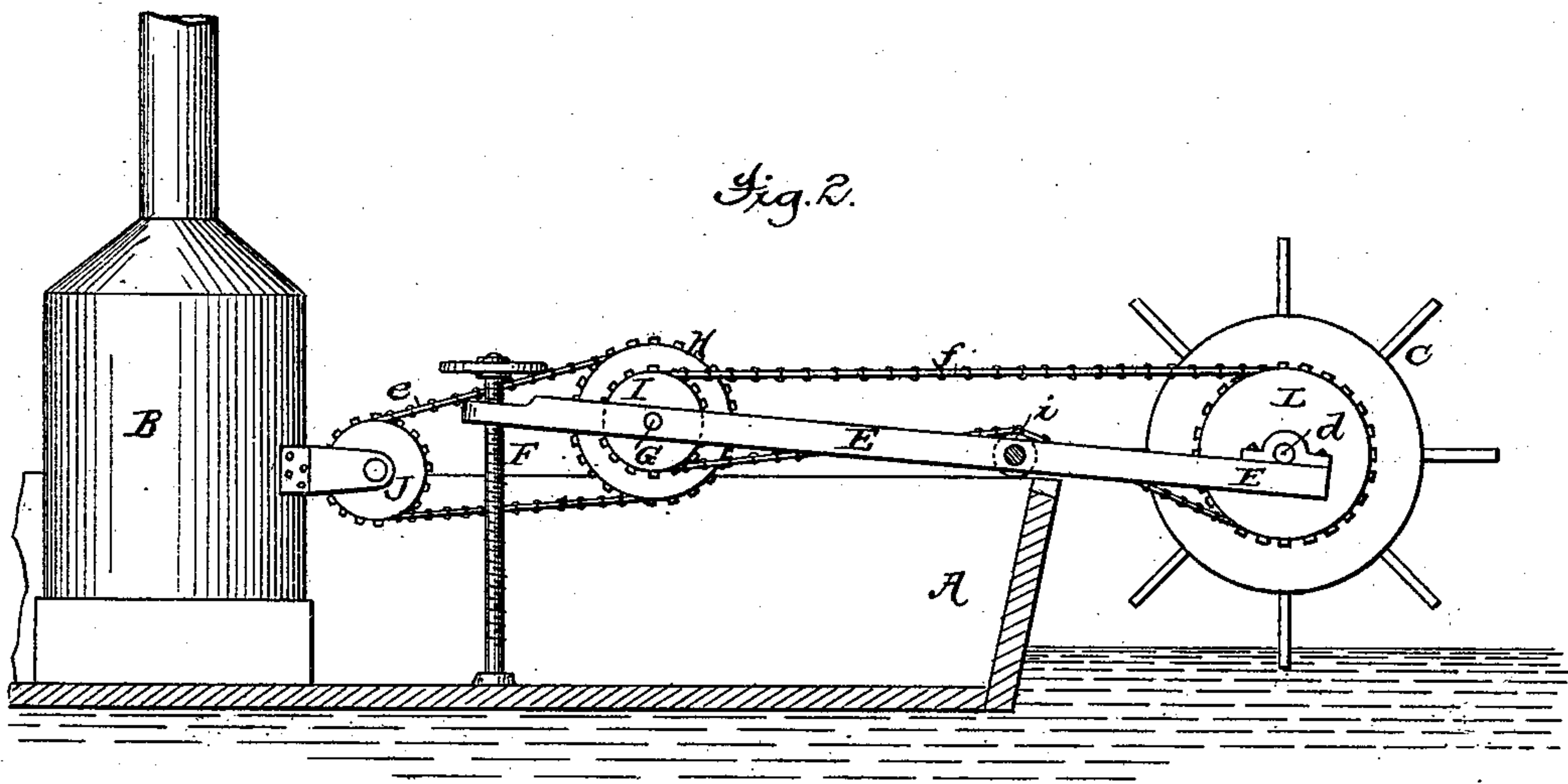
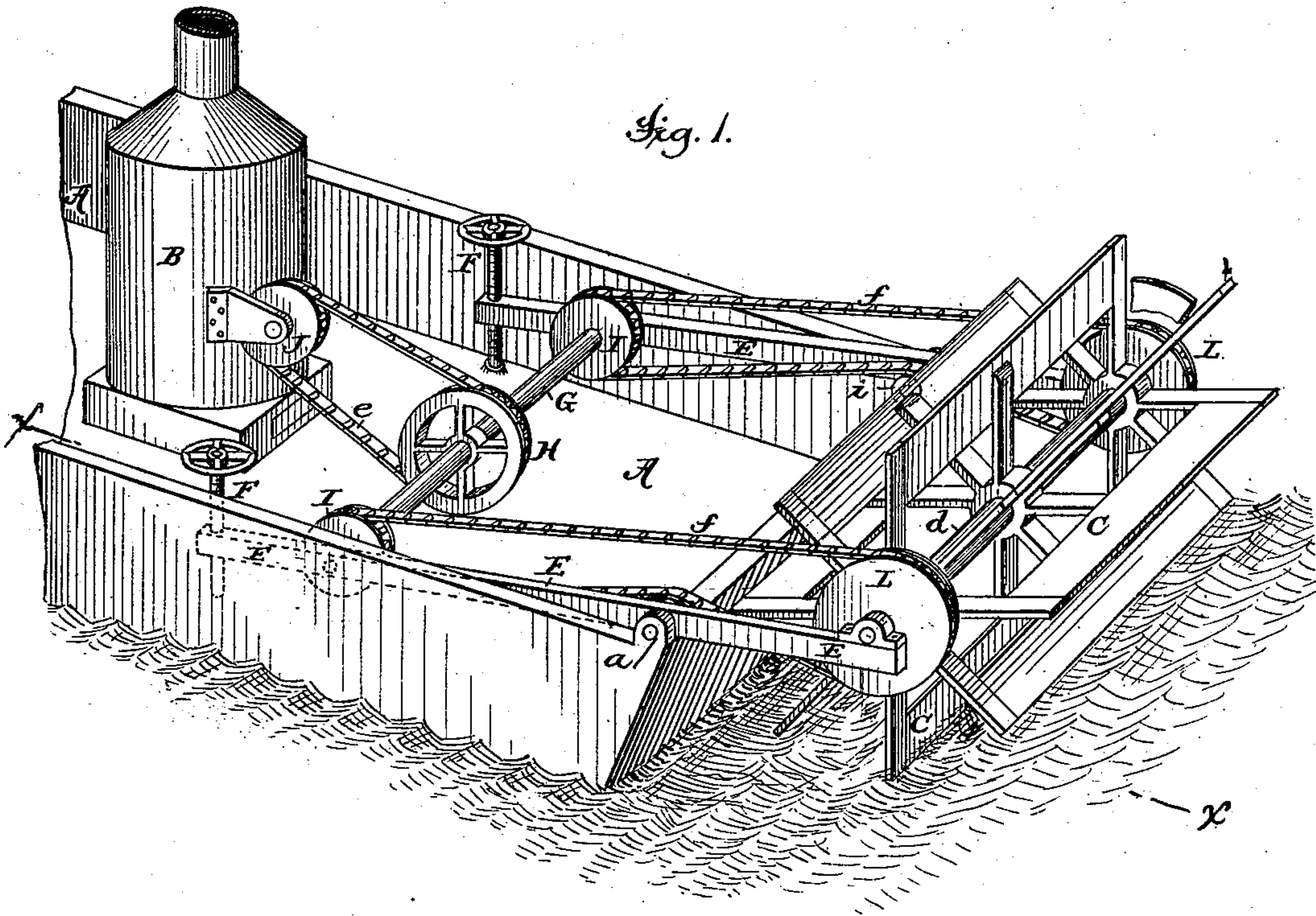


