

No. 870,225.

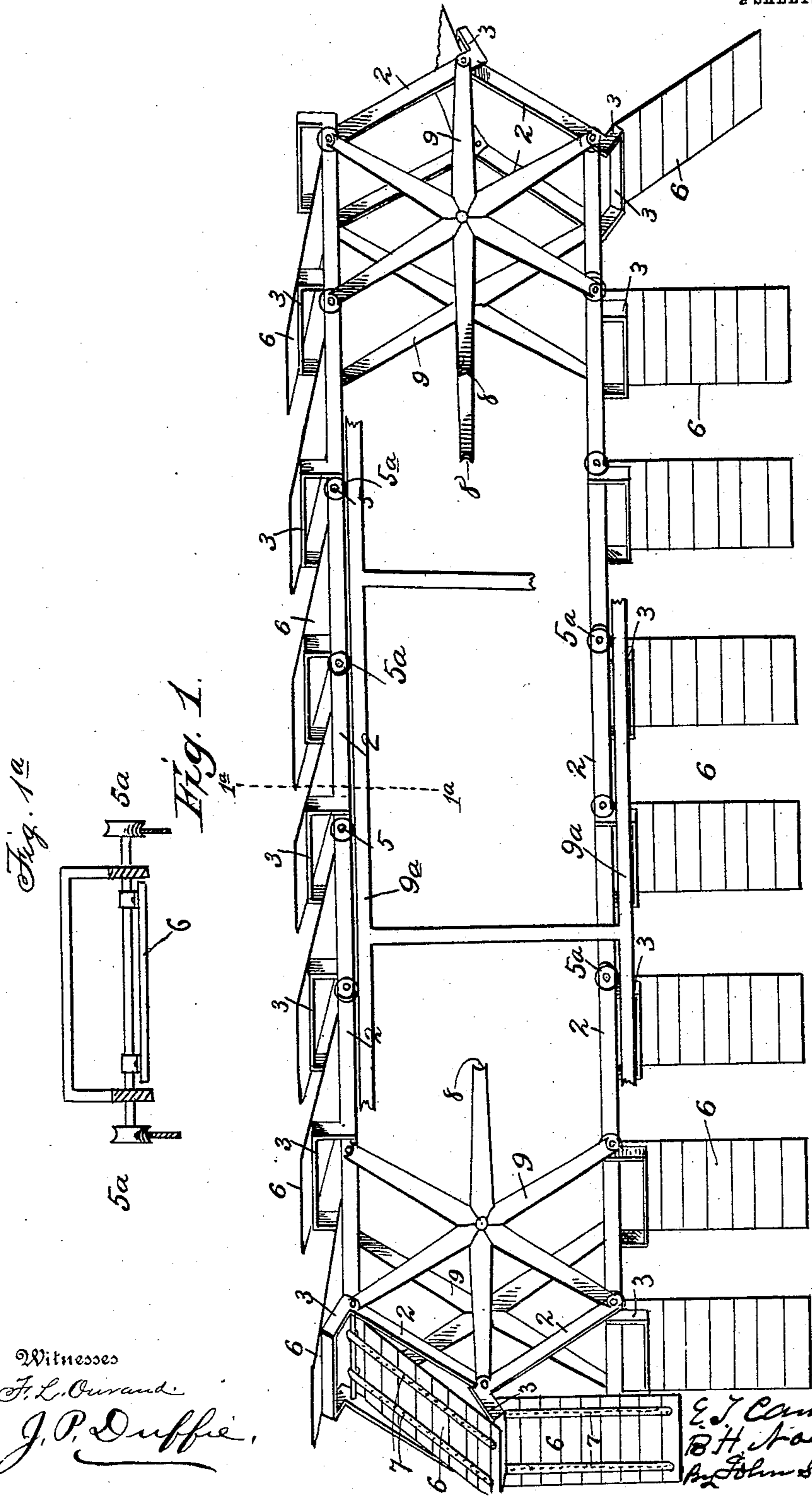
PATENTED NOV. 5, 1907.

E. T. CAMPBELL & B. H. NOELTING.

WATER MOTOR.

