

(Model.)

2 Sheets—Sheet 1.

R. B. SHELDON & J. V. PEACOCK.

Fertilizer Distributer.

No. 234,079.

Patented Nov. 2, 1880.

Fig. 1.

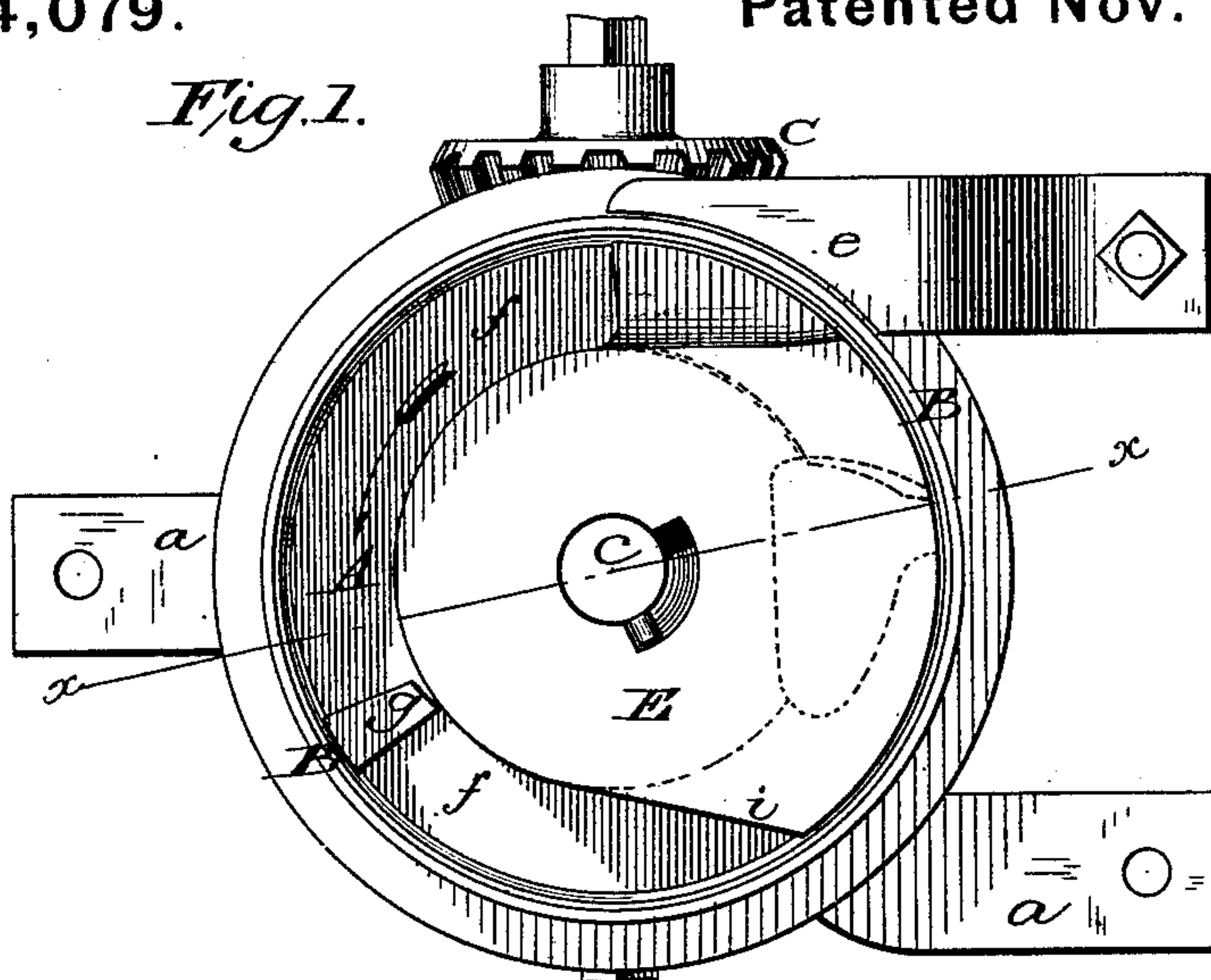


Fig. 2.

