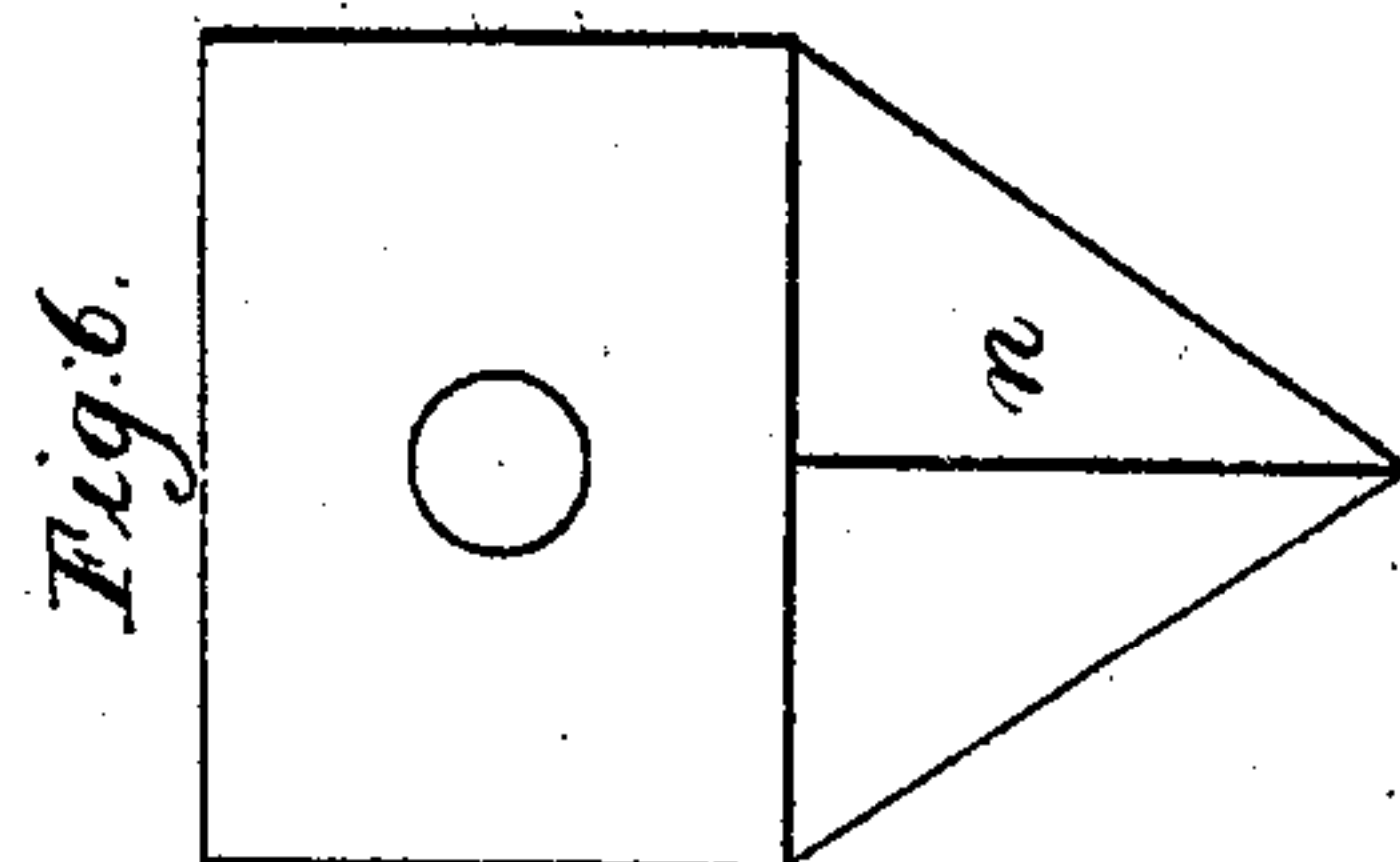
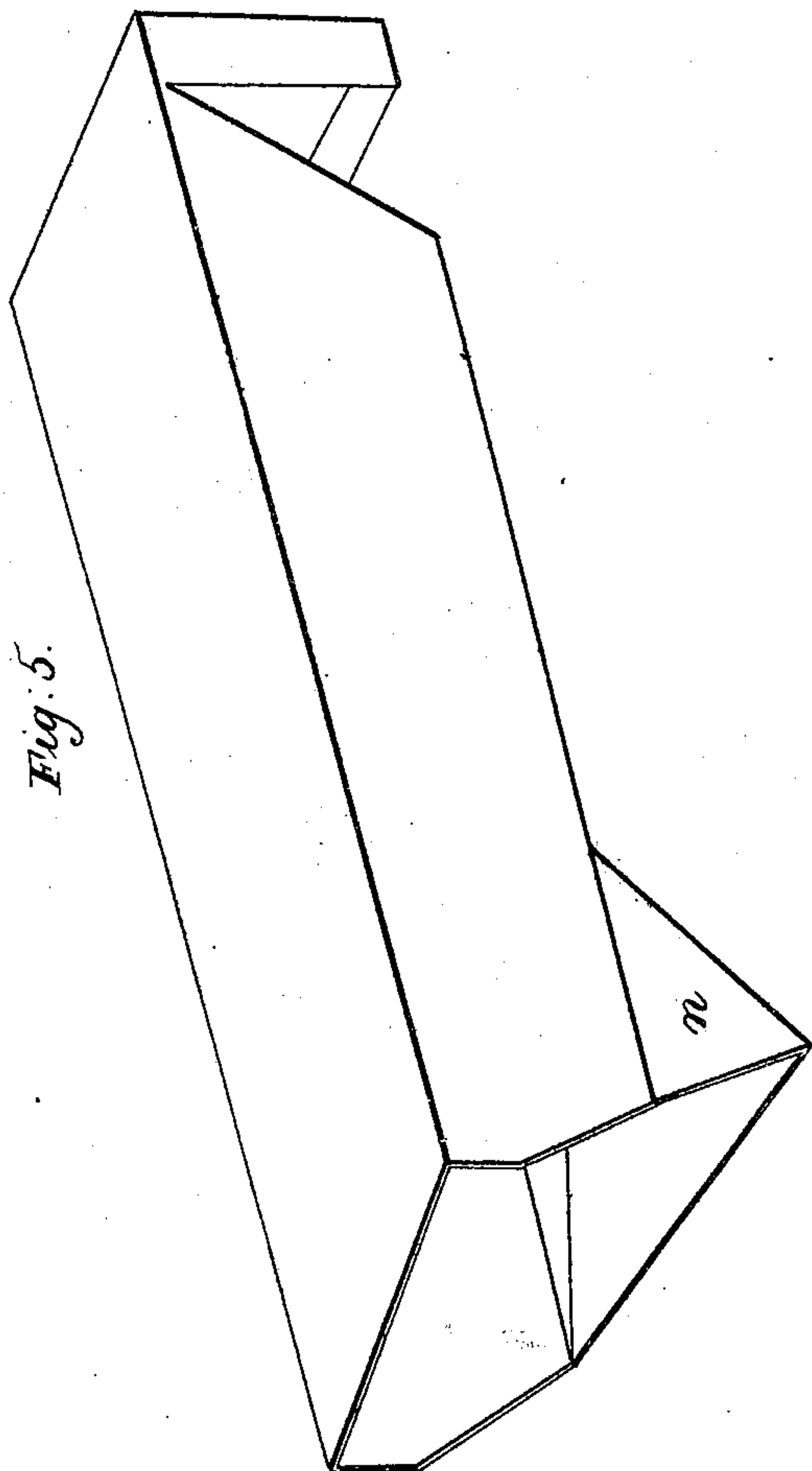
