

No. 609,026.

Patented Aug. 16, 1898.

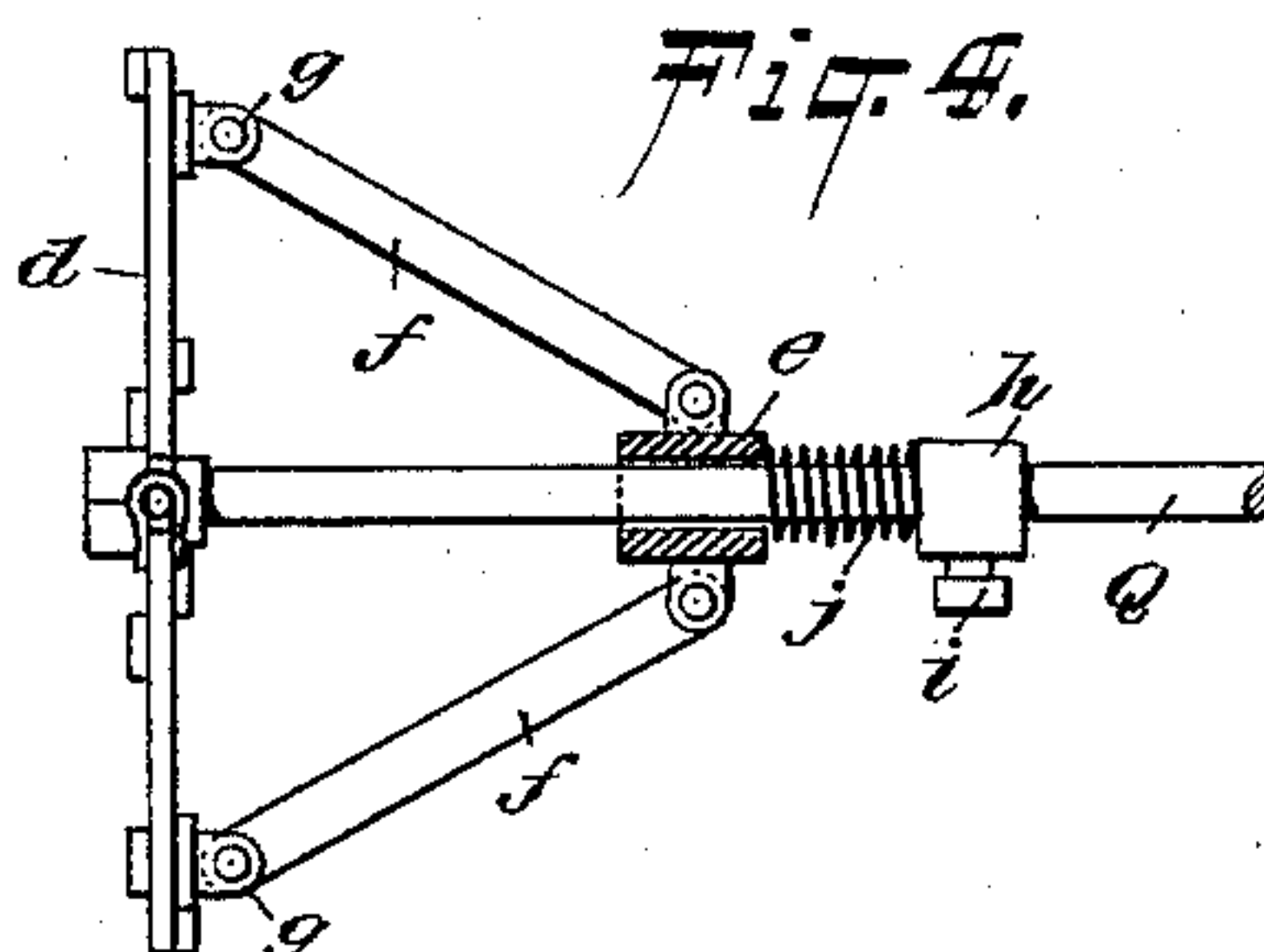
