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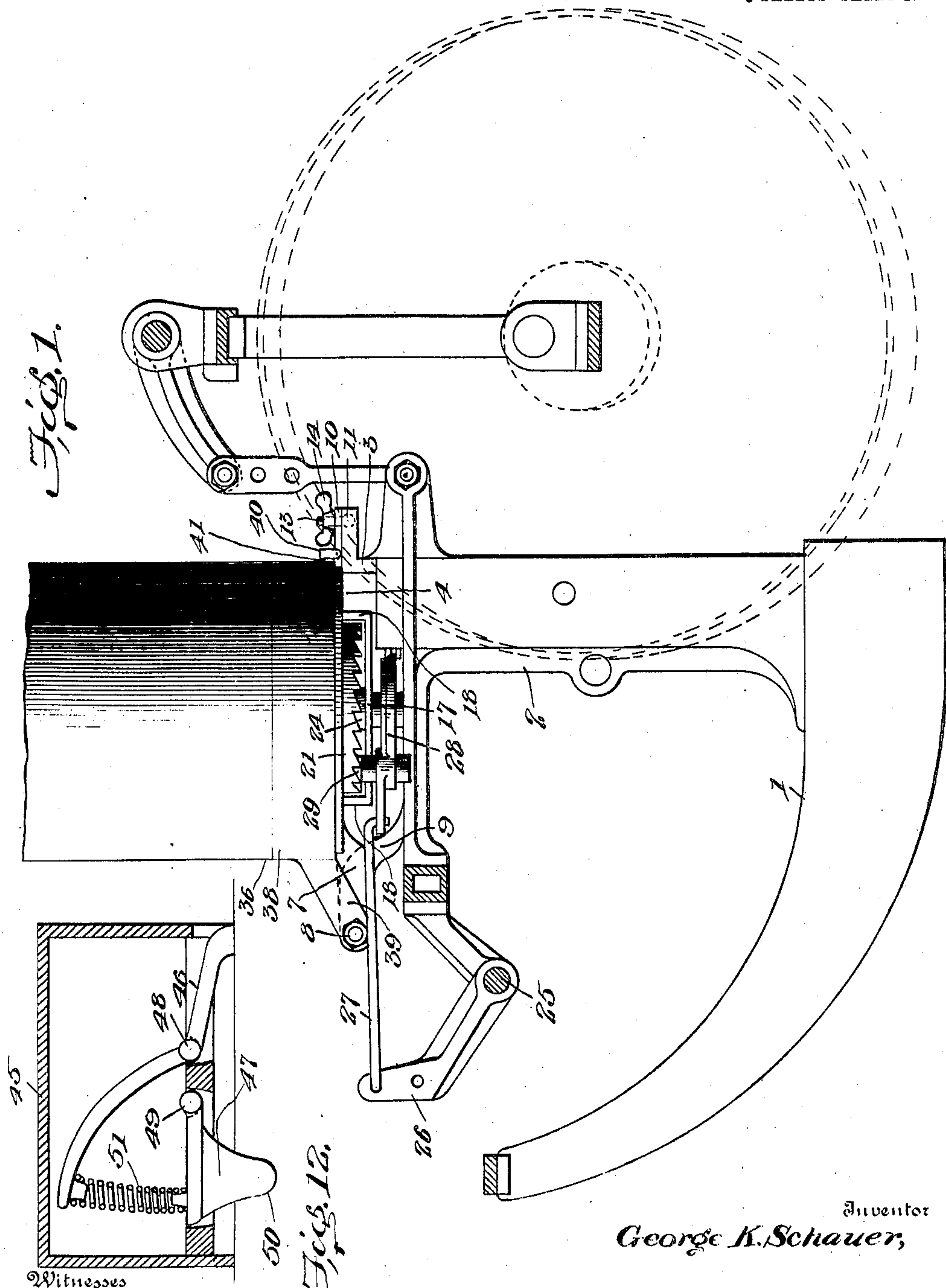
PATENTED FEB. 26, 1907.

G. K. SCHAUER.

CORN PLANTER.

APPLICATION FILED NOV. 17, 1905.

5 SHEETS—SHEET 1.



Witnesses

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5 SHEETS—SHEET 2.

