(No Model.) 2 Sheets—Sheet 1.

E. LOTZE.

CURRENT PROPELLER FOR VESSELS.

No. 401,446. Patented Apr. 16, 1889.

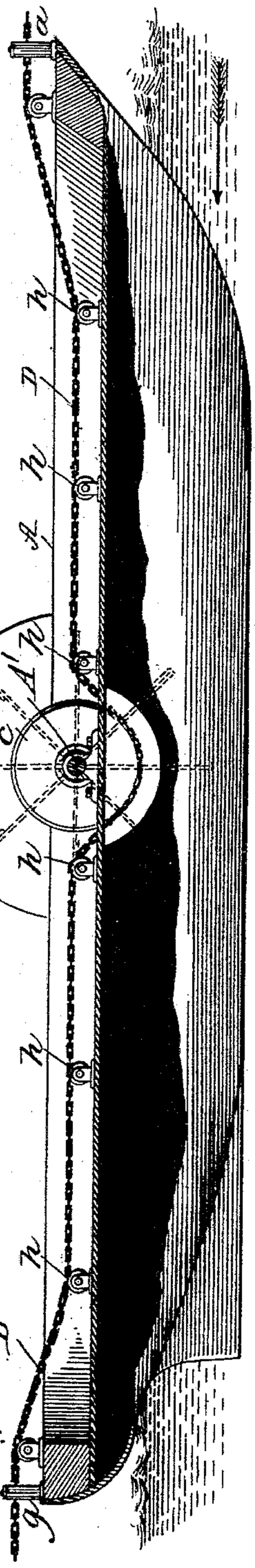

Fig. 1.

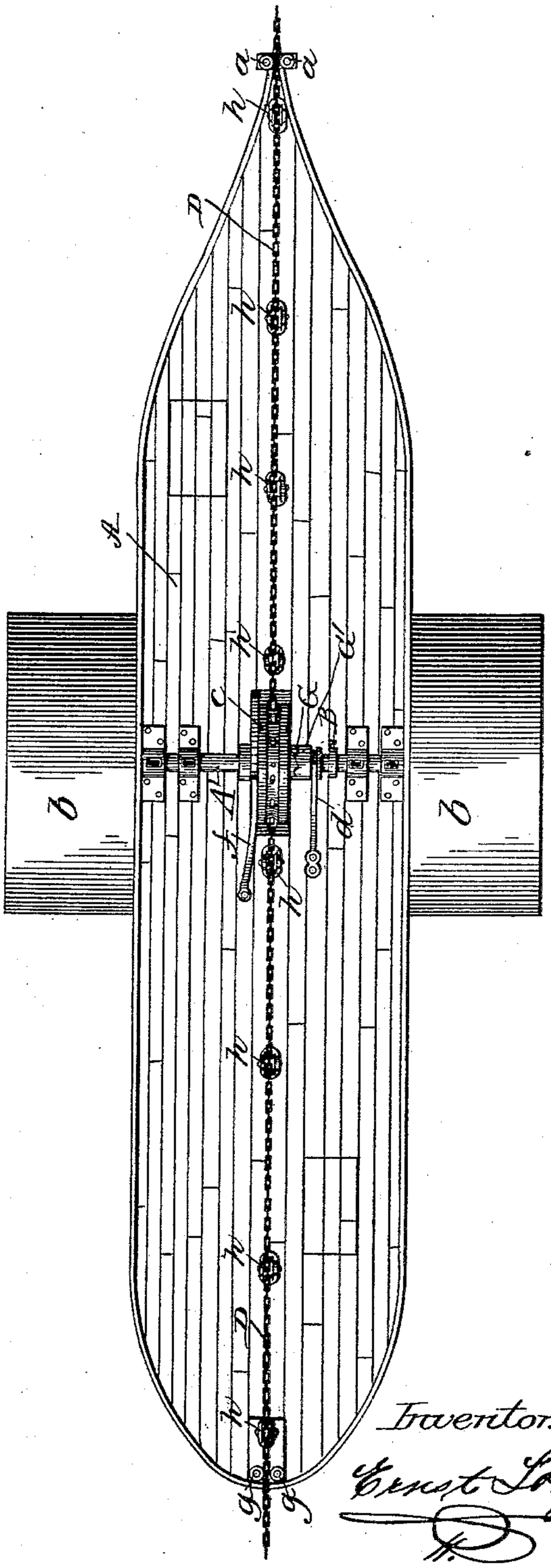

Fig. 2.