(No Model.)

W. D. EWART.
Paddle Wheel.

No. 243,535.

Patented June 28, 1881.



Attest;
Geo. H. Graham
Jacob Felbel

Inventor,
W. D. Ewart
J. M. Suter
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM D. EWART, OF CHICAGO, ILLINOIS.

PADDLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 243,535, dated June 28, 1881.

Application filed March 5, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DANA EWART, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stern-Wheel Steamboats; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

10 Previous to my invention it has been customary in the construction of what are known as "stern-wheel steamboats"—i. e., that kind of boats in which a paddle-wheel is located at the stern—to have the wheel hung in such a manner that, in order to adapt it to work properly at different times when the draft of the boat might be different, (on account of the character of her cargo or the absence or presence of a load,) it has been necessary to change the location of the floats or paddles relatively to the shaft or axis of motion of the wheel, that said paddles or floats might, under the various conditions named, have the proper "dip" in the water. It has also been usual in this kind of boats to have the wheel driven by the direct action of pitmen extending from the engine to crank-pins at either end of the wheel. As thus heretofore made (so far as my knowledge goes) this kind of boats has involved objections on account of, first, the labor and inconvenience of adjusting the wheel to work under the variations of draft of the boat, and, second, the necessarily slow rate of speed at which the engine has had to be run.

35 I propose to overcome these objections, first, by a construction in which the wheel and its attachments may be bodily raised and lowered readily and at pleasure, (and while the engine is running, if necessary,) and, second, by providing means by which, through the medium of simple appliances, the engine may be run at a comparatively high rate of speed, and thus have the steam-power more economically employed.

45 To these main ends and objects my invention consists in the hereinafter-described improved construction of or combination of devices composing the paddle-wheel supporting and driving mechanism, more particularly pointed out in the claim of this specification.

To enable those skilled in the art to which

my invention relates to make and use it, I will now proceed to more fully describe the construction and operation of the same, referring by letters to the accompanying drawings, forming part of this specification, and in which I have illustrated that mode of carrying out my invention under which I have so far successfully practiced it.

