

No. 20,208.

PATENTED MAY 11, 1858.

C. LEAVITT.
CORN MILL.

2 SHEETS—SHEET 1.

Fig. 1.

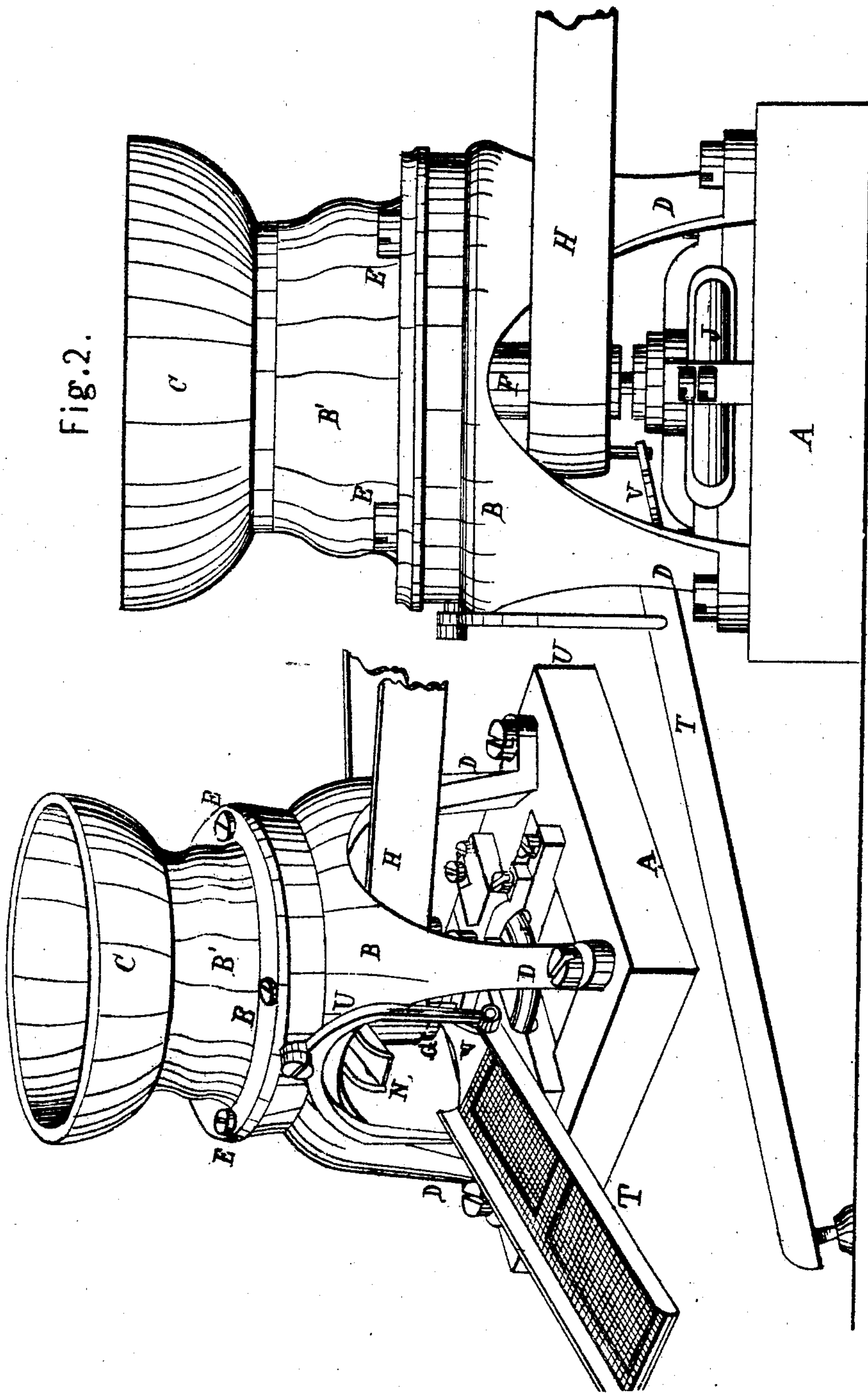
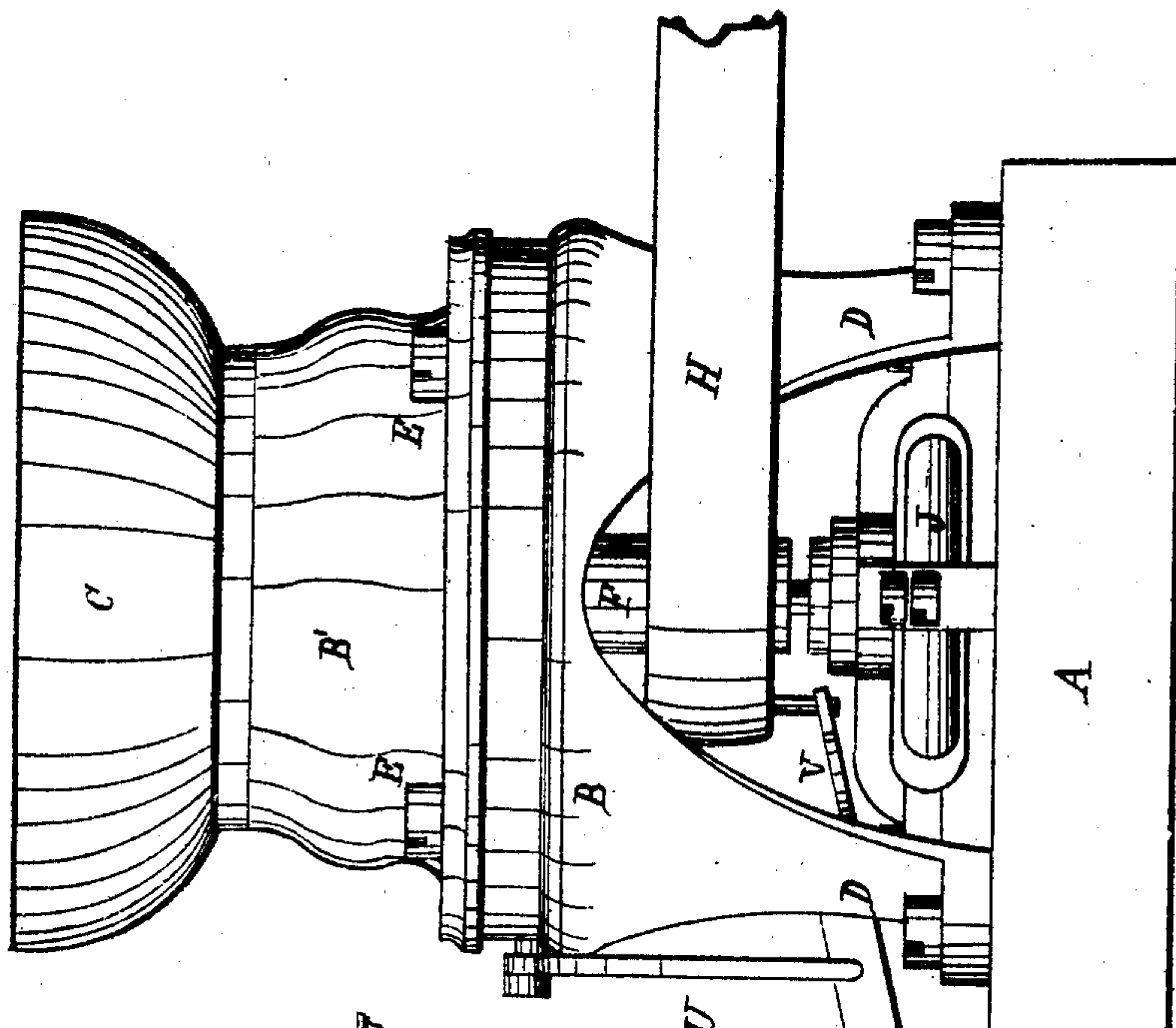


Fig. 2.



