

No. 882,230.

N. H. & J. H. BLOOM.
FERTILIZER DISTRIBUTER.
APPLICATION FILED FEB. 13, 1906.

PATENTED MAR. 17, 1908.

3 SHEETS—SHEET 1.

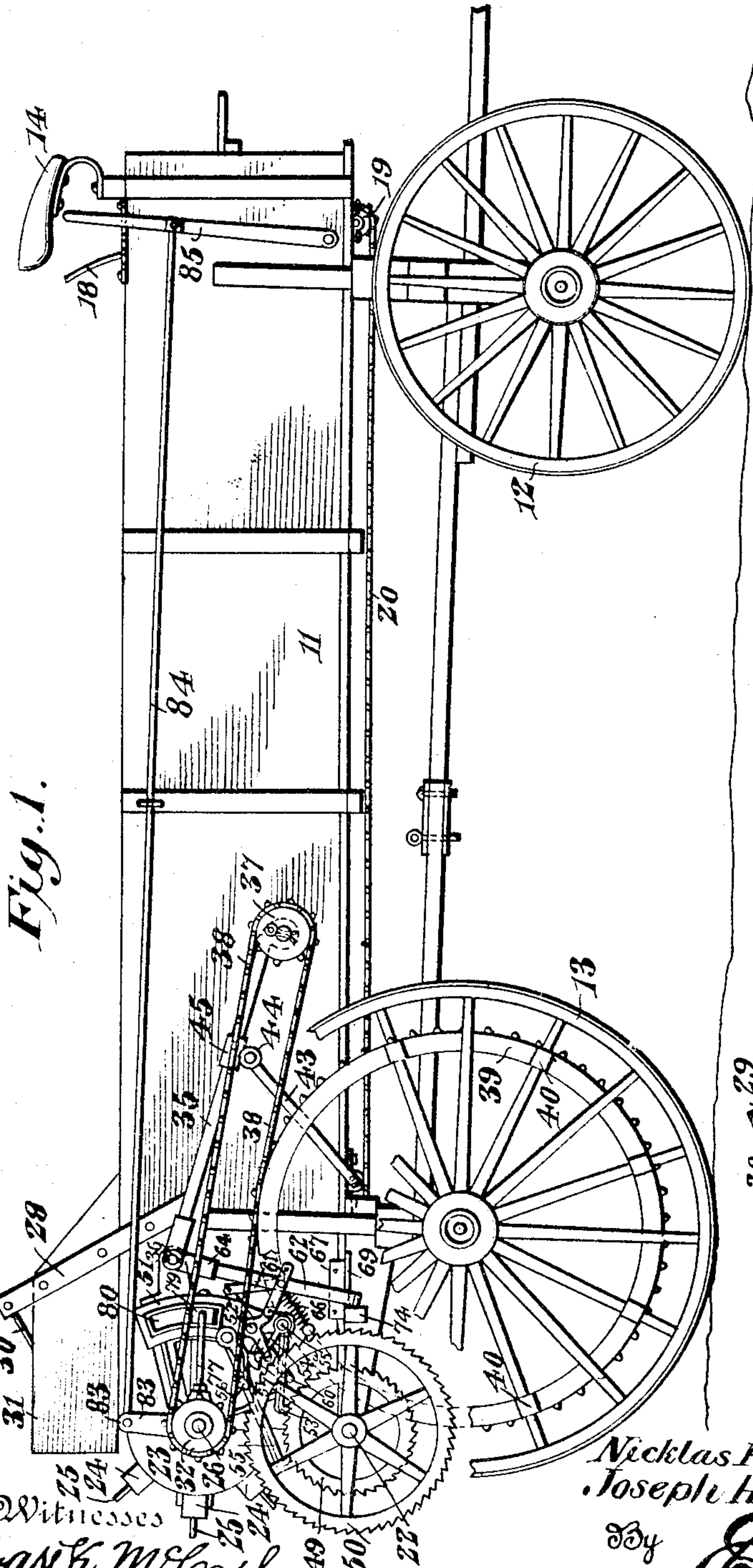


Fig. 1.

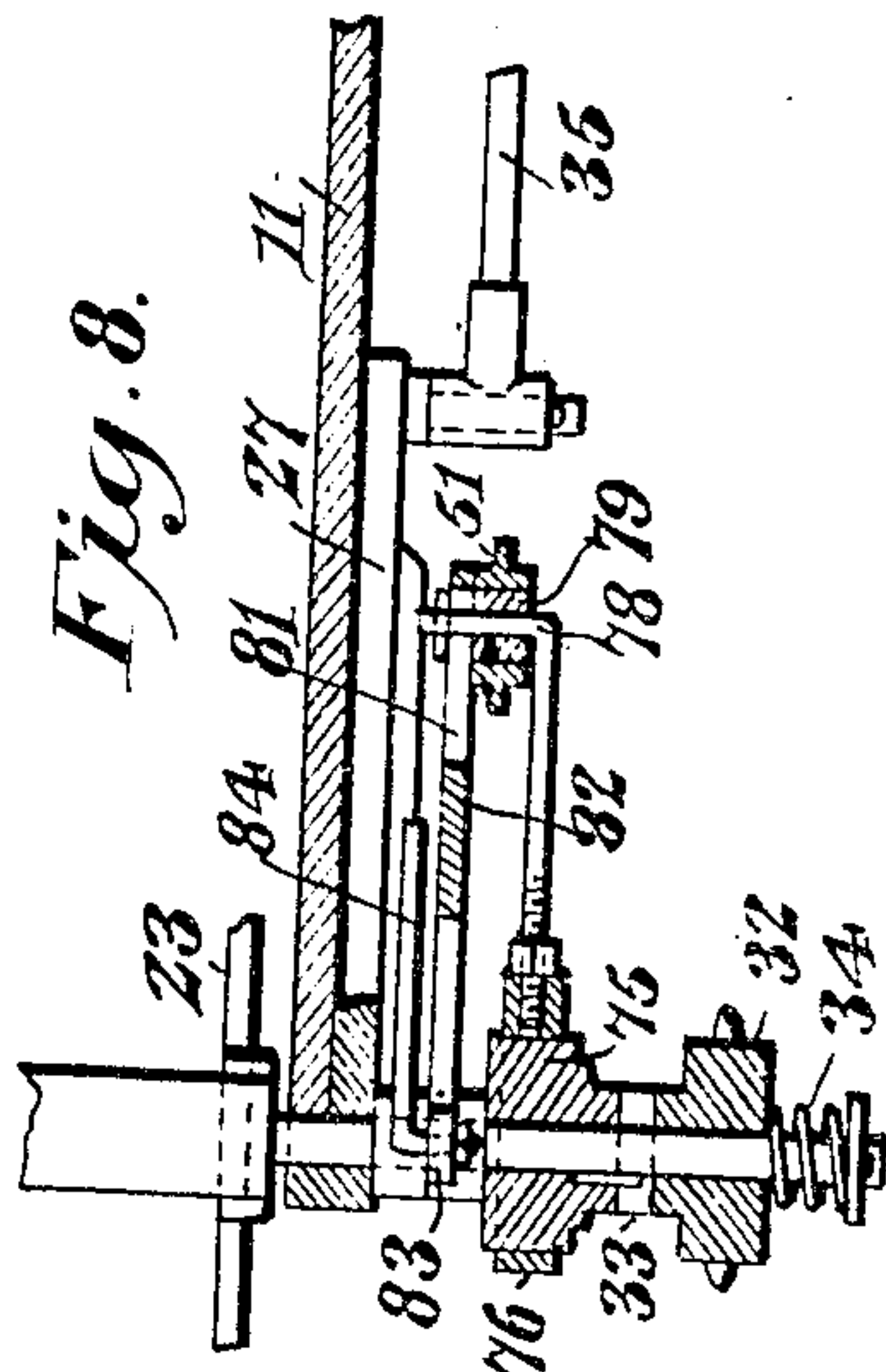


Fig. 8.

