

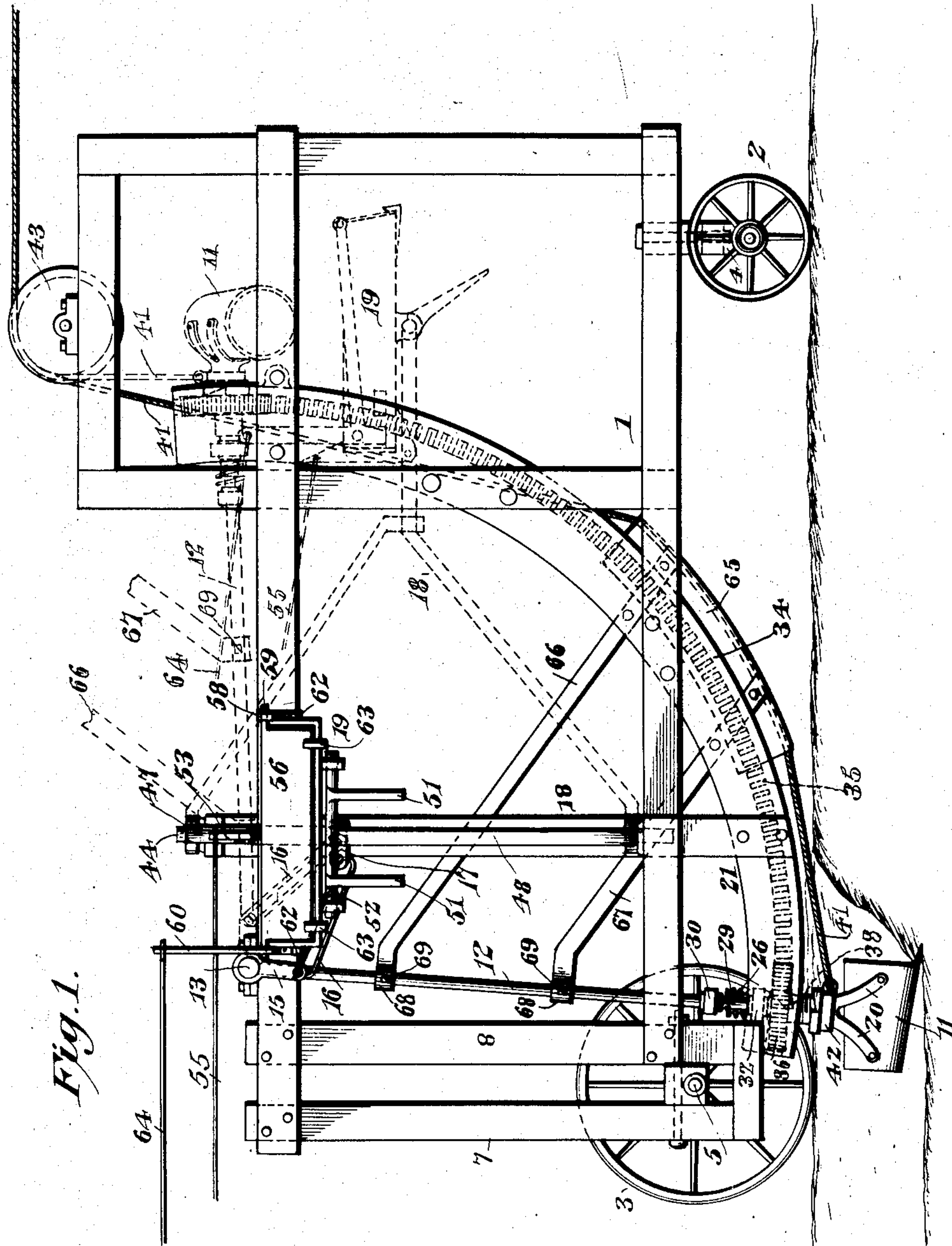
No. 768,362.

PATENTED AUG. 23, 1904.