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Ernst Lotze

(No Model.) 2 Sheets—Sheet 2.

E. LOTZE.

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No. 401,446. Patented Apr. 16, 1889.

Fig. 3.

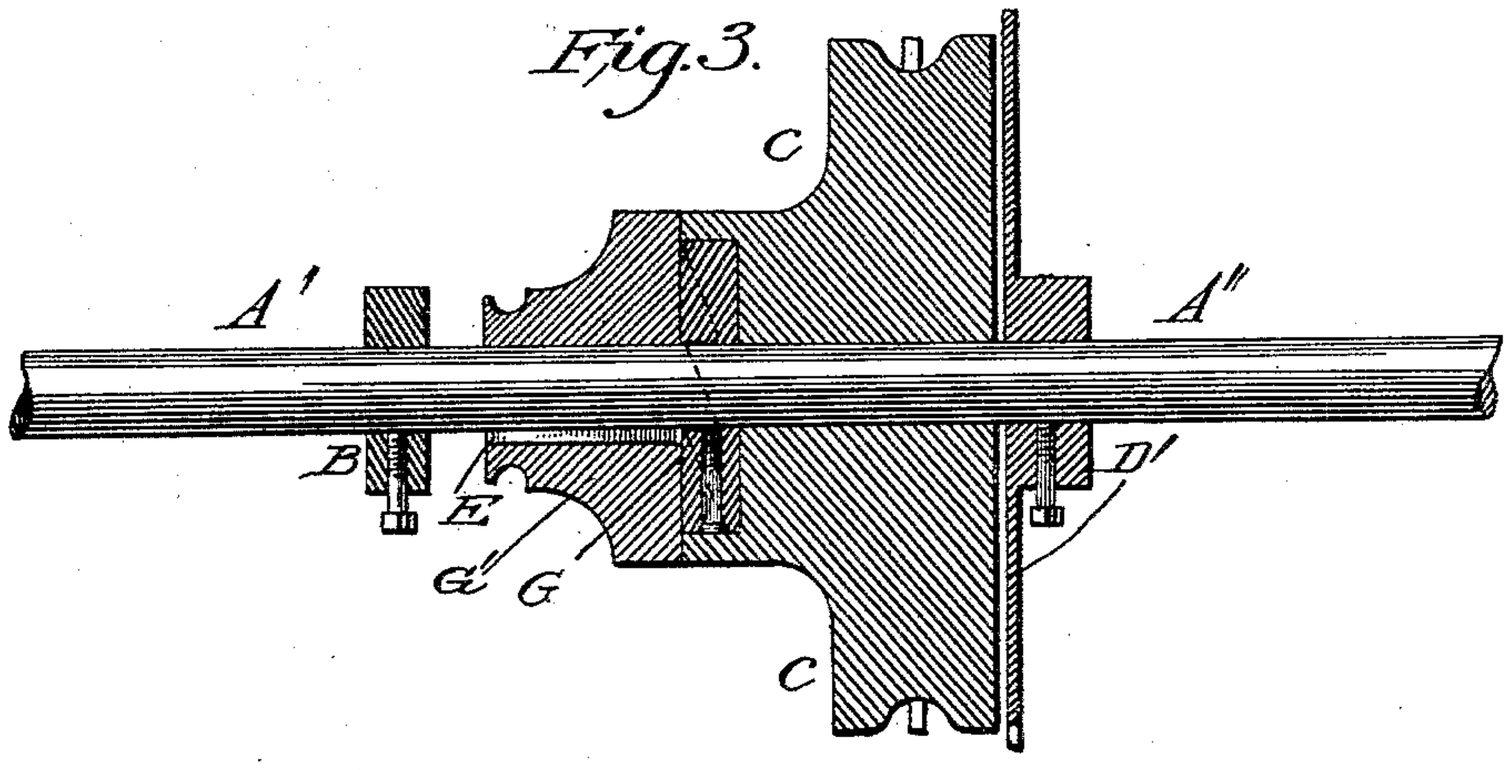
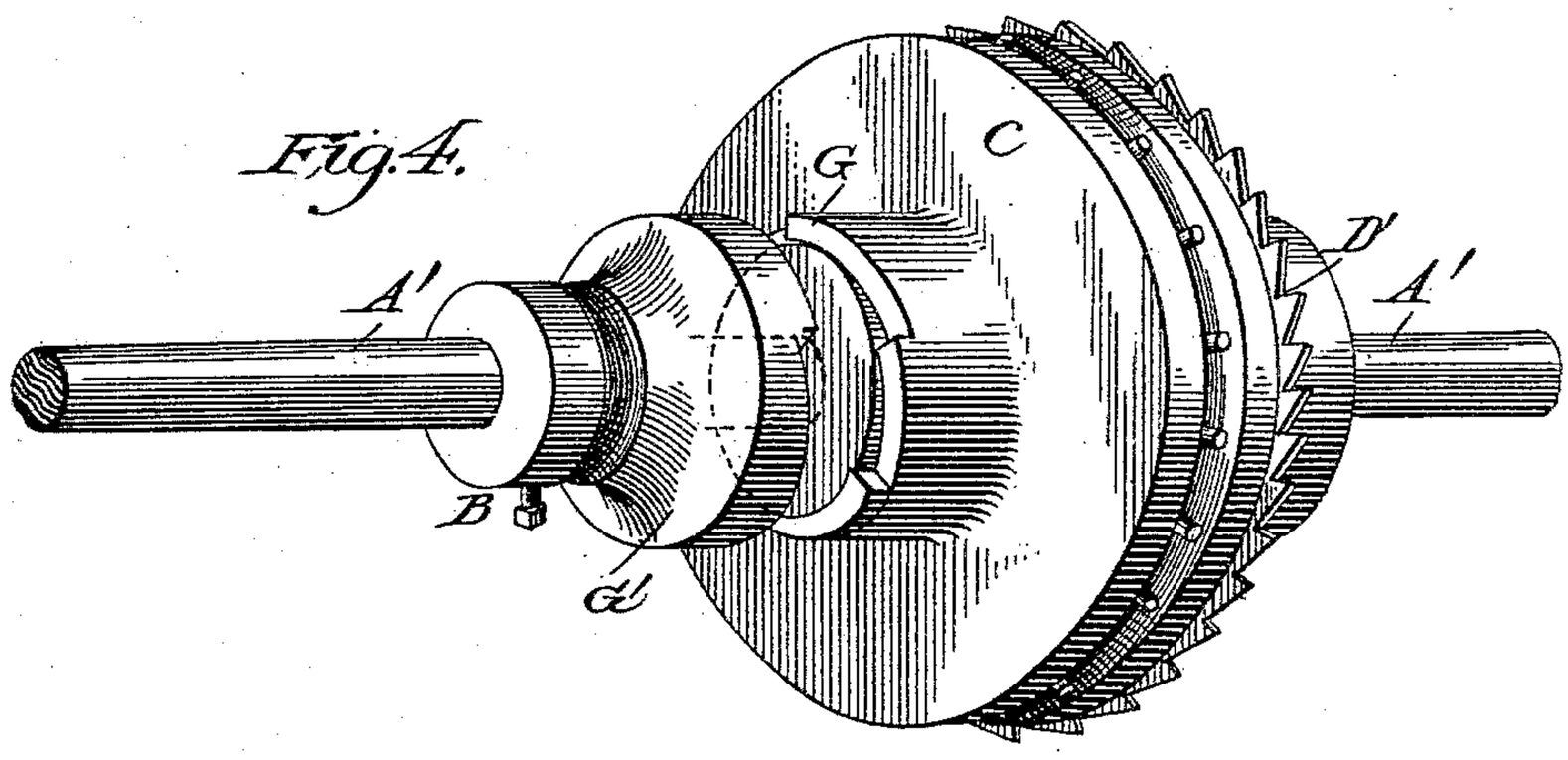


