

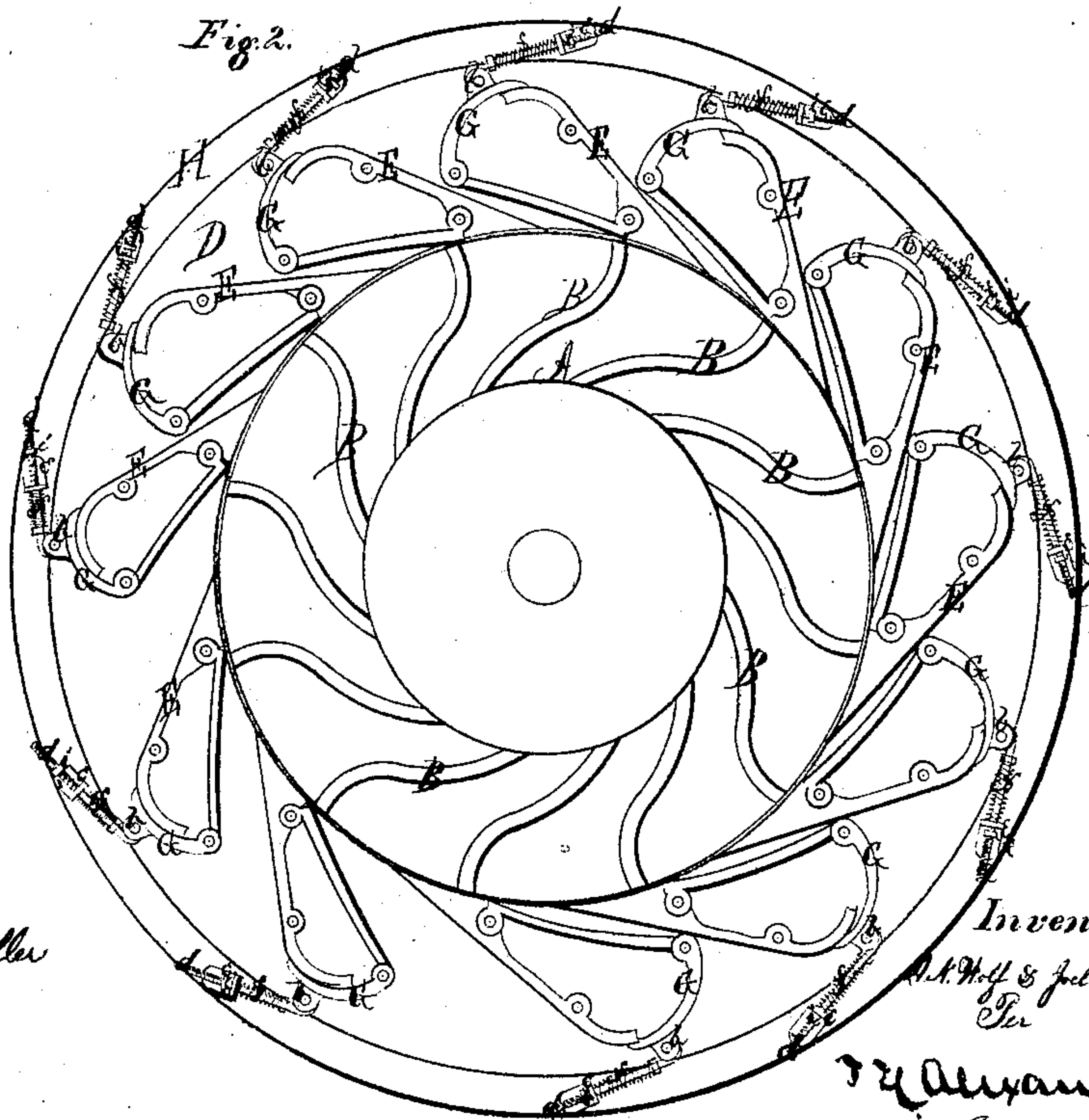
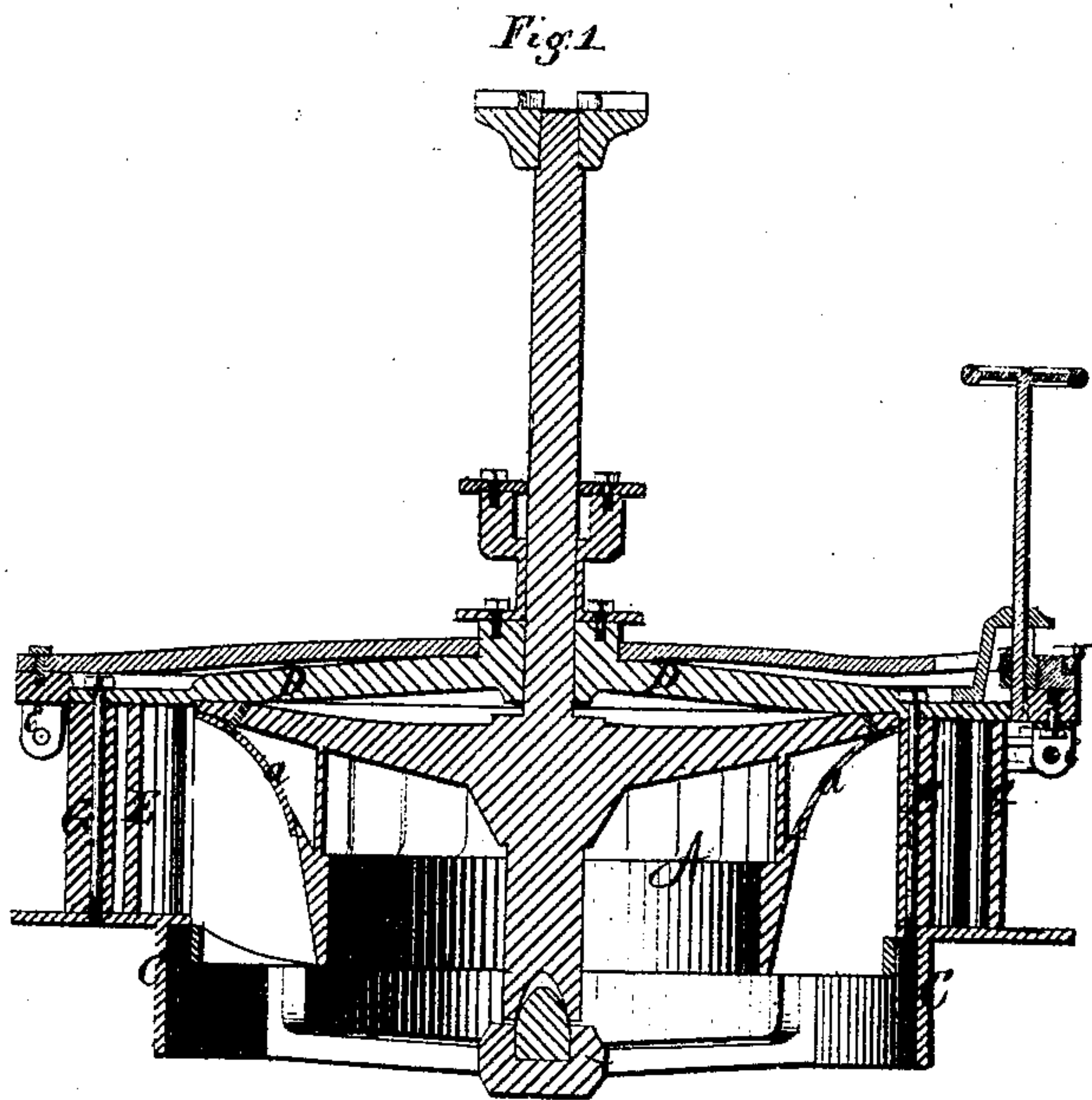
Wolf & Haug,

