

J. S. Bradford, Gold Washer.

No. 95,640.

Patented Oct 12, 1869.

Fig. 1.

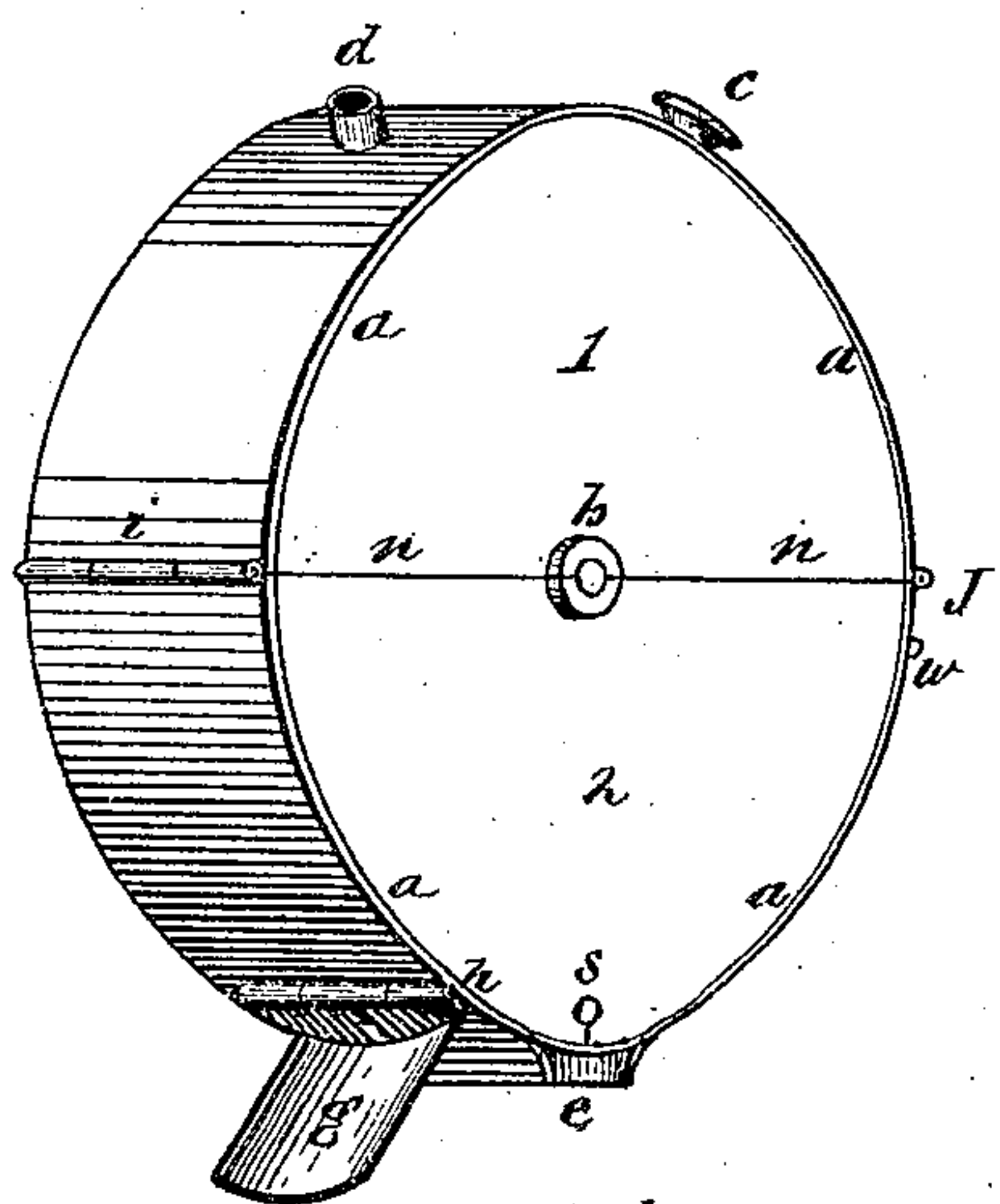


Fig. 2.