C. LEAVITT.
CORN MILL.

2 SHEETS—SHEET 2.

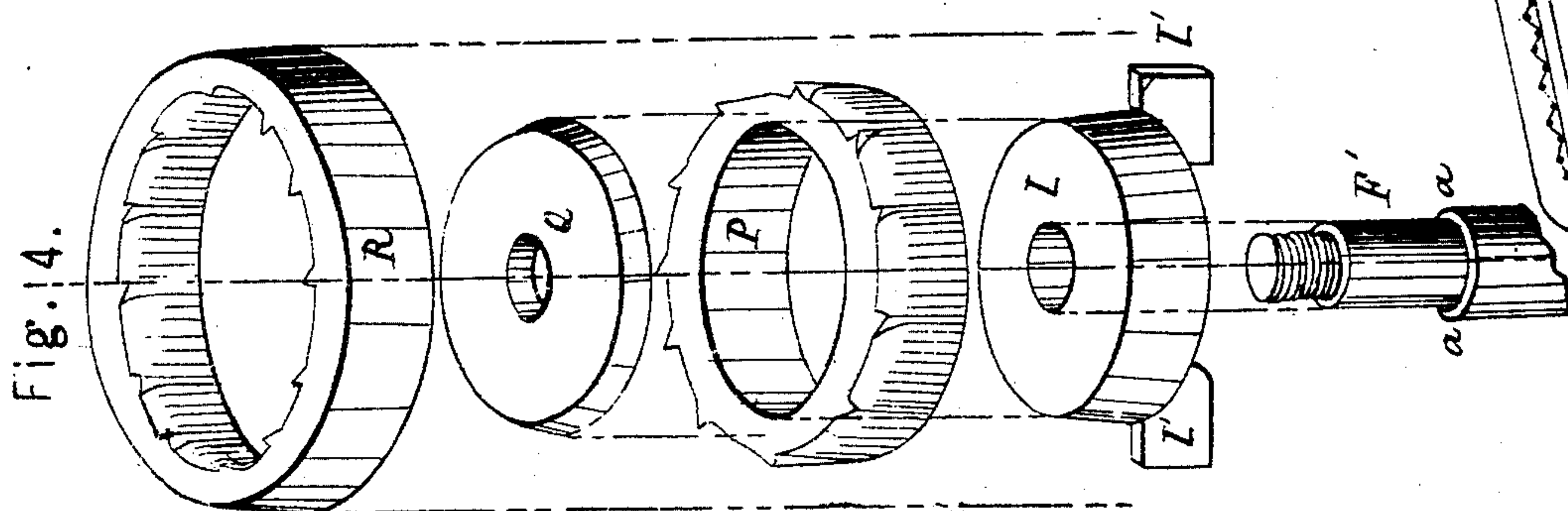


Fig. 5.