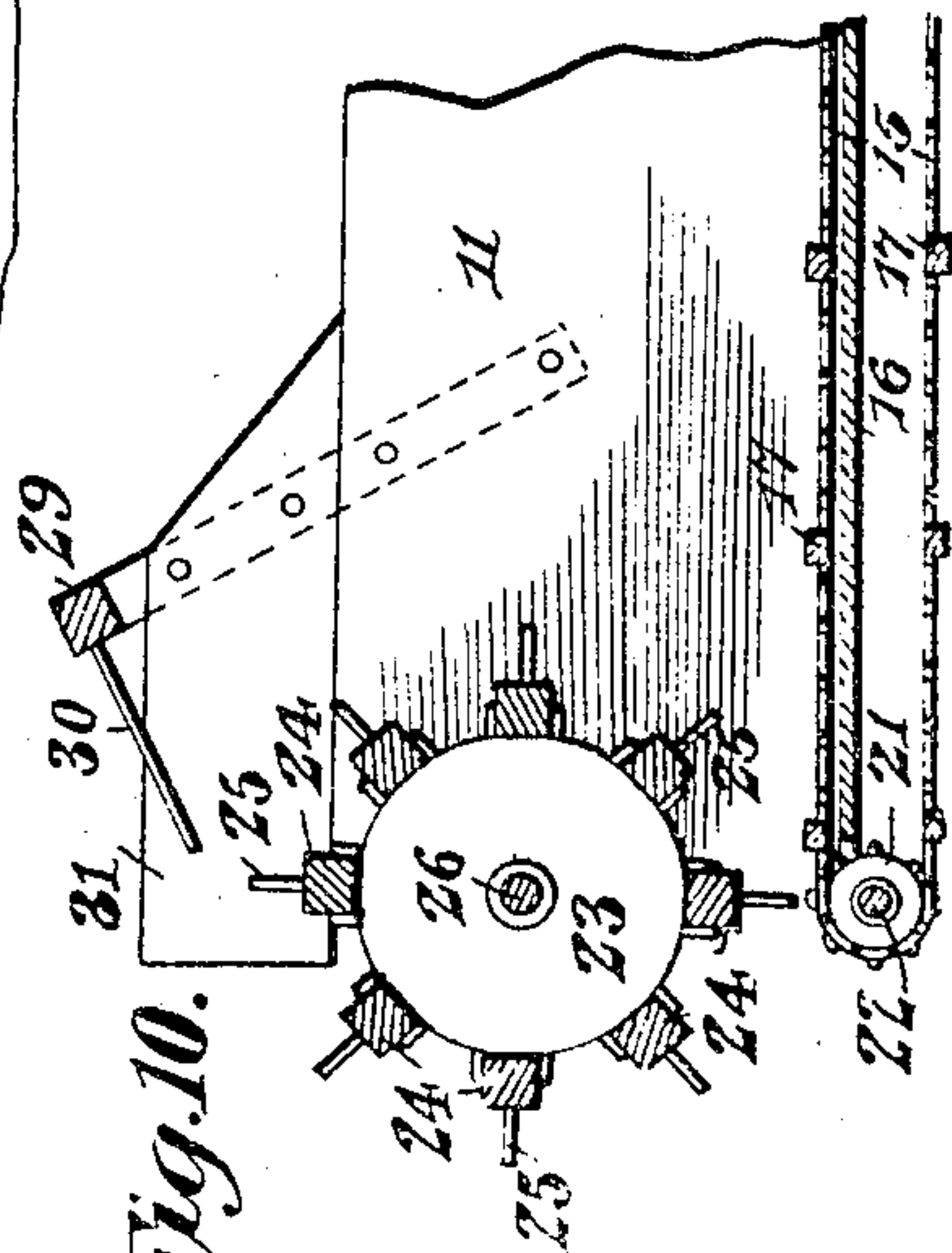


Fig. 10.

Witnesses

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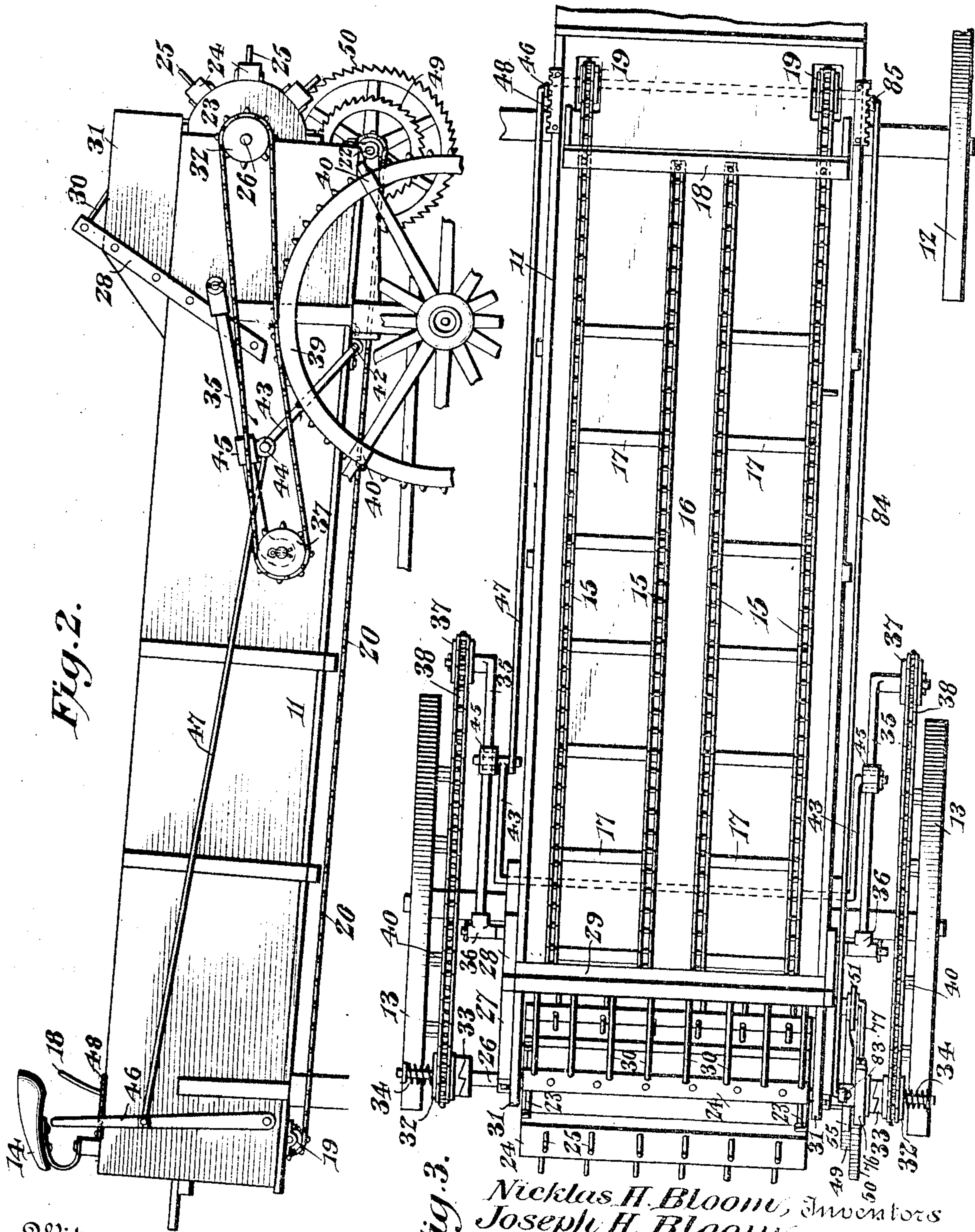


Fig. 2.

Fig. 3.

