

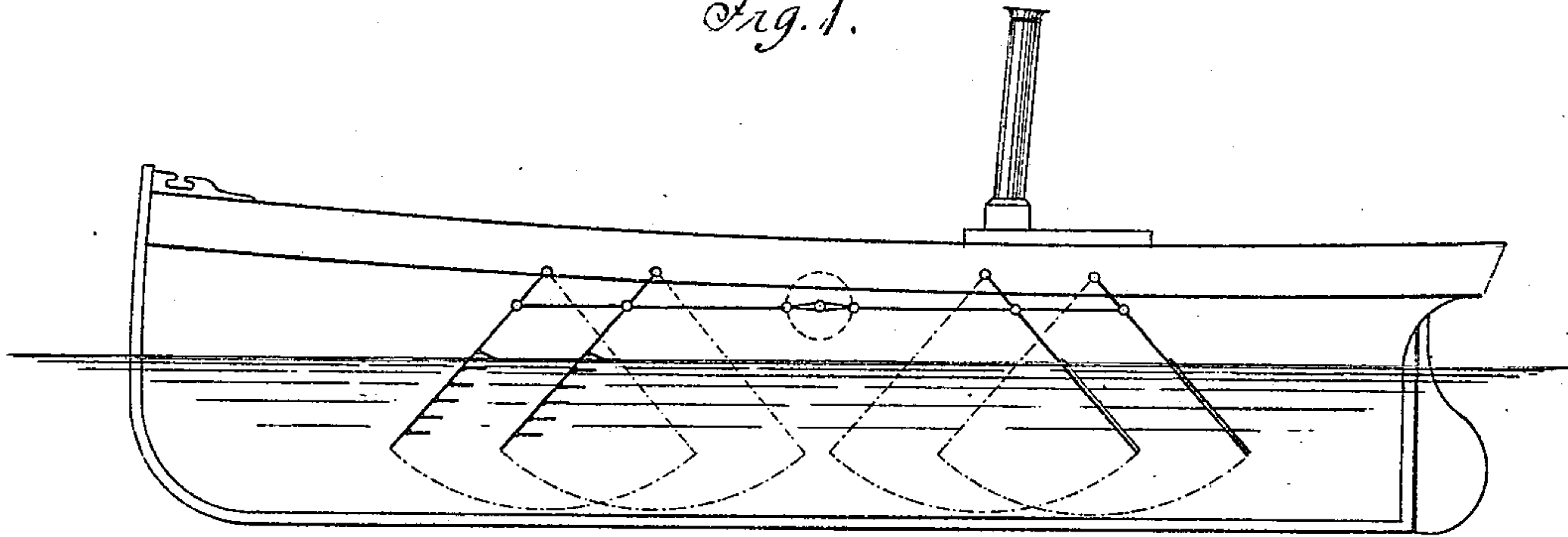
(No Model.)