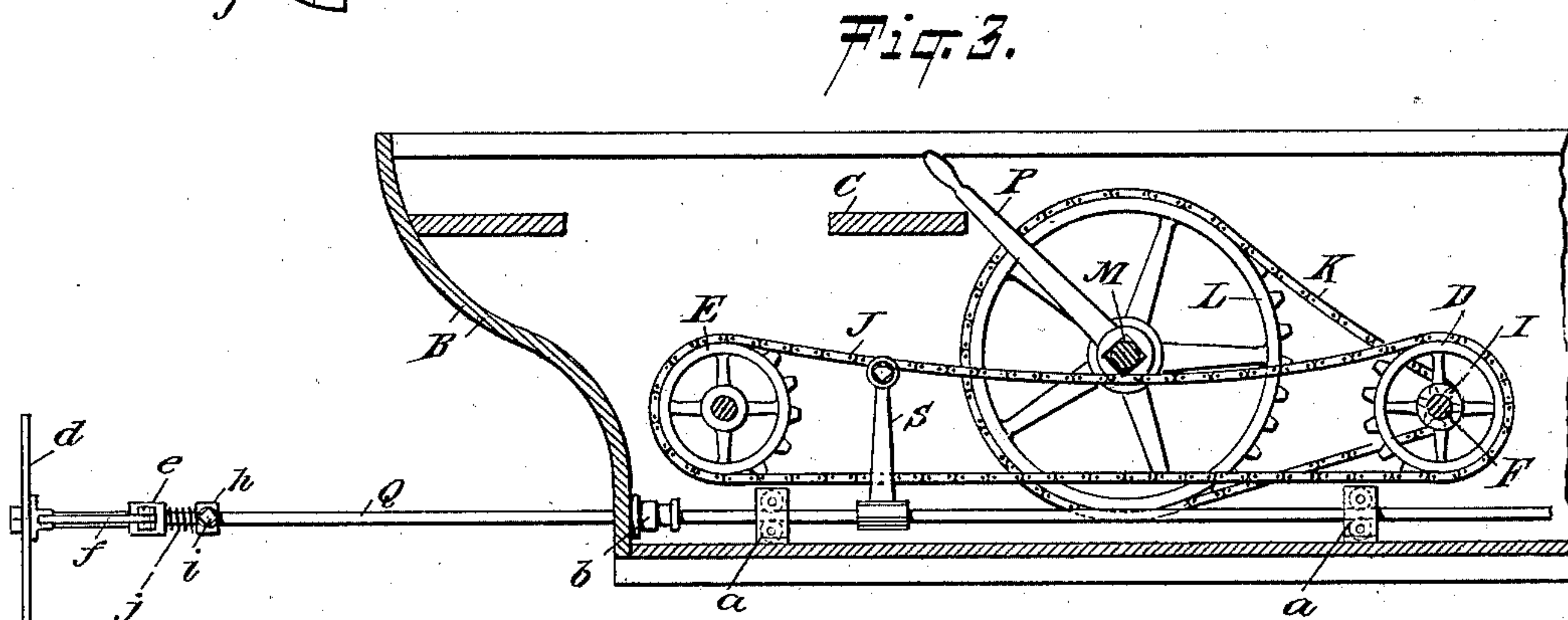
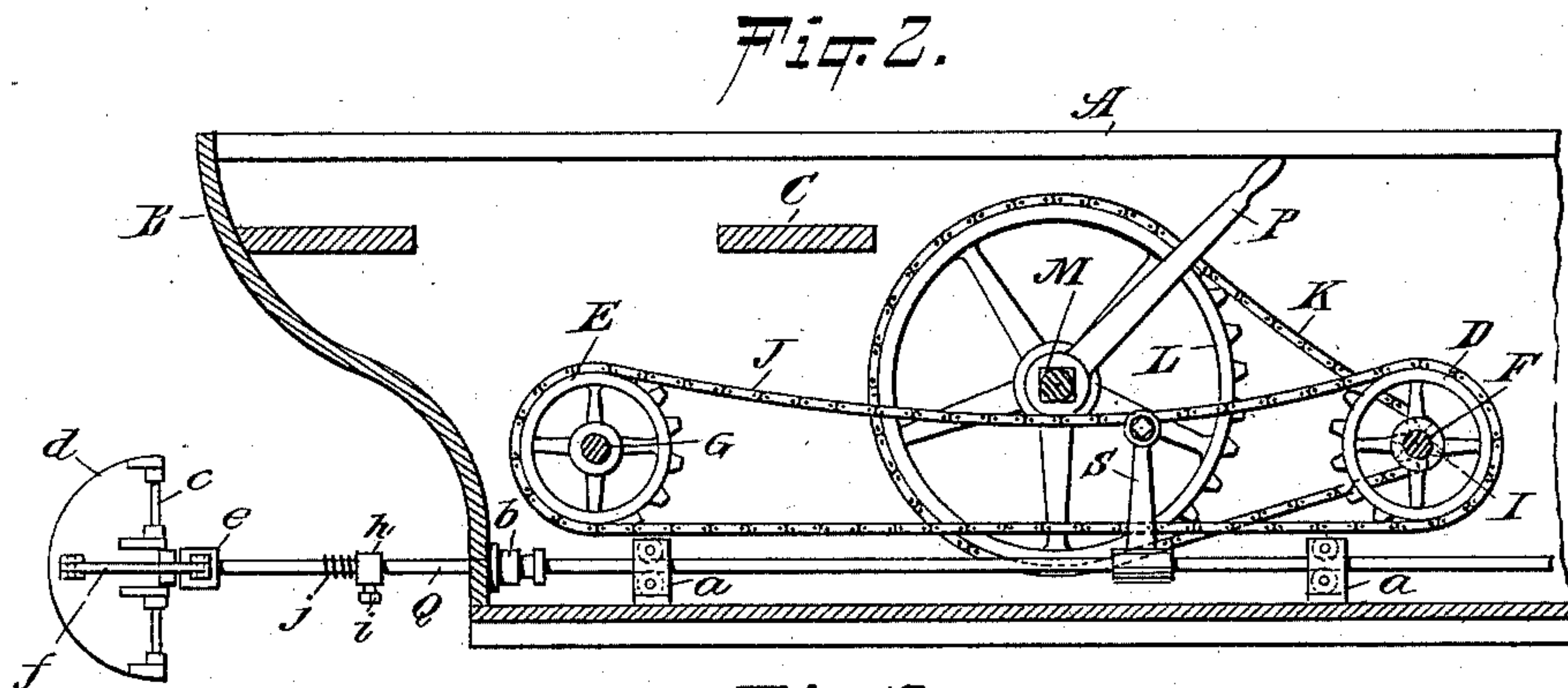
