

No. 652,770.

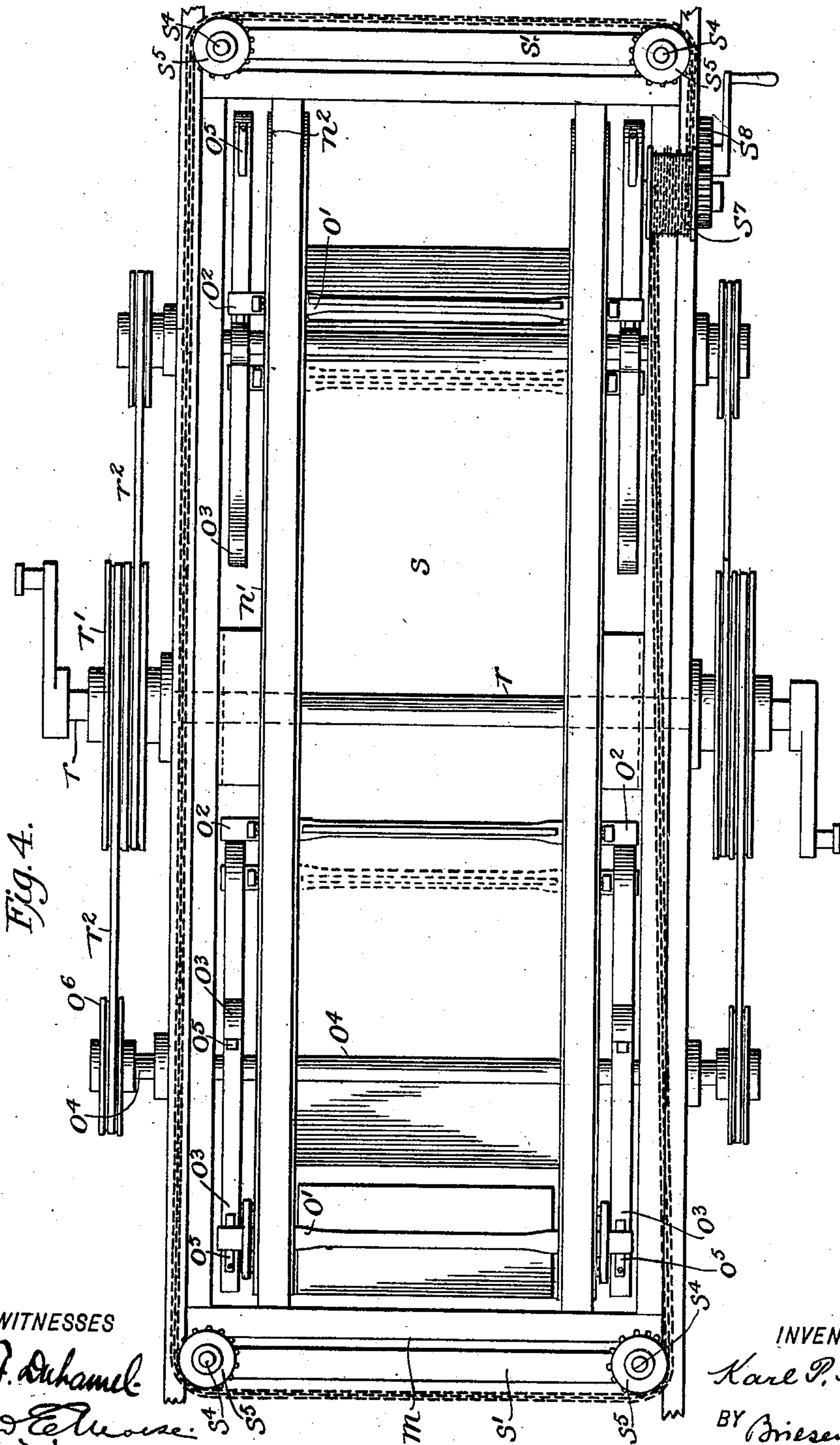
Patented July 3, 1900.

K. P. HANGL.
SHIP PROPELLING MECHANISM.

(Application filed Oct. 13, 1899.)