J. B. MERKL.  
VIBRATING PROPELLER.

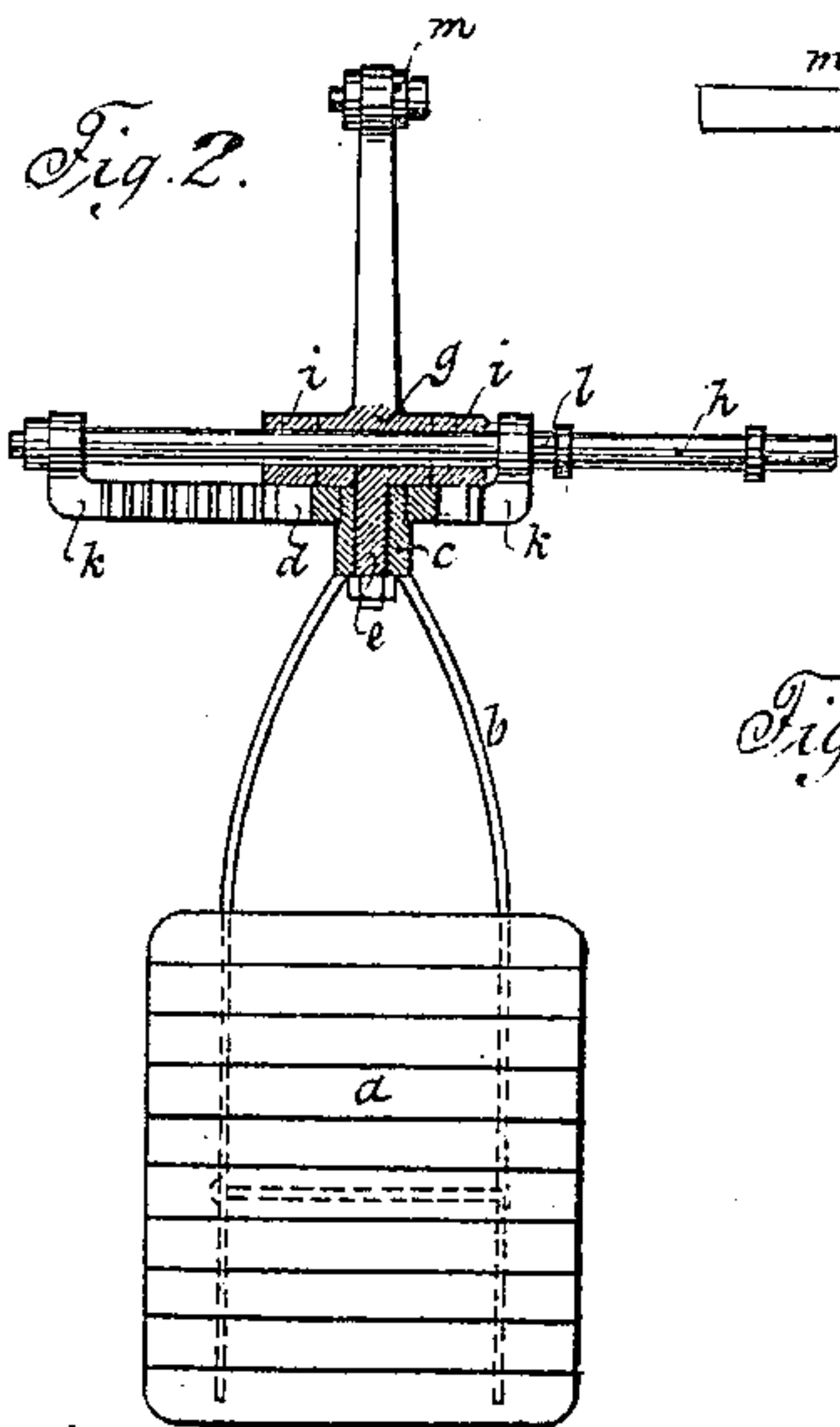
No. 270,455.

Patented Jan. 9, 1883.