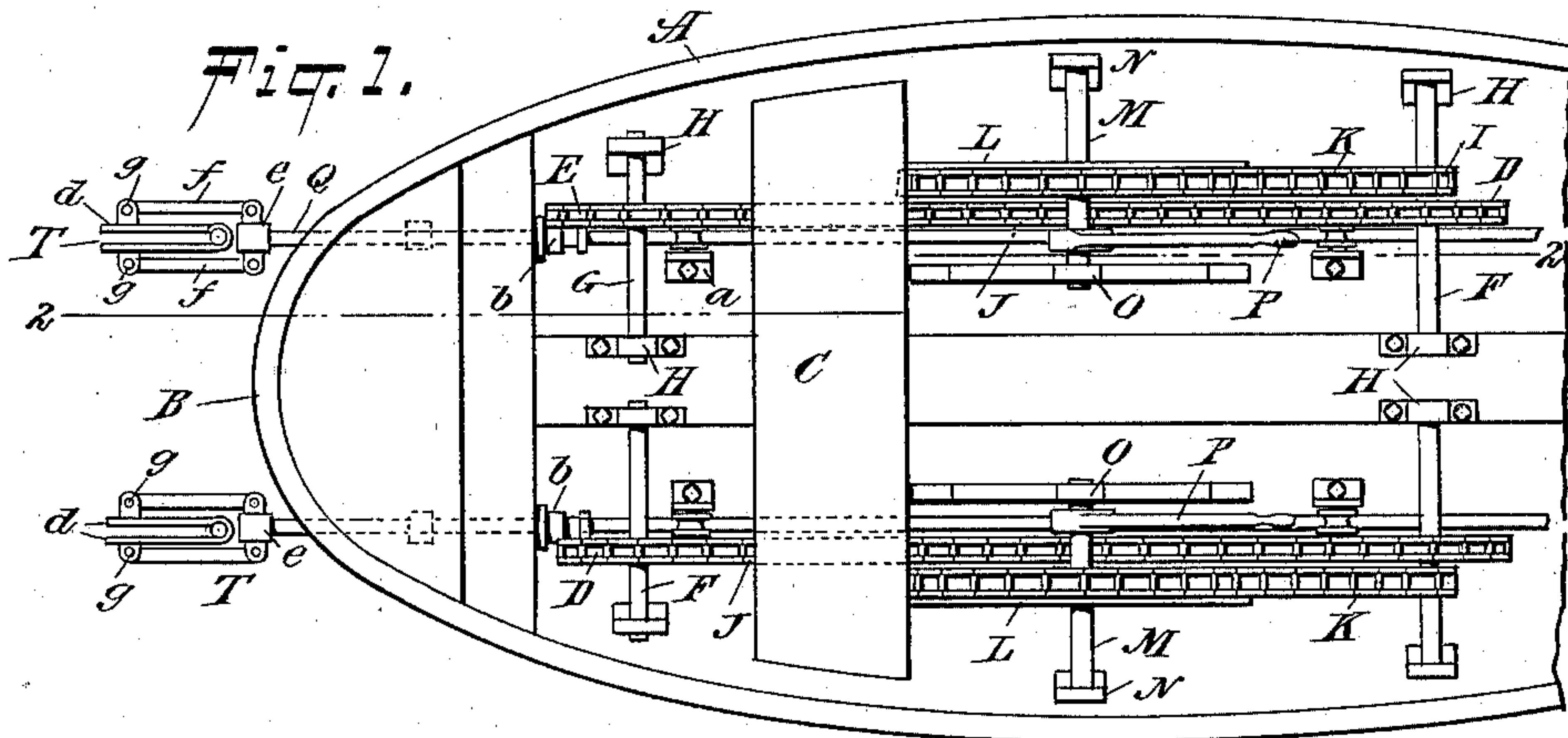
J. HEWSON.

