

BENJAMIN S. HEATH.
Improvement in Marine Propulsion.

No. 118,127.

Patented August 15, 1871.

Fig. 1.

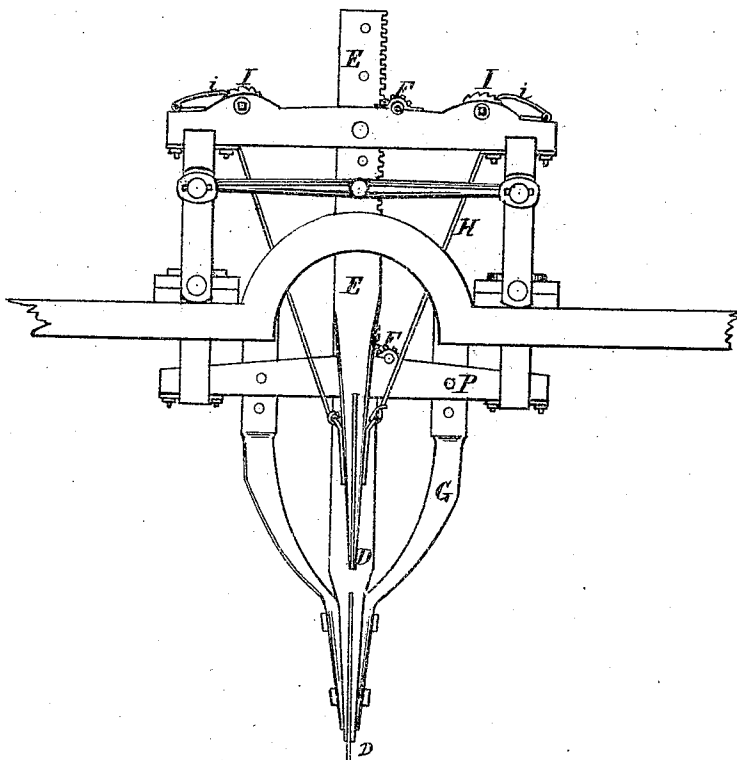
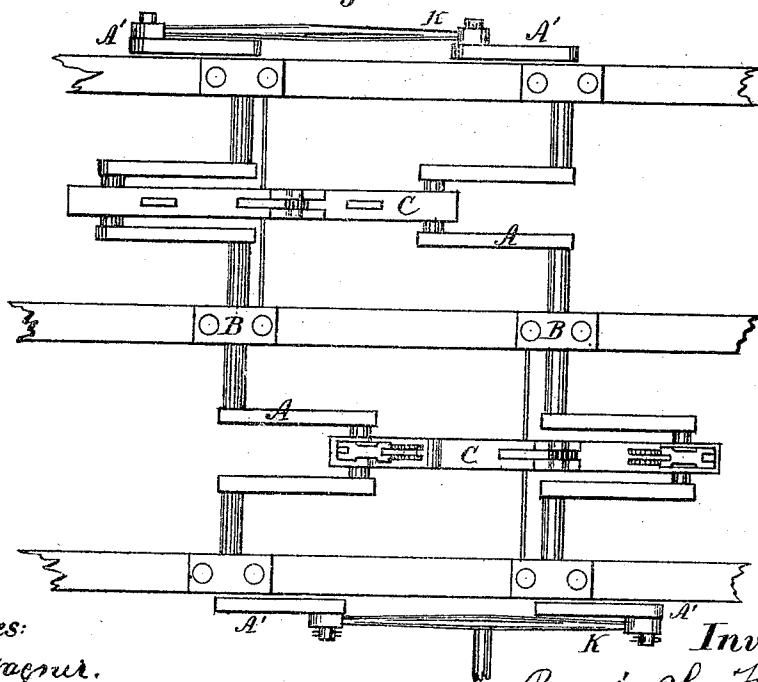


Fig. 2.



Witnesses:

Wm Wagner.
Wm Hamilton Colman

Inventor:

Benj. S. Heath
By *Daniel Breed Att.*

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Fig. 3.

