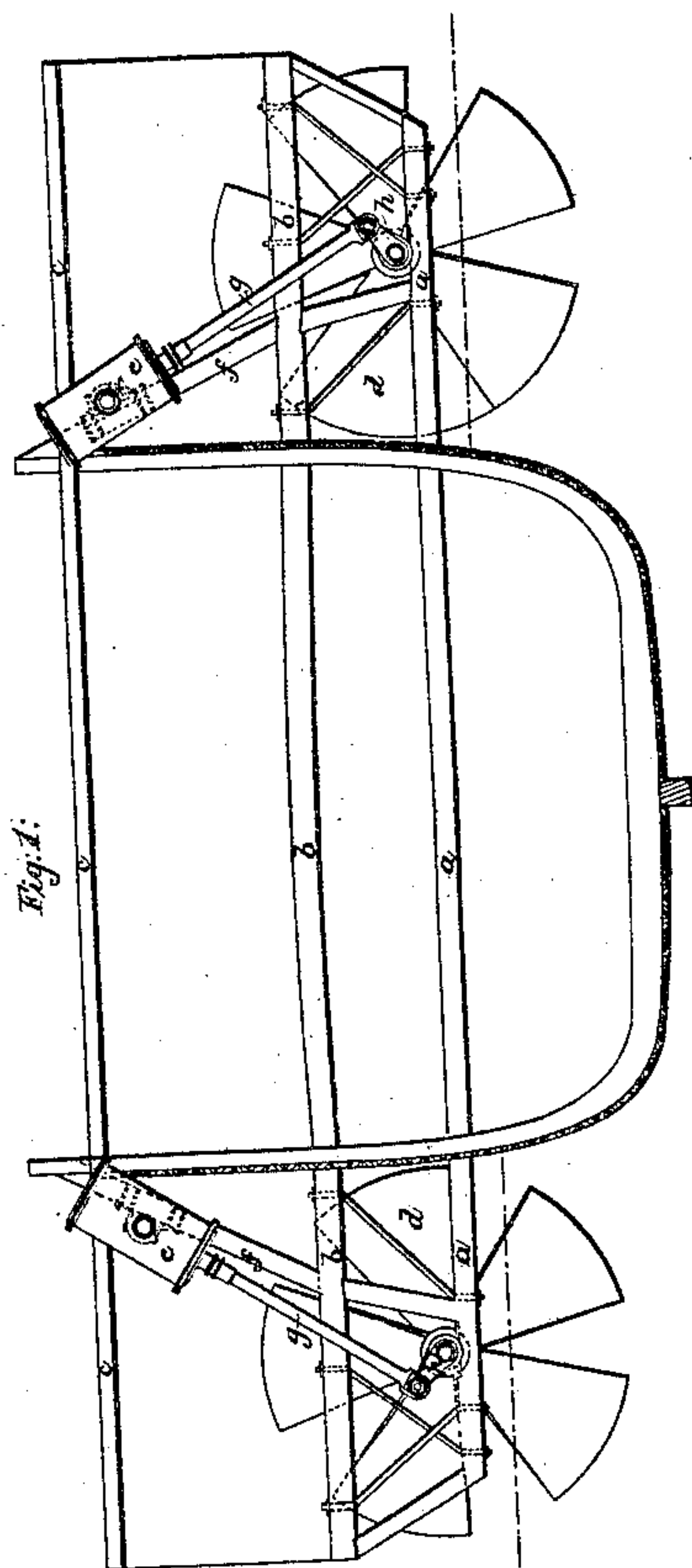
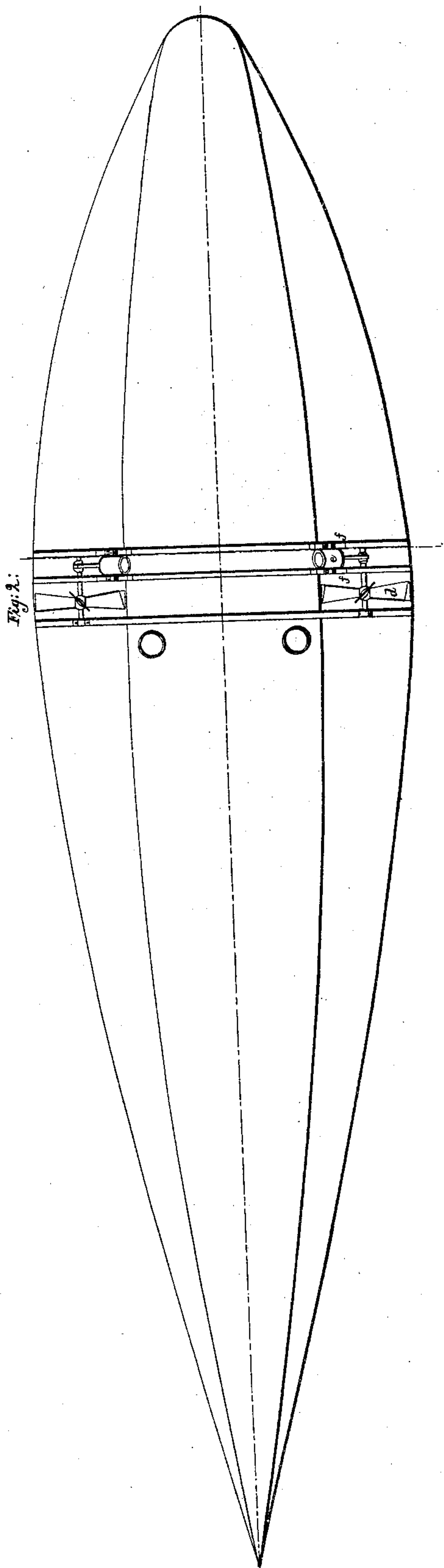


