

W. F. Knowlton.

Paddle Wheel.

N^o 104,603.

Patented Jun. 21, 1870.

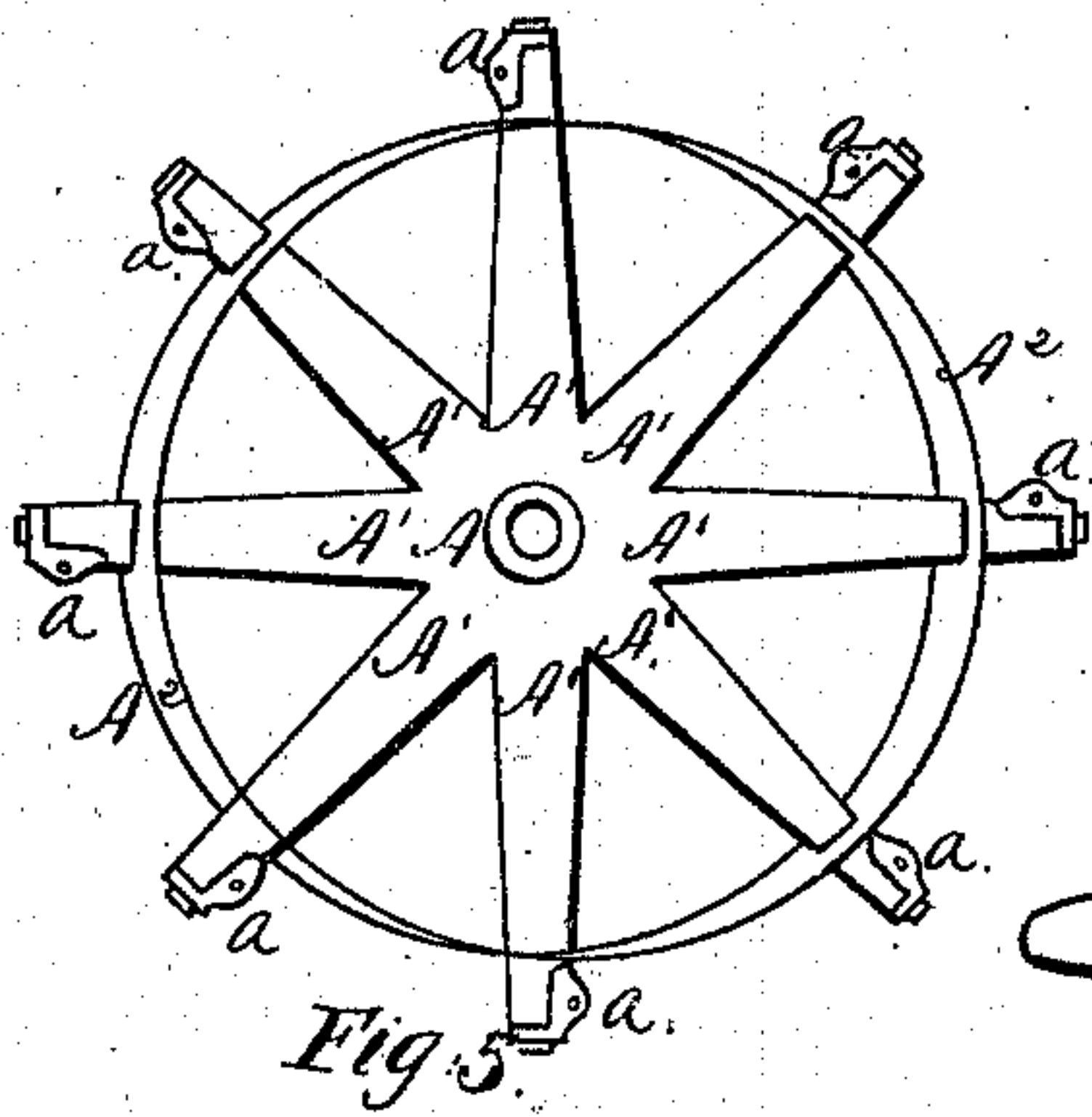


Fig. 5.

Fig. 1.

