

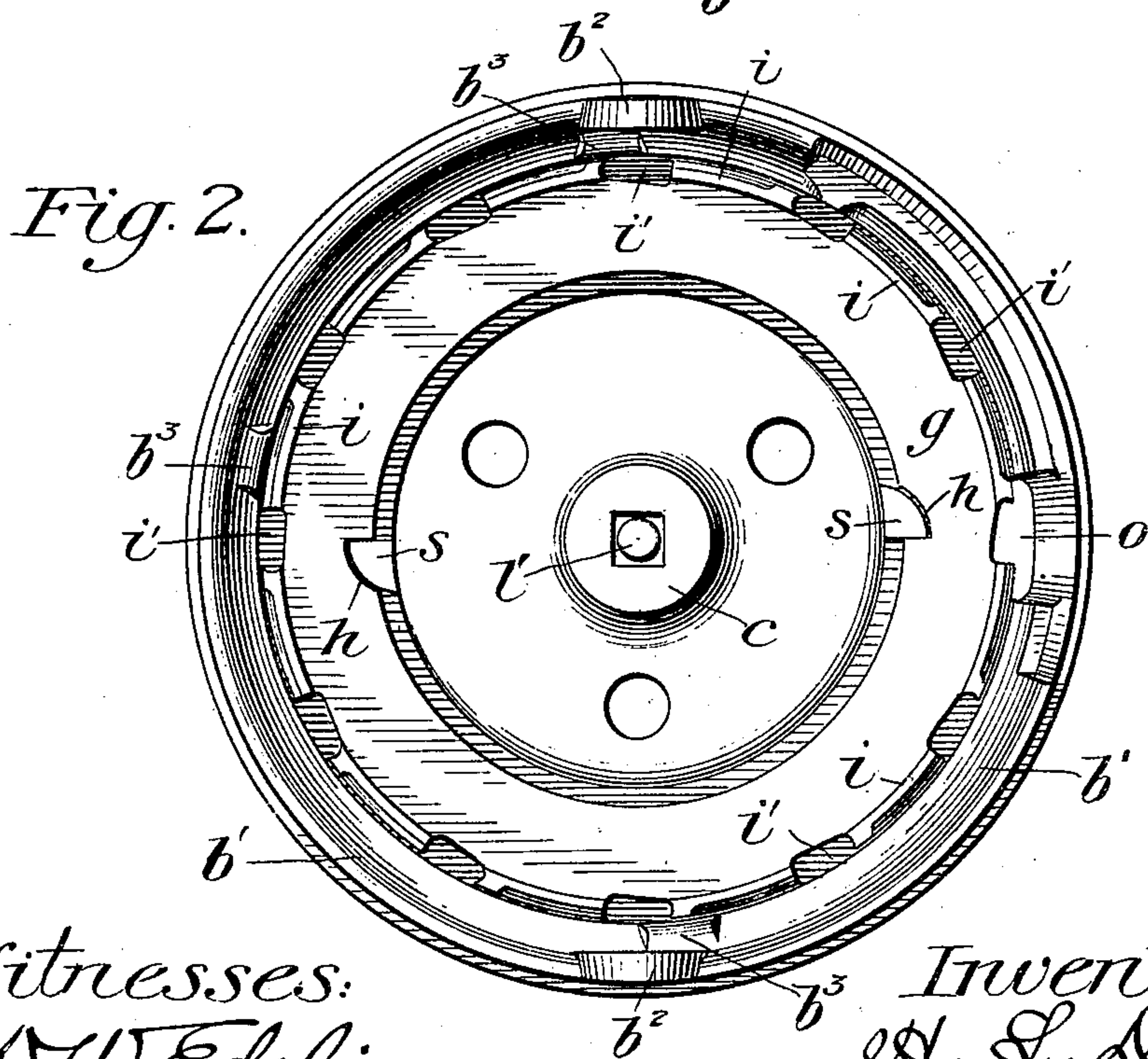
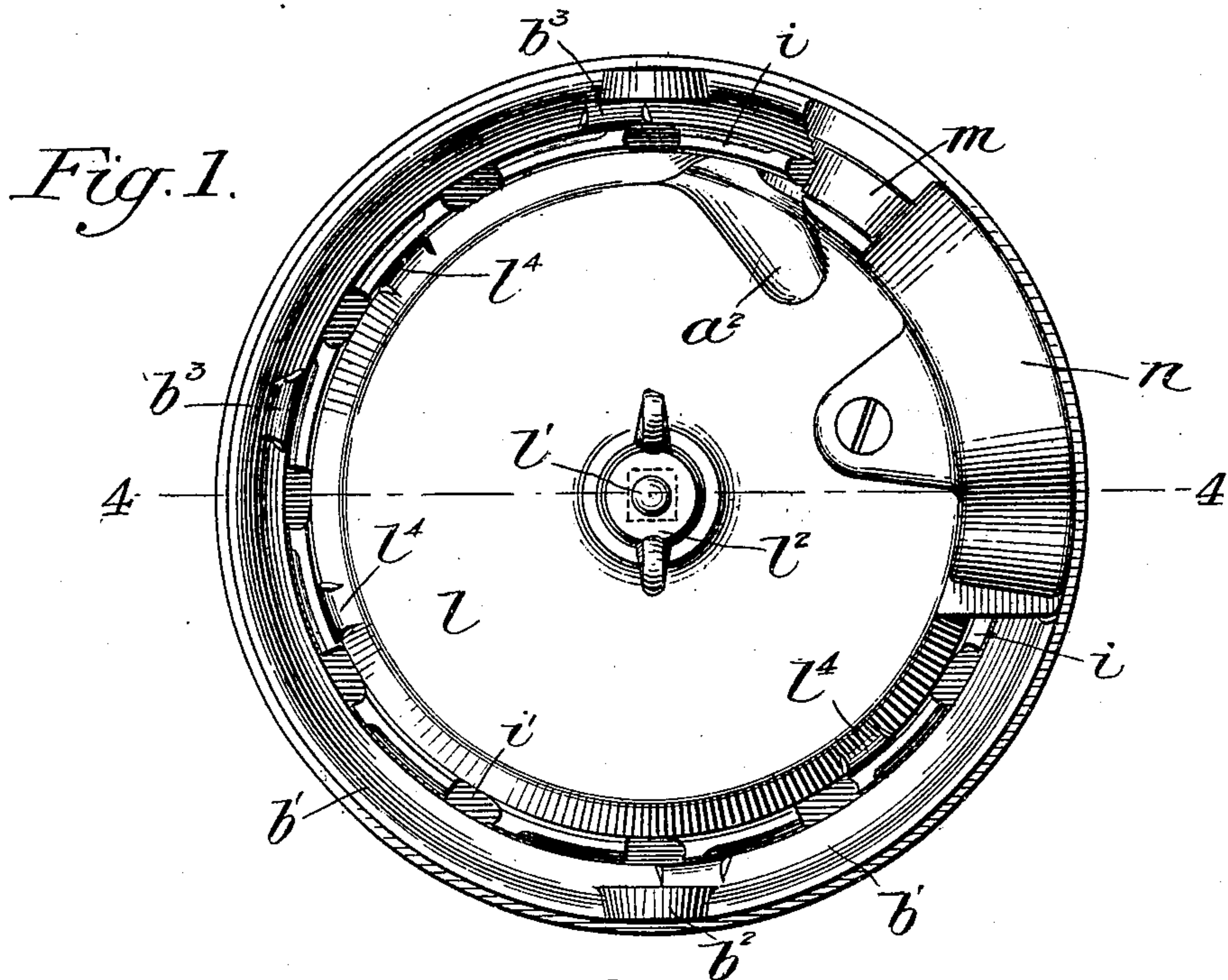
H. L. DOOLEY.