PROPELLING MECHANISM FOR BOATS.

(Application filed June 26, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

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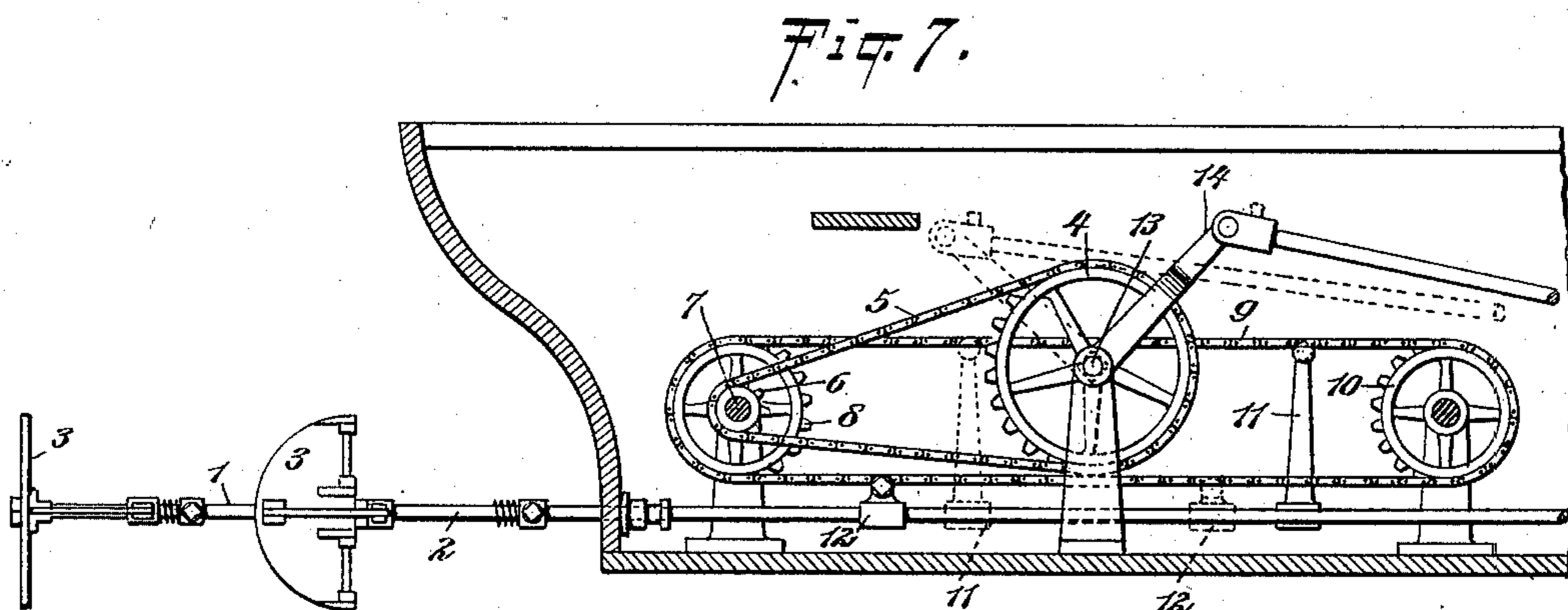