(No Model.)

4 Sheets—Sheet 3.



WITNESSES

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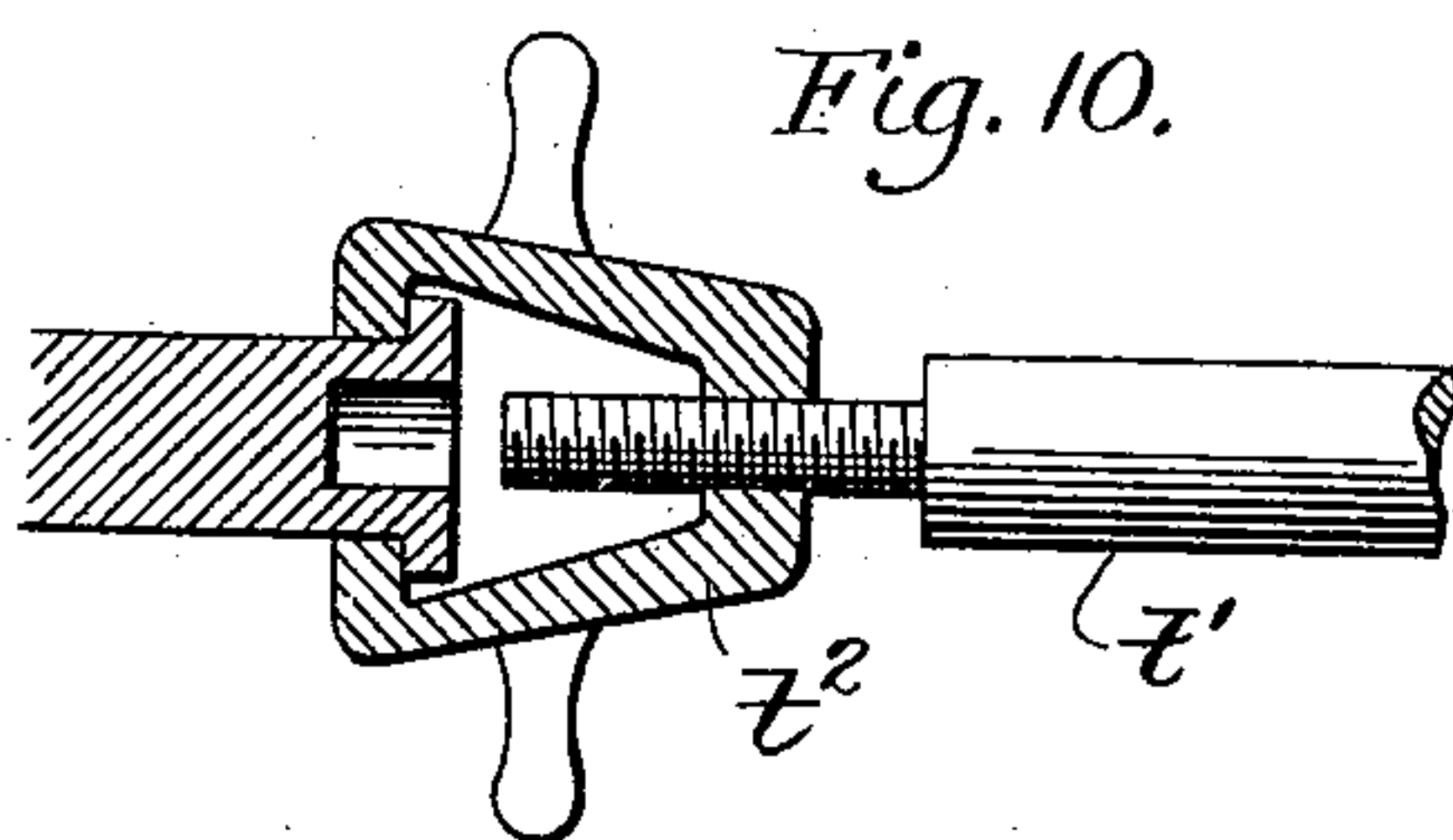
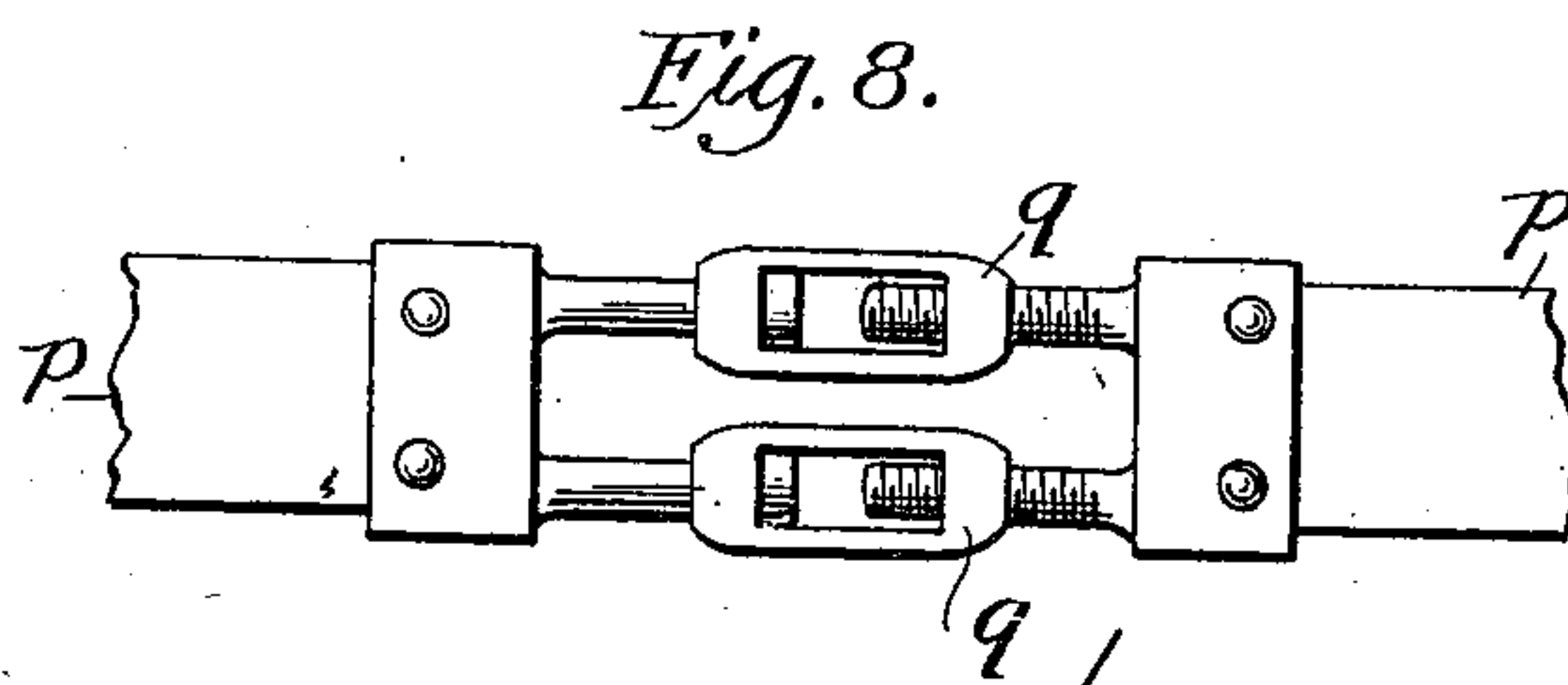