DROPPING MECHANISM FOR CORN PLANTERS.

(Application filed Jan. 8, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:

N. W. Edelin.

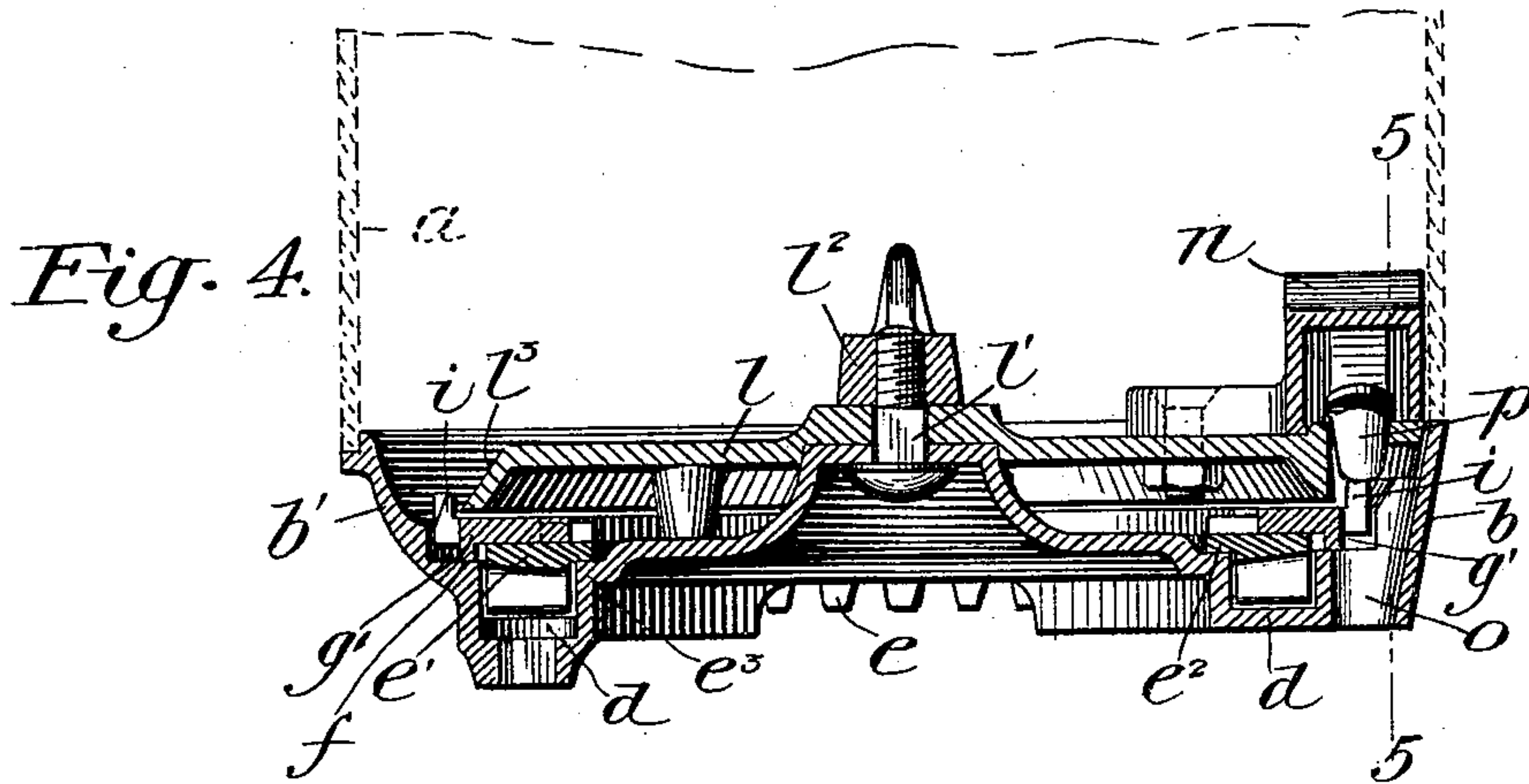
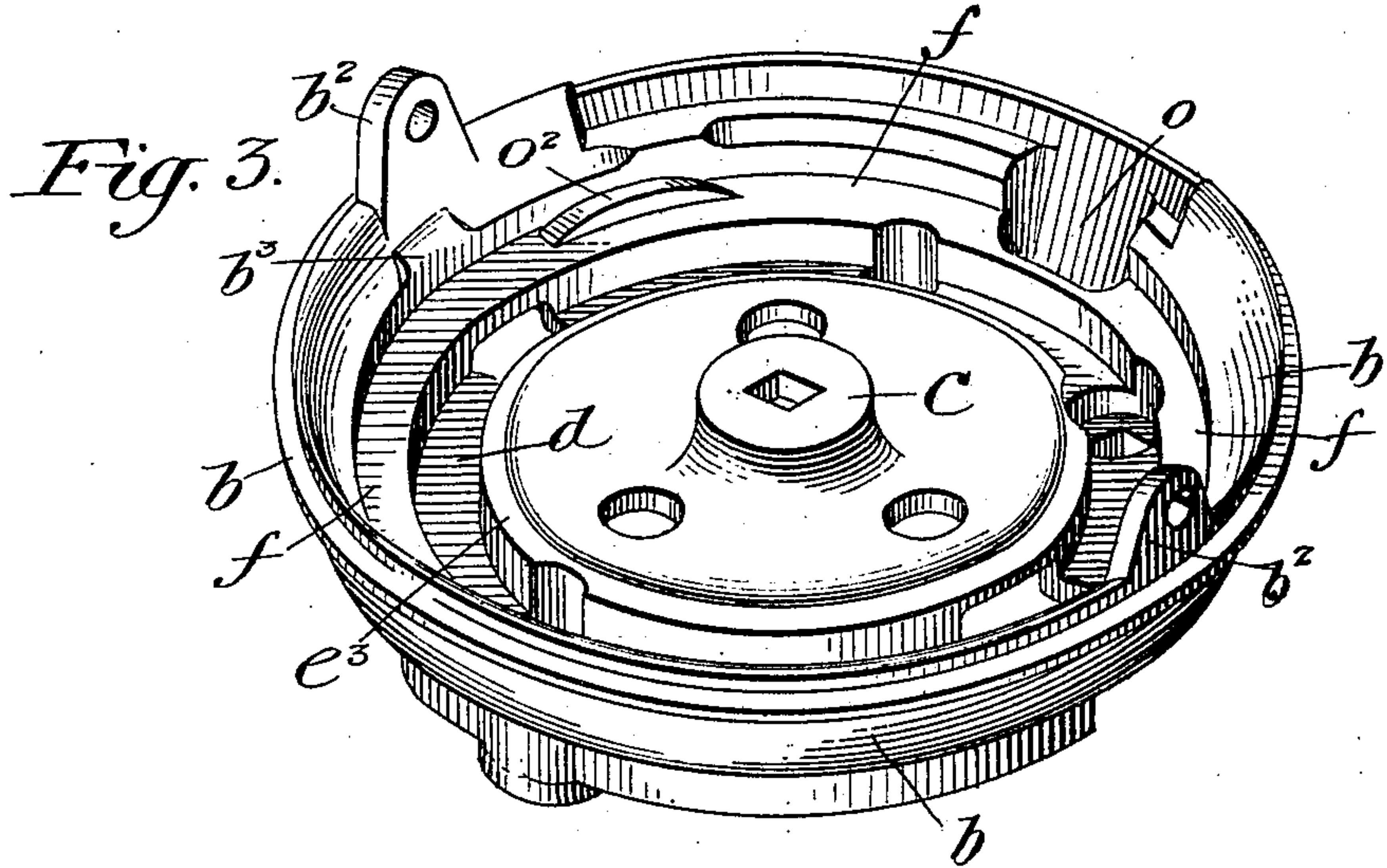
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3 Sheets—Sheet 3.

