No. 772,384. PATENTED OCT. 18, 1904.

F. W. SMITH.

BOAT AND PROPELLING MEANS THEREFOR.

APPLICATION FILED APR. 18, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

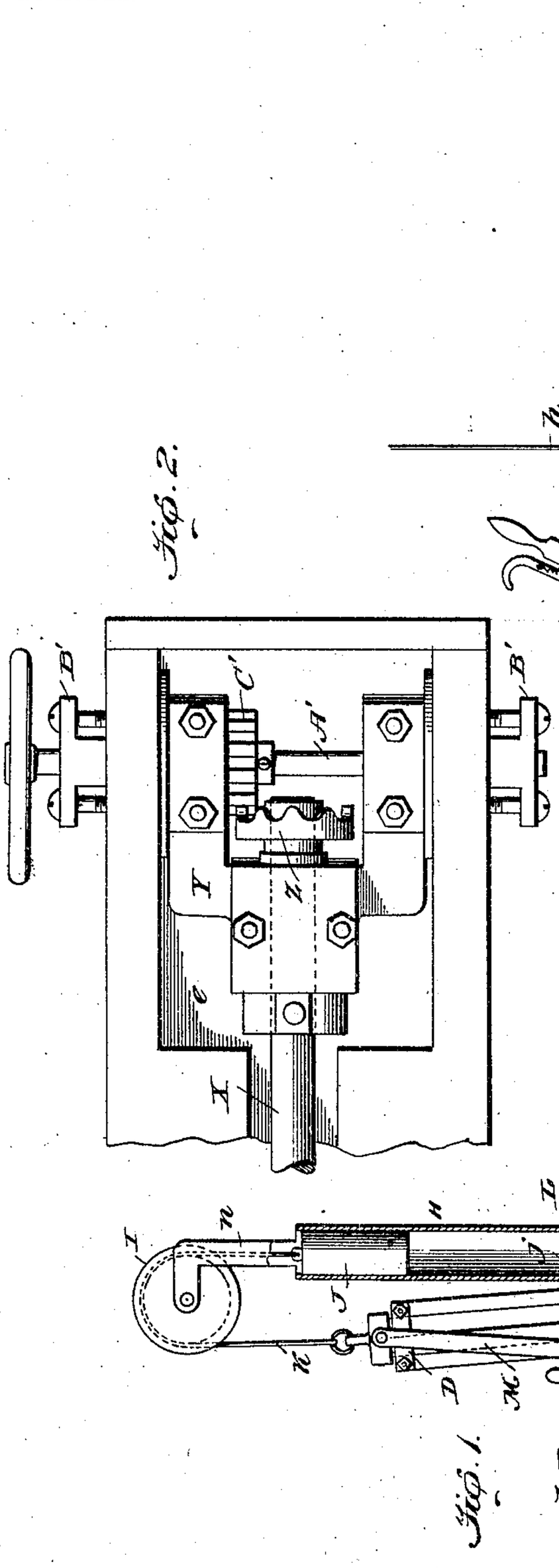

Fig. 2.

Fig. 1.

Fig. 3.

