

J. GROSS.

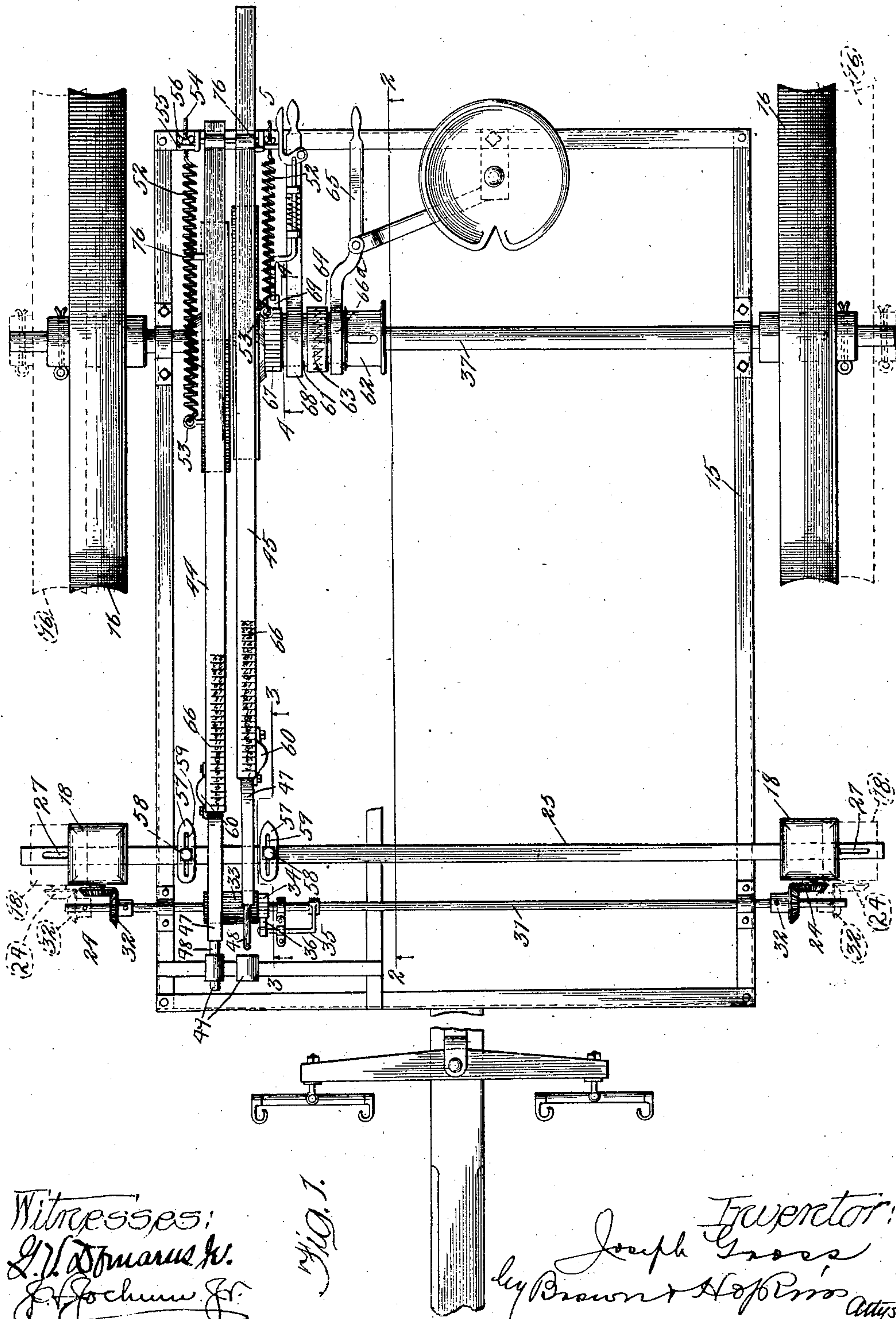
CORN PLANTER.

APPLICATION FILED FEB. 20, 1907.

973,499.

Patented Oct. 25, 1910.

3 SHEETS—SHEET 1.



Witnesses:
L. W. Dorman Jr.
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Fig. 1.