J. P. GORDON.
EXCAVATING MACHINE.
APPLICATION FILED OCT. 31, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



James P. Gordon, Inventor

By

E. G. Siggers

Attorney

Witnesses
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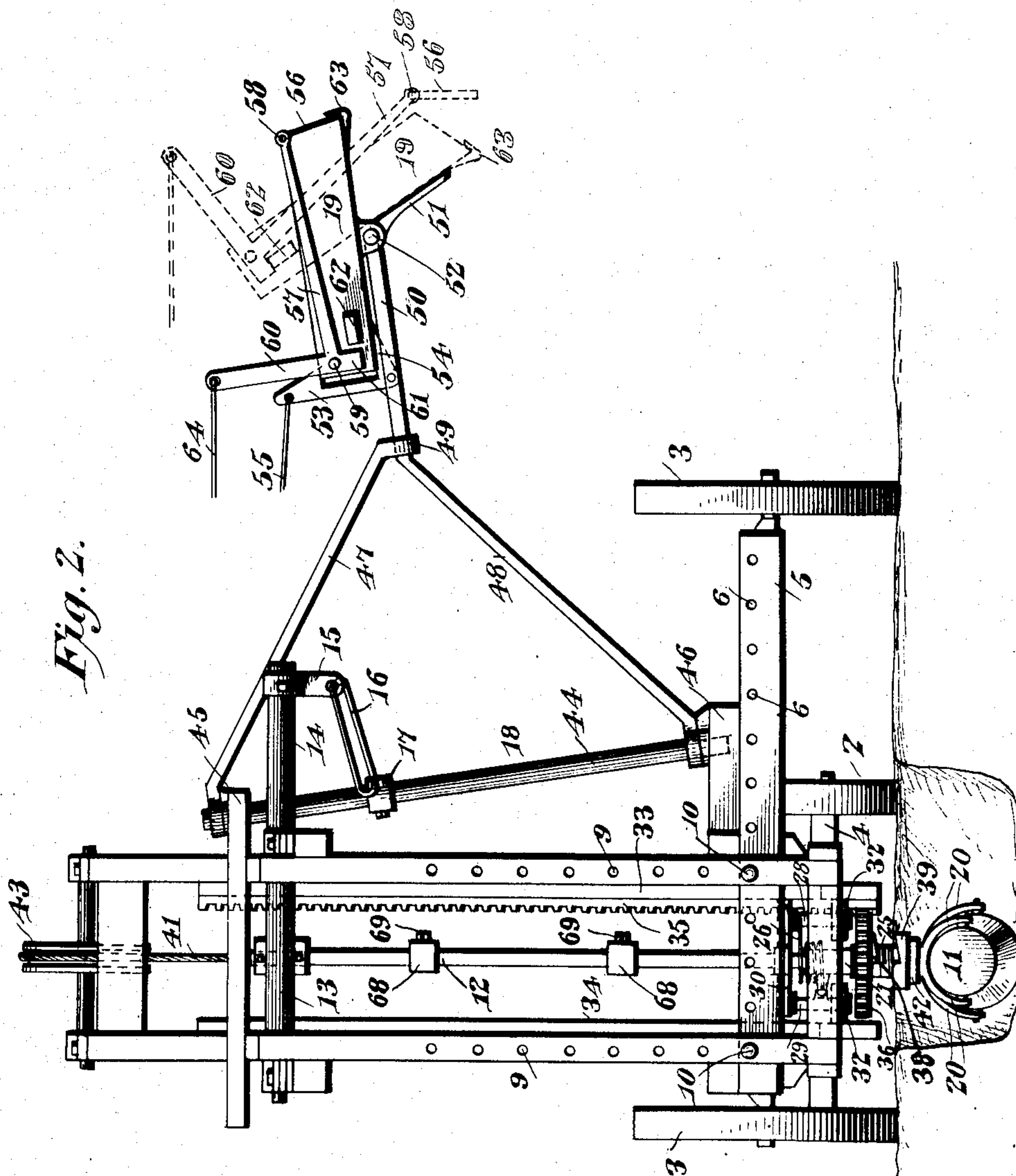
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

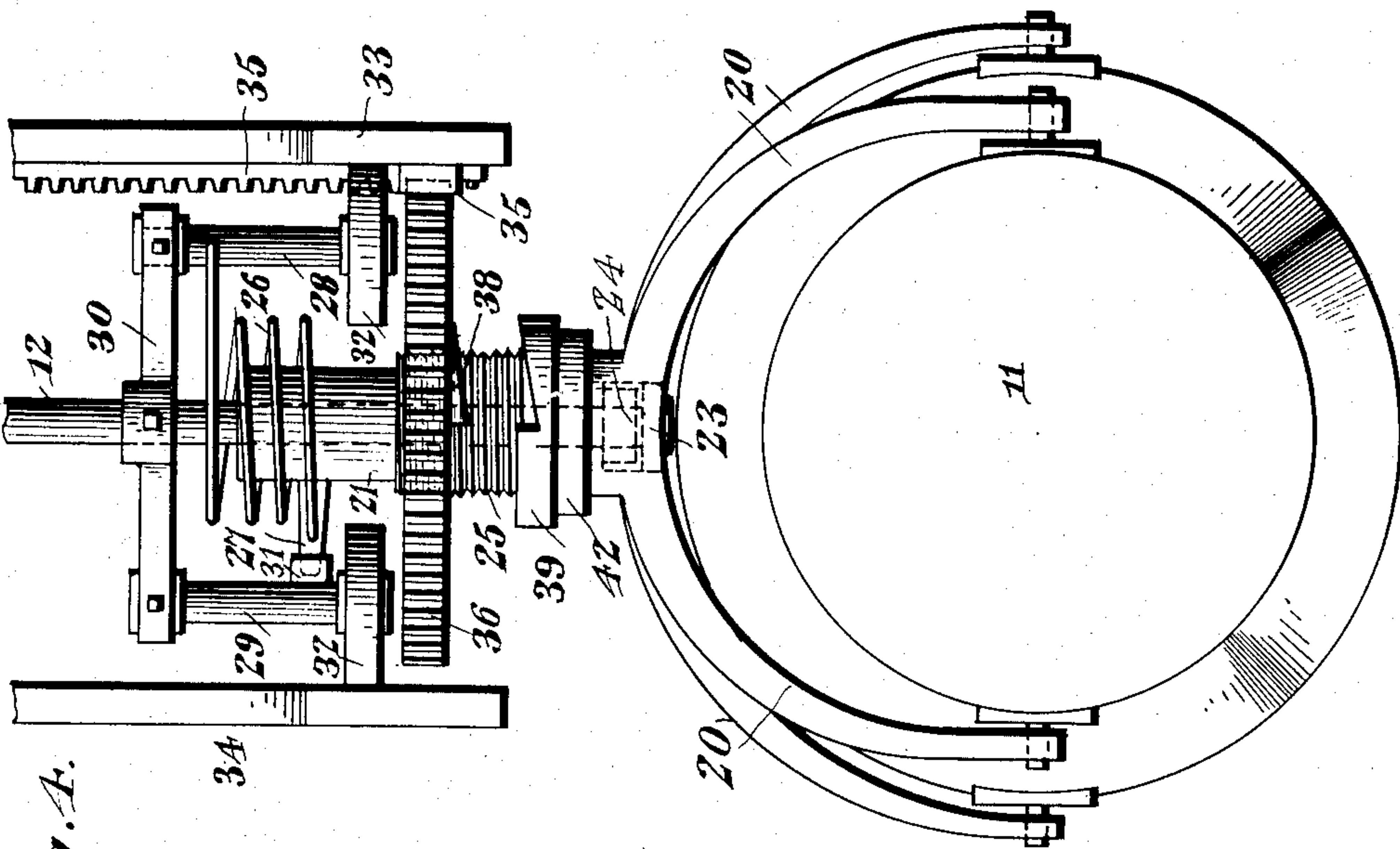


Fig. 4.