Fig. 4.



Witnesses.
M. L. Marx,
J. W. Harris,

Inventor.
Ernst Lotze

UNITED STATES PATENT OFFICE.

ERNST LOTZE, OF SPOKANE FALLS, WASHINGTON TERRITORY.

CURRENT-PROPELLER FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 401,446, dated April 16, 1889.

Application filed July 24, 1888. Serial No. 280,935. (No model.)

To all whom it may concern:

Be it known that I, ERNST LOTZE, who have on August 25, 1884, declared my intention to become a citizen of the United States, residing at Spokane Falls, in Spokane county, Washington Territory, have invented an Automatic Cable Propeller, for which invention I have filed a caveat on August 18, 1887, and of which invention the following is a specification.

My invention is an improvement in means for propelling river-vessels, and has for an object to provide a simple convenient construction by which the force of the current of the river may be utilized as the motive power to propel the vessel against and in the reverse direction of said current, as will more fully appear hereinafter.

The invention consists in the novel construction and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a side view, part in section, of a vessel in connection with my improvements. Fig. 2 is a top plan view thereof; and Figs. 3 and 4 are detail views showing the main wheel and the clutch mechanism, as will be described.

The vessel or boat A, the hull or body of which may be of any suitable form, size, and construction, has the shaft A′ suitably journaled to it, such shaft bearing at its ends the undershot side wheels, *b*, which also may be of any suitable form adapted to be acted on by the descending current to cause such current to revolve said wheels and the shaft to which it is attached. It will be understood that the wheels *b* are properly referred to as "undershot" wheels, because the water, by contact with them, serves to give them motion, and so revolve the drive-shaft. On the shaft A′—preferably at about its center, as shown—is arranged the main wheel C, which is adapted to engage and move up or climb the chain D as the said wheel is revolved. This wheel C may be fixed on the shaft A′ without departing from some of the broad features of my invention; but by preference I sleeve the wheel C loosely on shaft A′ and arrange the clutch-block G′, keyed at E on shaft A′, to be moved at G into engagement with the main wheel to key or fix the wheel C on shaft A′ when desired. This clutch-block is operated by a lever, *d*, and moves between the wheels C at G and a stop, B, secured on the shaft. On the shaft A′, I secure a disk, D′, having ratchet-teeth engaged by the pawl *f*, such construction operating as a brake to prevent the vessel from floating downstream when taken out of gear—that is, when it is intended to stop it from climbing up the chain.

On the boat A, at its bow, I arrange vertical guide-rolls *a a*, between which the chain D passes, and similar rolls, *g g*, are arranged at the stern of the boat, suitable horizontal rolls, *h*, being provided on the boat to direct the chain thereover and into proper contact with the wheel C, below which it passes, as shown most clearly in Fig. 1.

The rolls *h h* on opposite sides of and adjacent to the wheel C are so arranged with relation to said wheel C that the chain D passes down from such rolls *h* under the wheel D and is held by such arrangement firmly in contact with the wheel C, so that a positive certain operation is insured when the wheel C is turned.

The chain D lies on the bottom of the river, extending the full length thereof desired to be navigated, such chain being firmly anchored at the upper end of the river. To the lower end of the main chain I usually secure one end of a smaller chain, which has a barrel or other suitable buoy at its opposite end, so the lower end of the chain may be conveniently raised and placed over the boat under wheel C, as clearly shown in Figs. 1 and 2.

The wheel C being clutched to the shaft, it will be seen that the current will turn the undershot side wheels, effecting a turning of the main wheel, and the teeth thereof, making into the chain, will climb up such chain, pulling the boat up the stream.

The separated vertical guide-rollers *a a* and *g g* secure the boat in proper alignment with the chain.

Having thus described my invention, what I claim as new is—

1. The boat, substantially as described, provided with a main wheel and with guide-rolls by which to direct the chain into contact with said wheel, the upper surface of the rolls adjacent to the said main wheel being arranged above the lower surface of the main wheel,

whereby the chain passed over such guide-rolls and under the main wheel will be held firmly in contact with such main wheel and the chain passed over said guide-rolls and under the main wheel, substantially as set forth.

2. An improved boat, substantially as described, provided with a shaft suitably journaled and having a wheel or wheels arranged to be turned by the current, a main wheel carried by and loose with reference to said shaft, a clutch by which to key the said wheel to such shaft, and guides located on said boat by which to direct an anchored chain into contact with said main wheel, substantially as set forth.

3. The combination, in a boat, substantially as described, of the boat hull or body, the shaft journaled thereto and bearing the undershot side wheels at its ends, the main wheel C, loose on such shaft, the clutch by which such wheel may be keyed on the shaft, the brake consisting of disk D′ on the shaft, the pawl *f*, and the vertical and horizontal guide-rollers, and the chain guided by said rollers and engaging the main wheel, substantially as set forth.

ERNST LOTZE.

Witnesses:
WM. J. CLEARY,
PAUL STROBACH.