(No Model.)

# C. BERNHARD.

## MECHANICAL MOVEMENT.

No. 303,797. Patented Aug. 19, 1884.

Fig. 1.

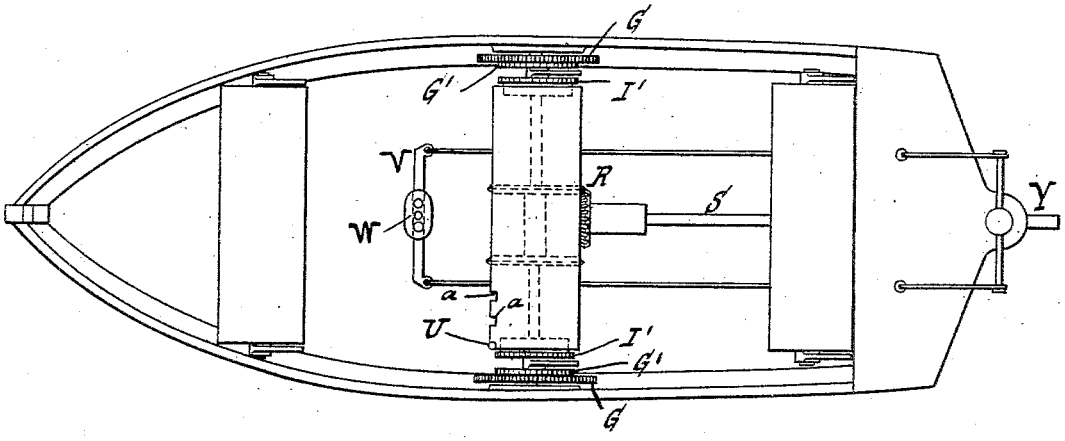



Fig. 2.

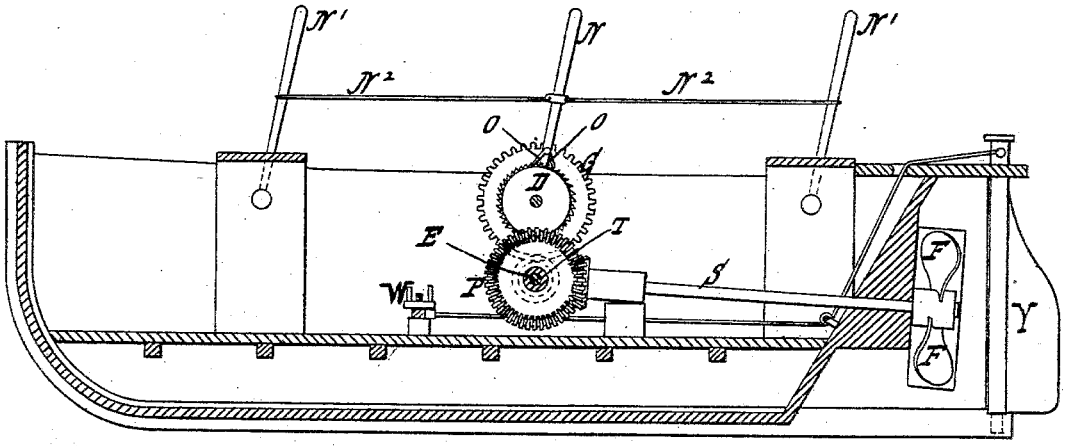



Fig. 4.

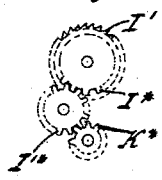
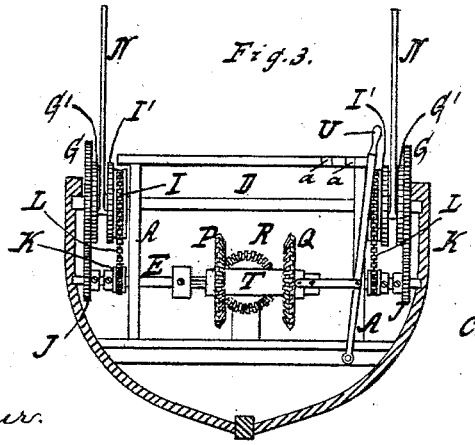



Fig. 3.




WITNESSES:

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# UNITED STATES PATENT OFFICE.

CHARLES BERNHARD, OF NEW YORK, N. Y.

## MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 303,797, dated August 19, 1884.

Application filed July 3, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES BERNHARD, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Mechanical Movements, of which the following is a specification.

This invention relates to means for converting oscillating or reciprocating motion into rotary motion; and it consists in the novel features of construction hereinafter described, whereby the desired purpose is accomplished.

In the drawings, Figure 1 shows a plan view of my movement. Fig. 2 is a sectional side view thereof. Fig. 3 is a front view thereof. Fig. 4 is a modification.

Similar letters indicate corresponding parts.

The movement is shown in the drawings as applied to a boat or vessel for operating the propelling device; but of course my movement is applicable to other purposes.

The letters A designate standards, in which are mounted a driving-shaft, D, adapted to support the driving mechanism, and a main shaft, E.