Witnesses

N. C. Dealy

By

Inventor

F. W. Smith.

James Sheehy

Attorney

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

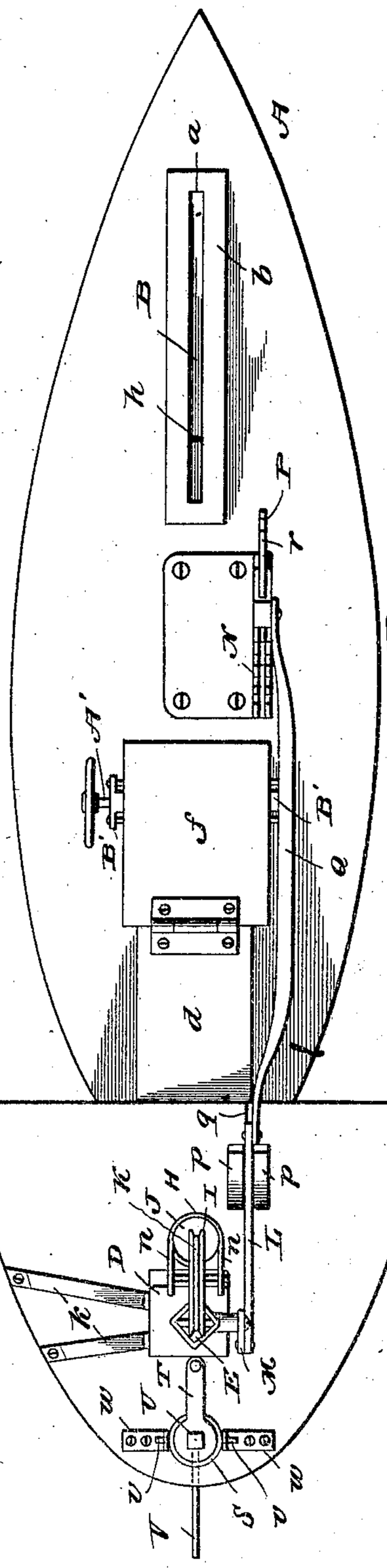

Fig. 4.

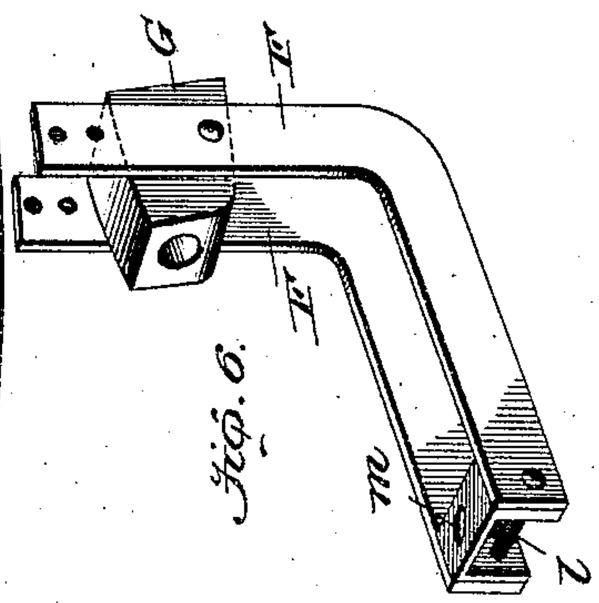

Fig. 6.

Witnesses

N. C. Healy

Inventor

F. W. Smith.

By James J. Shelby

Attorney

No. 772,384. Patented October 18, 1904.

UNITED STATES PATENT OFFICE.

FREDERICK W. SMITH, OF ELLSWORTH, MICHIGAN.

BOAT AND PROPELLING MEANS THEREFOR.

SPECIFICATION forming part of Letters Patent No. 772,384, dated October 18, 1904.

Application filed April 18, 1904. Serial No. 203,702. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. SMITH, a citizen of the United States, residing at Ellsworth, in the county of Antrim and State of Michigan, have invented new and useful Improvements in Boats and Propelling Means Therefor, of which the following is a specification.

My invention pertains to boats; and it consists in the peculiar and advantageous light-draft boat and boat-propelling means hereinafter described, and particularly pointed out the claims appended.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal vertical section illustrating a portion of a light-draft boat constructed in accordance with my invention and my novel means for propelling the same, some of the parts being shown in side elevation. Fig. 2 is an enlarged detail plan view illustrating the gearing which I prefer to employ for transmitting motion from the drive-shaft to the propeller-shaft and the box in which said gearing is arranged. Fig. 3 is a detail perspective view illustrating a portion of the rudder-post, the tiller, the collar in which the tiller is mounted, and the supports for said collar, the said supports being shown as separated from the collar. Fig. 4 is a plan view illustrating the boat and the propelling means. Fig. 5 is an enlarged detail perspective view of the lower portion of the rudder-post and the rudder therein, and Fig. 6 is a perspective view of the lower portion of the hanger which carries the propeller and the rudder and the vertically-swinging journal-box mounted in the said hanger.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is the body of my novel boat, which is flat, as shown in Fig. 1, and preferably, though not essentially, of the general outline shown in Fig. 4. The said body is provided in its forward portion with a longitudinal central opening *a*, which is surrounded by a well *b* and is also provided in its rear end with a longitudinal central opening *c*, covered by a hood *d*, which terminates at its forward end in a box *e*, having by preference a hinged cover *f*. Fixed on the hood *d* is a deck or platform *g*, from which the boat is preferably worked, as will be hereinafter more fully set forth.

B is a centerboard pivotally mounted in the well *b* of the body A and connected to a cable *h*, designed to extend to a point within convenient reach of the pilot of the boat.

