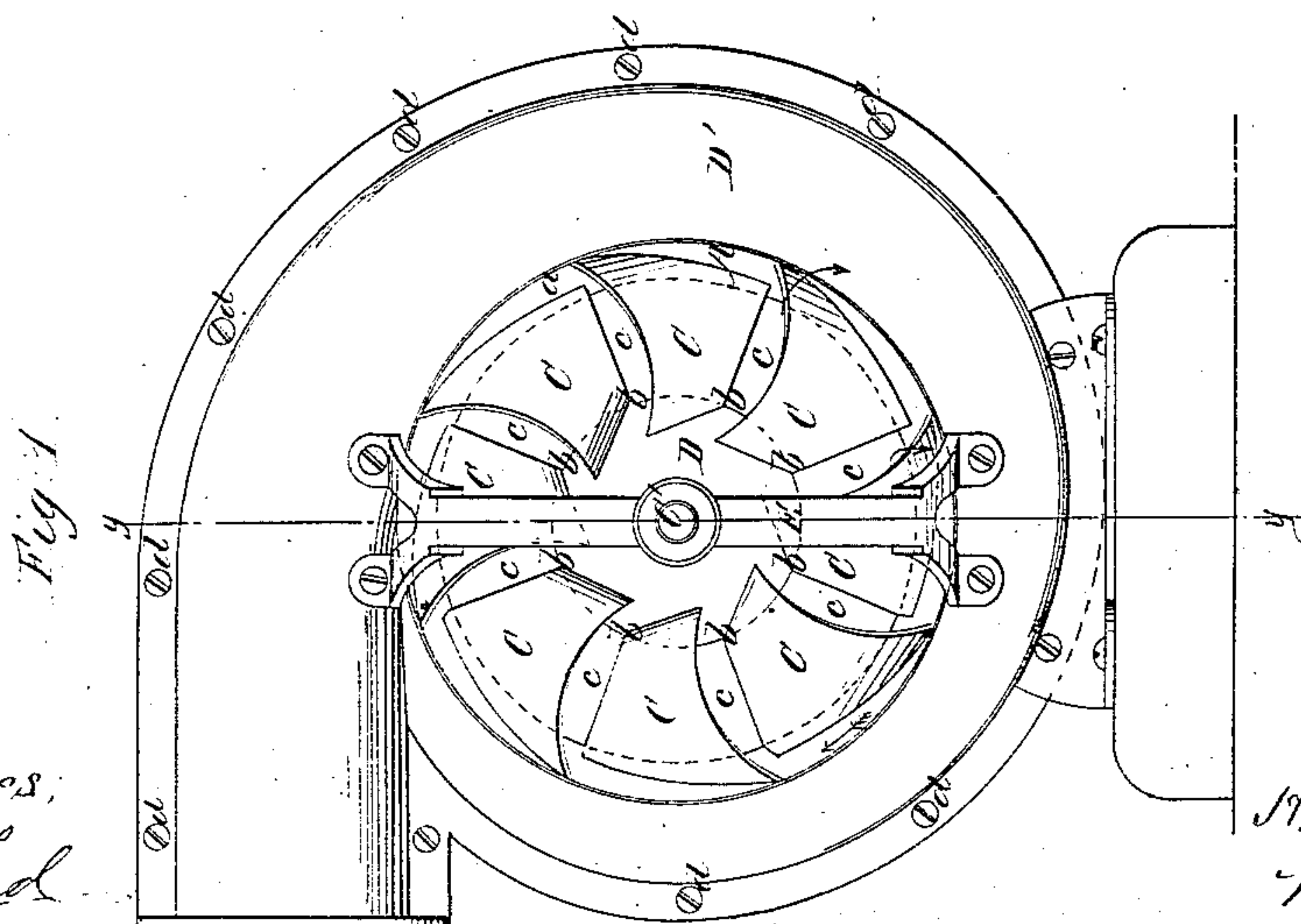
