

(No Model.)

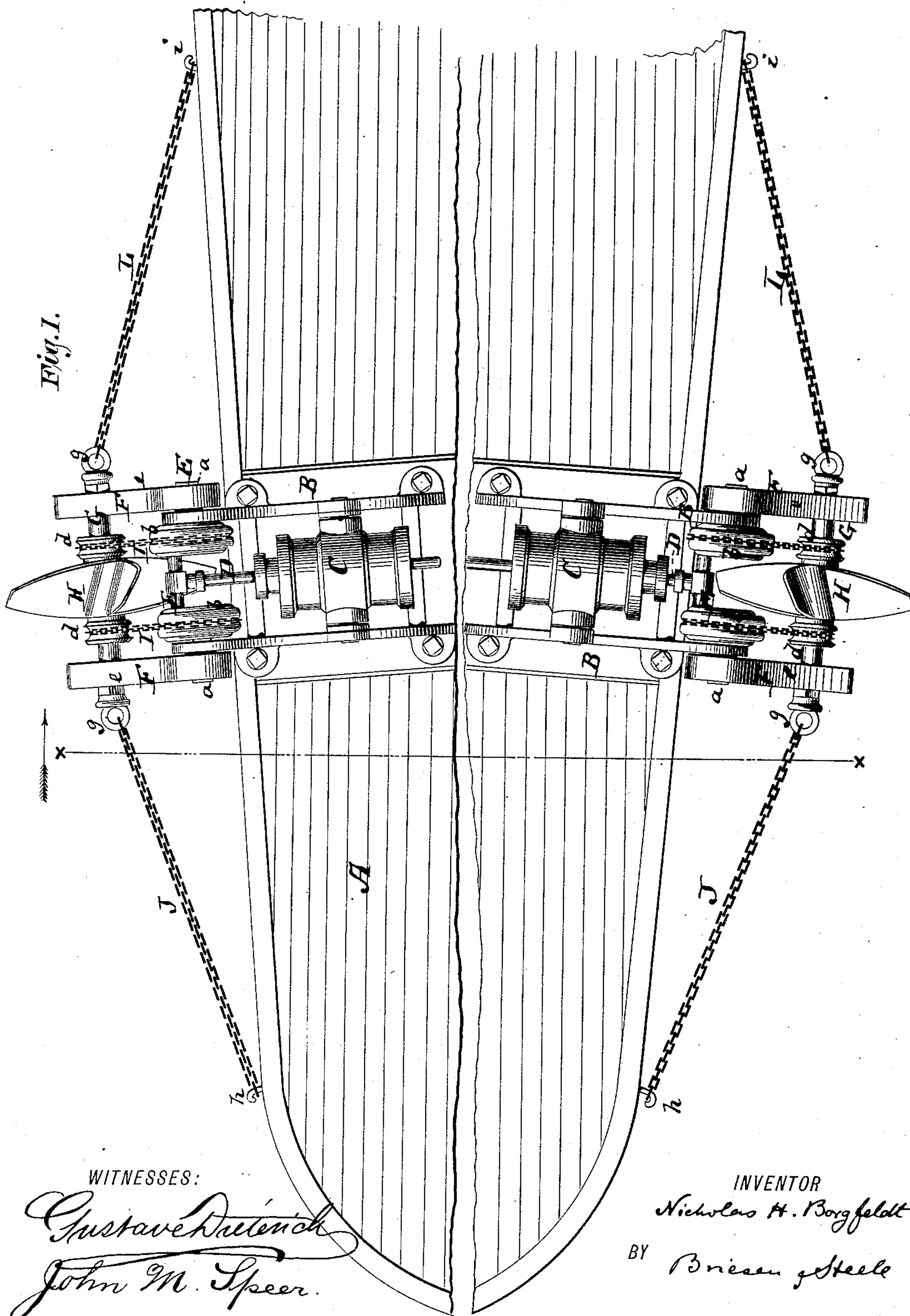
2 Sheets—Sheet 1.

N. H. BORGFELDT.

AUXILIARY PROPELLER FOR VESSELS.

No. 367,499.

Patented Aug. 2, 1887.



WITNESSES:

Gustave Dauterich
John M. Speer.

