

(No Model.)

O. H. P. CORNELIUS & G. H. TURNER.  
APPARATUS FOR REMOVING SAND BARS, &c., FROM RIVERS AND  
HARBORS.

No. 284,387.

Patented Sept. 4, 1883.

Fig. 1.

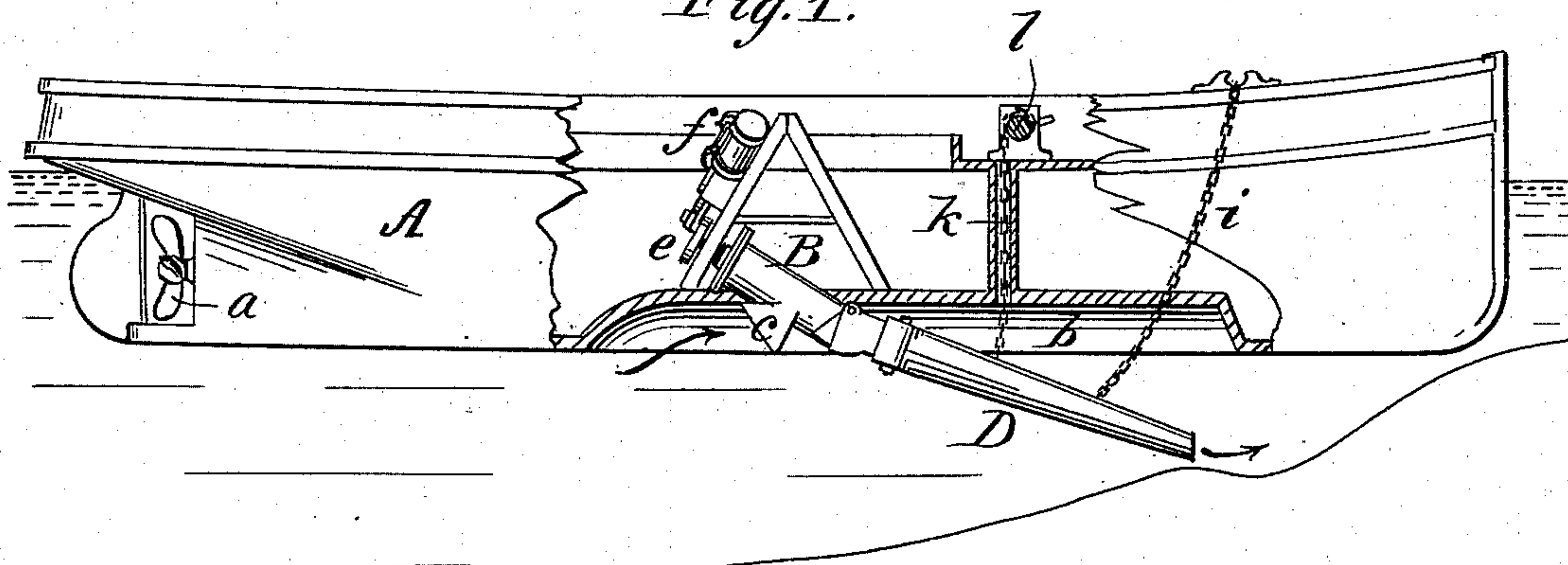


Fig. 2.

