No. 853,767. PATENTED MAY 14, 1907.

W. R. CALDWELL.

WHEEL.

APPLICATION FILED FEB. 20, 1907.

2 SHEETS—SHEET 1.

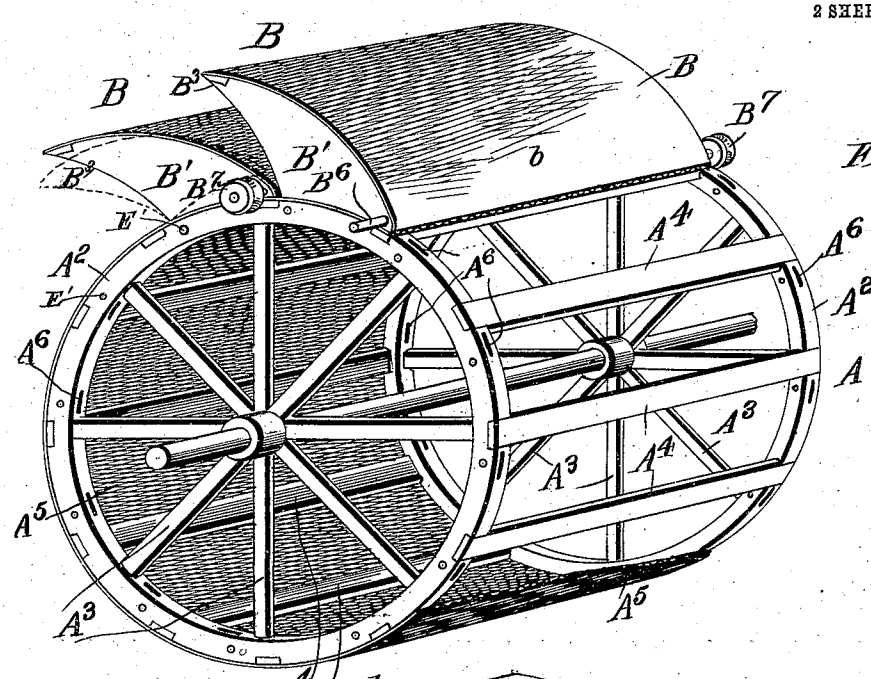


Fig. 1

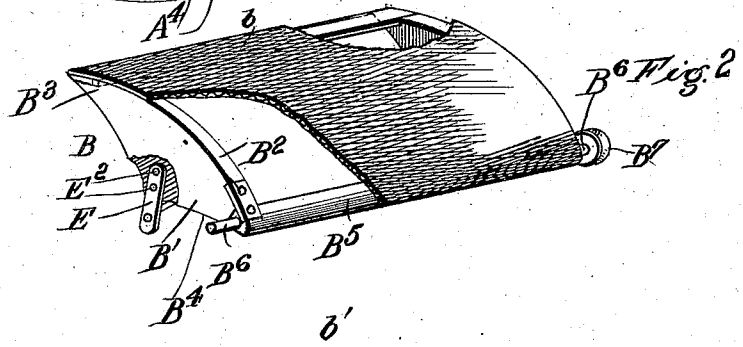


Fig. 2

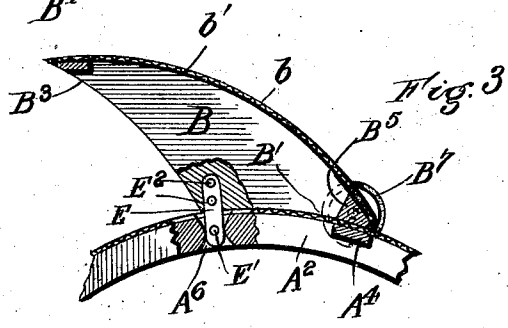


Fig. 3

WITNESSES

E. Whaley

Percy B. Turpin

INVENTOR

WILLIAM R. CALDWELL

BY Munn & Co.