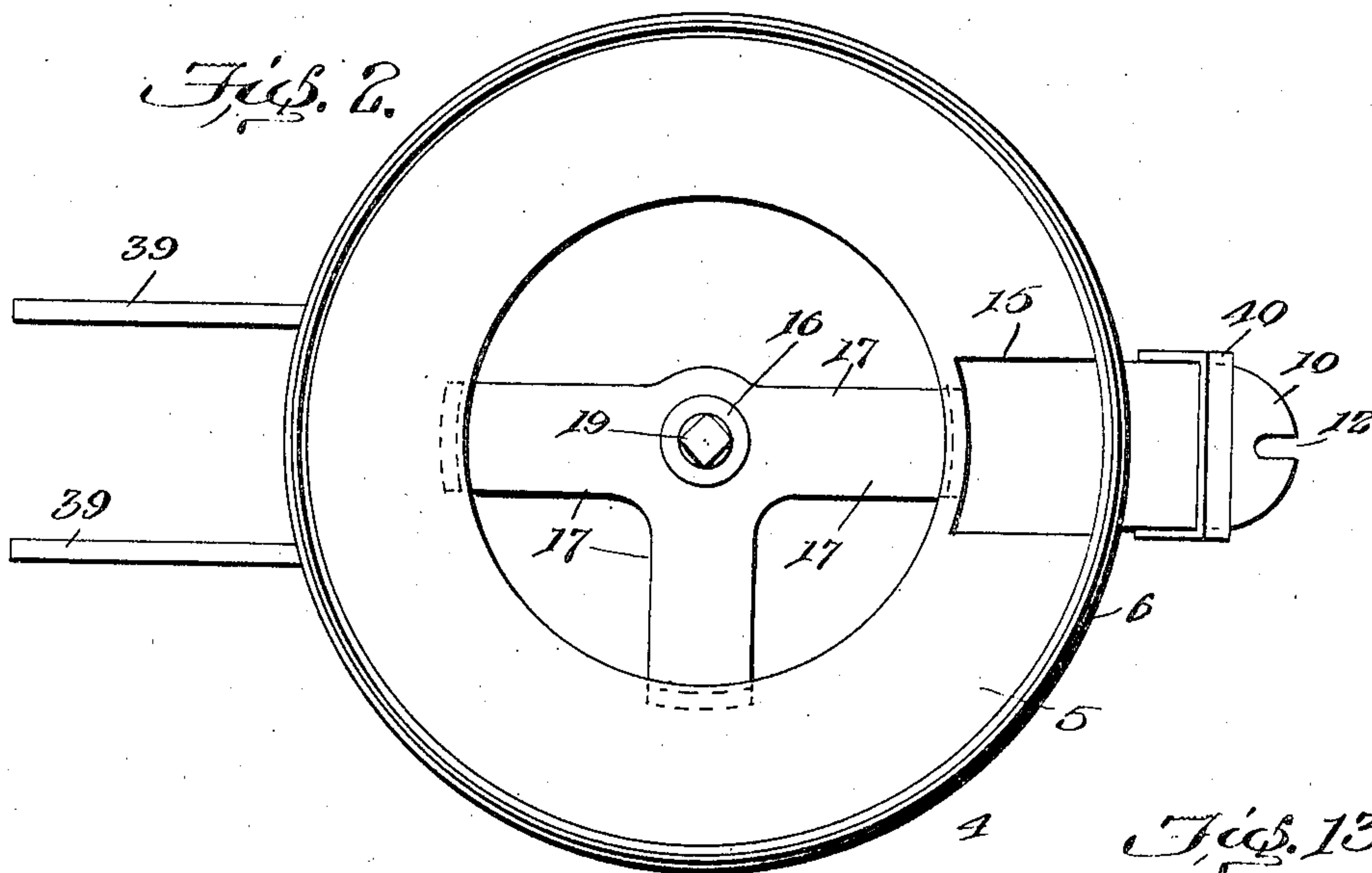
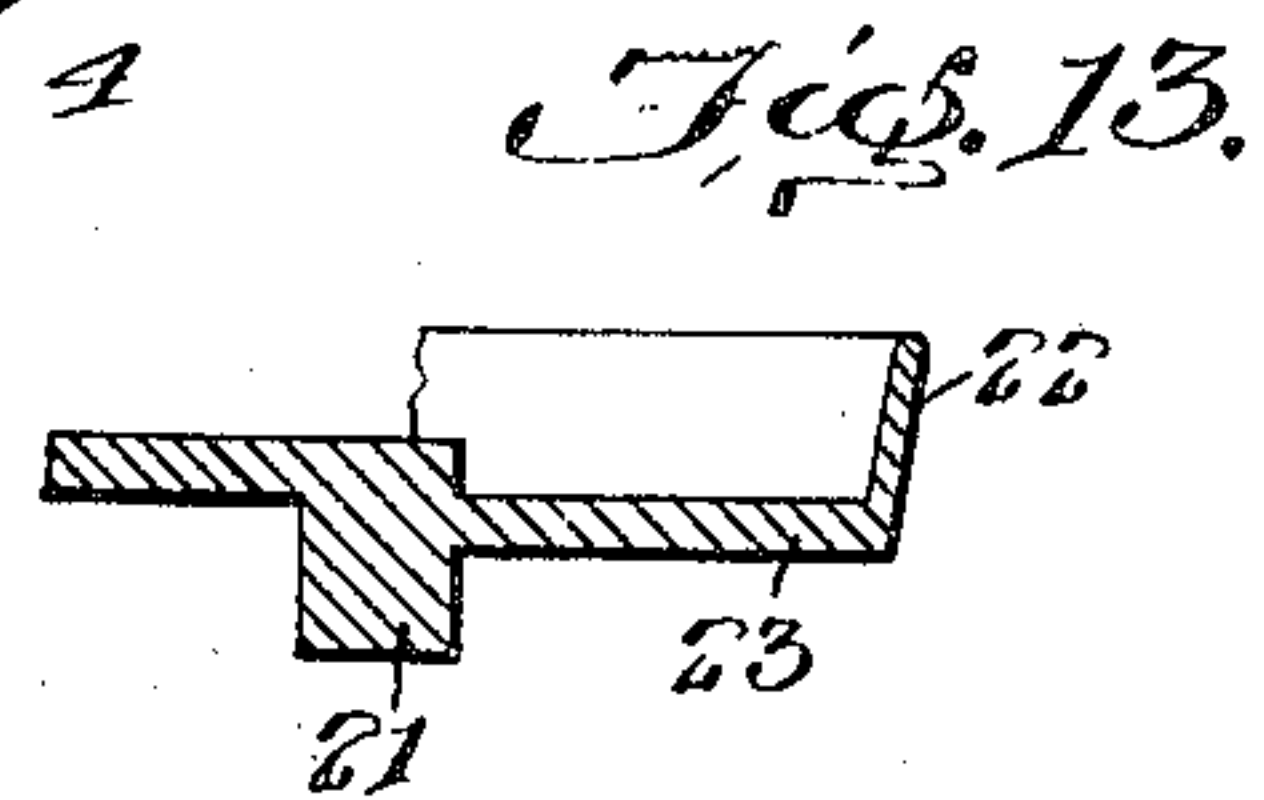
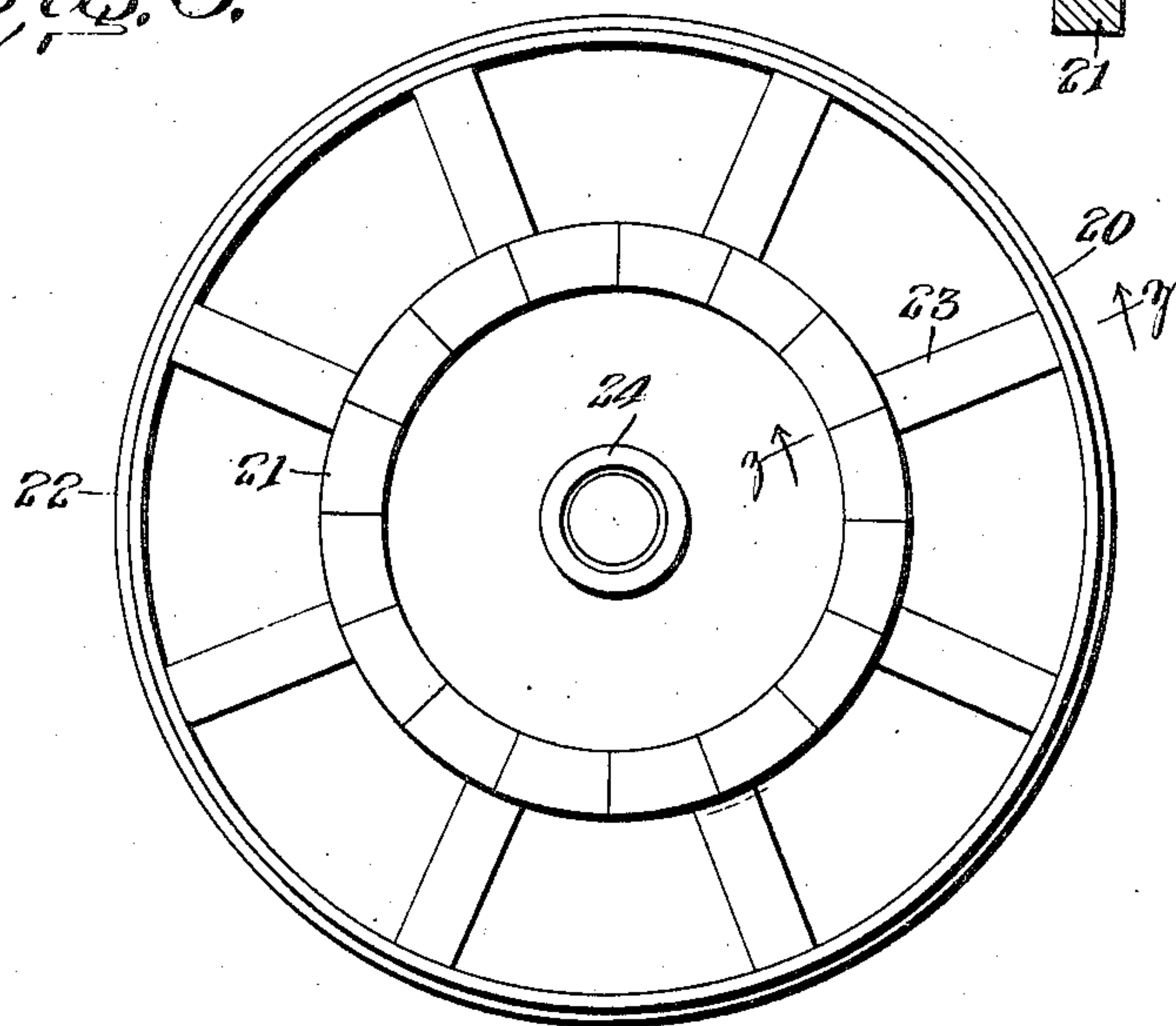


Fig. 3.



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6 SHEETS—SHEET 3.

Fig. 4.