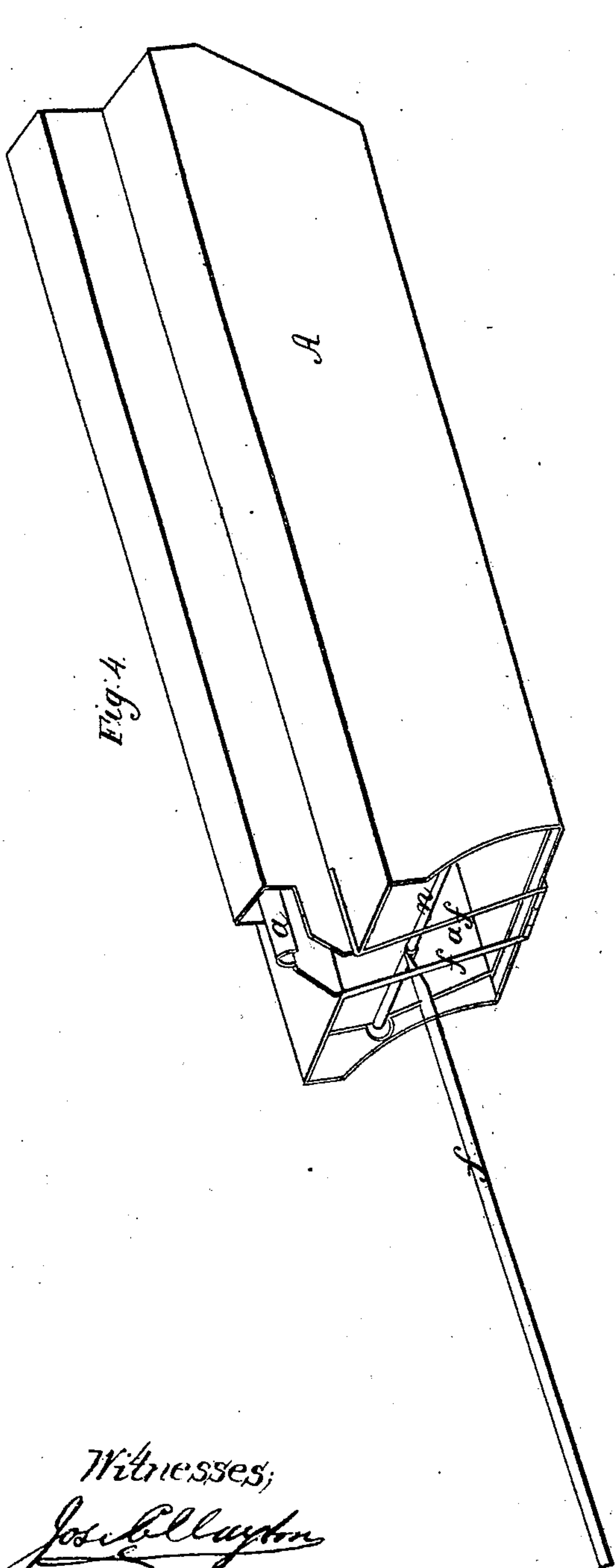