Fig. 5.

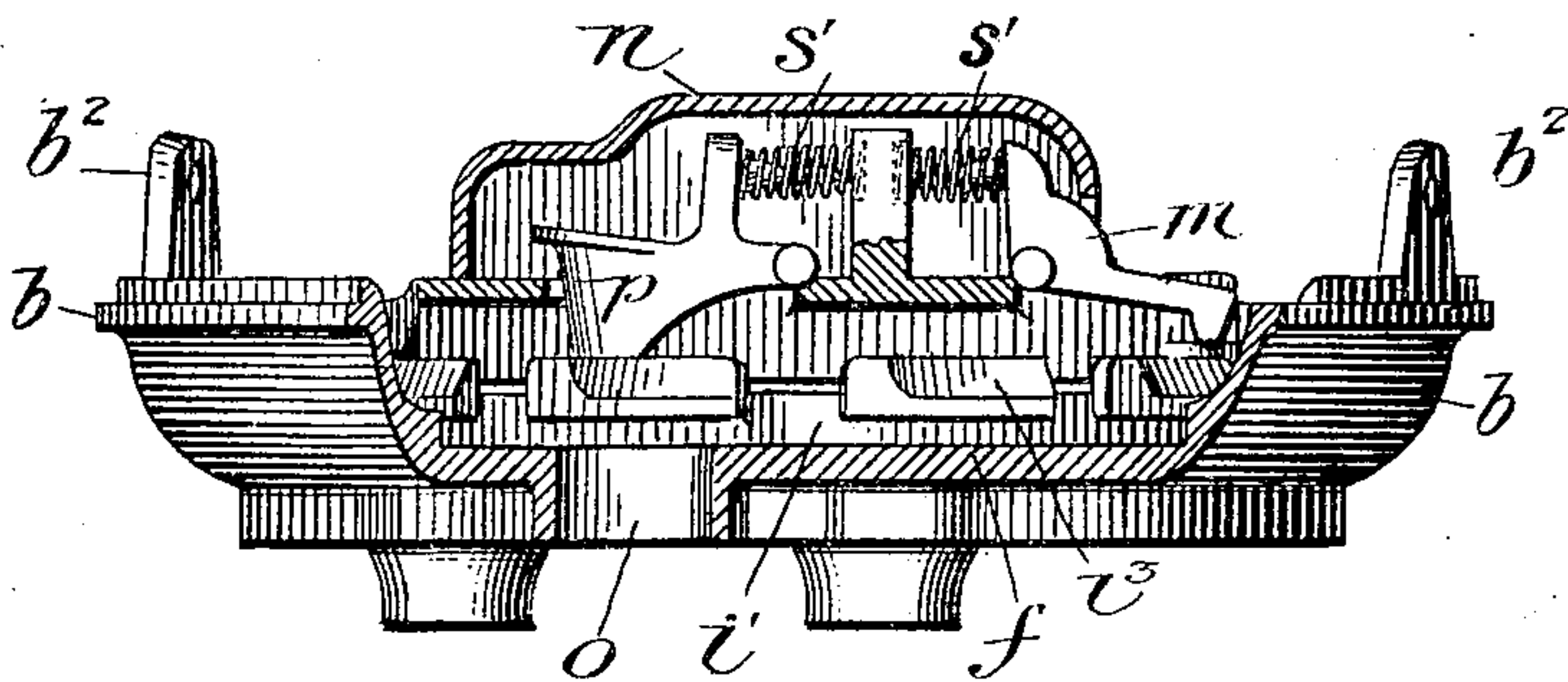
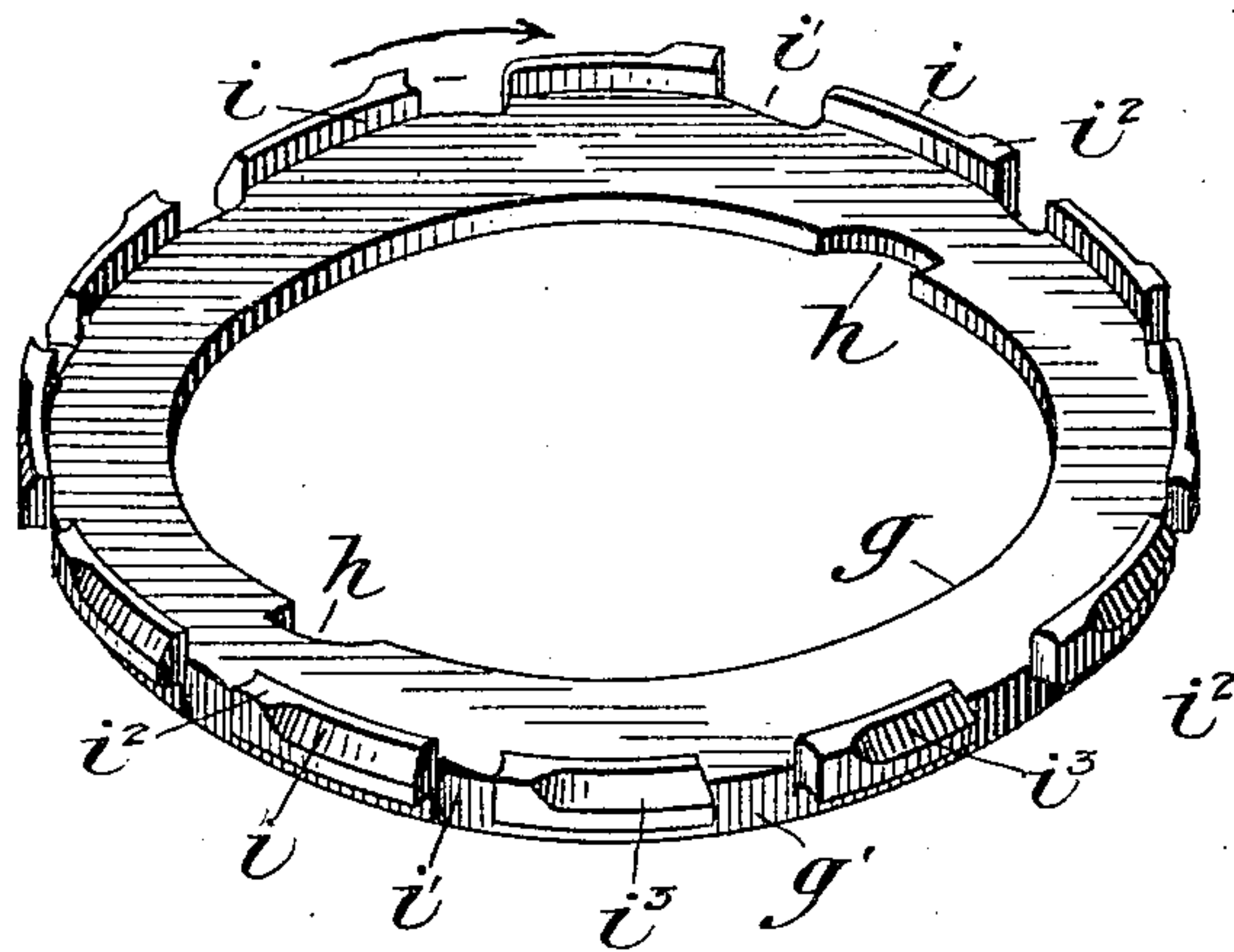


Fig. 6.



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UNITED STATES PATENT OFFICE.

HARRY L. DOOLEY, OF ROCK ISLAND, ILLINOIS, ASSIGNOR TO HENRY D. MACDONA, OF NEW YORK, N. Y.

DROPPING MECHANISM FOR CORN-PLANTERS.

SPECIFICATION forming part of Letters Patent No. 682,178, dated September 10, 1901.

Application filed January 8, 1901. Serial No. 42,488. (No model.)

