

(No Model.)

J. S. BAKER.
RECESSED PADDLE WHEEL.

No. 480,225.

Patented Aug. 2, 1892.

Fig-1-

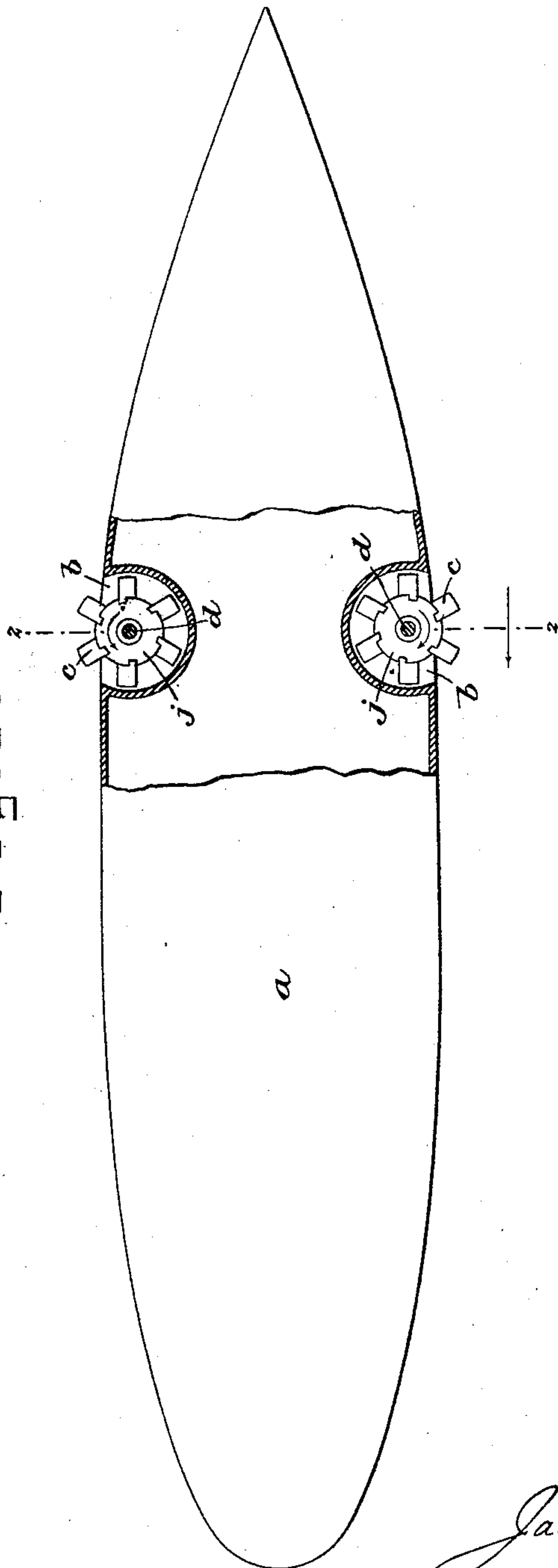
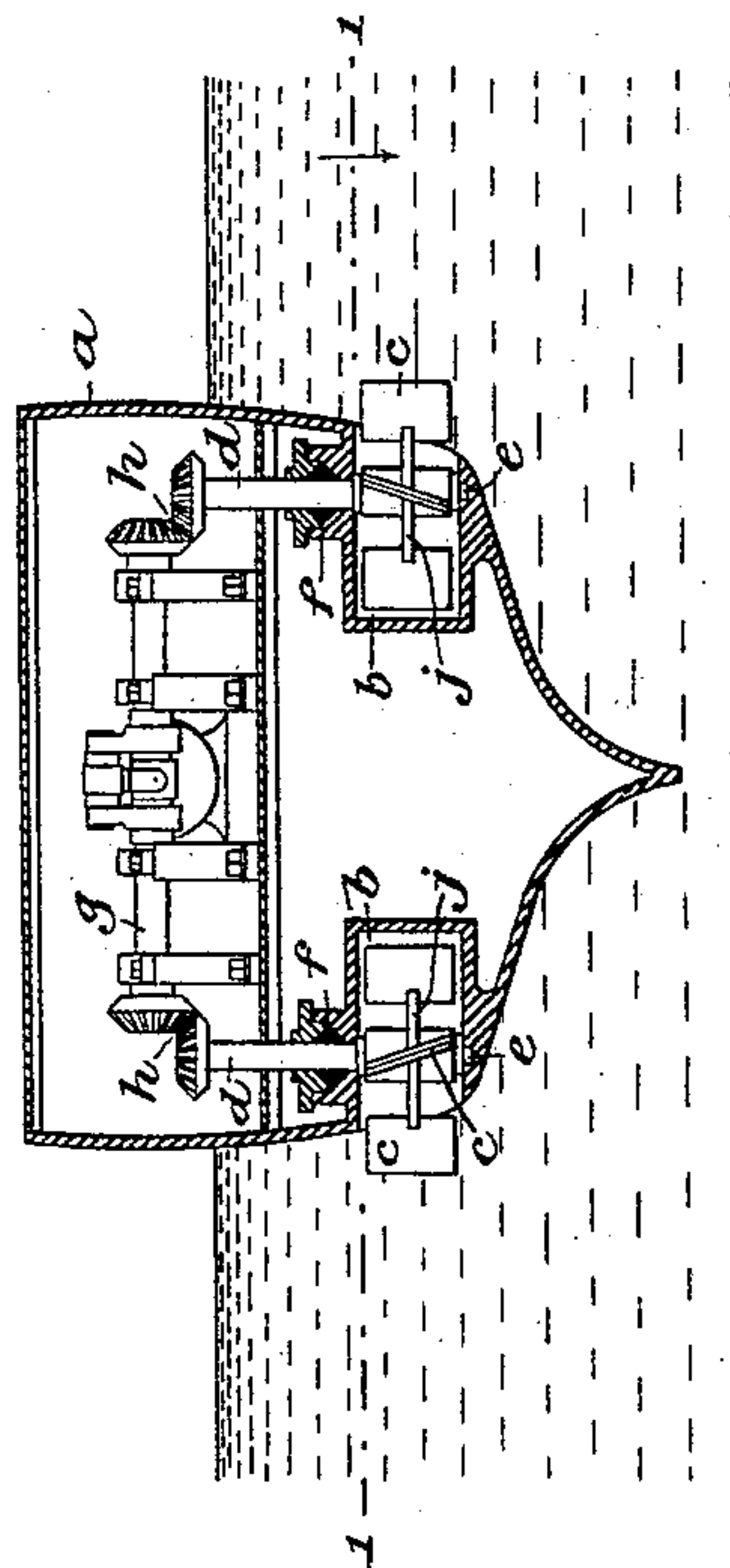


