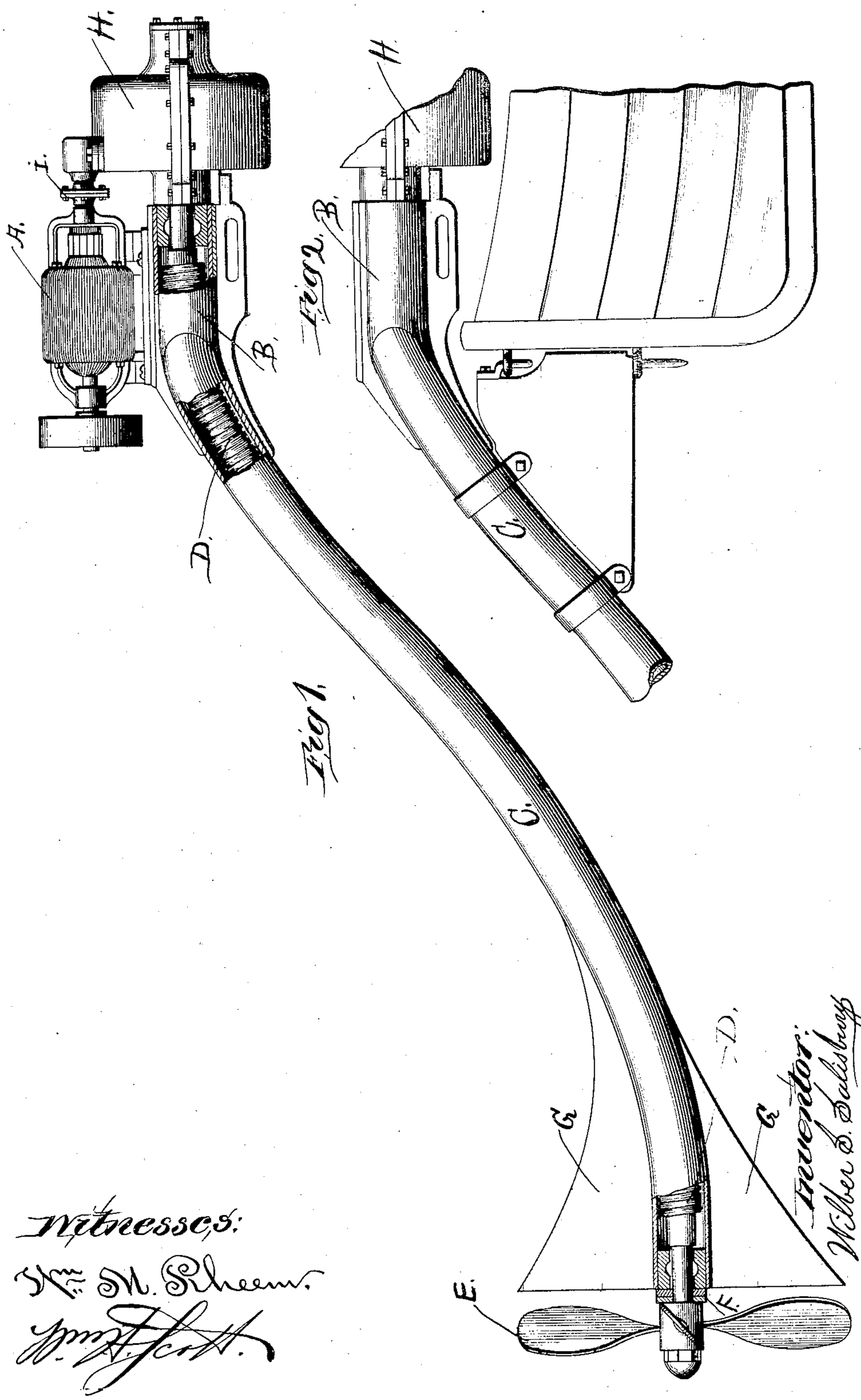
(No Model.) 2 Sheets—Sheet 1.