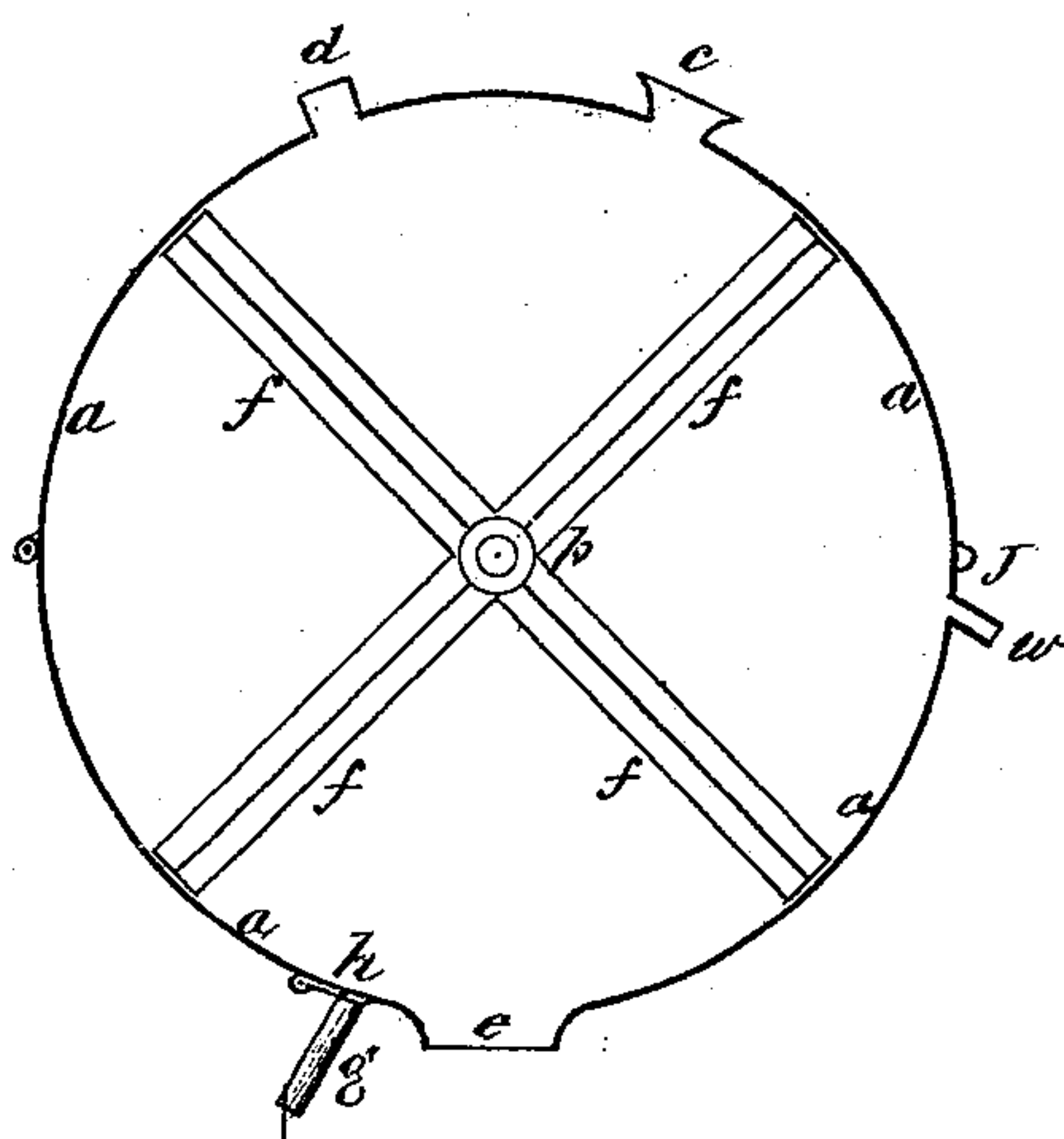


Fig. 3.