G. L. Carver.
Hydraulic Propeller.

N^o 29,464

Patented Aug. 7, 1860.



Witnesses;
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Chas. B. Burch,

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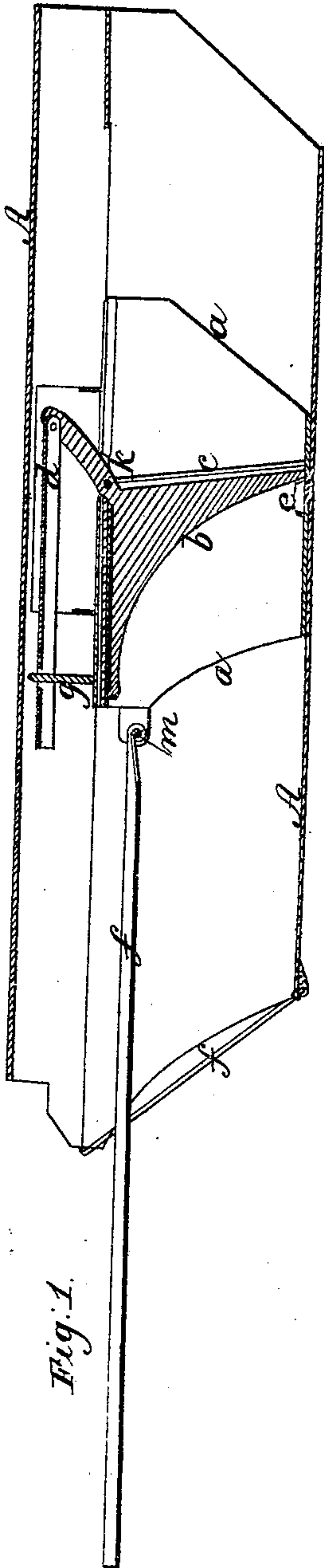


Fig. 1.

