate cog 38, which intermediate cog meshes with cog 32 and reverses the direction of said cog 32, cog 31 being on the same shaft as cog 32 is also reversed and is free to turn one half-revolution in the same as cog 35, by reason of the smooth portions of their peripheries coming together. When however said cog 31 has turned half a revolution in the direction of the hands of a watch, they are again in the position shown in Fig. 7, and the cog 35 meshes with the said cog 31, and again reverses said cog 31 for half a revolution, thus the shaft and drum or spool, is turned first one way for half a revolution and then the other way.

To refer now to Fig. 9, it will be obviously seen that the propeller-post lever is reciprocated by the winding and unwinding of the cable on the drum or spool.

To refer now to Fig. 4, it will be seen that the propeller or fan is thus thrust to first one side and then the other and each time comes in contact with one of the spring-buffers, which helps to force the fan back against the water, and thus give headway to the boat. By reason of the flexible fan or propeller the same resembles a fish-tail when in operation and is more powerful than if the same were stiff and rigid.

Having thus described the several parts and the operation of my invention, I do not wish to be understood as limiting myself to the exact construction as herein set forth, as various slight changes may be made therein which would fall within the limit and scope of my invention, and I consider myself clearly entitled to all such changes in form and construction.

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

1. Propelling mechanism for life-boats or the like consisting of a fan composed of a springy core, a sheathing on either side of the same, having a space or opening between the plates thereof, a propeller-post, a double-looped piece secured thereto, and carrying said fan, spring-buffers on either side of said fan, a band encircling said spring-buffers and carried in said looped piece, a mechanism for operating said fan, substantially as described.

2. Propelling mechanism for life-boats or the like consisting of a fan of a springy core, a sheathing on either side thereof having a space or opening between the plates of said sheathing, a propeller-post supporting said fan, spring-buffers secured on either side of said fan, and mechanism for operating said fan, substantially as described.

3. Propelling mechanism for life-boats or the like consisting of a fan composed of a springy core, a sheathing on either side thereof having a space or opening between the plates of said sheathing, means for supporting said fan, and means for operating the same, substantially as described.

4. Propelling mechanism for life-boats or the like consisting of a fan composed of a springy core, a sheathing on either side of said core, having a space or opening between the plates of said sheathing, and means for operating said fan, substantially as described.

5. Propelling mechanism for boats consisting of a fan, a propeller-post, a propeller-post lever secured thereto, a cable secured to said lever, a drum adapted to wind and unwind said cable, a shaft carrying said drum, partially-toothed cog-wheels carried on said shaft, a power-shaft above said drum, partially-toothed cogs carried on said shaft, substantially as described.

6. Propelling mechanism for boats consisting of a fan, a propeller-post, means for rocking the same consisting of a drum and cable, a shaft carrying said drum, a large and small cog-wheel having teeth on half their peripheries, a power-shaft above said drum, a large and small cog-wheel carried on said shaft and having teeth on half their peripheries, a pinion-wheel interposed between the two smaller cog-wheels, the whole arranged whereby the drum is rocked, substantially as described.

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

CHRISTOPHER HAYES.

Witnesses:

HERBERT C. EMERY,  
C. HUGH DUFFY.