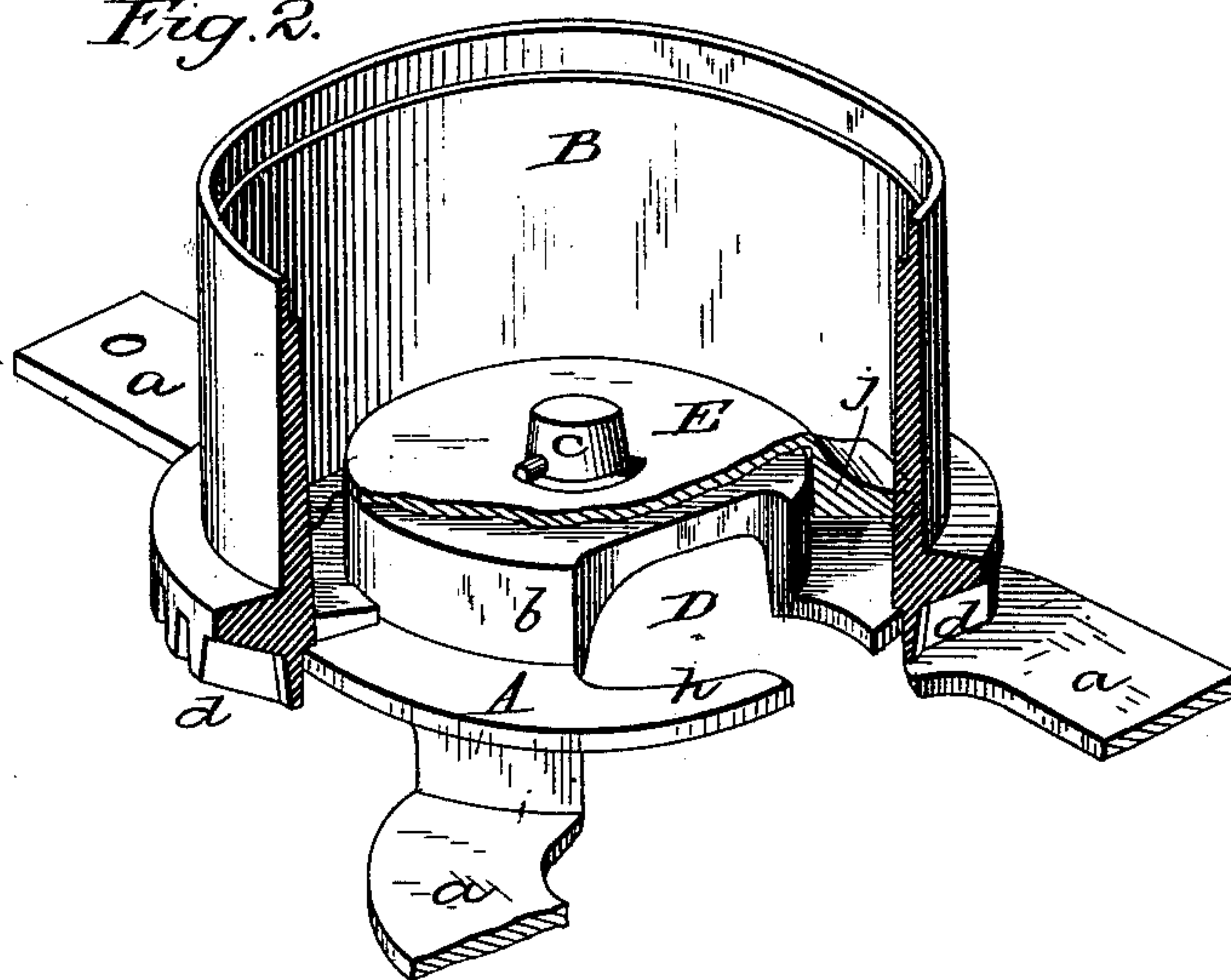