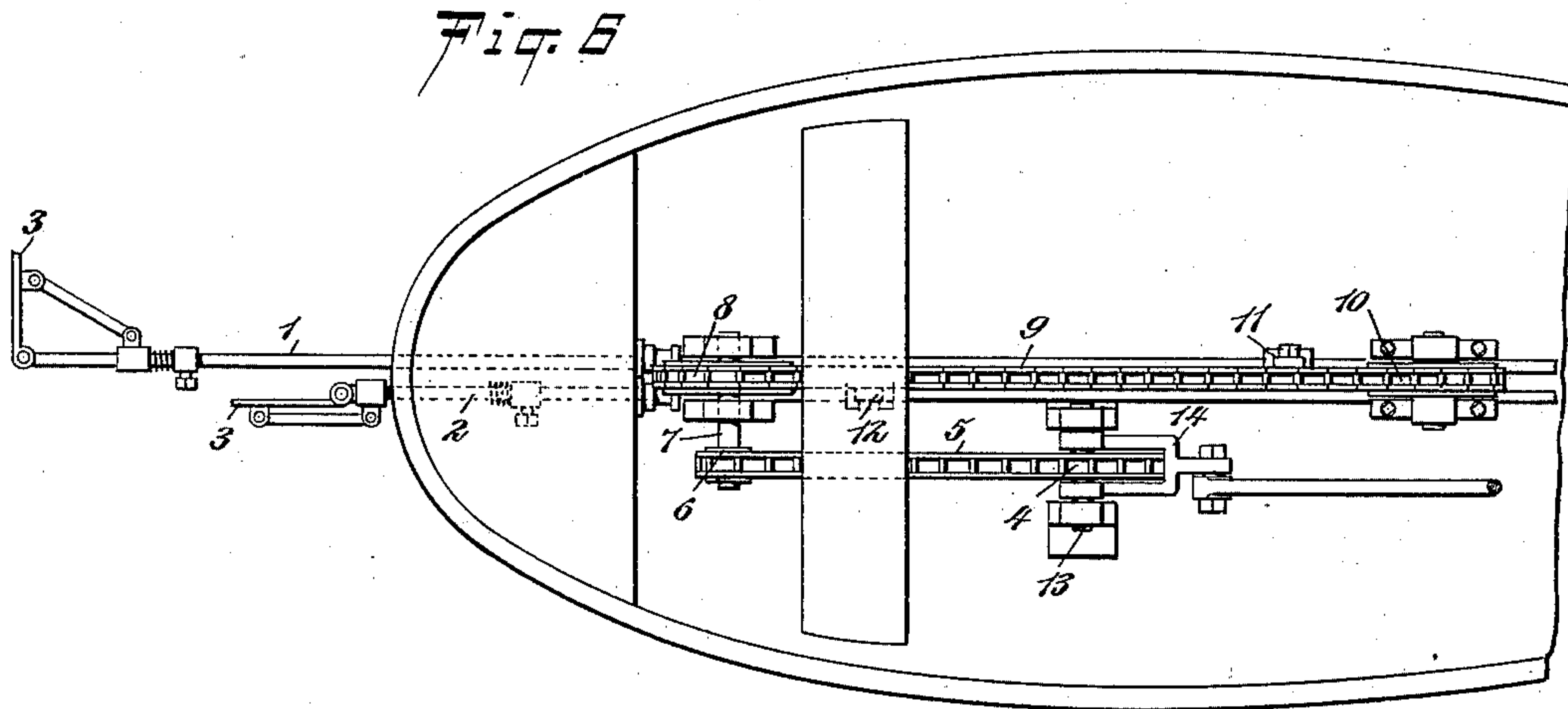
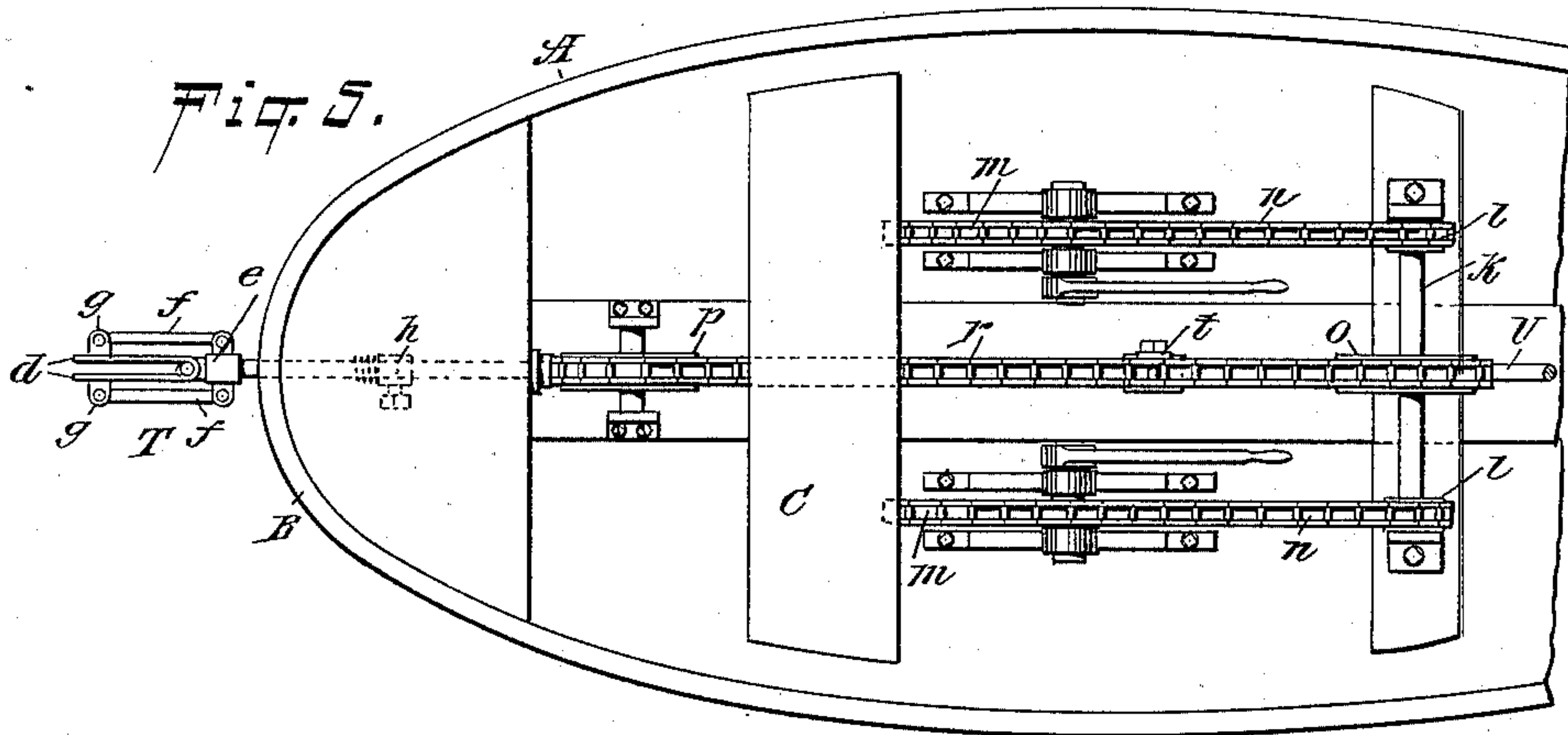
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UNITED STATES PATENT OFFICE.

