

(No Model.)

2 Sheets—Sheet 1.

J. C. HOLLOWAY & C. A. HUDSON.

OATMEAL MILL.

No. 309,855.

Patented Dec. 30, 1884.

FIG. 1.

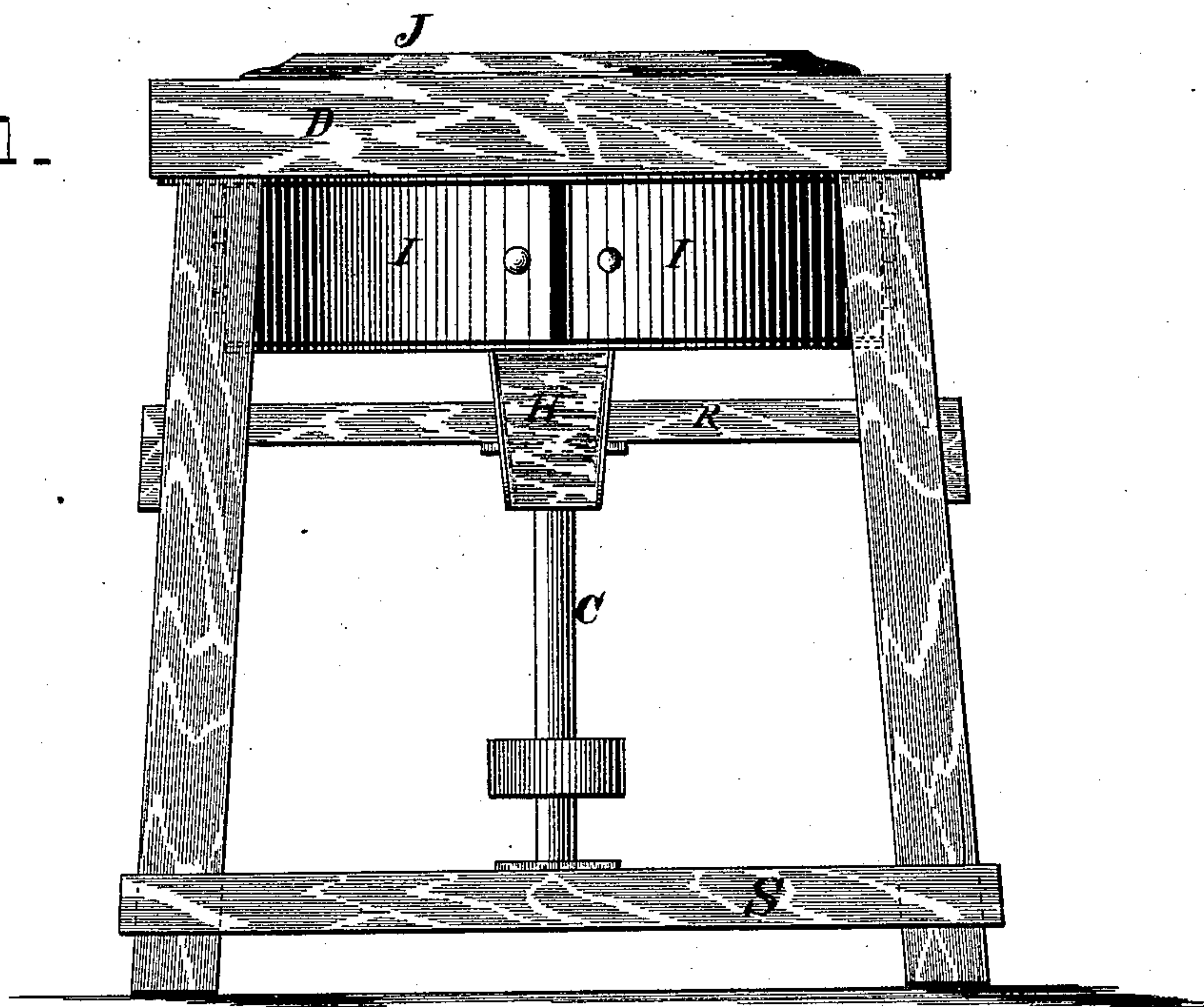
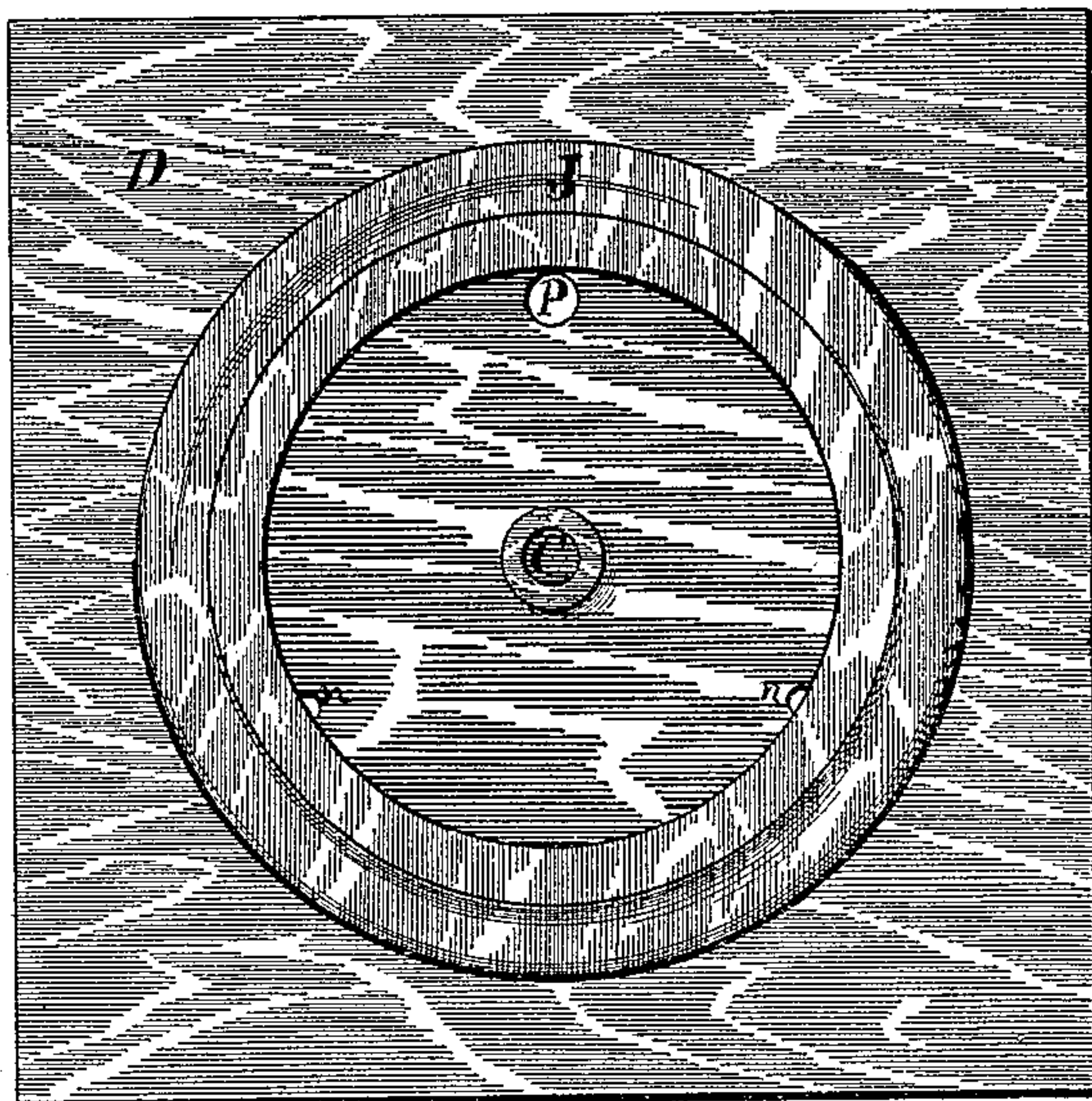


