No. 667,477. Patented Feb. 5, 1901.

H. A. WISE.

CURRENT WATER MOTOR.

(Application filed Feb. 13, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

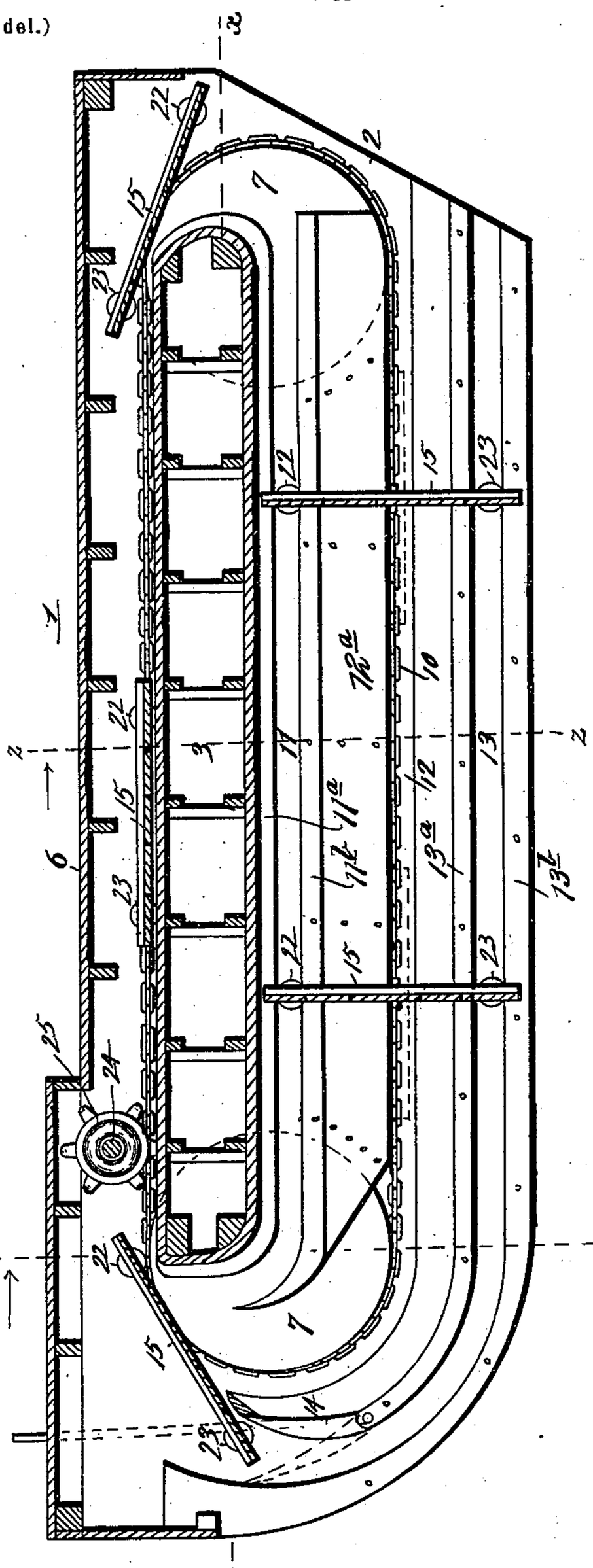
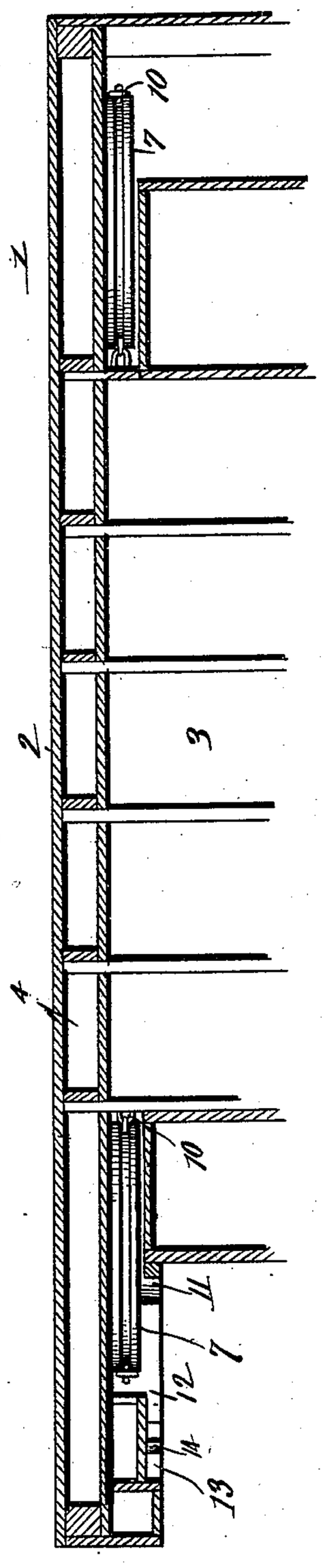


