

No. 641,408.

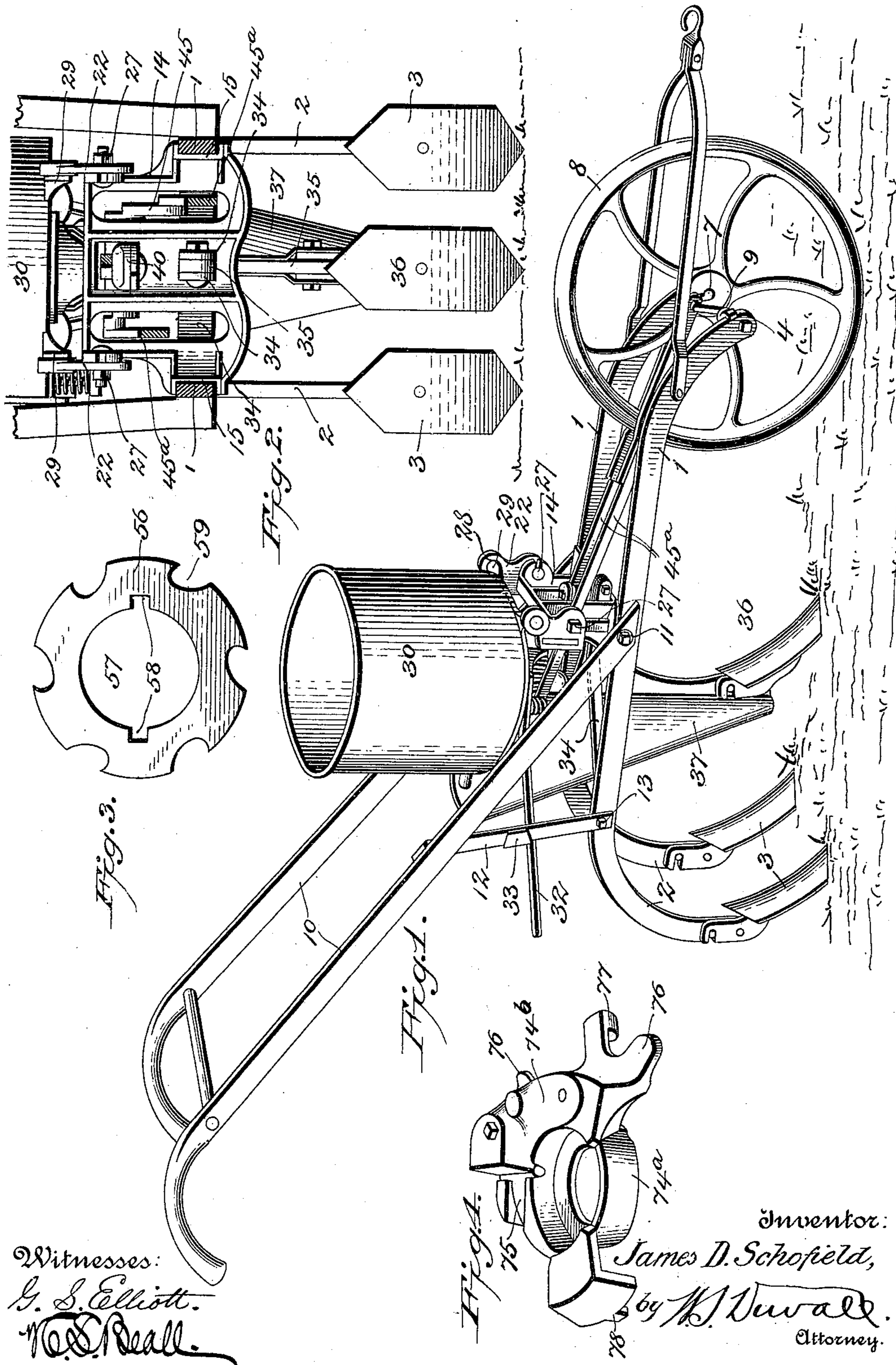
Patented Jan. 16, 1900.

J. D. SCHOFIELD.
PLANTER.

(Application filed Sept. 14, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
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W. S. Deall.