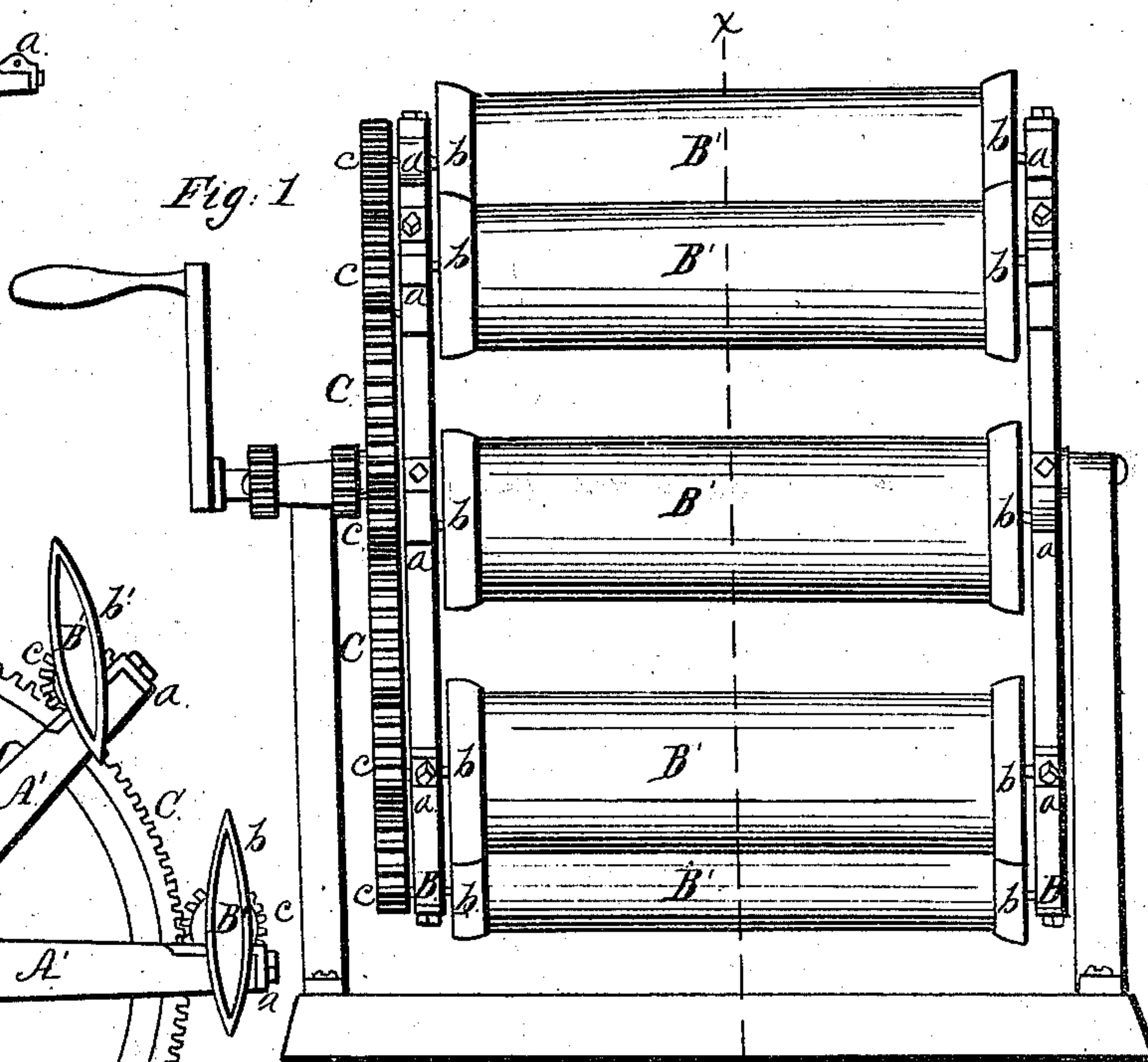


Fig. 2.