INVENTOR

Nicholas H. Borgfeldt

BY

Brienen & Steele

ATTORNEYS.

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Fig. 2.

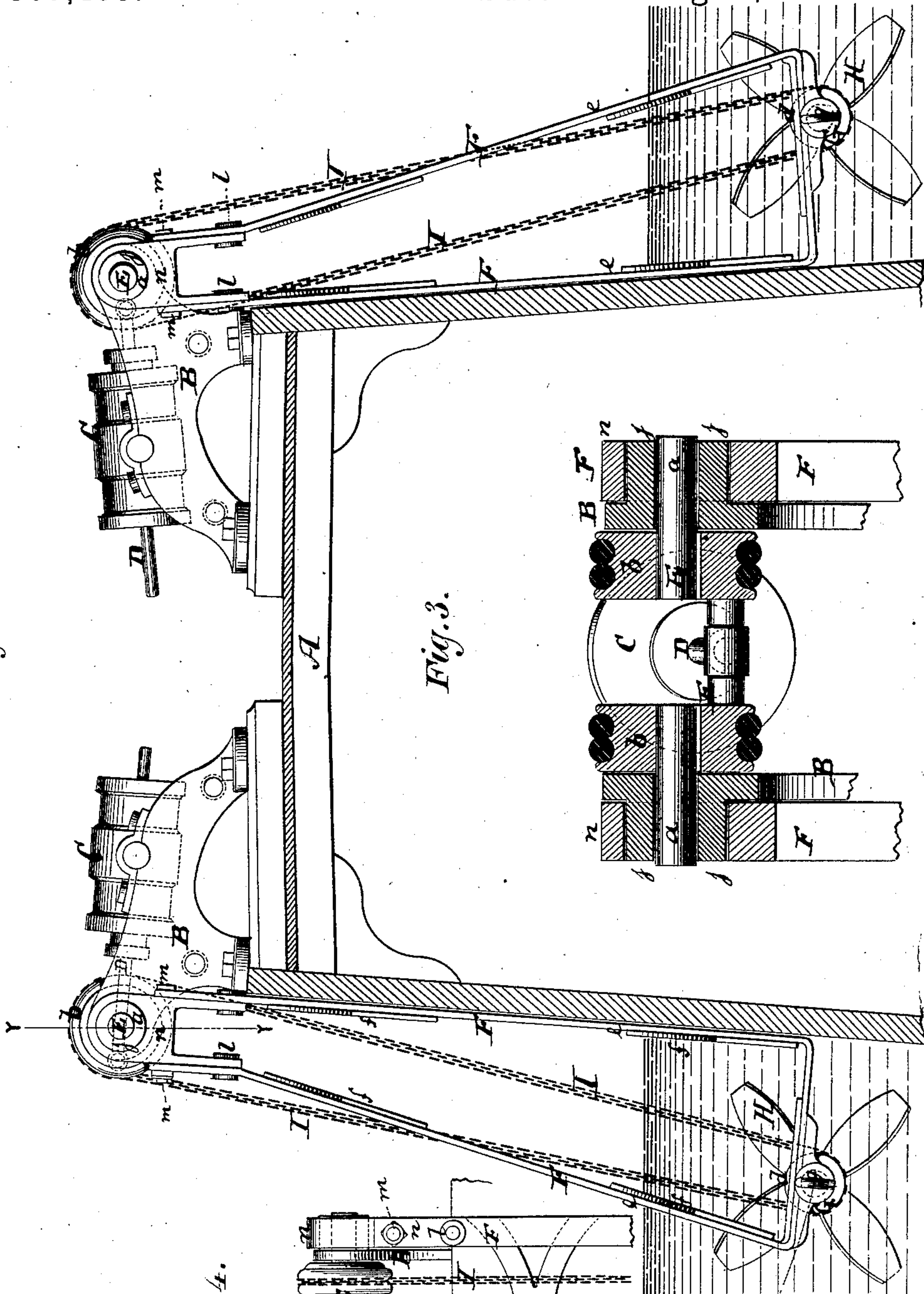


Fig. 3.