JOHN HEWSON, OF WALDWICK, NEW JERSEY.

PROPELLING MECHANISM FOR BOATS.

SPECIFICATION forming part of Letters Patent No. 609,026, dated August 16, 1898.

Application filed June 26, 1897. Serial No. 642,366. (No model.)

To all whom it may concern:

Be it known that I, JOHN HEWSON, a citizen of the United States, and a resident of Waldwick, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Propelling Mechanisms for Boats, of which the following is a specification.

My invention relates to an improvement in propelling mechanisms for boats whereby a greater amount of power may be secured than is possible with screw-propellers now in general use.

A further object of my invention is to provide a propelling device which will act in a straight or direct line with the length of the boat and directly against the water, the propeller itself being so constructed that it will automatically open and close during the forward-and-backward movements thereof, so that when forcing the boat ahead it will be opened or expanded in order to present as much surface as possible to the water and during its backward movement be tightly folded or closed in order to present the least possible amount of surface and resistance to the water.

A further object of my invention is to provide a device of this kind which shall be adapted for use in connection with small boats to be operated by hand and also applicable to larger boats propelled by steam.

A further object of my invention is to provide a propelling mechanism which shall be simple in its construction and arrangement, light in weight, and cheap to manufacture.

With these and other ends in view my invention consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a boat containing my improved propelling mechanism. Fig. 2 is a sectional view thereof, taken on the line 2 2 of Fig. 1. Fig. 3 is a similar view showing the parts in a different adjustment. Fig. 4 is a detached view of the propeller in its open adjustment. Fig. 5 is a plan view of a modification. Fig. 6 is a plan view showing the construction and arrangement of the several parts when pro-

pelled by steam. Fig. 7 is a sectional view of the same.