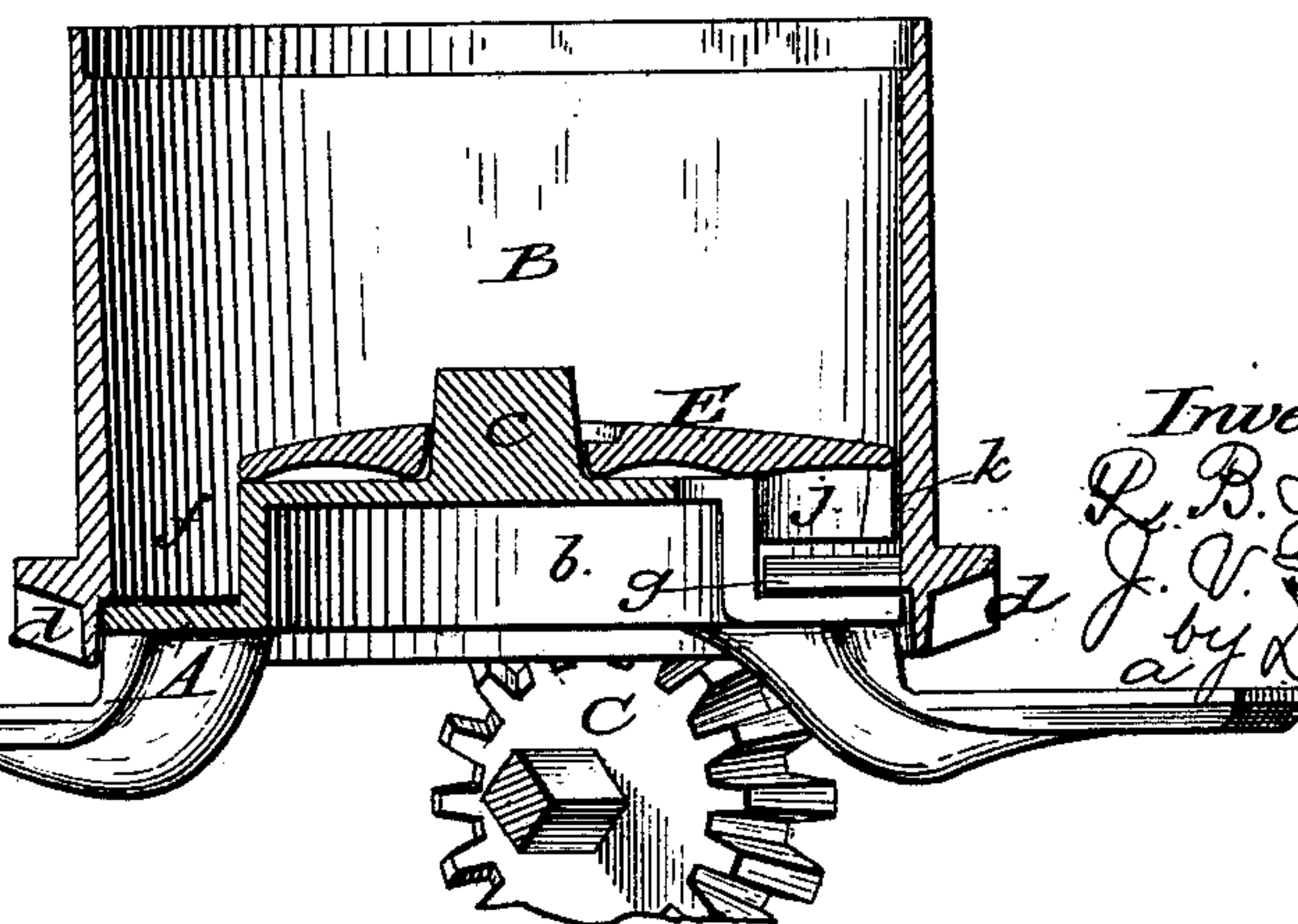