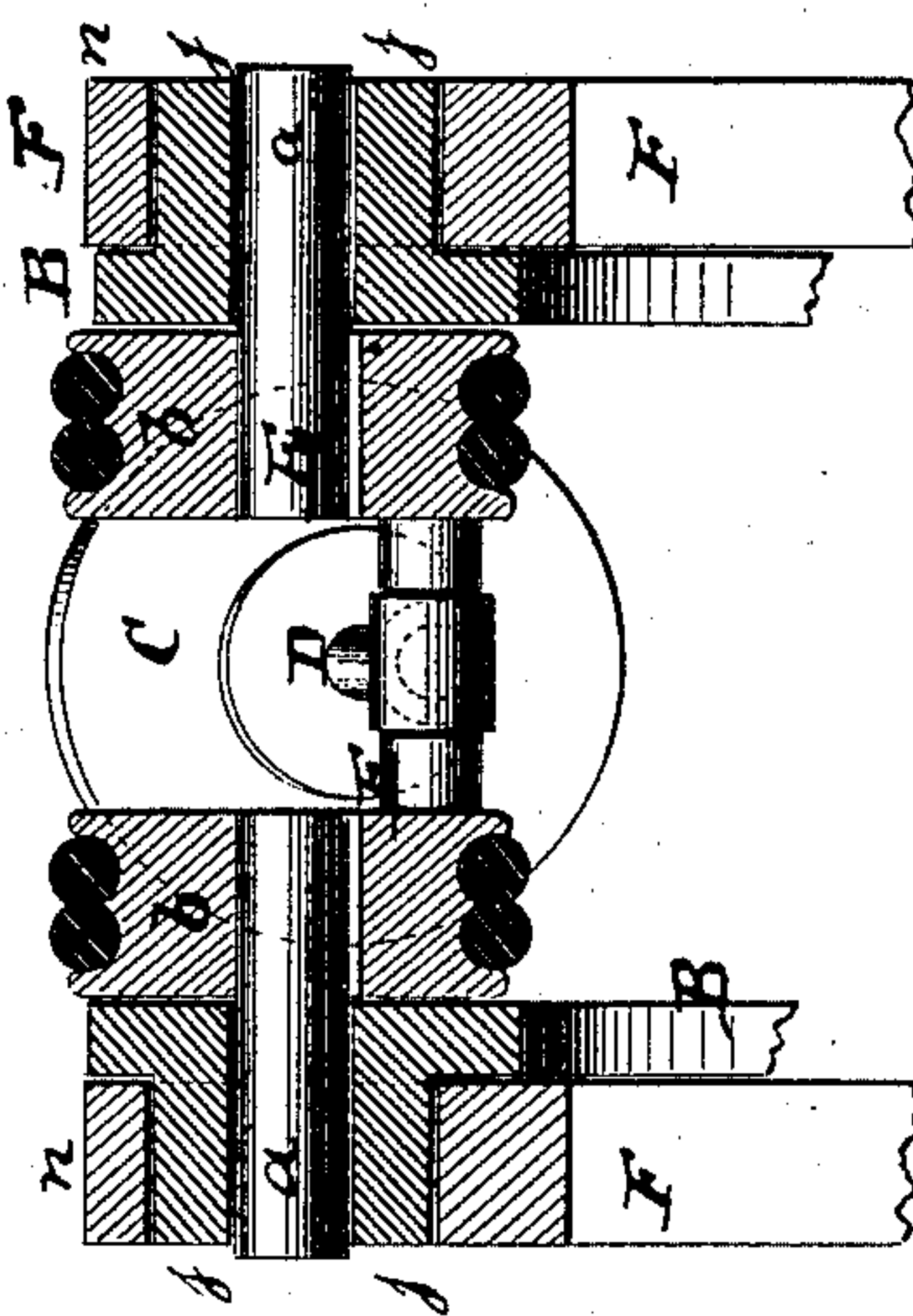