Referring to the drawings, A represents the sides of a boat built in any desired manner, B the stern thereof, and C a seat located in some convenient place for the operator.

In the rear end of the boat are located sprocket-wheels D E, tightly secured to the shafts F G, respectively, the ends of said shafts being mounted in suitable bearings H, said shaft F also carrying a smaller sprocket-wheel I, located in close proximity to the sprocket-wheel D.

Around the sprocket-wheels D E passes an endless sprocket-chain J, and around the smaller sprocket I passes a sprocket-chain K, the latter also passing around a larger sprocket L, rigidly secured to or mounted upon the shaft M, one end of which rests in the bearing N, secured to the side of the boat, and the opposite end in a standard O, the lower end or bottom of which is secured to the bottom of the boat, said shaft M also having secured thereto a lever P.

From the foregoing it will be understood that when the lever P is moved backwardly and forwardly the larger sprocket-wheel L will be moved accordingly, the motion thereof being transmitted through the sprocket-chain K to the smaller sprocket I, mounted on the shaft F, which in turn transmits motion to the sprocket-wheel D and through the latter and chain J to the sprocket E, the chain J being caused thereby to move backwardly and forwardly in accordance with the backward-and-forward movement of the lever P.

In the bottom of the boat and to one side of the center thereof is located a shaft Q, adapted to travel longitudinally in suitable bearings a, secured to the bottom of the boat, said shaft passing out of the stern of the boat through a stuffing-box b, the outer end having secured thereto a propeller T, constructed as hereinafter described.

To the extreme outer end of the shaft Q is rigidly fastened the vertical rod c, to which are hinged the semicircular blades or plates d, adapted and arranged, as shown in Fig. 1, to fold closely together during the forward movement of the shaft Q, said plates and blades d being constructed of any desired

metal, but preferably of aluminium, in order to secure the greatest amount of strength with the least possible weight. On the shaft Q slides a collar *e*, to which is secured one end of the rods *f*, the opposite ends of the latter being pivotally secured to lugs or flanges *g*, formed on or secured to the blades or plates *d*, this construction and arrangement of parts causing said plates or blades to move simultaneously, the collar *e* sliding forward on the shaft Q when the blades or plates are opened or separated and rearwardly toward the outer end of the shaft when said plates or blades *d* are closed or folded together. Around the shaft Q is also fitted a collar or ring *h*, held in its proper position by means of a set-screw *i*, and against which fits a spring *j*, coiled or wound around the shaft and adapted to receive the thrust of the collar *e* and relieve the mechanism from the jolt caused by the sudden opening or separation of the blades *d*. To the upper strand of the chain J is tightly secured the upper end of the standard S, the lower end of the latter being keyed or otherwise secured to the shaft Q.

As will be seen by reference to Fig. 1 of the drawings, the mechanism above described is located on one side of the boat, and as the mechanism on the opposite side is constructed and arranged in the same way a further description of the latter will not be necessary. It will also be seen that as the chain J is caused to move backwardly and forwardly, as before described, the standard S will also be caused to travel in a corresponding direction and impart a reciprocating motion to the shaft Q. In other words, as the lever P is moved forwardly the standard S is caused to travel forwardly, which in turn causes a forward movement of the shaft Q and propeller T, the semicircular plates of which will be closed together by reason of drawing them through the water, as shown in Fig. 1. As the lever P is pulled backwardly, as shown in Fig. 3, the shaft Q is forced backwardly, causing the plates or blades *d* to immediately open or separate, and as the shaft Q continues to travel rearwardly the resistance of the water offered to the propeller will cause the boat to move forward. It will also be understood that by reason of the fact that the two levers, shafts, and propellers, with the remaining parts of the propelling mechanism, are entirely separate and independent of each other said levers P may be worked in unison—that is, may be moved forwardly or rearwardly at the same time in order to force the boat ahead, or may be moved in opposite directions to turn the boat, or, again, one may be held stationary while the other is operated, causing the boat to swing or turn more slowly, the operator in all of the above instances being enabled to face the bow of the boat during the propelling thereof by reason of the fact that the shaft Q is connected with and travels in the same direction as the upper part of the chain J.