W. S. SALISBURY.

BOAT PROPELLING APPARATUS.

No. 486,684. Patented Nov. 22, 1892.



Witnesses:
Wm. M. Sheem.
Wm. A. Scott.

Inventor:
William S. Salisbury

(No Model.) 2 Sheets—Sheet 2.

W. S. SALISBURY.

BOAT PROPELLING APPARATUS.

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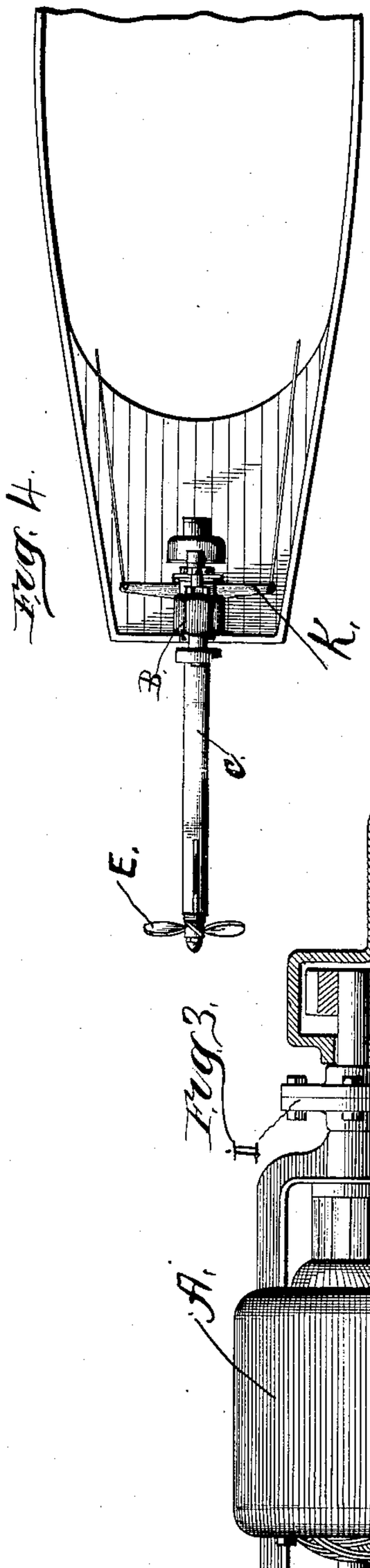

Fig. 4.

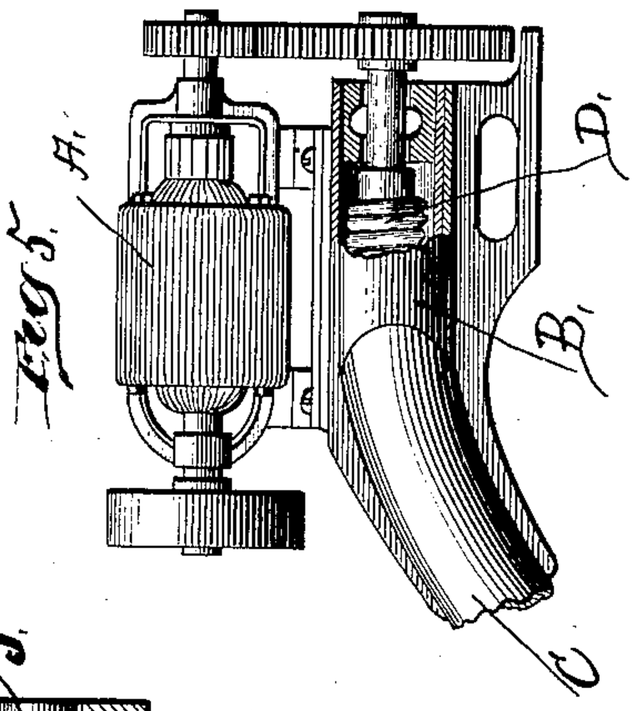

Fig. 5.