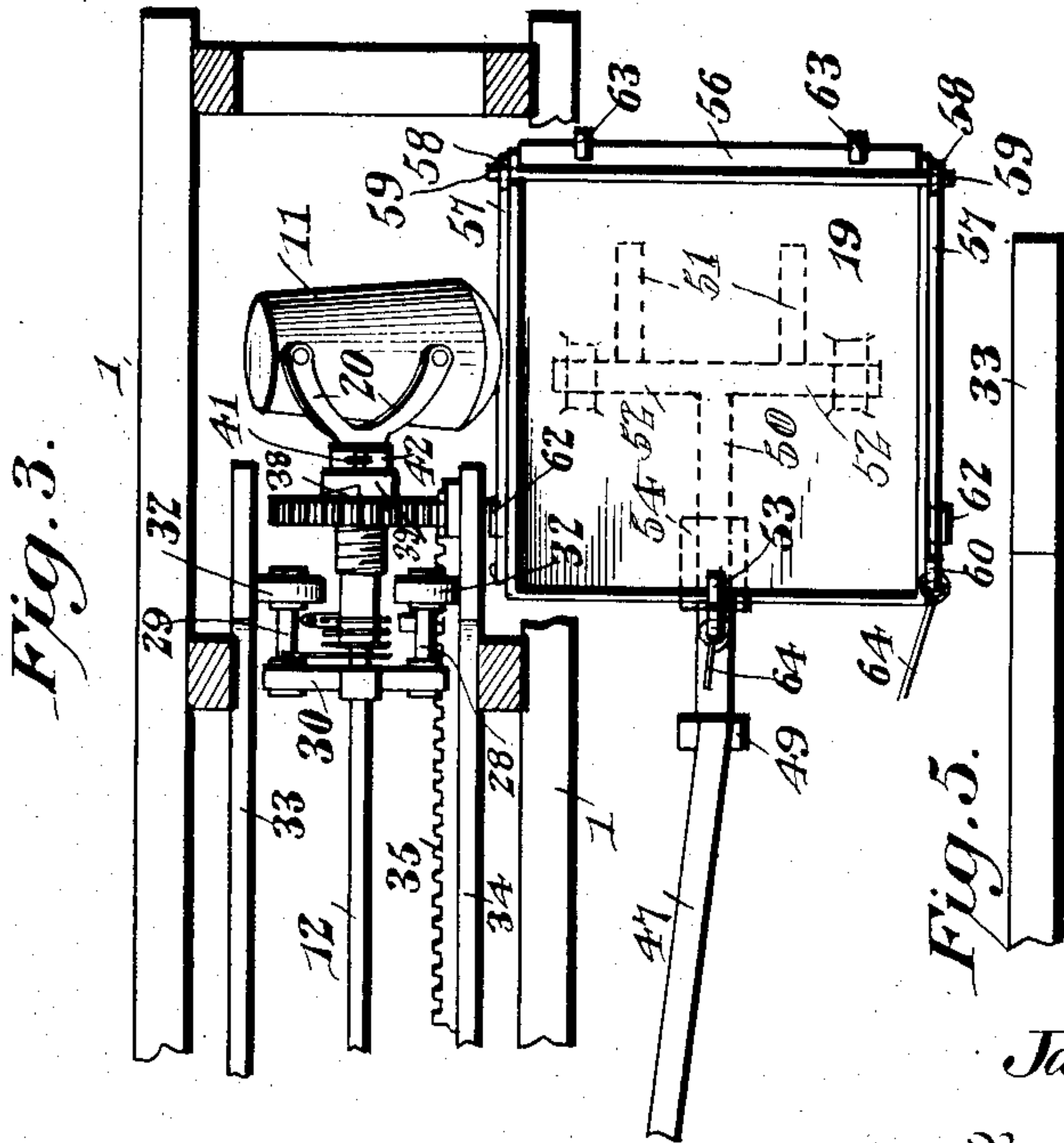


Fig. 3.