APPLICATION FILED JULY 27, 1906.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

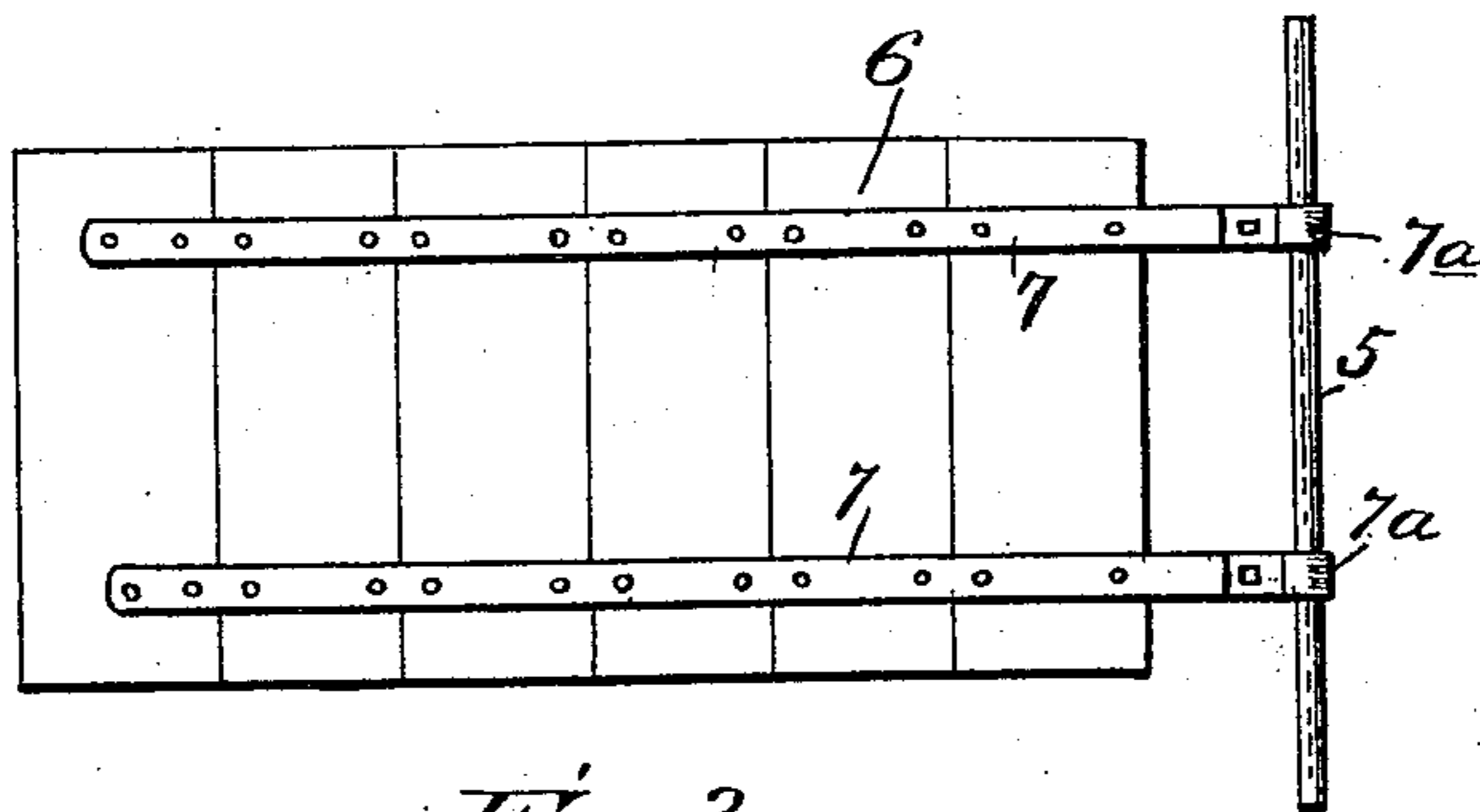
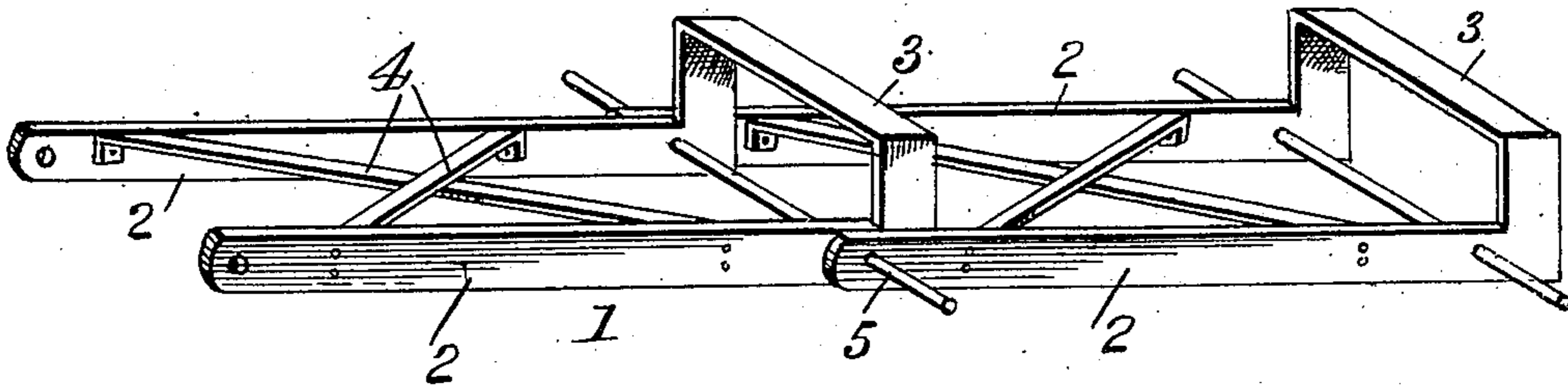