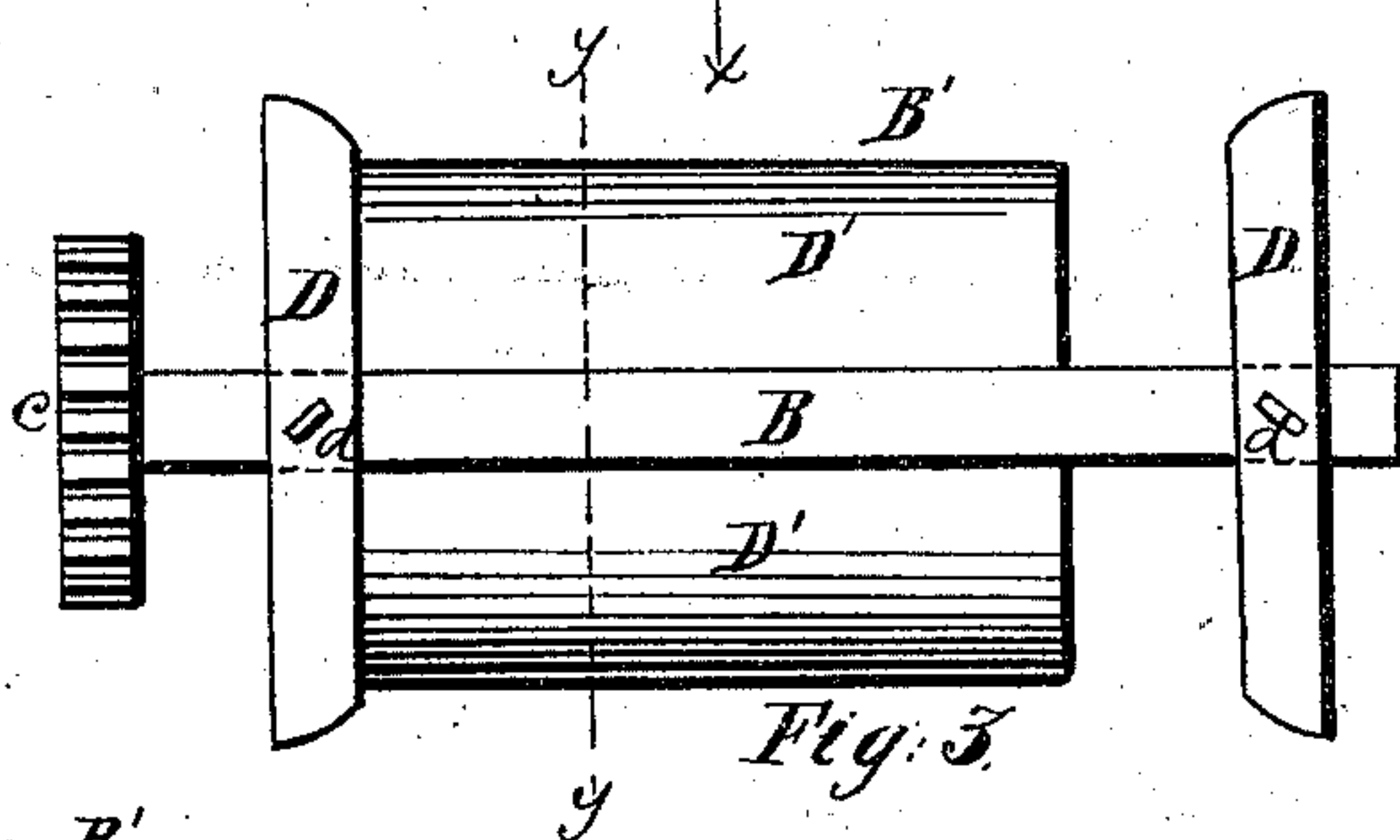
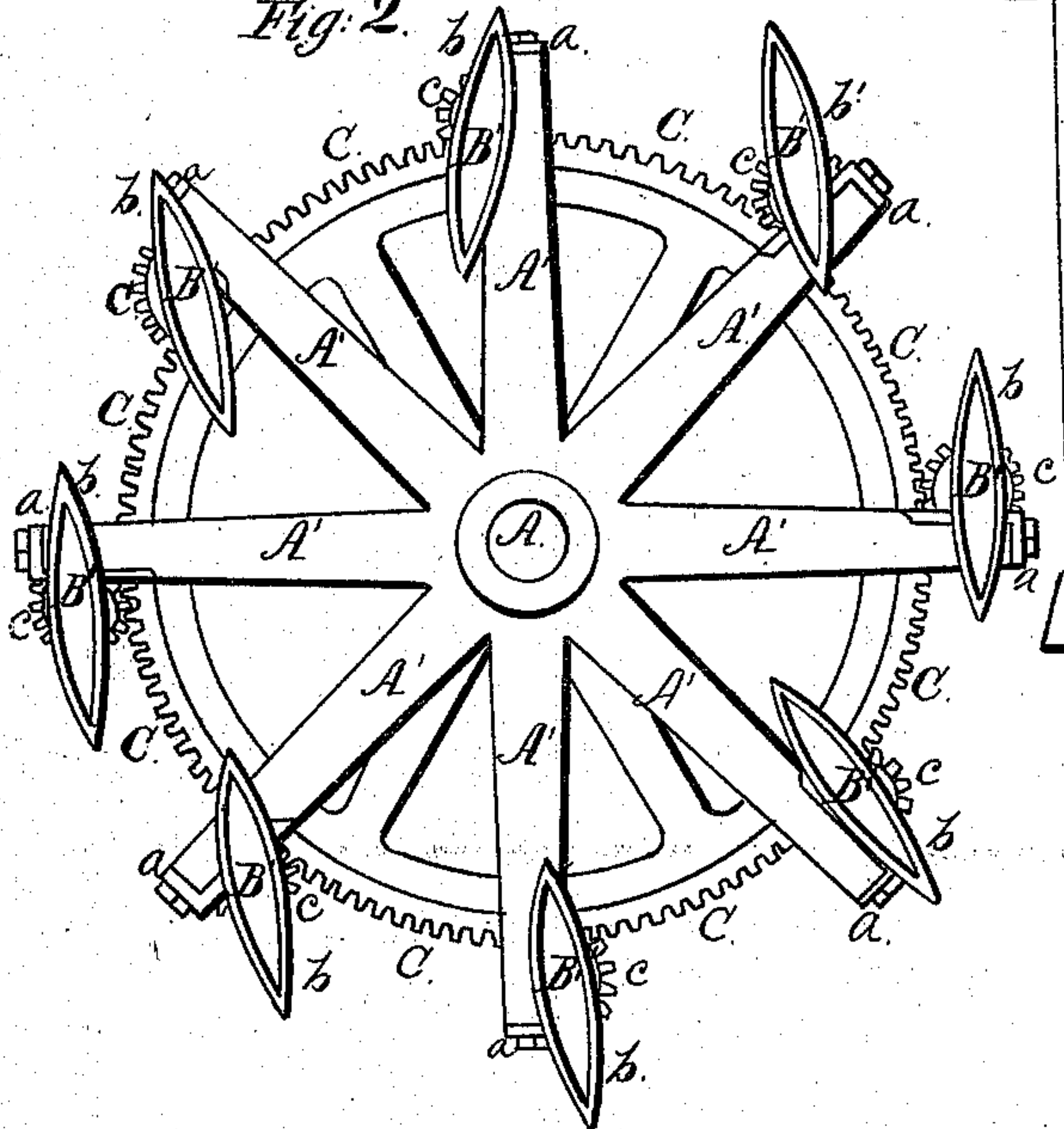
