C. F. Gardiner,
Vibrating Propeller.

No. 20,606. Patented Jun. 15, 1858.

Fig. 1.

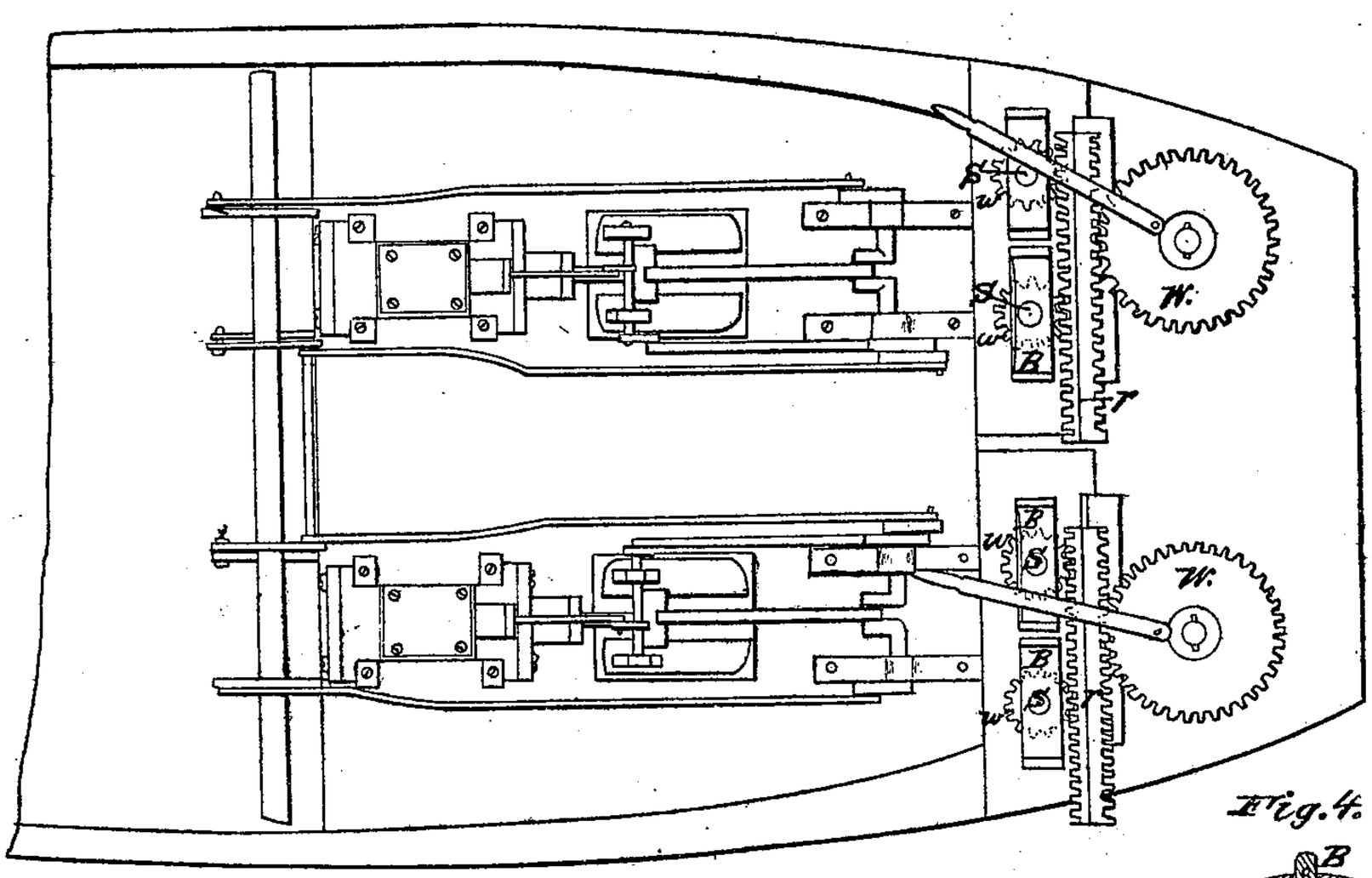


Fig. 4.