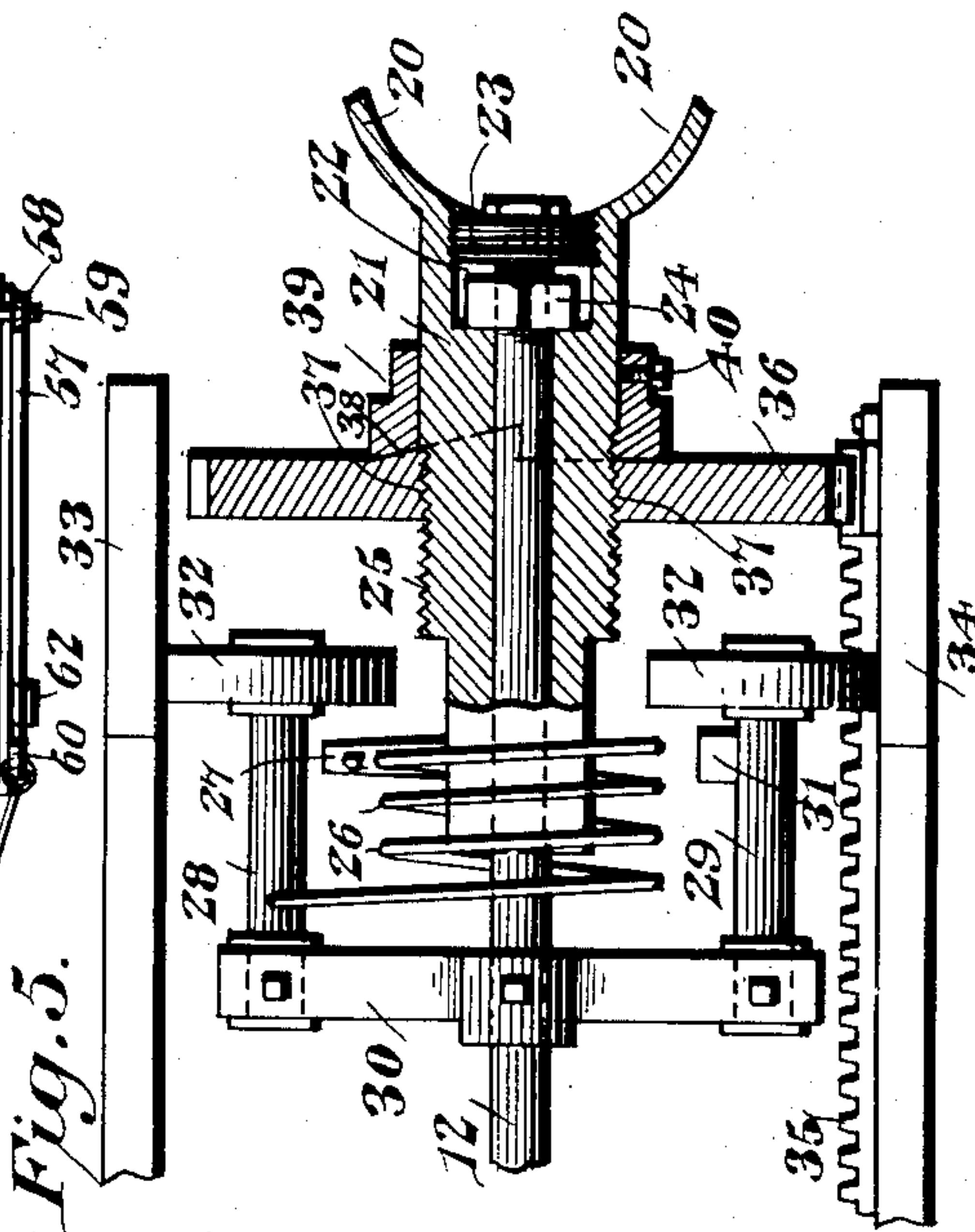


Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES PORTERFIELD GORDON, OF FLORENCE, COLORADO.

EXCAVATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 768,362, dated August 23, 1904.

Application filed October 31, 1903. Serial No. 179,375. (No model.)

To all whom it may concern:

Be it known that I, JAMES PORTERFIELD GORDON, a citizen of the United States, residing at Florence, in the county of Fremont and State of Colorado, have invented a new and useful Excavating-Machine, of which the following is a specification.

The invention relates to improvements in excavating or ditching machines.

The object of the present invention is to improve the construction of excavating or ditching machines and to provide a simple, inexpensive, and efficient machine of this character designed for operating on land and capable of operation wherever it is possible to drive a vehicle.

Another object of the invention is to enable the ditching-machine to be operated by a stationary engine located at a point beyond the place operated on and to provide a combined draft and hoisting rope or cable for propelling the machine and for operating its scoop or shovel.

The invention also has for its object to provide a ditching-machine in which the weight of the shovel or scoop will be utilized after the same has deposited its load and while returning to its starting-point for actuating the means for conveying such excavated earth from the shovel or scoop to the wagon or cart into which the excavated earth is discharged.

Furthermore, it is the object of the invention to provide means under the control of the operator for enabling the discharge of the excavated earth to be made at any desired point within the limits of the movement of the carrying means for conveying the earth from the scoop or shovel to the wagon or cart.

With these and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size, and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a side elevation of a ditching or excavating machine constructed in accordance with this invention. Fig. 2 is a rear elevation of the same. Fig. 3 is a detail plan view illustrating the arrangement of the scoop or shovel and the receptacle of the frame when the former is discharging into the latter. Fig. 4 is an enlarged detail view illustrating the manner of mounting the scoop or shovel. Fig. 5 is a sectional view of the same.

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

1 designates a main or supporting frame designed to be constructed of any suitable material, either wood or metal, and mounted upon front and rear wheels 2 and 3, the front wheels being arranged on the spindle of a short axle 4 and the rear wheels being mounted on an elongated axle 5. The elongated axle may be of any desired length, and when necessary axles of different lengths may be employed, and the said rear axle is provided at intervals with perforations 6 and is arranged between parallel uprights 7 and 8, disposed in pairs at the rear of the frame and located at opposite sides thereof. The uprights 7 and 8 are provided at intervals with perforations 9, adapted to receive fastening devices 10, which also pass through perforations of the rear axle, and by this construction the rear of the frame may be raised and lowered and may be adjusted laterally to enable the shovel or scoop 11 to operate at different points, whereby a ditch or trench may be excavated the desired width and depth. In practice the machine moves forward as the shovel or scoop cuts its width, and this operation is repeated until the necessary width is cut. One layer after another is excavated in this manner until the necessary depth is cut, the frame being lowered after cutting each layer to enable the shovel to operate at an increased depth.

The shovel or scoop is carried by an oscillatory arm 12 of a transverse shaft 13, which is journaled in suitable bearings at opposite sides of the frame, as clearly indicated in Fig. 2 of the accompanying drawings, the frame

being composed of two sides spaced apart to provide a way for the shovel and the long oscillatory arm 12 and connected beyond the shovel and the arm by suitable cross-pieces.