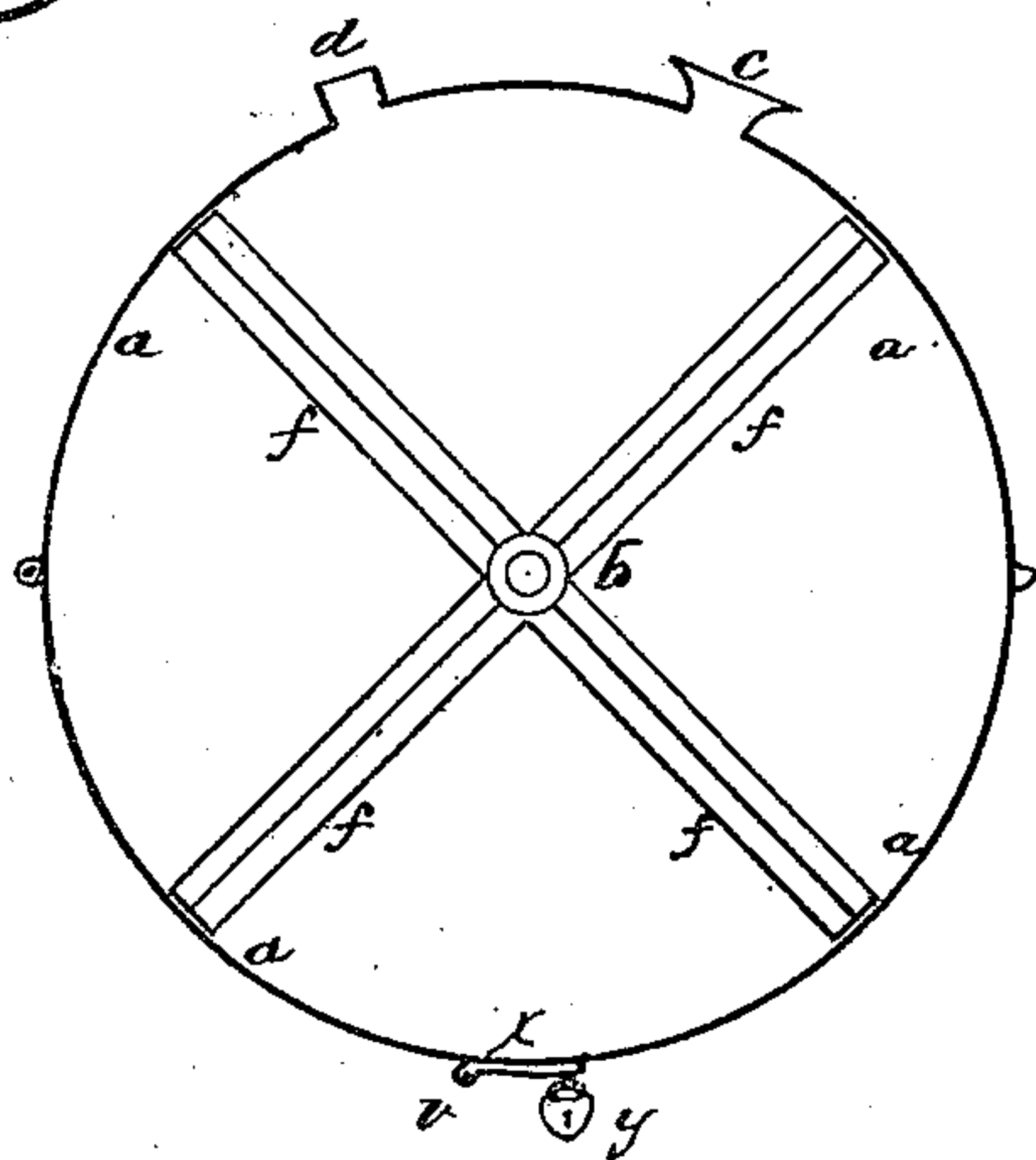