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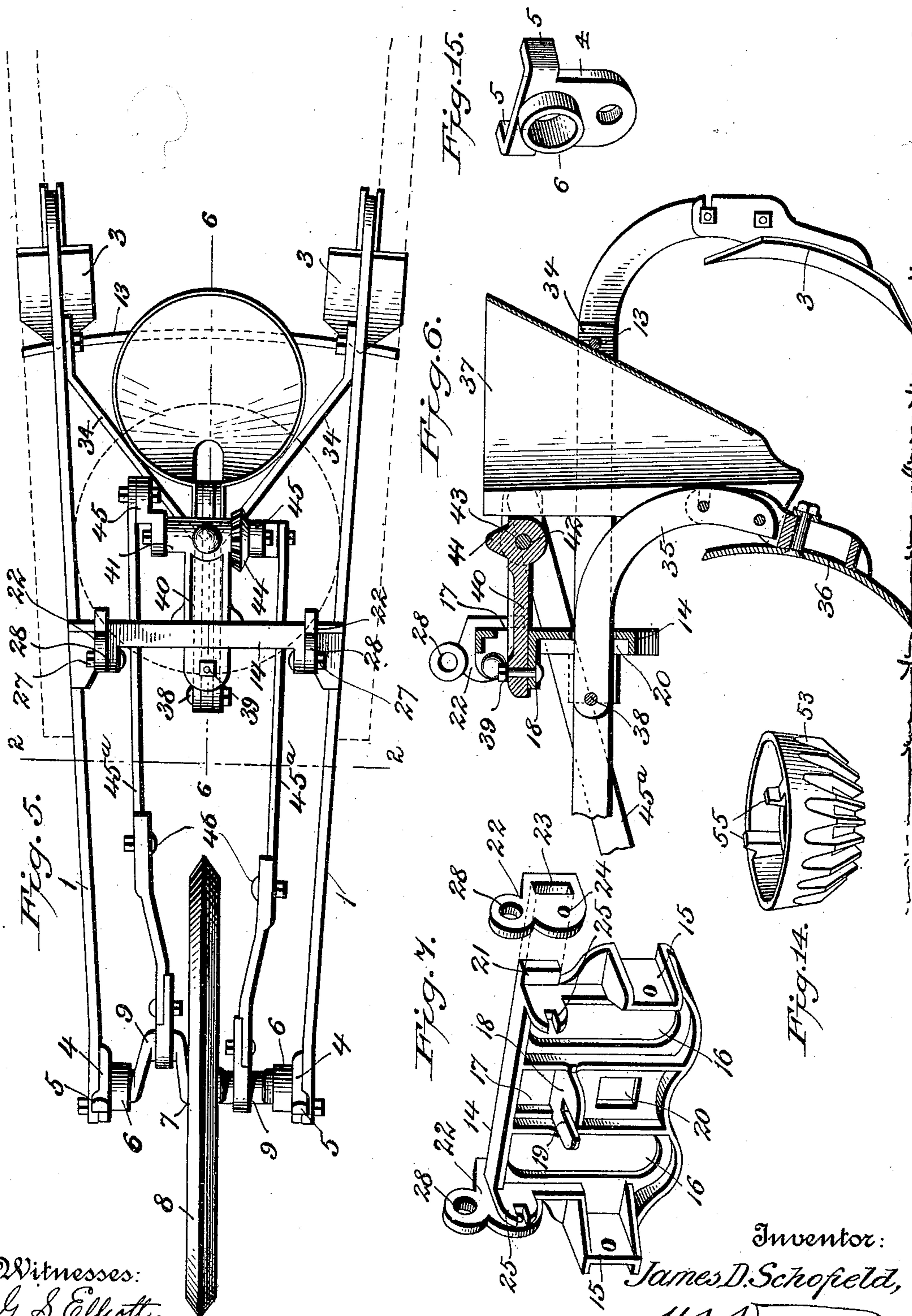
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