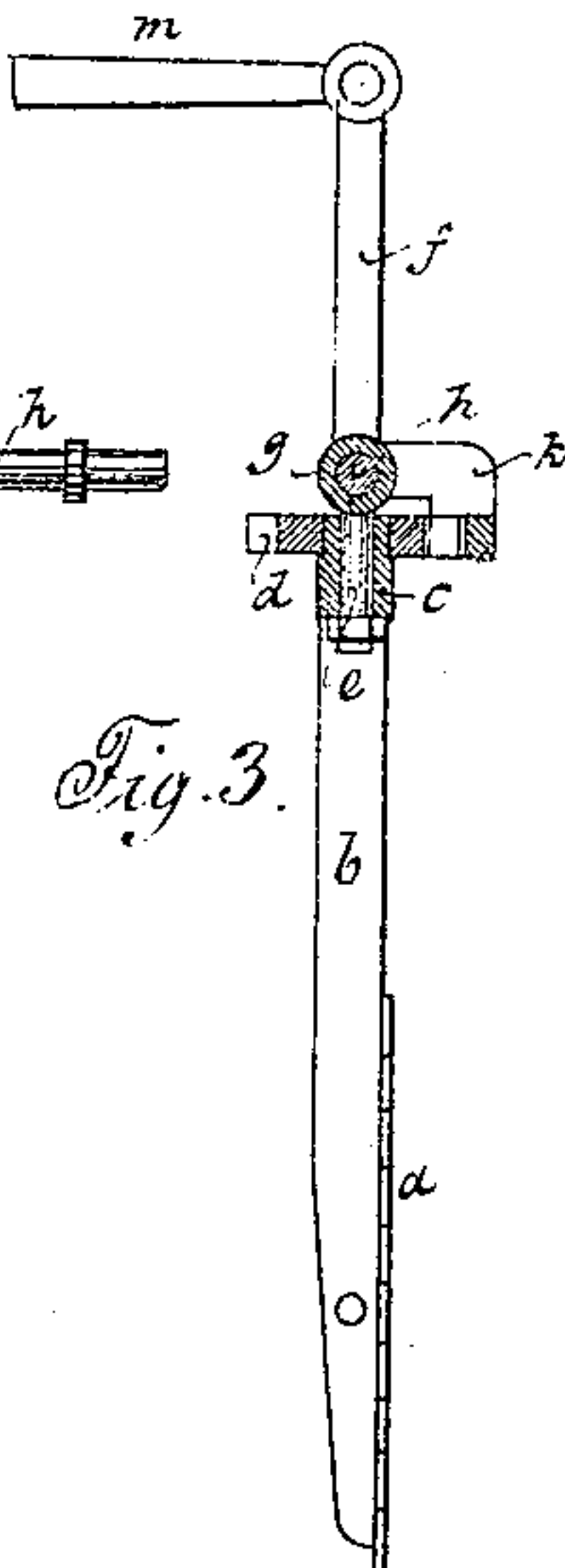
*Fig. 1.*



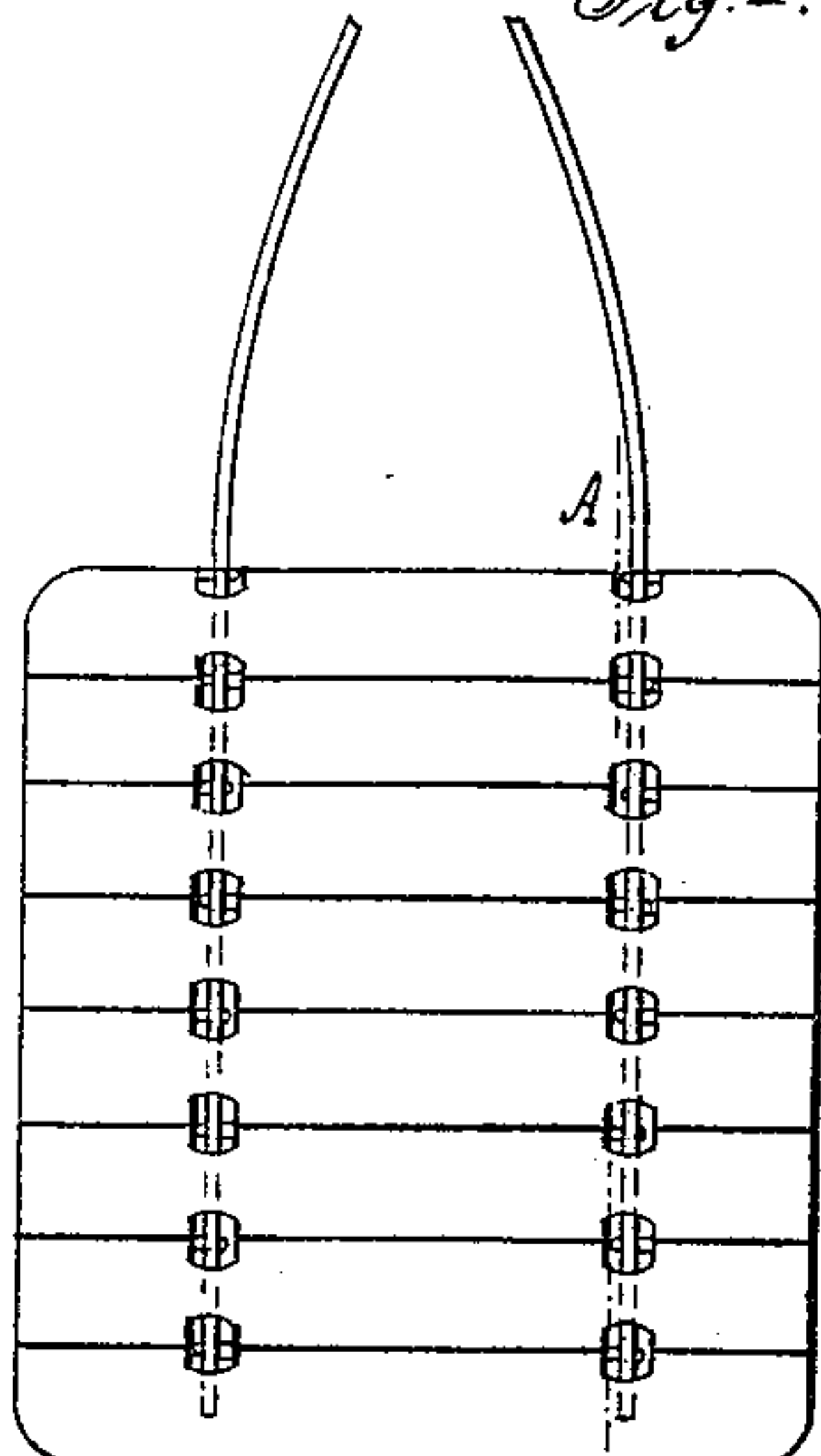
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Attest:

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# UNITED STATES PATENT OFFICE.