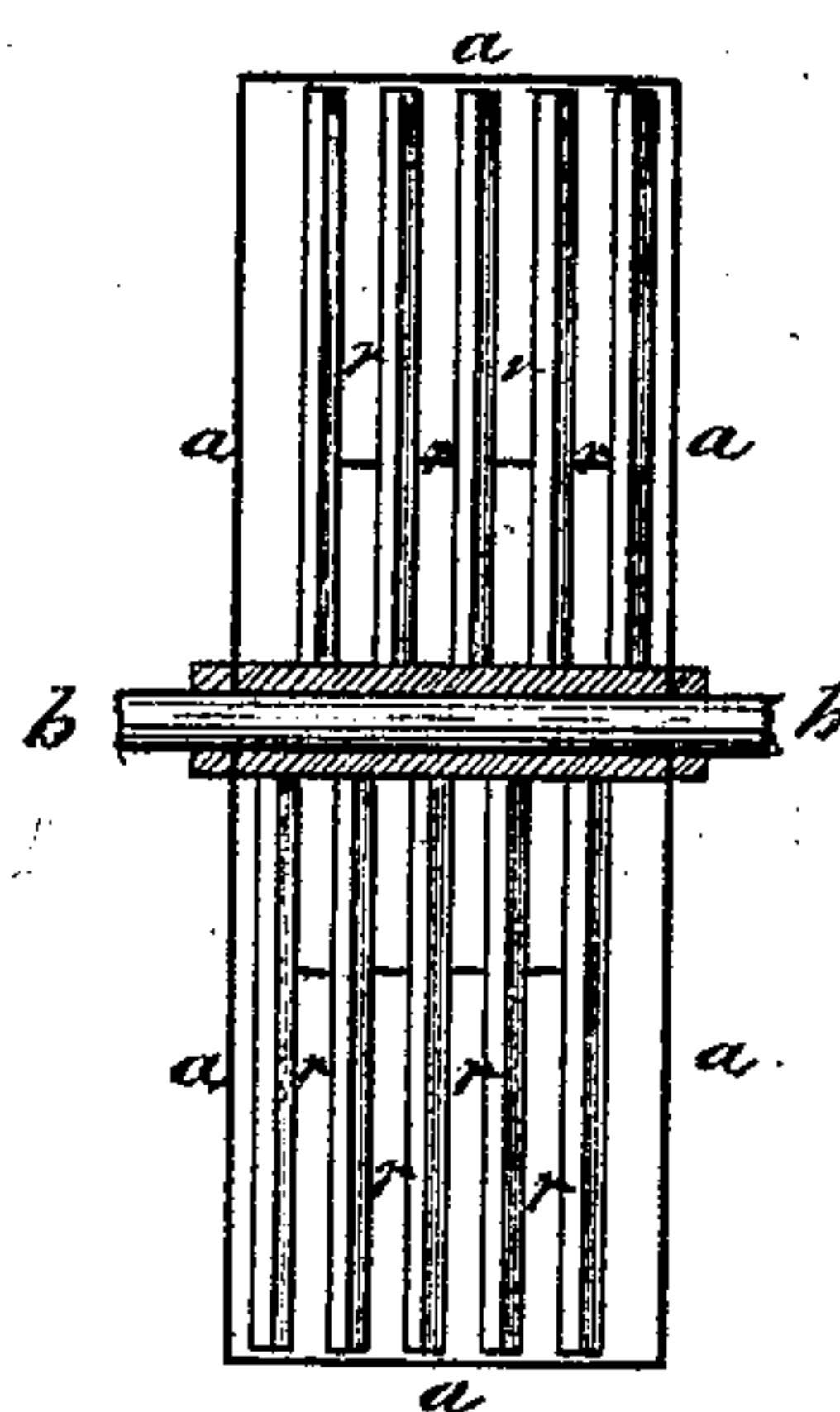