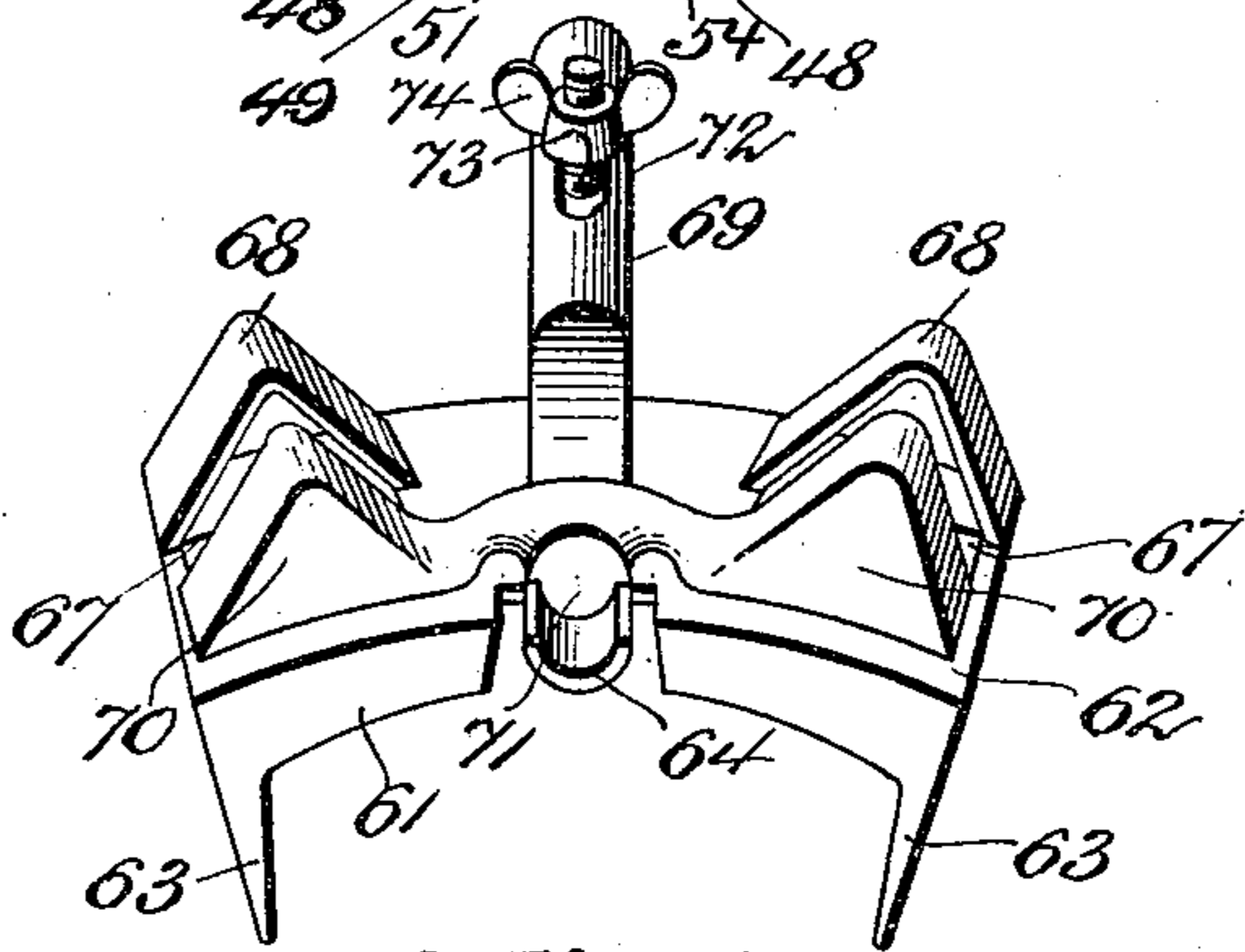
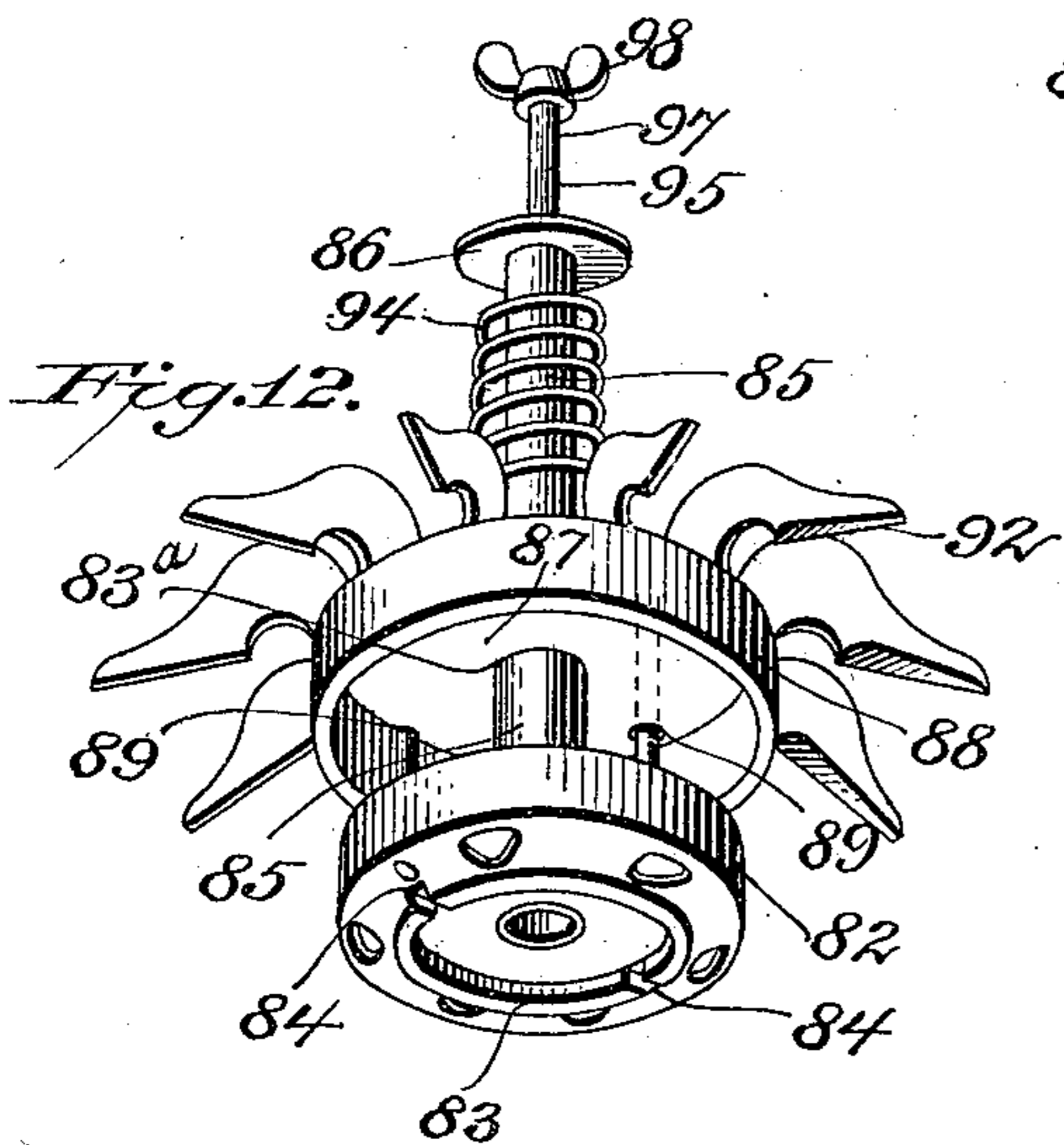
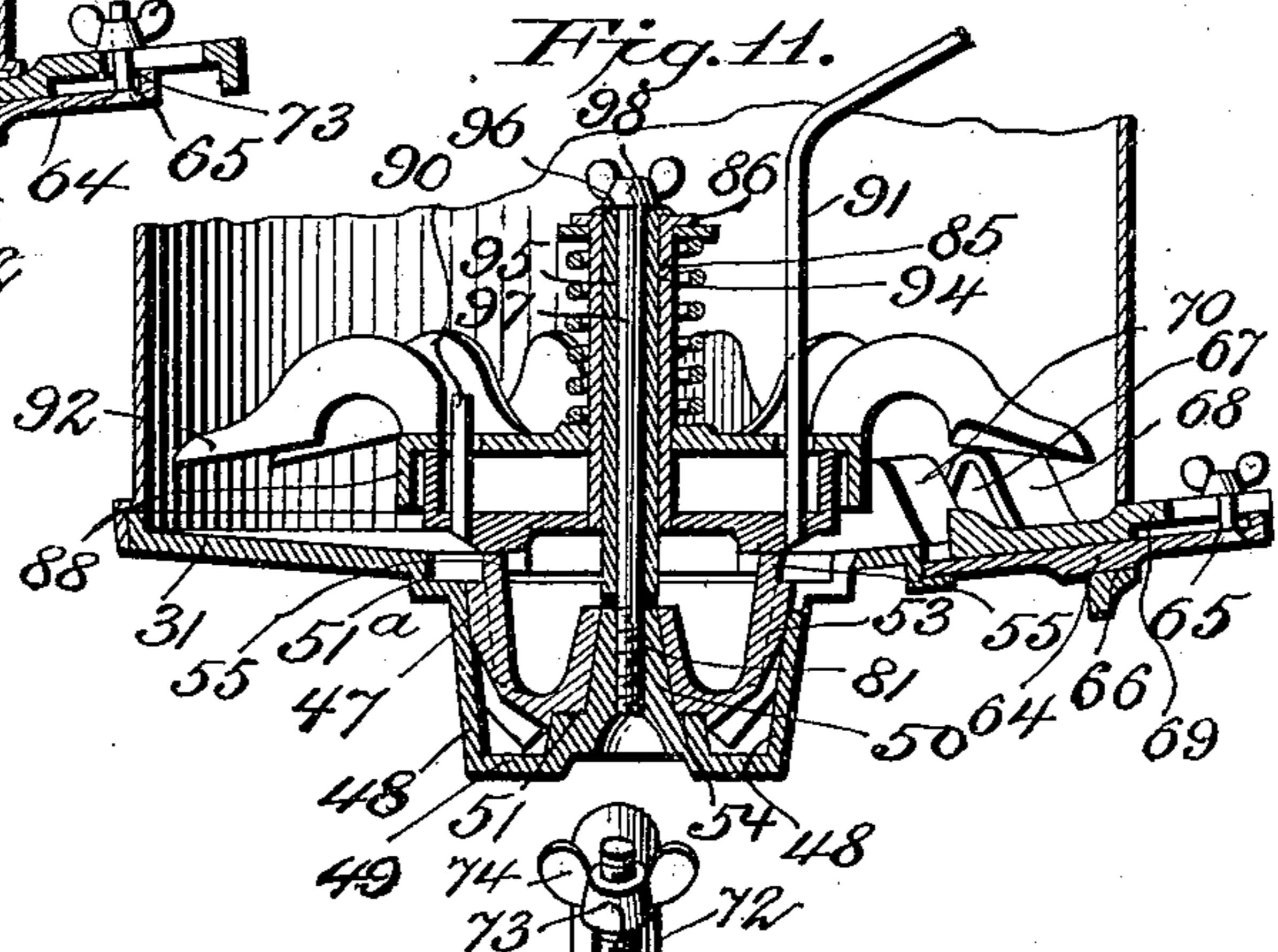
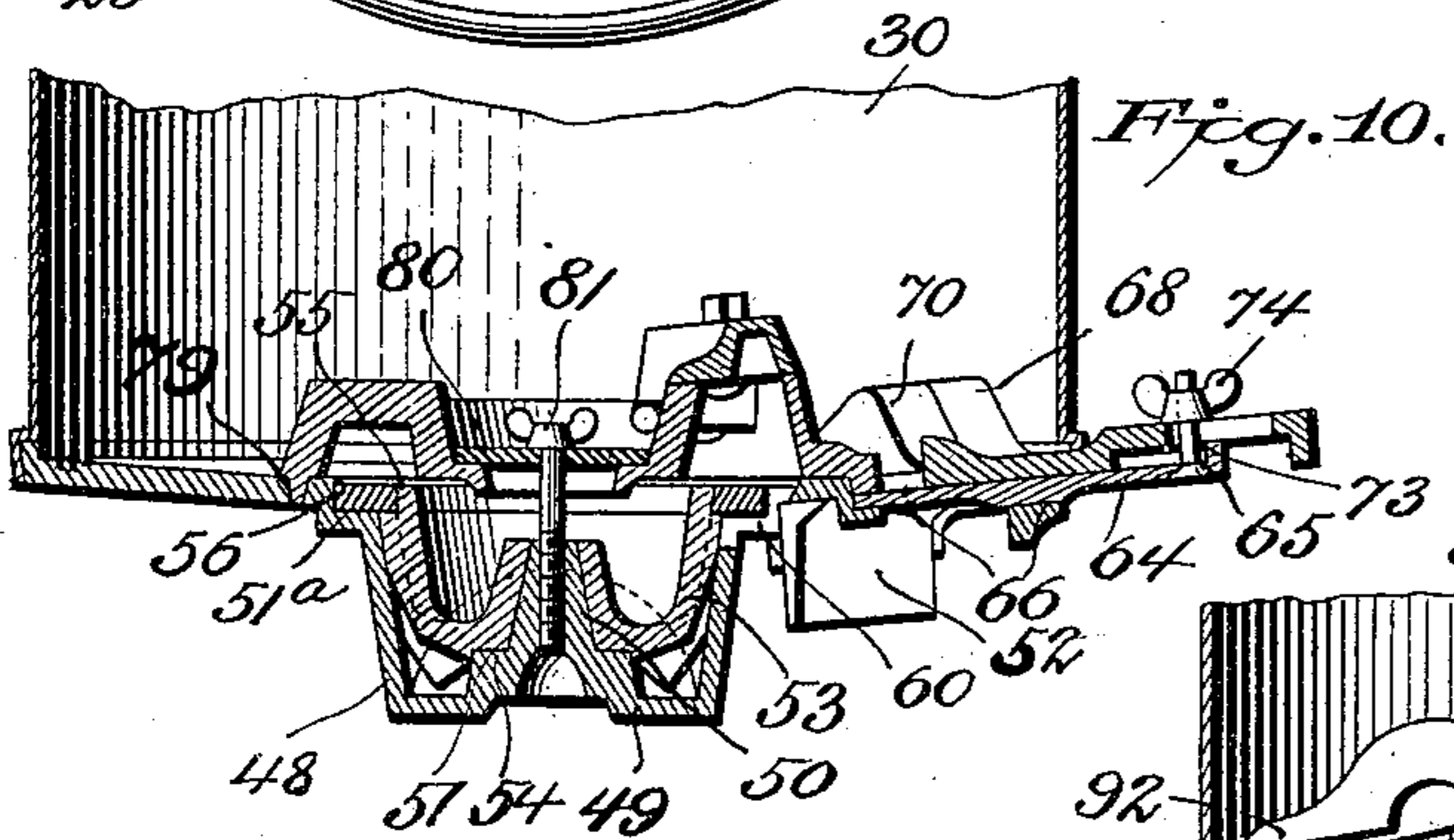