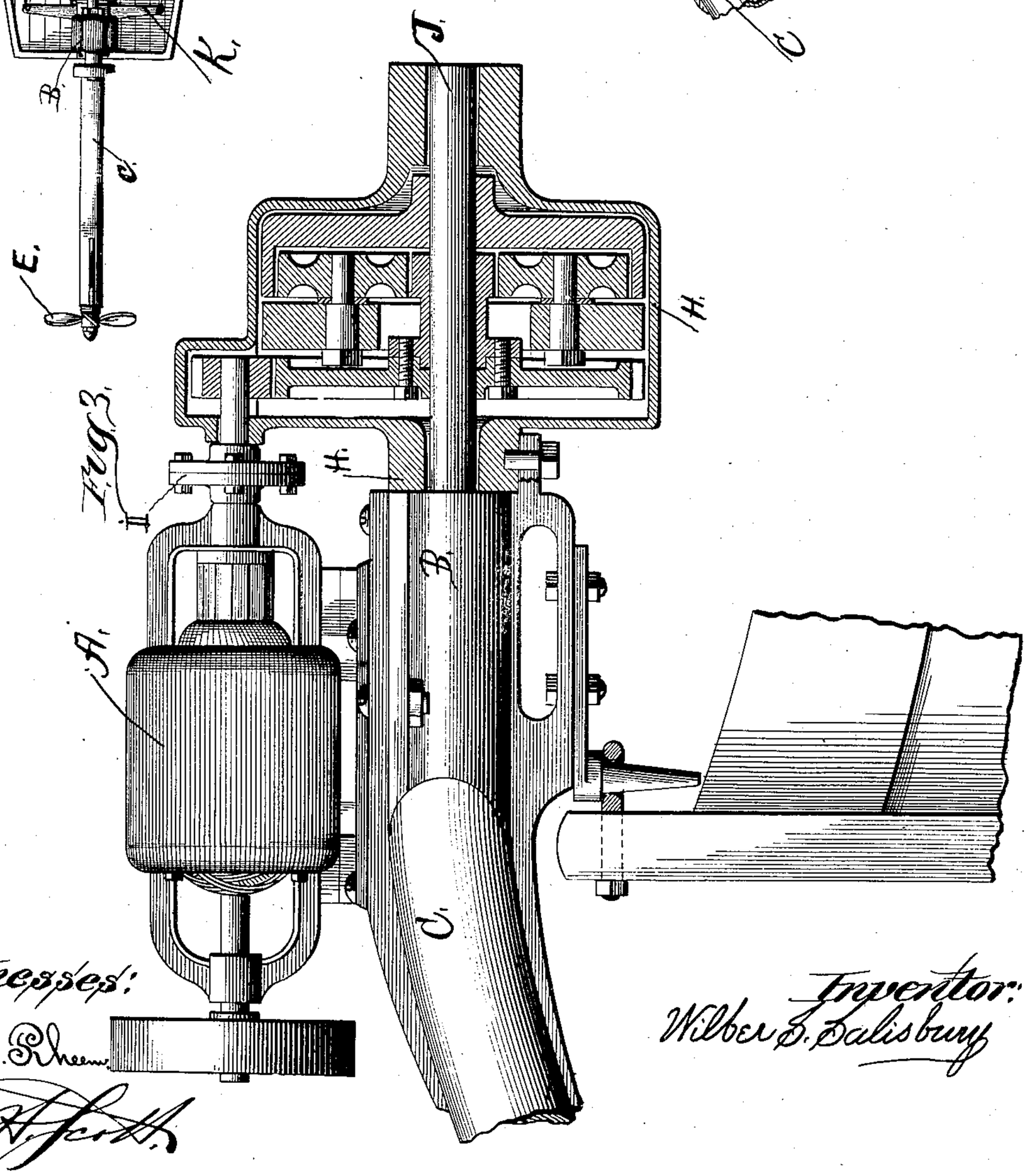

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

WILBER S. SALISBURY, OF CHICAGO, ILLINOIS.