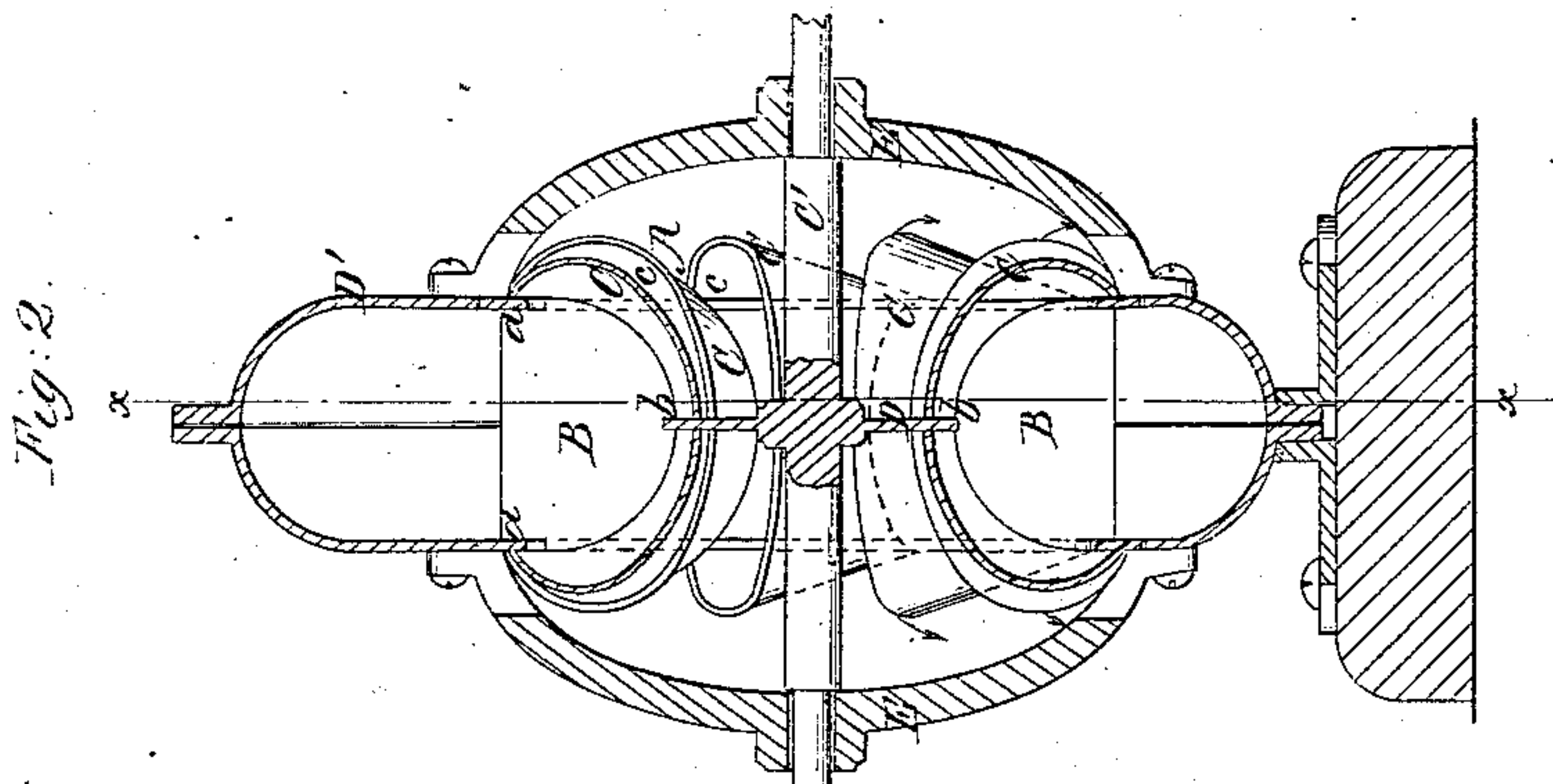