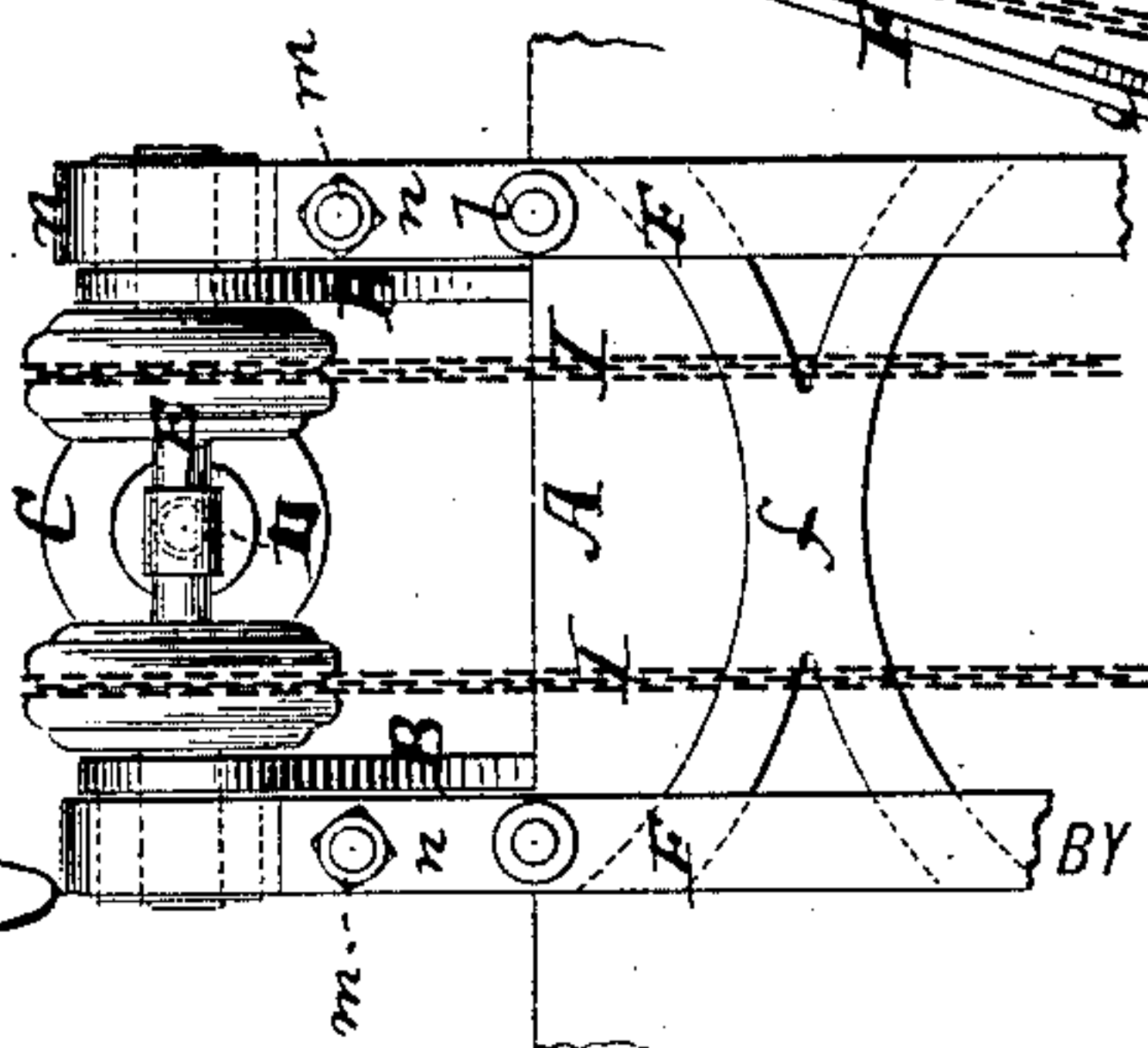