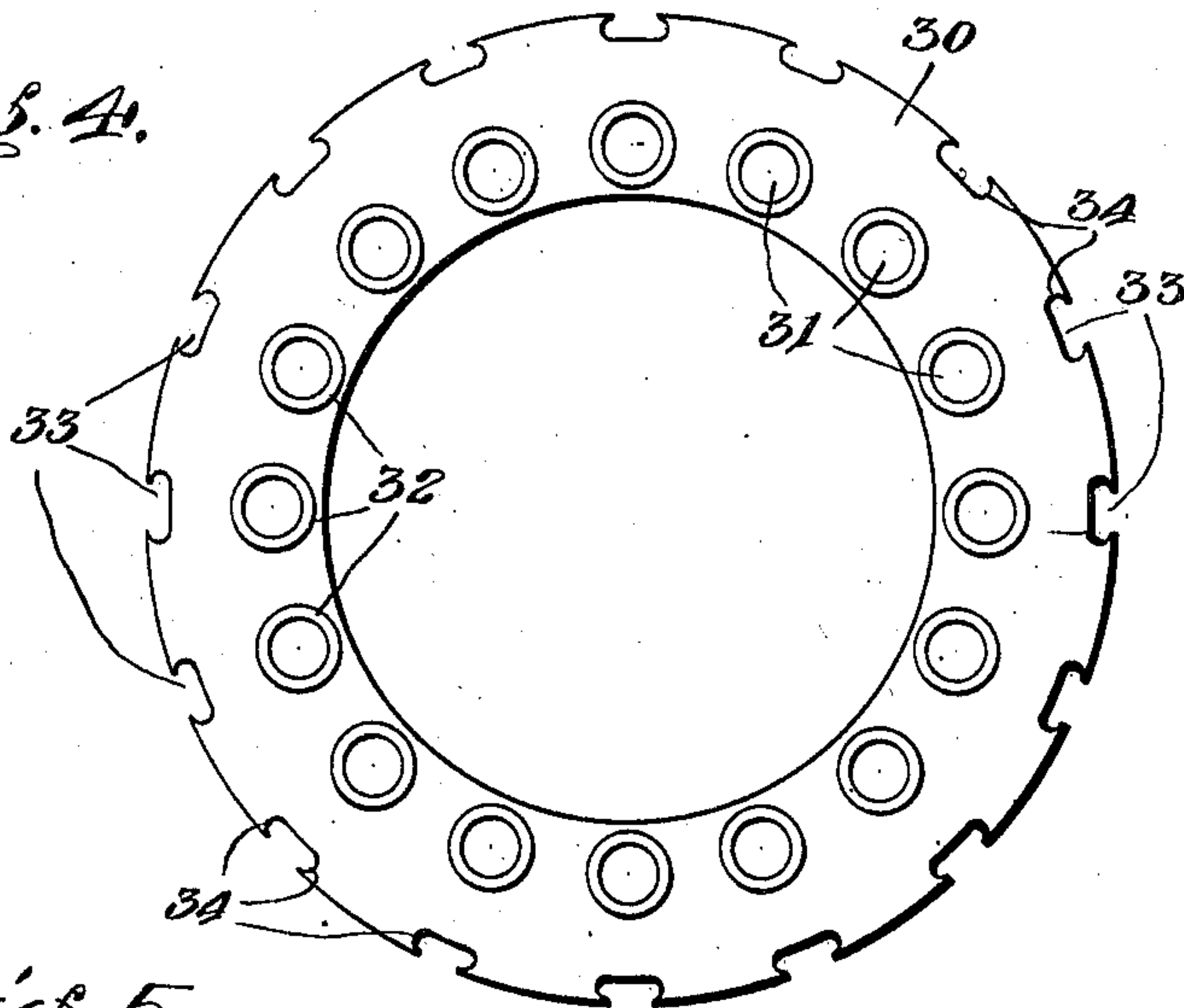


Fig. 5.

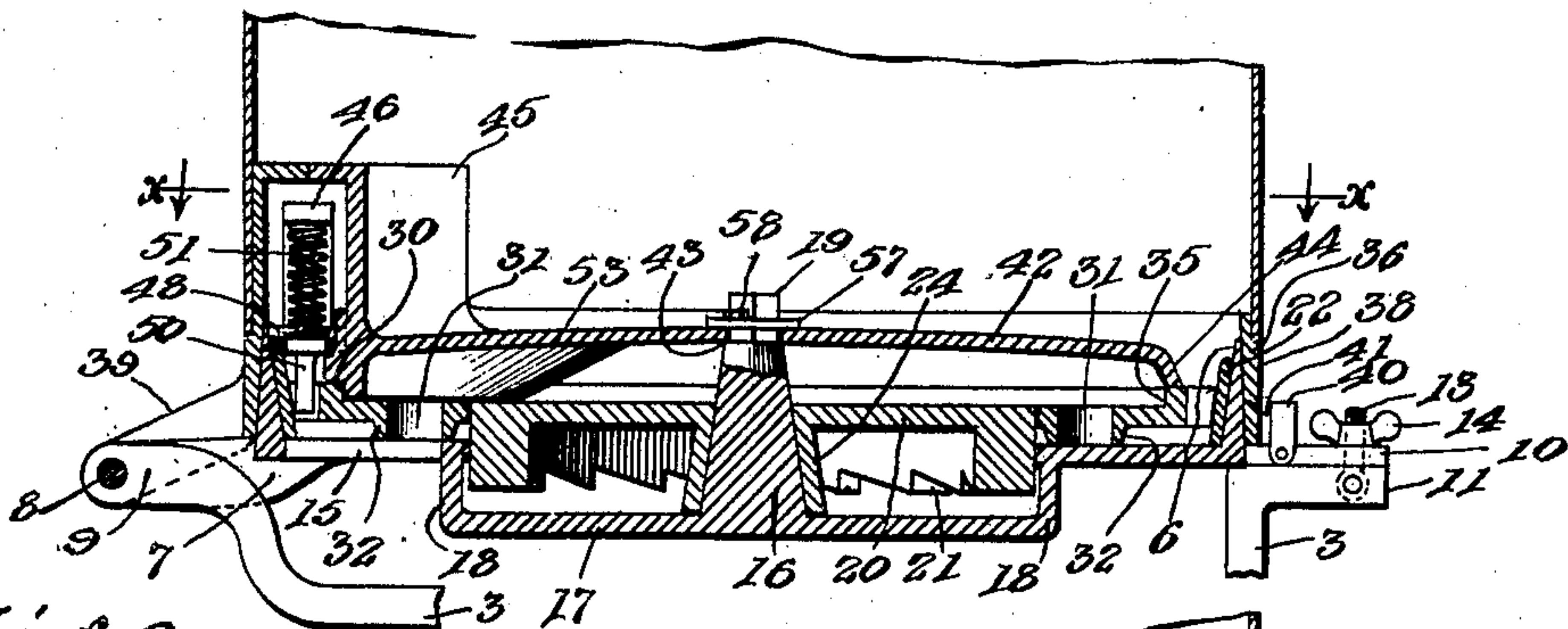
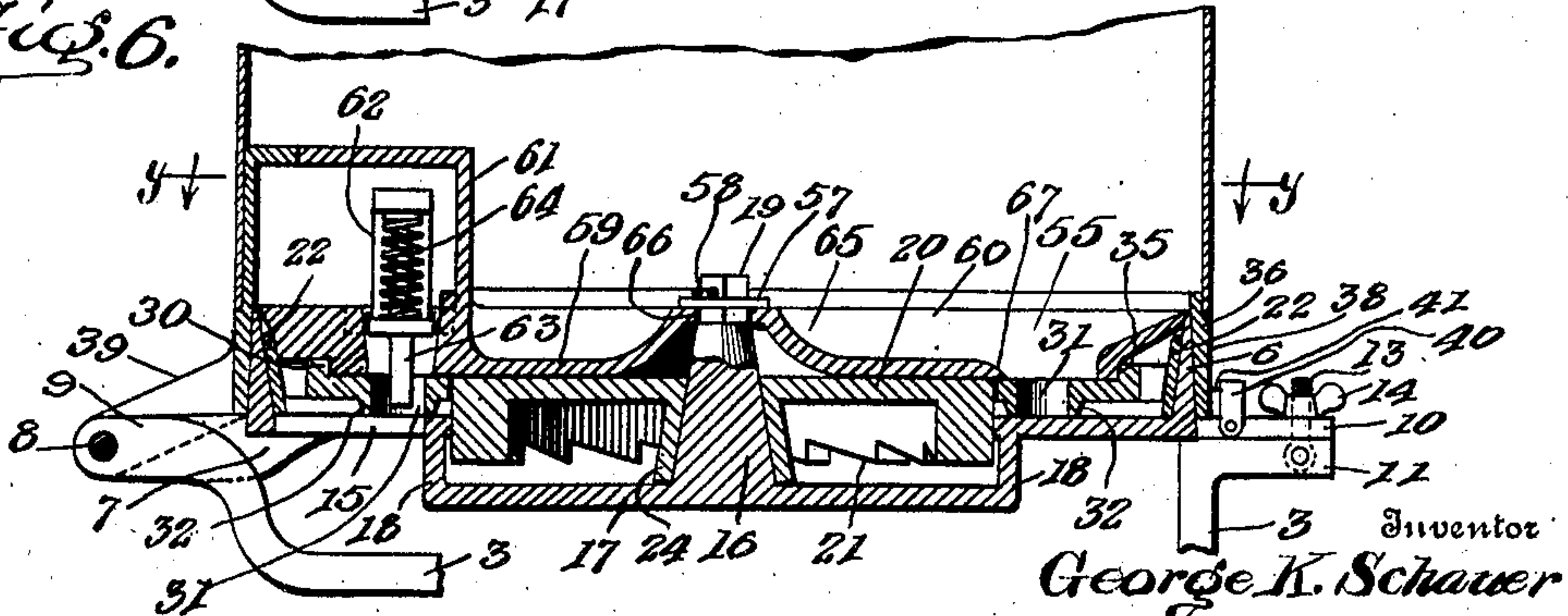


Fig. 6.