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

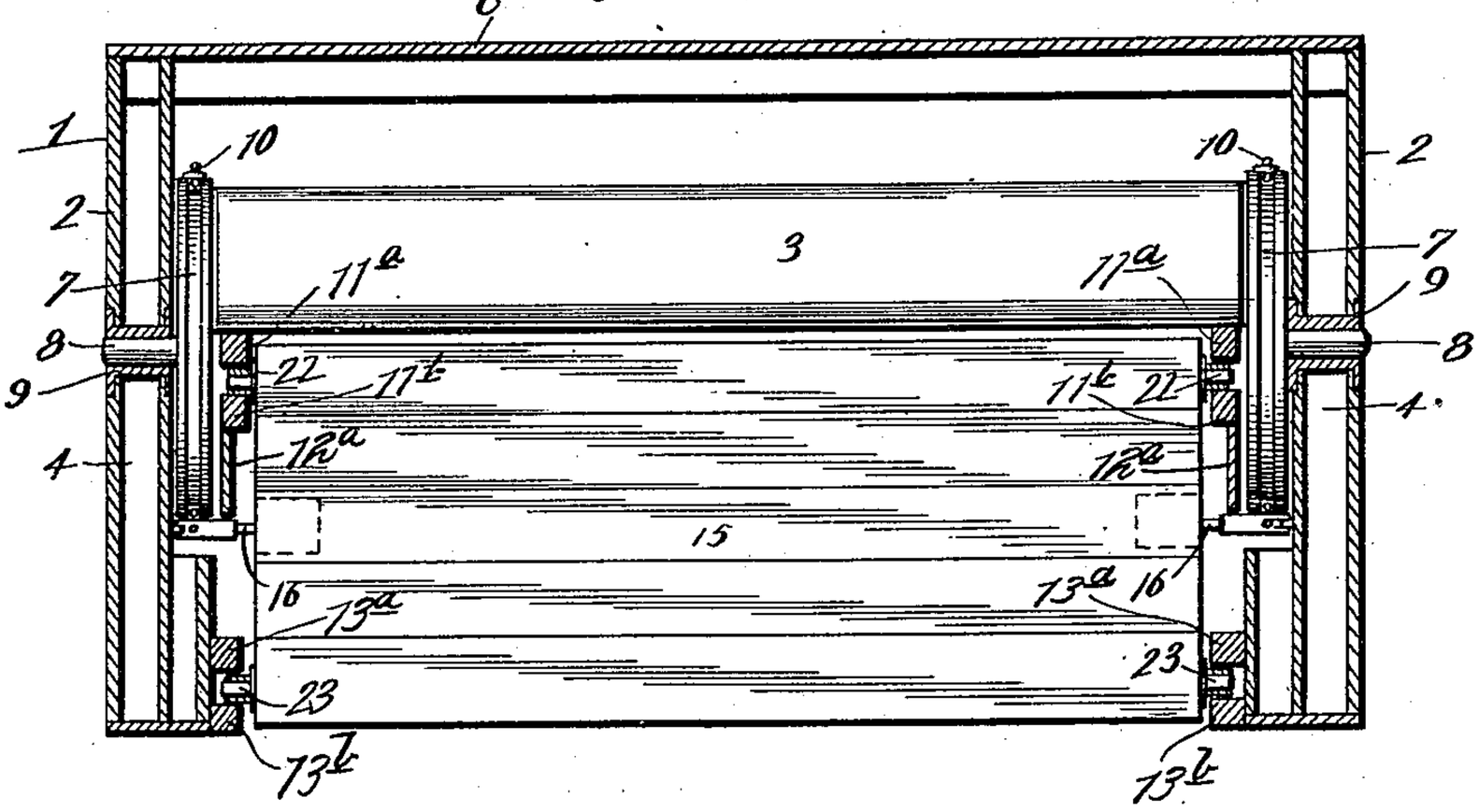


Fig. 4.

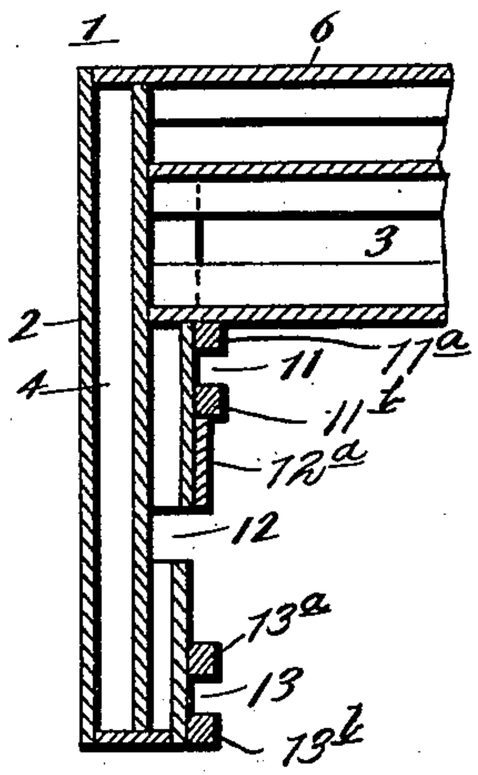


Fig. 5.

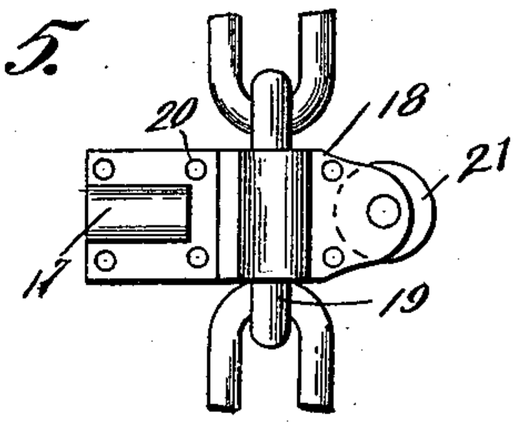
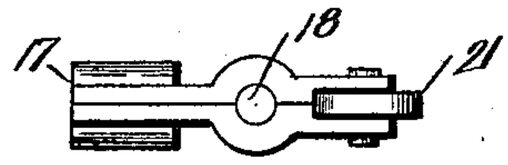


Fig. 6.



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UNITED STATES PATENT OFFICE.

HERBERT A. WISE, OF LUXORA, ARKANSAS.

CURRENT WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 667,477, dated February 5, 1901.

Application filed February 13, 1900. Serial No. 5,082. (No model.)

To all whom it may concern:

Be it known that I, HERBERT A. WISE, a citizen of the United States, residing at Luxora, in the county of Mississippi and State of Arkansas, have invented a new and useful Current Water-Motor, of which the following is a specification.

My invention is a current water-motor of the type in which endless traveling chains are provided with paddles operated by the current, whereby power is derived from a current of flowing water, as a river or other stream, the whole being supported by an anchored float.