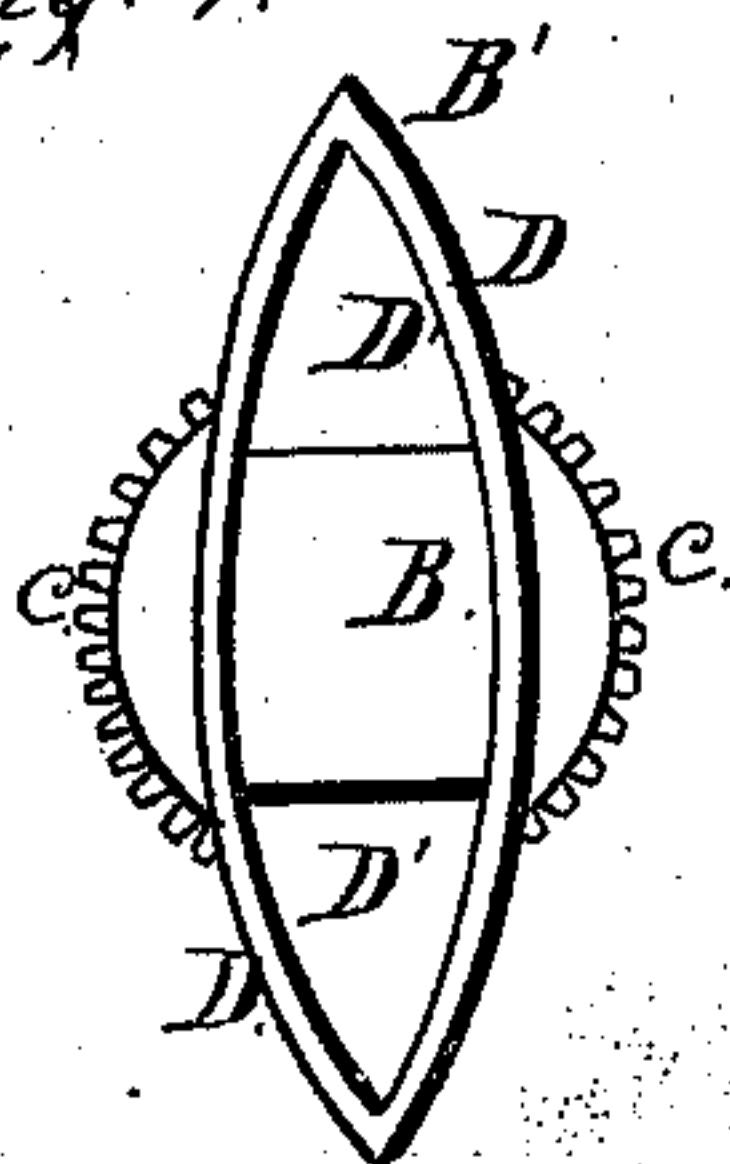