Fig. 3.



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Fig. 4.

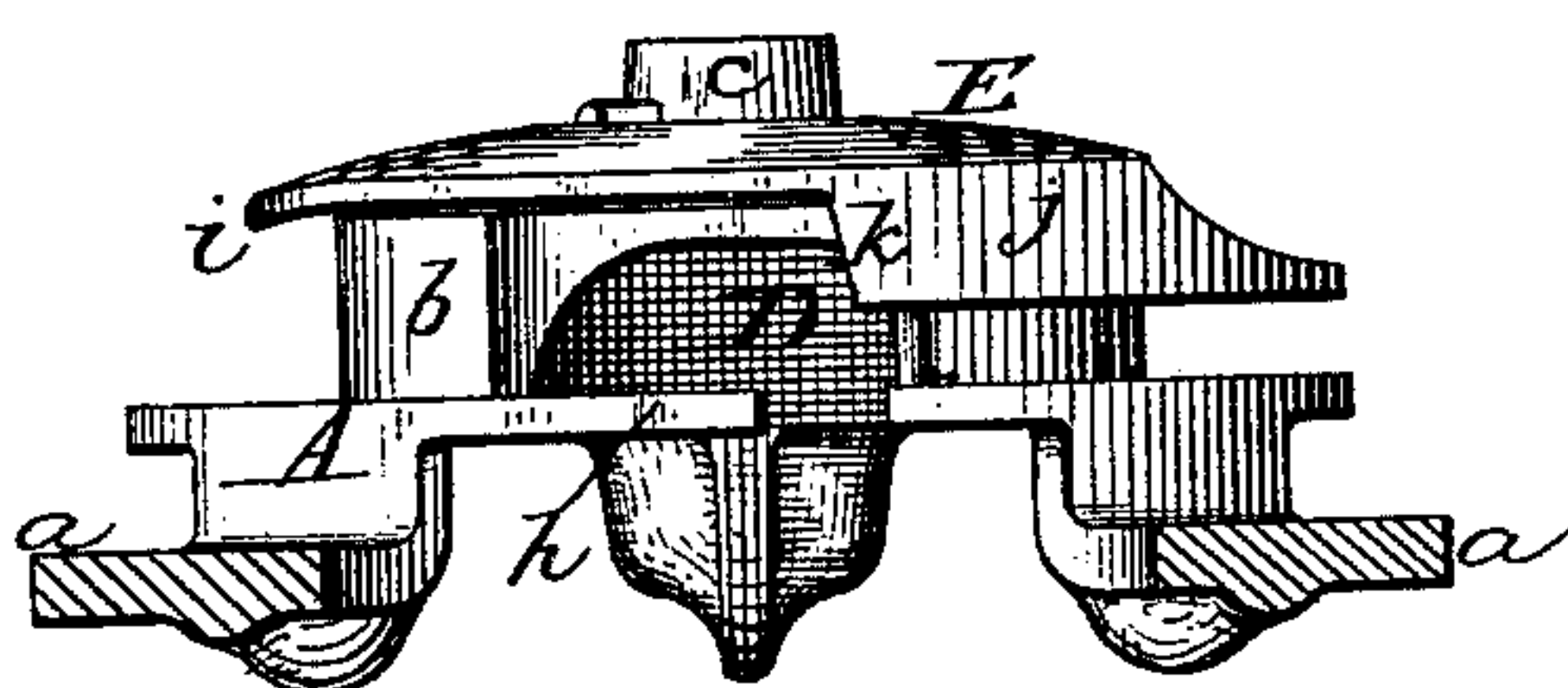
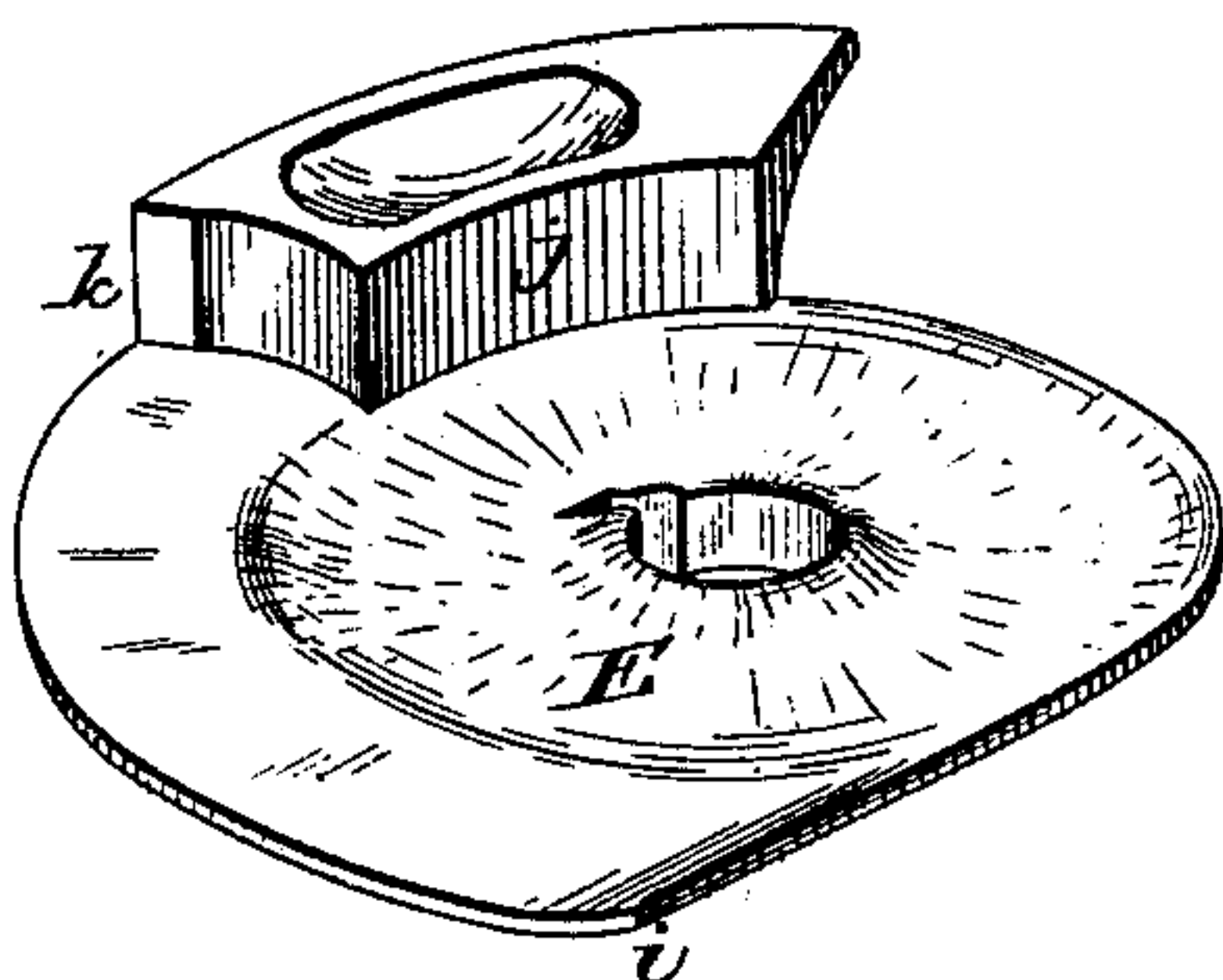