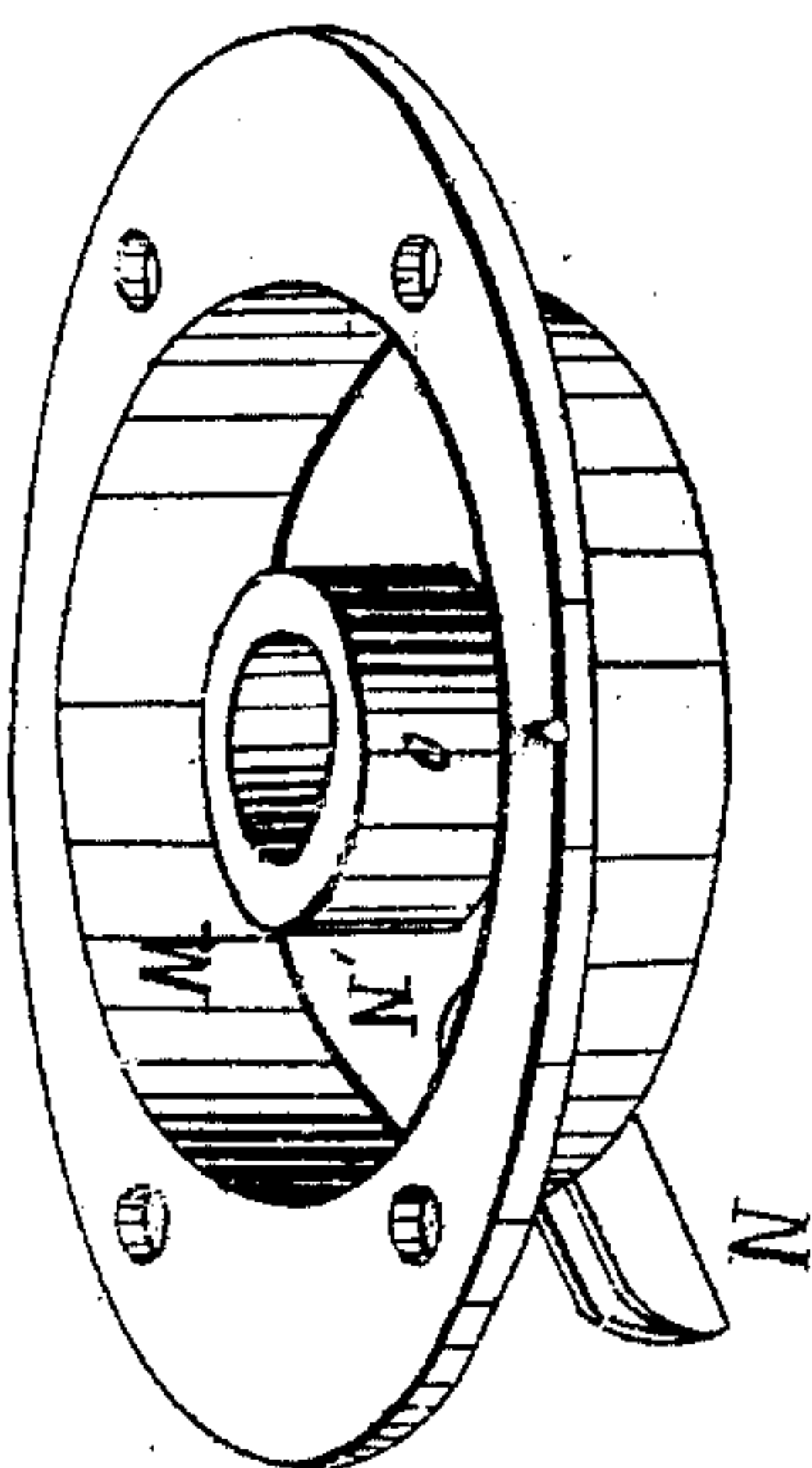


Fig. 6.