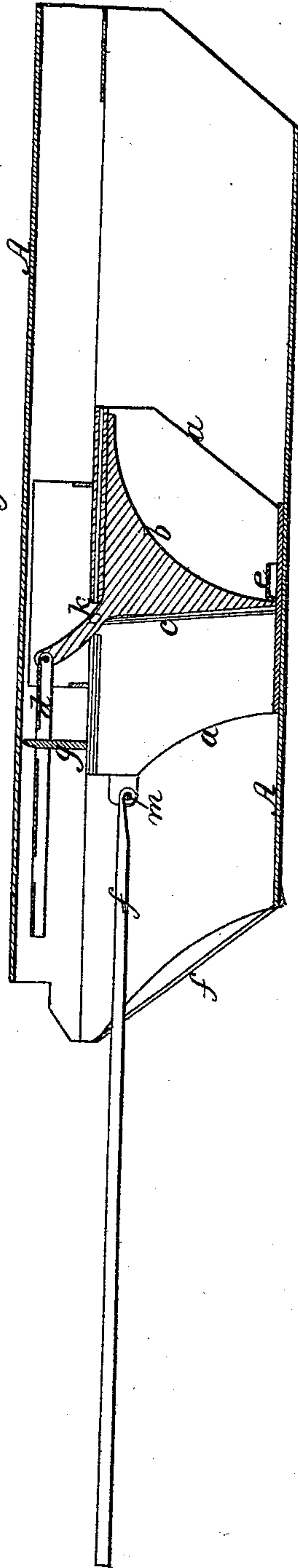


Fig. 2.