Fig. 5.



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UNITED STATES PATENT OFFICE.

RICHARD B. SHELDON AND JOSEPH V. PEACOCK, OF SHORTSVILLE, N. Y.

FERTILIZER-DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 234,079, dated November 2, 1880.

Application filed July 23, 1880. (Model.)

To all whom it may concern:

Be it known that we, RICHARD B. SHELDON and JOSEPH V. PEACOCK, of Shortsville, in the county of Ontario and State of New York, have invented certain Improvements in Fertilizer-Distributers, of which the following is a specification.

This invention relates to those devices for feeding phosphate, guano, and other fertilizers in which a horizontally-revolving ring or band causes the material to pass down through an opening in a fixed plate, and particularly to modifications of, and improvements in, the class of feeders represented in our patents numbered 226,121 and 227,998.

We now construct our improved feeder in three essential parts—a fixed horizontal plate, on which the mass of material rests and is sustained, and which has in one side an opening for its discharge, a ring or annular band revolving in a horizontal plane above the plate to urge the material toward the discharge-opening, and a second fixed plate located in the center above the bottom plate and covering the discharge-opening therein to prevent the material from escaping except as it is carried around beneath the covering-plate. The opening in the bottom plate is of special form, to secure a gradual delivery of the material and prevent its adhesion to the parts. The outside ring may be made with or without an inside arm to travel over the bottom plate and assist in urging the material to the delivery-opening. The center plate has its edge depressed or curled down, so as to give a free clearance to the material under the plate after it has passed the edge, and also has a lug or stud on the under side, to cause the material to pass through the discharge-opening and to keep the inner surface of the ring clear.

In the accompanying drawings, Figure 1 represents a top-plan view of our improved feeder; Fig. 2, a perspective view of the same, partially broken away to illustrate the construction more clearly; Fig. 3, a vertical central section on the line *xx* of Fig. 1; Fig. 4, a view illustrating the action of the cut-off; Fig. 5, a perspective view of the inner fixed plate, showing its under side.