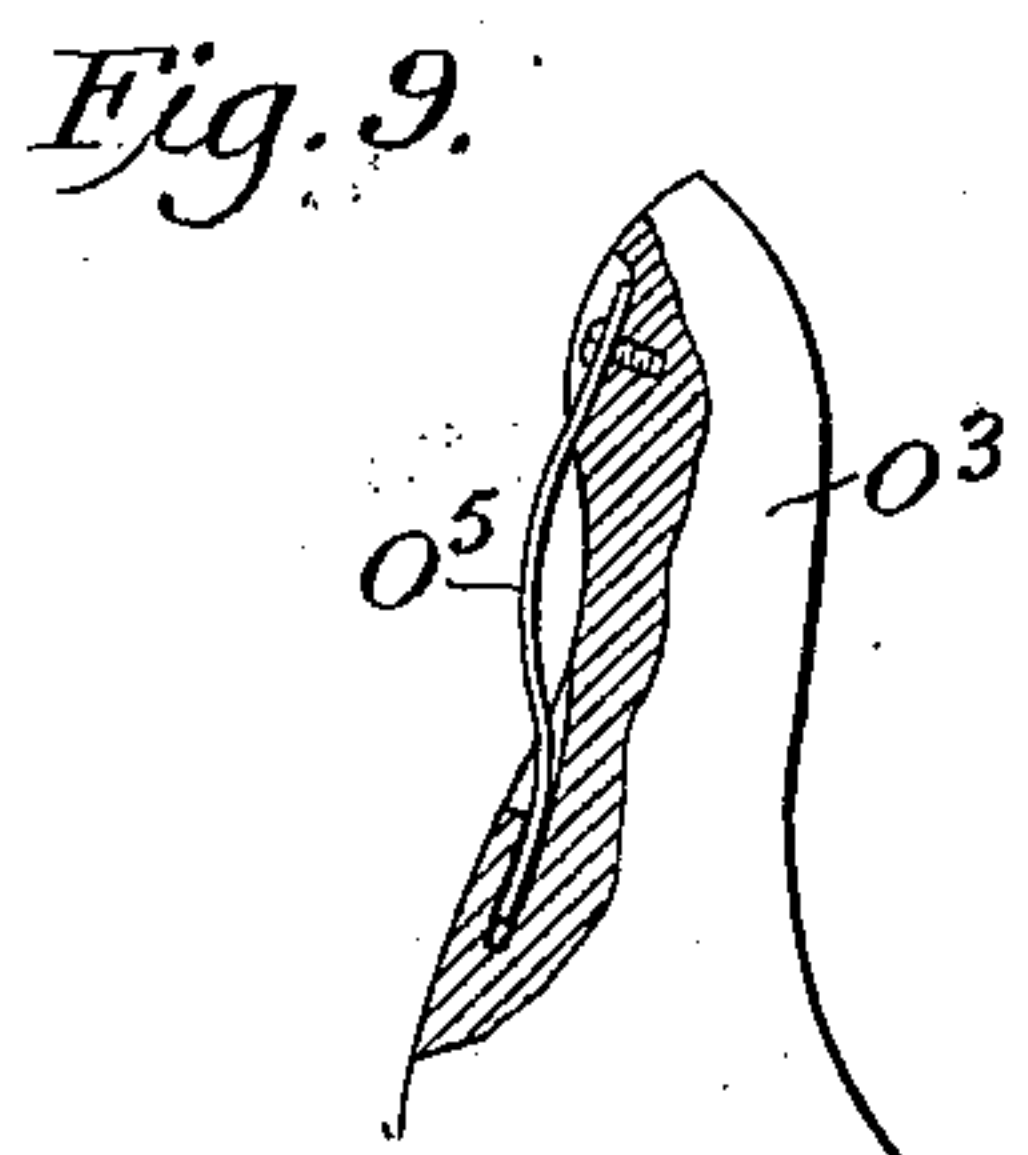
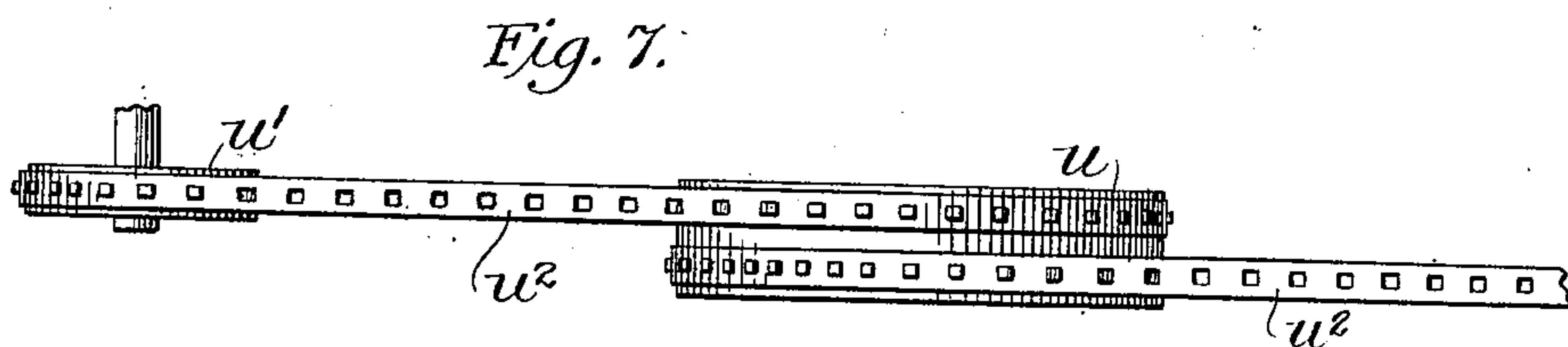