FIG. 2.



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FIG. 3.

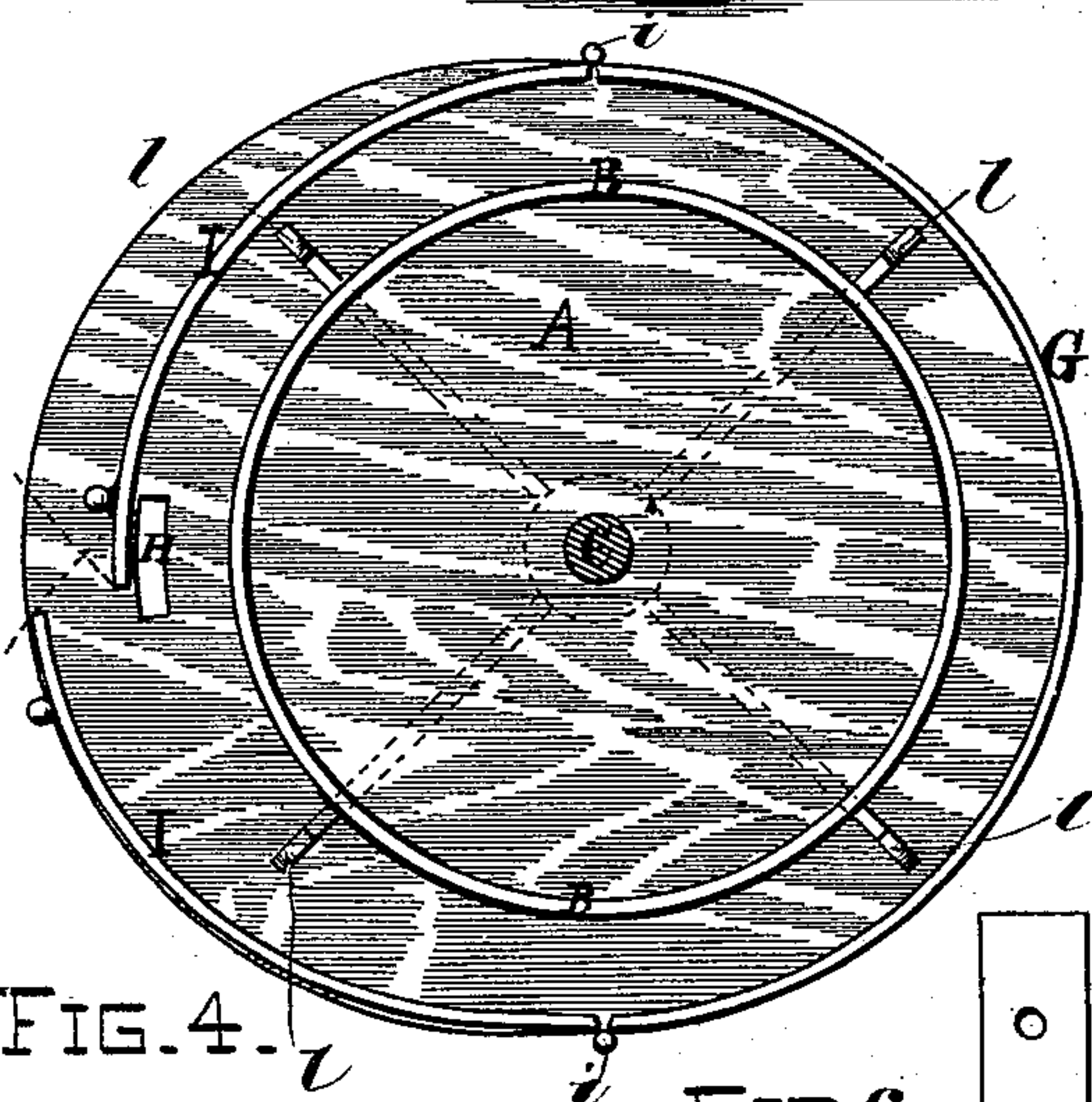
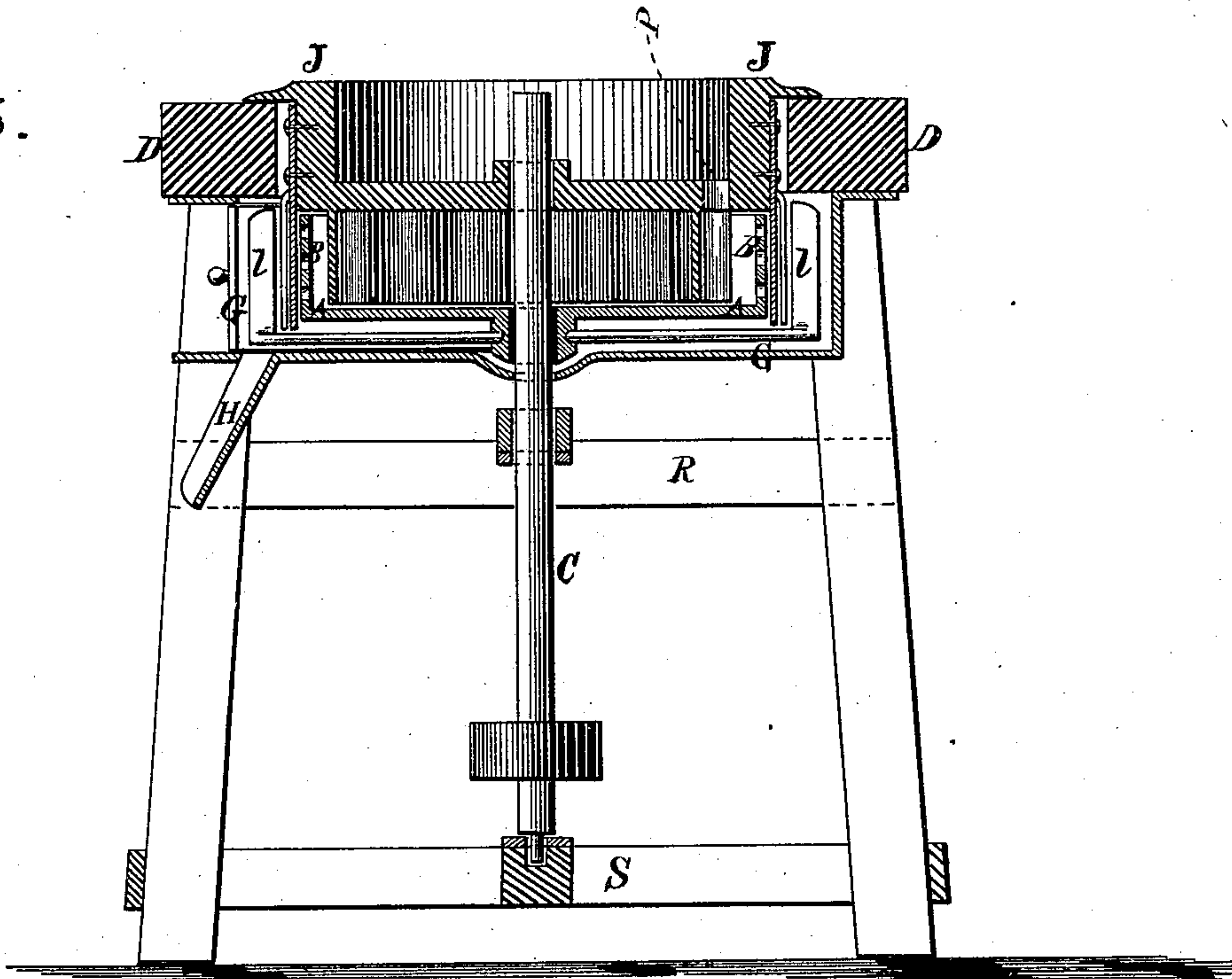