A represents a horizontal circular bed or plate, provided with arms *a*, by which it may

be attached to the supply-hopper, and formed with a raised central portion, *b*, of circular form, and concentric with the outer edge of the bed or plate, as shown, said raised portion being formed with an upright central stud, *c*.

B represents an annular band or case resting upon the bed or plate A, and formed or provided with a depending portion closely surrounding the bed or plate A, said depending portion being designed to prevent the shifting of the case or ring upon the bed or plate without preventing or interfering with its rotation thereon.

Upon the outside of the ring or case B, and at its lower side, there is formed an annular bevel gear-ring, *d*, which meshes with and receives a rotary motion from a bevel-pinion, C, located beneath it, as shown.

In order that the ring or case B may not be lifted from its seat on the bed or plate we provide one or more arms or fingers, *e*, curved to conform to the outer surface of the ring or case, bolting the same to the frame or to the hopper in such position that its free end shall extend over the upper face of the projecting gear-ring *d*. In practice it is preferred to locate the finger *e* directly above the pinion C, where the tendency of the ring to rise is greatest.

The bed or plate A and ring or case B, being thus arranged and combined, form together a cup to receive the material to be fed, while within the cup an annular passage, *f*, is formed by the raised central portion, *b*, of the bed or plate. The bed or plate A is cut away at one side, as more clearly shown in Fig. 2, forming a delivery-opening, D, through which the material is discharged from the cup. In order that such discharge may not take place by the fall of the material directly through said opening, an inner covering-plate, E, is secured upon the central stud, *c*, and extends outward over the discharge-opening to the inner wall or face of the ring D, said plate being made to cover from one-third to one-half, or thereabout, of the annular passage or channel *f*.

The phosphate or other material being supplied to the feed-cup enters the channel or passage *f*, and is carried, by the rotation of the ring B, forward and under the plate E and discharged through the opening, the feeding or carrying action of the ring being augmented,

if desired, by one or more inwardly-projecting studs or fingers, *g*, traveling close to the fixed plate or bottom *A*, and serving not only to carry the material forward, but also to loosen and separate the same and to scrape off any portion which may adhere to the face of the channel or passage *f*.

The ring or case *B*, which constitutes, essentially, the feeding or discharging mechanism, may be made with vertical walls; but better results are secured by making said ring or case slightly larger at the top than at the bottom, the material being more efficiently carried when the ring is so made.

In order that the material may not be delivered in lumps or large pieces the bottom of the channel or passage *f* is carried forward in the form of a tapering lip, *h*, under the plate *E*, as clearly shown in Fig. 2, so that instead of falling in a mass over the edge, the material begins to fall when it reaches the base of the lip and flows in a continuous stream gradually over the edge in traveling to the point.

To prevent the material from becoming compressed in the space beneath the plate or cover *E* and clogging the opening, the forward edge of said plate is bent or curled slightly downward, forming a lip, *i*, beneath which said material must pass in entering the space. The lip *i* being lower than the top of the space beneath the plate *E*, it will be seen that the material is freed as it passes under the lip, and that it will not touch the top of the space or the under face of the plate, and that it will consequently flow freely and evenly over the edge of the lip *h*.

The discharge-opening *D*, being formed not only through the bottom of the channel or passage *f*, but also through the side of the raised portion *a*, is of sufficient size to afford a perfectly free delivery of the material; but, owing to the pasty or gummy consistency of such materials, more or less of the phosphate of guano is liable to adhere to the face of the ring and be carried thereby across the discharge-opening.

To prevent the material from being carried past the opening *D*, and to keep the ring scraped clean, the plate *E* is furnished on its under side with a lug, *j*, which completely fills the channel or passage *f* when the feeding-fingers *e* are omitted, or, when said fingers are employed, reaches nearly to the bottom of the channel, leaving only sufficient room for the passage of said fingers under it. The front face of the lug *j* projects forward a short distance over the discharge-opening slightly in advance of the back edge thereof, as shown in Fig. 4, in order that any material which may be removed by it from the ring *B* or its feeding finger or fingers may fall freely down through the opening without meeting with any obstructions.