Fig. 4.



WITNESSES:

Gustav Dietrich
John M. Speer.

INVENTOR

Nicholas H. Borgfeldt
By Briesen & Steele

ATTORNEYS.

UNITED STATES PATENT OFFICE.

NICHOLAS H. BORGFELDT, OF NEW YORK, N. Y.

AUXILIARY PROPELLER FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 367,499, dated August 2, 1887.

Application filed August 30, 1886. Serial No. 212,163. (No model.)

To all whom it may concern:

Be it known that I, NICHOLAS H. BORGFELDT, a resident of New York city, in the county and State of New York, have invented an Improved Auxiliary Propeller for Steamships, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings, in which—

Figure 1 is a top view of part of a vessel having my improved auxiliary propellers. Fig. 2 is a cross-section of the same on the line *xx*, Fig. 1. Fig. 3 is a detail section on the line *y*, Fig. 2. Fig. 4 is a detail face view of the upper part of one of the propeller-carrying frames.

The object of this invention is to supply ocean-going steamships and other vessels with means for propelling them by steam-power in case the main propelling apparatus should break or get out of order.

The invention consists, principally, in combining one or more auxiliary engines, which are adapted to be placed on deck, with one or more frames suspended from the framing of said engines and carrying each an auxiliary propeller, and means for revolving the same from the engine, and with fore and aft brace-chains, which connect with the propeller-carrying shaft, which is swiveled in said suspended frame.

In the drawings, the letter A represents the deck of a steamship or other vessel. Upon this deck are shown to be placed two frames, B B, each supporting one or more cylinders, C, to which steam may be conveyed from a boiler for the purpose of reciprocating the piston-rod D of such cylinder.

The outer part of each frame B, which overhangs the deck of the vessel A, carries a crank-shaft, E, the ends or gudgeons *a* of which extend beyond the sides of the frame B into bearings *j*, that project from said frame and serve as swivel-supports for a frame, F, that is suspended from the bearings *j* and hangs along the side of the vessel, reaching below the water-line, as is more clearly shown in Fig. 2.

In the lower part of the frame F are the bearings for a shaft, G, upon which an auxiliary propeller, H, is loosely hung. The shaft E carries pulleys *b*, and the propeller H carries

pulleys *d*, that are also loose on the shaft G. Over these pulleys are laid chains I, which are to transmit rotary motion from the shaft E to the propeller H.

The frame F, it will be seen, is composed substantially of two main side pieces, *ee*, of which each is suspended from one of the bearings or gudgeon-blocks *j*, and at the lower part these side pieces, *ee*, are united by the shaft G, which carries the loose propeller, and which constitutes the main transverse connecting-brace between the pieces *ee*. Still other connecting-braces, *f*, (shown in Figs. 2 and 4,) may also be applied to the side pieces, *ee*, of each frame F for the purpose of furnishing greater strength.

The ends of the shaft G carry eyes or holders *g g*, to which are connected stay-chains J and L. The stay-chain J extends aft to a suitable bolt or fastening, *h*, and the chain L extends forward to a suitable bolt or fastening, *i*.

Having now described the construction of my apparatus, I desire to say that it is my intention to supply ocean-going steamships or similar vessels with two frames, B F, and the appurtenances heretofore specified, so that in case of the breaking or injury to the main propelling apparatus of such a vessel the auxiliary apparatus may quickly be put into operation. In such a case the frames B are fastened on deck with their cylinders C, and the frames F, which are carried by the shaft E, are let down over the side of the ship until they rest against her hull and extend beneath the water-line sufficiently far to enable the auxiliary propellers H to operate. The chains I, when the engines are set in motion, will revolve the propellers H, and thus impart motion to the ship. The brace-chains J and L hold the frames F and the auxiliary propellers in position.

For facilitating the connection of the frame F to the two bearings *j j*, that project from the frame B, I prefer to hinge the upper part of the frame F, by pins *l*, to the body of said frame B, and to lock this hinged portion to said body by screws or bolts *m*, so that upon unfastening the screws *m* the said upper portion, *n*, of the frame F may be turned on its hinge *l*, to be easily applied to or taken from the bosses or bearings *j* of the frame B.

By uniting the stay-chains J and L to the

eyes *g g*, that are carried by the shaft *G*, the strain of these chains is wholly removed from the frame proper, *F*, and absorbed entirely by the shaft *G*.

5 I claim—

The frame *F*, suspended at its upper end from a pivoted support and combined at its lower part with the transverse shaft *G*, the ends of

which are united to the stay-chains *J* and *L*, and with the propeller *H*, which is loosely hung upon the shaft *G*, as specified.

NICHOLAS H. BORGFELDT.

Witnesses:

GUSTAV SCHNEPPÉ,
HARRY M. TURK.