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

No. 853,767. PATENTED MAY 14, 1907.

W. R. CALDWELL.

WHEEL.

APPLICATION FILED FEB. 20, 1907.

2 SHEETS—SHEET 2.

Fig. 4

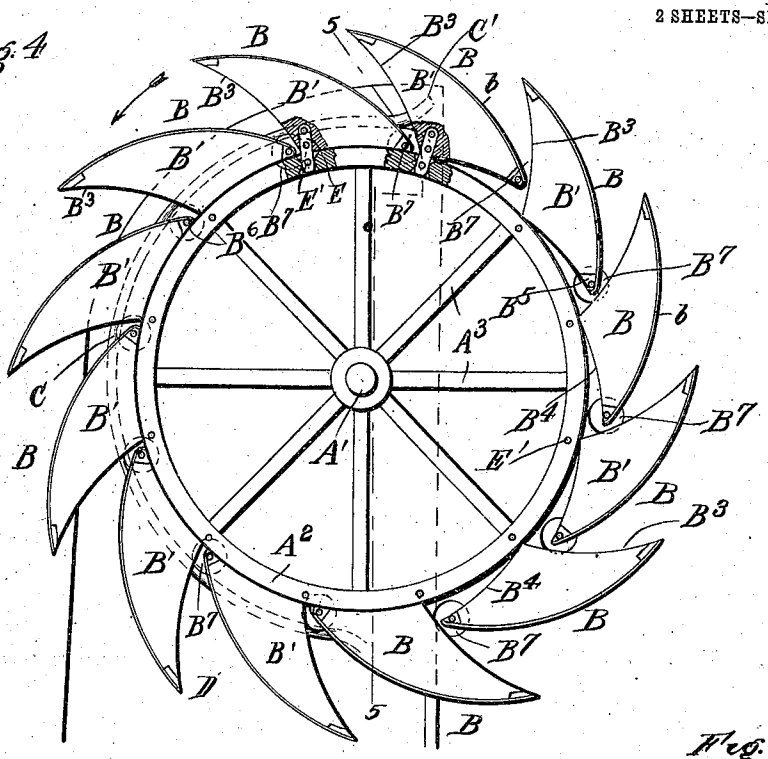


Fig. 5

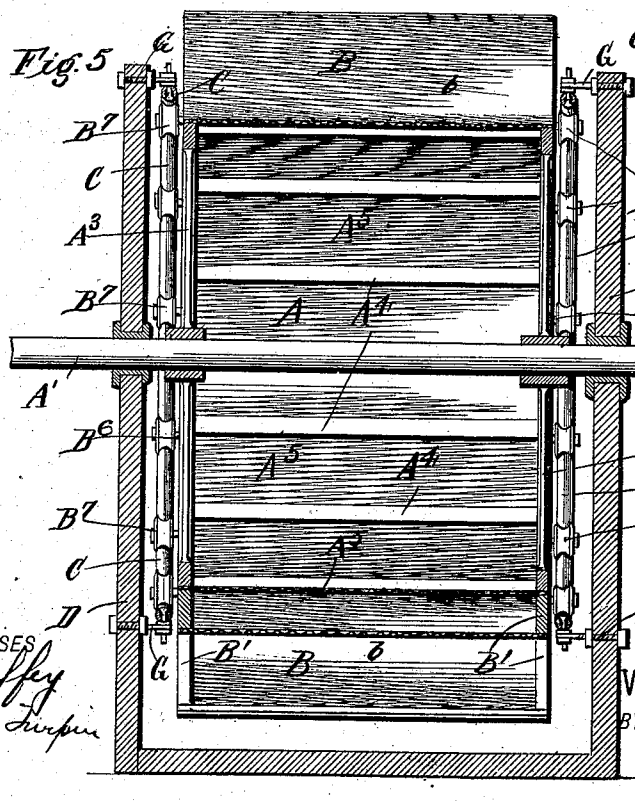
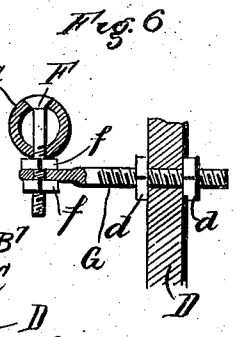


Fig. 6



WITNESSES

C. C. Chaffee

Percy B. Simpson

INVENTOR

WILLIAM R. CALDWELL

BY Munn & Co.