To all whom it may concern:

Be it known that I, HARRY L. DOOLEY, a citizen of the United States, residing at Rock Island, county of Rock Island, and State of Illinois, have invented certain new and useful Improvements in Dropping Mechanism for Corn-Planters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates more especially to that class of corn-planters where the can, hopper, or receptacle for holding the corn has in its bottom a revolving ring or plate provided with seed-cups or cells into which the grains are received and from which they are delivered one at a time into the spout or tube of the planter, whence they are discharged in the same manner if it is desired to drill or are accumulated until the number required for a hill is obtained, when they are dropped altogether.

The invention is illustrated in the accompanying drawings, forming part of this specification, and will be best understood in connection with the several views, as follows:

Figure 1 is a plan view of the hopper-bottom, showing the cover-plate and the housing for the cut-off and ejector. Fig. 2 is a similar view with the cover-plate removed to expose the seed-plate beneath. Fig. 3 is a perspective of the hopper-bottom detached. Fig. 4 is a vertical section of the bottom and its appurtenances on the line 4 4 of Fig. 1. Fig. 5 is a section on the line 5 5 of Fig. 4, and Fig. 6 is a perspective view of the seed-plate detached.

Many arrangements have been devised for separating the grains from the mass of corn contained in the hopper and delivering them one at a time to the spout or tube, and in that class of devices where the seed-plate is provided with cups or cells adapted to receive the grains edgewise only it has heretofore been thought necessary to provide a narrow groove or channel above the level of the cells of a width insufficient to permit the grains to settle naturally or to enter in any way except in the same edgewise position in which only they can be received by the cells. I have

discovered, however, that this preliminary groove or channel is unnecessary and that the grains can be gotten into the narrow cells edgewise without it, and incidentally I have been enabled to simplify and cheapen the construction and even to enhance its efficiency while reducing the number of parts. I obtain this result by forming the outer edge of the hopper-bottom and the corresponding edge of the plate that covers and protects the moving parts into an upwardly-flaring enlarged channel communicating freely with the interior of the hopper and into which the corn settles naturally and indiscriminately with the grains in haphazard positions. In connection with this widened and enlarged channel I provide in the bottom means for agitating the grains that are already lying therein and changing their positions after they enter and before they leave the channel from crosswise, flatwise, or whatever other positions they may be in to edgewise positions with respect to the openings into the cells which communicate directly and immediately with the channel. No means are necessary for causing the grains to enter the channel in any particular position, and they may enter freely in haphazard positions; but by the employment of the peculiar form of the channel herein described and the simple and efficient means that are also described for agitating the corn that gravitates naturally into it I am enabled to get the grains ultimately into the same position with respect to the cells.

Referring to the accompanying drawings, *a* denotes the body of any ordinary sheet-metal hopper or other receptacle for holding the corn. The bottom is indicated by *b*. It is constructed with a raised center *c* and a groove *d*, from the bottom of which latter I preferably lead the holes for the bolts by means of which the can is fastened down on the frame of the machine. The teeth on the under side of the annular gear-ring *e* travel in this groove, and on top of the gear-ring and connected thereto by the lugs *s s* is the seed-plate *g*, having notches *h h* to receive the lugs. The gear-ring is denoted by *e'*. It has an extension or flange *e''* projecting horizontally inside the circle of teeth forming the

gear and is supported by this flange resting on the annular ledge or shoulder e^3 on the bottom b above and just inside the groove d .

The seed plate or ring g rests flat upon the upper surface of the gear-ring and at its outer edge is provided with a depending flange g' , which overhangs the outer edge of the gear-ring and makes a snug fit with the surface of a ledge f , formed in the bottom on the outer side of the groove d and preferably flush with the ledge e^3 on the inner side of the groove. The seed-plate is further provided with an upstanding flange i around its periphery, which sets off slightly from the edge of the ring, as best illustrated in Figs. 4 and 6. At appropriate intervals (depending upon the speed of the ring and the character of the feed desired) this flange is notched or cut away, as shown in Figs. 2 and 6, and these notches constitute the cups or cells i' , into which the kernels or grains of corn are received. As will be noted in Fig. 2, where the seed-plate is shown in plan, these cells are elongated in the direction of the circumference of the plate and are made quite narrow in a transverse direction, with preferably a slight widening at the front end, (considered in respect of the movement of the ring,) but not in any part being of a width to permit the entrance flatwise of the grains or to permit the grains to turn therein after they have once entered. No particular novelty is claimed herein for the shape or size of these cells, and in regard to this detail it need only be said that the cells are intended to receive and hold only one kernel or grain at a time and should therefore be of a length and width adapted to the dimensions of the average grains.

Seated upon the raised center c of the bottom b and secured to the latter in fixed position by means of the bolt l' is the cover-plate l , having an imperforate top and being held down on the bottom and secured removably in place by the wing-nut l^2 , screwing upon the threaded end of the bolt l' . At its outer edge this plate has a downwardly and outwardly extending flange l^3 , the lower edge of which extends into close proximity to the upper surface of the seed-plate and comes flush with the inner edges of the cells i' . The relations of this flange to the seed-plate and its flange i are best illustrated in Figs. 1 and 4, from which it will be seen that the outer edge of the flange l^3 comes close to the inner edge of the flange i and is practically coincident with the outer edge of the seed-plate proper.