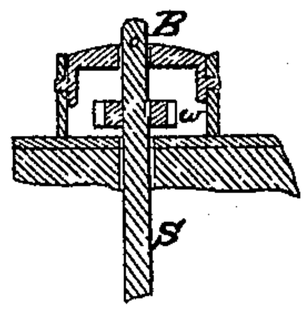
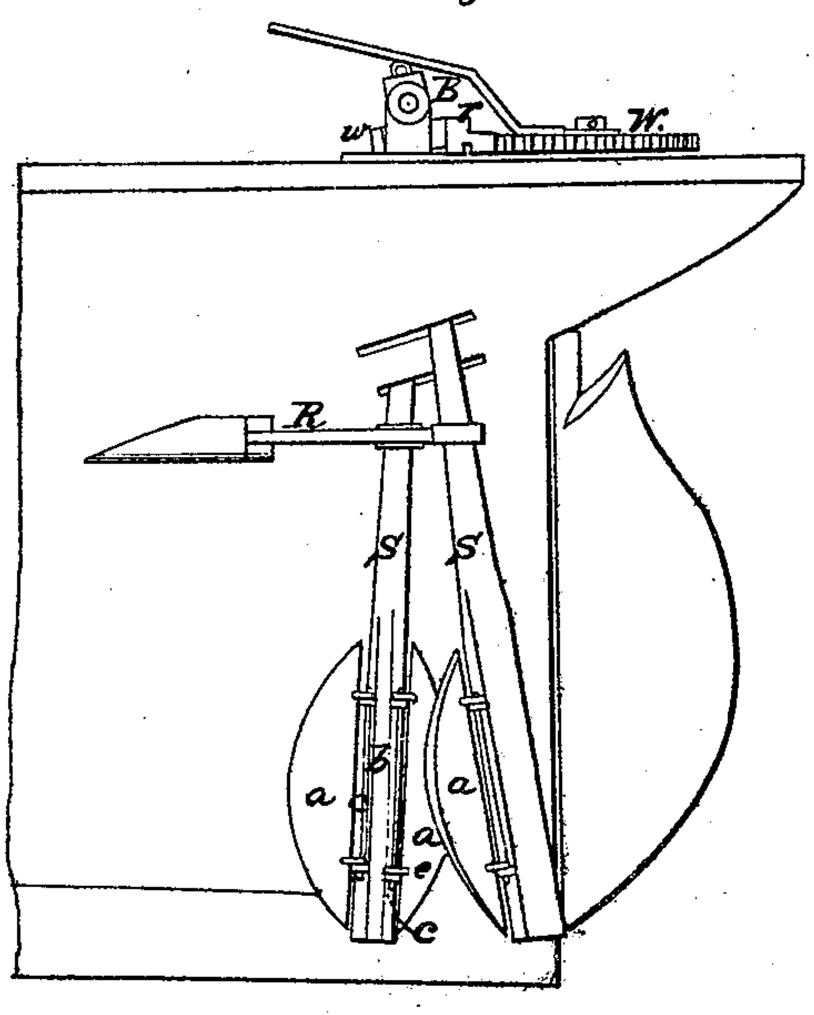
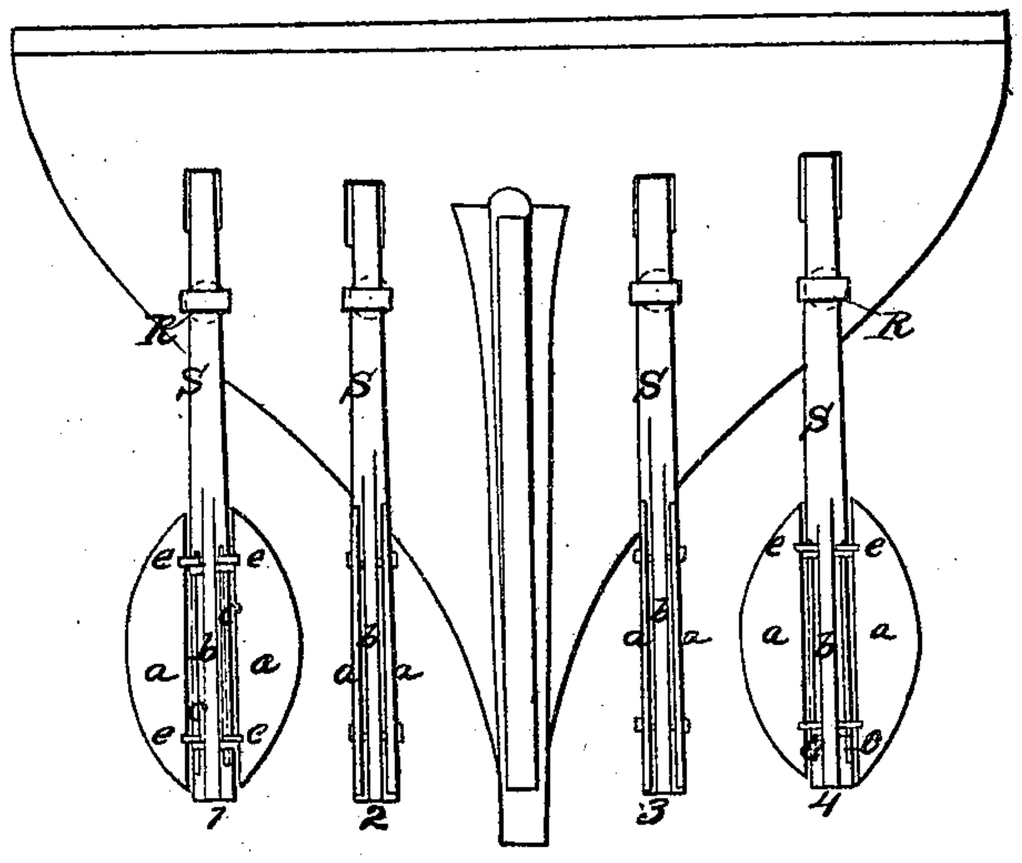