Fig-2-



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WITNESSES:

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UNITED STATES PATENT OFFICE.

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RECESSED PADDLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 480,225, dated August 2, 1892.

Application filed February 14, 1889. Serial No. 299,851. (No model.)

To all whom it may concern:

Be it known that I, JACOB S. BAKER, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Paddle-Wheel Boats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists of improvements in the construction and arrangement of horizontal paddle-wheels projecting from recesses in the sides of the hull of the vessel and located in the opposite exterior sides of the hull below the water-line, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a horizontal section of a boat having the paddle-wheels arranged according to my invention, and Fig. 2 is a transverse section of the same.

Anywhere along the sides of the hull *a* of the boat, but forward of the middle and below the water-line and as near the level of the keel as practicable, I provide a paddle-wheel recess *b* for a horizontal paddle-wheel *c*, which I fit therein on a vertical shaft *d*, supported in a step *e* below and extending upward through a stuffing-box *f*, suitably to be geared to the driving-shaft *g*, common to both wheels, with bevel-wheels *h*, or so as to be independently geared with a separate engine, if desired, said wheel-recesses and wheels being so arranged that the paddles of the wheels project at one side of the wheel beyond the side line of the hull into the water a suitable distance for taking effect thereon when rotated for driving the boat, while the rest of the wheel runs within the recess, where it is free from the retarding influence of the outside water, and, with what water may also occupy the recess, is carried along with the boat with practically no more resistance than if carried in the boat. The recesses inclose the wheels on the top, bottom, and sides, except so much as projects out of the sides of the boat into the water, said recesses being suitably open on that side for the purpose. For the rest they are curved conformably to the circumference of the wheels. The closure of the bottom prevents

the water from rushing in at the opening and out through the bottom, which would be obstructed.

I prefer to construct the wheels so that the reach of the paddles beyond the sides of the hull into the water is half the radius of the wheel; but they may of course be varied in this respect, if desired; and I also construct them with a spiral pitch directed so that the reactionary effect of the water has a lifting action on the wheel partly to give an upward tendency to the boat, particularly forward, which favors propulsion both by the more solid resistance of the water and by the diminished submerged section consequent upon the lifting of the boat. It also enables the wheels when geared separately to be used to right and steady a rolling vessel or one listed to one side by shifting of the cargo or ballast, the wheel on the low side being driven at high speed, while the other is slowed or reversed. I also prefer to connect the paddles to the hub, and thereby to the shaft, by means of a disk *j*, or it may be two disks, instead of independent arms, as the disks are made stronger and will run in the water contained in the recesses with less obstruction than independent arms will, for although such water will rotate to some extent with the arms or disks, so as not to offer much resistance, it will undoubtedly run somewhat slower, and with the disk or disks it will only have surface-friction, while with the arms there would have to be more or less displacement.

Wheels of this kind may be driven by smaller, lighter, and cheaper high-speed engines than such as the common paddle-wheels require. They work in more solid water with less slip and they are not affected by logs, ice, and other such objects floating on the surface.

I only represent one wheel in each side of the boat; but it is manifest that I may employ two or more in each side, if desired.

I am aware that wheels have been arranged horizontally in such recesses in the side; but they have always been placed at the middle or more or less back of the middle of the boat, whereas the special feature of my invention is the location of such wheels forward of the middle, which enables such wheels to work to much better advantage, because the direction

given to the water in parting along the forward part of the boat is substantially the same as the wheels also give, and the wheels therefore work in more solid water and with less
5 counteraction than when located back of the shape of the hull forcing the water outward, and they have in this position a lifting effect, which buoys the bow materially and enables it to be loaded heavier and to go faster.

10 I claim as my invention—

The combination, with a boat, of horizontal paddle-wheels consisting of paddles connected

to the vertical shaft by a central disk and located in recesses in the sides of the boat forward of the middle and having a spiral pitch 15 of the paddles directed to have lifting effect on the boat, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB S. BAKER.

Witnesses:

W. J. MORGAN,
W. B. EARLL.