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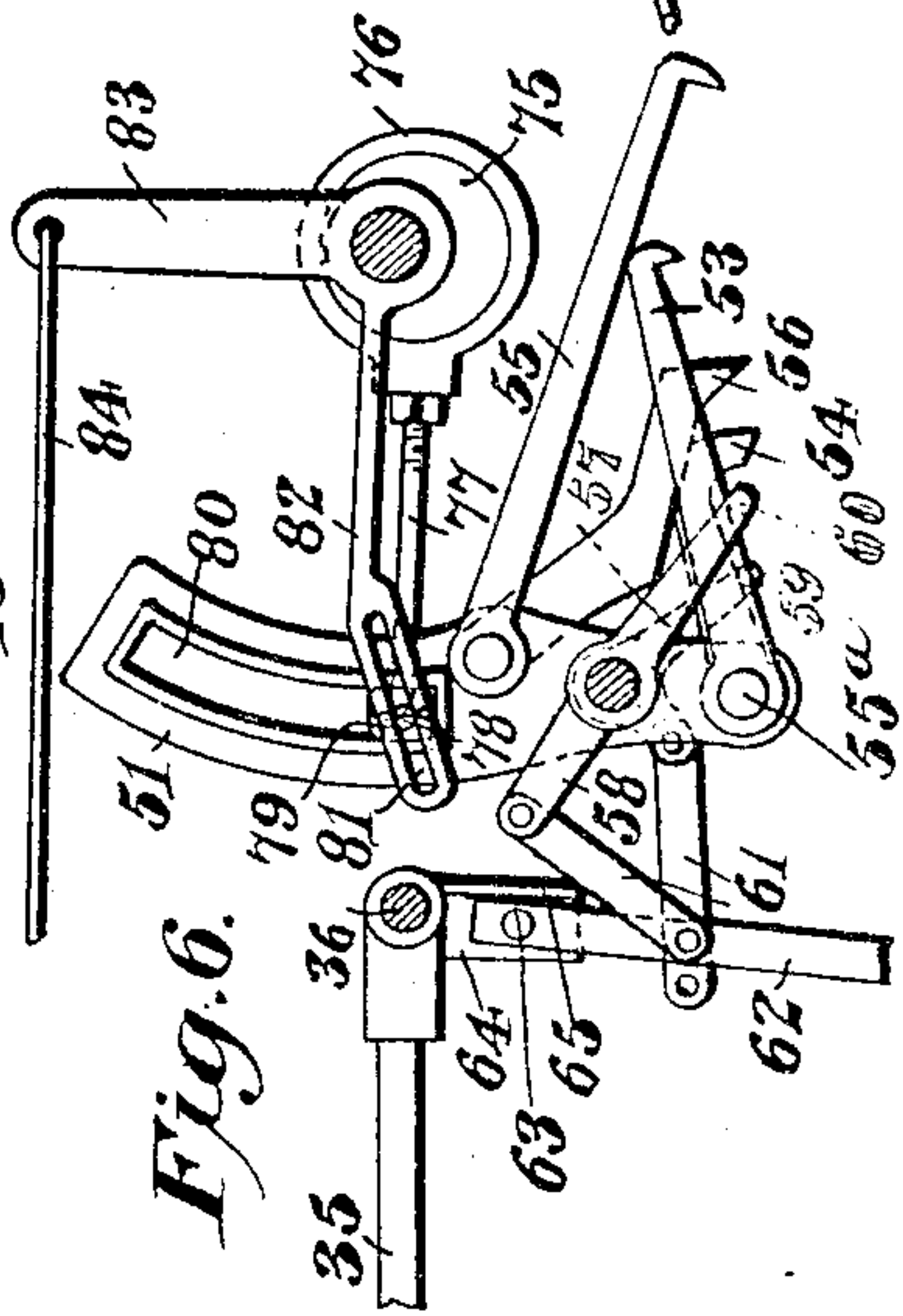
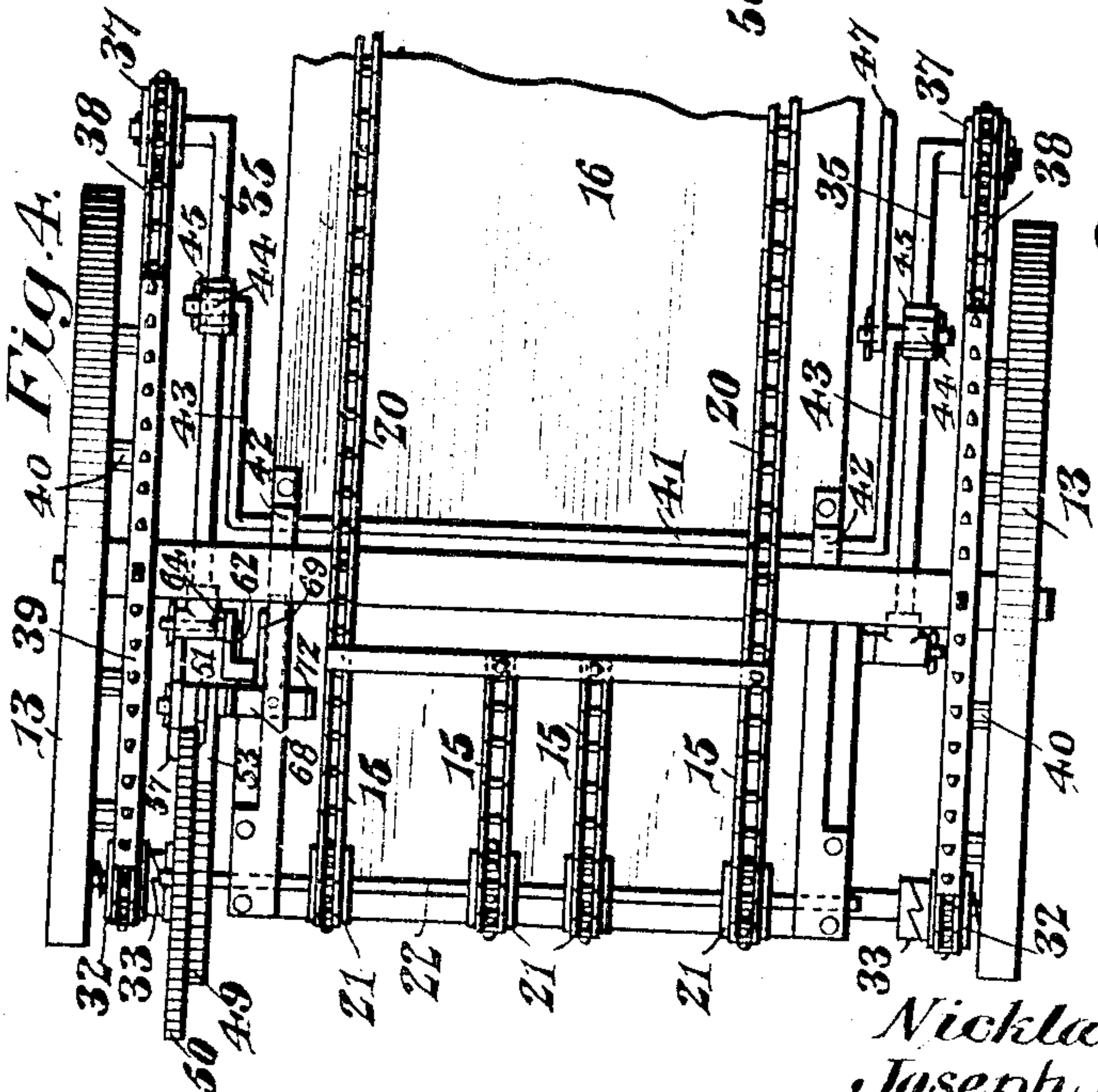
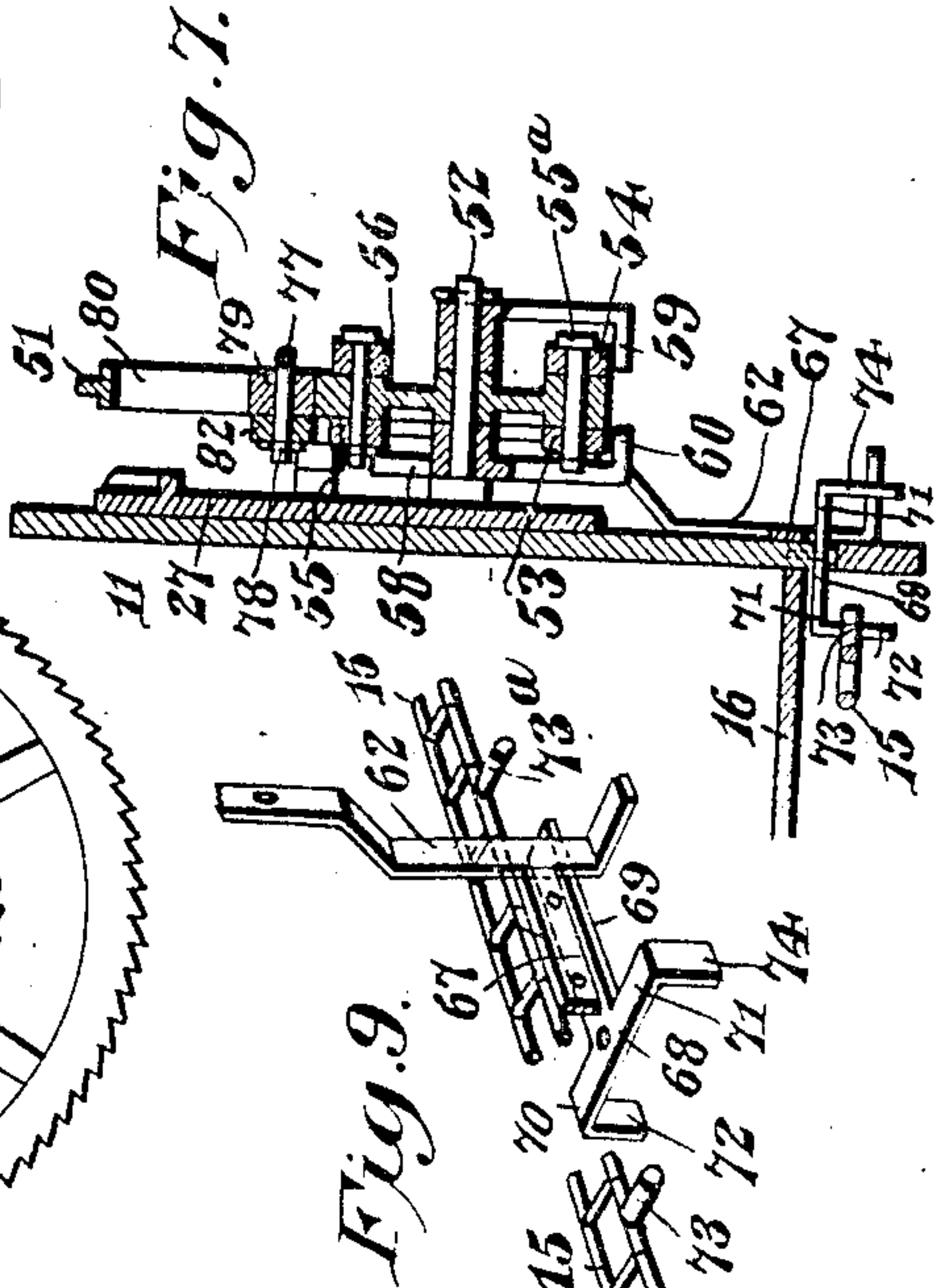
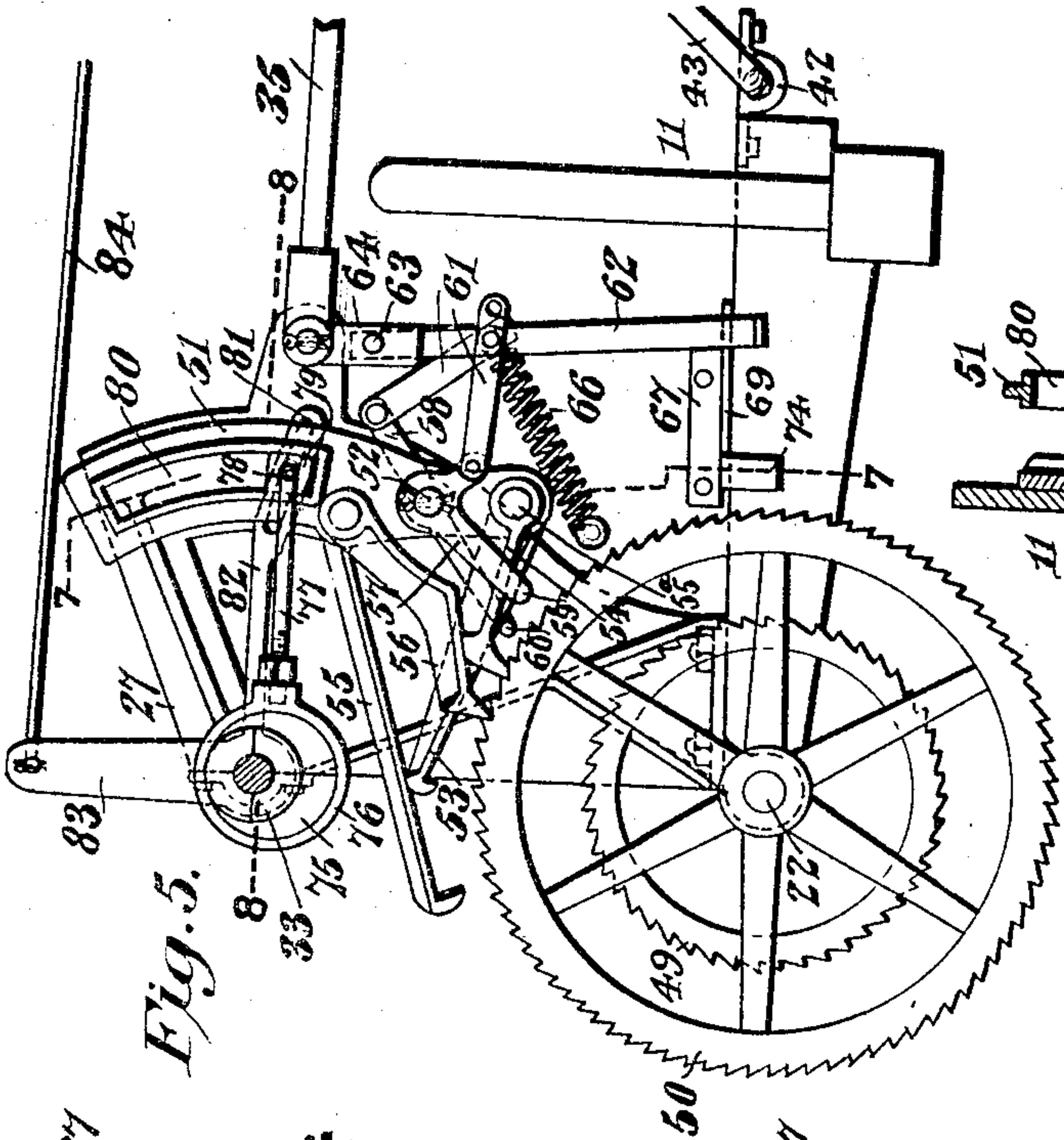
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