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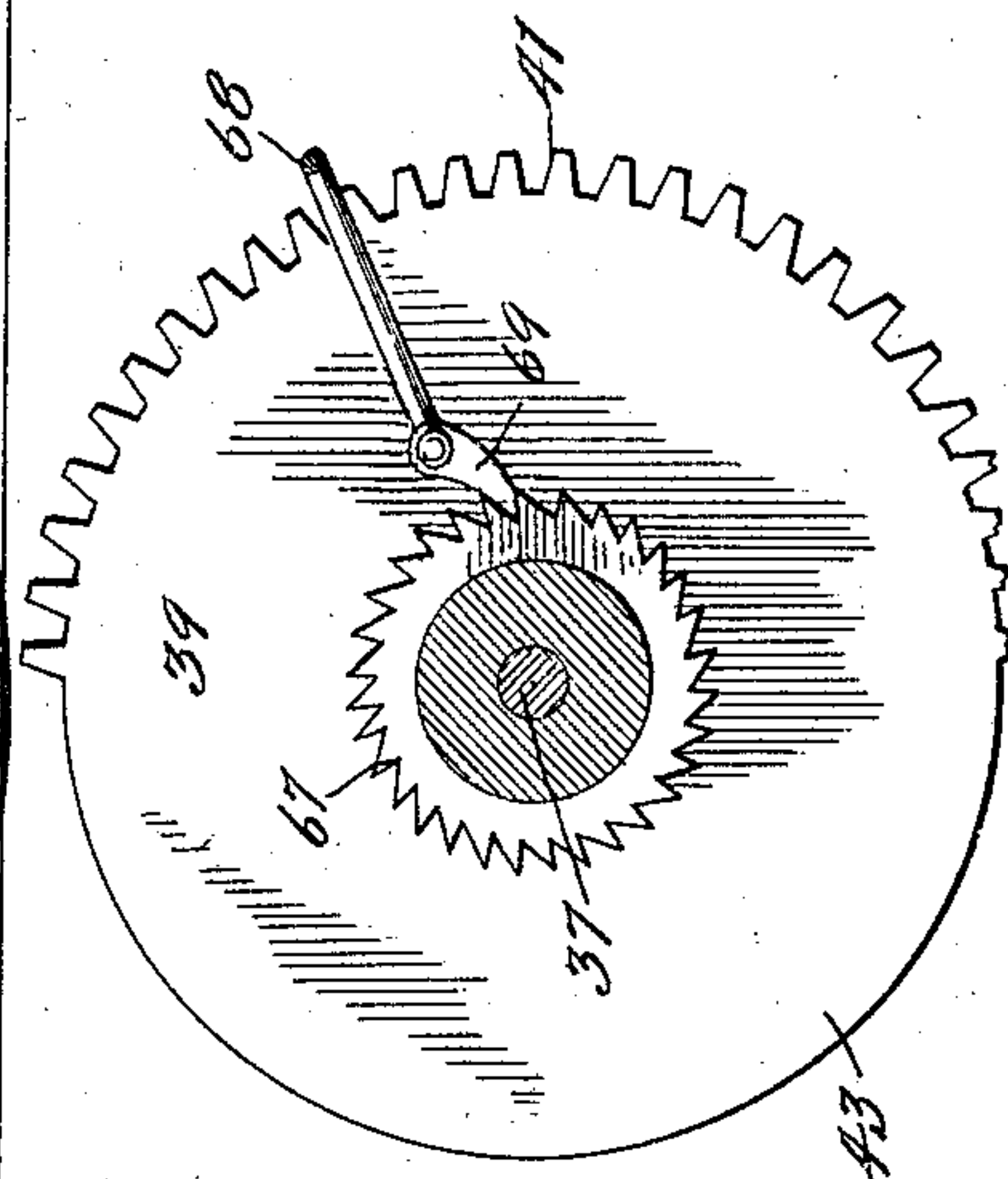
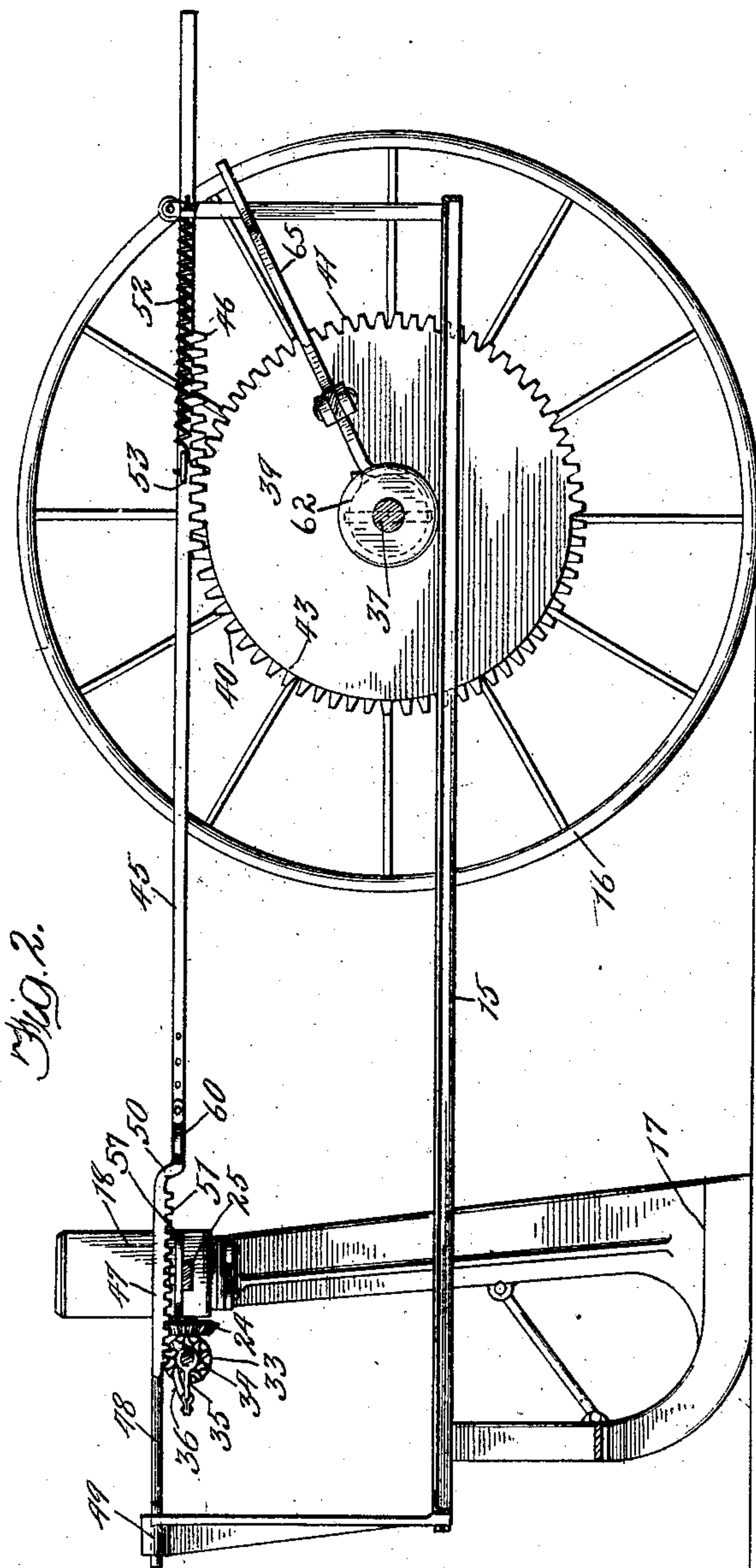
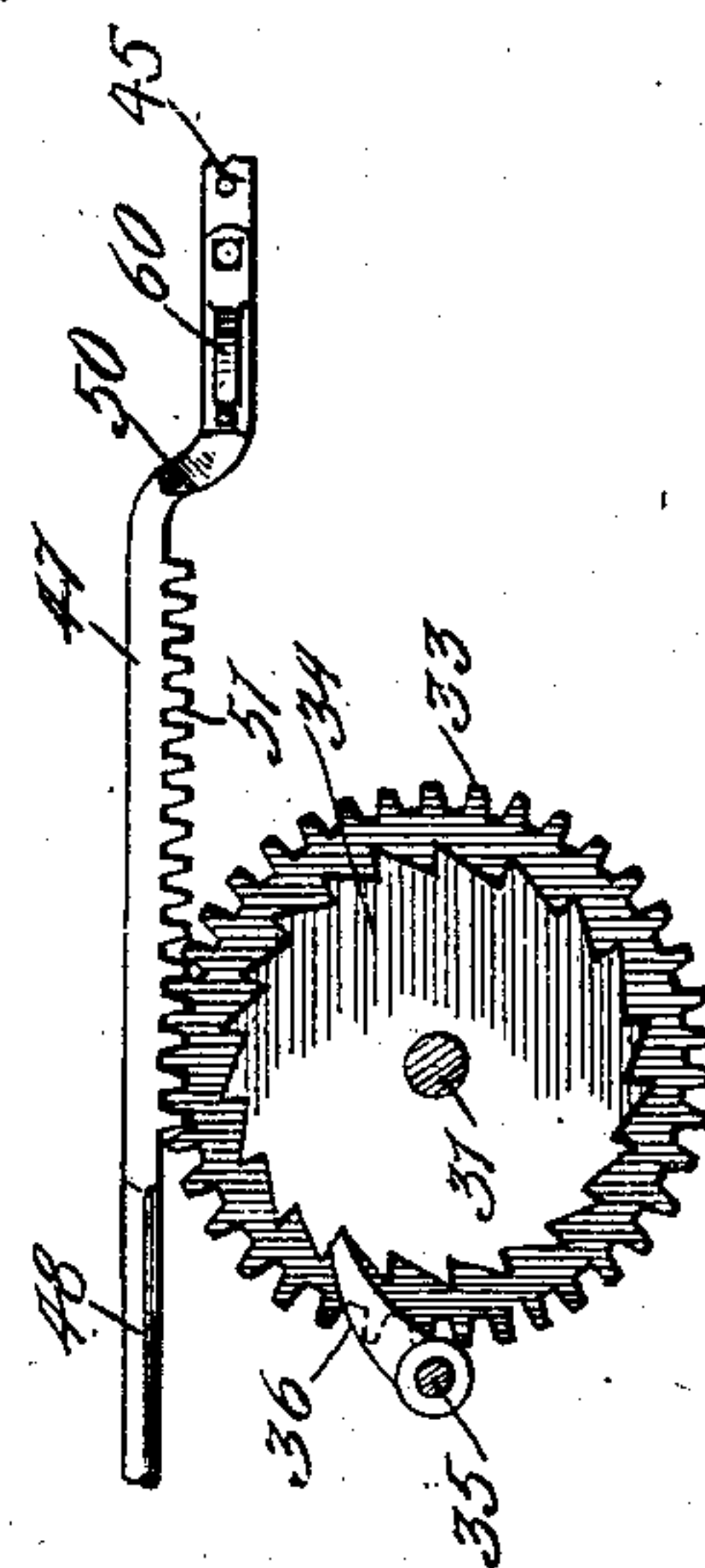


Fig. 4.

Fig. 3.