Fig. 3.

Fig. 4.



Witnesses:

Edwin James.

John B. Wheeler.

Inventor.

William F. Knowlton.

per J. C. B. Holmes

Attorney.

United States Patent Office.

WILLIAM F. KNOWLTON, OF ST. CLOUD, MINNESOTA, ASSIGNOR TO HIMSELF AND WILLIAM T. CLARK, OF SAME PLACE.

Letters Patent No. 104,603, dated June 21, 1870.

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, WILLIAM F. KNOWLTON, of St. Cloud, in the county of Stearns and State of Minnesota, have invented certain new and useful Improvements in Paddle-Wheels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a front view of the paddle-wheel.

Figure 2 is a vertical sectional view on the line *x x*, fig. 1.

Figure 3 is a front view of a blade with sliding adjustable holders or braces.

Figure 4 is a vertical sectional view on the line *y y*, fig. 3.

Figure 5 is a side view showing the arms and slotted brace-wheel.

The object of my invention is the construction of a paddle-wheel in such manner that the blades shall always preserve a vertical position.

The nature of my invention consists in securing to the axle of the wheel a series of radial arms on both sides of the blades. In boxes secured on the outer ends of these arms, the axle of the blades has its bearing. On one end of these axles is fastened a small cog-wheel, which meshes in and gears with a large cog-wheel secured to the main shaft; as the wheel is revolved, it carries with it the large cog-wheel, which in turn revolves the small cog-wheels attached to the axle of the blades. These blades are so arranged that by means of the cog-wheels they will always preserve a vertical position.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

A is the main shaft of the wheel. To this shaft A, are firmly attached a series of radial arms A¹ A¹, their number corresponding to the number of blades.

On the outer ends of these radial arms are secured metallic bearing-plates or boxes, *a a*, in which work the axles B B of the blades B' B'.

On the near end of these axles B B, and in relation to the position of the blades B' B', on the outside of the radial arms A¹ A¹, are secured small cog-wheels, *c c*, one on each axle.

These cog-wheels *c c* mesh in and gear with a large

cog-wheel, C, which is permanently secured to the main shaft A.

B' B' are the blades, and are convexed on both sides, as clearly shown in fig. 2, having on each end a metallic brace or holder, *b b*.

These blades may be constructed as clearly shown in figs. 3 and 4, wherein the axle B is a nearly-square bar of metal, the thickness of the paddle-blade in its middle, so that, when the sections or wings D' D' of the blade are fitted to the axle B, they shall present a smooth and uniform surface.

These sections D' D' are held in their places by means of the sliding adjustable braces or holders D D and thumb-screws *d d*.

The radial arms A¹ A¹ may be made tapering and convexed, as clearly shown in fig. 5, so as to enable them the more easily to cut the water in their passage through it.

These arms A¹ A¹ may also be caused to pass through a slotted wheel or rim, A², which will act as a stay or brace for the same.

It will be observed that the blades B' B' are so arranged that, in the revolution of the cog-wheel C by means of the cogs *c c*, they will always preserve a vertical position, and thus enable them, as it were, to cut the water both in their downward and upward movements.

In the drawing it will also be observed that the device is represented as being worked by a system of cog-gearing. All cogs may, however, be dispensed with, except those on the large wheel C and the small wheels *c c*, and the device operated by friction.

The axle of the main wheel C, and also that of the small cog-wheels *c c*, should rest in adjustable boxes.

Having thus fully described my invention,

What I claim therein as new, and desire to secure by Letters Patent of the United States, is—

The shaft A arms A¹ A¹, blades B' B', and cog-wheels C *c c*, when the whole is so combined and arranged as to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. F. KNOWLTON.

Witnesses:

NATHAN F. BARNES,
GEO. L. HAYS.