2. Sheets, Sheet 1.

Water Wheel.

No. 101,199

Patented Mar. 22, 1870.



Witnesses
Henry A. Miller
John A. Ellis.

Inventors
A. A. Wolf & Joel Haug
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Wolf & Haug,

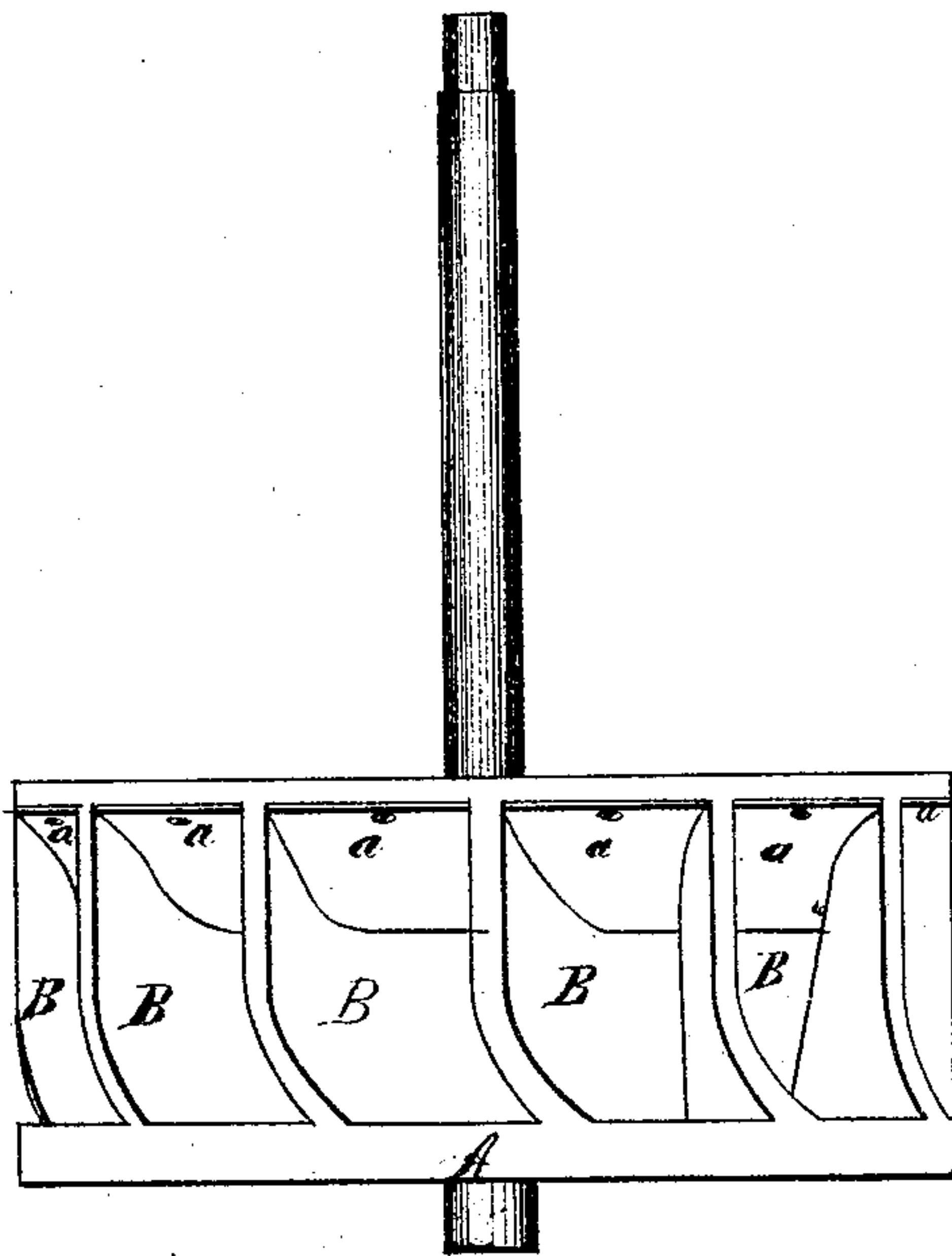
2, Sheets, Sheet 2.