5 The shaft 13 is provided at one side of the machine with an extension 14, and it has a short arm 15 at the end thereof. This arm 15 is connected by a link 16 with an approximately horizontal arm 17 of a crane 18, which

10 carries a receptacle 19 for the excavated earth and which is operated by the said shaft 14, whereby when the shovel or scoop is swung upward the crane is caused to swing inward to receive the contents of the scoop or shovel,

15 and when the scoop or shovel is swung downward the crane will be swung outward to discharge its load. The bucket, shovel, or scoop, which may be of any desired construction, is preferably approximately cylindrical and tapered,

20 as shown, and it is secured to arms 20 of a sleeve 21, the arms being disposed in pairs at the sides of the scoop or shovel, whereby the latter is rigidly connected with the sleeve. The sleeve is provided with a longitudinal bore

25 or opening to receive the outer end of the arm 12, and the bore or opening is enlarged at 22 and interiorly threaded to receive a plug 23, which is arranged at the outer end of the sleeve, sufficient space being provided between

30 the plug or closure 23 and the inner end of the enlargement of the bore or opening to accommodate a nut 24. The nut 24 engages the outer end of the arm 12 of the transverse shaft. The sleeve is first placed on the arm

35 12 and is then moved inward sufficiently to expose the outer threaded end of the arm. The nut 24 is then applied to the arm, and the sleeve is drawn outward to carry the nut into the enlargement of the bore or opening, after

40 which the plug or closure is applied to the outer end of the sleeve. This will retain the parts in proper position and will permit the sleeve to rotate on the arm 12 of the shaft, as hereinafter explained. The inner portion of

45 the sleeve is provided with exterior screw-threads 25, and the said sleeve is extended beyond the screw-threads and reduced, as shown, the reduced portion receiving a coiled spring 26, having one end connected with the sleeve

50 and its other end fixed with relation to the arm 12. The outer end of the spring is secured to a projection or finger 27 of the inner reduced portion of the sleeve, and the inner end of the spring is secured to one of a pair

55 of spindles 28 and 29, which are fixed to a cross-head 30 of the arm 12. The spindle 28 receives the inner end of the coiled spring, and the other spindle, 29, is provided with a stop 31, arranged in the path of the finger or

60 projection 27 and normally engaged by the same. The spring holds the finger or projection 27 against the stop 31 when it is free to act, and it thereby maintains the bucket, scoop, or shovel in proper position for excavating, and it returns the bucket, scoop, or

65

shovel to such position after the same has been partially rotated, as hereinafter explained, to dump the excavated earth into the receptacle of the crane. The cross-head 30 is suitably fixed to the arm 12 of the shaft 13, and the spindles

70 28 and 29, which are fixed to the cross-head, receive guide-wheels 32, forming antifriction devices and arranged to run on curved tracks 33 and 34, whereby the arm 12 is held against lateral movement and is caused to swing longitudinally of the machine.

75

The frame of the machine is provided at one side with a curved rack 35, arranged to receive a gear-wheel 36, which is provided with interior screw-threads 37 for engaging the exterior screw-threads of the sleeve, whereby

80 when the arm 12 is oscillated the gear-wheel 36 will be rotated and will be moved inward and outward on the sleeve as the arm 12 is swung backward and forward. The gear-

85 wheel is provided at its outer face with a clutch 38, which is adapted to engage a clutch member 39 of the sleeve, the clutch member 39 being preferably secured to the sleeve by a set-screw 40 and being provided at its en-

90 gaging face with a shoulder for engagement with the clutch member 38. The clutch member 38 is provided with a beveled outer face, and it has a shoulder at one end for engaging the clutch member of the sleeve.

95

When the arm 12 arrives at an approximately horizontal position, as illustrated in dotted lines in Fig. 1 of the drawings, the gear-wheel will have reached the outer end of the threaded portion of the sleeve and will

100 have engaged the clutch member 39 to partially rotate the bucket, scoop, or shovel against the action of the coiled spring for discharging the contents of the said bucket, scoop, or shovel into the receptacle of the crane. This

105 movement carries the finger or projection 27 away from the stop 31, and as soon as the bucket, scoop, or shovel descends the clutch member 38 of the gear-wheel will release the sleeve and permit the scoop or shovel to be

110 returned by the coiled spring to its position longitudinally of the machine for making another cut. The curved rack is substantially quadrant-shaped, and its curve slightly recedes from the arc of a true circle to accom-

115 modate itself to the inward and outward movement of the gear-wheel. As the arm 12 descends the gear-wheel moves inward, and the curved rack is arranged to receive the gear-wheel properly at each point along the arc in

120 which the arm 12 swings. The sleeve is connected with one end of a rope or cable 41 by a collar 42, having a suitable eye for the reception of the rope or cable and adapted to permit the sleeve to turn freely within it. The

125 rope or cable extends upward to a guide-pulley 43, located at the top of the machine at the front thereof, the frame of the machine being preferably extended, as shown. The cable or rope extends to a suitable stationary

130

engine, (not shown,) and it serves both as a hoisting rope or cable and as a draft rope or cable for propelling the machine forward.

The crane is approximately triangular, as illustrated in Fig. 2 of the drawings, and it is provided with an inclined shaft 44, having its ends journaled in bearings 45 and 46, located in the same transverse vertical plane. The lower bearing 46 is offset laterally beyond the upper bearing, and the shaft and the crane are thereby set at an inclination, and when the crane swings outward to its discharging position the receptacle is slightly elevated and is adapted to cause the crane to swing inward when the same is free to move.

The crane is provided with upper and lower inclined bars 47 and 48, the lower bar 48 being extended outward through an eye 49 of the upper bar to form an arm or support 50, which is provided with a depending stop or rest 51, set at an angle or inclination and adapted to limit the tilting movement of the receptacle 19, as illustrated in dotted lines in Fig. 2 of the drawings, thereby lessening the movement of the tilting receptacle and enabling the machine to be built somewhat lower than it could be were the receptacle allowed to swing downward to a vertical position. In other words, the receptacle will clear a cart or wagon when it is in an inclined position, whereas it might strike such cart or wagon when in an upright position.