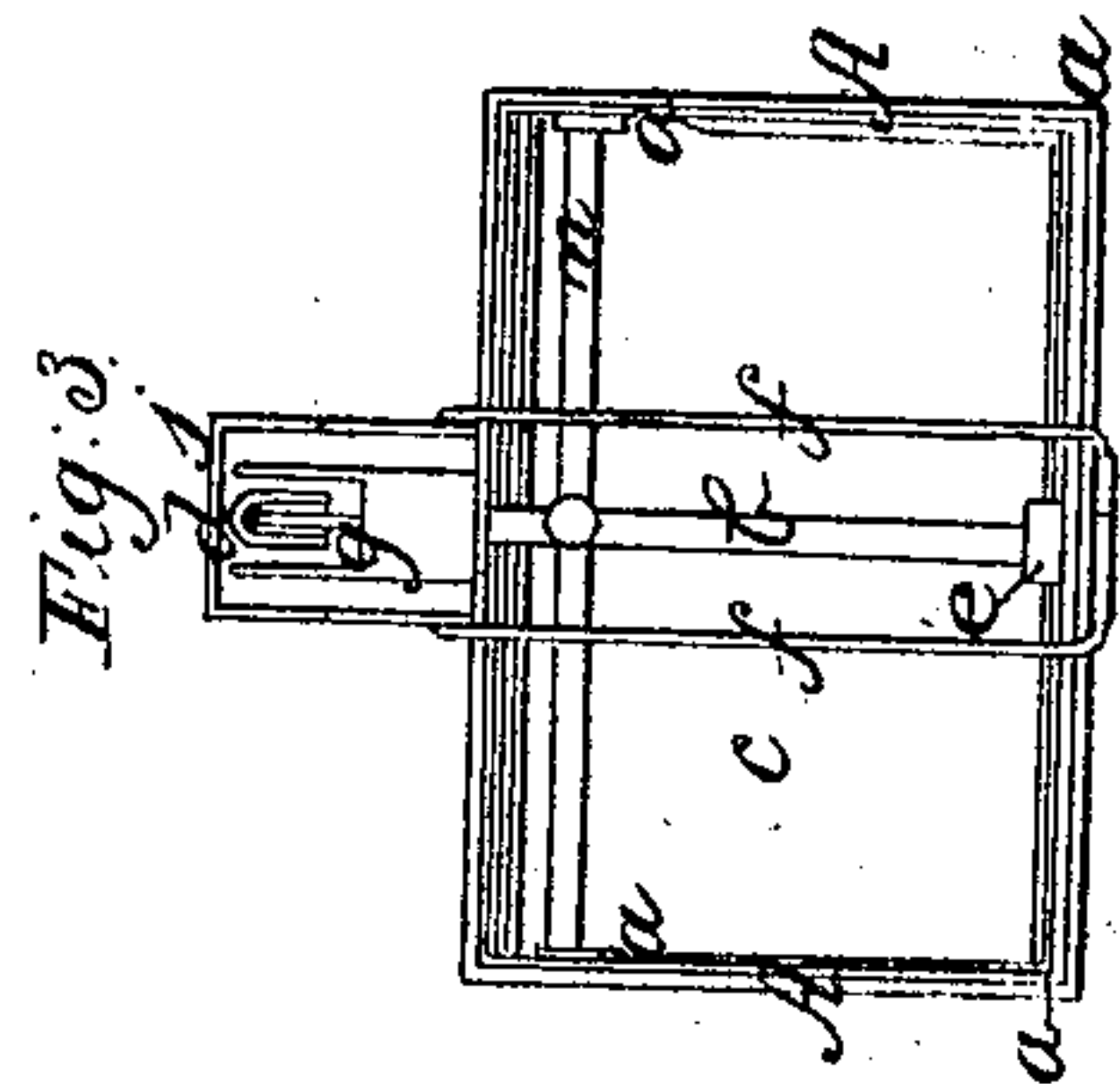


Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE L. CARVER, OF BRAZIL, SOUTH AMERICA.

MARINE PROPELLER.

Specification of Letters Patent No. 29,464, dated August 7, 1860.

To all whom it may concern:

Be it known that I, GEORGE L. CARVER, of Brazil, South America, have invented a new and useful Mode of Propelling Vessels on Water; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, in which—

Figure 1 is a longitudinal section, showing the propeller in position for propelling the boat. Fig. 2, is also a longitudinal section, showing the invention in the position for backing or reversing the boat. Fig. 3, is a front view of the invention. Fig. 4, is a perspective view of the shell or case in which the propeller operates. Fig. 5, is a perspective of another form or shape of bed, case or shell which I may use to operate the propeller in. Fig. 6, is a front end view of the case or box.

The nature of my invention consists in the manner of constructing the piston *a*, with the reversible lever or brace *b* revolving on rod *k*, and alternating floats or wings *c*, for propelling, or reversing boats, and avoiding back action of the water, as hereinafter set forth.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

In Fig. 1, *A*, is the case or piston box in which the propeller works, and through which the water flows. This case or piston box, or water chamber is placed on the bottom or in the stern end of the boat, one on each side of the boat, leaving the rudder between them, or they can be extended further forward. These piston boxes may be placed far enough forward to allow one, two or more of my propellers to work in on each side of the vessel, according to the size of the boat, or the amount of power required to propel the vessel.

a is the piston which is constructed of a sliding frame open at both ends, to admit of the easy flow of the water through it, and may be made of cast, or wrought metal, as may be desired, leaving it to the judgment of the constructor.

b, is the adjustable lever, which is hung on a rod *k*, passing across the piston frame seen in Figs. 1, and 2. This lever *b* is so constructed that it is in form somewhat of a triangular shape, and the axis being near the center, it is easily operated, so its posi-

tions can be easily changed. On the top of the arm of this lever is a sliding rod *d*, attached to arm of lever *b*, which extends forward of the piston box, and which catches on pin *g*, to hold it in position when at work. When it is desired to change the position of lever *b* this rod *d*, is pushed back, or drawn forward, as required, on the bottom and in the center of the piston frame (*a*), is a cleat or projection which serves as a support for the lever *b*, and against which it will rest whatever is the position of the lever *b*, whether backing or propelling.

