

(No Model.)

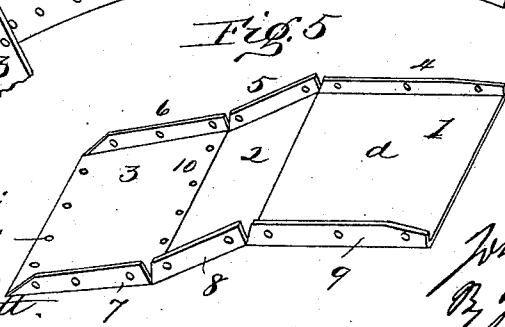
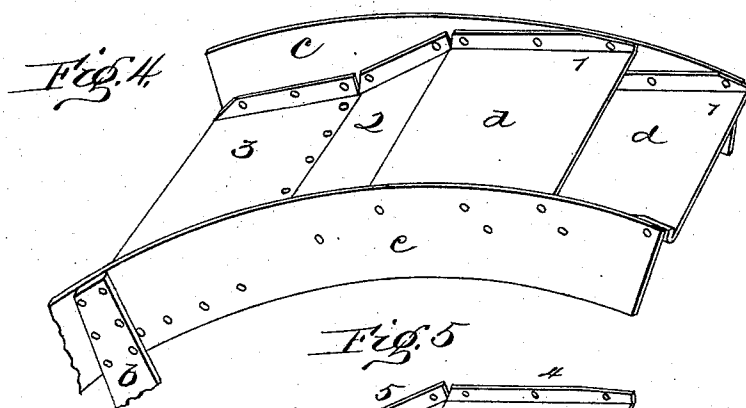
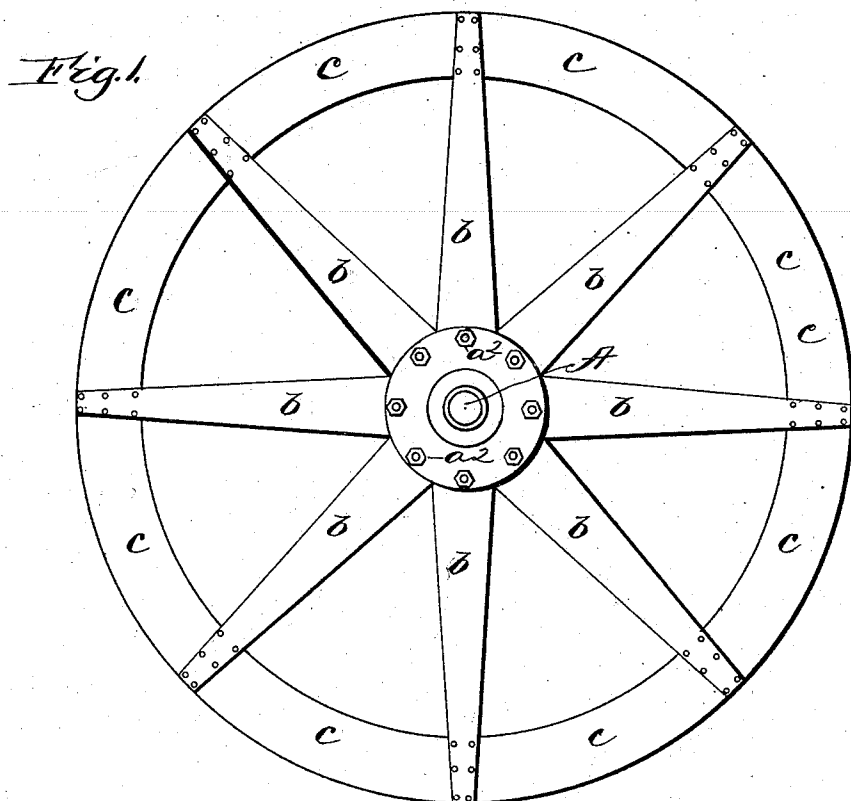
2 Sheets—Sheet 1.

J. H. HIGHSMITH.

OVERSHOT OR UNDERSHOT WHEEL FOR PROPELLING MACHINERY.

No. 578,745.

Patented Mar. 16, 1897.



Witnesses:

*J. M. R. R. R.*

*R. C. Rabbit.*

Inventor

*John H. Highsmith*

*By John S. Duffie*

Attorney

(No Model.)

