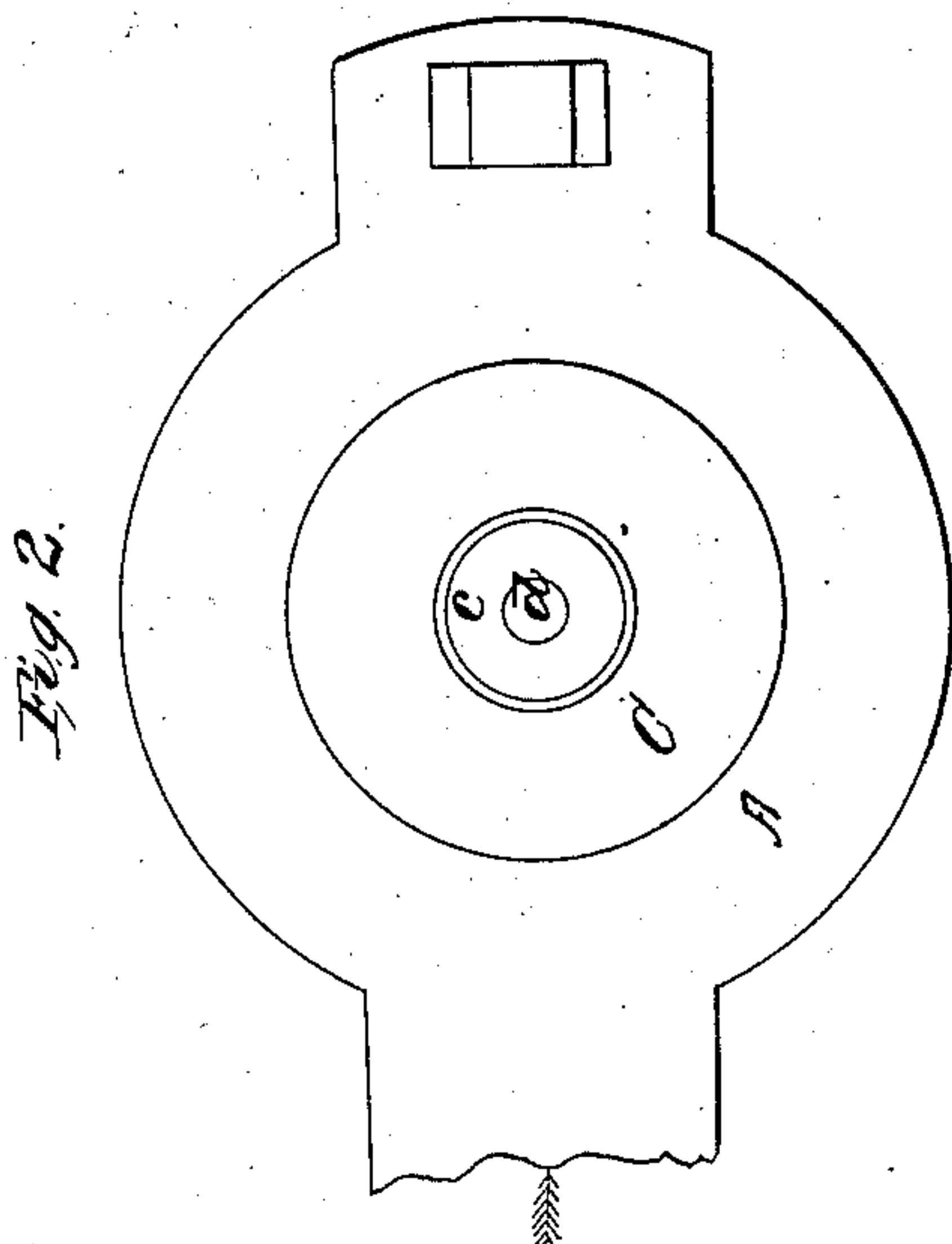
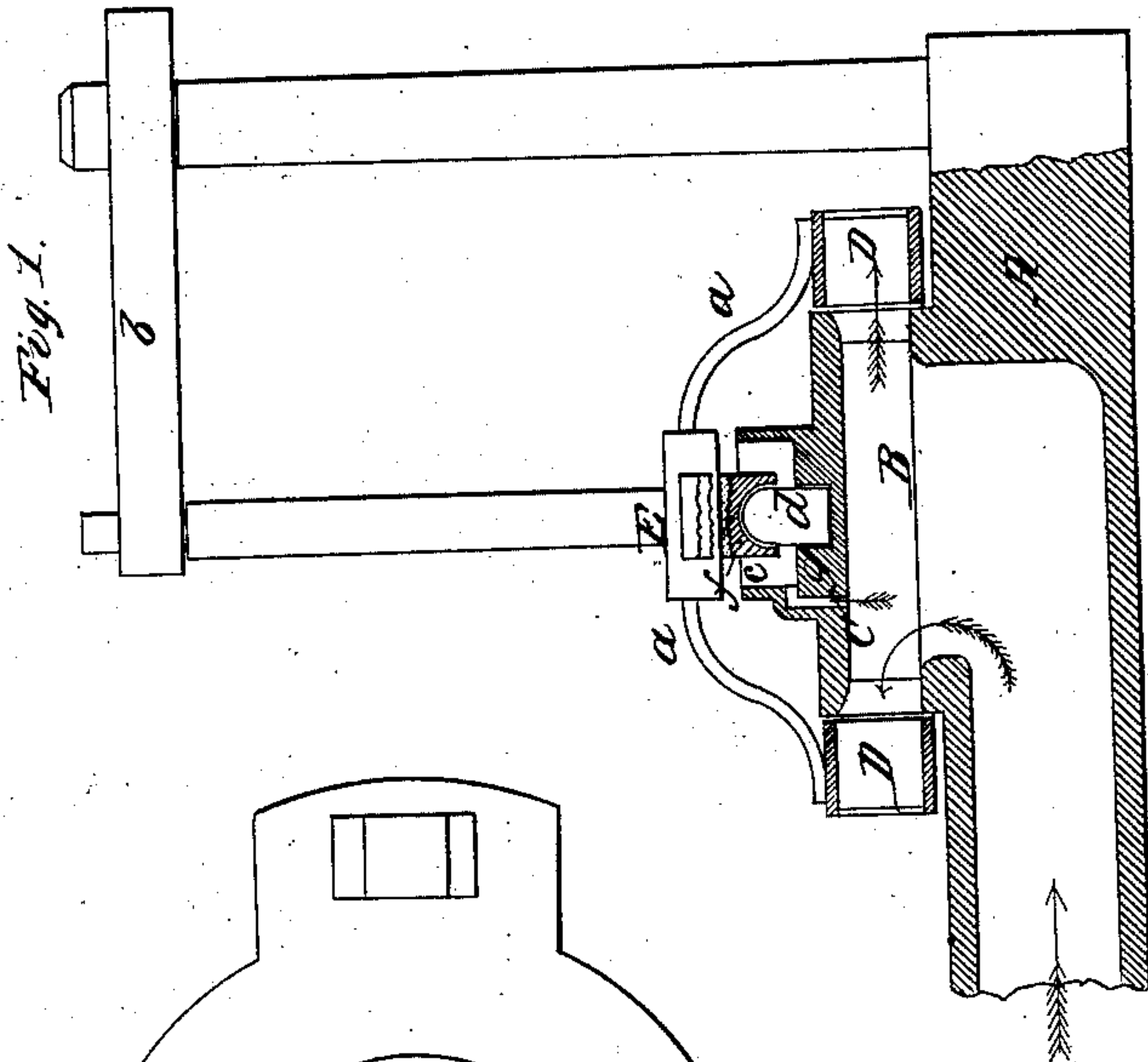
