I. McCord,

Paddle Wheel.

No. 938. Patented Sept. 22, 1838.

Fig. 1.

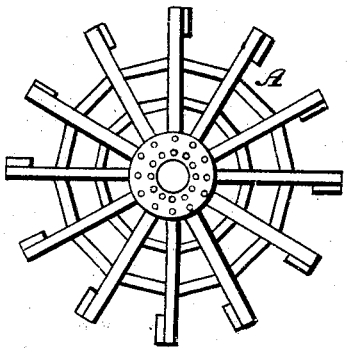


Fig. 2.

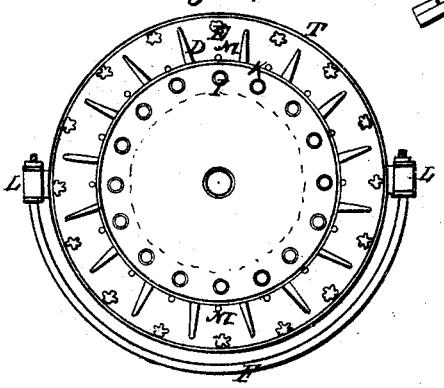
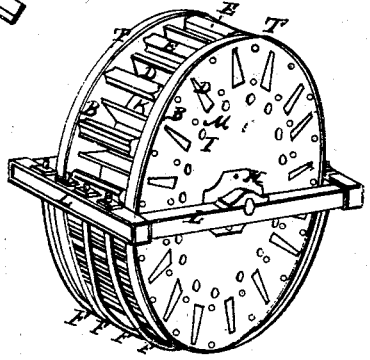


Fig. 3.



UNITED STATES PATENT OFFICE.

ISAAC McCORD, OF HARRISBURG, PENNSYLVANIA.

IMPROVEMENT IN PADDLE-WHEELS FOR PROPELLING BOATS.

Specification forming part of Letters Patent No. **938**, dated September 22, 1838.

To all whom it may concern:

Be it known that I, ISAAC McCORD, of Harrisburg, in the county of Dauphin, in the State of Pennsylvania, have invented a new and useful Improvement in Paddle-Wheels for Steam and other Boats, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

The ordinary steamboat-wheel is defective in at least three points, to wit: First, it is entirely open and liable to be entered and broken by ice, drift-wood, and other floating substances with which it may come in contact, which often destroys it and causes great delay and expense; second, the paddles radiate from the center and at every revolution raise a great quantity of water, which acts as a dead-weight upon the engine; third, the motion of this wheel is not and cannot be regular, for this reason that when the first paddle strikes the water it displaces so much that when the next or second takes its place it has a concave or nearly empty space to act upon, and therefore does not get a purchase for the leverage power of the wheel to act upon; hence that irregular motion of the wheel, which it transfers to the engine and causes that tremulous motion in the boat so annoying to passengers and so liable to put the machinery out of order and endanger both life and property; fourth, great inconvenience is suffered when traveling through ice and drift-wood, owing to the open and exposed state of the wheels now in use, to remedy which defect it is well known that a crib is made use of constructed of six or more sticks of timber about thirty feet long and one foot in diameter framed or bolted together and placed astraddle of the bow of the boat, extending beyond the sides to turn the ice off the wheels, which it does in part, but very imperfectly; and, besides, it is an unwieldy article and difficult to manage and very much impedes the progress of the boat, which amounts to a loss of at least one-third.

Now, the peculiar construction of my wheel is intended to obviate all of the before-mentioned difficulties, and for this purpose is made as follows: Two heads or ends B B, Figs. 2 and 3, constructed of one and one-half inch planks crossing each other at right angles, bolted together with a one-half-inch tire T round the periphery of each head and a casting H at the center through which to pass the main shaft, are connected by means of ten cross-ties I running through them and fixed from six to nine feet apart, in proportion to the diameter of the wheel. These ties are placed from two to four feet from the periphery, according to the size of the wheel. Around said ties and between the heads a rim of sheet-iron K is placed and fastened from six to nine feet wide, forming a space all around the wheel of the width thereof and from two to four feet deep. Between these heads are placed sixteen paddles D, of a prismoidal shape, in length equal to the width of the wheel and in thickness on the edge to be fitted to the said rim K from five to eight inches, according to the size of the wheel, and on the other edge one inch, beveled down all on the propelling side of the paddle to form the necessary angle to discharge the water at the surface of the river. These paddles are to pass through the heads in their whole dimensions, between which a fluted roller E is to be placed in the center of each bucket between said paddles for the purpose of excluding the air in part from the buckets, in order that they may the more completely fill with water, but more particularly to press down and pass smoothly under the wheel ice or drift-wood or any floating substance that may come in contact with it. A series of semicircular bars of iron F, placed about ten inches apart, of a little more than half the diameter of the wheel, are placed round the under side of the wheel within two inches and fastened to timbers L on each side of the wheel on a level with the guards of the boat, as represented by the drawings. These bars are intended to supersede the before-mentioned crib as a protection to the wheels and to be attached and detached as occasion may require.

The principal characteristics of my wheel are these: By means of its prismoidal paddles it discharges the water at the surface of the river, and thereby relieves the engine of that dead-weight. Its rollers displace a part of the air from the buckets, which enables them to fill with water, and thereby produce a regular and uniform motion, and also to pass smoothly under the wheel any floating substance it may come in contact with. Apertures M are made in the heads at the outer surface of the rim for the escape of air.

This kind of wheel may be constructed of

planks, as before, of scantlings, castings, and boards, or of cast or wrought iron. If made of iron, the balance-wheel now in use may be dispensed with, as this kind of wheel will have a steady and regular motion, so much so that the use of it will entirely supersede the use of a balance-wheel.

The invention claimed, and desired to be secured by Letters Patent, consists—

In the combination of a wheel for propelling steam and other boats, made of plank or iron ends or heads and a circular rim with prismoidal paddles, and fluted rollers placed between them, in the manner and for the purpose above set forth, and also the arrangement of the semicircular ribs of iron for protecting the wheels, as above described.

I. McCORD.

Witnesses:
WM. P. ELLIOT,
ED. N. ROACH.