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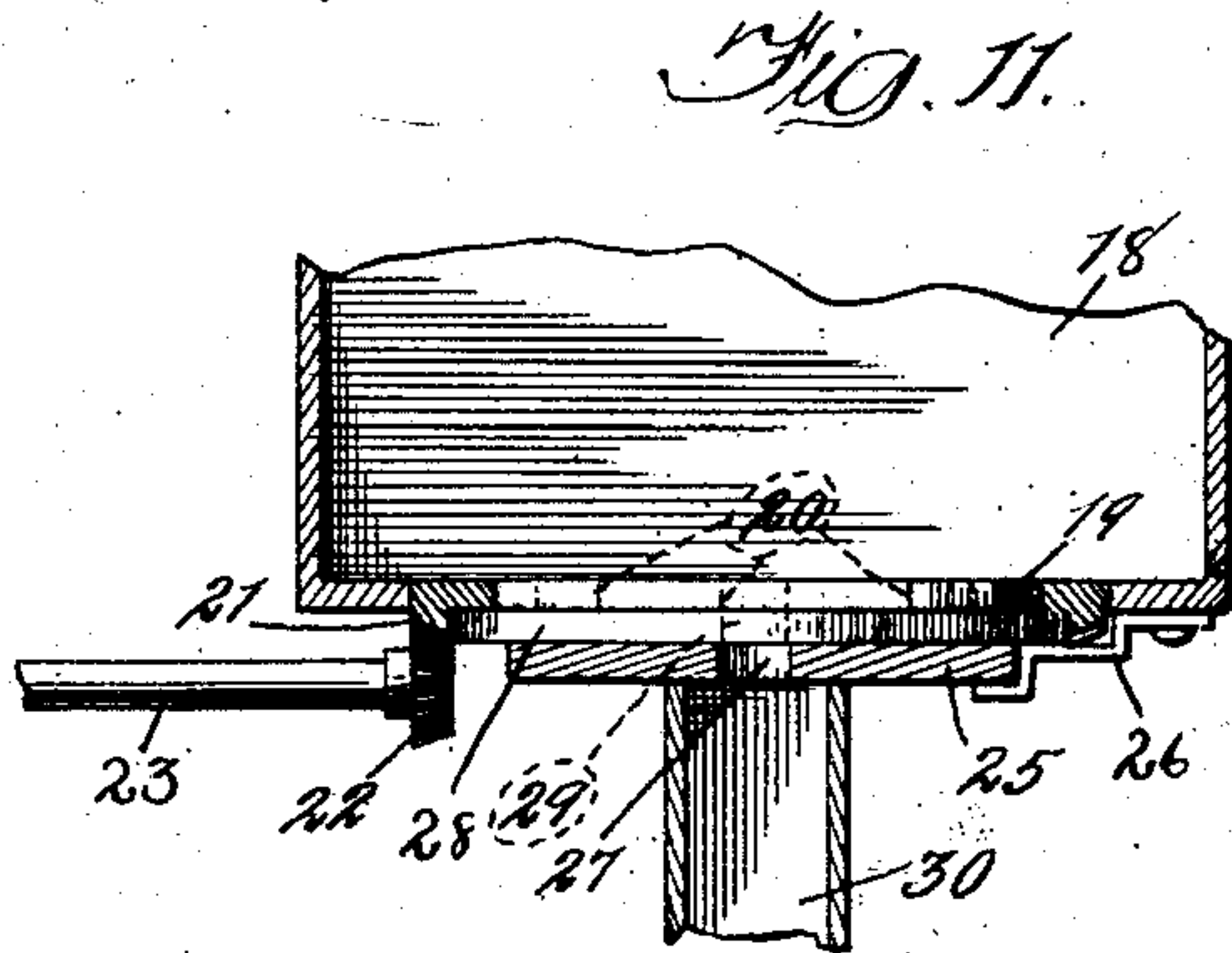
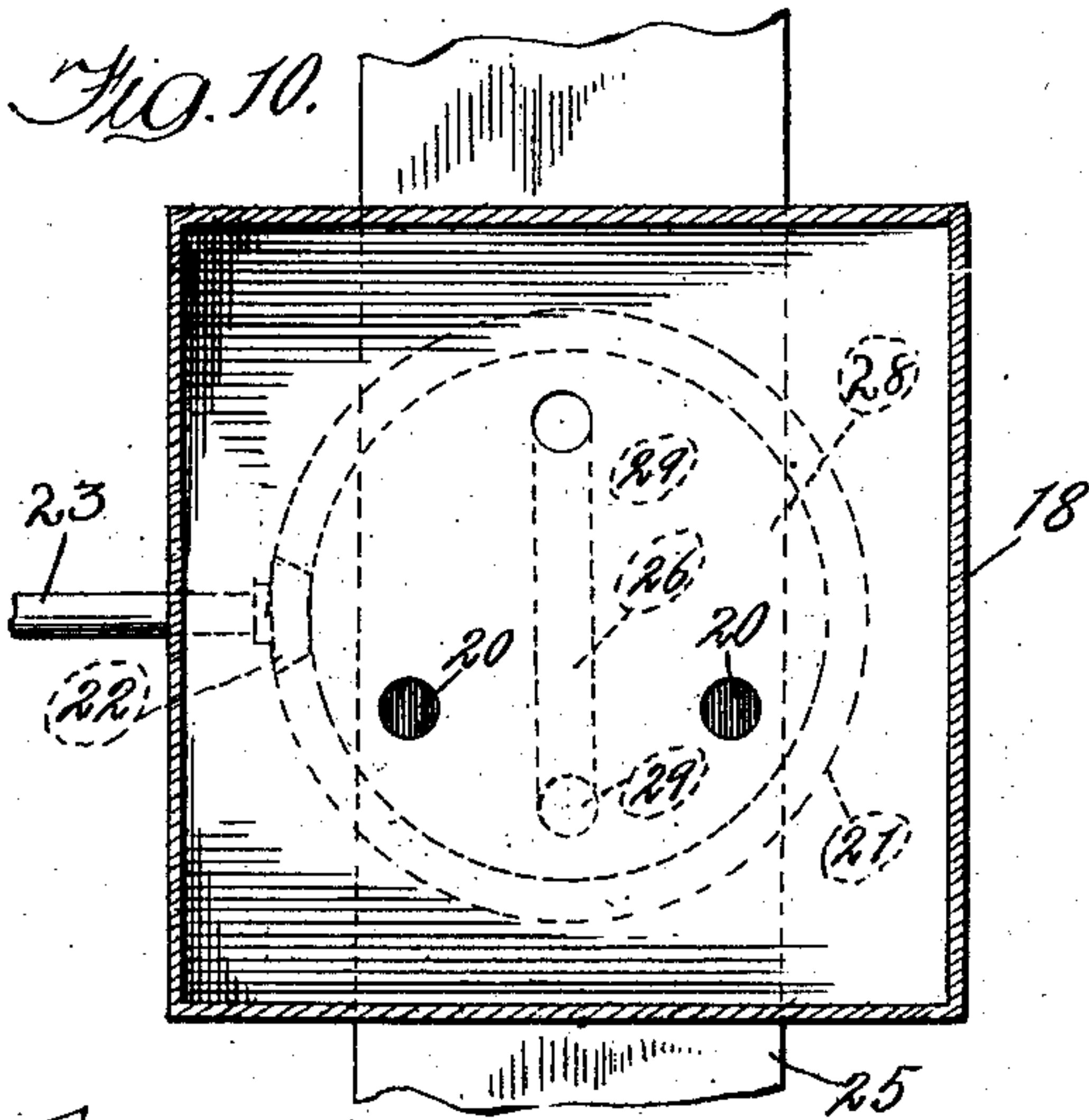