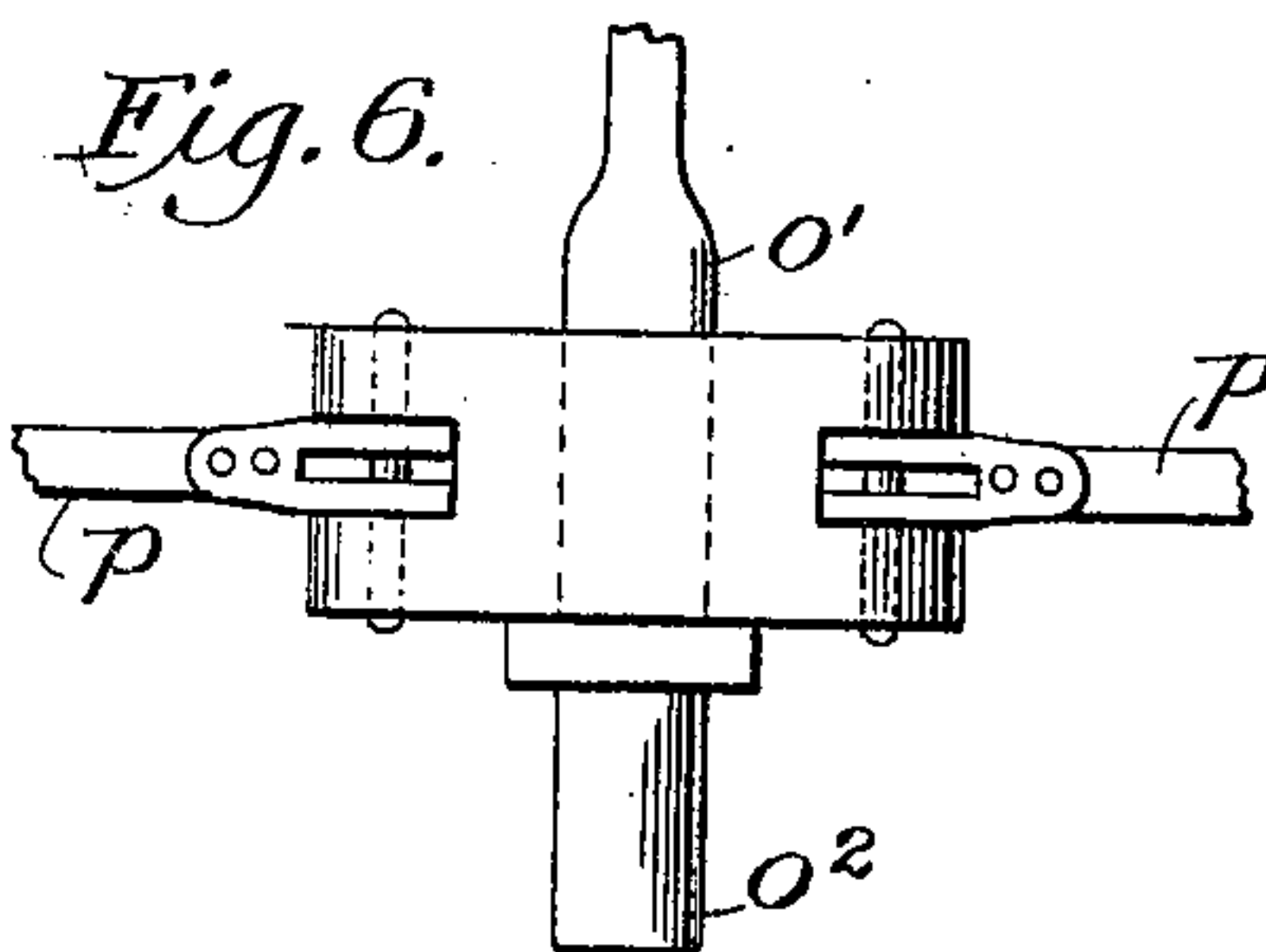
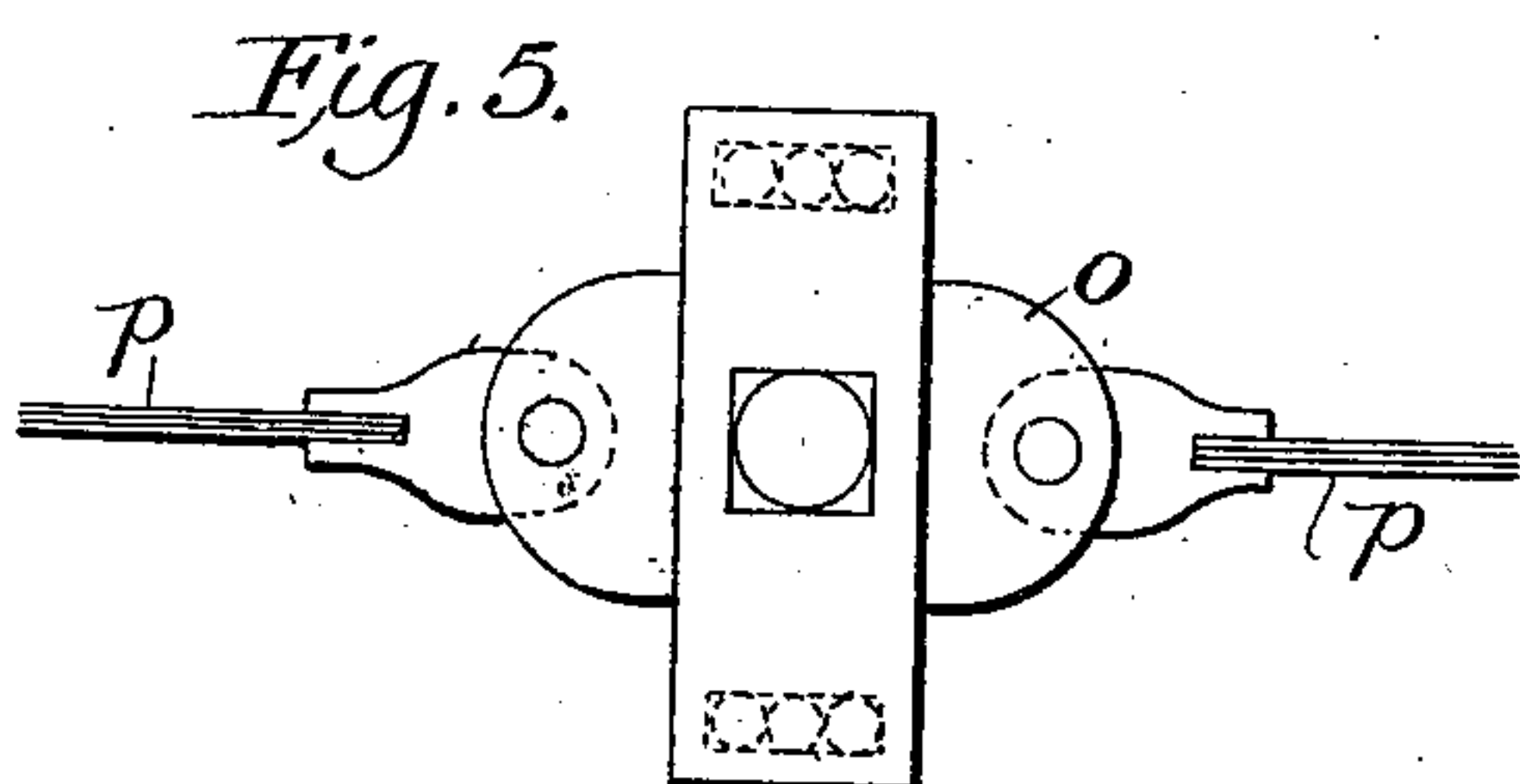
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UNITED STATES PATENT OFFICE.