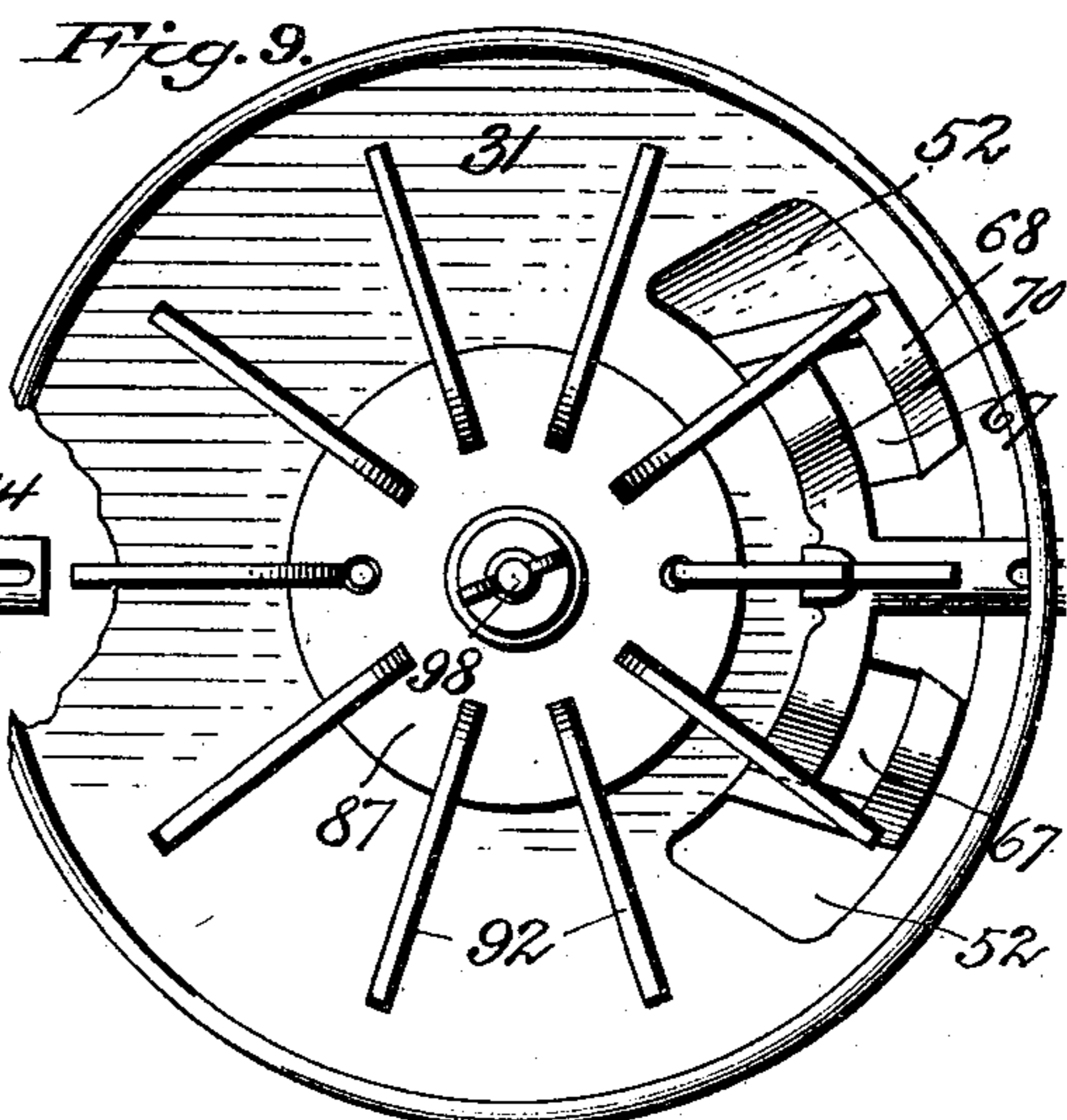
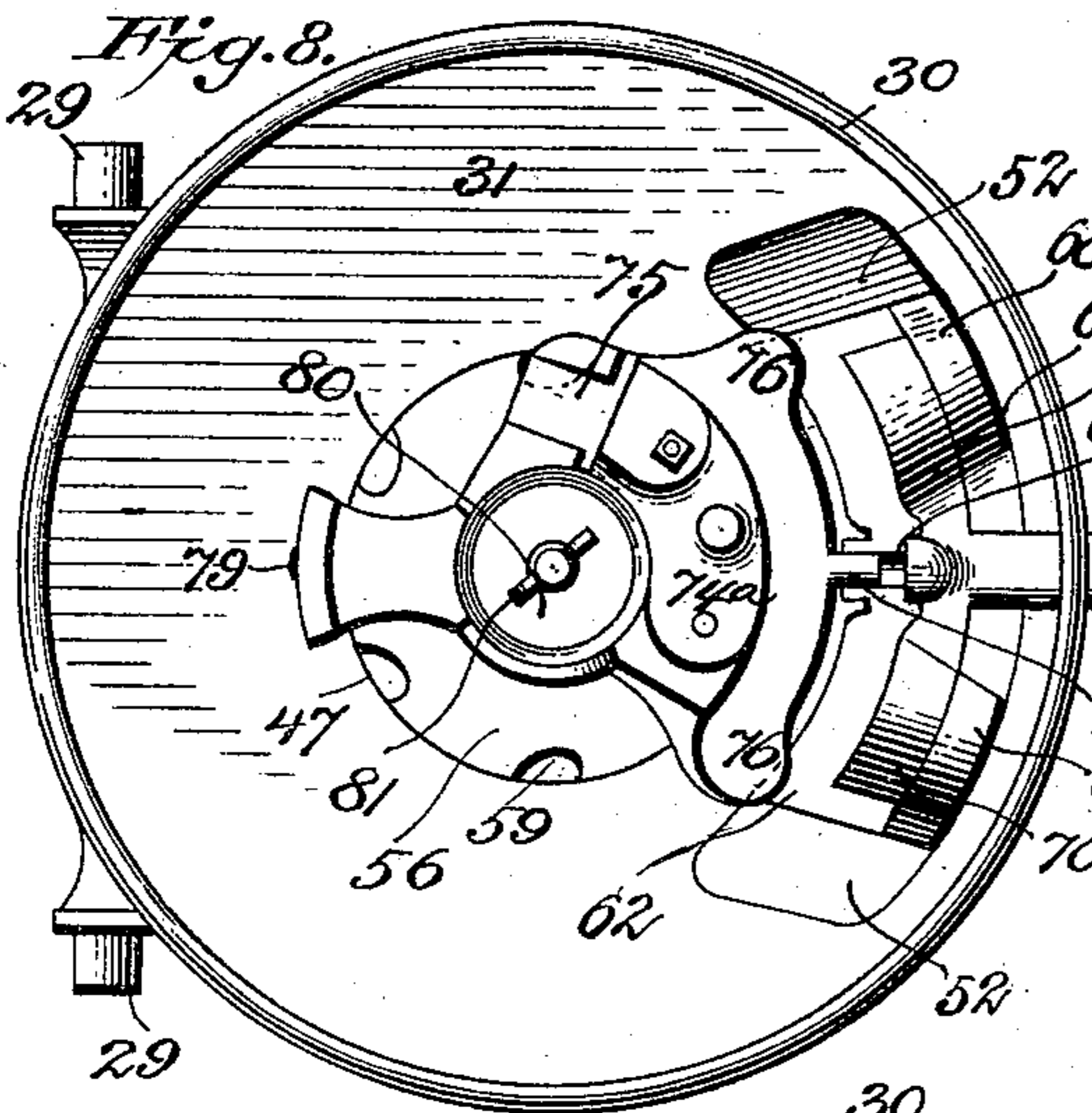
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3 Sheets—Sheet 3.