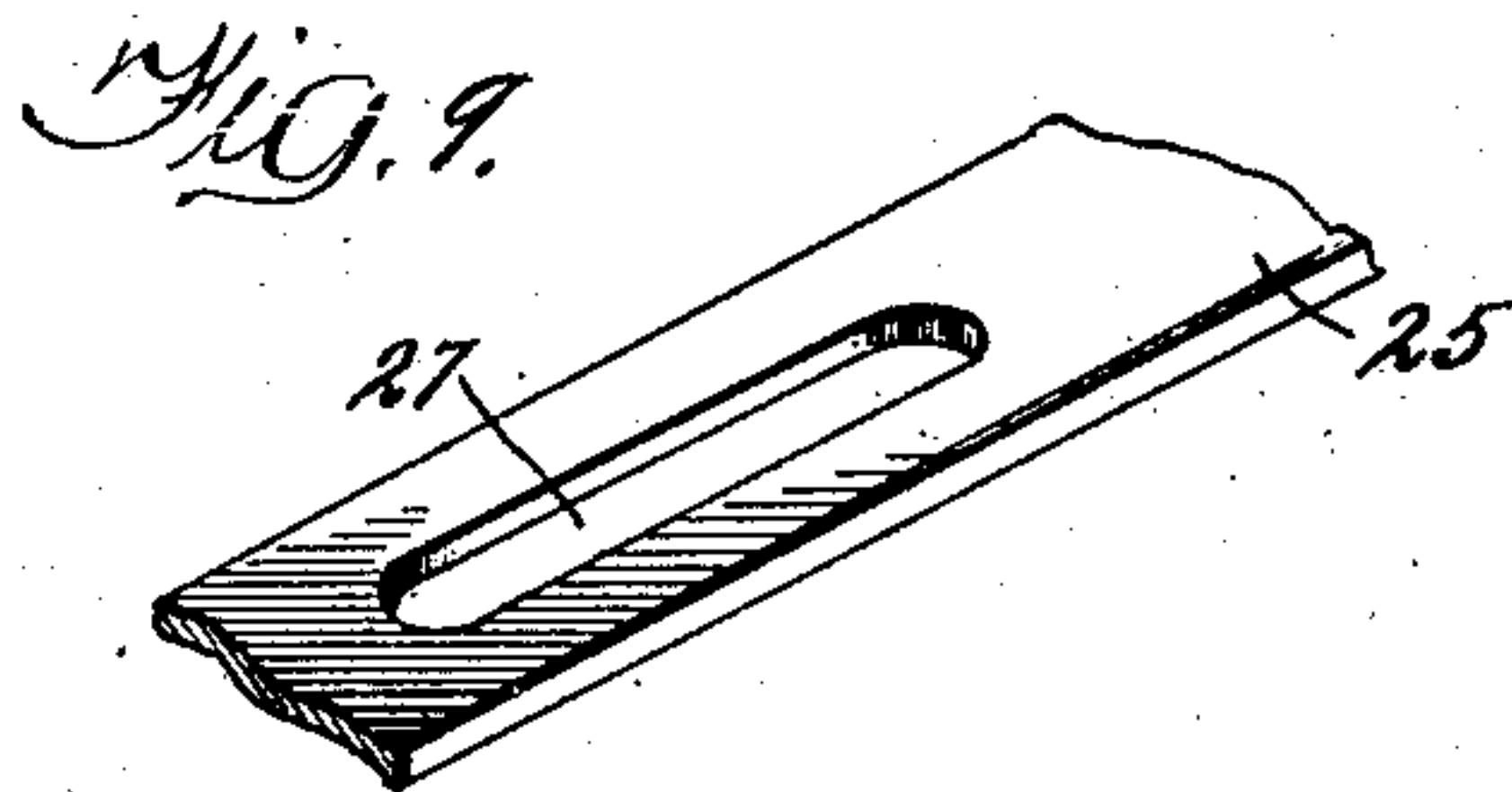
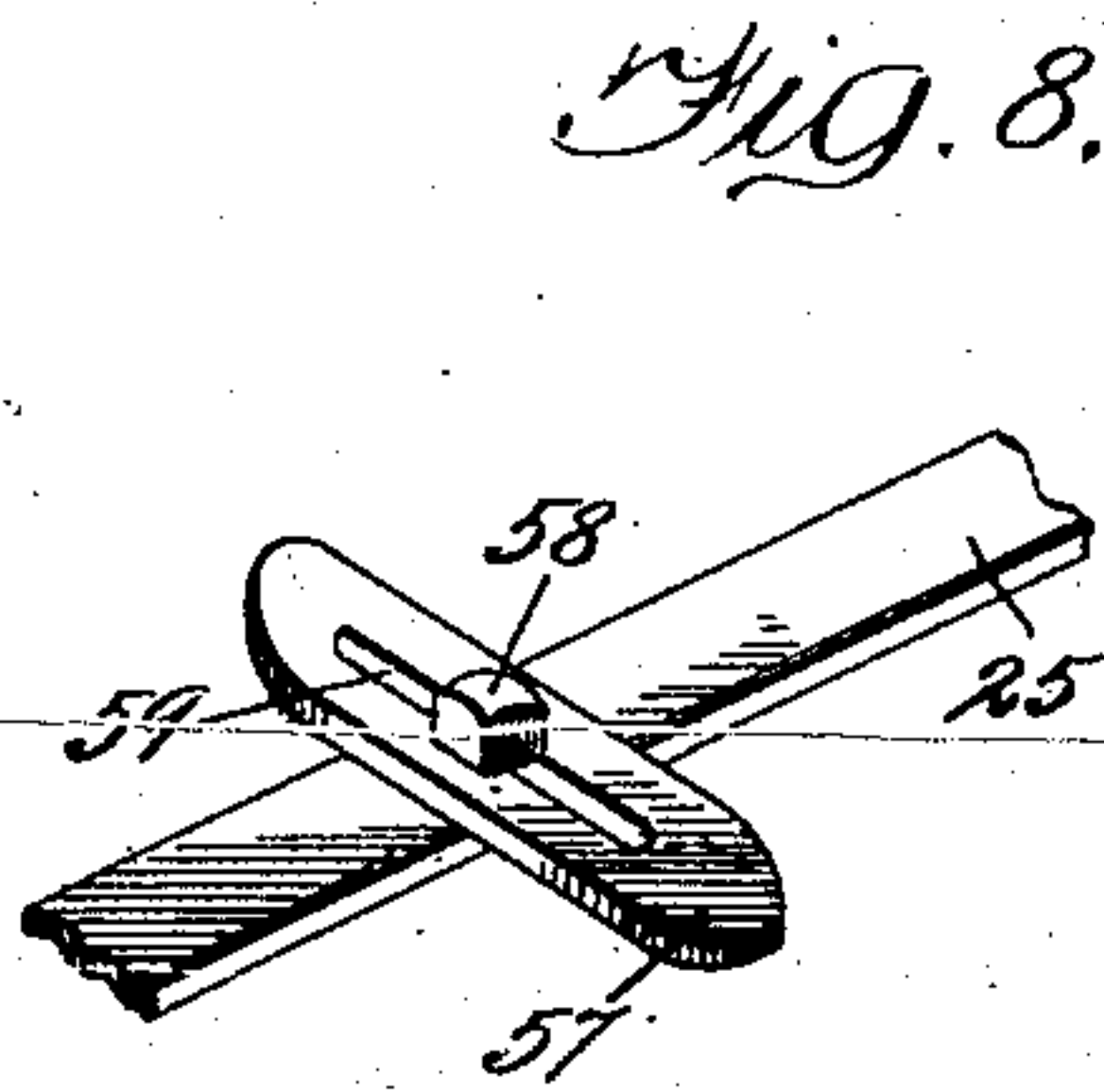
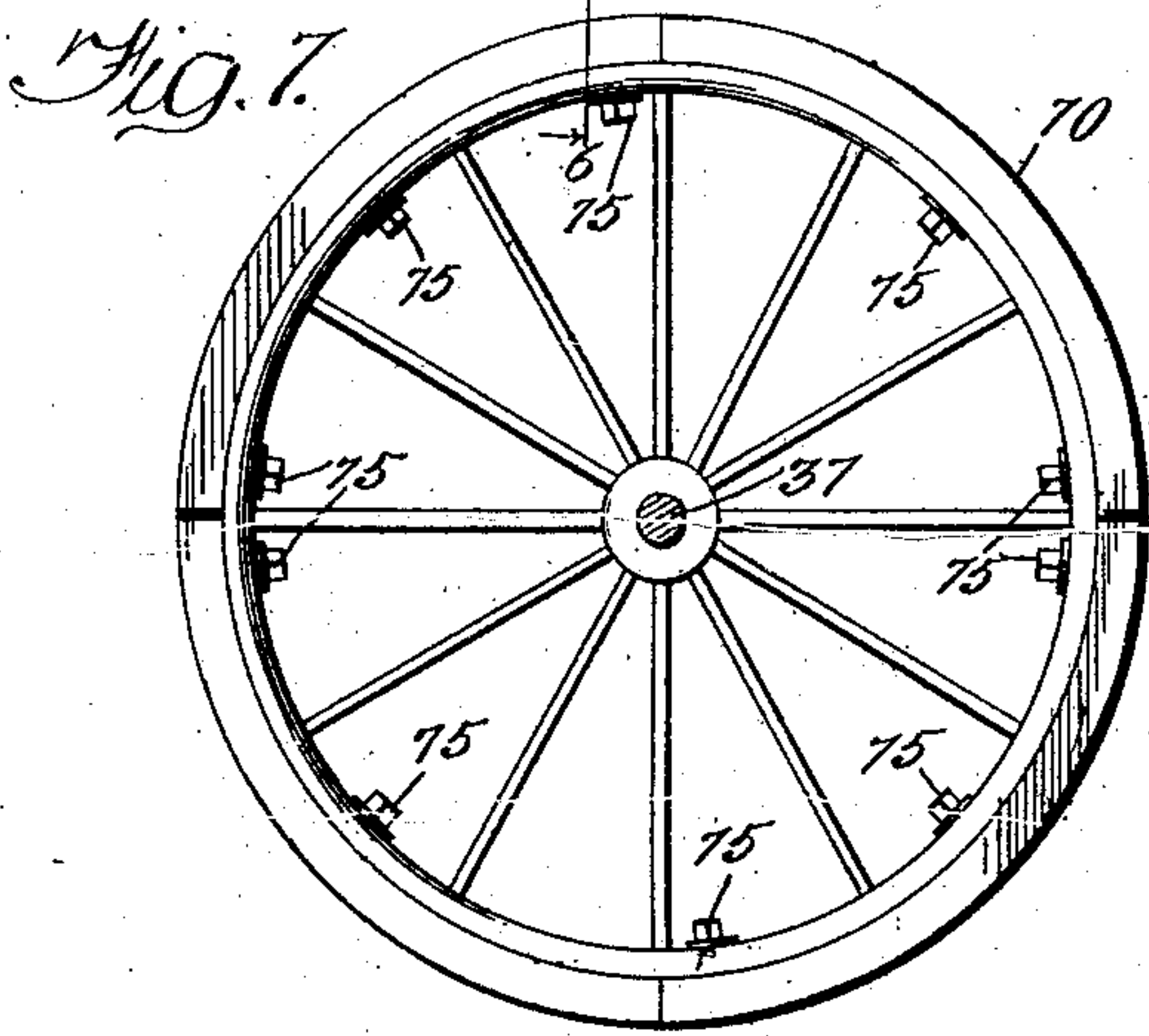