Witnesses

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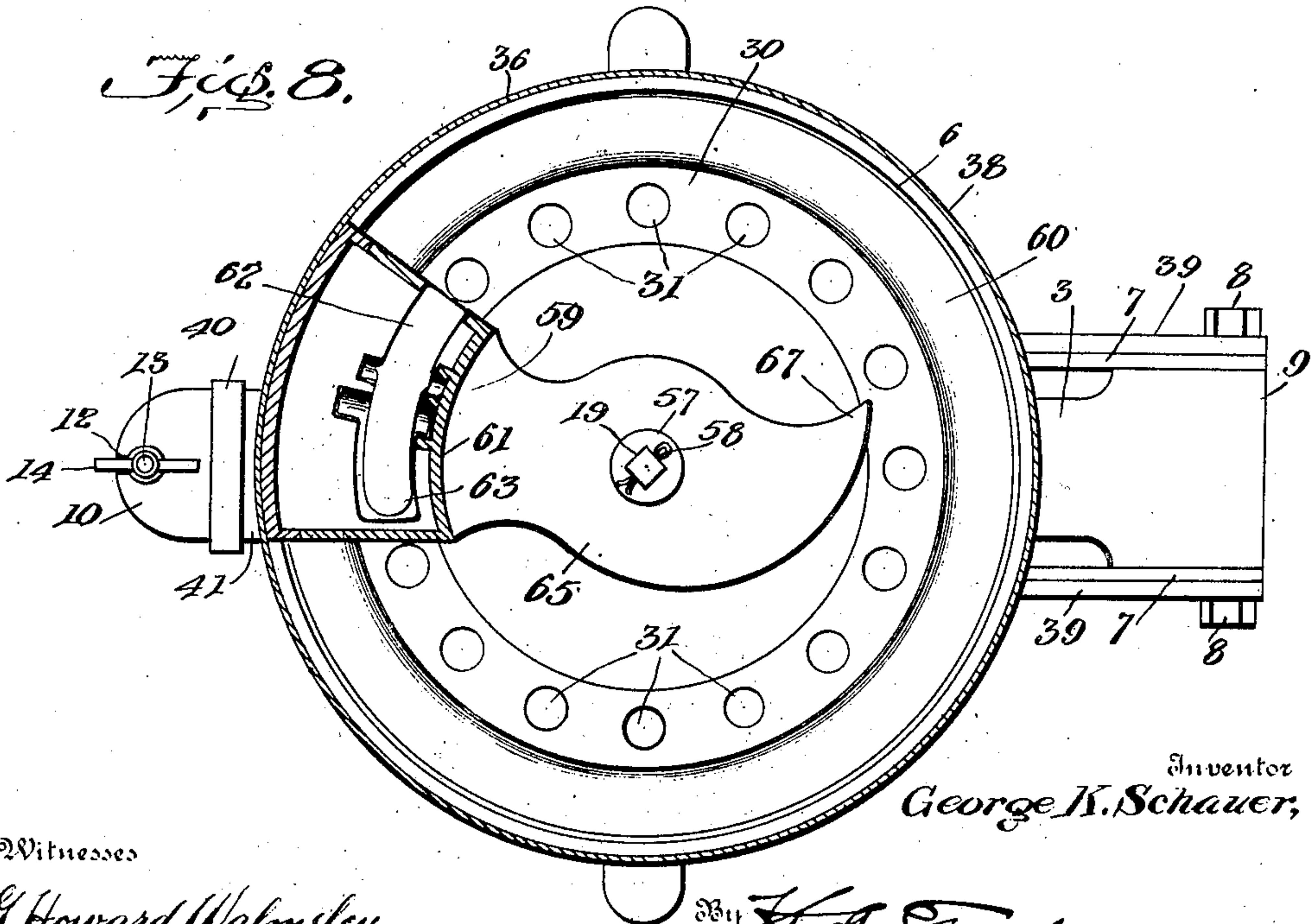
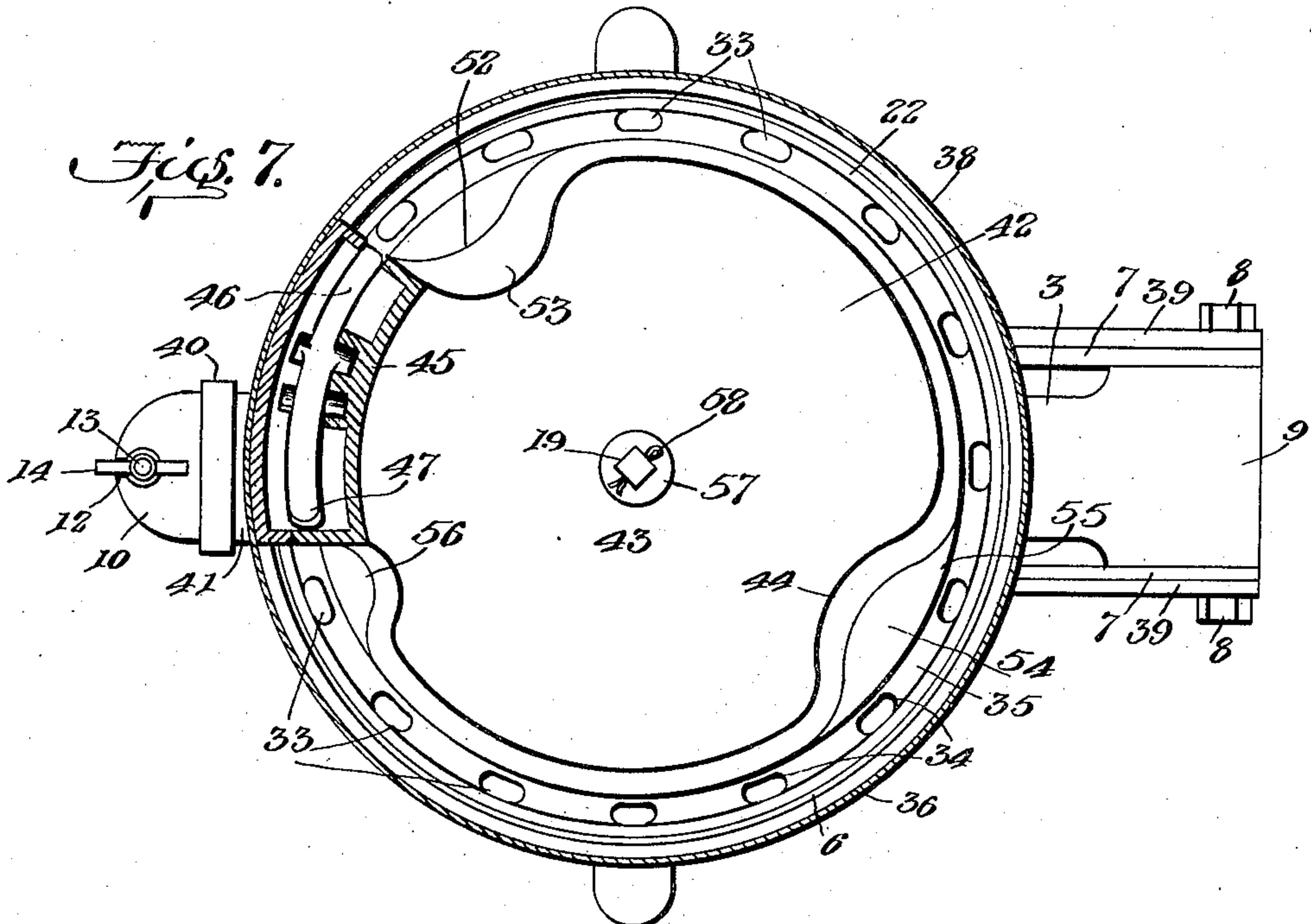
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6 SHEETS—SHEET 4.