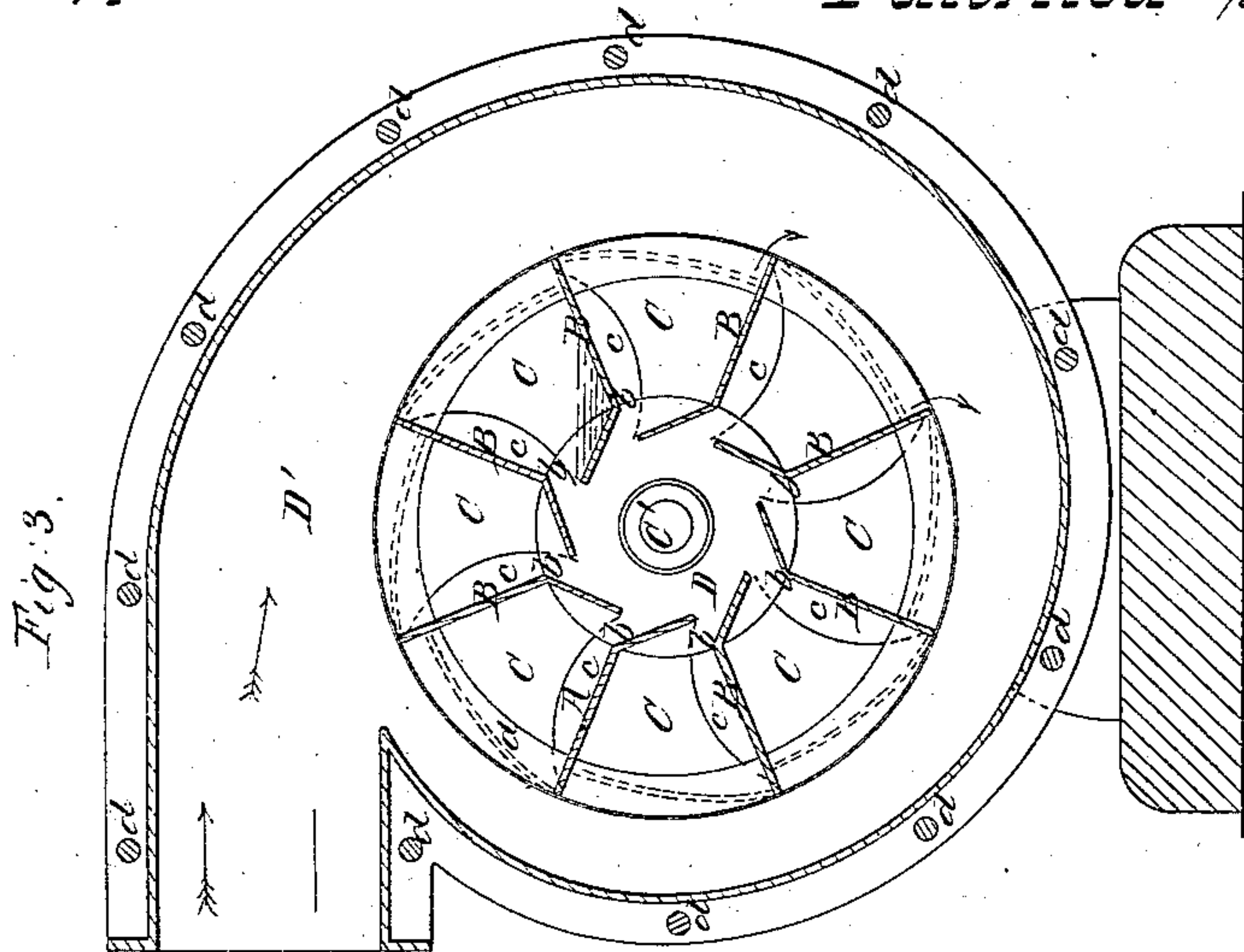