NICKLAS H. BLOOM AND JOSEPH H. BLOOM, OF NASHUA, IOWA.

FERTILIZER-DISTRIBUTER.

No. 882,230.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed February 13, 1906. Serial No. 300,892.

To all whom it may concern:

Be it known that NICKLAS H. BLOOM and JOSEPH H. BLOOM, citizens of the United States, residing at Nashua, in the county of Chickasaw and State of Iowa, have invented a new and useful Fertilizer-Distributor, of which the following is a specification.

This invention relates particularly to that type of vehicular distributors, from which the fertilizer is automatically delivered as the vehicle is moved over the field.

One of the principal objects is to provide novel, effective and simple mechanism, whereby the conveyer is automatically reversed when the material has been delivered to the distributor, and said conveyer is returned at a greater rate of speed than when it is operating to feed the fertilizer to the distributor, said mechanism being also controlled by novel hand-actuated means, so that it may be stopped, or its speed varied whenever the same is found desirable or necessary.

Still another object is to provide simple driving means that will secure the proper operation of the distributing device and conveyer not only when operating in a straight path, but when curves or turns are being made.

A single embodiment of the invention is illustrated in the accompanying drawings, but an inspection of the claims will show that said invention is not limited to the particular structure disclosed.

In the drawings:—Figure 1 is a side elevation of the machine, parts of the driving wheel being broken away. Fig. 2 is a side elevation of a portion of the opposite side of the machine, the unnecessary portions being broken away. Fig. 3 is a top plan view of the distributor. Fig. 4 is a bottom plan view of the rear portion of the same. Fig. 5 is a detail view in elevation of the operating mechanism for the conveyer. Fig. 6 is a view in elevation of the same from the inner side. Fig. 7 is a vertical sectional view taken substantially on the line 7—7 of Fig. 5. Fig. 8 is a horizontal sectional view on the line 8—8 of Fig. 5. Fig. 9 is a detail perspective view, illustrating the trip mechanism for the reversing or controlling arm. Fig. 10 is a longitudinal sectional view through the rear portion of the body.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated, a body 11 is employed, which may be of any desired form and structure, in the present instance being supported at a rearward and downward inclination on front wheels 12 and independent rear wheels 13. A driver's seat 14 is located on the front portion of the body. Mounted on said body is material-moving means consisting of a conveyer and a distributor. The conveyer comprises sets of chains 15 arranged upon the bottom 16 of the body and disposed in pairs, as shown in Fig. 3. The chains of each pair are connected by cross slats 17, which slats are independent of the chains of the other pair. The intermediate chains have rear ends connected to a follower 18, while the outer chains extend over suitable sprocket wheels 19, mounted in the front portion of the body, and said chains are continued, as shown at 20 longitudinally beneath the body. The chains 15 furthermore have their rear ends extending about sprocket wheels 21, carried by a conveyer driving shaft 22.

Journalled above the driving shaft 22 is a rotary distributor comprising a drum 23 having cross bars 24 provided with teeth 25. This drum is mounted on a shaft 26 that projects beyond the opposite sides of the body, the shaft being journalled in suitable bracket frames 27 secured to the opposite sides of said body. Coacting with the distributor drum is a comb comprising rearwardly and upwardly extending standards 28 secured to the body and carrying a cross bar 29 at their upper ends, said cross bar in turn having secured thereto rearwardly and downwardly inclined comb teeth 30, the lower ends of which are disposed over the drum. Retaining boards 31 are located at the ends of the comb.