Witnesses

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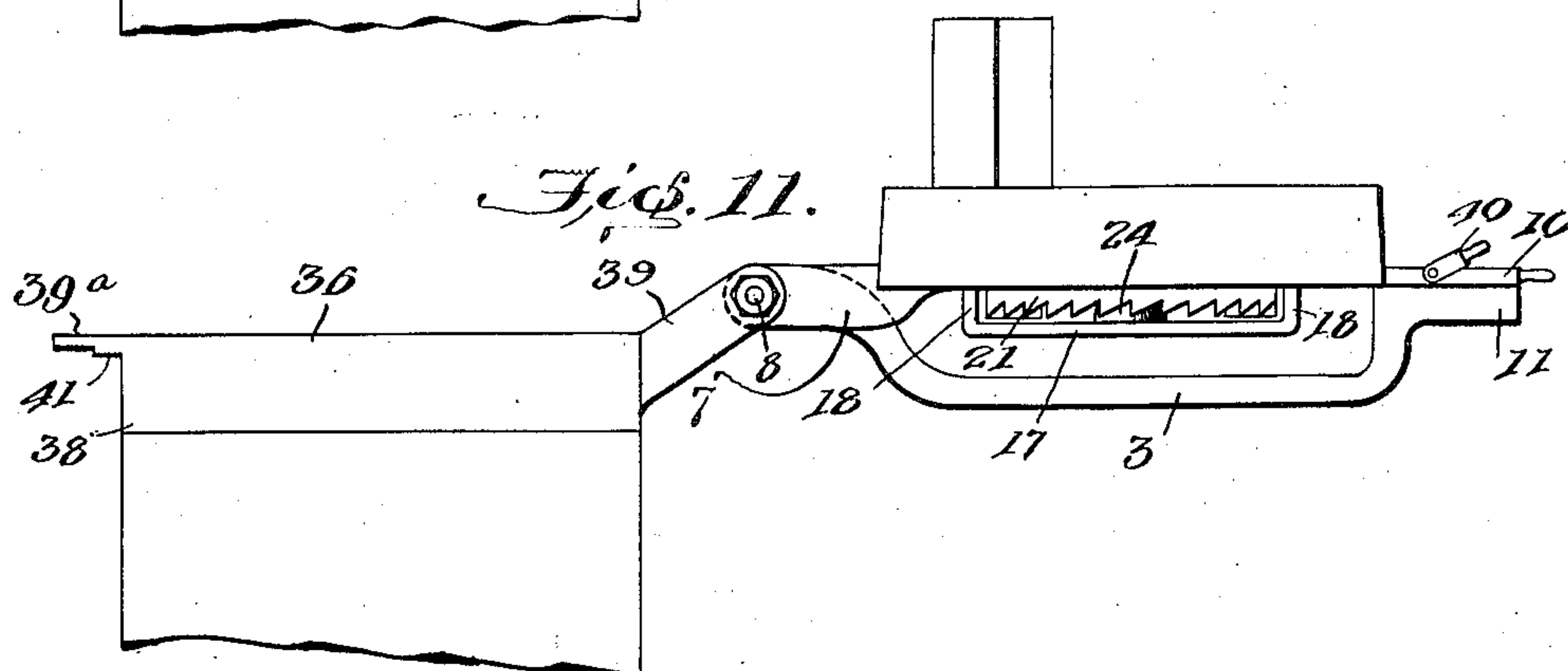
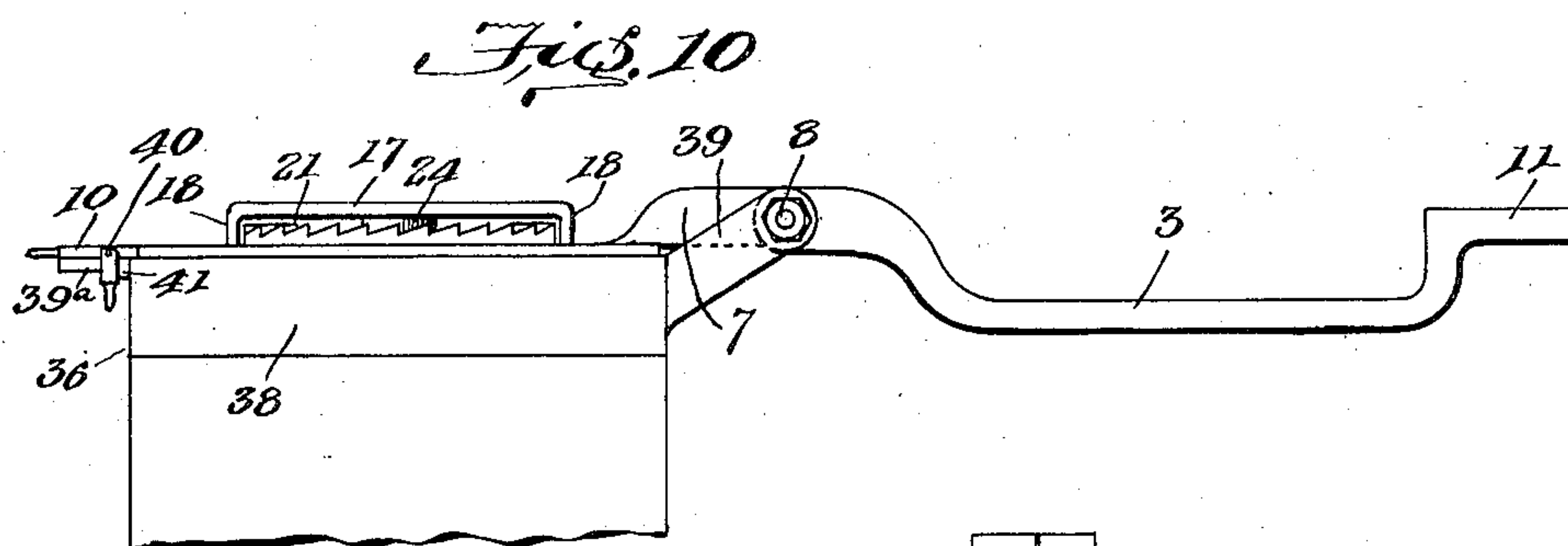
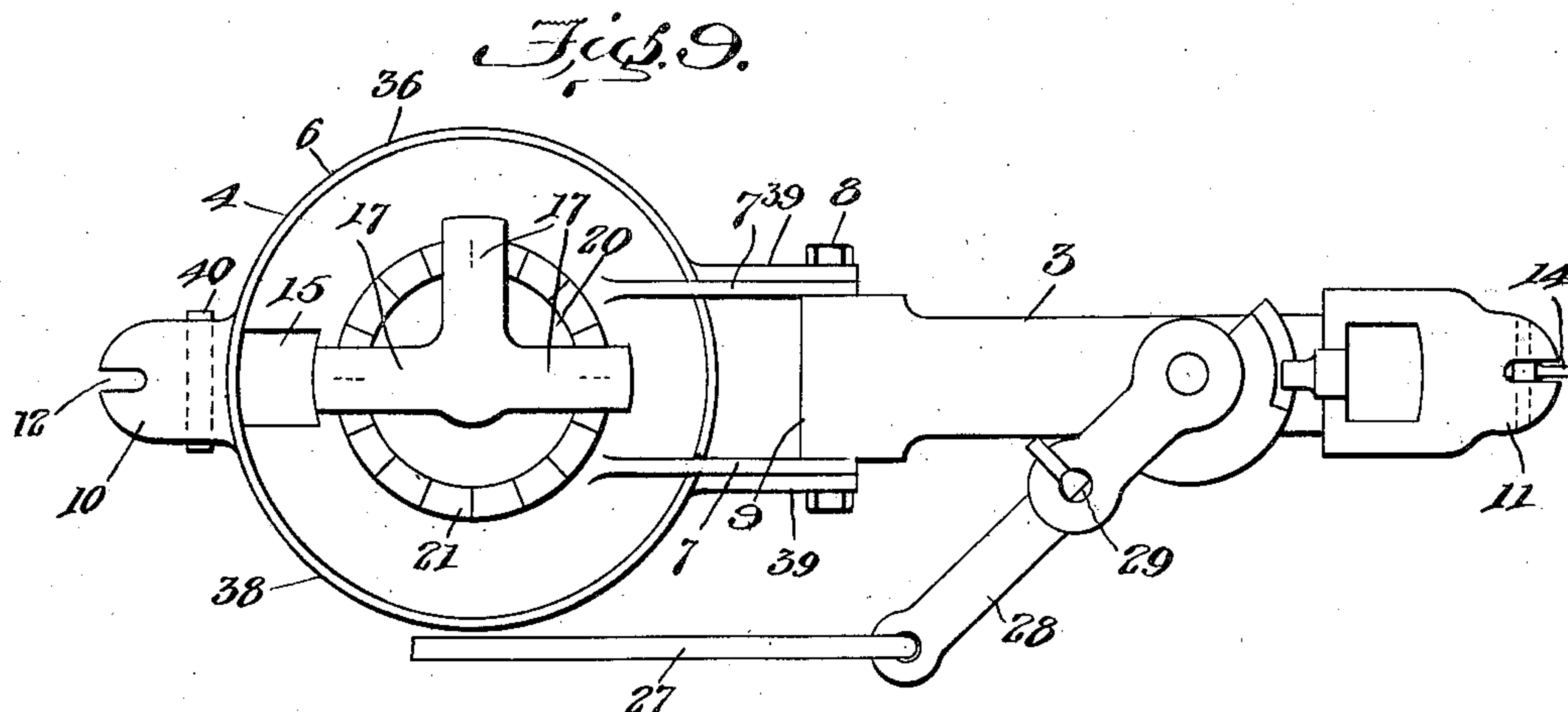
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APPLICATION FILED NOV. 17, 1905.