KARL P. HANGL, OF NEW YORK, N. Y.

SHIP-PROPELLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 652,770, dated July 3, 1900.

Application filed October 13, 1899. Serial No. 733,482. (No model.)

To all whom it may concern:

Be it known that I, KARL P. HANGL, a citizen of the United States, residing at No. 4 Brown Place, borough of Bronx, city, county, and State of New York, have invented certain new and useful Improvements in Ships, of which the following is a specification.

My invention relates to "ships," by which word I mean to include and describe all kinds of boats of any sort whatsoever; and the invention consists in the combination, with a hull or floating body, of novel driving means for driving the same through the water.

I will explain my invention with the aid of the accompanying drawings, forming part hereof, which drawings are illustrative of a form of construction in which my invention is embodied, it being understood that I do not thereby limit myself to the construction shown.

In the drawings, Figure 1 is a plan view of the ship on the engine deck or hold. Fig. 2 is a sectional side elevation of the ship or boat. Fig. 3 is an enlarged detail view, partly broken away and partly in section, of the driving mechanism with means for raising and lowering the same. Fig. 4 is a plan view of the structure shown in Fig. 3. Figs. 5 and 6 are side and plan views, respectively, of the travelers for carrying the paddles, all of which will be hereinafter described. Fig. 7 is a plan view, partly broken away, of a modified means for transmitting motion from the main driving-shaft to the paddle-driving shaft. Fig. 8 is a detail view of the couplings for the paddle-propelling bands, which couplings are interposed between paddles for the purpose of altering the distance between adjacent paddles. Fig. 9 is a detail sectional view of the end of one of the paddle-band-propelling arms; and Fig. 10 is a sectional detail view of an adjusting device for adjusting the length of the engine-pitman.

In the drawings, A indicates the hull of a ship or boat provided with a prow *a* and a longitudinal channel *b*, running fore and aft and closed on both sides by parallel body portions *c d*, so as to form a structure in the nature of a catamaran. This structure is suitably decked over, as by means of the superstructure *e* and the decks *f g*. At the bow of the ship two openings *h* are provided at the sides

of the prow or prow *a*, through which openings the water passes to the longitudinal channel *b*, the prow *a* serving to push aside or glance off logs or other floating objects which might get into the longitudinal channel *b* and cause damage to the propelling mechanism. The forward deck *g* is inclined so as to press downward upon the water and to properly direct the same into the paddle-box.

The propelling mechanism of the ship will now be described.

The sides of the longitudinal passage *b* are connected by the bulkheads *i j*, extending from the superstructure downward to about the water-line of the ship. The center well thus constituted serves to contain the paddle-box. This paddle-box is shown in plan in Fig. 1 as consisting of the bulkheads *m* and the side walls or frames *k l*. This paddle-box is capable of being raised and lowered in the center well, as clearly shown on an enlarged scale in Figs. 3 and 4, the details of the mechanism being shown in Figs. 5 to 8, inclusive. Each of the side walls *k l* of the paddle-box carries a double series of "rollers" *n*, within which term I mean also to include balls. These rollers are arranged in two oval forms, so as to form between them a channel of a general oval shape having the straight or substantially-straight horizontal portions *n'* and the semicircular portions *n''* at the ends. Each straight portion *n' n'* is one and one-half times as long as the semicircular portion at each end. Running in the channel formed between the sets of rollers *n* are travelers *o*, suitably secured to "bands" *p*, within which term I mean also to include any suitable flexible connection, (see Figs. 3, 5, and 6,) in which bands *p* are suitable take-ups or adjusting devices *q*. (See Figs. 3 and 8.) The travelers *o* are provided with shafts or carriers *o'*, having projecting ends *o''*, which are adapted to be engaged by the arms *o'''*, of which four are carried on each operating-shaft *o''''*, carried in the bearings in the paddle-box. The arms *o'''* are provided with springs *o''''*, which bear against the projecting ends *o''* of the rods *o'*, two of the arms *o'''* of each set being provided with springs on their forward side and the other two of the arms of each set being provided with springs on their rear sides, so that