The receptacle is provided near its center with eyes for the reception of a pivot 52 of the arm or support 50, the inner portion of the pan being preferably slightly heavier than the outer portion, whereby the weight of the pan or receptacle will operate to retain it in the position shown in full lines in Fig. 2. The receptacle is held in an upright position by means of a dog 53, pivoted at its lower end to the arm or support 50 and having an engaging upper portion which extends over the upper edge of the inner side of the receptacle. The dog is also provided with an arm 54, extending outwardly beneath the receptacle, and an operating cord or rope 55 is connected with the upper end of the dog and is adapted to be pulled to release the receptacle and to swing the inner side thereof upward to dump the receptacle.

The receptacle is provided at its outer side with a hinged gate 56, carried by a pair of arms 57 of a bell-crank lever. The arms 57 are provided at their outer ends with eyes to receive pivots 58 of the gate 56, and they are connected at their inner ends with a transverse shaft or pintle 59. An arm 60, which is arranged at right angles to the arms 57 and which is preferably formed integral with one of them, extends upward from the same and is provided with a projection 61, which is arranged to engage a lug 62 of the receptacle, as illustrated in dotted lines in Fig. 2 of the drawings. The gate 56, which is connected at the top with the

arms 57, has its lower edge engaging keepers 63, which firmly hold the gate in its closed position. When the arm 60 is swung rearward by a cord or rope 64, the gate 56 is lifted out of engagement with the keepers 63 and is permitted to swing outward to allow the contents of the receptacle to discharge into a cart or wagon or upon the ground, if desired. The operating cords or ropes 55 and 64, which for convenience of illustration are shown extending horizontally from the parts to which they are connected, will in practice extend to the platform of the machine in order to enable the operator to dump the receptacle when desired. After the receptacle has discharged its contents the operating cord or rope 64 is pulled to engage the projection 61 with the lug 62 and return the receptacle to its upright position. When the operating cord or rope 64 is released after returning the receptacle to its upright position, the gate will drop back into engagement with the keepers.

The crane is positively drawn outward to its discharging position by the weight of the arm 12 and the shovel or scoop when the said arm 12 swings downward, and when the arm is swung upward the crane is gradually permitted to swing around to the machine to receive the contents of the scoop or shovel. By this construction the oscillation of the crane is automatically controlled by the scoop or shovel, and as the latter vibrates longitudinally of the frame the receptacle will be moved transversely of the same. If desired, a plurality of shovels of different kinds and sizes may be provided, and the connection between the shovel and the arm or member 12 of the shaft 13 will permit the shovels to be readily changed when desired.

In order to prevent the rope or cable 41 from extending in a straight line from the pulley 43 to the outer end of the arm 12 and decreasing the power or leverage when the arm 12 is in an upright position, as illustrated in Fig. 1 of the drawings, a guide 65 is employed. The guide 65 is substantially segmental and preferably consists of a curved block or piece connected by bars 66 and 67 with the arm 12. The bars 66 and 67 are bolted or otherwise secured at their outer ends to the block or piece and are provided at their inner ends with eyes 68 and are secured by set-screws 69 to the said arm 12. The curved block or piece of the guide is provided at its outer face with a groove to receive the rope, and this peripheral groove is arranged concentric with the arc described by the arm 12 at the collar 42, where the rope or cable is secured. When the arm 12 is in substantially an upright position, the upper end of the curved body portion and the guide are located beneath and slightly in rear of the guide-pulley 43, and when power is applied to the rope or cable the same will exert substantially a direct upward pull on the guide, and the leverage of the arm 12 will be substan-

tially the same at every point within the limit of its oscillation. The set-screws 69 permit the guide 65 to be adjusted, and the said guide 65 is adapted to clear the guide-pulley 43, and it does not interfere with the oscillation and operation of the shovel.

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

- 10 1. The combination of a frame, a scoop or shovel carried by the same, and a combined hoisting and draft rope or cable connected with the shovel and adapted to operate the same and advance the frame, substantially as described.
- 15 2. The combination of a frame, a shovel or scoop, a rope or cable connected with the shovel or scoop for operating the same and extending from the frame and forming a draft-rope therefor, and means for guiding the rope or cable on the frame, substantially as described.
- 20 3. The combination of a frame, an oscillatory scoop or shovel movable longitudinally of the frame, and a flexible connection connected with the scoop or shovel and arranged to operate the same and advance the frame, substantially as described.
- 25 4. The combination of a frame, an oscillatory scoop or shovel arranged to swing upward and downward longitudinally of the frame, and a combined hoisting and draft rope or cable connected with the scoop or shovel for operating the same and for advancing the frame, substantially as described.
- 30 5. The combination of a frame, an oscillatory member pivotally connected with the frame at the top thereof and arranged to swing longitudinally of the same, a scoop or shovel carried by the oscillatory member, and a combined hoisting and draft rope or cable for actuating the shovel and for propelling the frame, substantially as described.
- 35 6. The combination of a frame, an oscillatory member, a combined hoisting and draft rope or cable for actuating the oscillatory member and for propelling the frame, a shovel or scoop carried by the oscillatory member, and means for automatically dumping the scoop or shovel, substantially as described.
- 40 7. The combination of a frame, an oscillatory member mounted on the frame, a scoop or shovel carried by the oscillatory member, a combined hoisting and draft rope or cable for operating the shovel and for propelling the frame, and means for partially rotating the scoop or shovel to discharge its contents, substantially as described.
- 45 8. The combination of a frame, an oscillatory member movable longitudinally of the frame, a scoop or shovel carried by the said member, a combined hoisting and draft rope or cable connected with the said member and extending upward and forward, and a guide-

pulley mounted on the frame and receiving the rope or cable, substantially as described. 65