(No Model.)



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UNITED STATES PATENT OFFICE.

JAMES DRUMMOND SCHOFIELD, OF DALLAS, TEXAS.

PLANTER.

SPECIFICATION forming part of Letters Patent No. 641,408, dated January 16, 1900.

Application filed September 14, 1899. Serial No. 730,458. (No model.)

To all whom it may concern:

Be it known that I, JAMES DRUMMOND SCHOFIELD, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in 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 ap-
10 pertains to make and use the same.

This invention relates to improvements in combined cotton-seed and corn planters.

The main objects of the invention are to perfect a machine of the class described which
15 is adapted to drop and cover either corn or cotton-seed at regular intervals, the said machine being positive in its working, adapted for either planting by very little change, that is simple in its operation and most readily
20 understood, to provide the same with a new and improved feed device, and also a new and improved drive mechanism.

Various other objects and advantages of the invention will hereinafter appear, and the
25 novel features thereof will be more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a general or perspective view of a combination-planter embodying my invention. Fig. 2 is a
30 transverse vertical sectional view on the line 2 2 of Fig. 5. Fig. 3 is a top plan view of the corn-disk in detail. Fig. 4 is a perspective view of the knocker-plate. Fig. 5 is a plan view of the planter with the hopper removed.
35 Fig. 6 is a longitudinal sectional view of the rear portion of the same, the view being taken on the line 6 6 of Fig. 5. Fig. 7 is a detail in perspective of the cast yoke employed in the frame. Fig. 8 is a top plan view of the hop-
40 per in detail, the same being arranged for planting or dropping corn. Fig. 9 is a similar view, the hopper being arranged for planting or dropping cotton-seed. Fig. 10 is a radial sectional view through Fig. 8. Fig. 11 is
45 a similar view of Fig. 9. Fig. 12 is a perspective view, the parts being separated, of the cotton-seed-stirring device. Fig. 13 is a detail in perspective of the cotton-discharge. Fig. 14 is a detail in perspective of one of the
50 cast bearing-brackets. Fig. 15 is a detail view of one of the journal-castings in which the crank-axle of the machine is journaled.