JOHANN B. MERKL, OF BERLIN, GERMANY.

## VIBRATING PROPELLER.

SPECIFICATION forming part of Letters Patent No. 270,455, dated January 9, 1883.

Application filed June 29, 1881. (No model.) Patented in Germany August 5, 1882.

*To all whom it may concern:*

Be it known that I, JOHANN BENEDICT MERKL, a subject of the Kingdom of Bavaria, residing at the city of Berlin, in the Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Mechanism for Propelling Steamships, of which the following is a specification.

My invention relates to improvements in mechanism for propelling steamships, and is intended to supersede the paddle-wheel and screw at present employed.

The chief point of my invention consists in the employment of flap-paddles made of iron or other suitable material, which said paddles may be fitted to the ship in various manners, as later on described.

Figure 1 of the accompanying drawings is a side view of a ship on which four flap-paddles are arranged on each side at the extremities of the middle third portion of the ship's length. The paddles are arranged in such a manner that when half their number are working with closed flaps the other half are working with open flaps, thus assuring a steady and regular motion of the vessel without any slip or lost power, as is the case with the screw or paddle-wheel. The paddles can also be fitted to the rear of the ship instead of in the middle, or two or four paddles can be fitted to the stern of the ship. For sea-going vessels it is necessary to arrange the flap-paddles in the interior of the ship in a suitable space provided for the same. I do not, however, bind myself to any particular way of attaching the paddles to the ship. As shown in the drawings, an oscillating motion is imparted to these paddles by means of connection-rods, which are themselves set in motion by cranks fixed to the main shaft of the engine or motor situated within the ship.

Figs. 2 and 3 show the reversing arrangement. The flaps *a* are fixed to a two or three pronged fork, the end of which forms a socket, and is provided with a tooth-wheel, *d*. By means of the socket *c* the paddles work or turn on the arm *e* of the lever *f*, which said lever turns on the shaft or axle *h* by means of the bouch *g*. This shaft or axle *h* works in bearings *i*, which are fixed in a suitable bracket fixed to the side of the ship. A rack, *k*, is arranged to slide in a slot of the shaft or axle *h*, and in this said rack the tooth-wheel *d* works. The connecting or draft rod *m* operates on the

arm of the lever *f* and imparts an oscillating motion to the same. In order to reverse the course of the ship, the paddles must be turned round on their axles. This is effected by the above-described mechanism, and in the following manner: By means of a lever which operates on the boss *l* the necessary sideward impulse is given to the rack *k*, and this causes a revolution of the tooth-wheel *d*, and thus the paddles are reversed and the ship at once is put about and moves in the opposite direction to the previous course.

Figs. 4 and 5 show one method of hanging or attaching the flaps onto the forks. The flaps are provided at their extremities with fingers or pivots, which work in corresponding bosses on the forks. The fingers or pivots are arranged so that they serve to strengthen the fork of the paddle by causing the fingers of the one flap to enter the boss from right to left and the fingers or pivot of the next flap to enter the boss from left to right.

The forks and those parts of the fittings which work against the water are tapered off, so as to present the least possible resistance to the water.

Having now described my said invention, I desire it to be understood that I do not confine myself to the number of paddles to be employed, nor to the details of construction, as these can be modified without departing from the tenor of my invention; but

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

1. In combination with the hull of a vessel, a series of flat paddles having flaps or shutters hinged thereto, such paddles having a movement substantially parallel to the course of the vessel, and having means for imparting to it a rotary movement, substantially as described.

2. Combined with the hull of a vessel, a series of paddles pivoted in bearings therein, and composed of a rigid frame adapted, when in operation, to move substantially in line with the motion of the vessel, and a number of hinged wings or shutters, and also in combination with the gear-wheel *d* and the rack bar *k*, whereby it is given a rotary movement, substantially as described.

JOHANN BENEDICT MERKL.

Witnesses:

EDWIN A. BRYDGES,  
WILHELM VOGT.