Fig. 2.

Fig. 3.





UNITED STATES PATENT OFFICE.

C. F. GARDINER, OF EAST BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND H. D. GARDINER, OF SAME PLACE.

PROPELLER.

Specification of Letters Patent No. 20,606, dated June 15, 1858.

To all whom it may concern:

Be it known that I, CHARLES F. GARDINER, of East Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Propellers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, forming part of this specification, in the several figures of which similar characters of reference denote the same part.

Figure 1 is a top view showing the stern of a vessel with my improved propeller. Fig. 2 is a stern elevation showing propeller blades in operating position. Fig. 3 is a side view, showing one propeller in position for backing and the other turned to show manner of attaching blades. Fig. 4 is a sectional view of shaft suspension.

The nature of my invention consists in the peculiar construction of paddles hereinafter to be described and in the manner of reversing the paddles on either or both sides, so as to turn the vessel without the assistance of the rudder from the movement of a simple engine working ahead at all times, thus obviating the necessity for reversing the engine.

In the drawing *s s* are the paddle shafts, and *a a* the wings of the same. These shafts are formed with a tongue *b*, at their lower extremities, on each side of which are hung the wings *a a*, by rods *c* passed through eyes *e* on the edge of the wing and the side of the tongue. The wings are thus free to open and close; the shaft on each side of the tongue acting as shoulders to hold the wings when open. The shafts *s* pass upward through the hull and are hung in rocking bearings B as shown in Fig. 4. They are connected by rods R with the engine, and move backward and forward under the action thereof. When moving rearward the wings open as shown at 1 and 4 Fig. 2 and give a forward movement to the vessel. Paddles 2 and 3 are shown in position as moving forward; the wings being closed.

Upon the upper portion of each shaft *s* is a cog wheel *w;* the wheels *w w* of the paddles on one side meshing with a rack *r*. This rack is geared on the other edge with a wheel W, to be moved by connection with the engine. By moving this wheel W the paddles are reversed and the vessel moved stern foremost from the forward movement of the engine. The paddles upon one side only may be reversed and the vessel thus turned without the aid of the rudder. The vessel may be steered by these paddles in event of the rudder being carried away. The shafts are so constructed that they may be drawn upward and retained in such position for repairs.

What I claim and desire to secure by Letters Patent, is—

1. The arrangement of the wheels *w*, *w*, on the heads of the shafts *s* with the rack *r*, and wheel W geared therewith, operating to reverse the paddles substantially as described.

2. In combination with the wings *a a* and tongues *b* of the shafts *s*, as and for the purpose set forth.

In testimony whereof, I have hereunto signed my name before two subscribing witnesses.

CHARLES F. GARDINER.

Witnesses:

C. H. HUDSON,

DAN SMITH.