Loosely journalled on the projecting ends of the distributor shaft 26 are sprocket wheels 32, having clutch connections 33 with said shafts. The wheels 32 are normally held in engagement with the clutches by springs 34, bearing against their outer sides and mounted on the shaft. Swinging supports in the form of arms 35 are journalled, as shown at 36 to the sides of the body in advance of the shaft 26, and have sprocket wheels 37 rotatably mounted on their front free ends. Sprocket chains 38 passing about the sprocket wheels 37 also pass about the sprocket wheels 32, and these chains are movable into and out of coaction with

toothed circles or bands 39 clipped, as shown at 40 to the rear supporting or driving wheels 13. It will thus be apparent that when the chains are in engagement with the wheels and the vehicle is propelled in a forward direction, the distributor will be rotated, and if turns are made, the clutches 33 will permit the variable movements of the chains, allowing the distributor to be rotated at the greater rate of speed. On the other hand, it will also be clear that if the supporting elements 35 are swung upwardly, the chains will be disengaged from the wheels, and consequently the distributing drum will not be rotated.

In order to effect the swinging movements of the supports and the chains, a bail is employed comprising a rock-shaft 41, journaled as shown at 42 transversely beneath the bottom of the body and having upstanding arms 43 pivoted as shown at 44 to boxings 45 that are slidably mounted on the supporting arms 35. A hand lever 46, fulcrumed on the front end of the body and in convenient relation to the driver's seat, has a link connection 47 with one arm of the bail, the lever coacting with a suitable rack 48, whereby it may be held in any desired position. It will thus be apparent that by swinging the lever 46 in one direction, the bail will be turned, so that the arms will be elevated, thereby elevating the supports and the chains carried by them. On the other hand, if the lever is moved in an opposite direction, the arms will be swung downwardly, thereby engaging the chains with the wheels.

Ratchet mechanism is employed for effecting the movement of the conveyer and the follower carried thereby in opposite directions. This ratchet mechanism is preferably constructed as follows. The driving shaft 23 of the conveyer has mounted on one of its projecting ends, opposite ratchet wheels 49 and 50 of different diameters and by the term "opposite ratchet wheels", it is intended to define those which are arranged to be rotated in opposite directions, as will be clear by reference to the drawings. A lever 51 is fulcrumed between its ends adjacent to the ratchet wheels, the fulcrum of said lever being preferably a pin 52 that is carried by one of the bracket supports 27. A long dog 53 and a short dog 54 are pivoted, as shown at 55 to the lower end of the lever on one side of its fulcrum. The long dog 53 coacts with the smaller ratchet wheel 49, while the short dog 54 operates upon the larger ratchet wheel 50. It will be observed that these dogs are located on opposite sides of the lever. Another set of dogs 55 and 56 are pivoted, as shown at 57 to the lever on the other side of the fulcrum 52, and are located on opposite sides of said lever. The dog 55 is arranged to operate upon the

smaller ratchet wheel 47, and the dog 56 operates upon the larger ratchet wheel 50. It will be seen particularly by reference to Fig. 5 that the dog 56 is engaged by the dog 54, and that the dog 55 is adapted to be supported by the dog 53, these dogs being thereby movable into and out of coaction with their respective ratchet wheels. To secure their opposite movements so that one set of dogs will be held out of coaction with its wheel when the other set is in coaction, a pair of oppositely swinging supports 57 and 58 are provided that are pivoted on the fulcrum 52 on opposite sides of the lever 51. The support 57, as shown in Fig. 7, has an inturned lower terminal 59 that engages beneath the dog 54, while the support 58 has an outturned lower end 60 that engages beneath the dog 53. These two supports are connected by pivoted links 61 to a reversing or controlling device in the form of a swinging arm 62 that is pivoted as shown at 63 to a downturned lug 64 carried by the adjacent supporting arm 35. The controlling arm 62 is capable of a limited swinging movement independently of the supporting arm 35, but as shown in Fig. 6, the depending portion 64 has an inturned flange or lug 65, adapted to abut against the rear edge of the arm 62 and swing the same forwardly when the supporting arm 35 is elevated. A motor member or element, comprising a coiled spring 66 connected to the arm 52 and to the side of the vehicle, serves to urge said arm rearwardly, but it is adapted to be held against the action of the spring by means of an abutment strip or plate 67 secured to the side of the body, the arm 62 engaging over the front end of said abutment strip. When the controlling arm 62 is in its foremost position, as shown in Fig. 5, the support 58 will hold the dog 53 elevated from the ratchet wheel 49, and said dog 53 will in like manner support the dog 55 out of engagement with the ratchet wheel. The dogs 54 and 56, however, will be in engagement with their ratchet wheel 50. If, however, the controlling or reversing arm 62 is disengaged from the front end of the abutment plate 67, the spring 66 will draw the same rearwardly and as a result, the supports 57 and 58 will be swung in opposite directions. That is to say, the support 57 will be swung upwardly, so as to carry the dogs 54 and 56 out of engagement with the ratchet wheel 50, while the lower end of the support 58 will be dropped, thereby permitting the dogs 53 and 55 to drop into engagement with the smaller ratchet wheel 49. The relative positions of the parts, as so arranged, is illustrated in Fig. 1.

In order to disengage the controlling or reversing arm 62 from the abutment 67, a trip is employed, comprising a lever 68 pivoted upon the bottom of the body directly adjacent to one edge thereof, said lever com-

prising a forwardly extending arm 69, an inwardly extending arm 70, and an outwardly extending arm 71. The forwardly extending arm is located directly in rear of the controlling arm 62, as shown particularly in Fig. 9. The inwardly extending arm 70 has a downward terminal 72 located in the path of movement of projections 73 and 73^a carried by spaced portions of the adjacent conveyer chain. The outwardly extending arm 71 is also preferably provided with a depending terminal 74. The projection 73 of the chain is so located that when the follower of the conveyer is contiguous to its rearmost position, said projection will strike the depending terminal 72 of the lever, thereby swinging the forwardly extending arm 79 outwardly and disengaging the controlling arm 62 from the abutment 67, will permit the spring 66 to draw said arm backwardly.

The lever 51 carrying the dogs, is of course oscillated to effect the proper movements of said dogs. Said lever is oscillated from the distributor shaft 26. Secured to said shaft is an eccentric 75, surrounded by a strap 76 that carries a pitman 77, said pitman having an intumed front terminal 78 that passes through a boxing 79 slidably mounted in a longitudinal slot 80, formed in the lever 51. The inner end of the terminal 78 engages in a slot 81 formed in one arm 82 of a bell crank lever that is journaled on the shaft 26, and has an upturned arm 83. A link 84 pivoted at its rear end to the arm 83 has its front end pivoted to a hand lever 85, disposed on the front portion of the vehicle body and on the opposite side to the lever 46, but in convenient relation to an operator, or driver located on the seat 14. By this structure, it will be apparent that when the distributor drum 23 and shaft 26 is rotated, the pitman 77 will be moved, and the lever 51 thereby oscillated, the extent of the oscillatory movement being controlled by the position of the boxing 79 in the slot 80, namely its distance from the fulcrum 52. This distance can be readily varied by operating the hand lever 85, which, swinging the bell crank lever 83—82, raises or lowers the intumed end 78 of the pitman 77.

The operation of the machine may be briefly outlined as follows. Assuming the distributor loaded with fertilizer, it will of course be understood that the follower 18 will be at the front end of the body. If the load is to be transported some distance before it is to be spread or delivered, the driver swings the lever 46 rearwardly. This raises the supporting arms 35, and consequently the driven chain belts 38 will be disengaged from the wheels, so that the material-moving means, namely the conveyer and the distributor will be inoperative. At the same time, when the supporting arms 35 are raised, the controlling arm 62 will be brought

to its foremost position, and will engage in front of the abutment 67. When it is desired to deliver the material, the driver has only to swing the lever 46 forwardly, thereby dropping the supporting arms and carrying the chains 38 into engagement with the driving wheels. This, as already shown, will cause the rotation of the distributor and the distributor shaft. The said distributor shaft being now in rotation, the eccentric 75 will also be revolved, and through the pitman 77, the lever 51 will be oscillated, the extent of said oscillation as already described, being controlled through the hand lever 85. When the arms 35 are dropped to permit the chains to engage the drive wheels, the reversing or controlling arm 62 remains in its foremost position, held by the abutment 67, as shown in Fig. 5. Consequently the dogs 54 and 56 are now in engagement with the larger ratchet wheel, while the other dogs 57 and 58 are out of engagement with the smaller ratchet wheel 49. The oscillation of the lever and the dogs therefore causes a continuous but comparatively slow rotation of the driving shaft 22 of the conveyer with a correspondingly slow rearward movement of said conveyer. The rotating distributor takes the material delivered to it by the conveyer and throws it rearwardly over the drum, but the stationary comb catches all lumps and excess and thoroughly breaks up the same.

