J. Mahony,

Paddle Wheel.

No. 96,603. Patented Nov. 9. 1869.

Fig. 1.

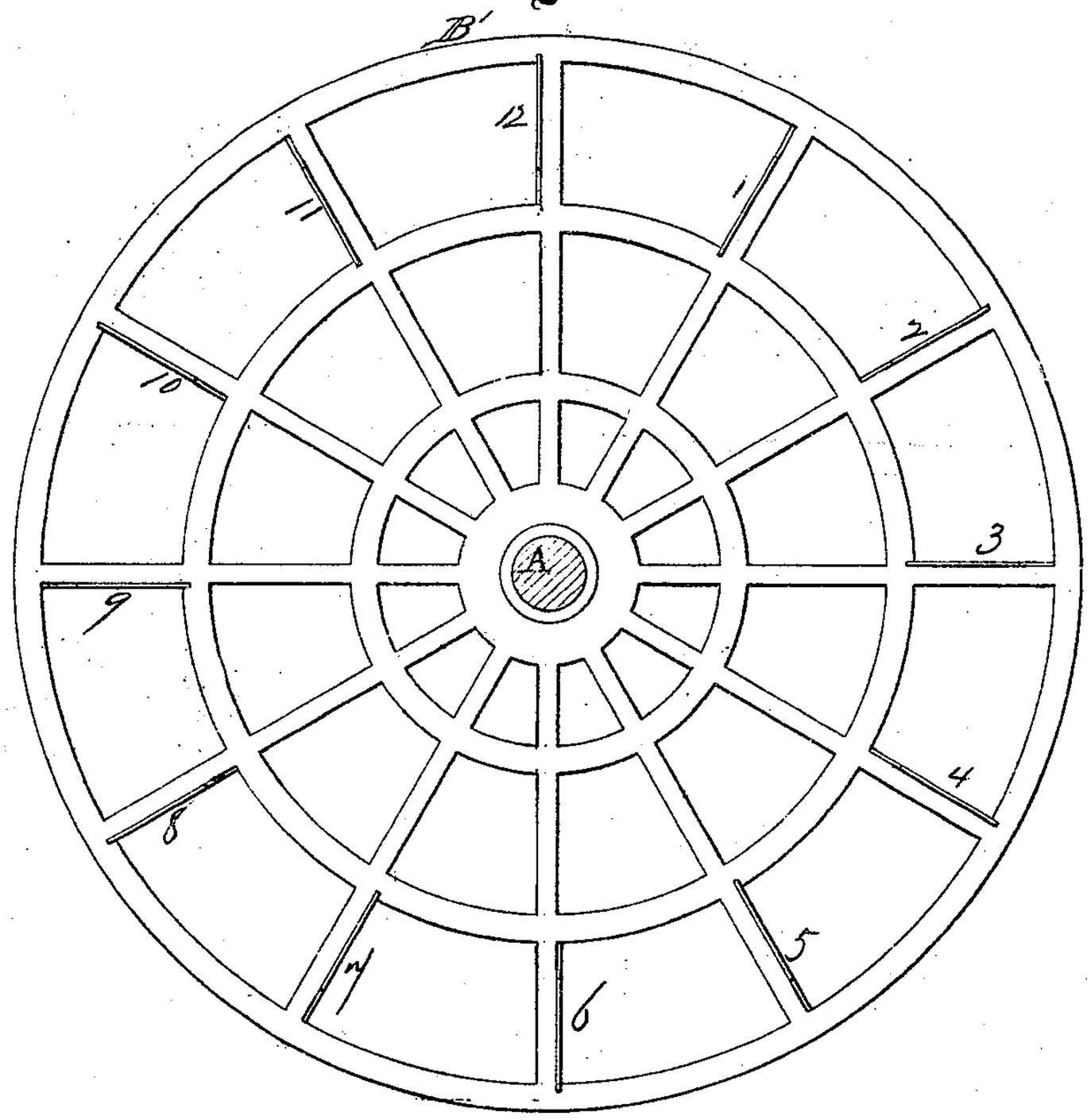

Fig. 2

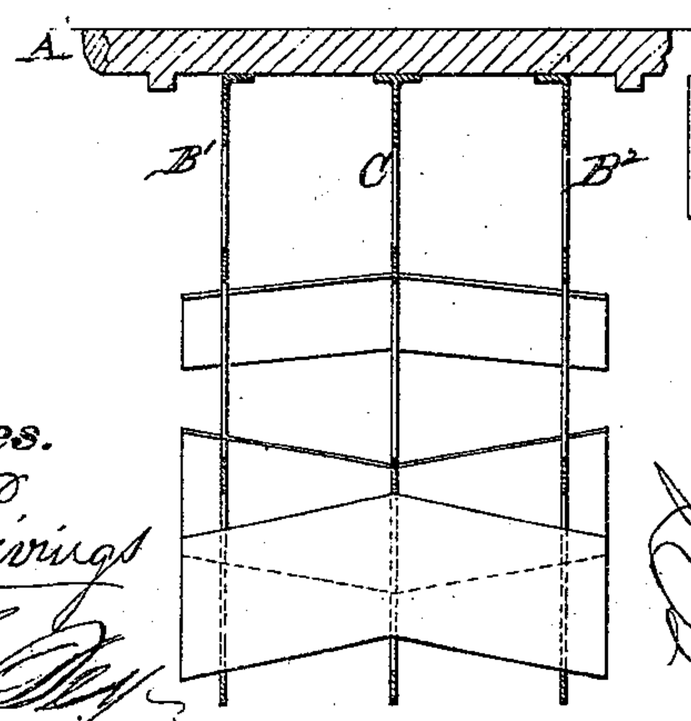

Fig. 3.

Witnesses.

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United States Patent Office.

JAMES MAHONY, OF NEWPORT, RHODE ISLAND.

Letters Patent No. 96,603, *dated November* 9, 1869.

IMPROVEMENT IN PADDLE-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES MAHONY, of Newport, in the county of Newport, and State of Rhode Island, have invented certain new and useful Improvements in Paddle-Wheels for Steamers; and I do hereby declare that the following is a full and exact description thereof.

My invention is intended to expose less float-surface to lift water, and to soften the concussion, and to diminish the sound and other attendant evils resulting from the sudden blow in striking the water. It is expected to increase the speed materially, as it is believed that it will be more efficient than the ordinary paddle-wheel in this respect.

I hold my paddle-floats in or very near the ordinary radial planes; that is, their inner edges are presented toward the shaft, instead of ranging obliquely forward or backward.

This is the correct position, as far as the planes or the general range of the faces is concerned. But I set the paddles obliquely in the other direction, and I divide the wheel into two widths, each width having the paddles set obliquely in this respect; that is to say, there are three rims to the wheel, one at each side, and one in the middle. One float is set out to the full diameter on the middle rim, and is set in, or reefed on each of the end rims. Then the next float is set in, or reefed on the middle rim, and is set out to the full diameter on each of the end rims. Then the third float is set out to the full diameter on the centre rim, and is reefed on the end rims, and so on alternately quite around the wheel.

It follows that one paddle strikes the water with the centre of its length first, and with its ends afterward, the immersion progressing gradually outward from the centre to the ends. The next paddle strikes at and near its ends, and strikes afterward at its centre. The blow being thus distributed, is materially softened, and the noises, tremblings, and the evils generally resulting from repeated severe concussions are lessened.