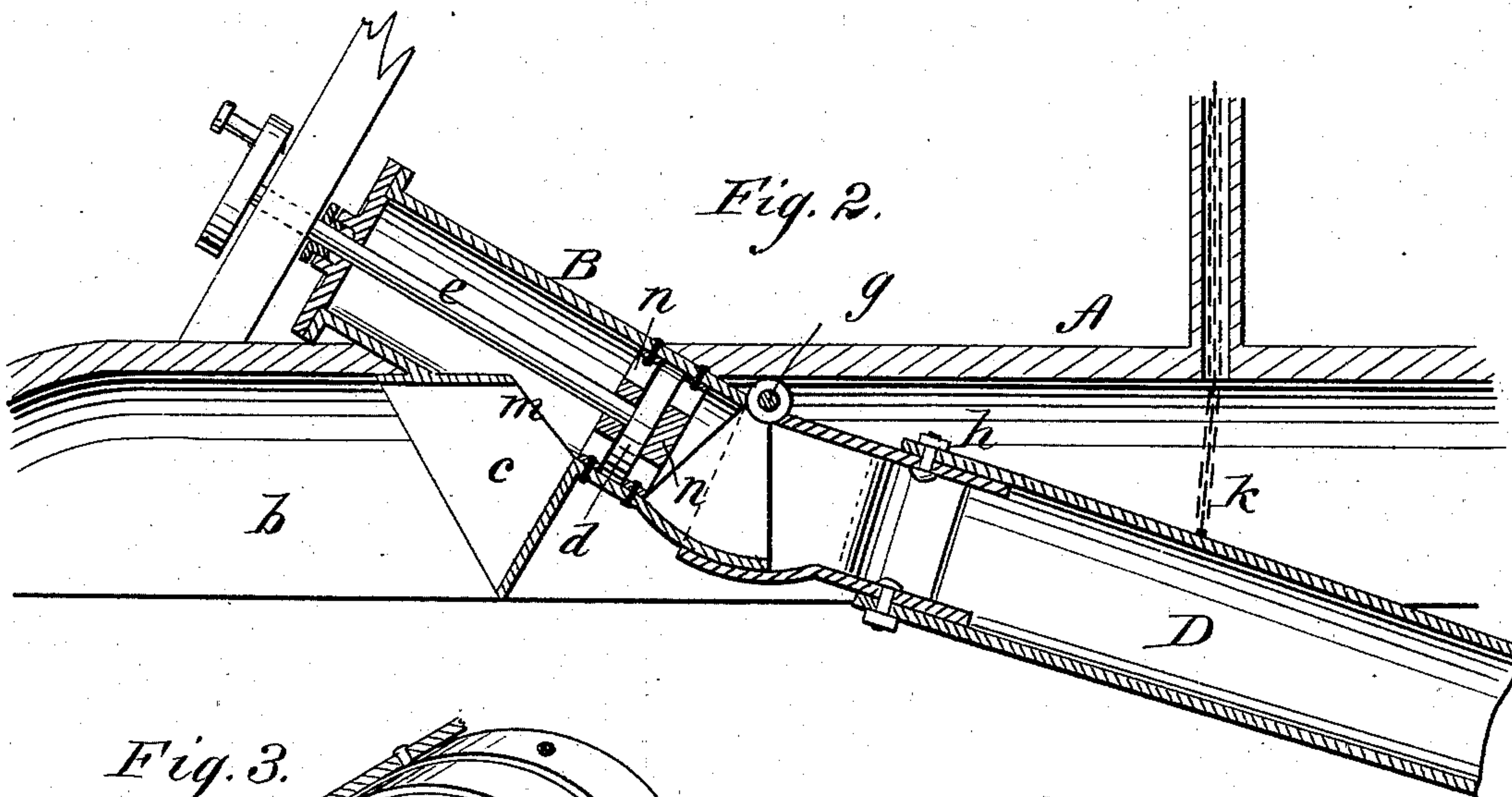


Fig. 3.