2 Sheets—Sheet 2.

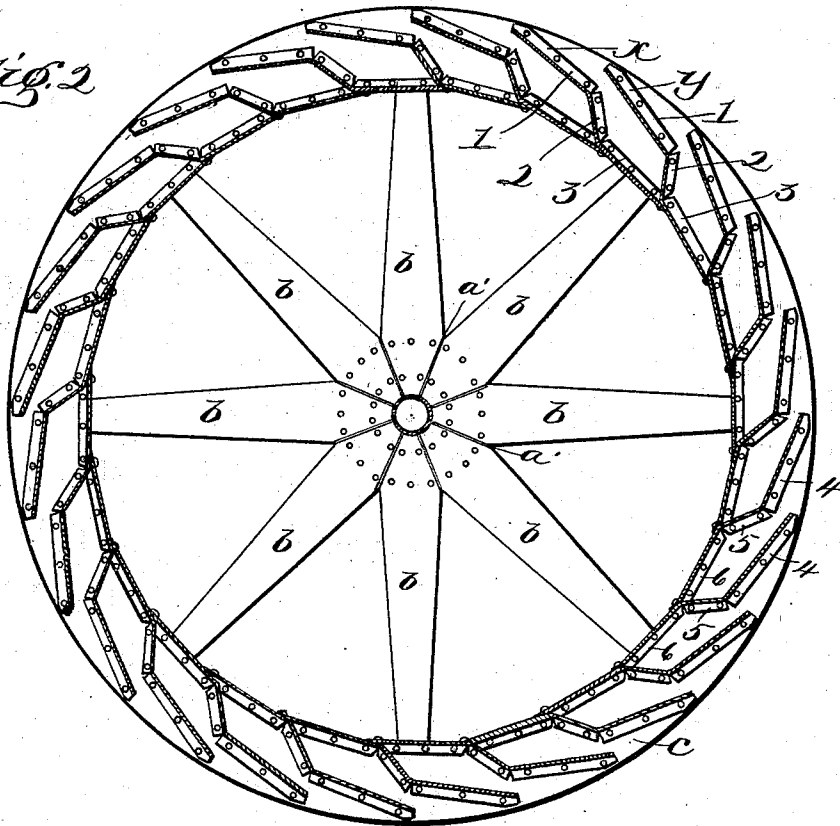
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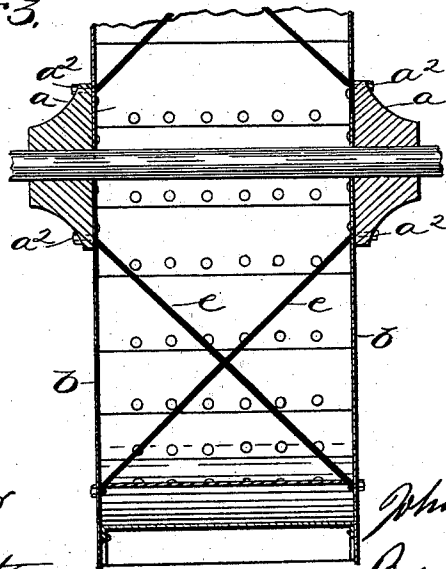
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*Fig. 2*



*Fig. 3*



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# UNITED STATES PATENT OFFICE.

JOHN HIRAM HIGHSMITH, OF CORNELIA, GEORGIA.

OVERSHOT OR UNDERSHOT WHEEL FOR PROPELLING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 578,745, dated March 16, 1897.

Application filed April 24, 1896. Serial No. 588,864. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HIRAM HIGHSMITH, a citizen of the United States of America, residing at Cornelia, in the county of Habersham and State of Georgia, have invented certain new and useful Improvements in Overshot or Undershot Wheels for Propelling Machinery; 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 is an overshot wheel for propelling machinery. It may, however, be also used as an undershot. This water-wheel is constructed of steel or iron, or both, may be taken to pieces, moved anywhere, and may be again put together for use by the use of bolts and nuts.

The wheel is very durable and of simple construction. It is not more weighty than the old-fashioned wooden wheel.

In the accompanying drawings, Figure 1 is a side elevation of my wheel. Fig. 2 is a sectional view. Fig. 3 is a sectional view of the hub, the lower half of the wheel, and a small portion of the upper half, the balance being cut away. Fig. 4 is a perspective view showing a section of the rim and two of the buckets. Fig. 5 is a perspective view of one of the walls of the buckets.

My invention is described as follows:

A is the shaft. *a* are the hubs. *b* are the arms. *c* are the sections of the rim. *d* are the section-walls of the buckets, and *e* are the braces.

The shaft A is made of steel or iron or of iron with steel bearings. All the other parts may be made of iron, steel, or any other suitable material.

The hubs *a* are secured to the shaft in any substantial manner. The inner faces of the hubs are provided with ribs or stays *a'* to support the arms. The inner ends of the arms are shaped to fit and rest in the V-shaped recesses between the ribs *a'* and are secured in such position by means of bolts and nuts *a<sup>2</sup>*.

To the outer and inner faces of the arms *b* are secured the sections *c* of the rim, which when put together form a perfect circle. Between the rim, when so formed, are secured by bolts and nuts the walls *d*, which form the

buckets. These walls consist each of a piece of plate metal having first a flat plane 1, (see Fig. 5,) then an incline plane 2, which inclines at an angle of about forty-five degrees to the face of plane 1. Then the balance of said plate, plane 3, is again inclined upwardly, so that it is about on a line parallel to the plane 1. These plates are then provided with perforated flanges 4, 5, 6, 7, 8, and 9. Said plate is provided at the upper part of plane 3 with perforations 10, and at its lower part with perforations 11. These walls *d* are then, by means of bolts and nuts, which pass through the perforations of the flanges 4, 5, 6, 7, 8, and 9 and through like perforations in sections *c*, secured to the inner face of sections, and when so secured form a perfect circuit of buckets, the lower end of plane 3 being bolted to the upper edge of plane 3 of the lower wall. Thus plane 3 of the upper wall and plane 2 of the lower wall form the bottom of one bucket, while the upper plane 1 of the lower bucket and plane 2 and plane 1 of the upper wall form the walls of the bucket, and so on all the way around the wheel. (See *x y*, Fig. 2.)

The wheel is braced by cross-braces *e*, said braces having their inner ends secured to the inner faces of the hubs and to the inner faces of the arms near their outer ends.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A water-wheel, consisting of the shaft A; hubs *a*, arms *b*, bolted to said hubs; sections *c*, secured to the inner faces of the arms *b*; bucket-walls *d*, consisting of the planes 1, 2, 3 and perforated flanges 4, 5, 6, 7, 8 and 9, and the planes 3, having perforations 10 and 11, and riveted together forming a complete and continuous inner wall and bottoms, and outer walls for the buckets, the flanges secured to the inner faces of sections *c*, substantially as shown and described and for the purposes set forth.

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

JOHN HIRAM HIGHSMITH.

Witnesses:

CHARLES G. VOSS,  
ROBERT McMILLAN.