FIG. 4.

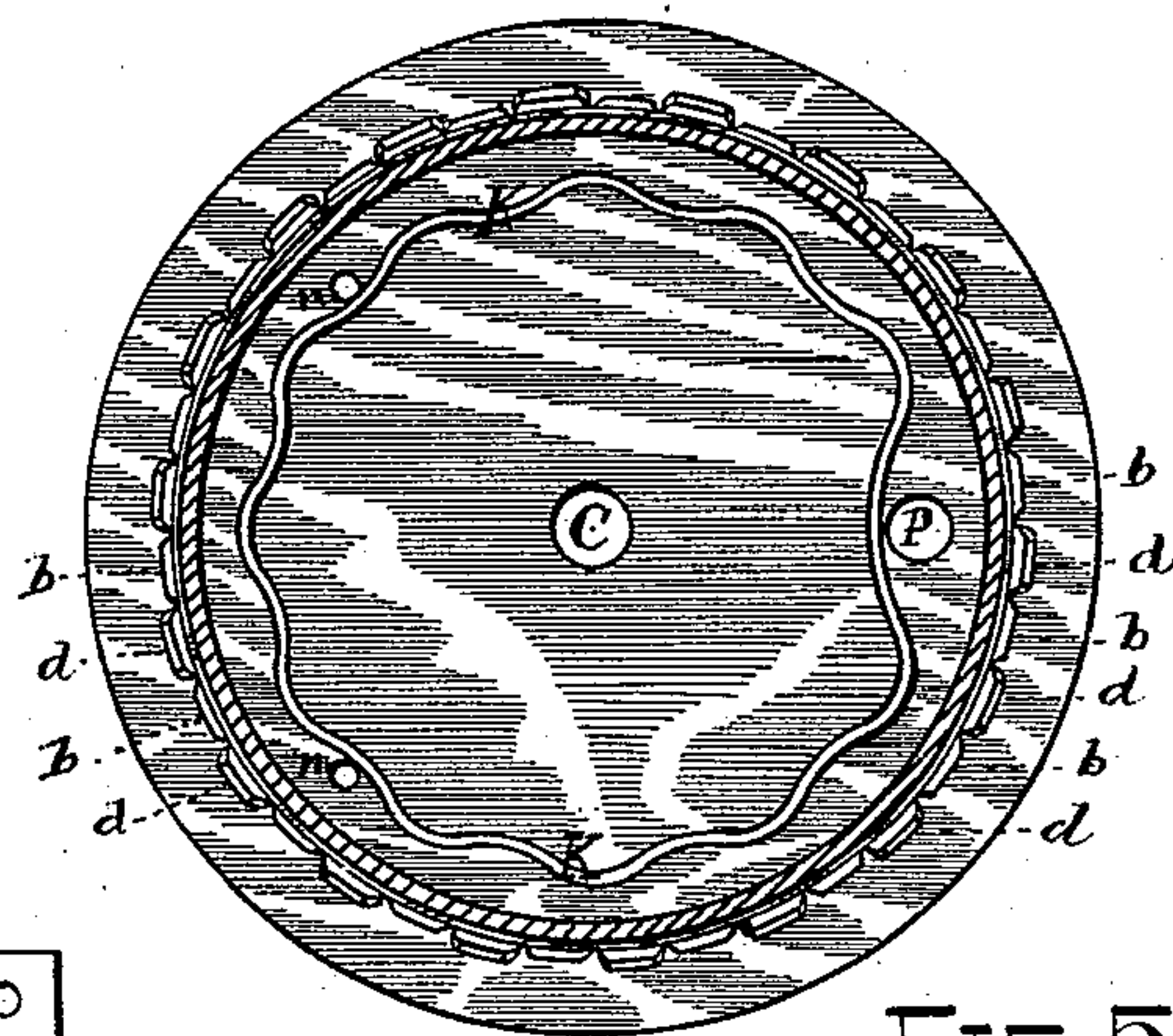
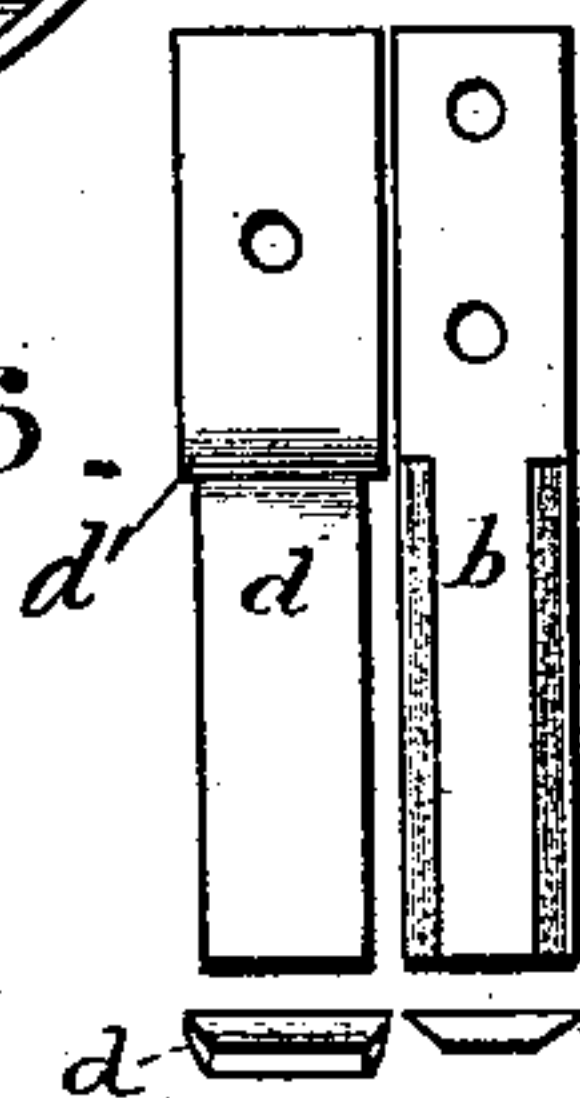


FIG. 5.