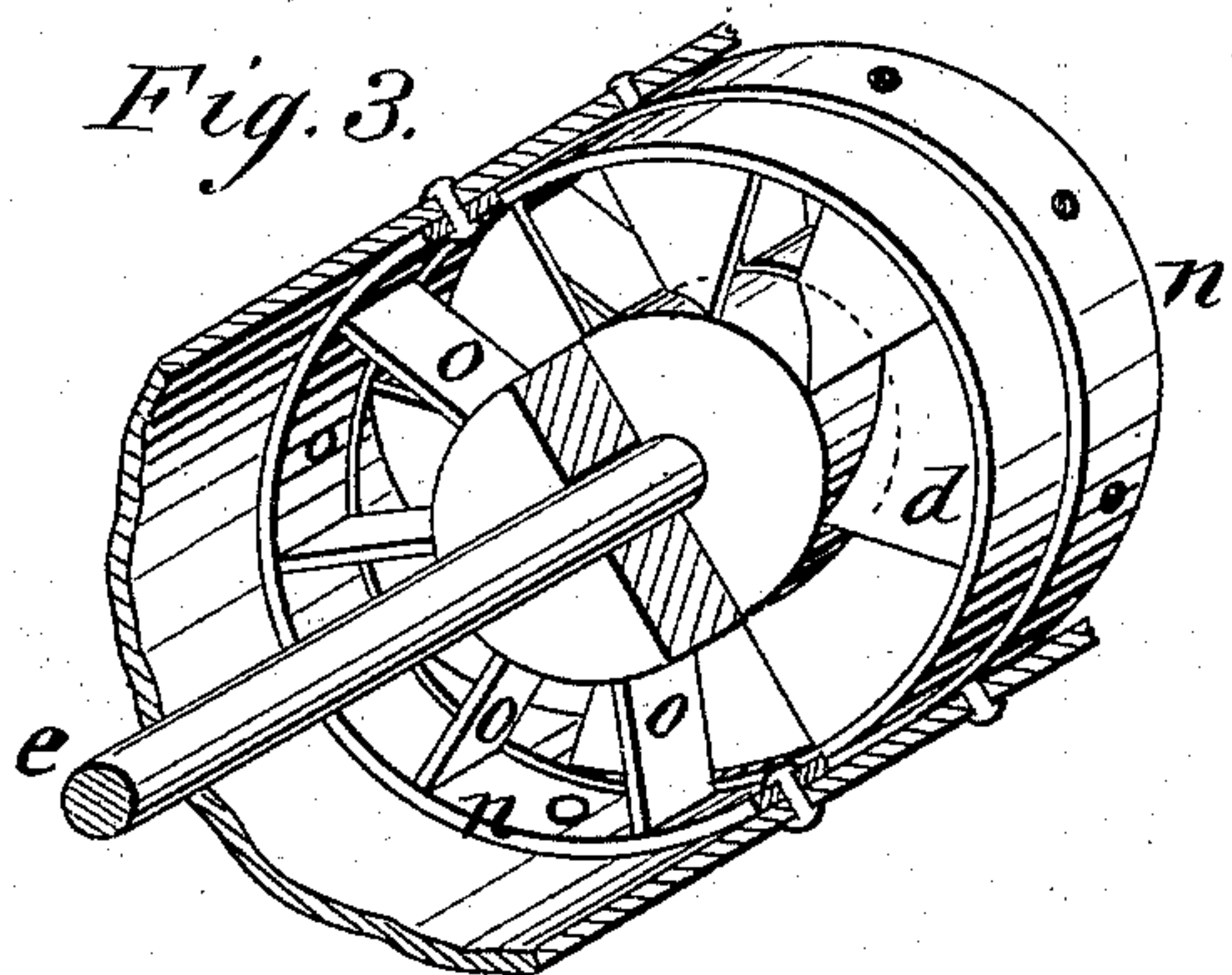