*H. Whitaker,  
Screw Propeller.*

*Patented Oct. 18, 1853.*

*N<sup>o</sup> 10,145.*



# UNITED STATES PATENT OFFICE.

HARRY WHITAKER, OF BUFFALO, NEW YORK.

IMPROVEMENT IN THE APPLICATION OF HIGH-PRESSURE ENGINES TO SCREW-PROPELLERS.

Specification forming part of Letters Patent No. 10,145, dated October 18, 1853.

*To all whom it may concern:*

Be it known that I, HARRY WHITAKER, of Buffalo, New York, have invented a new and useful Improvement in the Propulsion of Steam-Vessels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The nature of my improvement consists in applying screw-propellers and engines to the sides of boats in such manner that they can be worked by the direct application of the crank from the engine.

I am aware that screw-propellers have been essayed upon the sides of boats; but in all such cases within my knowledge the power has been applied through gearing to drive them. I am also aware that it is common to employ the direct application of the crank to screw-propellers placed at the stern of vessels, and that such application has been found to be far preferable to the use of gearing; but I believe that I am the first to invent an arrangement by which screw-propellers may be employed upon the sides of vessels and under the direct application of the crank. It will be seen that my plan involves necessarily separate engines for each propeller, and in order to attain the requisite number of revolutions the high-pressure engine must be used. The kind of boiler and the number of boilers may vary, according to circumstances.

The drawings illustrating my invention are made to a scale, Figure 1 being one-quarter inch to the foot and Fig. 2 one-eighth of an inch to the foot.

Fig. 1 is a sectional plan exhibiting the arrangement of the engines and propellers, and Fig. 2 a top view of the same.

In Fig. 1, *a* is the lower wheel-beam, *b* the upper wheel-beam in the line of the deck, and *c* is the promenade-deck.

*d* is the screw-propeller, calculated for this case to be fourteen feet in diameter and to have its axis above the water-line more or less, according to the size of the wheel. The steam-cyl-

inder *e*, intended to be either an oscillating cylinder or not, is supported by the cylinder-timbers *f f*. The connecting-rod *g* is drawn out of proportion merely to show clearly the several parts. The stroke of the engine for this case is designed to be three feet eighteen inches crank. With engines of four hundred horse-power each there will be no difficulty in getting ninety to one hundred revolutions per minute, and with the very little slip of screw-propellers we shall have twenty-five or twenty-eight miles per hour.

The arrangement of the engine entirely outside of the hull is a distinguishing feature of my invention.

In the application of screw-propellers to the stern it is practicable and common to apply the crank direct and pass the shaft through a stuffing-box; but in the use of side screw-propellers the stuffing-box cannot be used unless the propeller be geared. It would be possible to place the engine within the hull in the side application of propellers and yet to have the direct application of the crank; but, obviously, such an arrangement would be next to impracticable and certainly as difficult as would be the use of outside engines for stern propellers. I am not aware that there ever has been any direct application of the crank to screw or any other paddle wheel in which the crank was outside of the hull, either for stern or side wheels; and

What I claim, therefore, as my invention, is—

The direct application of the crank outside of the hull to side screw-propellers when such application is combined with or effected by a high-pressure engine, arranged also outside of the hull, substantially as hereinabove set forth.

HARRY WHITAKER.

Witnesses:

V. CAMPBELL,  
JOHN VARDEN.