FIG. 6.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JAMES C. HOLLOWAY AND CHARLES A. HUDSON, OF SALINAS, CALIFORNIA.

OATMEAL-MILL.

SPECIFICATION forming part of Letters Patent No. 309,855, dated December 30, 1884.

Application filed May 22, 1884. (No model.)

To all whom it may concern:

Be it known that we, JAMES C. HOLLOWAY and CHARLES A. HUDSON, both residents of Salinas city, Monterey county, in the State of California, have invented an Improved Oatmeal-Mill; and we do hereby declare that the following is a full, clear, and exact description thereof and of the principle upon which the same is operated.

Our invention relates to an improved machine for chopping oats and other similar grains into a coarse meal, and it embodies a new and superior means for feeding the oats or other similar grains through the perforations in a rotating rim, so that they can be cut by the chopping-knives. The new means which we employ for feeding the oats through the perforations in the rotating rim consists in devices for forcing air-currents through the perforations, either by producing an internal air-pressure or an external suction, by which the grains are either forced or drawn through the perforations and presented to the action of the knives. To accomplish this, certain features of construction are necessary, all of which will appear in the following description of our machine.

Referring to the accompanying drawings, Figure 1 is a side elevation showing the machine mounted on its frame. Fig. 2 is a plan view. Fig. 3 is a sectional elevation. Fig. 4 is a view showing the bottom and sides of the lower casing and the perforated rim with its wings. Fig. 5 is a bottom view of the upper casting. Fig. 6 shows the knives and gage-plates.

A represents a flat metallic disk, having a vertical rim, B, projecting upward entirely around it, the height of which may be one, two, or three inches, as desired. This rim is formed with numerous holes of a size capable of allowing the oats or other grain intended to be cut to pass readily through them endwise. This cup-shaped disk and rim we secure upon a vertical or upright spindle, C, the rim projecting upward, so that when the spindle is rotated the cup-shaped disk and rim will also be caused to rotate.

For convenience in mounting our mill, we construct an ordinary frame-work, such as is shown in the drawings, Figs. 1 and 3, the top D of which is a board having a circular hole in it somewhat larger than the disk A. The

spindle C is supported in a cross-beam, R, near its upper end, while its lower end is stepped in a bearing on a lower cross-beam, S. The cup-shaped disk and rim is secured upon the spindle just below the circular opening in the top board, D.

To the under side of the top board, D, of the frame we secure a circular casing, G, which entirely surrounds the cup-shaped disk and rim, and which has a spout, H, projecting from its bottom on one side. A portion, I, of the side of this casing, on each side of the spout-opening, (each of which portions constitute about one-fourth of the rim,) is hinged to the permanent portion of the side of the casing at *i*, so that either portion can be swung inward or outward like a door, and they are long enough so that their meeting ends will overlap when they are closed upon each other.

J is a cup-shaped casting, the bottom of which is of the same diameter as the circular disk A, which carries the perforated rim B. On the under side of the bottom of this cup-shaped casting, and near its periphery, we secure a downwardly-projecting serpentine or fluted rim, K, which will pass inside of the perforated rim B when the casting is forced down through the circular hole in the top board, D, of the frame, as shown at Fig. 3.

To the outside of the cup-shaped casting J we secure the cutting-knives *b* and gage-plates *d* alternately, so that they will project downward outside of the perforated rim.