Similar numerals of reference indicate similar parts in all the figures of the drawings.

In practicing my invention I employ the
55 usual steel frame or side bars 1 1, the rear ends of which are downwardly curved and constitute the shovel-standards 2, which carry the covering-shovels 3 3. The front ends of the side bars are also downwardly disposed
60 and have bolted thereto cast-metal bearing-brackets 4 4, which are provided with lugs 5 5, that embrace the front and rear edges of the front ends of said beams or side bars, and is each provided with a bearing-socket 6 for
65 the accommodation of the rotatable drive-axle 7. At the center of the aforesaid axle is secured a ground-wheel 8, that revolves with the axle, and at each side of the ground-wheel, which, as will hereinafter appear, is a driver,
70 the axle is formed with cranks 9, the same being disposed at a variance.

Rising from the side bars are the usual inclined handles 10, the same being bolted at their lower extremities to the said side bars
75 by means of bolts 11, and in rear of the same supported upon the upper ends of vertical standards 12 a binding-rod 13, passing through the lower ends of the standards 12 and the said side bars, whereby a rigid frame
80 is produced.

Located between the two side bars of the frame and extending vertically thereabove is a cast-metal yoke-frame 14, a detail of which is shown in Fig. 7 of the drawings. This
85 yoke is formed with opposite flanged frame-embracing feet 15, having holes for the reception of the bolts 11, by the aid of which and the flanges on the feet the same is held rigidly in position and also serves as a ma-
90 terial brace for the planter-frame. This yoke is formed with two oppositely-arranged vertically-disposed elongated side openings 16, and between the same with an upper central opening 17, from which projects a forwardly-
95 disposed horizontal bracket 18, having a bolt-receiving slot 19 at its extremity, and with a lower central opening 20. The upper corners of the yoke are also formed with lugs
100 21, which are angular in shape and which are designed to pass through and support cast-metal bearing-plates 22 22, one for each lug. Each of these bearing-plates is provided with an oblong or other angularly-shaped opening

23, which alines with and receives the lug 21, and in advance of the same with a bolt-hole 24, which coincides with a slotted ear 25, that projects forwardly from the front of the yoke and at an angle to the lug 21, adjacent thereto. Through the holes 24 and the slotted ears 25 are passed bolts 27, the same serving to clamp the bearing-plates in position upon the yoke. The upper portion of each bearing-plate is provided with a bearing-opening 28, and these receive the trunnions or bearing ends of lugs 29, that project from the under side of the hopper 30, and which are preferably cast integral with the bottom 31 thereof. The lugs 29 being located in advance of the center of the hopper, it will be seen that the tendency of the hopper is to remain depressed at its rear end or side, yet at the same time the hopper is capable of being tilted forward on its lugs, and when this is done, as will hereinafter appear, the machine is inoperative. For thus raising and lowering the hopper the same has projecting from its rear alongside one of the standards 12 a convenient handle 32, and by springing the same over or under a bracket 33, projecting from the standard 12, the said hopper is retained in either its raised or inoperative position or its lowered operative position. Through the lower central opening 20 of the yoke 14 there extend forwardly the front ends of a pair of divergent braces 34 and that of a centrally-located curved standard 35, which latter depend and support the furrow-opening shovel 36. The rear or divergent ends of the braces 34 are angled and provided with bolt-holes and receive the binding-rod 13, suitable clamping-nuts being employed for clamping the braces and side bars of the planter-frame together.

Within the space formed by the divergent brace-bars and the binding-rod 13 is located the discharge-spout 37, the same being formed of sheet metal, the edges of the blank of which embrace the standard 35 and are bolted thereto, as shown. A bolt 38 serves to bind the front ends of the divergent braces and the standard 35 together, it being apparent that the draft or strain upon the standard 35 is borne by the steel side bars, the strain being transmitted thereto by the divergent braces.

Clamped upon the horizontal bracket 18 by a bolt 39 is a bearing-yoke 40, the same extending rearwardly through the upper central opening 17 in the yoke 14 and having a general T shape, in that the rear end is formed with a transverse head 41, the said head being longitudinally bored, as at 42, for the reception of a short counter-shaft 43. At one side of this bearing-head 41 the shaft 43 is provided with a small beveled gear-wheel 44, and beyond the same and the opposite end of the said head the shaft is provided with short crank-arms 45, the same being loosely connected to the cranks 9 of the axle by means of intermediate connecting-bars or pitmen 45^a. These pitmen are preferably each made in

two sections, the inner ends thereof overlapping to form a sliding joint, the parts being maintained in their adjusted position through the medium of adjusting-bolts 46. This completes the description of the planter-frame and the parts carried immediately thereby, and I will now proceed to describe in detail the feed mechanism and its operation.

The bottom of the hopper is provided with a central circular opening 47, from which depends an annular flange 48, bridged by a bridge-piece 49, at the center of which is a vertically-disposed internally-threaded bearing lug or stud 50, surrounded at its base by a slightly-elevated annular track 51, all as best shown in Figs. 10 and 11 of the drawings. The opening 47 is surrounded at its top by an annular depressed track 51^a, and at one side of the opening near the wall of the hopper is a segmental cotton-seed-discharging opening 52.

Rotatably and removably mounted on the bearing-stud 50 is a cup-shaped beveled gear-wheel 53, the same having formed on its under side an annular track 54, which coincides with the track 51 of the stud. The teeth of this gear mesh with the small beveled gear-wheel 44, and the upper edge of the gear is flush with the bottom of the annular track 51^a, and from it above the track 51^a there rise a pair of diametrically opposite studs 55.

56 designates the corn-disk, which is provided with a central opening 57, the opposite sides of which are notched, as at 58, (see Fig. 3,) to engage with the studs 55. This disk has its edges provided with curved recesses 59 and is of such dimensions as will adapt it to be removably and rotatably seated in the depressed track 51^a of the hopper-bottom, the said recesses moving over a discharge-opening 60, (see Fig. 7,) formed in said bottom at one side of the opening 47 and within the track 51^a heretofore mentioned. It will be seen that the cup-shaped gear being rotated or driven by the driving mechanism heretofore described the corn-disk will be likewise rotated, each of its recesses carrying the kernels of corn to and dropping them through the discharge-opening 60.