One object of my invention is to provide feathering-paddles adapted to lie flat on the upper leads of the chains and to automatically present themselves broadside to the current on the lower leads of the chains, whereby the space between the top of the float and the cabin-deck may be narrowed as compared with existing motors of the same general type in which the paddles are not feathered and whereby the paddles employed may be enlarged as compared with those of existing current-motors.

A further object of my invention is to provide a current-motor in which the paddles on the lower leads of the endless traveling chains may be feathered or turned edgewise to the current, so as to throw the motor out of operation.

My invention consists in the peculiar construction and combination of devices hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is vertical longitudinal central sectional view of a current-motor embodying my improvements. Fig. 2 is a horizontal longitudinal sectional view of the same, taken on the line *x x* of Fig. 1. Fig. 3 is a vertical transverse sectional view of the same, taken on the line *y y* of Fig. 1. Fig. 4 is a detail vertical transverse sectional view of the same, taken on the line *z z* of Fig. 1. Figs. 5 and 6 are detail views of the endless traveling chains, showing the pivotal connection for the feathering-paddles and the antifriction-rollers.

The float 1 comprises the vertical sides or gunwales 2 and the horizontal buoying-chamber 3, which is disposed between and connects the sides or gunwales 2 at a point near the upper sides thereof. As here shown, the sides or gunwales 2 are hollow and form buoying-chambers 4, and the chamber 3 constitutes, in effect, a buoying-deck. The lower portion of the vertical buoying-chambers or gunwales and the lower side of the buoying-deck are submerged. The ends of the buoying-deck are rounded, and said deck is of less length than the sides or gunwales of the float, the ends thereof being at some distance from the extreme end of the gunwales or sides, and the upper sides of the gunwales are connected together by an upper or cabin deck 6, which, as here shown, is only a slight distance above the upper side of the buoying deck or chamber 3.

Supporting-wheels 7 are disposed approximately at the ends of the buoying-deck and are provided on their outer sides with projecting spindles or shafts 8, which are journaled in bearings 9 in the vertical sides or gunwales of the float. The outer edges or peripheries of said supporting-wheels project beyond the ends of the buoying-deck, and the upper sides thereof are disposed at a slight elevation above the top of the buoying deck or chamber 3, whereby the endless chains 10, which connect the said supporting-wheels 7 in pairs on opposite sides of the float, have their lower leads carried at some distance below the buoying-deck and their upper leads disposed and adapted to travel approximately on the upper side of the buoying-deck, as shown in Figs. 1 and 3.

In the opposing inner sides of the gunwales, below the buoying deck or chamber 3, are the series of guide or track ways 11, 12, and 13. The trackways 11 are formed by upper and lower rails 11^a 11^b, respectively, on the inner sides of the gunwales and here shown as attached to the inner sides of planks which are carried by cleats or blocks from the sides of the gunwales. Longitudinally-disposed boards 12^a are also bolted to these planks just below the rails 11^b. Said boards 12^a form offsets on the inner sides of the gunwales, and the lower sides thereof form ways under which the rollers 22 23 of the paddles are disposed when the paddles are in a horizontal position, as will be presently described. The trackways 13 are formed between upper

and lower rails 13^a 13^b, respectively, secured to the inner sides of the gunwales. The trackways 12 13 are near the lower sides of the gunwales or side chambers 4, the trackways 12 being disposed above and parallel with the trackways 13 Said trackways at the upstream end of the float are concentric with the proximate supporting-wheels 7, and disposed between the open ends of the trackways 12 13, at said upstream end of the float, are pivoted switch-rails 14, which may be operated by any suitable form of lever. (Not shown.)

The endless traveling chains are connected together at suitable regular intervals by paddles 15, which are transversely disposed between the sides of the float. Said paddles are provided at their centers with projecting trunnions 16, which are journaled in bearings 17 on plates 18, connected to appropriate links of the endless traveling chains, as at 19, said plates being formed in pairs bolted together on opposite sides of said links, as at 20. The outer ends of said plates project beyond the outer sides of the endless chains and form bearings for the antifriction-rollers 21, which travel in the trackways 12. The paddles 15 are provided near their opposite sides at their ends with projecting spindles on which are mounted track-rollers 22 23.