In the said drawings, Figure 1 is a perspective view of a stern-wheel boat having my improvements applied thereto, and Fig. 2 is a vertical section of the same at the line *x x* of Fig. 1.

The same parts, when they occur in the different views, will be found designated by the same reference-letter.

A represents the hull of the boat, and B the engine, which latter is preferably placed near the middle of the boat and so as to properly ballast her.

C is the paddle-wheel, which is made in any of the approved forms as to detail construction, and the shaft *d* of which is mounted in the rearmost ends or portions of two arms or levers, E E, which latter are pivoted each at *a* to the stern portion of the boat. The inner ends of the levers or pivoted beams E E are securely held down by vertical screw-shafts F F, which have their lower ends suitably journaled in the boat, and are provided at their upper ends with hand-wheels *b*. These shafts F are threaded and pass through and work within nuts with which the levers E are provided, and they serve to elevate and depress the inner ends of said levers for the purpose of raising and lowering the outer ends thereof, to which the shaft *d* of the paddle-wheel is journaled.

G is a shaft, which serves to carry three chain-wheels, and also performs the office of tying together the inner ends of the lever-beams E E, near which inner ends the ends of said shaft G are journaled. The wheels carried by said shaft G are, first, the middle wheel, H, by which said shaft is driven through the medium of a chain-belt, *e*, banding said wheel to the main drive-wheel J of the engine, and, second, two wheels, I I, located near the ends of said shaft, and through the medium of which and chain-belts *f f* the power and motion of said shaft are transmitted to two larger chain-

wheels, L L, which latter are keyed onto the paddle-wheel shaft *d*, as clearly shown.

i i are idlers, which are hung on studs or short shafts, preferably integral with the pivotal studs on which the levers E turn at the points *a a*, and which idlers serve to guide and hold the lower parts of the endless chain-belts *f f* out of contact with the rearmost part of the boat, over which said chains pass and from the level of which said chains must, of course, descend in passing under the chain-wheels L of the paddle-wheel shaft.

The general operation of the contrivance shown and so far described as to its construction needs but little explanation here, as it must be quite apparent.

The driving-power of the engine or motor at B is imparted through the drive-chain *e* and wheel H to the shaft G, and from this shaft, through the medium of its two wheels I I and the chains *f f*, to the wheels L L, which are fast on the shaft *d*, and which consequently rotate the paddle-wheel C. By a proper proportioning of the several sets of wheels referred to, the usually rapid speed of the engine at B (usually a "Baxter" or some such class of engine) is slowed down, so as to have imparted to the paddle-wheel the proper speed, while at the same time, it will be observed, the whole driving mechanism is of a positive character, and simple and durable of construction.

By turning both of the screw-shafts F F in one or the other direction, as occasion may require, the inner ends of the lever-beams E E will be either raised or lowered, and the outer ends of said beams proportionately lowered or raised, whereby the paddle-wheel C will be adjusted up or down relatively to the boat A, and may thus be set in the proper relation to the level of the water under variations of the draft of the boat.

The two shafts *d* and G, as well as the wheels and chains running thereon, being all hung on the two pivoted beams E E, and these beams, together with said shafts, constituting practically a simple rectangular frame, vibrating about the fulcrum pins or studs *a a*, the whole contrivance by which the ready and perfect adjustment of the paddle-wheel may be effect-

ed is, it will be seen, exceedingly simple and strong, and not at all liable to get out of order.

The inner ends of the beams E E might be yoked together, so that a single screw-shaft might be used, arranged near the middle of the boat, in lieu of the two F F; but, as in most cases the distance apart of the two inner ends of the beams E E is considerable, (varying from sixteen to twenty feet and upward,) I have found it preferable in practice to use two screw-shafts, in the manner shown and described.

Although the shaft G and its chain-wheel H move in the arc of a circle the center of which is at the pivotal point *a*, the adjustment up and down of said wheel H in this manner does not at all impair the perfect working of said wheel with its chain *e* and the main drive-wheel J, because, first, the arc of motion is not very long and its degree of curvature is but slight, and, second, a drive-chain working on sprocket-wheels (unlike an ordinary belt passing over smooth-faced pulleys) may be run so slack as to easily permit the shortening consequent to the curved path of motion of the axis of wheel H during the described adjustment of the latter.

Having now so fully explained my improvements in stern-wheel boats that those skilled in the art can make and use such boats with my invention applied thereto, what I claim as new, and desire to secure by Letters Patent, is—

In combination with the boat-hull, the paddle-wheel, and a frame carrying said wheel and capable of adjustment in the manner described, the system of chain-wheels H I I L L and drive-chains *f f*, by means of which the necessary power and motion may be derived from the engine by the wheel H, and be thence imparted in a positive manner to the paddle-wheel, as set forth.

In testimony whereof I have hereto set my hand this 17th day of February, 1881.

WILLIAM DANA EWART.

In presence of—

JACOB FELBEL,
H. JANVIER.