When the vehicle is substantially unloaded, the follower 18 will be contiguous to the rotating distributor, and will be approaching the same, but at this time, the projection 73 on the conveyer chain, as shown in Fig. 9 will move into engagement with the inner end of the trip lever 72, thereby swinging the forwardly projecting arm 69 of said lever outwardly. This will disengage the controlling or reversing arm 62 from its abutment 67, and the motor spring 66 will thereupon draw said arms rearwardly. The result is in an opposite movement of the part of the sets of dogs, for the dogs 54 and 56 will be elevated by the support 57, and the support 58 will permit the dogs 53 and 55 to drop into engagement with the ratchet wheel 49. Immediately the direction of rotation of the conveyer driving shaft 22 will be reversed, and because of the smaller diameter of the wheel 49, its reverse or return movement will be much quicker than its feeding movement, so that the follower will be replaced in the front part of the vehicle body, and the apparatus ready to receive another load in a comparatively short time.

During the return movement, the controlling or reversing arm 62 is back against the depending terminal 74 of the outstanding arm 71 of the trip lever 68. As the follower reaches its foremost position in the return movement, the projection 73^a of the

adjacent conveyer chain will engage the depending terminal 72 of the lever 68, as will be evident by reference to Fig. 9. Consequently the arm 71 will be swung forwardly, and this movement is sufficient to swing the arm 62 to a position to raise the return dogs 53 and 55 out of engagement with their ratchet wheel, and yet is not enough to permit the dogs 54 and 56 to drop into engagement with their ratchet wheel 50. The result is that both sets of dogs are automatically maintained out of engagement with the ratchet wheels, and the conveyer is automatically stopped. To reset the mechanism, therefore it is only necessary for the driver to move the lever 46 forwardly, which will elevate the arms 35, and again engage the controlling or reversing arm 62 with the holding abutment 67, and the parts are then in their first described position ready for a repetition of the operation.

From the foregoing, it is thought that the construction, operation, and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is:—

1. In a distributor of the character described, the combination with material moving means movable in opposite directions, of mechanism for automatically effecting the movement of the means in one direction at one speed and in an opposite direction at a different speed, said mechanism including relatively fixed wheels of different diameters connected to the moving means, actuating means alternately movable into and out of coaction with the different wheels for moving the same in opposite directions at different speeds, a ground wheel, and connections between said ground wheel and actuating means for moving the latter at a uniform rate of speed whether in coaction with the larger or smaller wheel.

2. In a distributor of the character described, the combination with material-moving means movable in opposite directions, of mechanism for effecting the movement of the means in one direction at one speed and in an opposite direction at a different speed, said mechanism including ratchet wheels of different diameters connected to the moving means, actuating dogs alternately movable into and out of coaction with the wheels for moving them in opposite directions, means for moving the dogs at a uniform rate of speed and means for effecting the movement of one dog into coaction with its wheel, and

the movement of the other out of coaction with its wheel.

3. In a distributor of the character described, the combination with a vehicle body, of a conveyer operating therein, a driving shaft for the conveyer, opposite ratchet wheels of different diameters secured to the shaft, actuating dogs coöperating with the different wheels for moving the same in opposite directions to effect the movement of the conveyer in one direction at one speed and in an opposite direction at a different speed, and means for engaging the different dogs with and disengaging them from their respective wheels.

4. In a distributor of the character described, the combination with a vehicle, of material moving means operating therein, opposite ratchet wheels connected to the moving means, a lever fulcrumed between its ends, a plurality of dogs pivoted to the lever on one side of the fulcrum and coacting with the different wheels, a plurality of dogs pivoted to the lever on the other side of its fulcrum and coacting with the different wheels, and means for operating the lever.

5. In a distributor of the character described, the combination with a vehicle, of material-moving means operating therein, opposite ratchet wheels connected to the means, a lever fulcrumed between its ends, separate dogs pivoted to the lever on one side of the fulcrum and coacting with the different wheels, separate dogs pivoted to the lever on the other side of its fulcrum and coacting with the different wheels, and means for operating the lever.

6. In a distributor of the character described, the combination with a vehicle, of material-moving means operating therein, opposite ratchet wheels connected to the means, a lever fulcrumed between its ends, separate dogs pivoted to the lever on opposite sides of the same and on one side of its fulcrum, said dogs respectively coacting with the different wheels, separate dogs pivoted to the lever on the opposite sides of the same and on the other side of its fulcrum, said latter dogs also respectively coacting with the different wheels, means for operating the lever, and means for holding one set of dogs out of coaction with its wheels when the other is in coaction with its wheel.

7. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a driving shaft for the conveyer, opposite ratchet wheels of different sizes mounted on the shaft, a lever fulcrumed between its ends and having a slotted portion, a set of dogs pivoted on the lever on one side of its fulcrum, said dogs respectively coacting with the different ratchet wheels, a separate set of dogs pivoted to the lever on the other side of its fulcrum and respectively coacting with the different

5 ratchet wheels, a pitman having an adjustable connection in the slot of the lever, means for holding the dogs out of coaction with one wheel when the other dogs are in coaction with the other wheel and vice versa, and mechanism for moving the said holding means.

10 8. In a distributor of the character described, the combination with material moving means, of a ratchet wheel connected thereto, a lever fulcrumed between its ends at one side of the wheel, dogs mounted on the lever on opposite sides of its fulcrum and coacting with the ratchet wheel, one of said dogs being movable into engagement with the other for supporting the same out of coaction with the wheel, a device mounted on the fulcrum of the lever for effecting the movement of said first dog out of coaction with the wheel and into engagement with the other dog, means for operating the lever, and means for moving said device.

25 9. In a distributor of the character described, the combination with material moving means, of a ratchet wheel connected thereto, a lever having a fulcrum, a dog mounted on the lever and cooperating with the ratchet wheel, a supporting device journaled on the fulcrum of the lever and engaging the dog to effect its movement with respect to the wheel, means for operating the lever, and means actuated by the material moving means for operating the supporting device.

35 10. In a distributor of the character described, the combination with material-moving means, of a ratchet wheel connected thereto, a dog cooperating with the ratchet wheel, a pivoted support engaging the dog for holding the same out of engagement with the wheel, said dog sliding in the support, a swinging arm, a link connecting the arm and support, and a spring engaging the arm to move the same, and thereby the support.

45 11. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a driving shaft for the conveyer, a ratchet wheel mounted on the driving shaft, a dog cooperating with the wheel for moving it, a pivoted support engaging the dog for holding the same out of engagement with the wheel, said dog sliding on the support, a swinging arm, a link connecting the arm and support, a spring engaging the arm to move the same, and thereby the support, an abutment engaged by the arm to prevent its movement by the spring, and means operated by the conveyer for disengaging the arm and abutment.

60 12. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a driving shaft for the conveyer, a ratchet wheel mounted on the driving shaft, a swinging lever, a dog pivoted on the lever and coacting with the

ratchet wheel, means for swinging the lever, a pivoted support for the dog having its axis of movement substantially coincident with the fulcrum of the lever, a swinging arm connected to the support, a spring connected to the arm for moving the same, and thereby swinging the support, an abutment for holding the arm against movement under the action of the spring, and means operated by the conveyer for disengaging the arm and support to permit the movement of the former under the action of the spring.

13. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a ratchet wheel connected to the conveyer, a lever fulcrumed between its ends, means for swinging the lever, dogs pivoted to the lever on opposite sides of its fulcrum and being movable into and out of coaction with the ratchet wheel, one of said dogs engaging the other to effect its said movement, a supporting device engaging one dog to move the same, and thereby the other dog, and means operated by the conveyer for moving the supporting device.

14. In a distributor of the character described, the combination with a vehicle body, of a conveyer operating therein, a driving shaft for the conveyer, opposite ratchet wheels of different diameters secured to the shaft, a lever fulcrumed between its ends, separate dogs pivoted to the lever on one side of its fulcrum and coacting with the different wheels, separate dogs pivoted to the lever on the other side of the fulcrum and coacting with the different wheels, one of the dogs of each wheel engaging the other dog of such wheel to move the same out of coaction with the wheel, separate supports pivoted on the fulcrum of the lever and engaging one of the dogs of each set to move the same, and thereby the other dog out of coaction with the wheels, a swinging arm connected to the supports, a spring for operating the arm, an abutment for holding the arm against the action of the spring, and means operated by the conveyer for disengaging the arm and abutment.

15. In a distributor of the character described, the combination with material moving means, of opposite ratchet wheels connected thereto, a lever fulcrumed between its ends, a pair of dogs mounted on the lever on one side of its fulcrum and respectively coacting with the different ratchet wheels, a pair of dogs mounted on the lever on the other side of its fulcrum and respectively coacting with the different ratchet wheels, and means for moving the dogs that coact with one wheel out of coaction therewith when the others are in coaction with their wheel and vice versa.