C, Fig. 1, is a guide arranged on and fixed to the deck *g* over an opening *i* therein and having an angular opening *j*. D is a similar guide arranged a considerable distance above the deck *g* and connected to one or more supports *k*, fixed to the deck; E, a vertically-movable bar of angular form in cross-section mounted in the guides C D and movable through the same; F F, parallel angular bars fixedly connected to the lower end of the bar E and connected together at their rear ends by a transverse bar *l*, having a vertically-disposed aperture *m*; G, a suitable journal-box pivotally mounted between the upright portions of the bars F, so as to swing in a vertical plane; H, an upright guide fixed to and rising from the deck *g*, preferably at a point in front of the guides C D; I, a vertically-disposed sheave mounted in supports *n* on the guide H; J, a weight movable in the guide H; K, a cable passed over the sheave I and connected to the bar E and the weight J; L, a vertically-disposed bell-crank lever mounted to work between standards *p* on the deck *g* and in a slot *q* thereof; M, a link connecting the rearwardly-extending arm of said lever L and the bar E; N, a fixed segmental rack arranged on the body A in front of the box *e* or at any other suitable point; P, a hand-lever having a detent *r* for engaging the rack N, and Q a link connecting the said lever P and the depending arm of the bell-crank lever L.

The bar E and the angular bars F constitute a hanger for the rudder and the propeller, hereinafter described, and in virtue of the construction just defined in detail it will be observed that the said hanger and the rudder and propeller carried thereby may be adjusted vertically and adjustably fixed, this in order to provide the light-draft boat with a pro-

peller and guiding means set deep in the water. It will also be observed that when the boat encounters a bar or other shallow place in a river or other body of water the hanger, the rudder, and the propeller may be raised so as to draw no more water than the body A, and hence the boat may be readily forced over the bar or other shallow point, which is an important advantage and a desideratum in the art. The centerboard B when lowered in deep water lends stability to the boat and assists in the steering thereof, and yet when raised to the position shown in Fig. 1, relative to the body A, does not interfere in any degree with the passage of the boat over a bar or the like.

R, Fig. 1, is a vertical box disposed in an opening *s* in the rear portion of the deck *g* and having a vertical passage *t* of angular form in cross-section and also having a circumferential groove *u* adjacent to its upper end; S, a collar arranged in the circumferential groove of the box R and having opposite projections *v* disposed in supports *w*, fixed on the deck *g;* T, a tiller fixed to or formed integral with the box R; U, a rudder-post of angular form in cross-section stepped at its lower end in the aperture *m* of the hanger and extending upwardly through the passage *t* of the box R, and V the rudder fixed on the said post U. When the hanger is raised or lowered in the manner before described, it will be observed that the rudder-post and rudder will move with the hanger, and yet the said rudder-post and the rudder may be readily manipulated to steer the boat irrespective of the position of the hanger relative to the body A.

W is the propeller; X, a shaft bearing the propeller and extending through the journal-box G, the slot *c* in the body A, the hood *d*, and the transverse portion of a vertically-swinging yoke Y, disposed in the box *e;* Z, a gear fixed on the said shaft X in front of the said transverse portion of the yoke Y; A′, a transverse drive-shaft extending loosely through the arms of the yoke Y and journaled in suitable water-tight boxes B′, connected to the side walls of the box *e*, and C′ a gear fixed on the shaft A′ and intermeshed with the gear Z. The shaft A′ will preferably be rotated through the medium of two engines set on the quarter; but as the said engines *per se* form no part of my invention I have deemed it unnecessary to illustrate the same.

As will be readily observed by reference to Fig. 1, the driving connection between the shaft A′ and the propeller W runs in the water, and hence requires but a minimum amount of lubrication. It will also be observed that when the hanger before described is raised or lowered the journal-box G and the yoke Y will accommodate themselves to the position of the hanger, with the result that motion will be transmitted to the propeller as well in one position as in another. When a large gear is employed on the shaft A′ and a comparatively small gear on the shaft X, the boat may obviously be propelled with a small engine or an engine of low power.

When the lever P is moved in one direction to raise the hanger and the rudder and propeller carried by the hanger, it will be observed that the weight J, operating as a counterbalance, will assist materially in the elevation, and hence but a minimum amount of effort on the part of the operator is necessary. It will also be observed that when the lever is moved to lower the hanger the counterbalance-weight will operate to prevent a quick fall of the hanger, and thereby lessen the liability of the hanger, the rudder, or the propeller being damaged.