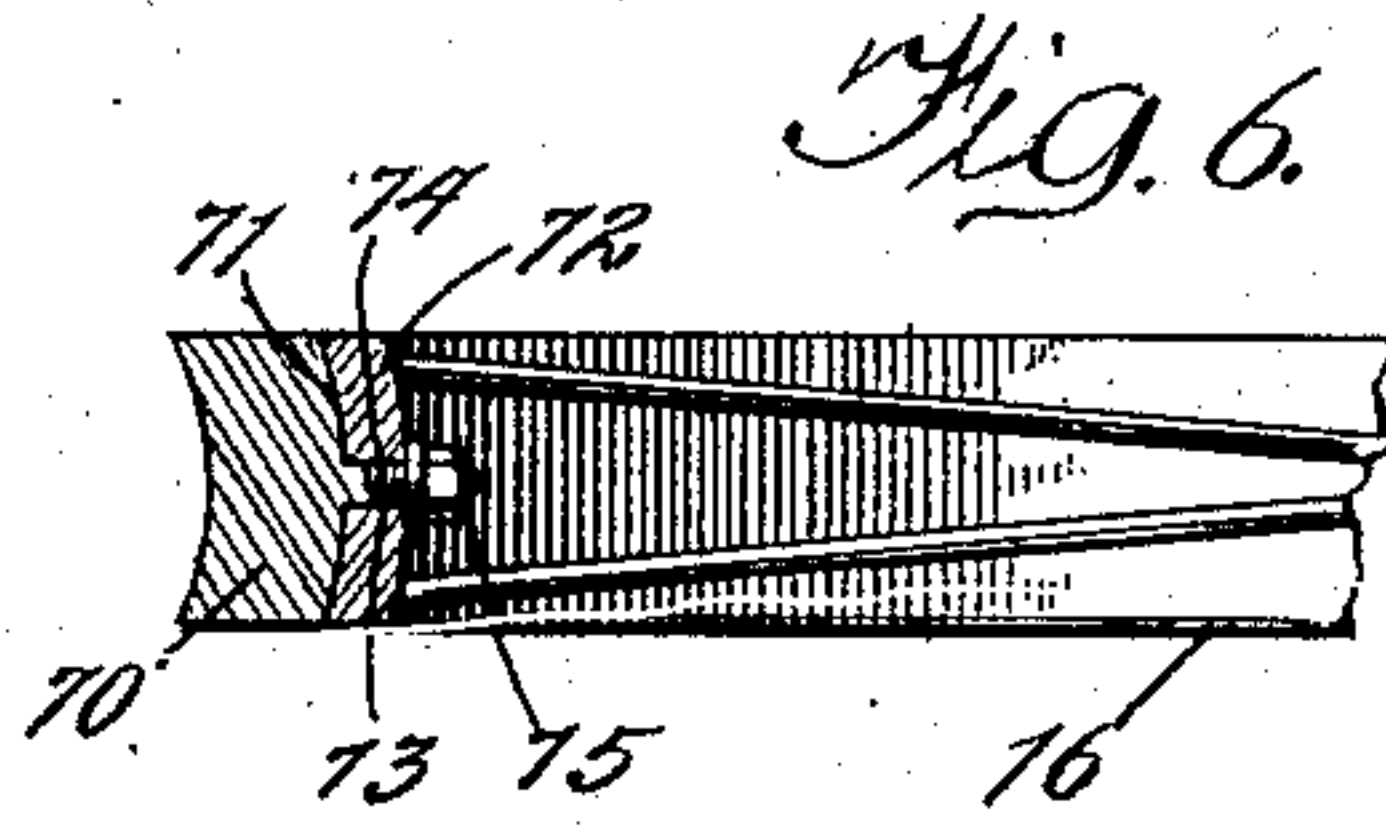
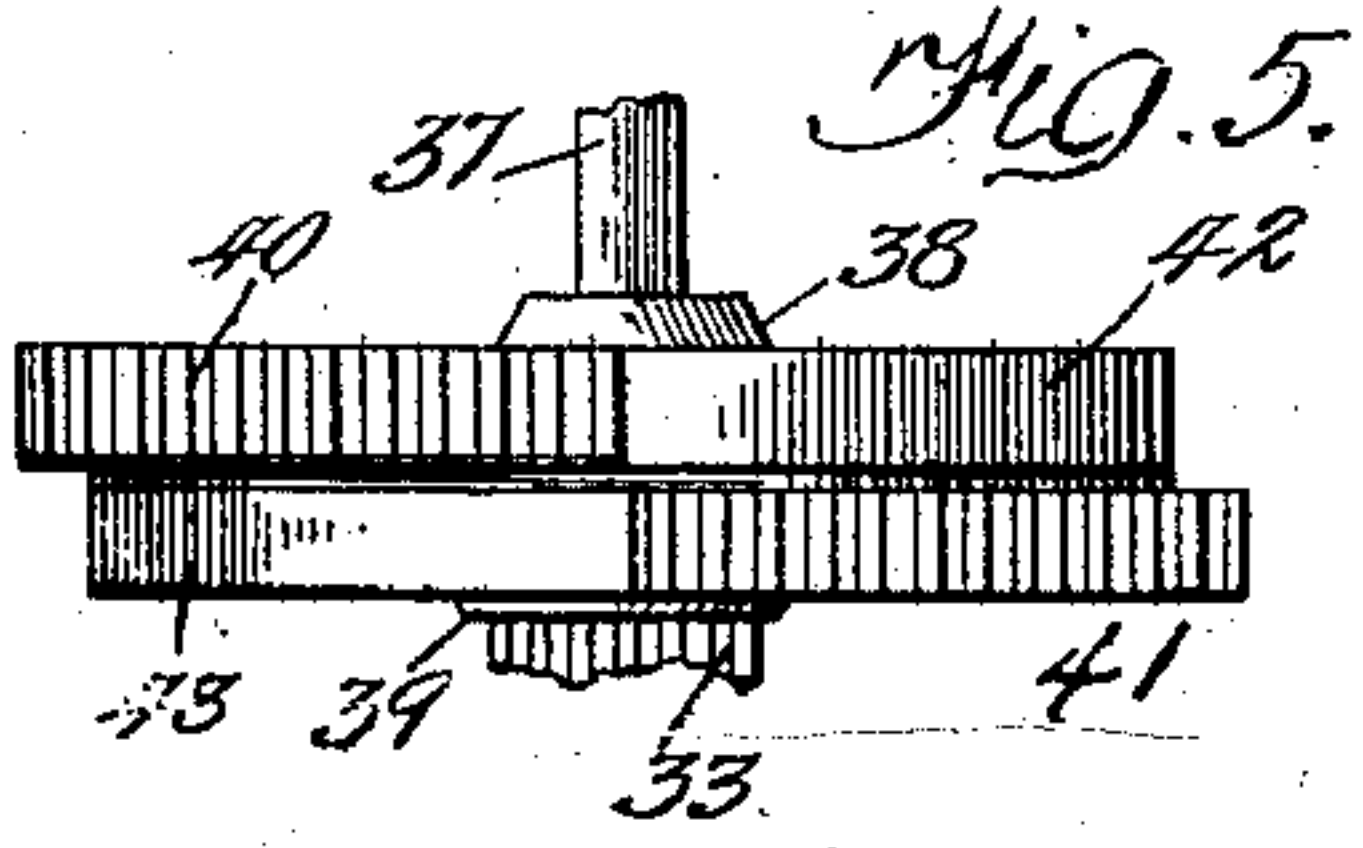
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CORN PLANTER.