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Fig. 3.



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A. N. WOLF, OF SHERIDAN, AND JOEL HAUG, OF BERNVILLE, PENN-
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Letters Patent No. 101,199, dated March 22, 1870.

IMPROVEMENT IN WATER-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 we, A. N. WOLF, of Sheridan, in the county of Lebanon, and JOEL HAUG, of Berville, in the county of Berks and State of Pennsylvania, have invented a new and valuable Improvement in Water-Wheels; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical section of our water wheel.

Figure 2 is a horizontal section of the same, and

Figure 3 is a side view of the wheel.

The nature of our invention consists in the construction of a water-wheel cast all in a solid piece, so as to make it more durable.

Also in the use of an apron or cover attached over the upper orifice of each bucket, whereby the wheel can be changed from a double discharge to a single one, and *vice versa*, and in the mode of constructing and operating the valves or gates.

In order to enable others skilled in the art to which my invention appertains to make and use the same, we will now proceed to describe its construction and operation, referring to the annexed drawings which form a part of this specification.

A represents the wheel, which is cast all in one piece instead of in parts or pieces and then put together, as is usually the case.

The buckets B B of the wheel are of the peculiar construction shown in fig. 3, and have both an upper and lower orifice for discharging the water.

Over the upper orifice of each bucket is placed a cover or apron, *a*, fastened by a screw or other suitable means, whereby the wheel is changed from a double discharge to a single, and by removing said aprons or covers, the wheel is again changed to a double-discharge.

C represents the bottom of the casing, and

D the cover, between which are permanently secured the chutes E E.

At or near the inner edge of each chute is pivoted the valve or gate G, which is made in two sections, hinged or joined together, as shown in fig. 2.

The outer section of the gate G is provided on the outer side with two ears, *b b*, between which an eye-bolt lever, *d*, is pivoted by means of a screw-bolt which passes through said ears and through the eye of the lever.

The other end of the lever *d* passes through an L-shaped strap, *e*, which is attached to the under side of a ring, H, working at and around the outer circumference of the cover D.

The lever *d* is secured by a nut, *i*, and is surrounded by a spring, *f*, between the strap *e* and the eye.

The ring H is moved so as to open and close the valves or gates G G by means of a pinion, I, and rack-bar, J, placed on one side near the edge of casing, as shown in fig. 1, or rather this pinion and rack-bar or lever is only used to open and hold open the gates.

The springs *f f* shut the gates as soon as the pinion is turned sufficiently to enable them to act, while, if one or more of the gates or valves should be obstructed from any cause, the springs on the same will yield and not prevent the closing of the other gates.

Having thus fully described our invention,

What we claim as new, and desire to secure by Letters Patent, is—

1. The wheel A with buckets B B, constructed as described and provided with aprons *a a*, whereby the wheel may be changed from a double discharge to a single, substantially as set forth.

2. The combination of the sectional valves or gates G G, ears *b b*, levers *d d*, straps *e e*, springs *f f*, nuts *i i*, and ring H, all constructed as described, and substantially as and for the purposes herein set forth.

A. N. WOLF.

JOEL HAUG.

Witnesses:

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