9. The combination of a frame, an oscillatory member connected with the frame at its upper portion, a scoop or shovel carried by the oscillatory member, means for oscillating the said member, and means for partially rotating the scoop or shovel automatically at one limit of the movement of the said member to discharge the contents of the said scoop or shovel, substantially as described. 70 75

10. The combination of a frame, an oscillatory member mounted on the frame, a shovel carried by the oscillatory member, a rack mounted on the frame, and a gear also carried by the oscillatory member and arranged to mesh with the rack for partially rotating the scoop or shovel to dump the same, substantially as described. 80

11. The combination of an oscillatory member, a shovel carried by the same, a rack, a gear also carried by the oscillatory member and arranged to mesh with the rack, and means for carrying the gear into and out of engagement with the scoop or shovel, substantially as described. 85 90

12. The combination of an oscillatory member, a shovel carried by the same, a rack, a gear arranged to mesh with the rack and adapted to partially rotate the scoop or shovel for dumping the same, and means for automatically carrying the gear into and out of engagement with the scoop or shovel, substantially as described. 95

13. The combination of an oscillatory member, a curved rack, a scoop or shovel carried by the oscillatory member, said oscillatory member being movable longitudinally of the rack, a gear carried by the oscillatory member and meshing with the rack during the entire movement of the said member, means for engaging the gear-wheel with the scoop or shovel for rotating the latter to discharge its contents, and means for automatically returning the scoop or shovel to its excavating position, substantially as described. 100 105 110

14. The combination of a frame provided with parallel guides, an oscillatory member movable longitudinally of the guides, a pair of antifriction-wheels carried by the oscillatory member and engaging the guides, a scoop or shovel also carried by the oscillatory member, and means for operating the oscillatory member, substantially as described. 115

15. The combination of a frame provided with parallel curved guides, an oscillatory frame or member having antifriction devices engaging the guides, a curved rack mounted on the frame, a scoop or shovel carried by the oscillatory member, a gear meshing with the rack and movable with the oscillatory member, and means for carrying the gear into and out of engagement with the scoop or shovel, substantially as described. 120 125

16. The combination of a frame provided with parallel curved guides, an oscillatory member mounted on the frame, a scoop or shovel carried by the oscillatory member, a pair of spindles located at opposite sides of and connected with the said member, antifriction-wheels mounted on the spindles and engaging the guides, and means for operating the said member, substantially as described.
17. The combination of an oscillatory member, a scoop or shovel carried by the oscillatory member, means for automatically dumping the scoop or shovel, and a spring for automatically returning the scoop or shovel to its excavating position after dumping, substantially as described.
18. The combination of an oscillatory member, a scoop or shovel carried by the same, a rack, a gear movable with the oscillatory member and arranged to mesh with the rack, means for carrying the gear into and out of engagement with the scoop or shovel, and a spring for returning the scoop or shovel to its excavating position after the same has been dumped, substantially as described.
19. The combination of an oscillatory member, a scoop or shovel carried by the same, means for partially rotating the scoop or shovel automatically for dumping the same, a spring connected with the scoop or shovel for returning the same to its excavating position, and means for limiting the movement of the scoop or shovel when actuated by the spring, substantially as described.
20. The combination of an oscillatory member, a scoop or shovel carried by the same, gearing embodying a clutch for automatically engaging and partially rotating the shovel to dump the same, a spring for returning the shovel to its excavating position after dumping, and a stop for limiting the movement of the scoop or shovel when actuated by the spring, substantially as described.
21. The combination of an oscillatory member, a scoop or shovel carried by the same and provided with a threaded sleeve, a rack, a gear having threads for engaging those of the sleeve and meshing with the rack, means carried by the gear for rotating the sleeve to dump the shovel, and means for automatically returning the shovel, after dumping, to its excavating position, substantially as described.
22. The combination of an oscillatory member provided with opposite spindles, one of the spindles having a stop, antifriction-wheels mounted on the spindles, guides receiving the antifriction-wheels, a sleeve provided with a projection for engaging said stop, a spring connected with the sleeve and with the oscillatory member, a shovel carried by the sleeve, and means for partially rotating the sleeve against the action of the spring to dump the shovel, substantially as described.
23. The combination of an oscillatory member provided with a scoop or shovel, and a crane

actuated by the oscillatory member and movable toward and from the same and provided with means for receiving the contents of the scoop or shovel, substantially as described.

24. The combination of an oscillatory member having a scoop or shovel, a crane provided with means for receiving the contents of the scoop or shovel, and means for swinging the crane to and from the oscillatory member, substantially as described.

25. The combination of an oscillatory member having a scoop or shovel, a crane provided with means for receiving the contents of the scoop or shovel, means for moving the crane to and from the oscillatory member, and means for dumping the scoop or shovel, substantially as described.

26. The combination of an oscillatory member having a scoop or shovel, a crane provided with a receptacle and movable toward and from the oscillatory member to receive the contents of the shovel, and means for automatically dumping the shovel, substantially as described.

27. The combination of a vibratory scoop or shovel, a receptacle movable toward and from the shovel, means for dumping the shovel into the receptacle, and means for emptying the latter, substantially as described.

28. The combination of a vibratory scoop or shovel, a receptacle movable toward and from the scoop or shovel to receive the contents thereof, and means for automatically dumping the scoop or shovel, substantially as described.

29. The combination of a vibratory scoop or shovel, a crane movable toward and from the shovel and provided with a receptacle to receive the contents thereof, and means for dumping the shovel, substantially as described.

30. The combination of a vibratory shovel movable longitudinally of the machine, a crane movable transversely of the machine and provided with means for receiving the contents of the scoop or shovel, and means for dumping the scoop or shovel, substantially as described.