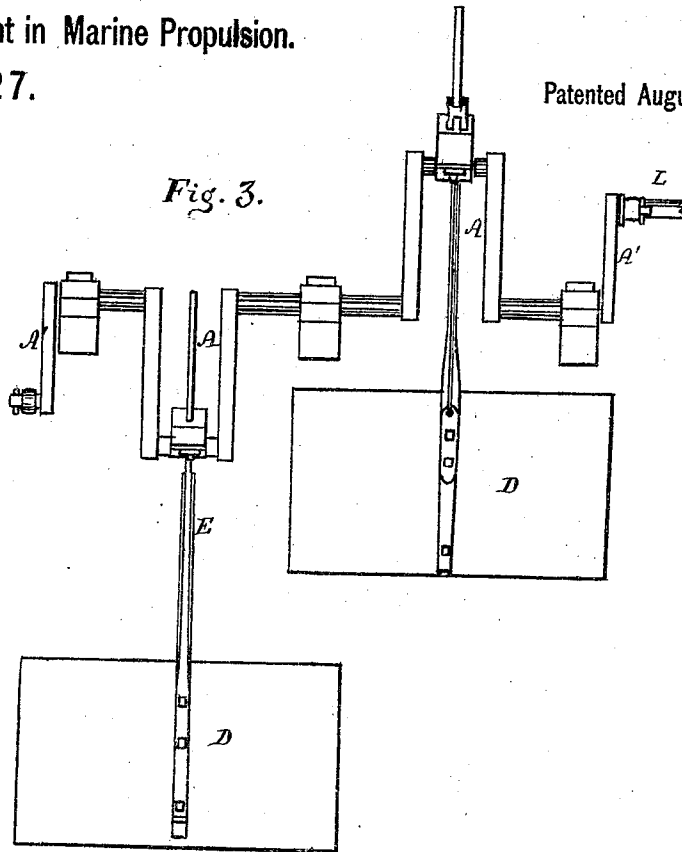
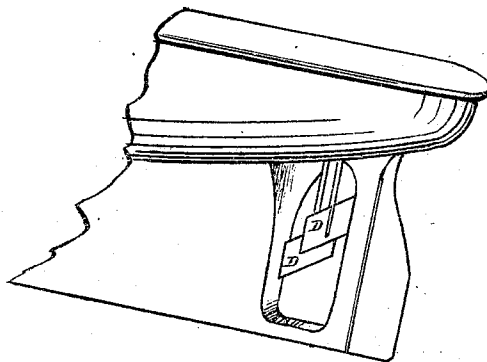


Fig. 4.



Witnesses

Wm. Wagner
Edw. Hamilton Johnson

Inventor:

Benj. S. Heath

by Daniel Breed
Atty

UNITED STATES PATENT OFFICE.

BENJAMIN S. HEATH, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MARINE PROPULSION.

Specification forming part of Letters Patent No. 118,127, dated August 15, 1871.

To all whom it may concern:

Be it known that I, BENJAMIN S. HEATH, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have, as I believe, invented new and useful Improvements in Paddles for Steam-Boats; and I do hereby declare the following to be a full and exact description of the same, reference being had to the drawing that accompanies and forms a part of this specification.

In the accompanying drawing, Figure 1 is a side view of machine. Fig. 2 is a top view of the same. Fig. 3 is an end view. Fig. 4 is a view of the stern of a boat, showing my paddles attached thereto.

The chief object of my invention is to obtain the direct and forward action of the paddles applied to a vessel, and to avoid the loss of power from either lifting the water or pressing it down, and thus tending to lift the boat or vessel without driving it forward. My invention consists of a paddle or paddles in combination with two cranks or their equivalents, connected by a paddle-beam or other suitable means, for the purpose of lowering the paddle during the stroke, and then raising the same in order to prevent lifting the water.

In the application of my improvements to steam-boats I now propose to apply the paddles in the stern of the boat, as shown in Fig. 4; but the paddles may be applied to the side of the boat if desired. I prefer to employ two double-crank shafts, A, placed in the same horizontal plane, and provided with three bearings, B, as seen in Fig. 2. These crank-shafts may be placed one above the other, or in any other suitable position if desired. These shafts or their cranks are connected by paddle-beams C, Figs. 1 and 2. The paddles D are provided with stems E, which are made adjustable in the beams by means of a toothed bar on the edge of the stem and ratchet F. The paddle-stem E has rigid braces G or cable-braces H, the latter being provided with tightening-ratchets I, Fig. 1, and the former with adjusting-pins P. The end cranks A' are connected by rods K, which have a pitman-pin, L,

for attaching the pitman of the engine in the usual manner.

The important points in my invention are as follows: First, I obtain a direct forward action of the paddles without wasting power in thrusting the paddle into the water or in lifting it out. In other words, my paddles do not lift the water or the boat, but only give a forward thrust; therefore much power is saved which in the paddle-wheel must be lost. Second, my paddles may be raised or lowered to suit the depth of water or draught of the boat, and they may be made larger or smaller, according to the power required. Third, it will be observed that my paddles do not act or offer any resistance at the dead-centers of the cranks. The paddle begins to dip after the cranks pass the dead points, and when the power is greatest the paddle is deepest in the water and exerts the greatest force upon the boat; but with a paddle-wheel it is very different, as the same power is required at the dead-center as at the quarter-stroke; consequently a wheel will jar the boat, and the engine must have a jerking motion, while my paddles will give a more steady action on the boat. Fourth, what is most important, I spend the power in propelling the boat forward. Fifth, the two paddles D, upon the right and left, extend across toward each other, so that their ends overlap and revolve around each other so as to occupy only a narrow space, and thus require but a small hole cut in the stern of the boat.

Having described my invention, I claim—

1. The paddles D and crank-shafts A, arranged and operated in connection with the stern of the boat or vessel, substantially as set forth.

2. In combination with the adjustable paddle D, the adjustable braces H G, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJAMIN S. HEATH.

Witnesses:

JOHN HORN,
G. W. COOPER.