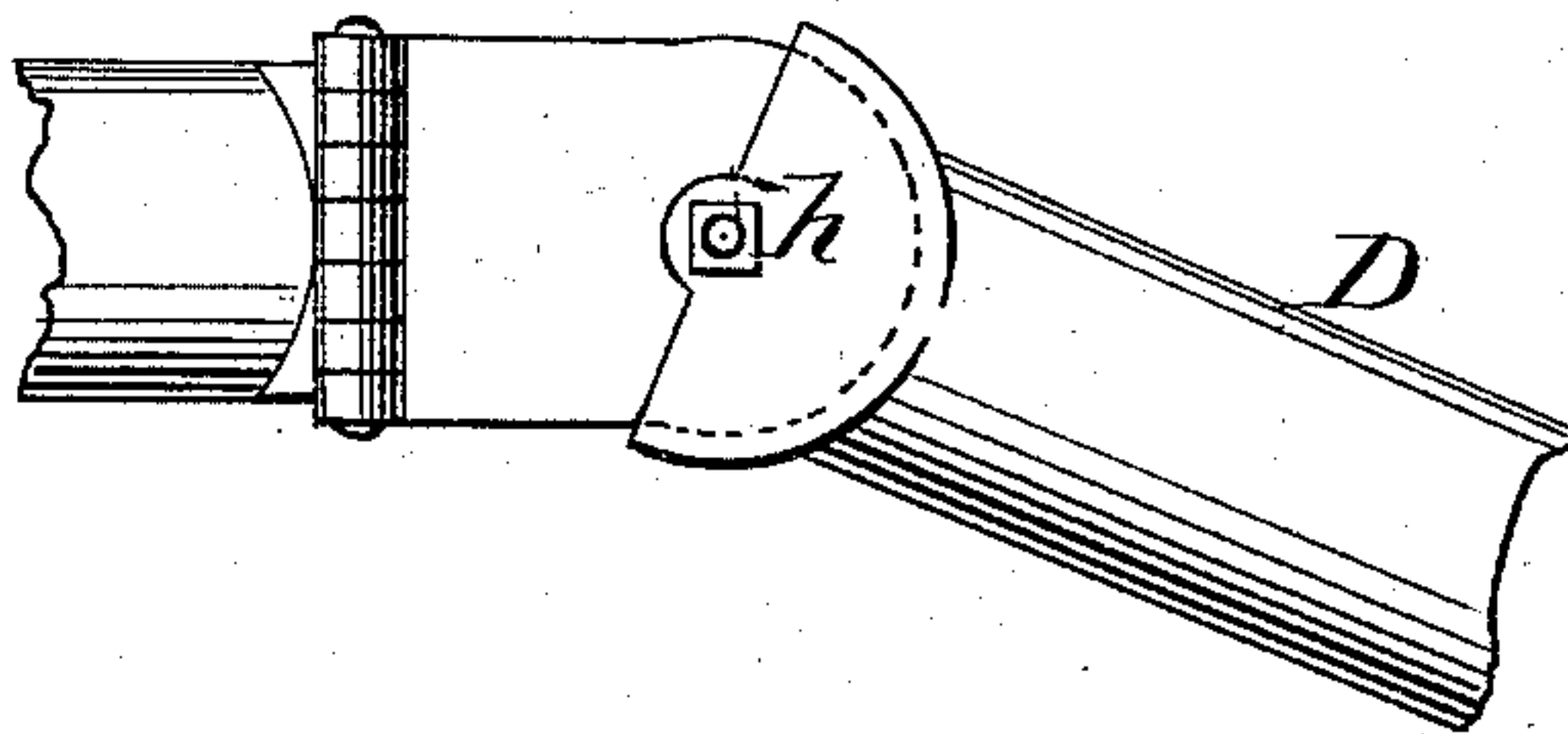