16. In a distributor of the character described, the combination with material moving means, of opposite ratchet wheels asso-

ciated therewith, a lever fulcrumed between its ends, dogs pivoted to portions of the lever on opposite sides of its fulcrum, said portions simultaneously moving in opposite directions and moving the dogs simultaneously in opposite directions, said dogs coacting with the different wheels, and means for swinging one of the dogs out of coaction with its wheel and permitting the other to be in coaction with its wheel.

17. In a distributor of the character described, the combination with material moving means, of opposite ratchet wheels associated therewith, a lever fulcrumed between its ends, a plurality of sets of oppositely moving and swinging dogs pivoted on the lever, each set comprising a plurality of dogs coacting with one of the ratchet wheels, and means for moving the dogs of one set out of coaction with the wheel when the other set is in coaction with its wheel.

18. In a distributor of the character described, the combination with material moving means, of opposite ratchet wheels associated therewith, a lever fulcrumed between its ends, separate independently swinging sets of dogs, the dogs of each set being pivoted on the lever on opposite sides of its fulcrum and coacting with one of the wheels, separate oppositely moving devices engaging the dogs to swing one set out of coaction with its wheel and permit the other set to be in coaction with its wheel and vice versa, and means for effecting the opposite movement of the devices.

19. In a distributor of the character described, the combination with a conveyer, of opposite ratchet wheels associated therewith, a lever fulcrumed between its ends, a set of dogs pivoted to the lever on one side of the fulcrum and coacting with the different wheels, another set of dogs pivoted to the lever on the other side of its fulcrum and coacting with the different ratchet wheels, oppositely swinging supports for effecting the opposite movement of the dogs of each set, and means for operating the supports.

20. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a driving shaft for the conveyer, opposite ratchet wheels mounted on the shaft, a lever fulcrumed between its ends, swinging dogs pivoted on the lever on one side of its fulcrum and coacting with the different ratchet wheels, swinging dogs pivoted on the lever on the other side of its fulcrum and coacting with the different wheels, means for swinging the lever, and means for swinging the corresponding dogs in opposite directions to carry them into and out of coaction with their respective wheels.

21. The combination with material moving means, of mechanism for moving the same in opposite directions, a reversing device connected to the operating mechanism

for reversing the direction of movement of the material moving means, means for automatically moving said device, a stationary abutment for holding the device against movement, and a pivoted trip comprising one of said arms being located in the path of movement of the material moving means and the other of said arms being arranged to directly engage the device and move it out of coaction with the abutment to permit its movement by said automatic means.

22. In a distributor of the character described, the combination with a conveyer, of opposite ratchet wheels connected thereto, a lever fulcrumed between its ends, independently swinging dogs pivoted to the lever on opposite sides of its fulcrum and coacting with the ratchet wheels, oppositely moving supports for the dogs journaled on the fulcrum of the lever, a swinging arm connected to the supports for moving the same in opposite directions, means for moving the arm, an abutment for holding the arm against movement, and a tripping device for disengaging the arm from the abutment, said device having a portion disposed in the path of movement of the conveyer.

23. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, mechanism for moving the conveyer in opposite directions, a reversing arm connected to the operating mechanism to reverse the direction of movement of the conveyer, a motor device connected to the arm for operating the same, means for holding the arm against movement by the motor device, and a trip lever having a portion engaging the arm, and a portion engaged by the conveyer when the latter reaches a predetermined position to move said lever and thereby move the arm to release said arm.

24. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, mechanism for moving the conveyer in opposite directions, a reversing arm connected to the mechanism for reversing the direction of movement of the conveyer, a spring connected to the arm for moving the same, an abutment engaged by the arm to prevent its movement by the spring, a trip lever pivoted on the body and having angularly disposed arms, one of which engages the reversing arm, and a projection carried by the conveyer and engaging the other arm of the trip lever to swing the same, and thereby disengage the reversing arm from the abutment.

25. In a distributor of the character described, the combination with a conveyer, of a driving shaft therefor, opposite ratchet wheels mounted on the shaft, swinging dogs cooperating with the wheels for moving the same in opposite directions, means for mov-

ing the dogs of one wheel out of coaction therewith and permitting the movement of the other dog into coaction with the other wheel and vice versa, said means including
 5 a swinging reversing arm, a spring for swinging the arm, an abutment engaging the arm for holding it against movement under the action of the spring, and a trip lever pivoted on the body and having a portion engaging
 10 the arm to disengage it from the abutment, said trip lever having a portion that is engaged by the conveyer to move the lever.

26. In a distributor of the character described, the combination with a vehicle body,
 15 of a conveyer, operating therein, a driving shaft for the conveyer, opposite ratchet wheels mounted on the driving shaft, an operating lever fulcrumed between its ends, oppositely moving dogs pivoted on the lever on
 20 opposite sides of its fulcrum and coacting with the ratchet wheels, oppositely moving supports for the dogs, a swinging arm connected to the supports for simultaneously swinging the same in opposite directions, a
 25 spring connected to the arm for swinging the same, means for holding the arm against movement under the action of the spring, and a trip device operated by the conveyer and disengaging the arm from the holding
 30 means, when said conveyer reaches a predetermined position.

27. In a distributor of the character described, the combination with a vehicle, of a
 35 conveyer, a driving member, reversible operating mechanism for moving the conveyer in opposite directions, said mechanism having a detachable connection with the driving member, a controlling member for reversing the direction of movement of the conveyer
 40 by the operating mechanism, and manual means for connecting the operating mechanism to and disconnecting it from the driving member, said means having an engagement with the reversing member for moving the
 45 same to a predetermined position.

28. In a distributor of the character described, the combination with a vehicle, of a
 50 conveyer operating therein, a driving wheel, reversible mechanism for moving the conveyer in opposite directions, said mechanism including an element movable into and out of engagement with the driving wheel, a controlling member for reversing the direction of movement of the conveyer by the mechanism, a device for holding the controlling
 55 member against movement, manually operated means for moving the element into and out of engagement with the driving wheel, said means having an engagement with the
 60 reversing member for moving the same into coaction with the holding device, and means controlled by the conveyer for automatically moving the reversing member away from the holding device after it has been moved there-
 65 to by said manually operated means.

29. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a driving wheel, a movable support, operating mechanism for moving the conveyer in opposite directions,
 70 said mechanism including means carried by the support and swinging therewith into and out of coaction with the wheel, and a controlling device for reversing the operation of the mechanism on the conveyer, said device
 75 being carried by the support.

30. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a driving wheel, a movable support, operating mechanism for
 80 moving the conveyer in opposite directions, said mechanism including means carried by the support and movable therewith into and out of coaction with the wheel, a controlling device movable with said support for reversing
 85 the operation of the mechanism on the conveyer, said device being carried by the support, and a hand lever for moving the support.

31. In a distributor of the character described, the combination with a vehicle, of a
 90 conveyer operating therein, a driving wheel, a swinging support, operating mechanism for moving the conveyer in opposite directions, said mechanism including a sprocket chain
 95 mounted on the support and swinging therewith into and out of coaction with the driving wheel, and a controlling device for reversing the operation of the mechanism on the conveyer, said device being carried by the
 100 support.

32. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a driving wheel, a movable support, operating mechanism
 105 for moving the conveyer in opposite directions, said mechanism including means carried by the support and movable therewith into and out of coaction with the wheel, a controlling device for reversing the operation
 110 of the mechanism on the conveyer, said device being carried by the support and movable therewith in one direction, and a spring for moving the device in an opposite direction independently of the support.
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33. In a distributor of the character described, the combination with a vehicle, of a toothed driving wheel, a conveyer operating in the vehicle, a support pivotally mounted on the vehicle and swinging towards and
 120 from the driving wheel, actuating means for the conveyer including a sprocket chain belt mounted on and swinging with the support into and out of coaction with the driving wheel, a controlling device for reversing the
 125 operation of the ratchet mechanism on the conveyer, said controlling device being pivoted on the support and swinging therewith in one direction, a spring for moving the controlling device in an opposite direc-
 130

tion, means for holding the controlling device against movement by the spring, means operated by the conveyer for releasing the controlling device from the holding means, and a hand lever for swinging the support.

34. In a distributor of the character described, the combination with a vehicle body, of material moving means operating therein, drive wheels located on opposite sides of the body, supports movably mounted on opposite sides of the body, driven elements carried by the supports and movable therewith into and out of coaction with the drive wheels, a bail comprising a rock shaft journaled on the body and having offset arms connected to the supports, and means for operating the bail.