Fig. 3.

Fig. 3^a

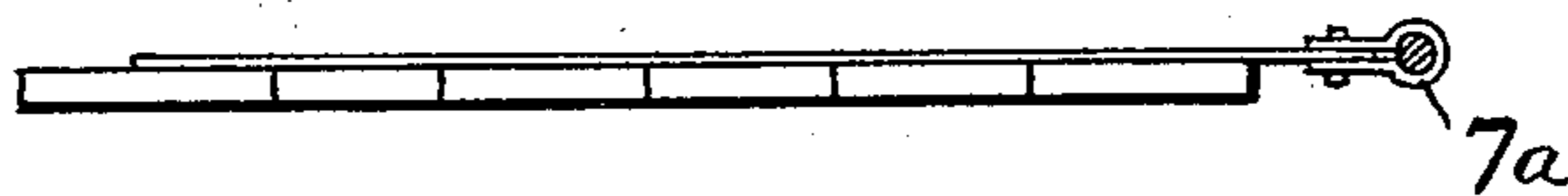
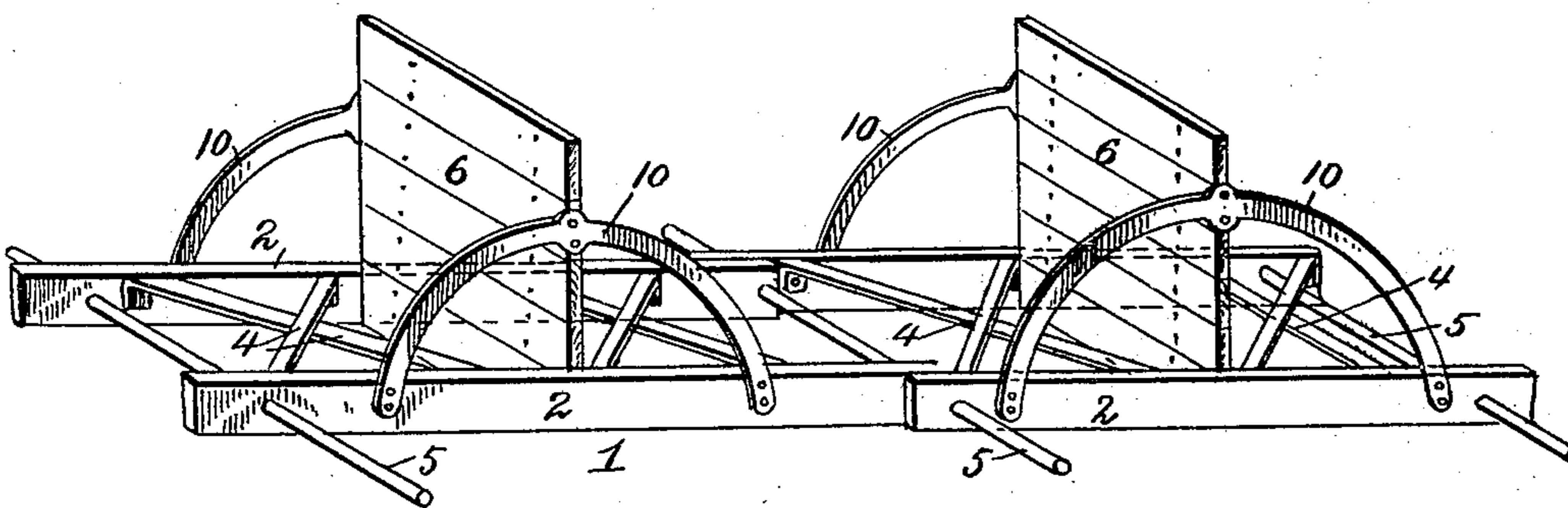