At the point where the can or hopper communicates with the drill spout or tube the bottom is provided just under the ledge f with an opening o , through which each cell discharges its grain as the seed-plate moves around. Over this opening the cover-plate l is provided with a removable housing n , and in this housing are mounted a cut-off m , the function of which will be referred to again

later on, and a grain-ejector p , the point of the latter working immediately above the discharge-opening o . This cut-off and ejector are pivoted to the cover-plate under the housing and are operated by springs $s' s'$ in a manner and for a purpose well understood, these details not forming any part of the present invention.

Referring now more particularly to Fig. 4, it will be noted that the hopper-bottom b has an outwardly and upwardly inclined flange b' around its outer edge, this flange beginning at the outer edge of and slightly above the level of the ledge or floor f and extending to a point preferably slightly above the level of the cover-plate l . The body of the can or hopper is secured to this flange by means of ears or lugs, to which it is riveted, so that its lower edge rests upon a shoulder running around the flange. On referring to Fig. 4 it will be noted that the flanges l^3 and b' on the cover-plate and bottom, respectively, incline in opposite directions and that the space between them forms a groove or channel, the side walls of which are not vertical, but flare outwardly, so as to allow the corn in the hopper above to gravitate or settle naturally into it with the kernels or grains arranged haphazard and indiscriminately. The bottom of this channel is formed by the flange i of the seed-plate, and preferably this flange projects so far upward midway between the side walls as to extend above the bottom of the channel, and it is desirable that the flanges converge to a point about midway the height of the seed-plate flange and practically flush with the upper surface of the plate. The inclination of the side walls to the upstanding flange i between them is preferably about forty-five degrees; but obviously the invention is not limited to any particular inclination, all that is necessary being that one or both of the walls should diverge from about the level of the entrance to the seed-cups, so as to form a channel that is widened or enlarged in cross-section, so as to receive the corn in bulk from the can and hold a number of grains without regard to their arrangement in contradistinction to being of such width only as to receive the grains singly and on edge. This arrangement of the wall or walls of the channel, in connection with the fact that the flange of the seed-plate forms the bottom of the channel and is provided with agitators which keep the grains lying in the channel constantly changing their positions as the plate rotates, is the important thing in this part of the invention.

The construction being as above described it will be noted that the ledge or floor f forms the bottom of the cells or seed-cups and that in the preferable arrangement herein shown the flange i extends up some little distance into the channel. The object of having the flange project upwardly in this way is to more effectually agitate the corn in the channel and to keep the grains moving as the seed-

plate turns, so as to gradually work those kernels that lie crosswise into a position lengthwise of the channel, and to assist the flange *i* in the performance of this result the forward or advancing edge of the uncut portions of the flange are slightly enlarged, as shown at *i*², and behind this enlargement the outer side of the flange is chamfered or beveled off, as indicated at *i*³. These details are, however, ancillary to the real improvement, which, as above explained, is not limited to any actual or particular extension of the seed-plate flange above the bottom of the channel, provided it forms the bottom and is exposed to the grains above and is constructed and adapted to agitate the corn, as explained.

For the purpose of further assisting the notched flange *i* to arrange the grains lengthwise in the channel the walls *b'* and *b*³ are provided, respectively, with little projections or lugs *b*³*b*⁴ near the upper edges of the flanges. These lugs project laterally from the walls into the channel and are particularly useful in preventing the grains from lodging crosswise the channel and by bridging the space between the walls to prevent the free entrance of the corn from above. These lugs are located at appropriate intervals around the walls, and they are preferably so located as not to come opposite each other.

As before noted, the object of extending the flange *i* above the seed-plate is to more effectually agitate the grains. A further object is to deepen the cells, and thereby insure the retention of the grains which enter them at points remote from the discharge-orifice while the ring is traveling around. For unless the cells are deep enough to completely inclose the grains there is some liability of the overlying corn raking them out of the cells before they reach the discharge-opening. This deepening of the cells, however, sometimes permits two or more of the smaller imperfect grains to crowd into the cells at a time, and for the purpose of getting rid of surplus grains I provide the ledge *f* with an inclined cam or riser *o*² at a point just in front of the cut-off *m*. As the cells move around to the point of discharge the grains are pushed along the ledge by the notches in the flange of the seed-plate, and when they reach the riser they slide up over its top and are thereby lifted, so that the cut-off will act upon any surplus grains and push and scrape them off and away from the mouth of the cells, and in connection with this cut-off I preferably form a groove or depression *a*² in the cover-plate into which the grains that are scraped off may pass instead of piling up in front of the scraper.