Each cutting-blade consists of a shank, by which it is fastened to the outside of the circular casting, and a blade portion which projects downward far enough to extend slightly below the lower edge of the perforated rim. Each cutting-blade may be sharpened on each side edge or on one edge only, according to whether or not it is intended to construct a reversible mill. We have represented them sharpened on both edges. Each guard-plate *d* has a shank, similar to the shank of the cutting-blades, by which it is secured to the outside of the circular casting; but the guard portion, which extends below the bottom of the casting, has an offset, *d'*, which causes it to stand outwardly from the cutting-blades a sufficient distance to gage the length of grain to be cut, and also allow the cut pieces to pass out between them and the knives. The bottom of the circular casting has a hole in its center,

through which the upright spindle C passes when the casting is forced down into the opening in the top board of the frame. The machine will then consist of the stationary cup-shaped casting, fitting down into the circular opening in the top board of the frame, and having the alternately-secured cutting knives and guards projecting downwardly entirely around the circumference of its bottom, and also having the serpentine or fluted rim projecting downward a short distance inside of the cutting-knives, while the rotating perforated rim extends upward close to and inside of the series of cutting-knives, leaving a narrow space between the perforated and serpentine rims. The casing G surrounds the whole, leaving a narrow space between it and the cutting-knives. In this space we arrange two or more fan blades or wings, *l*, which are driven by connecting them with the bottom of the rotating disk A by means of connections which pass below the knives and guards. The hinged portions I of the side of the casing can be set so as to provide a wind-escape, similar to the evolute openings in a blowing-machine, by closing one and opening the other, according to the direction in which the fan blades or wings are driven. The open top of the cup-shaped casting J forms a hopper into which the oats or other grain is fed. An opening, P, is made in the bottom of this cup-shaped casting, near one side, so as to feed the oats into the space between the perforated and serpentine rims, and for this purpose we make the curve in the serpentine rim, which is directly below this opening, much larger than the other curves, so as to supply the oats in a sufficient quantity. We also make one or more air-openings, *n*, leading through the bottom of the cup or hopper into the space between the perforated and serpentine rims at different points, in order to supply an abundance of air for feeding purposes. Now, when the upright spindle C is driven, the disk A, with its perforated rim and fan blades or wings, will be caused to rotate, and thereby an air-blast will be produced which will cause an air-current to flow outward through each hole in the perforated rim. The oats, being fed into the machine, will follow around the serpentine space and have their points directed outward by striking against the inclined sides of the curves, while the air-currents will draw them into the perforations, where they are cut by the knives. The chopped oats or meal will then pass out of the machine through the spout H.

The fan blades or wings *l* are not absolutely necessary, as the mere rotation of the perforated rim close to the continuous series of gage and cutting blades will produce sufficient suction to draw the oats through the holes in the rim; but by using the fan-blades the capacity of the machine is increased.

The feeding of the oats at or near the periphery is also an important feature of the machine, as the air passes in with the oats, and

the draft-currents are thereby rendered more positive, and assist more effectually in directing and moving the grains into the perforations. The same effect can be produced in a machine in which the perforated rim is stationary by causing the knives to rotate in connection with suitable devices for producing an outward air draft or current from the interior of the machine.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination, in an oatmeal-machine, of a perforated rim and suitable devices for feeding and cutting the grain, with suction mechanism for producing outward air-currents through the perforated rim, substantially as described.

2. The combination, in an oatmeal-machine, of a revolving disk having a perforated rim, with a cup-shaped casting provided with a continuous series of cutting knives or blades, and a serpentine rim and suction mechanism for producing outward air-currents through the perforations in the rim, substantially as described.

3. The combination, in an oatmeal-machine, of a revolving disk having a perforated rim, a cup-shaped casting provided with a continuous series of alternating gage-plates, *d*, and cutting-plates *b*, with a serpentine or irregular rim, K, arranged inside of the perforated rim, and with a feed-opening, P, for delivering the oats into the space between the perforated and irregular rims, substantially as described.

4. In an oatmeal-machine, the cup-shaped casting or hopper J, provided with the downwardly-projecting series of alternating knives and gage-plates *b d*, with the downwardly-projecting serpentine or irregular rim K, and the feed-opening P, leading into the space between the irregular rim and the series of knives and gage-plates, in combination with the vertical spindle C, and the disk A, having the perforated rim B, said perforated rim extending upward close to the series of cutting-knives and gage-plates, substantially as described.

5. The combination, in an oatmeal-machine, of suitable mechanism for delivering the grain to be cut, the double-edged cutting-blades, the air-blast mechanism, and the outer casing provided with the hinged wings I, whereby the machine can be operated in either direction, substantially as described.

In witness whereof we have hereunto set our hands and seals.

JAMES C. HOLLOWAY. [L. S.]
CHARLES A. HUDSON. [L. S.]

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Witnesses for Hudson:

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