Fig. 4.



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UNITED STATES PATENT OFFICE.

EZRA T. CAMPBELL AND BERNHARD H. NOELTING, OF NEBRASKA CITY, NEBRASKA.

WATER-MOTOR.

No. 870,225.

Specification of Letters Patent.

Patented Nov. 5, 1907.

Application filed July 27, 1906. Serial No. 328,067.

To all whom it may concern:

Be it known that we, EZRA T. CAMPBELL and BERNHARD H. NOELTING, citizens of the United States, residing at Nebraska City, in the county of Otoe and State of Nebraska, have invented certain new and useful Improvements in Water-Motors, of which the following is a specification.

Our invention has relation to that class of water motors in which a series of paddles of preferably rectangular form are hinged to the connecting rods of an endless chain of frames rigidly connected at one of their ends by integral inverted U shaped braces which present a firm bearing surface for the paddles when presented to the current to receive the impact thereof, the ends of the connecting rods being adapted to engage in corresponding concave recesses in the radial arms of wheels and effect their rotation.

One of the objects of the invention is the production of a current motor which is comparatively simple and economical in construction, efficient in operation, and capable of delivering ashore the maximum amount of power possible from any stream in which it may be placed.

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

In the accompanying drawings in which like parts are designated by like characters throughout the several views:—Figure 1, is a perspective view of our invention. Fig. 1^a, is a cross sectional view of our invention, cut on the line *a a*, of Fig. 1. Fig. 2, is a detail perspective view of our invention, showing the construction of the frames comprising the endless chain for the paddles. Fig. 3, is a bottom plan view of one of the paddles hinged to one of the connecting rods. Fig. 3^a, is an edge view of Fig. 3. Fig. 4, is a modification of our invention, showing the construction of the frames comprising the endless chain for the paddles and the manner of securing them thereto when the motor is used as a propeller.

Our invention is described as follows:—The numeral 1, represents the frames comprising the endless chain for the paddles. Said frames are preferably constructed of flat rectangular steel bars 2 transversely perforated near their ends and rigidly connected at one of their ends by means of inverted U shaped braces 3, the purpose of which will be shown. The free ends of said frames are rigidly braced a pre-determined distance apart by oblique braces 4, which are secured at their ends to the inner sides of said bars 2 of said frames 1. Said frames are detachably connected together by bringing them in such a position that the perforations in their free ends register with the perforations in the opposite ends of adjacent frames, and employing transverse connecting rods 5, which are passed transversely through said perforations. The numeral 6, represent

the paddles of our motor, which paddles are constructed of suitable material and are preferably rectangular in shape. Said paddles are hinged to said connecting rods 5 within the bars 2 of said frames 1 by longitudinal plates or bars 7, which are rigidly secured to the under faces of said paddles and hinged at their eyed ends to said connecting rods 5. The ends of said transverse connecting rods 5 protrude sufficiently beyond the outer faces of the bars 2 of said frames 1 to permit of engagement in corresponding concave recesses in the radial arms of wheels 9. The radial arms of said wheels 9 are of such a number and such distances apart with respect to the frames 1 as to permit of perfect engagement with the ends of said connecting rods 5.