Having thus described my invention, what I claim is—

1. In a dropping mechanism for corn-planters, a hopper-bottom having an annular channel into which the grains settle indiscriminately, a horizontal rotating ring or plate at

the bottom of said channel having cells adapted to receive the grains edgewise only, and means for agitating the grains in the channel and arranging them so that they enter the cells edgewise.

2. In a dropping mechanism for corn-planters, a hopper-bottom having an annular channel into which the grains settle indiscriminately, a horizontal rotating ring or plate at the bottom of said channel having cells adapted to receive the grains edgewise only, and projections on said ring extending up into the channel between its side walls for the purpose of agitating the grains and causing them to enter the cells edgewise.

3. In a dropping mechanism for corn-planters, a hopper-bottom having an annular channel into which the grains settle indiscriminately, a rotating ring or plate at the bottom of said channel having cells adapted to receive the grains edgewise only, projections on said ring extending up into the channel between its side walls, and lateral projections on one or both of said side walls coöperating with the projections on the ring to agitate the grains and cause them to enter the cells edgewise.

4. In a dropping mechanism for corn-planters, a hopper-bottom having an annular upwardly-flaring channel, a horizontal rotating ring or plate at the bottom of said channel having a flange projecting vertically into the channel with a space between it and the side walls of the channel, and cells formed in said flange at intervals and adapted to receive the grains edgewise only.

5. In a dropping mechanism for corn-planters, a hopper-bottom having an annular upwardly-flaring channel, a rotating ring or plate having a flange projecting upwardly into the channel between its side walls, cells formed in said flange at intervals and adapted to receive the grains edgewise only, and a ledge in the hopper-bottom forming a floor or bottom for said cells.

6. In a dropping mechanism for corn-planters, a hopper-bottom having an annular channel, a rotating ring or plate having an upstanding flange cut away at intervals to form cells to receive the grains edgewise only, a ledge in the bottom forming a floor or bottom for said cells, a cam or riser on the ledge to lift the grains as each cell approaches the point of discharge, and a cut-off to clear away superfluous grains.

7. In a dropping mechanism for corn-planters, a hopper-bottom having an upwardly and outwardly inclined edge flange, a rotating seed-plate, a stationary cover-plate overlying said seed-plate and having an edge flange inclined downwardly and outwardly, a vertical flange on the seed-plate projecting midway between the flanges and cut away at intervals to form cells adapted to receive the grains edgewise only, and a ledge in the bottom forming a floor for the cells, the oppositely-inclined flanges forming a channel with

upwardly-flaring side walls converging downwardly toward the cells.

8. In a dropping mechanism for corn-planters, a hopper-bottom having a groove in
5 which works an annular gear-ring, a seed plate or ring connected with the gear-ring, a cover-plate overlying said rings and having an edge flange inclined outwardly and downwardly, an outwardly-inclined edge flange in
10 the hopper-bottom projecting upwardly outside the flange of the cover-plate, said oppositely-inclined edge flanges forming a channel with flaring side walls converging downwardly, and cells formed in said seed-plate in
15 the vertical plane of the nearest convergence of the edge flanges, said cells being only wide enough to receive the grains edgewise.

9. In a dropping mechanism for corn-planters, a hopper-bottom having an annular upwardly-flaring channel, a rotating ring at the
20 bottom of said channel, and a flange on said ring projecting upwardly into the channel between its side walls, said flange being cut away at intervals to form cells adapted to receive the grains edgewise only, and said flange
25 also having portions of its outer edge chamfered off between the cells.

10. In a dropping mechanism for corn-planters, a hopper-bottom having an annular upwardly-flaring channel, a rotating ring at the
30 bottom of said channel, and a flange on said ring projecting upwardly into the channel

between its side walls, said flange being cut away at intervals to form cells adapted to receive the grains edgewise only, and said flange
35 being provided with enlargements at the rear ends of the cells.

11. In a seed measuring and delivering mechanism for corn-planters, an annular channel in the hopper-bottom constructed to
40 receive the grains indiscriminately, and a horizontal rotating ring or plate at the bottom of said channel having cells adapted to receive the grains edgewise only, said plate being constructed to agitate the grains lying
45 in the channel above and arrange them so that they enter the cells edgewise.

12. In a hopper-bottom for corn-planters, an annular channel constructed to permit the grains to settle indiscriminately therein, a rotating ring or plate at the bottom of said
50 channel, having cells adapted to receive the grains edgewise only, and projections on the plate extending into the channel for agitating and changing the positions of the grains
55 lying therein from an indiscriminate arrangement to an edgewise arrangement with respect to the cells.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY L. DOOLEY.

Witnesses:

J. A. JOHNSON,

W. J. SWEENEY.