As shown in Fig. 5, instead of using two shafts and propellers on opposite sides of the center of the boat one shaft and one propeller may be used, in which instance the shaft U will lie in the center of the boat, the propeller T being constructed as before described. When using but one propeller, a shaft *k* will be employed, extending across the center of the boat and carrying sprocket-wheels *l* near its outer ends and in line with the larger sprockets *m*, around which said sprockets *l m* pass the endless sprocket-chains *n*, said shaft *k* also carrying a central sprocket *o* in line with the sprocket *p*, located in the stern of the boat, and around which sprocket *p* and sprocket-wheel *o* passes the chain *r*, having the upper portion thereof connected with the shaft U by means of a standard *t*, similar to the standard S, hereinbefore referred to. When the mechanism is constructed and arranged as above described, the levers will be operated in unison, the power applied thereto being transmitted through the chains *n* and sprockets *l* to the chain *r* and through the latter to the shaft U.

When the boat is designed to be propelled by steam, I prefer to use two shafts 1 2, as shown in Fig. 6, located in close proximity to each other, carrying a semicircular plate 3, as a propeller, attached to the end of the shaft and constructed as hereinbefore described. Instead of using two large sprockets and two chains, as hereinbefore described, one large sprocket 4 may be used, as shown in Fig. 7, a sprocket-chain 5 being passed around the same and around the small sprocket 6, secured to the shaft 7, on which latter is also mounted a sprocket 8. Around the sprocket 8 passes a sprocket-chain 9, which also passes around a sprocket 10, the upper portion of the chain 9 being secured to the shaft 1 by means of a standard 11 and the lower portion of the chain 9 being secured to the shaft 2 by the standard 12. To the shaft 13, upon which the larger sprocket 4 is mounted, is also secured a crank 14, with which the engine may be connected in any suitable way. When power is applied thereto, the crank 14 will be caused to move backwardly and forwardly, as shown in dotted lines in Fig. 7, the power being transmitted therefrom through the chain 5 and sprocket 8 and chain 9, which in turn imparts a reciprocating motion to each of the shafts 1 and 2, one shaft traveling forwardly while the other travels rearwardly, the propellers 3, hinged to the end of the shafts, operating and working in a manner as hereinbefore described, causing the boat to move forwardly, and as said propellers work close to the longitudinal center of the boat the latter will be caused to travel in a straight line, either one or the other of said propellers being forced outwardly at each backward-and-forward movement of the crank 14. By reason of the fact that the propellers move or work in the direction of the length of the boat this construction and arrangement of mechanism are particularly ap-

plicable to canal-boats operated by power, as any wash or movement of the water is in a line away from the stern of the boat and not toward sides, as in the case of a screw-propeller, the great objection to the use of which is that the sides of the canal are damaged by reason of the force with which the water is driven against them.

It will be apparent to any one skilled in the art that numerous changes might be made in the detail construction and arrangement of the several parts and particularly the location of the bearings, shafts, &c. Again, instead of having the shafts project in a straight line from the stern of the boat they may be bent slightly upwardly or downwardly, according to the depth of the water in which the boat is to be used. I would therefore have it understood that I do not limit my invention to the exact construction and arrangement as shown and described, but include such changes as fairly fall within the spirit and scope thereof.

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

1. In a propelling mechanism for boats the combination with a reciprocating shaft, of a folding propeller secured to the outer end thereof, sprocket - wheels arranged as described, an endless chain passing around said wheels and connected to said reciprocating shaft, a larger sprocket-wheel having a lever secured to the shaft thereof, a smaller sprocket-wheel mounted on the shaft of one of said first-mentioned wheels, and an endless chain passing around the said larger and smaller sprocket-wheels, substantially as described.

2. In a propelling mechanism for boats, the combination with a pair of sprocket-wheels, of an endless chain passing around the same, reciprocating shafts, provided on their ends with folding propellers, one of which is connected with the lower portion of said chain, and the other with the upper portion of said chain, a second pair of sprockets, one of which is mounted on the shaft of one of the first-mentioned sprockets, an endless chain passing around said second pair of sprockets, and a lever secured to the shaft of one of said last-mentioned sprockets, substantially as described.

3. In a propelling mechanism for boats, the combination with a pair of sprocket-wheels, of an endless chain passing around the same, a second pair of sprockets, one of which is larger than the other and having a lever secured to its shaft, the smaller of said sprockets being mounted upon the shaft of one of the first-mentioned sprockets, an endless chain passing around said larger and smaller sprockets, a reciprocating shaft connected with the upper portion of the first-mentioned chain, and a folding propeller secured to the outer end of said shaft, and consisting of semicircular blades hinged to a rod secured to the shaft, and having rods pivoted to said blades and to a collar sliding on said shaft, substantially as described.

Signed at New York, in the county of New York and State of New York, this 24th day of June, A. D. 1897.

JOHN HEWSON.

Witnesses:

F. S. KENNEDY,
M. VAN NORTWICK.