When in use, the free ends of the upper section of the train of paddles 6 lie down against the tops of the inverted U shaped braces 3 of said frames 1 and travel in a direction opposite to that of the current. The lower section of the train of paddles travel in the direction of the current and are held in vertical position by the inverted U shaped braces 3 of said frames, which serve as bearing surfaces for the upper hinged ends of said paddles. In this position the paddles receive all the power of the stream possible. The paddles traveling in the direction of the current are carried up and over corresponding wheels 9, and travel in a direction opposite to the current, when the paddles lie down again against the tops of the inverted U shaped braces 3, of the frames. Our water motor, when in use, is secured on a catamaran, or a flat boat, provided with a proper central walled opening for the paddles securely anchored to prevent its floating away.

When we desire very great power, we make the chain of considerable length so we may use quite a number of paddles, in which case we erect a vertical frame 9^a, on the upper and lower rails of which the spools 5^a, journaled on the ends of the rod 5, run.

In the modification of our invention, see Fig. 4, which is designed to be used as a propeller, we dispense with the inverted U shaped braces 3, of the frames 1, and in lieu thereof employ an additional set of oblique braces with each frame. In this case, the paddles 6, are not hinged to the connecting rods 5, but are vertically braced at the center of the lengths of the frames by curved braces 10, secured at their lower ends to the side bars of the frames and at their centers to the outer edges of said paddles. The wheels 9, in this case are constructed in accordance with the wheels for the water motor, and the frames work over the wheels in the same manner as the frames of the motor.

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

1. In a water motor, the combination of a series of frames, each consisting of two rectangular bars transversely perforated at either end, and connected at one end

by a transverse inverted U shaped brace; oblique braces, their ends secured to the inner faces of said bars; transverse connecting rods, one passing through the perforations in the end of each frame, and the perforations in the opposite end of the adjacent frame; longitudinal bars, hinged to said connecting rods within said frames; rectangular paddles, their under faces secured to said last mentioned bars, and wheels having radial arms provided with concave recesses in their ends, the outer ends of said connecting rods adapted to engage in the recesses of the radial arms of said wheels and effect their rotation, substantially as shown and described, and for the purposes set forth.

2. In a water motor, the combination of a series of frames, each consisting of two rectangular bars; inverted U shaped braces connecting one of the ends of said frames; oblique braces, their ends secured to the inner faces of said frame bars; means for pivotally connecting the adjacent ends of said frames; rectangular paddles, hinged longitudinally to said frames, and wheels having radial arms provided with recesses in their ends, said wheels adapted to be put in rotation by said frames, substantially as shown and described, and for the purposes set forth.

3. The combination of a series of frames forming a chain, each frame consisting of two bars transversely perforated near their ends; braces secured to the inner faces

of said bars, bracing them a predetermined distance apart; transverse rods, passing through the perforations in said frames, and hinging the same together; paddles carried by said frames, and wheels having radial arms adapted to catch the outer ends of said transverse rods, said paddles adapted to rotate said wheels when operated by the current, substantially as shown and described, and for the purposes set forth.

4. The combination of a series of frames forming a chain, each chain consisting of two bars transversely perforated near their ends; braces secured to the inner faces of said bars, bracing them a predetermined distance apart; transverse rods passing through the perforations in said frames, and hinging the same together; spools, journaled on the ends of said rods; paddles, carried by said frames; wheels, having radial arms adapted to catch the outer ends of said transverse rods, and a vertical frame provided with upper and lower rails for said spools to run on, substantially as shown and described and for the purposes set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EZRA T. CAMPBELL.

BERNHARD H. NOELTING.

Witnesses:

HUGH H. SEYMOUR,

HOWARD SEYMOUR.