On the driving shaft D are mounted cog-wheels G and chain-wheels I, and on the main shaft E are mounted cog-wheels J, gearing with the cog-wheels G, and chain-wheels K, connecting with the chain-wheels I by means of chains L. The cog-wheels J and chain-wheels K on the main shaft are fixed, and the chain-wheels I are loose.

The device as thus far described bears a resemblance to the device described by me in my United States Letters Patent No. 298,160, dated May 6, 1884. In the specification of said patent, however, the cog-wheels G are described as being fixed on the driving-shaft, which is an inconvenience in case any of such cog-wheels G are broken or out of order, as then it may become necessary that the entire driving-shaft be taken out. In the device set forth in this application the cog-wheels G are loose upon the driving-shaft D, and any cog-wheel G which is deranged or inoperative can readily be removed and repaired or replaced by another.

To the cog-wheels G are secured ratchet-wheels G', while to the chain-wheels I are secured ratchet-wheels I'. The ratchets of the wheels G' face in opposite directions from the ratchets of the wheels I'.

On the driving-shaft D are mounted levers N, which, in the example in the drawings, are hand-levers. On said levers are pawls O O, in the proper position to engage, respectively, the ratchet-wheels, so that if an oscillating or reciprocating motion is imparted to these levers N a rotary motion is imparted to the cog-wheels G, and also to the chain-wheels I; but the motion of the chain-wheels I is in a direction opposite to that of the cog-wheels G. The motion of the cog-wheels G and chain-wheels I is imparted to the main shaft E; but as the cog-wheels G impart a rotary motion to the main shaft E in a direction opposite to that of the cog-wheels G, while the chain-wheels I impart a rotary motion to the main shaft E in the same direction as that of the chain-wheels I, the actuations of the levers N will cause the main shaft E to continuously turn in the same direction.

On the main shaft E is feathered a sleeve, T, which turns with the main shaft, but is capable of longitudinal motion thereon. On said sleeve T are mounted bevel-wheels P and Q, and by causing the bevel-wheel P to gear with the bevel-wheel R, mounted on the actuating-shaft S, said actuating-shaft S will be caused to turn in one direction, and by causing the bevel-wheel Q to gear with the bevel-wheel R the shaft S will be caused to turn in the opposite direction. By throwing both the bevel-wheels P and Q out of gear the actuating-shaft S will not be operated through the main shaft E. The actuating-shaft S may be used to actuate any desired device—as, for example, a propeller, F. The levers N may be connected by rods or pitmen $N^2$ to supplemental levers N', so as to increase the facilities for applying power. A lever, U, may serve to throw the bevel-wheels P and Q into or out of gear, and said lever U may be held in any desired position by the detent-recesses *a a*.

The usefulness of my device—for example, as a propeller—is illustrated by the fact that it enables the person operating to face in the direction the boat is moving, allowing the feet to operate the lever V, operating the rudder Y.

A screw-washer, W, can be screwed down onto the lever V and hold it in any desired position.

Of course my device may be modified in construction without departing from my invention—as, for example, the driving-shaft D, instead of running across the entire apparatus, may be formed in two parts or sections, independent of one another, and each section of sufficient length to support a lever, N, and wheels G and I, and instead of the chain L and chain-wheels I K three cog-wheels, I* K* I'*, may be used, the wheel I* being fast to the ratchet-wheel I', the wheel K* being firmly mounted on the main shaft E, and the wheel I'* being intermediate between the two, so that when the ratchet-wheel I' is turned the shaft E will turn in the same direction, as shown in Fig. 4. It is also to be noticed that one lever, N, will serve to actuate the main shaft E; but I prefer two or more levers as furnishing ready means for applying any desired amount of power.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, substantially as hereinbefore described, with the driving-shaft and the main shaft, of two ratchet-wheels, both loosely mounted on the driving-shaft, the oscillating lever mounted on the driving-shaft intermediate between the ratchet-wheels, the pawls secured to this lever and adapted to engage the ratchet-wheels, the cog-wheels G J, for transmitting motion from one of the ratchet-wheels to the main shaft, and the chains and chain-wheels or equivalent devices for transmitting motion from the other ratchet-wheel to the main shaft.

2. The combination, substantially as hereinbefore described, with the driving-shaft and the main shaft, of two loosely-mounted ratchet-wheels near each end of the driving-shaft, oscillating levers mounted on the driving-shaft intermediate between each two ratchet-wheels, cog-wheels G J, for transmitting motion from one ratchet-wheel near each end of the driving-shaft to the main shaft, and the chains and chain-wheels or equivalent devices for transmitting motion from the other ratchet-wheel near each end of the driving-shaft to the main shaft.

3. The combination, substantially as hereinbefore described, with the driving-shaft and the main shaft, of cog-wheels G J, gearing with one another, chain-wheels I K, or equivalent devices, ratchet-wheels G' I', lever N, engaging with said ratchet-wheels, and gear-wheels P Q, adapted to engage alternately with an actuating-pinion, R.

4. The combination, substantially as hereinbefore described, with the driving-shaft and the main shaft, of cog-wheels G J, gearing with one another, chain-wheels I K, or equivalent devices, ratchet-wheels G' I', lever N, engaging with said ratchet-wheels, and gear-wheels P Q, provided with means for throwing said wheels P and Q into and out of gear with an actuating pinion or wheel, R.

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

CHARLES BERNHARD. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.