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM R. CALDWELL, OF KEYSER, WEST VIRGINIA.

WHEEL.

No. 853,767. Specification of Letters Patent. Patented May 14, 1907.

Application filed February 20, 1907. Serial No. 358,362.

To all whom it may concern:

Be it known that I, WILLIAM R. CALDWELL, a citizen of the United States, and a resident of Keyser, in the county of Mineral and State of West Virginia, have invented an Improvement in Wheels, of which the following is a specification.

My invention is an improvement in power wheels, which may be utilized as paddle wheels for boats, or as propelling wheels for aerial machines, or for other purposes where power wheels may be desired; and the invention consists in certain novel constructions and combinations of parts as will be hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view partly broken away and parts being removed of a wheel embodying my invention. Fig. 2 is a detail perspective view partly in section of one of the buckets removed. Fig. 3 is a detail transverse section showing one of the buckets and the parts directly associated therewith. Fig. 4 is a side view partly in section of one of the wheels. Fig. 5 is a face view partly broken away in section of one of the wheels; and Fig. 6 is a detail view illustrating the means for supporting the track from the main frame.

In carrying out my invention, I construct the wheel with a body A, buckets B, tracks C for closing the buckets, and a main frame D supporting the body A and the tracks.

As shown, the body A is in the form of a drum having a shaft A′ journaled in the main frame and end portions in the form of wheels having rims A^2 supported by spokes A^3 from hubs on the shaft A′. The opposite rims A^2 are connected by slats A^4, said slats being recessed in the rims so their outer faces are flush with the peripheral surfaces of the rims, as best shown in Fig. 1, and a covering A^5 is provided for the drum, said covering consisting preferably of duck, silk or other suitable fabric. This construction forms a drum closed at its periphery by a suitable covering, and in the rims A^2 are formed at intervals, openings A^6, in which are pivoted the hinge bars E of the buckets. The hinge bars are pivoted at E′ a distance from their inner ends, the inward extension beyond the pivots abutting the walls of the opening A^6 and aiding in stopping the buckets in their open and closed positions.

The buckets are shown as consisting of the end plates B′ whose outer edges B^2 are curved preferably on arcs of circles, and whose inner edges B^3 and B^4 are also curved, the edges B^4 on arcs of circles coinciding with the curvature of the drum, so that when the buckets are closed as shown in full lines Fig. 1, the edges B^4 of the end plates will coincide with the outer face of the drum and form tight joints at the ends of the buckets. At their rear ends the end plates B^2 are connected by cross bars B^5 extending between them, and having at their ends extensions B^6 forming bearings on which are mounted rollers B^7 to engage the rails or tracks C, as will be understood from Figs. 4 and 5 of the drawings. As shown in Figs. 1 and 3, the cross bars B^5 are arranged to bear in the closed position of the buckets directly above their respective slats A^4, and the covering *b* of the buckets which may be duck, silk or other suitable fabric or material, is drawn over the outer curved surface *b′* of the end plates B′, and thence around and under the cross bar B^5, forming a packing between the said cross bar and the drum which is rendered more effective by the relative arrangement of the bars B^5 and slats A^4 so the said cross bars B^5 will bear directly above the slats A^4 as illustrated in Figs. 1 and 3.