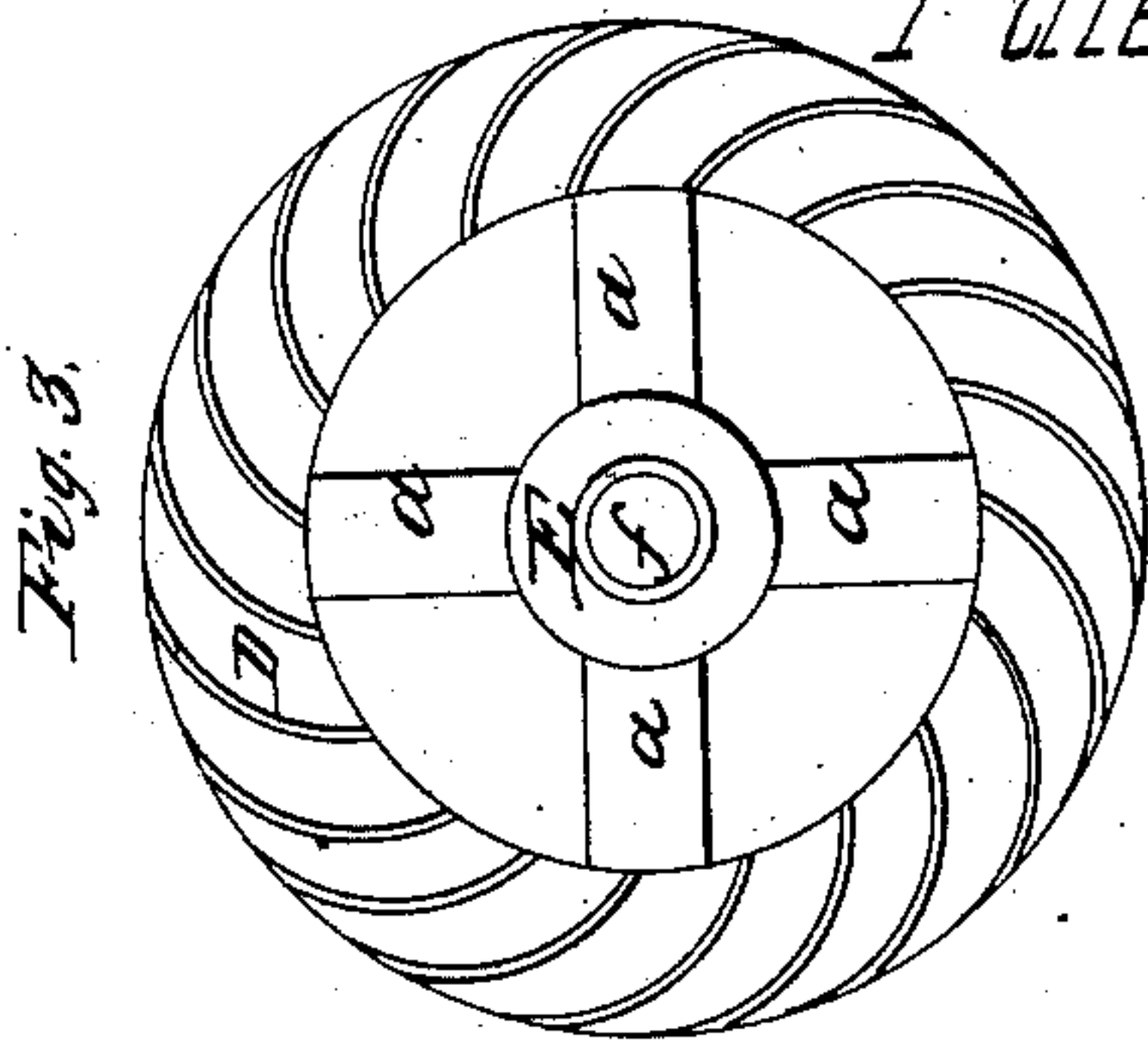