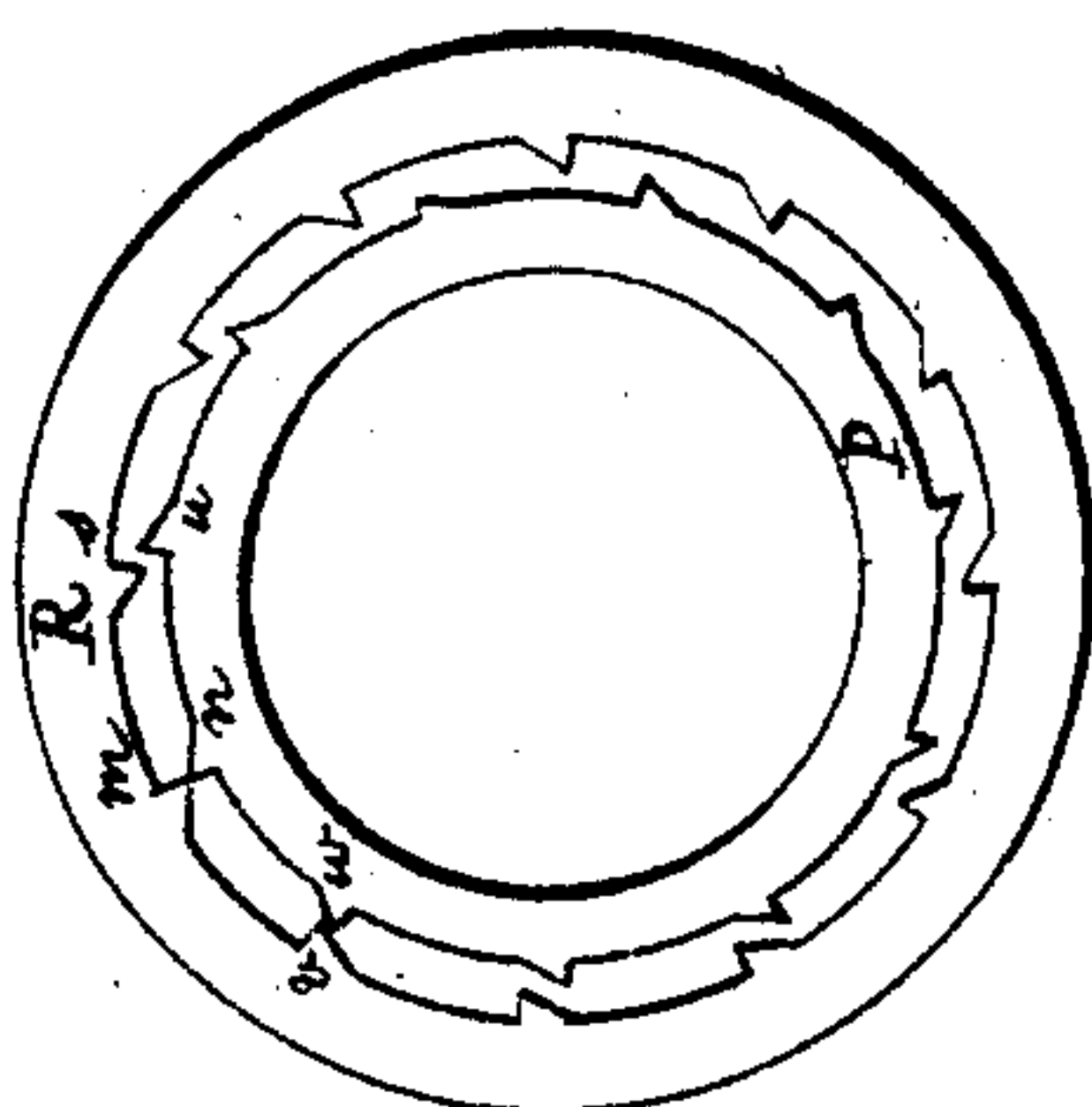