Fig. 4.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

OLIVER H. P. CORNELIUS AND GEORGE H. TURNER, OF TURNER, OREGON.

APPARATUS FOR REMOVING SAND-BARS, &c., FROM RIVERS AND HARBORS.

SPECIFICATION forming part of Letters Patent No. 284,387, dated September 4, 1883.

Application filed May 21, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, OLIVER H. P. CORNELIUS and GEORGE H. TURNER, both of Turner, in the county of Marion and State of Oregon, have invented a new and Improved Apparatus for Removing Sand-Bars and other Obstructions from Rivers and Harbors, of which the following is a full, clear, and exact description.

Our improvements relate to apparatus for removing sandbars, accumulations of silt, and similar obstructions to navigation in rivers and harbors, by the action of a stream of water discharged upon the obstruction for loosening it up, and the creation of a rapid current for distributing and carrying off the loosened material.

The special objects of the invention are to accomplish the work with as little expenditure of power as possible, and to provide apparatus that can readily be used in shallow waters and in waters where snags and drift-wood abound, without risk of injury to the apparatus.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of a vessel provided with our apparatus. Fig. 2 is a section in larger size of the tube and wheel. Fig. 3 is a perspective view of the wheel, and Fig. 4 a detail view of the tube-joint.

The vessel A is provided with a propeller, *a*, for its propulsion. In the bottom of the vessel is formed a longitudinal well or recess, *b*, open at the under side and closed at the top. Near one end of the recess, and projecting in an inclined direction through the bottom, is a trunk, B, the upper or rear end of which is closed by a suitable cap, the lower or forward end being open and terminating within the recess. At the under side of the trunk B, and opening at the rear, is a flaring mouth, *c*, and within the trunk, below the mouth *c*, is a wheel, *d*, upon a shaft, *e*, which extends through the cap of the trunk into the vessel, where it is connected to an engine or engines, *f*, by which the wheel is rotated.

D is the hydraulic tube, connected to the top of recess *b* by a hinged joint, *g*, and lapping over the lower end of trunk B, so that the tube may swing vertically without open-

ing the joint; and the tube is also provided with a joint at *h*, which allows lateral swing of the tube in adjusting its outer end for discharge of the water at the desired place. The lateral adjustment is to be made by means of chains *i*; that pass from their connection, near the outer end of the tube, upward and over the side of the vessel. The tube is sustained by a chain, *k*, passing upward through a well to a windlass, *l*, on the deck of the vessel, and by this arrangement the tube can be raised or lowered to a proper position for operation, and when not in use can be drawn entirely into the recess *b* above the bottom of the vessel, out of the way of snags or other obstructions. This allows the vessel to be moved from place to place without danger of injury to the tube from the bottom in shallow waters or from obstructions. At the mouth *c* are bars *m*, forming a grate, that prevents drift-wood or other material from entering.

The wheel *d* may be of any suitable construction; but as shown it is formed with inclined paddles or wings held in an outer rim, and is fitted between fixed disks *n*, having openings between guide-flanges *o*, that serve to direct the water to the wheel and counteract rotary motion of the water in the trunk and tube.

In the operation of the apparatus the vessel is to be brought bow onto the bar, the tube then lowered, and the wheel set in motion. The action of the wheel is to draw the water in at the mouth *c* and discharge it in a powerful stream at the mouth of tube D, thereby loosening up the sand or silt, which is carried away by the current thus created, assisted by whatever natural current there may be. The propeller *a* is to be rotated at the same time to counteract the reactionary effect of the stream of water on the vessel. The apparatus being at the bottom of the vessel, the wheel has a solid body of water to act upon, and as the water has to be raised only a short distance, and never above the surface, a powerful stream can be forced through the tube by the expenditure of comparatively little power.

In place of the wheel, as shown in tube B, an ordinary propeller-wheel may be used; and we prefer to use for rotating this wheel or propeller two engines, working on a single crank-pin and set at right angles, so as to overcome



dead-centers and insure a more steady motion.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

- 5 In an apparatus for removing sand-bars, the vessel A, having the well *b*, open at the under side and closed at the top, and the trunk B, projecting on an incline through said vessel, closed at the upper and open at the lower end,  
10 having the flared mouth *c*, and provided with

the wheel *d* on shaft *e*, in combination with the swinging hydraulic tube D, lapping the trunk, hinge-jointed to it at *g*, jointed at *h* to swing laterally, and adjustably suspended by a chain, *k*, as shown and described.

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Witnesses:

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