In Fig. 13 I have illustrated the cotton-seed discharge, and it comprises two members, the one or upper member being adjustably mounted upon its companion. The lower member 61 comprises a segmentally-shaped plate 62, from the opposite ends and sides of which depend flanges 63, the said plate being of such dimensions as to adapt it to completely close the segmental opening 52 heretofore mentioned. Half-round bearing-stems 64 project from the opposite longitudinal sides or edges of the plate, the outer stem being somewhat longer than the inner stem, and therefore projecting through an opening in the wall of the hopper. This outer stem is also provided with an aperture 65, which is countersunk at its lower end, and the two stems are designed to rest in half-round bearings or depressions 66, formed in the hopper-

bottom at each side of the discharge-opening 52. The plate 62 is also provided near its opposite ends with discharge-openings 67, at one side of which are formed triangular flanges 68. The upper or movable member of this feed device comprises a half-round stem 69, which coincides with and is mounted upon the stems 64 of the lower member. The stem 69 is provided with oppositely-disposed triangular flanges 70, the same being companions to and opposing the flanges 68, the two sets of flanges combining to cover or partly uncover the discharge-openings 67 of the plate 62. The opposite ends of the stem 69 are provided with depending half-round lugs 71, the same serving as guides in the movements of the upper member upon the lower member. The stem 69 is further provided near its outer end with a slot 72, which registers with the aperture 65 in the stem 64, and upwardly through the said aperture and the aforesaid slot is passed an adjusting-bolt 73, at the upper end of which is a thumb-screw 74 for clamping the two stems together, and therefore securing the two members in their proper relative positions. It will be at once apparent that the output of cotton-seed may be regulated by the adjusting screw or bolt 73, and, if desired, that the discharge-openings 67 may be wholly closed, such being the case when it is desired to convert the machine from a cotton-seed to a corn planter. In the latter instance it becomes necessary to provide some means for retaining the cotton-seed discharge in an inoperative state, and this I accomplish by means of the knocker device employed and which I have illustrated in detail in Fig. 4 and in operative positions in Figs. 8 and 10. This device is a simple casting, which comprises a central depending hub 74^a, designed to fit within the corn-disk 56, and it is formed at one side with a hood 74^b, in which is arranged the usual vibrating knocker 75. From this hood project radial retaining-lugs 76, which when the device is in position in the bottom of the hopper above the corn-disk overlap the opposite ends of the plate 62 of the cotton-seed-feed device and retain the same stationary. There also projects from the edge of the hood between the two retaining-lugs referred to an angular or depending lug 77, which rests within the inner end of the inner stem 64 of the cotton-seed-feed device. At a diametrically opposite point the hub of the knocker device is provided with an angular lug 78, the same resting in a recess formed in the hopper-bottom and designated as 79. A washer 80 is seated in the hub of the knocker device, and through the same there is passed a winged bolt 81, the lower end of which threads removably in the internally-threaded bearing-stud 50, whereby the knocker device is held in position and serves to clamp the cotton-feed device in an immovable position.

The operation of the machine as thus arranged will be readily apparent and may be

briefly explained as follows: Motion being conveyed to the cup-shaped gear-wheel 53, the same in turn rotates the corn-disk, the kernels of corn being carried by the recesses in said disk to the discharge-opening under the knocker, which latter dislodges the corn in the usual manner. In planting cotton-seed the knocker device and the corn-disk are both removed, leaving the cotton-seed-feed device free to rock or vibrate. The cotton-seed-agitating device comprises a lower disk 82, the under side of which is provided with an annular depending flange 83, notches 84 being formed therein at diametrically opposite points. The disk is of such diameter as adapts its said flange 83 to fit within the cup-shaped gear 53, the lugs 55 of said gear engaging the notches 84 of said flange 83, and therefore causing the said disk and gear to rotate together. A hollow stud 85 extends upwardly from the center of the disk 82, which stud is designated as 85, and the same is open throughout its length, is in vertical alinement with the threaded stud 50, and terminates at its upper end in an annular flange or head 86.

The cotton-seed disk or agitating device further comprises an upper disk 87, which has an annular depending flange 88 of a diameter adapting it to fit over in a loose manner the lower disk 82, upon which it is mounted. The upper disk is further provided with a central hole 83^a, upwardly through which the hollow stud 85 extends, and with radially-opposite side openings 89, through which extend the agitating-arm 91 and a stud 90, the said upper disk being capable of riding vertically thereon. The upper disk is further provided at its periphery with a series of radiating agitating fingers or arms 92, which are beveled on their under sides. Upon the hollow stud 85 and between the head 86 thereof and the upper side of the upper disk there is located a coiled expansion-spring 94, the same having a tendency of depressing the upper disk yieldingly upon the lower disk, yet permitting of a limited vertical movement upon the part of the upper disk, whereby the agitating-fingers 92 are enabled to ride over obstructions located between the same and the hopper-bottom. Within the hollow stud 85 is located a hollow bolt 95, which is headed at its upper end, as at 96, at which point it is located above the upper end of the hollow stud 85, and at its lower end it rests upon the upper end of the hollow stud 49, with which latter it agrees in diameter. Through this hollow bolt is passed a bolt 97, the upper end of which is provided with thumb-pieces or wings 98, and the lower end of which is threaded in the hollow stud 49, whereby these parts are secured in position and the agitating device is capable of rotating with the cup-shaped gear 53.

The operation of the cotton-seed feed may be described as follows: The lower disk 82 being rotated by the cup-shaped gear 53 in turn rotates the upper disk, the agitating-fingers operating in the usual manner upon

the cotton-seed. The cotton-seed feed, of course, has been adjusted to regulate the output. The agitating arms or fingers 92 successively strike, ride over, and depress the raised ends of the cotton-seed discharge 69, which latter is therefore rocked or vibrated and at each rocking or vibration discharging a predetermined quantity of cotton-seed.

It will be apparent that the machine may be readily and quickly converted from a cotton-seed to a corn planter, and vice versa, the operation being easily understood and obvious to the most unskilled, and also that the feed of either cotton-seed or corn is positive and takes place at regular intervals, so that the result is a regular planting. It will also be observed that the driving mechanism is all contained within the planter-frame, is most compact and simple, worn parts being readily replaced when necessity may require. The cotton-seed-feed or agitating device readily yields to any accumulation or obstruction in the hopper-bottom, rides over the same, and thus is not prevented from even temporarily performing its function and operating the vibratory feed device. By raising the hopper upon its trunnions, as heretofore described, the teeth of the cup-shaped gear are elevated out of contact with the gear-wheel 44, and hence no feed of the seed can take place. To start the feed again, it is simply necessary to disengage the lever or handle 32 from the bracket or catch 33 and lower the hopper, thus establishing a reengagement between the two gears 53 and 44.