Fig. 5.

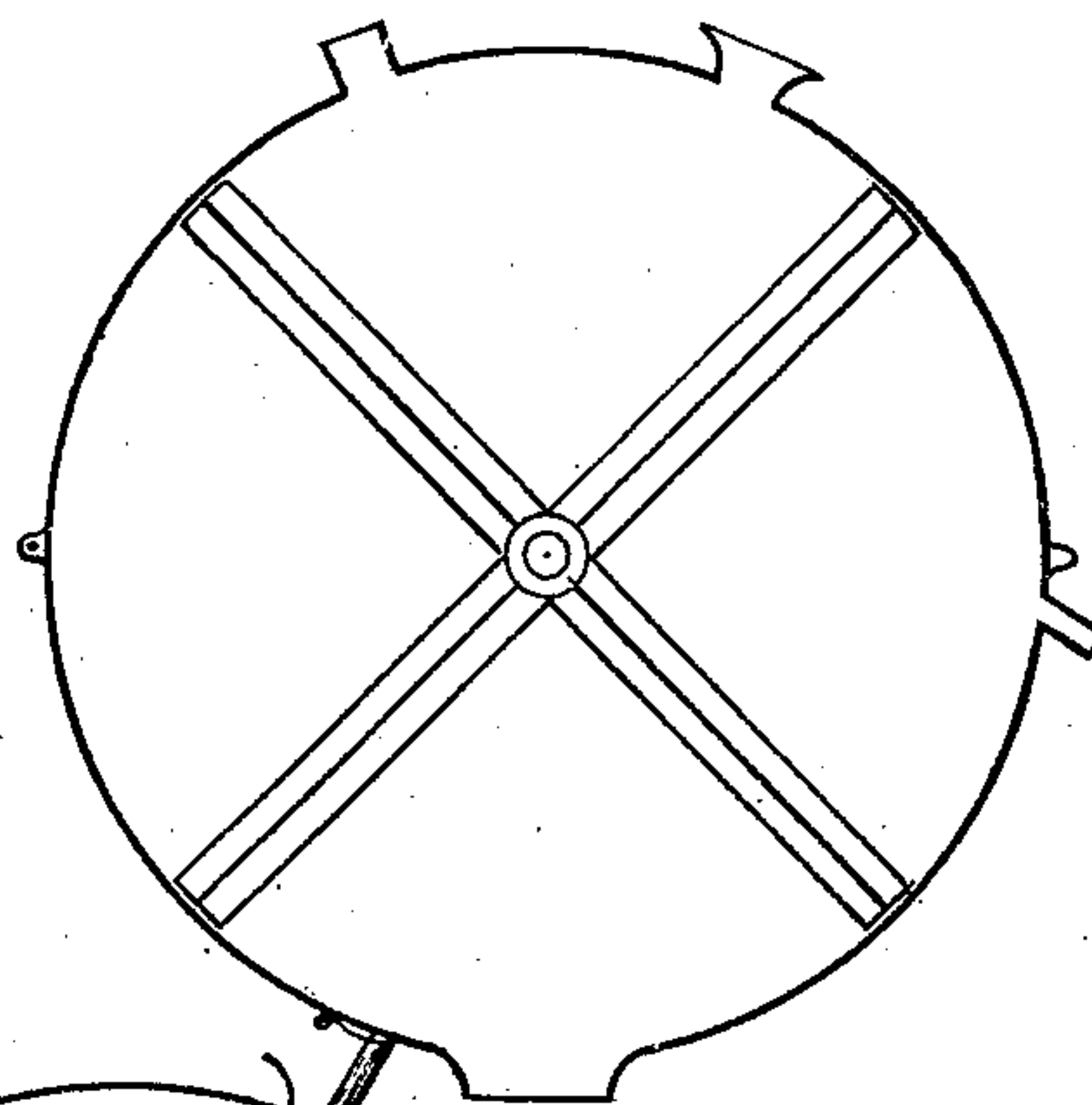