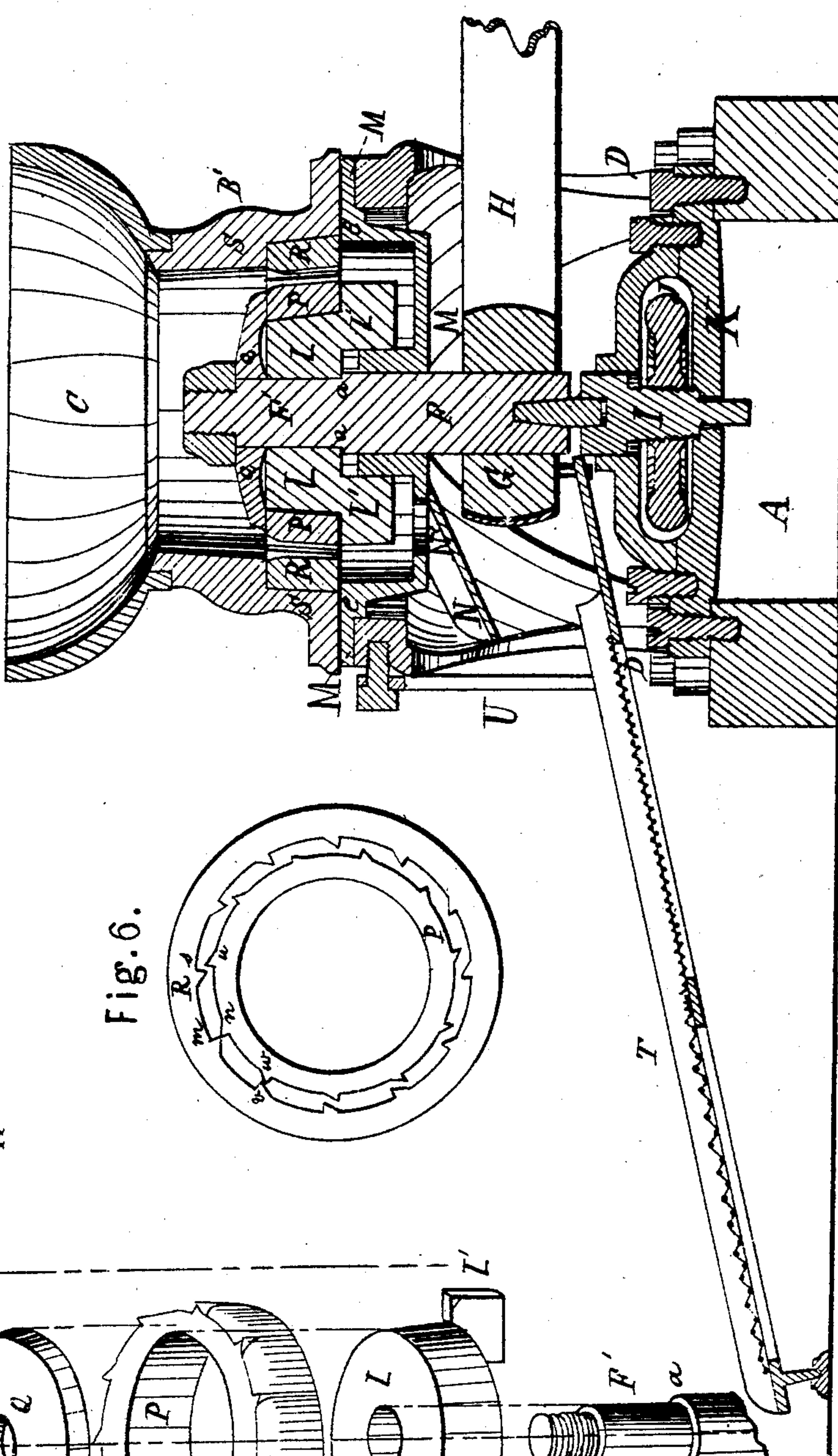