A power-shaft 24 is journaled in suitable bearings in the sides of the float above the buoying-deck and near one end thereof, and on the said power-shaft are keyed sprocket-wheels 25, which engage the endless chains and are rotated by the latter, thereby communicating motion to the power-shaft when the motor is in operation.

The operation of my improved current water-motor is as follows: The paddles being pivoted at their centers between the endless traveling chains, the same as they reach the upper leads of said endless traveling chains at the rear end of the buoying-deck, where their rollers 22 23 are not engaged by the trackways, are caused to feather as they pass over the upper sides of the supporting-wheels 7 and to lie flatwise on the upper side of the buoying-deck while traveling forward thereon, the said rollers 22 23 engaging and traveling upon the upper side of the buoying-deck, as shown in Fig. 1. As each of the paddles nears the front or upstream end of the float its rollers 23 engage and enter the curved upper portions of the trackways 13, and as said rollers descend said curved portions of said trackways, the switch-rails 14 being in the position indicated in full lines in Fig. 1, said curved portions of said trackways 13 operate as cams and turn the paddle on its pivots in such manner as to dispose the same radially to the concentric portions of the trackways 13 11 and engage the rollers 22 of the paddle with said trackways 11, the trackways 11 13 coacting to dispose the paddle in a vertical position broadside to the current, by which the paddle is swept rearward until it clears said trackways and feathers while being withdrawn from the water by the upper leads of the chains. It will be understood that by this construction of my improved current water-motor I secure maximum efficiency of the actuating-paddles. When it is desired to stop the operation of the motor, the switch-rails 14 are turned so as to guide the rollers 23 of the paddles at the lower edges thereof from the trackways 13 toward the trackways 12, thereby preventing the rollers at the upper side of the paddles from entering trackways 11 and disposing the lower sides of the paddles to the force of the current, which causes the paddles to turn on their pivots to a horizontal position as their pivots reach the lower sides of the supporting-wheels 7 at the front end or bow of the float and engage the rollers 22 23 of said paddles with the lower sides of the boards 12^a, as shown in dotted lines in Fig. 1, thereby disposing the said paddles edgewise to the current.

It will be understood from the foregoing description and by reference to the drawings that the space between the upper or cabin deck of the float and the buoying deck or chamber 3 in my improved current water-motor is narrowed, thereby reducing the height of the free board of the float and enabling the latter to be much more economically constructed than is possible in existing current water-motors in which the paddles are not adapted to feather as they pass under the upper deck.

I do not desire to limit myself to the precise construction of the float as herein before described, as it is evident that modifications may be made therein without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. In a current water-motor, the combination with endless traveling chains and supporting-wheels therefor, of centrally-pivoted paddles connecting said endless traveling chains and provided with guides or rollers equidistant from their centers, a trackway in the same plane with the pivotal centers of said paddles, trackways equidistant therefrom for the guides of the paddles and means to direct said guides into said trackways and from the latter into said centrally-disposed trackways, substantially as described.

2. A float having a buoying-deck, in combination with supporting-wheels at the ends thereof, with their upper sides above said deck, endless chains connecting said supporting-wheels, paddles, centrally pivoted to said endless chains, and trackways below the deck, parallel with and above and below the lower leads of the chains, and concentric at one end with the supporting-wheels, said trackways being engaged by tappets on the ends of the paddles, for the purpose set forth,

and the latter feathering on the upper side of the deck on the upper leads of the chains, substantially as described.

3. In combination with the feathering-paddles having the pivots or trunnions, the endless chains having the plates 18 provided with rollers 21 and bearings 17 for the pivots or trunnions of the feathering-paddles, substantially as described.

4. In combination with the feathering-paddles having the pivots or trunnions, the endless chains, the plates 18 bolted together and embracing links of said chains between them, said plates being formed with bearings 17, and rollers 21 having their bearings in the ends of said plates, extending beyond one side of said chains, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HERBERT A. WISE.

Witnesses:
B. DUDNEY,
ED. F. GREER.