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3 SHEETS—SHEET 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH GROSS, OF CHICAGO, ILLINOIS.

CORN-PLANTER.

973,499.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed February 20, 1907. Serial No. 358,388.

To all whom it may concern:

Be it known that I, JOSEPH GROSS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification.

This invention relates to improvements in corn planters, for planting corn or the like, and the primary object of the invention is to provide an improved machine of this character which will be simple and durable in construction, and automatic in operation.

A further object is to provide improved means whereby the dropping or feeding mechanism may be adjusted so as to drop or plant the seed in line with the hills of the last row planted.

A further object is to provide improved means for adjusting or varying the distance between the hills of seed.

To the attainment of these ends, and the accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangements of the several parts hereinafter more fully described and claimed, and shown in the accompanying drawings illustrating an exemplification of the invention, and in which:

Figure 1 is a top plan view of an improved planter, constructed in accordance with the principles of this invention. Fig. 2 is a longitudinal sectional view on line 2—2 of Fig. 1. Fig. 3 is a detailed sectional view on line 3—3 of Fig. 1. Fig. 4 is a detailed sectional view on line 4—4 of Fig. 1. Fig. 5 is a top plan view of the improved double mutilated gear for operating the dropping mechanism. Fig. 6 is a detailed sectional view on line 6—6 of Fig. 7. Fig. 7 is a side elevation of one of the main supporting wheels, having an improved attachment applied thereto for increasing the diameter of the wheel. Fig. 8 is a detailed perspective view of a portion of the dropping mechanism and the adjustable shoe or member. Fig. 9 is a detailed perspective view of another portion of the dropping member. Fig. 10 is a top plan view, partly in section, showing the bottom of the hopper and the feeding plate or disk. Fig. 11 is a detailed longitudinal sectional view of the bottom of the hopper.

Referring more particularly to the drawings, and in this exemplification of the in-

vention, the numeral 15 designates a main frame provided with the main supporting wheels 16, located preferably adjacent to the end of the frame. The front of the frame may be supported in any desired or suitable manner, preferably by means of the furrow opener or planter shoes 17, which latter may be of the ordinary and well known construction, and form on part of the present invention.

Supported by the main frame 15, and adjacent to the shoes 17, are seed hoppers 18, which are provided in their bottom with rotatable plates 19, which latter are provided with suitably spaced apertures 20 passing through the plate. These plates 19 are preferably provided with peripheral gear teeth 21, and a suitable gear or pinion wheel 22, mounted upon a shaft 23 is adapted to mesh with the teeth 21 to rotate the plates 19 in the usual manner. Secured to the extremities of the shafts 23 are suitable gear or pinion wheels 24, by means of which motion may be transmitted to the shafts to rotate the gears 22.

A dropping operating member 25, preferably in the form of a bar or rod, is mounted for sliding movement on the frame in any suitable manner. The extremities of said bar or member 25 project under the hoppers 18, and are supported adjacent to the lower face of the bottoms thereof in any suitable manner, preferably by means of guides or brackets 26, secured to the bottoms of the hoppers. The extremities of this bar or member 25 are preferably provided with elongated slots or apertures 27, and secured to the upper face of the bar or member are plates 28, which are adapted to cover the slots or apertures 27, and said plates are provided with apertures 29, preferably arranged diametrically opposite each other, and are adapted to register with the respective slot 27 in the bar or member 25, and said plate 28 is adapted to be reciprocated by the bar or member 25, and the apertures 29, therein are so located that with each revolution of the plate 19 one of the apertures 20 therein will be brought into register with one of the apertures 29, so as to permit the seed to drop through the registering apertures so as to be brought into a position to drop into the tube 30 which leads to the shoe 17, in the ordinary and well known manner.

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tending across the frame work 15, with its extremities projecting beyond the frame work is a shaft 31, and adjustably secured to each end of the shaft is a gear wheel 32, and said gear wheel is adapted to engage and mesh with the gear wheel 24 on the end of the shaft 23, so that when the shaft 31 is rotated, in a manner to be set forth, motion will be transmitted to the shafts 23 through the medium of the gear wheels. Loosely mounted upon the shaft 31 is an elongated gear wheel 33, to one end of which is secured a ratchet wheel 34.

A suitable arm 35 is secured to rotate with the shaft 31 and supported upon said arm 35 is a dog or pawl 36, which is adapted to engage the teeth of the ratchet wheel 34, so that when the gear 33 is rotated in one direction the dog or pawl 36 will lock the gear 33 through the medium of the ratchet wheel 34 to the shaft 31, and cause said shaft to rotate with the gear, but when the gear 33 is rotated in the opposite direction the dog or pawl 36 will ride over the teeth of the ratchet wheel 34, to permit the gear 33 to rotate independently of the shaft 31.

Loosely mounted on the axle 37, of the supporting wheels 16, is a double mutilated gear, comprising two members 38 and 39. These members are provided respectively with gear teeth 40—41 and mutilated or plain surfaces 42—43, and are so arranged with relation to each other that the gear teeth of the member 38, will be adjacent the mutilated or smooth portion 43 of the member 39, and the gear teeth 41 of the member 39 will be adjacent the mutilated or smooth portion 42 of the member 38, and said gear teeth 40—41 are located in different planes, as shown more clearly in Fig. 5 of the drawing.

Suitable bars or rods 44—45 are mounted for sliding movement on the main frame, and said bars or rods are located adjacent each other, and are provided with depending teeth or a rack portion 46, and said teeth or rack 46 are adapted to be respectively engaged by the teeth 40—41 of the members 38—39. These teeth or racks are preferably located adjacent to rear end of the bars or rods 44—45, and their forward extremities 47 are preferably reduced, as at 48, and said reduced portions 48 are adapted to enter and pass through suitable guides 49, which latter serve as means for preventing displacement of the forward ends of the bars or rods 44—45. The forward ends 47 of these bars or rods 44—45 may be offset as at 50, if desired, and said ends 47 are provided with rack or gear teeth 51, which are adapted to engage and mesh with the gear 33, so that when the bars or rods 44—45 are moved longitudinally of the frame the rack or teeth 51 will rotate the gear 33. With this arrangement, when the planter is advanced, the rotation of the sup-

porting wheels 16 will cause the mutilated members 38—39 to rotate, and as the gears on the members engage the respective teeth or rack on the bars or rods 44—45 the said bar or rod will be moved forward, causing the rack or teeth 51 thereon to rotate the gear 33, and as said gear 33 is locked to the shaft 31, through the medium of the arm 35 and the pawl or dog 36, the said shaft 31 will also be rotated and will transmit motion to the feed plates in the hoppers, through the medium of the gears 32—24, and rotate said plates to feed the seed to the dropper bar 25. When the advancing bars 44—45 have reached the limit of their forward movement, that is, when the last tooth on the respective gear engages the last tooth on the rack 46, a further forward movement of the mutilated member will cause the meshing teeth to pass out of engagement with each other just at the time when the first tooth on the other mutilated member is brought into engagement with the first tooth on the other rack 46 of the other bar, and just before the said other bar begins to advance the bar which has already been advanced and ropped the seed, will be quickly returned to its normal position, thus rotating the gear 33 in the opposite direction, causing the shaft 31 to stand still, in the manner as has already been set forth.

Any suitable means may be provided for returning the bars or rods 44—45, but a simple and efficient device for accomplishing this purpose comprises an elastic member 52, such as a spring or the like, one end of which is secured to the respective bar or rod 44—45 in any suitable manner, as at 53, and the other end is preferably provided with a threaded extremity 54, which passes through a suitable support 55, and adjustably mounted on the threaded extremity 54 beyond the support 55 is a suitable nut 56, by means of which the tension of the yielding member or spring may be adjusted.

The dropper bar or member 25 is reciprocated by the advancement of the bars or rods 44—45, so as to receive the seed from the hopper and convey it to the shoe 17. Any suitable means may be provided for accomplishing this purpose, and in this exemplification of the invention spaced shoes or members 57 are adjustably secured to the bar or member 25, adjacent the bars or rods 44—45. These members are adjustably held in position, preferably by means of screws or bolts 58, which pass through suitable slots or apertures 59, in the shoes or members, and into the sliding bar or member 25.

Secured to each of the bars or rods 44—45, preferably the side thereof, adjacent to the respective shoe or member 57, is an adjustable shoe or tappet 60, which is adapted to engage the shoe or member 57 to move the bar or member 25 as the respective bar or

rod 44—45 advances. The movement of the bar or member 25 in one direction caused by the engagement of one of the shoes or tappets 60 with the shoe or member 57 will move the other shoe or member 57 into the path of movement of the other shoe or tappet 60, so that when the latter is advanced, and after the first shoe or tappet has assumed its normal position, the bar or member 25 will be moved in to opposite direction by the advancing shoe or tappet 60, as will be understood.

Any suitable means may be provided for locking the double mutilated gear to rotate with the shaft or axle 37, but a simple and efficient device for accomplishing that purpose comprises a collar or sleeve 61, which is secured to the double mutilated gear and loosely surrounds the axle 37.