The openings A^6 for the hinge bars are formed between the side faces of the rims A^2, and the end plates B′ of the buckets B are provided in their inner edges midway between their side faces with openings in which are secured the outer ends of the hinge plates E by means of screws, nails, or other similar fastenings, as illustrated at E^2 in Figs. 2 and 3. The hinge plates are thus secured rigidly to the end plates of the buckets and are pivoted at E′ to the drum or body A so they may rock from the position shown in full lines Fig. 1, to the dotted line position indicated in the same figure.

It will be noticed that the buckets will operate upon wind or water to serve as propellers when the said buckets are in the closed position shown at the left in Fig. 4, and the wheel is revolved in the direction of the arrow in said figure. In such position, the buckets will be held firmly by the operation of the rollers B^7 within the rails C, said rails being flared at their ends C′ to guide the rollers beneath them, as will be understood from Fig. 4. After the rollers have passed the lower ends of the rails C, they will open to the position shown at the right in Fig. 4, and thus offer no resistance to the air or water.

In supporting the rails, I prefer to employ

a rail circular in cross section, and to pass vertically through it at suitable intervals a bolt F extending through an eye at the inner end of a bolt G and secured by nuts *f* above and below the bolt G, the bolt G extending laterally through the frame D and held thereto by nuts *d* on the inner and outer side of the frame. This is a simple construction for conveniently securing the rails in the practical use of the invention.

In Figs. 4 and 5, I have shown the rail as arranged to bear against the outer sides of the rollers B^7 for forcibly holding the buckets closed. It may in some instances be desired to arrange the rail to hold the buckets open, in which construction the rollers would be adjusted to bear against the outer side of the rails instead of the inner sides, the rails being correspondingly disposed.

I claim:

1. A power wheel comprising a main frame, a body journaled thereto and made in the form of a drum, having end portions provided with rims having in their outer faces openings midway between the inner and outer sides of said rims, slats connecting the opposite end rims and flush at their outer faces with the peripheral surfaces of said rims, said body portion having a covering, buckets disposed around the drum and having end plates provided with curved inner edges coinciding with the curvature of the drum, a cross bar connecting the rear ends of said end plates, and provided with end extensions and rollers thereon, said end bars being arranged in the closed position of the buckets to overlie the slats of the drum, a covering for the buckets extending along the outer edges of the end plates thereof, hinge bars secured at their outer ends to the end plates of the buckets and projecting and pivoted at their inner ends within the openings in the end rims of the drum, rails for engagement by the rollers of the buckets, and means for supporting said rails from the main frame, substantially as set forth.

2. A power wheel consisting of a drum having a covering upon its peripheral surface, buckets consisting of end plates having curved inner edges coinciding with the curvature of the drum, means hinging the said end plates midway between their ends to the drum, a covering extending between the end plates at the outer edges thereof, a cross bar connecting the said end plates at their rear ends, rails extending along the wheel for a portion of its circumference, and means on the buckets for engagement with said rails, substantially as set forth.

3. A power wheel comprising a body or drum, having a covering for its peripheral surface, buckets having end plates provided with curved edges coinciding with the peripheral curvature of the drum, and a covering extending between the said end plates at the outer edges thereof, and means hinging the said buckets to the drum at a point midway between the ends of the end plates, substantially as set forth.

4. A power wheel comprising a drum having end rims, slats extending between the same, and a covering, and buckets having end plates hinged between their ends to the drum, cross bars connecting the opposite end plates of the buckets, and arranged in the closed position of the buckets to overlie the respective slats of the drum, and a covering for the buckets, substantially as set forth.

5. The combination in a power wheel, with the main frame, the body or drum journaled thereto, and the buckets having a hinged connection with the drum and provided with laterally extending portions for engagement with rails, of rails in position for engagement by said laterally extending portions of the buckets, bolts extending from the rails, laterally extending bolts having eyes receiving the rail bolts, nuts on the rail bolts and securing the same in connection with the lateral bolts, and means securing said lateral bolts in connection with the main frame, substantially as and for the purposes set forth.

WILLIAM R. CALDWELL.

Witnesses:
W. A. WELCH,
F. G. DAVIS.