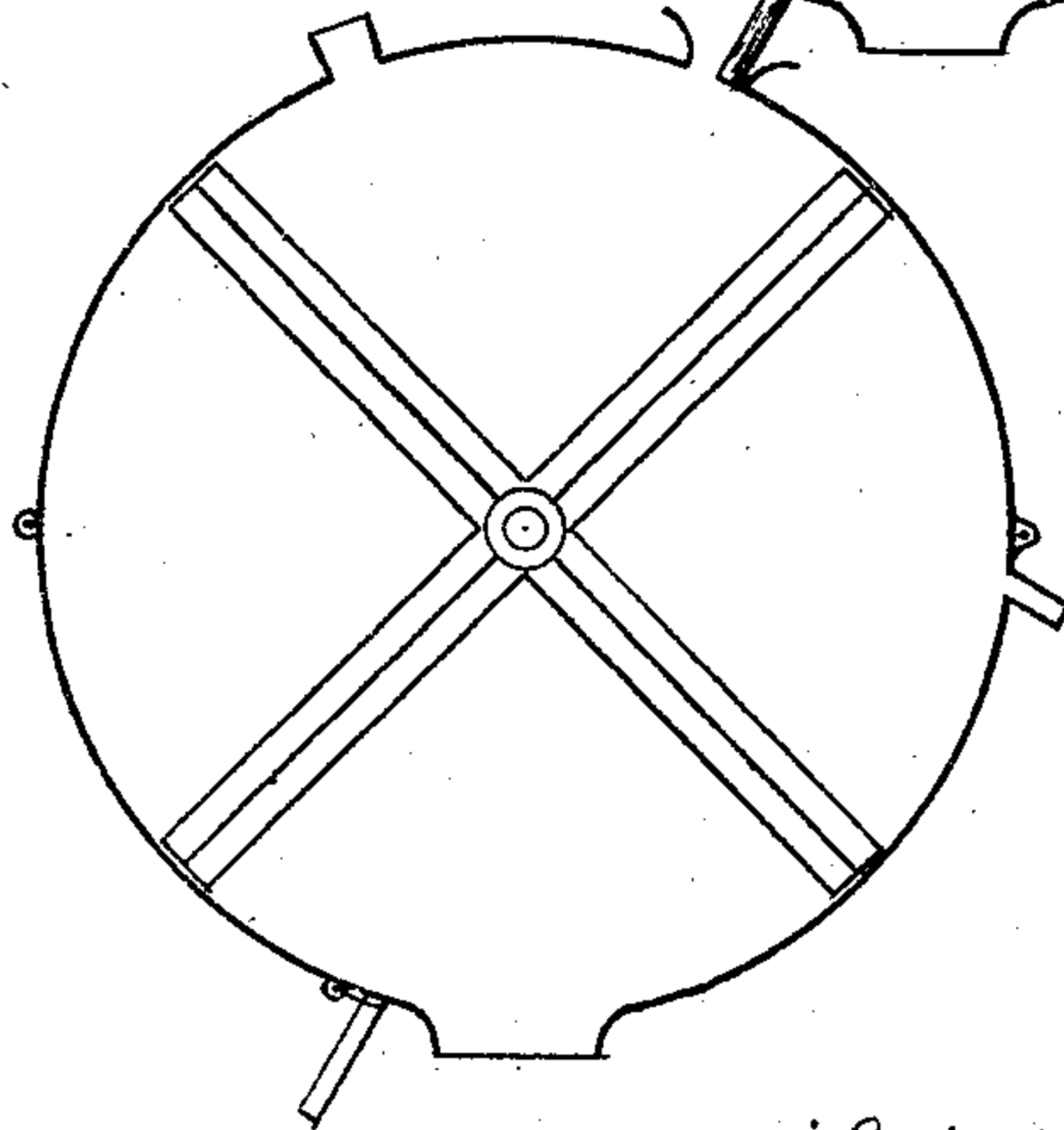