A sliding sleeve or collar 62 is secured for rotation with the shaft 37, adjacent the collar 61 and the adjacent faces of these two sleeves or collars 61—62 are provided, respectively, with ratchet teeth 63—64, which are adapted to engage with each other to lock the double mutilated gear to the shaft 37 when the sleeve or collar 62 is brought into the proper position in the ordinary manner. A suitable lever 65 is mounted upon the frame in such a manner that one end 66^a thereof will surround the sleeve or collar 62 so that when the lever 65 is rocked upon its pivot the sleeve or collar 62 will be thrown into or out of engagement with the collar 61 to lock or unlock the double mutilated gear, as will be understood.

A suitable indicator may be provided for indicating the space lacking to make the proper distance between the hills or the intervals at which the seed should be dropped by means of the bar or member 25, and this indicator preferably comprises a series of graduations 66 on each of the bars or rods 44—45. These indicators are adapted to cooperate when the bars or rods 44—45 are reciprocated in the manner already set forth.

Should it so happen that when a planter reaches the end of a row, and on its return trip to plant the next row the double mutilated gear is not in the proper position to drop a hill of seed in line with the respective hill in the last row planted, the mutilated gear may be adjusted so that the teeth thereon will engage in the rack or teeth on the bars or rods 44—45, to cause a seed to be dropped at the proper place. A suitable and efficient means for accomplishing this purpose comprises a ratchet or series of teeth 67, which are located on the sleeve or collar 61. An operating lever 68 loosely surrounds the sleeve or collar 61, and mounted upon said lever 68 is a yielding pawl 69, which is adapted to engage the teeth of the ratchet 67 and said pawl and teeth are dis-

posed in a direction to permit the pawl to ride over the teeth when the machine is advanced and the axle 37 is rotated. When it is desired to set the machine to drop a hill at a certain point the double mutilated gear is first unlocked from the shaft or axle 37 by means of the lever 65, and the operator may then, through the medium of the lever 68, the pawl 69, and the ratchet 67 rotate the double mutilated gear independently upon the shaft or axle 37 to the proper position. During this rotation or adjustment the bars or rods 44—45 will move with relation to each other to place the shoes or tappets 60 in such a position as to engage the shoes or members 57 at the proper time. The graduation 66 on the bars or members 44—45, serving to indicate the extent of adjustment of the rods with respect to each other.

When it is desired to increase the width of the rows the wheels 16 may be adjusted on the shaft or axle 37 to the dotted position as shown in Fig. 1 of the drawings and the hoppers 18 may also be adjusted to the position shown in dotted lines in Fig. 1, so that they will stand over the slots adjacent the extremities of the bar or member 25, and the gear wheels 32 may also be adjusted on the ends of the shaft 31 so as to mesh with the gears 24 on the shaft 23 to rotate to feeding plate. When it is desired to increase the distance between the hills of seed in each row the diameter of the wheels 16 may be increased and a suitable and efficient means for accomplishing this purpose comprises a sectional ring 70, one face of which is convex, as at 71, so as to enter and be seated with the concave periphery 72 of the wheels. The peripheries of these wheels may be provided with suitable spaced apertures 73, and the sectional ring 70 is adapted to be secured and held in position, preferably by means of screws or bolts 74, which pass through the apertures 73, and mounted upon the free extremities thereof are suitable nuts 75, shown more clearly in Fig. 6 of the drawing.

Any suitable means may be provided for preventing displacement of the bars or rods 44—45 as they are returned under the tension of the springs 52, and a simple and efficient means comprises a projection 76, extending laterally from the bars or rods 44—45, which are adapted to strike the supports 55 when the bars or rods 44—45 have reached the limit of their return movement.

The shoes or tappets 60 may be adjusted on the respective bars or rods 44—45, and the shoes or members 57 may also be adjusted upon the bar or member 25 to vary the time of engagement of the one with the other, to regulate the distance between the hills of seed in the row.

In order that the invention might be fully

understood by those skilled in the art, the details of the foregoing embodiment thereof have been thus specifically described but

What I claim as new and desire to secure by Letters Patent is—

1. In a corn planter, the combination of a wheel supported frame, feeding mechanism including a dropper member, a member mounted for reciprocating movement and adapted to engage the dropper member to move the latter means operatively related to the supporting wheels and adapted to engage and move the second said member into engagement with the dropper member, and means for returning the second said member to its normal position.

2. In a corn planter, the combination of a wheel supported frame, feeding mechanism including a dropper member, a member mounted for reciprocating movement and adapted to engage the dropper member to move the latter, means operatively related to the supporting wheels and adapted to engage and move the second said member into engagement with the dropper member, means for varying the time of engagement of the two said members, and means for returning the said members to their normal position.

3. In a corn planter, the combination of a wheel supported frame, feeding mechanism including a dropper member, a member mounted for reciprocating movement and adapted to engage the dropper member to move the latter, means operatively related to the supporting wheels and adapted to intermittently engage and move the member into engagement with the dropper member, means for returning the second said member, and means for varying the time of engagement of the two said members.

4. In a corn planter, the combination of a wheel supported frame, feeding mechanism including a dropper member, a member mounted for reciprocating movement, adjustable members on the two said members, means operatively related to the supporting wheels and the reciprocating member to cause the said adjustable members to be brought into engagement to move the dropper member, and means for returning the first said members to cause the adjustable members to assume their normal position with relation to each other.

5. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a feeding and a dropping member, an operating member, means operatively related to the supporting wheels adapted to intermittently engage and move the last said member in one direction, means operatively related respectively to the feeding and the dropping members adapted to be engaged and moved by the operating member during the movement of the latter

in one direction, and means for returning the operating member and the dropper member to their normal position.

6. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a rotary feeding and a reciprocating dropping member, an operating member, means operatively related to the supporting wheels adapted to intermittently engage and move the last said member in one direction, means operatively related respectively to the feeding and the dropping members adapted to be engaged and moved by the operating member during the movement of the latter in one direction, means for returning the operating and the dropper members to their normal position, and ratchet mechanism operatively related to the feeding mechanism to permit the return of the said operating member.

7. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a rotary feeding member and a reciprocating dropper member, an operating member, means operatively related to the wheels adapted to intermittently engage and move the operating member, tappet mechanism operatively related to the operating and the feeding members to move the latter, ratchet mechanism operatively related to the feeding member and the operating member adapted to move the feeding member in one direction and to permit the operating member to move in the opposite direction, and means for returning the operating member to its normal position.

8. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a rotary feeding member and a reciprocating dropping member, an operating member, means operatively related to the wheels adapted to intermittently engage and move the operating member, adjustable tappet mechanism operatively related to the operating and the feeding members to move the latter, ratchet mechanism operatively related to the feeding member and the operating member adapted to move the feeding member in one direction and to permit the operating member to move in the opposite direction, and means for returning the operating member to its normal position.

9. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a dropping member, an operating member separate from the dropping member, adjustable means on the dropping member adapted to be engaged by the operating member to move the dropping member, said operating member being provided with a plurality of teeth, a mutilated gear operatively related to the supporting wheels, the teeth of said gear being adapted to intermittently engage the teeth of the operating member to move the same, and

means for moving the said operating member in the opposite direction.

10. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a dropper member, an operating member separate from and adapted to move the dropping member, adjustable means on one of the members at their point of engagement for varying the time of movement of the dropping member, said operating member being provided with a plurality of teeth, a mutilated gear operatively related to the supporting wheels, the teeth of said gear being adapted to intermittently engage the teeth of the operating member to move the same, and separate means for moving the operating member in the opposite direction when the mutilated portion of the gear is in proximity to the teeth on said member.

11. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a dropping member, an operating member provided with a rack portion, a mutilated gear operatively related to the supporting wheels, the teeth of the gear being adapted to engage the rack to move the said member, and means operatively related to the said operating member and to the dropping member, adapted to be brought into engagement when the operating member is moved to shift the dropping member, said means being respectively adjustable whereby the time of engagement thereof may be varied.

12. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a dropping member, an operating member separate from and adapted to engage and move the dropping member, said operating member comprising a rack portion, a mutilated gear operatively related to the wheels, and a yielding member normally holding the operating member out of operative engagement with the dropping member, the teeth of the gear being adapted to engage the rack portion to move the operating member to shift the dropping member, and said yielding member being adapted to return the operating member to its normal position when the mutilated portion of the gear is adjacent the rack.

13. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a dropping member, an operating member movable adjacent the dropping member, adjustable means on both of said members adapted to be brought into engagement to move the dropping member, said operating member being provided with a rack portion, a mutilated gear operatively related to the wheels, the teeth of said gear being adapted to intermittently engage the rack to move the operating member, a yielding member adapted to return the operating

member when the mutilated portion of the gear is adjacent the said rack portion, and means for adjusting the tension of the yielding member.