BOAT-PROPELLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 486,684, dated November 22, 1892.

Application filed February 12, 1892. Serial No. 421,334. (No model.)

To all whom it may concern:

Be it known that I, WILBER S. SALISBURY, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Boat-Propelling Apparatus, described and claimed in the following specification.

This invention relates to improvements in boat-propelling apparatus, and embraces a propeller-wheel and a motor for propelling small boats and launches, the said device being mounted upon or attached to a tube containing a flexible shaft connecting the motor and propeller-wheel, which is swiveled to move with perfect freedom in any direction for steering or propelling a boat.

Heretofore, so far as I am aware, the motor and screw-wheel have been dependent upon the rudder for steering the boat, necessitating the combination of the three for propelling and steering the vessel.

The prime object of my invention is to have a motor and propeller-wheel supported upon a movable tube, operating in flexible connection with each other, said tube having such suitable attachments that it may be readily applied to the various forms of boats in a practical and useful manner independent of the rudder for steering and propelling in any direction required, thus producing a practical, useful, and novel device in navigation. This object is obtained by swiveling one end of the device to the stern of a boat, producing a combined propelling and steering mechanism, entirely taking the place and doing away with any form of rudder for steering purposes, and is therefore entirely independent of a rudder in its functions of propulsion.

In order that the description may be rendered more clear, I refer to the accompanying drawings, in which—

Figure 1 represents a side elevation of a bent tube inclosing a flexible coiled-wire shaft, as seen at the broken sections at both ends of the tube, also showing an electric motor and gear-casing at the upper end thereof and a screw-wheel for propelling at the lower end. Fig. 2 represents one manner of mounting said device to the stern-post of a small boat, which is accomplished by means of the ring-clasps encircling the bent tube and bolting the ends to a piece of board that has been shaped on one side to conform to the curve of the tube and then swiveling the said board by means of a brace-pin passing through eye-bolt attached to the stern-post. Fig. 3 represents another plan of attaching the device to a boat by swiveling direct from the under side of the head or casting upon which the motor and gear-casing is mounted, also represents the motor coupled to the gear, said gear being shown in section as mounted upon the short shaft. Fig. 4 represents a top plan view of the device as attached to a square stern, showing, also, the yoke and steering-ropes. Fig. 5 represents the motor mounted on the tubing, with a small and a large gear-wheel for operating the shafting.

In said drawings, A represents the electric motor suitably mounted on the head-frame B. The head-frame B is cast in parts and formed to fit the end of the bent tube C, and both the top and under parts have lip-extensions for the purpose of supporting the tube at the neck. The parts are bolted together, clasped around the tube, thereby giving a strong support for the motor, gear-casing, and tubing.

Inside the tube C is a flexible shaft D, of coiled wire, extending throughout its entire length. On each end of the flexible shaft are suitably mounted short shafts journaled in metal boxes that are fastened within and at each end of the tube C.

On the projecting end of one of the short shafts is suitably attached the screw-propeller wheel E, and between the propeller-wheel and the end of the tube is placed friction-rings F to relieve the thrust of propeller-wheel of undue friction against the end of the tube when working.

To the lower end of the tube are fins G G, made from sheet metal and brazed on the center of tube at top and under side to assist in steering, but are not wholly essential to the successful working of the device for the purpose of guiding the direction of the boat, as the boat can be steered by the working of the wheel when the tube is thrown from port to starboard by means of the yoke K, said yoke passing through the elongated opening

in the under part of head-casting B. Projecting forward from the under side of the head B is a lug by which the casing H, containing the gear-wheels, is bolted thereto. The armature-shaft and pinion-shaft are connected by the flange-couplings I.