My arrangement differs materially from those in which the planes of the paddles are oblique, because the planes of my paddle are not oblique, but radial, thus acting on the water in the true line. Inclining the planes always involves evils. Inclining them one way makes them enter the water easily, but in coming out of the water such paddles lift the water, worse than those of the ordinary wheels. Inclining the planes of the floats the other way would make them come out of the water easily, but they strike the water still more like sledge-hammers than those of the ordinary wheel. Inclining the floats the whole length of the wheel involves, as compared with the common wheel, a part of the advantages due to my arrangement. It causes the blow to be distributed, but if the obliquity in such paddles is carried to a sufficient extent, it makes the reefed ends of the paddle almost or quite ineffective; in other words, it too greatly reduces the average diameter of the wheel.

My arrangement, as shown, having each paddle oblique in its longitudinal position, and divided, in effect, if not literally, into two lengths, accomplishes the end, and gives a sufficient obliquity, without too greatly affecting the mean diameter of the wheel.

My wheel is intended to be used for river, lake, or ocean-service, but its benefit is greatest in smooth, or waters called smooth water. For ocean-service the paddle-floats require to be relatively small and strong. They strike the heaving water at various angles, in consequence of its irregular motion. They do not, when in the ordinary form, produce concussions like those involved in the use of the wide wheels, which can be made available in still water.

My invention allows the use of the largest wheels and the broadest paddles otherwise practicable, and almost entirely avoids the difficulty due to their concussive action, as also, in great part, the lifting of the water.

The accompanying drawings form a part of this specification.

Figure 1 is a side view of the entire wheel;

Figure 2 is a vertical section in the plane of the axis of the shaft, showing only the lower half of the wheel, it being understood that the upper half is similar; and

Figure 3 represents a float, or paddle, detached from the same to better exhibit its best form.

Similar letters of reference indicate like parts in both the figures.

A is the shaft, and

B^1 B^2 are the outer and inner centres or frames, carrying arms and rims, which form the outer and inner boundaries or sides, so to speak, of the wheel.

C is a corresponding centre, with arms and rim mounted half way between the frame B^1 and the frame B^2. I will designate the several arms and rims, in other words, the entire frame at the outer side, by the letter B^1, the entire middle frame by the letter C, and the entire inner frame by the letter B^2.

It is desirable, for various reasons, to make the floats as thin as is consistent with strength. I have represented, and will describe my floats as made of thin steel or wrought-iron, with sharp edges. I believe that such are, theoretically, very desirable, but do not limit my invention to the use of such material. They may be made of hard, strong wood, or any other approved material.

The floats are respectively numbered 1, 2, 3, 4, &c. The floats with the odd numbers, 1, 3, 5, 7, &c., are

set out in the centre and in at each end; that is, the part which is adjacent and bolted to the centre rim C, is further from the axis of the wheel than that which is adjacent and bolted to either of the end frames B^1 B^2. The floats which have the even numbers, 2, 4, 6, &c., are in the reverse position; that is, the part which is bolted to the centre frame C is nearer the axis of the shaft A than the parts which are bolted to the end frames B^1 B^2. It follows that the paddles alternate in position.

I attach much importance to the fact, that while the paddles thus alternate in their oblique positions, the wheel is divided into two lengths, so that no part is reefed or contracted in diameter as much as would be necessary if the floats were in a single length.

I can make the paddles in two distinct lengths, if preferred.

I do not confine my improvement to the particular angle of obliquity there shown. It may be increased or diminished a little without material detriment, or the outlines may be slightly curved, so as to approximate to the form of a crescent instead of a V, so long as the surface is a plane and stands practically radial to the shaft. But I believe the straight edges and the degree of obliquity shown are the best for general practice.

I do not claim separately placing the paddles in oblique positions, alternating the inclination, or dividing them into two lengths; but

I claim the specific arrangement herein set forth; that is, placing them obliquely in half lengths, arranged so that the half lengths alternate in position, while each half length sets with the plane of its face passing through or near the axis of the shaft, all substantially as and for the purposes herein set forth.

In testimony whereof, I have hereunto set my name, in presence of two subscribing witnesses.

JAMES MAHONY.

Witnesses:

BENJN. FINCH,

SAML. T. MELVILL.