31. The combination of a frame, a scoop or shovel movable longitudinally thereof, a crane movable transversely of the frame and provided with means for receiving the contents of the scoop or shovel, means for dumping the scoop or shovel, and means for discharging the contents of the crane, substantially as described.

32. In a machine of the class described, the combination of a scoop or shovel movable longitudinally of the machine, a receptacle movable transversely of the machine toward and from the scoop or shovel, means for dumping the latter, and means for discharging the contents of the receptacle, substantially as described.

33. In a machine of the class described, the

combination of a scoop or shovel movable longitudinally of the machine, a receptacle movable transversely of the machine and automatically operated by the scoop or shovel, and means for dumping the latter, substantially as described.

34. In a machine of the class described, the combination of a scoop or shovel movable longitudinally of the machine, a receptacle movable transversely of the machine and automatically operated by the scoop or shovel, and means for automatically dumping the contents of the scoop or shovel into the receptacle, substantially as described.

35. In a machine of the class described, the combination of a scoop or shovel movable longitudinally of the machine, a receptacle movable transversely of the machine toward and from the scoop or shovel, means for automatically dumping the contents of the scoop or shovel into the receptacle, and manually-operated means for discharging the contents of the receptacle, substantially as described.

36. In a machine of the class described, the combination of an oscillatory member provided with a scoop or shovel, a crane provided with a receptacle for receiving the contents of the shovel, and means for connecting the crane and the oscillatory member to carry the receptacle to and from the scoop or shovel, substantially as described.

37. In a machine of the class described, the combination of an oscillatory member having a scoop or shovel and provided with a shaft having an arm, an oscillatory crane provided with a receptacle, and means for connecting the crane with the arm of the said shaft, substantially as described.

38. In a machine of the class described, the combination of a horizontal shaft having an oscillatory member and provided with an arm, an upright crane having an arm, a scoop or shovel carried by the oscillatory member, means carried by the crane to receive the contents of the scoop or shovel, and means for connecting the said arms, whereby the crane will be oscillated simultaneously with the said member, substantially as described.

39. In a machine of the class described, the combination of a horizontal shaft having an oscillatory member, an upright crane set at an angle and connected with and actuated by the shaft, a scoop or shovel carried by the member, and means carried by the crane for receiving the contents of the scoop or shovel, substantially as described.

40. In a machine of the class described, the combination of an oscillatory member having a scoop or shovel, an upright crane hinged at the top and bottom, the points of hinging being out of alignment, whereby the crane is automatically movable in one direction, means connected with the oscillatory member for moving the crane in the opposite direction,

and a scoop or shovel carried by the oscillatory member, substantially as described.

41. The combination of a crane, a pivotally-mounted receptacle carried by the crane and having a hinged gate, a locking device for holding the receptacle normally in an upright position, means for limiting the swing of the receptacle, and means for disengaging the locking device and for opening the hinged gate, substantially as described.

42. The combination of a crane, a pivotally-mounted receptacle carried by the same and having a hinged gate, arms pivotally mounted on the receptacle and carrying the gate, and means for tilting the receptacle and for operating the arms to open and close the gate, substantially as described.

43. In a machine of the class described, the combination of a pivotally-mounted receptacle, a dog engaging the receptacle for holding the same in an upright position and provided with means for tilting the receptacle, and means for operating the dog, substantially as described.

44. In a machine of the class described, the combination of a crane having an inclined stop, a receptacle pivotally mounted on the crane and arranged to engage the stop, and a dog engaging the receptacle to lock the same in an upright position and provided with means for tilting the receptacle when it is disengaged therefrom, substantially as described.

45. In a machine of the class described, the combination of a pivotally-mounted receptacle having a keeper at the bottom, a gate engaged by the keeper, an arm pivotally connected with the receptacle and hinged to the gate, and means for operating the arm to open and close the gate and to return the receptacle to an upright position, substantially as described.

46. In a machine of the class described, the combination of a pivotally-mounted receptacle provided with a keeper, a gate engaging the keeper, and means for engaging the gate with and disengaging the same from the keeper and for returning the receptacle to an upright position after the same has been dumped, substantially as described.

47. In a machine of the class described, the combination of a receptacle having a lug and provided with a keeper, a gate engaging the keeper, arms pivotally mounted on the receptacle and connected with the gate, and an operating-arm connected with the said arms and provided with a projection for engaging the said lug, substantially as described.

48. In a machine of the class described, the combination of a pivotally-mounted receptacle, an inclined stop for limiting the movement of the same, a dog engaging the receptacle for holding the same in an upright position and provided with means for automatically tilting the receptacle when it is disengaged therefrom, a gate, arms pivotally con-

5 nected with the receptacle and carrying the
gate, a keeper mounted on the receptacle and
engaging the gate when the latter is closed,
and means for operating the arms to open and
close the gate and for returning the receptacle
to an upright position, substantially as de-
scribed.

10 49. In a machine of the class described, the
combination with an elongated axle, of a frame
adjustably secured to the axle and movable
vertically and horizontally with relation to
the same, a shovel carried by the frame, and
means for operating the shovel, substantially
as described.

15 50. The combination of a frame, an oscilla-
tory member, a scoop or shovel carried by the
same, a hoisting rope or cable connected with
the oscillatory member, and a guide connected
with the said member and receiving the rope
20 or cable in advance of the said member and at

a point substantially concentric with the arc
described by the member at the point of at-
tachment of the rope or cable, substantially
as described.

51. The combination of an oscillatory mem- 25
ber, a scoop or shovel carried by the same, a
rope or cable connected with the member, and
a curved guide located in advance of the os-
cillatory member and receiving the rope or
cable and provided with bars connected with 30
the oscillatory member, substantially as de-
scribed.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

JAMES PORTERFIELD GORDON.

Witnesses:

H. E. KILLIAN,

GEO. E. KILLIAN.