It will be observed by reference to Fig. 5, and also to the dotted lines of Fig. 1, that the face of the lug *j* is not radial to the center of the cup, but that its outer edge stands some-

what in advance of the inner edge, thereby producing a sharp cutting or scraping lip or edge, *k*, against which the ring or band *B* is drawn by the pinion *C*, and by which said ring is constantly scraped clean. The upright rear face of the opening *D* is of like form, having a sharp edge or point, *l*, to scrape that portion of the ring which encircles the plate *A*. The upright edge of the opening through hub *b*, the edges of the lug *j* and plate *A*, and the edges of the finger *g* are also sharp and well defined, so that the finger in passing between the lug and plate effects a clean and perfect division or cutting of the phosphate or other material which may chance to be before it, instead of compacting the same.

The depression of the forward edge of plate *E*, besides giving clearance to the phosphate or other material beneath it, serves also to loosen that above it. The jarring of the machine tends to pack the phosphate; but in passing over the depressed edge it is kept in a pulverized condition to fall into the channel.

The plate *E* is provided with a circular opening to fit over stud *c*, said opening having a radial extension to permit the plate to pass below a projecting lug or pin on the stud, beneath which the plate is locked by being turned a short distance horizontally.

The operation of the device will be readily understood. A series of the distributors are placed beneath the supply-hopper in proper position, and receive motion from a common shaft, the arrangement of the devices in relation to the grain-drill feeders being the same, essentially, as in other devices of this class. The fertilizing material, falling into the channel or passage *f*, is carried, by the ring or band *B*, beneath the plate *E* and caused to flow evenly and gradually over the edge of lip *h*, through the opening *D*, any portion thereof adhering to the ring being removed by the lug *j*, as before stated.

It will be observed that in the present device the ring or band *B* has no inwardly-extending flange or bottom, but that said bottom is formed solely by the fixed plate *A*. This we find important, for the reason that in practice the material was found to lodge and become firmly compacted upon and adhere to such inwardly-extending flange, while in the present device no such difficulty is experienced.

It will likewise be noticed that the material in being discharged is not caused to change its direction to enter the delivery-opening, but enters the same in traveling directly forward and without the aid of deflectors or scrapers of any kind. Consequently the flow or discharge is much more certain and regular, and the material is delivered in better condition than it otherwise could be.

It is apparent that, instead of the fixed plate *E*, a rotating plate or disk may be used, mounted in substantially the same manner as in our former Patent, No. 227,998, before mentioned. In such case the disk or plate should be con-

cave on its under face and mounted upon a stud located eccentrically within the cup, and the lug *j* should be formed upon the plate A.

Having thus described our invention, what we claim is—

1. In a fertilizer-distributor, the combination of a fixed bed-plate adapted and arranged to sustain the mass of material and provided with an outlet-opening, a fixed plate located above the outlet-opening, and a vertical ring or cylinder revolving upon or around the base-plate, substantially as described and shown, whereby the vertical surface of the cylinder is caused to advance the material over the fixed plate to the point of discharge.

2. In combination with the top plate and rotary ring, the base-plate having the finger or extension *h* at the discharge-opening, to cause a uniform and gradual delivery.

3. In combination with the annular band or ring, the base-plate having the feed-opening and the point or edge *h*, to remove adhering material from the ring.

4. In a fertilizer-feeder, the combination of a base-plate having an outlet-opening, means, substantially such as described, for advancing the material over the base-plate to the outlet, and a fixed upper guard or cut-off plate, the

forward edge, *i*, of which is depressed to give a clearance to the material.

5. In a fertilizer-feeder, the combination of the externally-flanged cylinder and the arm or finger arranged to hold the same in place.

6. In a fertilizer-feeder having a fixed base portion, by which the material is sustained and through which it is discharged, a vertically-rotary cylinder surrounding the same and arranged to advance the material over the fixed base wholly or mainly by means of its vertical surface acting against the material, as described and shown.

7. The fixed base-plate having the discharge-opening in one side and the raised hub at the center, in combination with the vertical ring and the central top plate locked fast upon the hub.

8. The cut-off plate having the sharp edge *k* to clean the ring, substantially as shown.

9. The combination of the bottom plate, A, ring B, and cut-off plate E, having the lug *j* on its under side.

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Witnesses:

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OLIVER S. TITUS.