Having described my invention, what I claim as new is—

1. In a planter, the combination with a frame; a ground-wheel; an axle for the same having cranked portions at each side of said wheel; a rear transverse bearing; a counter-shaft journaled therein; a gear-wheel; and opposite end cranks on said shaft; and connecting-rods between the cranks of the axle and those of the counter-shaft, the same being arranged between the side bars of the frame; of a hopper; and a feed mechanism carried thereby and comprising a gear-wheel meshing with that of the drive mechanism of the frame.

2. In a planter, the combination with the opposite side bars; the cranked axle; the ground or drive wheel mounted thereon; a yoke arranged between and bolted at its opposite sides to the said side bars; an arm extending rearwardly from and secured to the yoke, and provided with a transverse bearing; a counter-shaft journaled therein; a beveled gear; and end cranks carried by the counter-shaft; and connecting-rods between the cranks of the axle and the end cranks of the counter-shaft; of a hopper; and a feed mechanism carried by the hopper, said mechanism comprising a beveled gear adapted to mesh with and be driven by the beveled gear of the counter-shaft.

3. In a planter, the combination with the op-

posite side bars downwardly curved at their rear ends to form shovel-standards; shovels mounted thereon; a yoke-frame arranged between and bolted to said side bars, and provided with a central opening; a pair of diagonal braces connected to the said side bars in rear of the said yoke and having their front ends extended through and beyond the opening in the yoke-frame; and a shovel-carrying standard clamped and bolted between said ends; of a feed-spout embraced by the said braces and secured to the said shovel-carrying standard.

4. In a planter, the combination with the frame; a yoke-frame, provided with upper and lower openings arranged between and bolted to the side bars of the said frame; and provided at its upper end with bearing-openings; of a central shovel-carrying standard secured within the lower opening of the yoke-frame; a bracket-arm having a transverse bearing secured within the upper opening of the yoke-frame; a counter-shaft arranged in the bearing; a gear, and end cranks carried by the shaft; a cranked axle; a drive-wheel carried thereby; connecting-rods between the cranks of the axle and the end cranks of the counter-shaft; a superimposed hopper; lugs extending therefrom and journaled in the said bearing-openings at the upper end of the yoke-frame; and a feed mechanism carried by the said hopper and comprising a gear-wheel adapted to engage with the gear-wheel of the counter-shaft; and means for raising and lowering the said hopper and supporting the same in either of its positions.

5. In a planter, the combination with the opposite side bars; of a yoke-frame located between and bolted to the said bars; and a hopper having opposite trunnions in front of its center journaled in said bearings; and means for raising and lowering the said hopper.

6. In a planter, the combination with the opposite side bars; and a yoke-frame located between and bolted to the same; said yoke being provided with outwardly-projecting angular lugs 21; and with forwardly-projecting ears 25; of opposite plates 22, provided with openings 23 for said lugs, bolt-holes 24, and bearing-openings 28; bolts connecting the said holes with the ears; and a hopper having opposite trunnions journaled in the bearing-openings of the plate.

7. In a planter, the combination with the opposite side bars; and the transverse casting or yoke arranged between and bolted to the same, said casting or yoke being provided with angular lugs; of bearing-plates removably secured upon the lugs; and a hopper having bearing-trunnions arranged in openings in the said plates.

8. In a planter the combination with a frame comprising opposite side bars; and the casting 14 located between and bolted thereto, said casting comprising the flanged feet 15, the opposite side openings 16, the upper cen-

tral opening 17, having the flange 19, the lower opening 20, angular studs 21, and the forwardly-projecting slotted ears 25; of the cranked axle, and its drive-wheel; the bracket-arm 40, provided with a transverse bearing; the bolt 39 passing through the front end of the bracket-arm and the flange 17; the counter-shaft arranged in the bearing of the bracket-arm; the gear-wheel and end cranks thereon; the connecting-rods passed through the openings 16 and connecting the end cranks and the cranks of the axle; the opposite diagonal braces bolted to the side bars in rear of the yoke and having their front ends passed through and beyond the lower central opening in the yoke; the shovel-carrying standard extended at its upper end through the lower central opening of the yoke and between the front ends of the braces; and bolts clamping the front ends of the braces and said standard; a superimposed hopper provided with opposite bearing-trunnions; and opposite plates having openings for the trunnions and provided with angular openings for the reception of the angular studs 21; and bolts passed through the said plates and slots in the forwardly-projecting ears 25.

9. In a planter, the combination with a frame; and a driving mechanism carried thereby, and comprising a beveled gear; of a hopper having a central flanged opening in its bottom; a bridge-piece spanning the same; a threaded stud rising from the said bridge-piece and surrounded by a track; and a beveled gear mounted on the track surrounding the stud and journaled on the said stud, said gear being in mesh with the gear of the driving mechanism and adapted to support a corn or cotton feed plate or disk.

10. In a planter, the combination with a frame; and a drive mechanism carried thereby; of a hopper having a cotton-seed discharge at one side thereof; a vertically-yielding rotatable cotton-seed feed located in the hopper; and means for conveying motion to the same from the driving mechanism.

11. In a planter, the combination with a frame; and a driving mechanism carried thereby; of a hopper having a cotton-seed-

discharge opening at one side of its center; a vibratory cotton-seed feed located therein; a rotatable cotton-seed disk located in the hopper; means for conveying motion from the driving mechanism to the disk; and means for yieldingly retaining the latter in the bottom of the hopper.

12. In a planter, the combination with a frame; and a driving mechanism carried thereby; of a hopper having a feed-slot; a vibratory feed device mounted therein; a gear journaled in the hopper; means for conveying motion from the drive mechanism to said gear; and a cotton-seed disk carried by the gear, said disk comprising a lower member mounted on the gear, and an upper member having radiating arms adapted to operate the vibratory feed, a central stem extending from the lower member upwardly through the upper member and terminating in a head, and a coiled spring surrounding the stem and interposed between the head thereof and the said upper member.

13. In a planter, the combination with the frame; and a driving-gear carried thereby and comprising the gear 44; of the hopper mounted in the frame, said hopper having a segmental cotton-seed-discharging opening; the central opening having a flange; the transverse bridge-piece; and the central stud and tracks 50 and 51, the cup-shaped gear-wheel mounted on the stud and the track 50 and meshing with the gear 44; the lower cotton-seed-disk member 82 secured to the cup-shaped gear, the hollow stem 85 and agitating-studs 90 and 91 rising therefrom; the upper member 87 having openings for the studs and stem and telescoping over the lower member and having the fingers 92; the head 86 at the upper end of the stem 85; the interposed spring 94; the hollow bolt 95; and the bolt 97 extending through the hollow bolt and threaded in the stud of the bridge.

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

JAMES DRUMMOND SCHOFIELD.

Witnesses:

S. MITCHELL, Jr.,

L. A. SMITH.