B. Holly,
Water Wheel.

No. 41,508.

Patented Feb. 9, 1864.



Witnesses
Charles H. Cherry
William A. Loder,

Inventor
Birdsall Holly
By J. Trauer & Co.
Attys

UNITED STATES PATENT OFFICE.

BIRDSILL HOLLY, OF LOCKPORT, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **41,508**, dated February 9, 1864.

To all whom it may concern:

Be it known that I, BIRDSILL HOLLY, of Lockport, in the county of Niagara and State of New York, have invented a new and useful Improvement in Water-Wheels; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, making part of the specification.

Figure 1 is a central vertical section of a water-wheel and its supporting parts, with my improvement applied thereto. Fig. 2 is a plan of the base that supports the wheel; Fig. 3, a bottom view of the wheel detached.

Like letters of reference indicate corresponding parts in all the figures.

My improvement is particularly applicable to turbine-wheels; and the invention consists in the arrangement of parts whereby the step or lower bearing of the wheel is kept constantly lubricated and cooled by the admission of water from the induction, thus preventing the necessity of oiling and the danger of heating.

As represented in the drawings, a base, A, for the support of the wheel, is provided, having the induction B, for the application of the water, beneath. From this induction the water escapes outward, sidewise, through openings in an elevated circular rim or cylinder, C, into the buckets of the wheel D, which consists of a ring revolving closely but freely around the circular rim of the base. The wheel is connected by arms *a a* with the spindle E, which has its upper bearing in any suitable support, *b*, but whose lower bearing is arranged as follows:

Centrally from the top of the rim C of the base projects a flange, *c*, of suitable diameter and height, forming an open-topped dish or reservoir, as clearly shown in Figs. 1 and 2. In the center of this dish is secured a lignum-vitæ step, *d*, and on this step rests the socket *f*, forming the end of the spindle, or, if desired, the order may be changed, the step being formed on the end of the spindle and the socket in the base, but the former arrangement is preferable.

At one or more points ending in the reservoir *c* is a conduit or passage, *g*, leading downward through the top of the base and opening into the induction B. This allows a free flow of water at all times and under all circumstances into the reservoir, and keeps the same full above the bearing.

The advantage of this arrangement is at once manifest. The reservoir *c* being always full above the level of the bearing, the latter is kept lubricated in the best manner, to avoid excess of friction, and thus the necessity of any oil-receptacle is avoided and less friction really produced, while the parts are kept much cleaner. In addition to this, the bearing, by being constantly surrounded by a body of water and this water continually running and changing from the impulse received from the head, never becomes excessively heated, as in the ordinary arrangements, and therefore runs more truly and wears much longer. The pressure of the water being considerable, the tendency is to wash out all dirt and impurities that settle in the reservoir *c*, and the bearing is thus kept always clean and unobstructed.

In this arrangement of the wheel, the step being elevated above the discharge of the water through the buckets, there is no method by which it can be kept uniformly submerged, except that described, where the pressure of the head keeps the reservoir filled whenever the wheel is in operation.

What I claim as my invention, and desire to secure by Letters Patent, is—

The reservoir *c*, bearing *d f*, and conduit *g*, in connection with the induction B beneath, substantially as and for the purpose herein set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

BIRDSILL HOLLY.

Witnesses:

W. W. BRYAN,
A. F. BROWN.