As will be readily appreciated from the foregoing, my novel light-draft boat and the means for propelling the same are very simple and inexpensive and at the same time strong and durable and that hence the boat and propelling means are calculated to withstand the rough usage usually incident to boating.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear, and exact understanding of the same. I do not desire, however, to be understood as confining myself to such specific construction and relative arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of my invention as claimed.

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

1. The combination, in a boat, of a shallow body having an elevated deck on its rear portion, a hanger movable up and down through the elevated deck of the body, suitable means for adjustably fixing the said hanger, a propeller carried by and movable with the hanger, and means connected with the propeller for transmitting rotary motion to the same.

2. The combination, in a boat, of a shallow body having an elevated deck on its rear portion, a hanger movable up and down through the elevated deck of the body, suitable means for adjustably fixing the said hanger, a propeller carried by and movable with the hanger, means connected with the propeller for transmitting rotary motion to the same, a rotary box supported on the deck and having a passage of angular form in cross-section, a rudder having a post of angular form in cross-section journaled in the hanger and extending through the passage of the rotary box, and a tiller on said rudder-post.

3. The combination, in a boat, of a shallow body having an elevated deck on its rear por-

tion, and also having a slot in its rear end and a covering arranged over said slot and terminating at its forward end in a box, a rocking bearing arranged in the box on the body, a transverse drive-shaft journaled in the side walls of the box and extending through and supporting the rocking bearing, and provided with a gear, a hanger movable up and down through the elevated deck of the body, suitable means for adjustably fixing the said hanger, a vertically-swinging journal-box mounted in the hanger, a shaft journaled in the rocking bearing and the journal-box, and having a gear on its forward portion intermeshed with that of the drive-shaft, a propeller on the rear portion of said shaft, a rotary box supported on the deck and having a passage of angular form in cross-section, a rudder having a post of angular form in cross-section journaled in the hanger and extending through the passage of the rotary box, and a tiller on said rudder-post.

4. The combination, in a boat, of a shallow body having an elevated deck on its rear portion, and also having a slot in its rear end and a covering arranged over said slot and terminating at its forward end in a box, a hand-lever mounted on the body, means whereby said lever may be adjustably fixed, a bell-crank lever mounted on the body and connected with the hand-lever, a rocking bearing arranged in the box on the body, a transverse drive-shaft journaled in the side walls of the box and extending through and supporting the rocking bearing, and provided with a gear, a hanger movable up and down through the elevated deck of the body, a connection between the said hanger and the bell-crank lever, an upright sheave supported on the deck, a counterbalance-weight movable vertically in the sheave-support, a vertically-swinging journal-box mounted in the hanger, a shaft journaled in the rocking bearing and the journal-box and having a gear on its forward portion intermeshed with that of the drive-shaft, a propeller on the rear portion of said shaft, a rotary box supported on the deck and having a passage of angular form in cross-section, a rudder having a post of angular form in cross-section journaled in the hanger and extending through the passage of the rotary box, a tiller on said rudder-post, a cable passed over the sheave and connecting the hanger and the counterbalance-weight.

5. In a boat, the combination of a body, a hanger of angular form in cross-section movable up and down with respect to the body and in a correspondingly-shaped guide thereon, a counterbalance-weight also movable up and down with respect to the body and connected with the hanger so as to assist in raising the same, a propeller carried by the hanger, means for transmitting motion to the said propeller, a lever mounted on the body, a connection between the lever and the hanger for moving the latter by the former, and means for adjustably fixing said lever.

6. In a boat, the combination of a body, a hanger mounted to move up and down in the body, a counterbalance-weight movable up and down in an upright guide on the body, an upright sheave, a cable passed over said sheave and connecting the hanger and the weight, a propeller carried by the hanger, means for adjusting and adjustably fixing the hanger, and means for transmitting rotary motion to the propeller.

7. In a boat, the combination of a body, a hanger movable up and down with respect to the body, a counterbalance-weight also movable up and down with respect to the body, and connected with the hanger so as to assist in raising the same, a propeller carried by the hanger, and means for transmitting motion to the said propeller.

8. In a boat, the combination of a body, a hanger movable up and down with respect to the body, a counterbalance-weight also movable up and down with respect to the body and connected with the hanger so as to assist in moving the latter, a rudder-post movable up and down in the hanger and with respect to the body and carrying a rudder, a propeller carried by the hanger, and means for transmitting motion to the said propeller.

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

FREDERICK W. SMITH.

Witnesses:
W. A. Boss,
ISABEL U. WILSON.