I have shown in Fig. 3 one plan of gearing by double reduction for power purpose and in Fig. 5 I have shown a single-reduction gearing. Those two methods are for small high-speed motors; but when using a slow-speed motor of larger type I couple direct to the upper shaft J, thereby dispensing with the gear-wheels. Therefore I do not wish to limit myself to any one form of gearing, neither do I desire to limit myself to any one method of attaching my device to the stern of a boat, as I have already illustrated by Figs. 2 and 3 two plans.

By constructing and arranging the electric motor on the tube and connecting it by gearing with the propeller-wheel, as set forth, an adequate amount of flexibility will be attained between said motor and propeller-wheel, whereby the wear on the parts will be reduced to a minimum, and all jerking or vibratory motion is taken up by the flexible shaft, thus insuring easy running, also a higher rate of speed, with maximum current rate of discharge, owing to the spring action of the shaft in the line of rotation.

When the circuit is closed, in starting, the spring action of the shaft enables the motor to get up its counter electro-motive force more speedily and with less danger of overheating the armature. Therefore there is the same advantage gained in constant running—viz., less heating of the armature. By this method of construction great advantages are gained in permitting the same form of construction being easily applied to the various forms of row-boats, canoes and hunting-boats, or even to small launches.

The use of the tubing partially filled with oil and inclosing the flexible shaft permits, of constant and copious lubrication of the shaft and journal bearings, reducing the friction and wear to a minimum, and prevents the access of dirt to the working parts. The spring of the flexible shaft relieves the motor and propeller-wheel of any sudden strain due to rapid starting or stopping of the motor. A very important feature is produced by the use of the flexible shaft in the tube, whereby the thrust of the wheel is borne by the tube, thereby relieving the motor from the evil effects that otherwise would occur from the thrust of the screw-wheel when in motion.

Numerous slight changes might be made in the details of construction of my invention without departing from the spirit of my invention. Hence I do not wish to limit myself to the precise details of construction herein set forth; but,

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

1. Boat-propelling apparatus comprising a tube and motor-support connected therewith, a flexible shaft within said tube carrying at its lower end a propeller-wheel, and a motor mounted on said support connected with said flexible shaft and giving motion therethrough to the propeller-wheel, substantially as described.

2. Boat-propelling apparatus comprising a tube arranged and adapted to be pivotally connected with the stern of a boat, a flexible shaft within said tube carrying at its lower end a propeller-wheel, and a motor connected with said flexible shaft adapted to give motion thereto and to the propeller-wheel, substantially as described.

3. Boat-propelling apparatus comprising a suitably-incased flexible shaft adapted to be pivotally connected with the stern of a boat and provided at its lower end with a propeller-wheel, and a motor having connection with the upper end of said shaft operative to give motion thereto and to the propeller-wheel, substantially as described.

4. Boat-propelling apparatus comprising a rotary flexible shaft contained within a casing arranged and adapted to be pivotally connected with the stern of a boat, a propeller-wheel fixed to the lower end of said shaft, and a motor having gear connection with the upper end of said shaft, arranged and adapted to give motion thereto and to the propeller-wheel, substantially as described.

5. Boat-propelling apparatus comprising a tube arranged and adapted for pivotal connection with the stern of a boat and provided at its lower end with steering-fins, a flexible shaft within said tube provided at its lower end with a propeller-wheel, and an electric motor having operative connections with the upper end of said shaft adapted to give motion to the propeller-wheel, substantially as described.

6. Boat-propelling apparatus comprising a flexible rotary shaft, a casing surrounding said shaft, a propeller-wheel fixed to the lower end of said shaft, and means connected with the upper end of said shaft adapted to give motion to the propeller-wheel, substantially as described.

In testimony whereof I have signed this specification in the presence of the subscribing witnesses.

WILBER S. SALISBURY.

Witnesses:
E. F. GALPIN,
G. M. LISCOM.