H. N. Gallagher,

Water Wheel,

N^o 36,514.

Patented Sep. 23, 1862.



*Witnesses,
J. B. Smith
G. W. Reed*

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UNITED STATES PATENT OFFICE.

H. N. GALLAGHER, OF GENEVA, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 36,511, dated September 23, 1862.

To all whom it may concern:

Be it known that I, H. N. GALLAGHER, of Geneva, in the county of Ontario and State of New York, have invented a new and Improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of my invention. Fig. 2 is a vertical section of the same, taken in the line *yy*, Fig. 1; Fig. 3, a vertical section of the same, taken in the line *xx*, Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in that class of water-wheels which are encompassed by a scroll, and in which the water, after acting upon the buckets, is discharged at both sides of it, or, when the wheel is used in a horizontal position, discharged both at the top and bottom.

The object of the invention is to obtain a wheel of the class specified which will admit of the water being discharged immediately after it has acted upon or against the buckets, and without coming in contact with any part of the wheel, which will detract from the effect or power of the water obtained by its first impact with the buckets.

To this end the invention consists in having the buckets formed of radial plates provided with semicircular inner ends, and having bodies or sides of semi-conical form, the buckets being placed in the wheel and the latter encompassed by a scroll, all arranged as herein-after fully shown and described.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents the wheel, which is composed of two rims, *a a*, placed at a suitable distance apart and having radial plates B secured between them at equal distances apart. The outer edges of the plates B are flush with the outer edges of the rims *a a*; but the plates extend inward toward the shaft C' of the wheel and are attached to a circular plate, D. The inner parts of the plates B are of semicircular form, as shown in Fig. 2, and they are secured centrally to the edge of plate D, as shown at *b*.

Each plate B has the longitudinal half of a hollow cone, C, attached to its semicircular part, which forms the sides of the bucket, the plates B forming the fronts. The sides C of the buckets fill the spaces between the plates B at their outer edges, but discharge apertures or issues *c* are allowed between the inner semicircular parts of the plates and the larger ends of C, as shown in all the figures. The larger ends of C are fitted on the plate D, the latter passing through slots in C.

The plates B and the hollow semi-cones C comprise the buckets of the wheel, and the larger of flaring ends of C project laterally beyond the rims *a a* of the wheel, as shown clearly in Fig. 2.

The wheel A is encompassed by a scroll, D', which is of semicircular form in its transverse section, and gradually decreases in depth from its induction end or orifice to its opposite end. (See Figs. 1 and 3.) This scroll D' is formed of two parts provided with flanges at their outer edges, through which bolts *d* pass for securing the parts together, and the shaft C' of the wheel has its bearings in bars E E, which are bolted to the scroll, as shown in Figs. 1 and 2. When the wheel is fitted within the scroll, the rims *a a* work snugly within the inner edges of the scroll as closely as may be without causing unnecessary friction, and the water in passing through the scroll and wheel is discharged through the issues *c* at each side of plate D, the water acting by impact against the plates B of the buckets, and then exerting a reacting force against the sides C as it passes through or out of the issues *c*.

The plate D and buckets form the only connection between the shaft C' and the rims *a a*, and it will be seen that the water in passing through the wheel does not act upon any part of the latter without exerting a propelling effect. The water has a direct and free discharge from the wheel at each side after it has done its work, and cannot serve as a "drag" to diminish the power of the latter.

This wheel may be placed in a vertical or in a horizontal position and work equally well in either case. It may be constructed at a moderate cost, and it has no parts liable to get out of repair or become deranged by use.

Having thus described my invention, what I

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

The wheel A, composed of two rims, *a a*, placed at a suitable distance apart and provided with buckets formed of radial plates B, and longitudinal halves C of hollow cones connected with the rims *a a*, and a circular plate,

D, on the shaft C' of the wheel, as shown, in connection with the scroll D', all arranged substantially as herein set forth.

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Witnesses:

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