14. In a corn planter, the combination of a wheel supported frame, planter mechanism proper including a feeding and a dropping member, an operating member provided with a rack portion, means operatively related to the said operating and the dropper members adapted to be brought into engagement when the operating member is moved, means also operatively related to the operating member and the feeding member adapted to move the feeding member in one direction, a mutilated gear operatively related to the wheels, the teeth of said gear being adapted to engage the said rack portion to move the operating member, means for returning the last said member when the mutilated portion of the gear is adjacent the rack, and means for permitting an independent movement of the operating member in one direction with relation to the feeding member.

15. In a corn planter, the combination of a wheel supported frame, planter mechanism including a feeding and a dropping member, an operating member, means operatively related to the wheels for intermittently moving the operating member, means on the operating member and the dropping member adapted to be brought into engagement to shift the dropping member when the operating member is moved, ratchet mechanism operatively related to the operating and the feeding members for shifting the latter when the operating member is moved in one direction and for permitting an independent movement of said operating member in the opposite direction, and means for returning the operating member.

16. In a corn planter, the combination of a wheel supported frame, planter mechanism including a feeding and a dropping member, an operating member, comprising a mutilated gear and rack, tappets operatively and respectively related to the operating and the dropper members, and adapted to be brought into engagement to shift the latter member, means for adjusting said tappets with relation to each other to vary their time of engagement, and means for returning the operating member to its normal position when the operative portion of the gear and rack are displaced with relation to each other.

17. In a corn planter, the combination of a wheel supported frame, a planter mechanism including a dropper member, an operating mechanism including an intermittently movable member, means operatively related to both of said members adapted to shift the dropper member when the operating member is moved in one direction, a rotatable mutilated gear adapted to engage the oper-

ating member, means for rotating the gear to move the operating member in one direction, means for returning the last said member when released by the gear, and means
5 for moving the dropping member into a position to be engaged and moved by the next movement of the operating member.

18. In a corn planter, the combination of a wheel supported frame, planter mechanism
10 including a dropper member, operating mechanism for said member comprising a mutilated gear and rack construction, means for transmitting motion to one of the members of the operating mechanism for moving
15 the other member to shift the dropper member, and means for shifting the relation of the operating mechanism with relation to the last said means.

19. In a corn planter, the combination of
20 a wheel supported frame, planter mechanism including a dropper member, operating mechanism for said member comprising a mutilated gear and rack construction, means for transmitting motion to one of the mem-
25 bers of the operating mechanism for moving the other member to shift the dropper member, means for shifting the relation of the operating mechanism with relation to the last said means, and means for indicating
30 the degree of adjustment.

20. In a corn planter, the combination of a wheel supported frame, planter mechanism including a dropper member, operating
35 mechanism for said member, comprising a mutilated gear and rack construction including a clutch, means for transmitting motion to one of the members of the operating mechanism for moving the other member to
40 shift the dropper member, means for releasing the clutch, and mechanism for shifting the relation of the operating mechanism with relation to the last said means when the clutch is released.

21. In a corn planter, the combination of
45 a wheel supported frame, planter mechanism including a dropper member, operating mechanism for said member, comprising a mutilated gear and rack construction including a clutch, means for transmitting motion
50 to one of the members of the operating mechanism for moving the other member to shift the dropper member, means for releasing the clutch, and a pawl and ratchet mechanism for shifting the relation of the operat-
55 ing mechanism with relation to the last said means when the clutch is released.

22. In a corn planter, the combination of a wheel supported frame, planter mechanism including a dropper member, operating
60 mechanism for said member comprising a mutilated gear independently rotatable with relation to the wheels and a rack adapted to be engaged by the gear to be moved in one direction, clutch mechanism for locking said
65 gear to rotate with the wheels, tappet mecha-

nism operatively related to the rack and to the dropper member for shifting the latter when the rack is moved by the gear, means for returning the rack, and means for shifting the position of the gear with relation to its
70 operating mechanism when the clutch is released.

23. In a corn planter, the combination of a wheel supported frame, planter mechanism including a dropper member, operating
75 mechanism for said member comprising a mutilated gear independently rotatable with relation to the wheels and a rack adapted to be engaged by the gear to be moved in one direction, clutch mechanism for locking said
80 gear to rotate with the wheels, tappet mechanism operatively related to the rack and to the dropper member for shifting the latter when the rack is moved by the gear, means for returning the rack, a pawl and ratchet
85 mechanism operatively related to the gear for shifting the position of the gear with relation to its operating mechanism when the clutch is released and operating means for said pawl and ratchet mechanism.
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24. In a corn planter, the combination of a wheel supported frame, planter mechanism including a dropper member, an operating member for shifting the dropper
95 member, means for intermittently moving the operating member in one direction, mechanism for transmitting motion to said means, means for moving the said operating member in the opposite direction when re-
100 leased by the first said means, and means for throwing the first said means out of operation.

25. In a corn planter, the combination of a wheel supported frame, planter mechanism including a reciprocating dropper and
105 a rotary feeding member, means for operating said members comprising a mutilated gear and rack construction, means for rotating the gear to move the rack in one direction, means operatively related to the
110 dropper member and the rack adapted to be brought into engagement when the rack is moved in one direction to shift the dropping member in one direction, a ratchet mechanism operatively related to the rack and the
115 feeding member to rotate the latter in one direction and to permit an independent movement of the rack with relation to said member in the opposite direction, means for returning the rack to its normal position
120 and means for moving the dropper member in the opposite direction.

26. In a corn planter, the combination of a wheel supported frame, planter mechanism including a dropper member and a feeding
125 member, a shaft, means operatively related to the shaft for rotating the feeding member, a gear loosely mounted on the shaft, ratchet mechanism for locking the shaft and gear to rotate in one direction, a drop-
130

ping member, operating mechanism for the feeding and dropping members, including a mutilated gear and rack construction, means for rotating the gear to intermittently
 5 move the rack in one direction, means for moving the rack in the opposite direction, tappets operatively related to the rack and the dropping member for shifting the said member during the movement of the rack in
 10 one direction, means for returning said member, and teeth operatively related to the rack adapted to engage the gear on the feeding member operating shaft, to rotate the shaft during its movement in one direction and to
 15 rotate the gear independently of the shaft during the return movement of the rack.

27. In a corn planter, the combination of a wheel supported frame, planter mechanism including a dropper plate, spaced tappets on said plates, a double mutilated gear, the mutilated portion of one gear being disposed adjacent the teeth of the other gear, and the respective teeth of the gears being
 20 arranged in different planes and disposed opposite to each other, a pair of racks adapted to be alternately engaged and advanced by its respective gear, said racks being adapted to pass between the tappets, projections on said racks, said projections being
 25 adapted to engage one of the tappets to move the dropping member in the respective direction as the racks are alternately advanced, and means for returning the advanced rack when the respective gear teeth
 30 are displaced with relation to the rack and the mutilated portion is adjacent thereto.

28. In a corn planter, the combination of a wheel supported frame, planter mechanism including a dropper plate, spaced tappets on said plates, a double mutilated gear, the mutilated portion of one gear being disposed adjacent the teeth of the other gear, and the respective teeth of the gears being
 40 arranged in different planes and disposed opposite to each other, a pair of racks adapted

ed to be alternately engaged and advanced by its respective gear, said racks being adapted to pass between the tappets, projections on said racks, said projections being adapted to engage one of the tappets to
 50 move the dropping member in the respective direction as the racks are alternately advanced, means for varying the time of engagement of the projections and tappets, and means for returning the advanced rack
 55 when the respective gear teeth are displaced with relation to the rack and the mutilated portion is adjacent thereto.

29. In a corn planter, the combination of a wheel supported frame, planter mechanism including a dropper plate, spaced tappets on said plates, a double mutilated gear, the mutilated portion of one gear being disposed adjacent the teeth of the other gear, and the respective teeth of the gears being
 60 arranged in different planes and disposed opposite to each other, a pair of racks adapted to be alternately engaged and advanced by its respective gear, and being adapted to pass between the tappets, projections on
 65 said racks, said projections being adapted to engage one of the tappets to move the dropping member in the respective direction as the racks are alternately advanced, means for returning the advanced rack when the
 70 respective gear teeth are displaced with relation to the rack and the mutilated portion is adjacent thereto, said racks being provided with cooperating indications, and means for independently shifting the mutilated
 75 gear to cause said indications to be brought into proper relation.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 16th day
 85 of February A. D. 1907.

JOSEPH GROSS.

Witnesses:

J. H. JOCHUM, Jr.,
 M. W. CANTWELL.