35. In a distributor of the character described, the combination with a vehicle body, of material moving means operating therein, drive wheels located on opposite sides of the body, swinging supporting arms pivoted on opposite sides of the body, driven elements mounted on the supporting arms and movable into and out of coaction with the wheels, a bail comprising a rock shaft journaled on the underside of the body and having offset arms, said arms having slidable connections with the supporting arms, and a lever connected to the bail for operating the same.

36. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a driving member, a movable support, a driven element mounted on the support and movable therewith into and out of coaction with the driving member, and means for moving the support including a swinging arm having a slidable connection with said support.

37. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a drive wheel, a swinging supporting arm, a belt mounted on the supporting arm and movable into and out of coaction with the drive wheel, and means for swinging the supporting arm including a swinging arm having a slidable connection with the supporting arm.

38. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein a drive wheel, a swinging supporting arm, a belt mounted on the supporting arm and movable into and out of coaction with the drive wheel, means for swinging the supporting arm including a swinging arm having a sliding connection with the supporting arm, and a hand lever connected to said swinging arm.

39. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, mechanism for moving the conveyer, including an eccentric, a sprocket wheel located adjacent to the eccentric, coacting clutch elements carried by the eccentric and sprocket wheel, a drive wheel, a movable support, and a

sprocket chain carried by the support and movable therewith into and out of engagement with the drive wheel, said chain passing around the sprocket wheel.

40. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, mechanism for moving the conveyer, including a shaft, an eccentric element and a sprocket wheel element mounted on the shaft, one of said elements being fixed to the shaft, the other being free thereon, a clutch connection between the elements, a toothed drive wheel, a swinging support, and a sprocket chain carried by the support and movable therewith into and out of engagement with the drive wheel, said chain passing around the sprocket wheel.

41. In a distributor of the character described, the combination with a vehicle, of a conveyer, reversible operating mechanism for moving the conveyer in opposite directions, a single controlling device for automatically effecting the reverse movement of the mechanism on the conveyer, a motor for moving the controlling device in one direction to cause the movement of the conveyer in one direction, and a hand lever for moving the controlling device against the action of the motor and to a position to cause the movement of the conveyer in an opposite direction.

42. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, reversible operating mechanism for moving the conveyer in opposite directions, a single swinging controlling arm for automatically reversing the operation of the mechanism upon the conveyer to cause the latter to move in opposite directions, a spring connected to the arm for moving the same in one direction; and a hand lever connected to the arm for moving the same against the action of the spring.

43. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, a rotatable distributor device journaled on the vehicle and having a shaft, independent rotatable supporting wheels for the vehicle, gear wheels loosely journaled on the distributor device at the opposite ends of the distributor, gearing connecting the supporting wheels and the gear wheels, clutch connections between the gear wheels and the shaft, one of said connections including an eccentric, and operating means for the conveyer driven by said eccentric.

44. In a distributor of the character described, the combination with a vehicle body, of independently rotatable supporting wheels therefor, a rotatable distributing device journaled on the body and including a shaft, swinging supports swinging mechan-

isms mounted on the swinging supports and shaft and movable with the former into and out of coaction with the wheels, and clutch connections between the portions of the mechanism mounted on the shaft and the distributing device.

45. In a distributor of the character described, the combination with a vehicle body, of independently rotatable supporting wheels therefor, a rotatable distributing device journaled on the body and including a shaft, supports journaled on the body, gearing mounted on the supports and swinging there-with into and out of coaction with the wheels, said gearing being connected to the shaft and swinging with the same as its axis, a bail pivotally mounted on the body and having arms connected to the supports, and means for swinging the bail.

46. In a distributor of the character described, the combination with a vehicle body, of material-moving means mounted thereon, and including a conveyer and a rotatable distributor, said distributor having a shaft, mechanism for operating the conveyer, means mounted on the distributor shaft for actuating the mechanism, supporting wheels having toothed portions, swinging supports, sprocket chains mounted on the supports and on the distributor shaft and moving with said supports into and out of coaction with the toothed portions of the wheels, a bail extending beneath the body and having up-standing arms slidably engaged with the supports, and a lever connected to the bail for swinging the same.

47. In a distributor of the character described, the combination with a vehicle body, of a conveyer operating in the bottom thereof, a drive shaft for the conveyer, opposite ratchet wheels of different diameters mounted on the shaft, a lever fulcrumed between its ends on one side of the body, dogs pivoted to the lever on opposite sides of its fulcrum and cooperating with the different wheels, said lever having a longitudinal slot, a distributor drum journaled on the rear of the body and having a shaft, an eccentric mounted on the shaft, a pitman operated by the eccentric and having a bearing in the slot of the lever, means including a hand lever for moving said bearing in said slot, a swinging controlling arm, supports for the dogs connected to the controlling arm, a spring for moving the controlling arm in one direction, a device for holding the controlling arms against movement by the spring, a trip actuated by the conveyer for releasing the controlling arm from the holding device, swinging supports journaled on opposite sides of the body, one of said supports constituting a support for the controlling arm and effecting its movement against the action of the spring, independent toothed drive wheels, chains having clutch connec-

tions with the distributor shaft and mounted on the swinging supports, said chains being movable into and out of coaction with the drive wheels on the swinging movements of the supports, a bail journaled beneath the body and having arms slidably engaging the supports, and a hand lever connected to the bail.

48. In a distributor of the character described, the combination with a conveyer movable in reverse directions, of means for moving the same in one direction a predetermined distance, automatically reversing the direction of movement of the conveyer and automatically stopping the same after its reverse movement a predetermined distance, said means including a single controlling device and a single tripping member cooperating therewith, said member being engaged and operated by the conveyer on its reverse movements.

49. In a distributor of the character described, the combination with a conveyer movable in reverse directions, of means for moving the same in one direction a predetermined distance, automatically reversing the direction of movement of the conveyer and automatically stopping the same after its reverse movement a predetermined distance, said means including a single controlling device and a single tripping member cooperating therewith, said member being engaged and operated in opposite directions by the conveyer on its reverse movements.

50. In a distributor of the character described, the combination with a conveyer movable in reverse directions, of means for moving the same in one direction a predetermined distance, automatically reversing the direction of movement of the conveyer and automatically stopping the same after its reverse movement a predetermined distance, said means including a single controlling device, a motor for moving the controlling device in one direction, an abutment for holding the controlling device against movement by the motor, and means actuated by the conveyer on its movement in one direction to release the controlling device from the abutment and permit its actuation by the motor and on its movement in an opposite direction to move said controlling device against the action of the motor.

51. In a distributor of the character described, the combination with a conveyer movable in reverse directions, of means for moving the same in one direction a predetermined distance, automatically reversing the direction of movement of the conveyer and automatically stopping the same after its reverse movement a predetermined distance, said means including a single controlling device, a spring for moving the controlling device in one direction, an abutment for

holding the controlling device against movement by the spring, and a trip moved in opposite directions by the conveyer on the reverse movement of the latter, said trip when moved in one direction releasing the controlling device and permitting the operation of the spring and when moved in an opposite direction, effecting the movement of the controlling device against the action of the spring.

52. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, mechanism for moving the conveyer in opposite directions said mechanism including opposite ratchet wheels, a swinging lever, dogs pivoted on the lever and alternately operating on the wheels to rotate the same in opposite directions, and an automatic controlling device controlled by the conveyer for maintaining the dogs of either or both wheels out of coaction with said wheels, said device being automatically movable to carry one set of dogs out of coaction and the other set of dogs into coaction with their respective wheels, and thereby effect the automatic reversal of movement of the conveyer.

53. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein, mechanism for moving the conveyer in opposite directions said mechanism including opposite ratchet wheels, a swinging lever, dogs pivoted on the lever and alternately operating on the wheels to rotate the same in opposite directions, a controlling device for maintaining the dogs of either or both wheels out of coaction with said wheels to effect the opposite

movements of the conveyer and the stoppage thereof, and means controlled by the conveyer for automatically effecting the different movements of the controlling device to automatically reverse the movement of the conveyer and automatically stop the same after the reverse movement has been accomplished.

54. In a distributor of the character described, the combination with a vehicle, of a conveyer operating therein and including a drive shaft having opposite ratchet wheels, a swinging lever, means for swinging the lever, sets of dogs pivoted on the lever and operating on the different ratchet wheels to rotate the same in opposite directions, supports for moving either set of dogs out of coaction with its wheel and permitting the engagement of the other set with its wheel, a controlling arm connected to the supports, said supports on their movement by the arm, effecting the disengagement of either or both sets of dogs from their respective wheels, a trip lever having angularly disposed arms between which the controlling arm operates and projections carried by different portions of the conveyer and arranged to engage the trip lever for operating the same and thereby effecting the different movements of the controlling arm.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

NICKLAS H. BLOOM.
JOSEPH H. BLOOM

Witnesses:

H. G. DEXTER,
M. A. KEPPLER.