Fig. 3.



UNITED STATES PATENT OFFICE.

C. LEAVITT, OF CLEVELAND, OHIO.

CORN-MILL.

Specification of Letters Patent No. 20,208, dated May 11, 1858.

To all whom it may concern:

Be it known that I, CHARLES LEAVITT, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful
5 Improvements in Portable Corn-Mills; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, in which—

10 Figure is a perspective view of my improved portable corn mill, Fig. 2 a side elevation, Fig. 3 a vertical section, and Figs. 4, 5, and 6, detached sections which will be referred to hereafter.

15 In the description, like letters refer to like parts.

A, Figs. 1, 2, and 3, represent the timber frame upon which the mill stands.

20 B, B', represent the outside casing, and C, the hopper. The outside casing is cast in two parts. The lower part B, is divided at bottom into four parts, thus forming legs and feet, by which it is secured to the frame A, by screws, as seen at D. The upper part
25 B', is secured to the lower part by screws seen at E, Figs. 1 and 2. This connection of the two parts of the casing, serves also another purpose, hereafter to be described. The hopper, C, fits closely upon a seat
30 formed upon the upper part of the case B. The spindle which bears the revolving grinder, is seen at F. This spindle is driven by a pulley G, and belt H. The spindle rests upon an adjustable step, I, the shank of
35 which is provided with a screw which fits into a corresponding thread in the lighter wheel, J, and by which it is operated, for the purpose of setting the grinders coarse or fine, as desired. The lighter wheel and step,
40 are supported by a cross tree, K, which rests upon and is secured to the frame timbers A.

A metallic collar L, Figs. 3 and 4, is fitted to that part of the spindle seen at F', Figs. 3 and 4. Upon the under side of this collar,
45 are two wings, L, L'; these revolve with the collar, and spindle, the wings serving the purpose of clearing the cavity of the mill from meal, as hereafter described. Immediately below this collar L, is placed a dia-
50 phragm M, Fig. 3, seen also in detached section Fig. 5, the edge of which is interposed between the sections B, and B', of the case. This diaphragm has a central depression seen at M, into which the ground
55 meal falls, and is swept around into the spout N, through the hole N'. From the

center of the diaphragm, rises a collar O, which encircles the spindle E, forming thereby the upper bearings or bush of the spindle, and also prevents the meal from escaping
60 from the depression in the diaphragm, except through the spout hole N'. The collar L, rests upon a shoulder a, Figs. 3 and 4, upon the spindle F, where it is firmly held by means of the under grinder, P, Figs. 3
65 and 4, being pressed upon the collar by the cap Q, and nut Q', as hereinafter described.

The grinder P, is made of chilled cast iron, or steel, and fits closely upon the outer surface of the collar L, the under edge rest-
70 ing upon the upper edge of the wings L'; the depth of this inner grinder being a trifle greater than the collar L, its upper edge necessarily projects above the collar L, the cap Q, consequently resting upon the upper
75 surface of the grinder P, the nut Q', and firmly securing the whole together, so that when the spindle F is caused to revolve, the collar L, and grinder P, revolve with it. In this manner, the grinder P, is firmly and
80 securely attached to the spindle, without the intervention of bolts or screws, which would not only weaken the part, but would also tend to spring it out of shape. The stationary grinder R, Figs. 3 and 4, is also made of
85 cast iron and steel, the teeth and corrugations being upon the inside, whereas those of the revolving grinder, are upon the outside, the inner surface of the grinder R, being
90 large enough to admit it to pass over the outer surface of the grinder P. To prevent them from springing, or shrinking unequally, there should be no holes or thickened parts to receive bolts, simply a ring or
95 band of metal with corrugated surfaces as described. I have therefore adopted other means to secure one to the spindle, as described, and similar means to secure the other to the outer casing. In the ordinary
100 mode of constructing these grinders the surfaces of the inner and outer sections have been divided into a uniform number of sections, say twelve on each. Consequently all of the cutting teeth of the revolving grinder
105 would pass the teeth of the stationary part at the same moment. Then the grinders would perform one twelfth of a revolution, when all the teeth would again be brought into their closest proximity, and for an instant, the whole twelve sections have to per-
110 form their severest labor, thus forming periods of light and heavy draft, thereby

causing a strong pulsation and trembling in the mill, and consequently requiring much more power to drive it. In order to avoid this difficulty, I divide the grinding surfaces of the inner and outer grinders into an unequal number of sections, having one more in the outer grinder, than in the inner one, as seen in Fig. 6, by reference to which it will be seen that when the two sections *m*, *n*, are opposite, or nearly in contact, the section or teeth *s*, *v*, which are next to come into opposition, have not quite reached that position and the sections *v*, *w*, have just passed, and so on, upon each side of any two sections that are in contact, the distance between any two sets is greater, and greater until it is equal, and consequently there is but one pair of sections doing their full work at once, all the others being either approaching or receding, from a given section in the stationary grinder.