Fig. 4.



Witnesses.
Saml. N. Parmelee
J. A. Merriam

Inventor.
J. S. Bradford

United States Patent Office.

JOHN STRICKER BRADFORD, OF NEW YORK, N. Y.

Letters Patent No. 95,640, dated October 12, 1869.

IMPROVED ORE-CONCENTRATOR AND AMALGAMATOR.

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, JOHN STRICKER BRADFORD, of the city, county, and State of New York, have invented a new and useful Machine for the Concentration and Amalgamation of Pulverized Ores, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, viz:

Figure 1 is an outside vertical surface view, showing upper and lower sections of cylinder, numbered 1 and 2.

Figure 2 is an inside vertical view, showing open concentrating-chamber *e*, and reach of wheel-arms, with (when the valve *h* and the water-discharge *w* are closed) the entire lower section of the cylinder in a smooth and unbroken surface to the concentrating-chamber.

Figure 3 shows construction of wheel-arms, the sections alternating in their strokes, and applicable to the machine for both concentration and amalgamation-purposes.

Figure 4 shows a combination of two concentrators.

Figure 5 shows inside vertical view of the machine as an amalgamator, conforming in construction in all respects to the concentrator, except in the omission or closing of the waste-valve *h* and the water-discharge *w*, and in the substitution of the valve-discharge *x* in place of the concentrating-chamber *e*.

Practical dimensions, (to which, however, I do not confine myself:) diameter, four feet, edge-width, sixteens inches.

a a a a, inside circumference of cylinder.

b, axle of concentrating-wheel.

c, ore-feed, and, in fig. 5, ore and mercury-feed.

d, water-feed.

e, concentrating-chamber.

f f f f, wheel-arms.

g, ore-waste.

h, waste-valve.

i, section-hinge.

j, section-lock.

n n, in fig. 1, water-tight section-joint.

r r r r, in fig. 3, sections of wheel-arms, moving in close proximity to the sides and inside circumference of the cylinder, and alternating in their contact with and displacement of the charge of pulverized ores.

s, in fig. 1, lock of concentrating-chamber.

w, water-discharge.

x, in fig. 5, valve amalgamation-discharge.

y, in fig. 5, valve-hinge, and *y* valve-lock.

My invention is designed as a concentrator for pulverized ores, and as an amalgamator for all auriferous sulphuret and free-gold ores.

The cylinder, of the dimensions above stated, or of such other dimensions as may, by practical use, be found most desirable, being charged with a proportional amount of pulverized ore, and water let in to nearly the full capacity of the cylinder, the valve *h* and the water-discharge *w* being closed, the concentrating-wheel will be put in motion, and the ore thoroughly washed, when *w* will be opened, and the water

discharged to the level of *w*, taking off the mud, slime, and lighter particles of the ore; *w* will then be again closed, and water again let in to nearly the full capacity of the cylinder, and the wheel be again put in motion, when, on the principle of gravitation, the heavier particles of the ore will be deposited in the concentrating-chamber *e*; the close action of the ends of the sections of the wheel-arms to the inside circumference of the cylinder, tending to withdraw from the chamber all lighter particles which may have lodged there, and which action of the withdrawal of lighter particles may, when desired, be largely increased by constructing the arm-sections with hollow ends.

After the discharge of the ore-waste, the cylinder will again be charged with ore and water, and the same process performed and renewed until it is found necessary to remove and secure the contents of the concentrating-chamber, which, in working auriferous quartz, would scarcely be oftener than once in four or five hours, and by which means, I think and believe, that working a combination of two concentrators, as in fig. 4, discharging the waste of the first into the second, thereby more thoroughly working the ores, and having as a remainder the contents of the two chambers, some eight or ten tons per day of pulverized quartz could be concentrated to a residue of a very small percentage of its original bulk, and prepared for economical amalgamation, which would be performed in the amalgamator, as described in fig. 5; the alternating sections of the wheel-arms, which pass in close proximity to the sides and inside circumference of the cylinder, forcing the mercury into contact with the gold contained in the charge of concentrated ore, so effectually that every particle must be taken up; and by this combination of concentration and amalgamation, economizing and simplifying the working of auriferous ores, and obtaining the largest practicable results.

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

1. The construction and form of concentrator and amalgamator, in the combination of all their parts, and in the combination of the two as one machine, either being convertible into the other, as before described in this specification.

2. The wheel-arms, in their alternating sections, constructed alike for both concentration and amalgamation-purposes.

3. The concentrating-chamber.

4. The waste, as arranged at *h* and *g*.

5. The water-discharge, as at *w*.

6. The valve-discharge, as at *x*, in the amalgamator, all constructed substantially as herein described, and for the purpose set forth, but not confining myself to absolute dimensions or materials, or relative positions of the points of feed or discharge.

New York, August 3, 1869.

J. STRICKER BRADFORD.

Witnesses:

SAML. N. PARMALEE,

HIRAM L. HUSTON.