Attached to rod *k*, are two wings, or floats *c*, and which hang loosely and swing on said rod. When the lever is in position for propelling, one of the wings, or floats *c*, is in a vertical position, as seen in Fig. 1, and the other float, or wing, is in a horizontal position, and has no action on the water, but when the engineer wishes to reverse his boat the lever *b*, is changed, and the float *c*, which, in propelling, is brought to a vertical position, as seen in Fig. 2, and the other float *c* is in a horizontal position have their positions reversed; when the float or wing is in a vertical position it rests against lever *b*, and which gives it support, and strength, *f*, is the connecting rod attached to cross rod *m*, which is attached to piston *a*, and which rod may be attached to the crank of the shaft of the engine, and by which motion is given to the propeller from the engine, *l*, are arms extending out in front of the piston box and on which the piston slides when in motion. These I may dispense with, and make the piston box the full length of the stroke. This lever *d* instead of extending forward as represented may assume a vertical position and be made to work equally well. I do not confine myself to the position of this lever.

In Fig. 3, the same letters represent like parts.

In Fig. 4, is shown a perspective view of the piston case, or box, the connecting rod *f*, attached to cross rod *m*, which is attached to piston *a*, and revolves in its bearings in piston *a*. Piston *a*, ought to be about one third the length of the case in which it works, and arms *f*, which in this view is raised to a vertical position.

In Fig. 5, is shown another shape, or form of the piston box *A*, with an enlarged opening in the rear, projecting down somewhat as a rudder, as seen at *n*.

Fig. 6, is a front end view of Fig. 5, showing the opening through the end of the box for the connecting rod to move and projection *n* in the rear end. I may find it convenient to dispense with the piece on the front end of the box as seen in Fig. 6.

In the operation of my invention it will be seen that the piston boxes may be placed in the stern, as are the screw propellers, and if a vessel of ordinary size is used, then two of these chambers one on each side of the rudder, placed below the water line, at the stern, will be enough for to propel a common sized vessel *b*, but when a greater amount of power is required than would be obtained by only one set of propellers on each side of the stern, then the piston boxes may be extended farther forward so as to put two, three, or more pistons in the same box, and they can all be connected by a continuous connecting rod, extending from one piston to the other, thus operating all on each side directly from the same connecting rod, attached to the crank of the engine. It will be seen that as the stroke is made, (the lever *b*, having been placed in position as seen in Fig. 1,) as the piston is drawn forward the float, or wing *c*, rises to a horizontal position allowing all the water in the piston box to pass through it. Then as soon as the piston makes its backward stroke the float *c*, acts against the water bringing it down entirely across the piston, and causing it to leave in its whole surface against the water with all the force of the stroke. If there should be on each side of the keel, or rudder one, two or more of my propellers they will all act in the same manner propelling the boat with great force, and

avoiding entirely all back action or loss of power. To reverse the action it will be only necessary for the engineer to force the rod *d*, back which will change the position of the lever *b*, and floats *c*, when the action of the piston will be the reverse of that above described in propelling the boat.

It is well known that the wheel, or screw, by the action of backwater destroys a large amount of power, and to avoid this is one of the objects of my invention, and in the accomplishment of which I feel confident I have succeeded. Again in high or rough seas, it is often the case that the wheel is out of water and will not act on it, but in this invention such is not the case, it must at all times act on the water, to propel or reverse the vessel.

For war vessels my invention will be of great use, as the shot of the enemy cannot affect the motive power.

The size of the piston must be made to correspond to the amount of propelling force, and which will be easily graduated by any constructor of vessels or engines.

Having thus described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combined use of the valve, piston-box, and reversing apparatus actuated by the rod (*d*), the combined parts being constructed, and operating in the manner, and for the purposes set forth.

GEO. L. CARVER.

Witnesses:

T. G. CLAYTON,
EDM. F. BROWN.