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

GEORGE K. SCHAUER, OF OSBORN, OHIO.

CORN-PLANTER.

No. 845,200.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed November 17, 1905. Serial No. 287,778.

To all whom it may concern:

Be it known that I, GEORGE K. SCHAUER, a citizen of the United States, residing at Osborn, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to corn-planters, and more particularly to the dropping mechanism thereof.

In the planting of corn as now practiced it is sometimes deemed desirable to drop the corn from the seedbox or hopper when the grains are lying in a flat position, which is known as the "flat drop," while under other conditions it is desired to drop the corn from the seedbox or hopper when the grains are in a vertical or upright position, resting on their edges, which is known as the "edge drop."

The primary object of my invention is to provide a simple and efficient construction whereby the machine may be used either for flat dropping or edge dropping, being readily convertible from one form to the other.

A further object of my invention is to provide means whereby the parts of the dropping mechanism may be rendered readily accessible for the purpose of converting the machine from one form of dropping to the other or for any other purpose without involving the necessity of emptying the corn from the seedbox or hopper.

Further objects of the invention are to improve the construction of the machine in various respects, hereinafter referred to.

To these ends my invention consists in certain novel features which will I now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a sectional view of a part of a corn-planter, showing to much thereof as is necessary for an understanding of my present invention. Fig. 2 is a plan view of the base plate or ring of the hopper detached. Fig. 3 is an inverted plan view of the driving member of the dropping mechanism detached. Fig. 4 is an inverted view of the seed plate or ring, detached. Fig. 5 is a central vertical longitudinal sectional view taken through the hopper and dropping mechanism, showing the same arranged for edge dropping. Fig. 6 is a view similar to Fig. 5, showing the machine arranged for flat dropping. Fig. 7 is a

plan section taken on a line corresponding with the line xx of Fig. 5 and looking in the direction of the arrows. Fig. 8 is a plan section taken on a line corresponding to the line yy of Fig. 6 and looking in the direction of the arrows. Fig. 9 is a plan view showing the hopper and base-plate swung back from the support, this being the initial step of the operation of getting access to the dropping mechanism. Fig. 10 is a side elevation of what is shown in Fig. 9. Fig. 11 is a view showing the next step of said operation with the base-plate and the parts carried thereby swung back into their first position, so as to be readily accessible. Fig. 12 is a detail view, being a vertical section through one of the cut-offs and ejectors and the associated parts, and Fig. 13 is a detail sectional view taken on the line zz of Fig. 3 and looking in the direction of the arrows.

In the said drawings, 1 indicates the shoe of the runner or furrow-opener, and 2 the seed-tube thereof, which supports the hopper and dropping mechanism through the medium of a support 3, mounted on the top of the seed-tube. To this support there is hinged the base-plate 4, (shown in detail in Fig. 2,) which comprises a flat annular body 5, having at its margin an upwardly-extending flange or ring 6. This base-plate is provided at one side with hinge-lugs 7, by means of which it is connected to the support 3 through the medium of a pivot-bolt 8, passing through said lugs and through a bearing-sleeve 9 on the elevated upper end of the support at that side of the hopper. On the opposite side the base-plate is provided with a securing-lug 10, by means of which it may be secured to a corresponding lug 11 on the other end of the support 3. This connection is preferably effected by providing a slot 12 in the lug 10, which slot is engaged by a pivoted screw-bolt 13, carried by the lug 11 and having a clamping thumb-nut 14. This base-plate is provided with a dropping-aperture 15, arranged to register with the seed-tube and with the dropping-openings of the seed-plate, hereinafter referred to. Said base-plate is further provided with a central bearing stud or post 16, supported by arms 17 from the annular body 5 of the plate. In the present instance these arms are shown as depressed below the body of the plate, being connected therewith by upright portions 18, and three of said arms are shown, the fourth being omitted to leave a clear space for the

operation of the pawl-bearing arm hereinafter referred to. The bearing-stud 16 is preferably upwardly tapering in form, as shown, and its upper end is preferably squared or polygonal in form, as indicated at 19.

The base-plate 4 supports the driving member 20, (shown in detail in Fig. 3 of the drawings,) which in its preferred form comprises a ratchet-wheel 21, a steering-ring 22, and connecting-spokes 23. The ratchet-wheel fits within the central aperture of the base-ring 4, below the body 5 of which it projects, as shown, and said ratchet-wheel has a central bearing-sleeve 24, which fits upon the bearing-stud 16. The body of the ratchet-wheel extends above the base-plate 4 to a height equal to the height of the body portion of the seed plate or ring, hereinafter referred to, and the spokes 23 extend outward from the body of the ratchet-wheel at a height such that their under sides are on a level with and bear upon the upper surface of the body 5 of the base-plate. The ring 22 extends upward from the outer ends of the spokes 23 and fits against the inner face of the ring 6 of the base-plate. An intermittent rotatory motion is imparted to this driving member 20 by any suitable mechanism—such, for instance, as that shown—in which a rock-shaft 25 is provided with an arm 26, connected by links 27 with a vibrating pawl-bearing arm 28, which carries a pawl 29 to engage the teeth of the ratchet-wheel 21.

30 indicates the seed plate or ring, which is shown in detail in Fig. 4 of the drawings. It fits in the space between the ring-body 22 and that portion of the body of the ratchet-wheel 21 which extends above the base-plate body 5. The spokes 23 thus lie between the seed-plate and said body 5. This seed-plate is provided with two sets of dropping-openings, one for flat dropping and the other for edge dropping. The former set consists of an annular series of apertures 31 of a size such as to admit flatwise the largest grains of corn. These apertures are preferably circular in form and are located inward from the outer margin of the seed-plate. On the under side of the plate there is formed, around the margin of each aperture 31, a downwardly-extending flange 32, which extends downward a distance sufficient to bear upon the upper surface of the body 5 of the base-plate. The total depth of each aperture 31, including the thickness of the plate and the depth of the flange, is such as to prevent the lodgment therein of more than one grain of corn at a time, so that by the assistance of the cut-off, hereinafter referred to, each aperture will in practice contain only a single grain of corn lying in a flat position. The flanges or ribs 32 support the body of the plate above the base-plate in such a way as to prevent the accumulation

of trash between the two, and consequent clogging and lifting of the seed-plate. The spokes 23 of the driving member 20 are of a width such as to fit in the space between the flanges 32 of two adjacent apertures, so that this engagement causes the seed-plate to rotate along with the driving member.