when the ship is being driven forward two of the arms o^3 of each set will operate upon the paddles and when backing the other two arms will thus operate. It will be observed that
 5 by the proportions maintained between the length of the straight parts of the channels in which the travelers move and the semicircular parts thereof at least three arms on each side of the paddle-box will be in contact with
 10 three of the projecting ends o^2 of the paddle rods or shafts. The paddle-operating shafts o^4 are driven from a main operating-shaft r , motion being transmitted from the shaft r to the shafts o^4 by means of belts r^2 , passing
 15 over pulleys r' on the main shaft r and pulleys o^6 on the paddle-driving countershafts o^4 . A suitable deck s is provided in the paddle-box and is secured to the sides thereof.

It will be obvious that owing to the fact
 20 that the ship will be more or less immersed with greater or less cargo and as it is desirable to immerse the paddles to a given extent at all times it will be necessary to provide some means whereby an immersion of
 25 said paddles can be properly regulated. I prefer to raise and lower the entire paddle-box for this purpose. To this end I have provided suitable threaded cross-beams s' and have provided the paddle-box at its four corners
 30 with suitable stationary brackets s^2 . Passing through these brackets are adjusting-screws s^4 , which pass through threaded openings in the cross-beams s' , by which the up-and-down adjustments may be effected. The
 35 screws s^4 carry sprocket-wheels s^5 , around which a chain s^6 passes, which chain is wound upon a drum s^7 , which is suitably driven by driving mechanism s^8 , which may be of any
 40 desired character, herein shown as windlass mechanism. I prefer to drive the main driving-shaft r by suitable engines t , which necessarily must be provided with adjusting means t^2 for their pitman-rods t' . The preferred form of adjusting means t^2 is shown in
 45 Fig. 10. In Fig. 7 I have shown a sprocket-gear $u u'$ and bands u^2 , which may be used in lieu of belts r^2 shown in the enlarged views.

Having described one form of apparatus in

which my invention is embodied, the same being the best form at present known to me, 50 I declare that what I claim, and desire to secure by Letters Patent, is—

1. In a ship, the combination of a hull or body having a longitudinal channel therein, paddle-carrying means located in the said 55 channel and means for raising and lowering the said paddle-carrying means and adjusting means for adjusting the parts of the driving mechanism to correspond with the said raising and lowering. 60

2. In a ship, the combination of a floating body provided with a longitudinal channel therein, propelling-paddles and their operating means located in the said channel and an inclined forward deck g acting upon the wa- 65 ter in the said channel, substantially as described and for the purposes set forth.

3. In a propelling mechanism for ships, the combination of roller-bearing channels, travelers traveling in the said channels and carrying paddles and bands provided with means for adjusting their length, the said bands connecting adjacent travelers. 70

4. In a propelling mechanism for ships, the combination of roller-bearing channels, travelers traveling therein and carrying paddles and arms for driving the said paddles by frictional contact with a part or parts connected to the said paddles, the said frictional contact being of a springy character, substan- 80 tially as described.

5. In a propelling mechanism for ships, the combination of the paddle-box and the traveling paddles connected by bands, and springy arms adapted to drive the said paddles. 85

6. In a ship, the combination of a floating body, a channel therein, paddle-carrying means located in said channel, and means for raising and lowering said paddle-carrying means, comprising in its structure adjusting- 90 screws and a chain and windlass for rotating said screws.

KARL P. HANGL.

Witnesses:

GEO. E. MORSE,

OTTO V. SCHRENK.