A recess seen at S, S', Fig. 3, is formed in the outer casing B', for the reception of the grinder R, in which it is securely held, and preserved from a lateral movement; the lower edge of the grinder R, rests upon the horizontal and outer lip of the diaphragm M, as seen at e, e, Fig. 3, the recess S being less in vertical distance, than the vertical thickness of the grinder, the screws or bolts E, E, Figs. 1 and 2, which pass through the lip of the diaphragm, and into the casing B, and hold the grinder R, firmly in its place. The meal when ground, falls upon the lower table of the diaphragm, and is swept around by the wings L' through the hole N', into the spout N from whence it falls upon the vibrating screen U, where it is freed from chaff and bran, if desired. This screen is seen in Figs. 1 and 2. By turning the lighter wheel J, the spindle F is raised and lowered at pleasure for the purpose of regulating the quality of the meal, the inner grinder being slightly cone shaped, that is, of larger diameter at the bottom, than at the top. A pin, or eccentric upon the shaft V, Fig. 2, placed in the lower side of the driving pulley G, strikes against a projecting point upon the end of the screen which is hung by the yoke U, to the side of the case, and gives it a vibrating motion, for the purpose of better sifting the meal. In putting this grinder together, I first place the spindle F, in its proper position. The diaphragm is then passed down over the upper end of the spindle, thus forming the upper bearing or bush of the spindle. The collar L, is then put in place, and the grinder P adjusted, surmounted by the cap Q, and nut Q'. The outer grinder R, is then introduced, and the upper section of the outer case B' placed over it, and the screws E, E, turned loosely

into their places. The shaft F, with the revolving grinder, is then slowly rotated, and at the same time, the nut Q', and screws E are gradually tightened, and in this manner, if the two grinding surfaces are brought nearly into contact by raising the spindle with the lighter the grinders will become properly adjusted, from which position there will be no tendency to move, and where they are held by guides and steps.

Some of the advantages of my improvement, over all others, may be enumerated as follows: First, the grinders can be cast of a uniform thickness, without provisions for bolt or screw holes, which would cause an unequal shrinkage in the metal. Second, in my improvement, I avoid all straining by the use of bolts, and therefore, avoid all liability to spring or break the grinders. Third, in grinding, the metal becomes heated, and therefore, expands, and if securely held by bolts or screws, is liable to become broken by an unequal expansion and straining of the metal. Fourth, in case of accident to, or wearing out of the grinding surfaces, others can be introduced without alteration of any of the parts of the mill, and the grinding surfaces properly and readily adjusted, as described. Fifth, by placing the diaphragm under the grinders, the meal is collected and discharged at one place.

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

1. The manner of securing the revolving grinder P, to the spindle F, by means of the collar L, wings L', cap and nut Q, Q', when arranged as described, also the recess S, in the outer casing B', in combination therewith, the adjusting and securing the grinder R, in place by means of the outer casing B and B', and the diaphragm M, upon which the grinder is superimposed, in the manner specified.

2. Also, dividing the surfaces of the two grinders into an unequal number of parts or sections for the purpose of bringing the several sections of the grinders successively into opposition in the manner herein described, and for the purposes specified, and

3. Also, the diaphragm M, when arranged in relation to the support of the spindle F, and grinder R, and the collecting and discharging of the meal, at one point, as specified.

These several devices I claim, when arranged as described, and applied to the purpose set forth.

CHARLES LEAVITT.

Witnesses:

I. BRAINERD,
W. H. BURRIDGE.