The other set of dropping-openings employed for edge dropping, are indicated at 33. They are formed in the outer margin of the plate and are of a length such as to accommodate the largest grains of corn, while their width from their inner walls to the circumference of the seed-plate is sufficiently narrow to prevent the grains of corn from lying flatwise therein, while permitting them to enter and lie edgewise. These openings are preferably in the form of notches or recesses, the outer walls of which are formed by the ring 22, which rotates in unison with the seed-plate, or by any other suitable annular abutment for the outer margin of said plate. I prefer to form the end portions of the outer walls from the body of the seed-plate, as indicated at 34, as I find that such a construction retains the grains more positively in the dropping-openings. The body of the ring 30 is, as already stated, flush with the top of the ratchet-wheel 21; but the outer portion of said ring is increased in thickness, so as to form an annular shoulder 35 for the purpose hereinafter specified.

36 indicates the body of the hopper, which is provided at its upper end with a suitable closure, not shown in the present instance, although any of the numerous approved forms of closure for this purpose may be employed. At its lower end said body is provided with a ring or band 38, which fits over the base-plate ring 6. The ring 38 is provided with pivot-lugs 39, which lie immediately inside of and parallel with the pivot-lugs 7 of the base-plate 4, said pivot-lugs 39 serving to connect the supporting-ring of the hopper to the pivot-bolt 8. The hopper-body is thus pivoted to the support 3 independently of the base-plate. On the side opposite to that on which the pivot-lugs are located the ring 38 is provided with a locking-lug 39^a. Since the hopper and base-plate swing over together during the first step of opening up the mechanism in the manner hereinafter described, it may be desirable to provide a separate detachable connection between said parts, and I propose to employ for this purpose a bail 40, pivoted to the lug 10 and adapted to engage over a projection 41 on the lug 39^a, and thereby lock the hopper and base-plate together. By swinging this bail outward it may be disengaged from the projection 41, thereby releasing the base-plate and permitting it to be swung back into its original position independently of the hopper.

When it is desired to use the machine for

edge dropping, I provide means for covering the flat-dropping apertures 31, so that the corn in the hopper can have access only to the edge-dropping apertures 33. The mechanism as arranged for edge dropping is shown in Figs. 5 and 7. In this construction a plate 42 is employed, fitting over and covering the central portion of the dropping mechanism, so as to be interposed between the corn within the body of the hopper and the dropping-apertures 31. Said plate is preferably supported at its center upon the bearing-stud 16, having for this purpose an aperture 43, which fits the reduced polygonal end 19 thereof. The marginal portion of the plate 42 for the greater portion of its extent terminates immediately inward from the dropping-openings 33, downward toward which it is inclined, as indicated at 44. This plate is provided adjacent to the discharge-opening 15 of the base-plate with a housing 45, in which are mounted a cut-off 46 and a combined ejector and detent 47. These parts are shown in detail in Fig. 12 of the drawings. The cut-off 46 is pivoted between its ends at 48 in the plate 42 and ring 6, and one end of said cut-off bears upon the grain-plate 30 in a position such that the openings 33 pass under the same. The ejector 47 is similarly pivoted between the plate and ring at 49 and extends down into the openings 33 as they successively pass beneath it, being provided with a shoulder 50 to prevent reverse motion of the seed-plate. A spring 51, interposed between the ejector and the upper end of the cut-off, forces both of them downward toward the seed-plate, while the housing 45 prevents them from being clogged by the grain. In advance of the cut-off and its housing the plate 42 is deflected laterally inward, as indicated at 52, thus forming a space between the said plate and that portion of the structure on the outer side of the path of the openings 33, into which space the grains of corn which are intercepted by the cut-off may recede laterally without crushing or clogging at this point. To facilitate this action, the bevel of the edge of the plate 42 is given a more gradual inclination, as indicated at 53. It will be understood that the cut-off permits only a single grain to enter each opening 33, in which it lies edgewise, and that the ejector serves to positively force said grain through said opening when the same registers with the discharge-opening 15 of the base-plate, which lies below the ejector. A portion of the housing is shown as connected to the base-ring 38 of the hopper-body, so as to swing with the hopper and permit the latter to clear that portion of the housing which is carried by the plate 42.

It is desirable to give the marginal portion of the plate 42 a shape such as will insure the shifting of the position of the grains of corn

as they travel around in the comparatively narrow space between the plate 42 and ring 22, so that they may eventually assume a position such as to insure their dropping edgewise into the openings 33. To this end the plate 42 is provided about opposite the discharge-point with a relief-space 54, at which the beveled edge 44 of said plate recedes from the ring 22, forming a recess or pocket, the bottom of which is formed by a flat portion 55 of the plate 42 lying flush with the outer raised portion of the seed-plate 30. This gives the grains of corn an opportunity to shift their position, so that if they have not already entered the openings 33 they may be in better position to do so after the shifting caused by the relief-space. To further this end, that portion of the bevel 44 which lies beyond the relief-space 54 with respect to the travel of the seed-plate has a much steeper inclination than that portion of said bevel or incline which lies in advance of said relief-space, thus tending to hold the grains more in an edgewise vertical position to better insure their entrance into the openings 33.

It sometimes occurs that two grains of corn enter the feed-openings and are carried through under the housing without being discharged. In order to prevent these grains from binding against the plate 42 as they emerge from the housing, thereby requiring excessive power to operate the seed-plate as well as tending to crack or break the grains, the margin of the plate 42 is relieved or cut back at the point where the seed-plate emerges from the housing, as indicated at 56. This space gives the grains a chance to escape and avoids the presence of a sharp corner, which might tend to crack the grains.

In order to prevent the plate 42 and its connected parts from becoming displaced when they are inverted along with the hopper, said plate is detachably secured to the post or bearing-stud 16 in any suitable manner. As shown, the reduced marginal end of the stud extends above the top of the plate 42 a distance sufficient to receive a washer 57 and split pin 58 for this purpose.

When it is desired to use the mechanism for flat dropping, (see Figs. 6 and 8,) provision is made for a plate which will cover the edge-dropping openings 33 in such a way as to prevent the grain from having access to them, said plate at the same time leaving uncovered the dropping-apertures 31 by which the flat dropping is accomplished, so that they form the means for dropping the grain from the hopper into the seed-tube. This plate (indicated as a whole by the reference-numeral 59) has a body-portion 60 in the form of a ring or annulus which fits against the shoulder 35 at its lower inner edge and extends thence outward and upward to the defining-wall of the space within

the hopper. Preferably the outer edge of this plate abuts against the upper edge of the flange or ring 6 of the base-plate. The downward and inward inclination of the annular body 60 serves to direct the grain downward and inward toward the apertures 31, which lie inward from and adjacent to the lower inner edge of said ring. The plate 59 is provided with a housing 61, containing a cut-off 62 and a combined ejector and detent 63, operated by a spring 64, these parts being similar to the cut-off and ejector 46 and 47, with the exception that they are of greater width on account of the greater width of the openings 31 and that their pivots are mounted wholly in the plate 59 instead of partly in the ring 6. Their mode of operation and functions are the same as those of the corresponding parts 46 and 47. The plate 59 also comprises a central portion 65, which is apertured at 66 to fit over the squared reduced end 19 of the bearing stud or post 16, to which it is secured by the washer 57 and pin 58, already described. The portion 65 of the plate 59 is extended outward over the top of the driving member and over the inner edge of the seed-plate, as indicated at 67, and the forward edge of this extension, being that edge which is presented to the corn as it is carried around, is inclined outward in a curve which extends in the general direction of movement of the seed-plate, said edge acting to carry the grains outward and direct them to the feeding-apertures 31 in order to better insure the entrance of the grains into said apertures.

It will be seen that the plates by means of which the change in the character of the feed is effected, which plates may be termed "occlusive plates," since they shut off or close the feeding-apertures which they control, are placed in position and removed from above, and the same is true of the seed plate or ring, which, under certain conditions, it may be desirable to change for a seed-plate having a different number of feeding-apertures or otherwise different from the one in use. To avoid the necessity of emptying the corn from the hopper when these changes are effected, the hopper is made to swing over into inverted position, in the manner already described. Since, however, the corn would nevertheless escape during this operation unless the hopper is closed at the bottom as well as at the top, I cause the base-plate and the parts which it supports, all of which, considered together, constitute the bottom of the hopper, to swing over with the hopper when the latter is inverted. This operation is illustrated in Figs. 9 and 10, which show the hopper thus inverted with the base-plate connected thereto. The base-plate is then disconnected from the hopper by swinging out the bail 40 in the manner already described, and the base-plate is then turned

back to its original position, as shown in Fig. 11. All of the parts are now readily accessible, and the occlusive plates and seed-plate can be readily changed, as desired. After these changes have been effected the base-plate is then swung back again over the hopper and connected to the same, whereupon the hopper and base-plate are finally swung back into normal position and there secured by the means provided for that purpose.

It will be seen that I have provided a simple and efficient mechanism for dropping the grains of corn either edgewise or flat, as may be desired, without involving the necessity of providing separate plates for the two styles of dropping. It will also be seen that the change from one style of dropping to the other can be readily effected by the simple removal of one plate and the substitution of another and that it is not necessary to remove the seed-corn from the hopper to effect these changes. Special provision has also been made for insuring the proper entrance of the grains of corn into the feeding-apertures of the seed-plate and for preventing injury to said grains. It should be noted in this connection that the ring 22, carried by the driving member, serves in an obvious manner to stir up the grains of corn and aids in carrying them around within the hopper.

I do not wish to be understood as limiting myself to the precise details of construction hereinbefore described, and shown in the accompanying drawings, as it is obvious that these details may be varied without departing from the principle of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a corn-planter, the combination, with a seed-hopper, of a seed-plate provided with two sets of apertures of different widths, one relatively wide set for flat dropping and one relatively narrow set for edge dropping, and separate means for covering either the one or the other of said sets, substantially as described.

2. In a corn-planter, the combination, with a seed-hopper, of a seed-plate provided with two annular sets of apertures of different widths arranged at different distances from the axis of said plate, and means for covering at will either of said sets of apertures to prevent the corn from having access thereto, substantially as described.

3. In a corn-planter, the combination, with a seed-hopper, of a seed-plate having an annular series of relatively narrow apertures at its margin and a second series of relatively wide apertures between its margin and center, and means for closing at will either of said series of apertures to prevent the corn from having access thereto, substantially as described.

4. In a corn-planter, the combination, with

a seed-hopper, of a seed-plate having marginal recesses open at the periphery of the plate, and a driving member on which said seed-plate is removably supported, said plate and driving member rotating in unison, and said driving member having an upwardly-extending marginal flange within which said seed-plate fits, said flange extending above the seed-plate and forming a rotating wall moving in unison therewith, substantially as described.

5. In a corn-planter, the combination, with a seed-hopper, of a seed-plate having marginal recesses open at the periphery of the plate, said plate having portions extending toward each other at each side of the open side of said recesses, and a driving member on which said plate is removably supported, said plate and driving member rotating in unison, and said driving member having an upwardly-extending marginal flange within which said plate fits, said flange extending above said plate and forming a rotating wall moving in unison therewith, substantially as described.

6. In a corn-planter, the combination, with a seed-plate having two annular sets of apertures of different widths, a relatively wide set for flat dropping and a relatively narrow set for edge dropping, said sets being located at different distances from the axis of rotation of the plate, of interchangeable occlusive plates adapted to be removably secured in the hopper above said seed-plate, whereby access of the corn to either set of apertures may be prevented, substantially as described.

7. In a corn-planter, the combination, with a hopper, of a seed-plate having two annular sets of dropping-apertures arranged at different distances from its axis of rotation, and interchangeable occlusive plates adapted to be detachably secured in the hopper above said seed-plate to close either of said sets of apertures, each occlusive plate being provided with a cut-off and ejector arranged to register with the set of apertures not closed by said plate, substantially as described.

8. In a corn-planter, the combination, with a support, of a base-plate hinged to said support and carrying on its upper side a seed-plate and interchangeable occlusive plates, and a hopper-body having a top closure, separably fitting the base-plate at its lower end, and hinged to swing to an inverted position, the base-plate being hinged to swing independently of the hopper, substantially as described.

9. In a corn-planter, the combination, with a support, of a base-plate hinged to said support and having seed-dropping devices on its upper side, means for securing said base-plate to the support, a hopper-body having a top closure, separably fitting the base-plate at its lower end, and hinged to swing to an

inverted position, the base-plate being hinged to swing independently of the hopper, and means for detachably connecting said hopper-body and base-plate to each other independently of the connection of the base-plate to the support, substantially as described.

10. In a corn-planter, the combination, with a support having a pivot on one side and a fastening device on the other, of a base-plate hinged to said pivot and having a lug adapted to be engaged by the fastening device, said lug being provided with a pivoted bail, and a hopper-body also hinged to said pivot, provided with a top closure and separably fitting the base-plate at its lower end, said hopper-body having a lug adapted to be engaged by the bail, substantially as described.

11. In a corn-planter, the combination, with a base-plate having a flat annular body, of a driving member having a central body portion fitting the opening of the base-plate, spokes extending over the body of the base-plate, and an upwardly-extending marginal ring carried by said spokes, and a seed-plate fitting between said ring and the body of the driving member and engaging the spokes thereof, substantially as described.

12. In a corn-planter, the combination, with a base-plate having a flat annular body, of a driving member having a central body portion fitting the opening of the base-plate, spokes extending over the body of the base-plate, and an upwardly-extending marginal ring carried by said spokes, and a seed-plate fitting between said ring and the body of the driving member and engaging the spokes thereof, said seed-plate having depending flanges surrounding its apertures and bearing on the body of the base-plate, between which flanges the spokes of the driving member fit, substantially as described.

13. In a corn-planter, the combination, with a seed-plate having marginal dropping-openings, and a cut-off, of a non-rotating plate covering the central portion of the seed-plate and having a downwardly-inclined margin adjacent to the dropping-openings thereof, said non-rotating plate being provided with a relief-recess adjacent to the cut-off, substantially as described.

14. In a corn-planter, the combination, with a seed-plate having marginal dropping-openings, of a non-rotating plate covering the central portion of the seed-plate and having an inclined margin adjacent to the dropping-openings thereof, said non-rotating plate having a relief-recess in its marginal portion opposite the discharge-point, substantially as described.

15. In a corn-planter, the combination, with a seed-plate having marginal dropping-openings, of a non-rotating plate covering the central portion of the seed-plate and having an inclined margin adjacent to the drop-

ping-openings thereof, said non-rotating plate having a relief-recess in its marginal portion opposite the discharge-point, the inclination of the margin of said plate being
5 relatively small in advance of said recess and relatively abrupt beyond said recess, substantially as described.

16. In a corn-planter, the combination, with a seed-plate having marginal dropping-
10 openings, and a housing containing a cut-off, of a non-rotating plate covering the central portion of said seed-plate and having its margin located adjacent to the dropping-openings thereof, the margin of said plate having
15 a release-recess adjacent to the side of the housing from which the seed-plate issues, substantially as described.

17. A seed-plate provided with two sets of

openings of different widths, one a relatively wide set for flat dropping and the other a
20 relatively narrow elongated set for edge dropping, substantially as described.

18. A seed-plate provided with two sets of openings of different widths, one a relatively
25 wide set for flat dropping, in the form of apertures formed through the body of the plate, the other a relatively narrow set for edge dropping, in the form of notches or recesses in the margin of the plate, substantially as
30 described.

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

GEORGE K. SCHAUER.

Witnesses:

E. O. HAGAN,

F. W. SCHAEFER.