

No. 785,227.

PATENTED MAR. 21, 1905.

J. S. PATCH.
MANURE SPREADER.

APPLICATION FILED JULY 18, 1904.

3 SHEETS—SHEET 1.

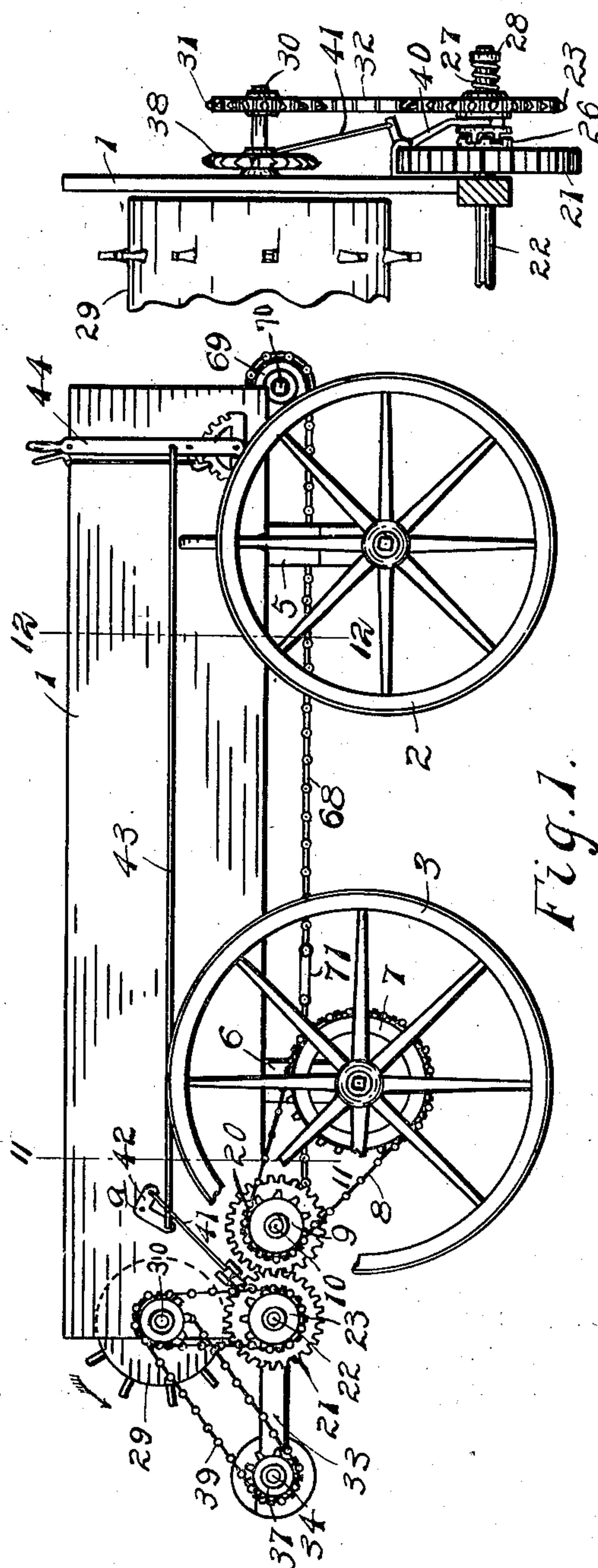


Fig. 1.

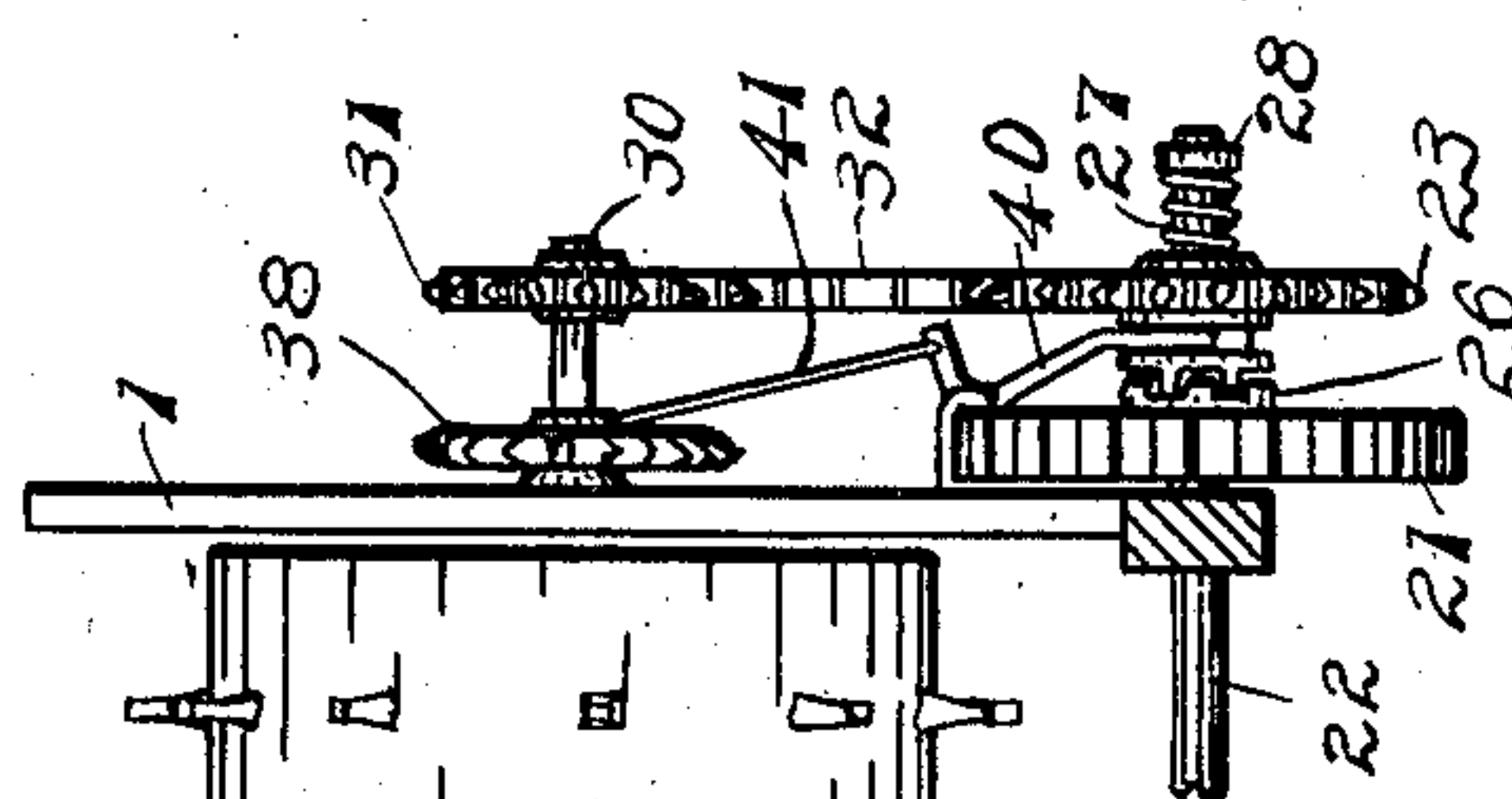


Fig. 2.

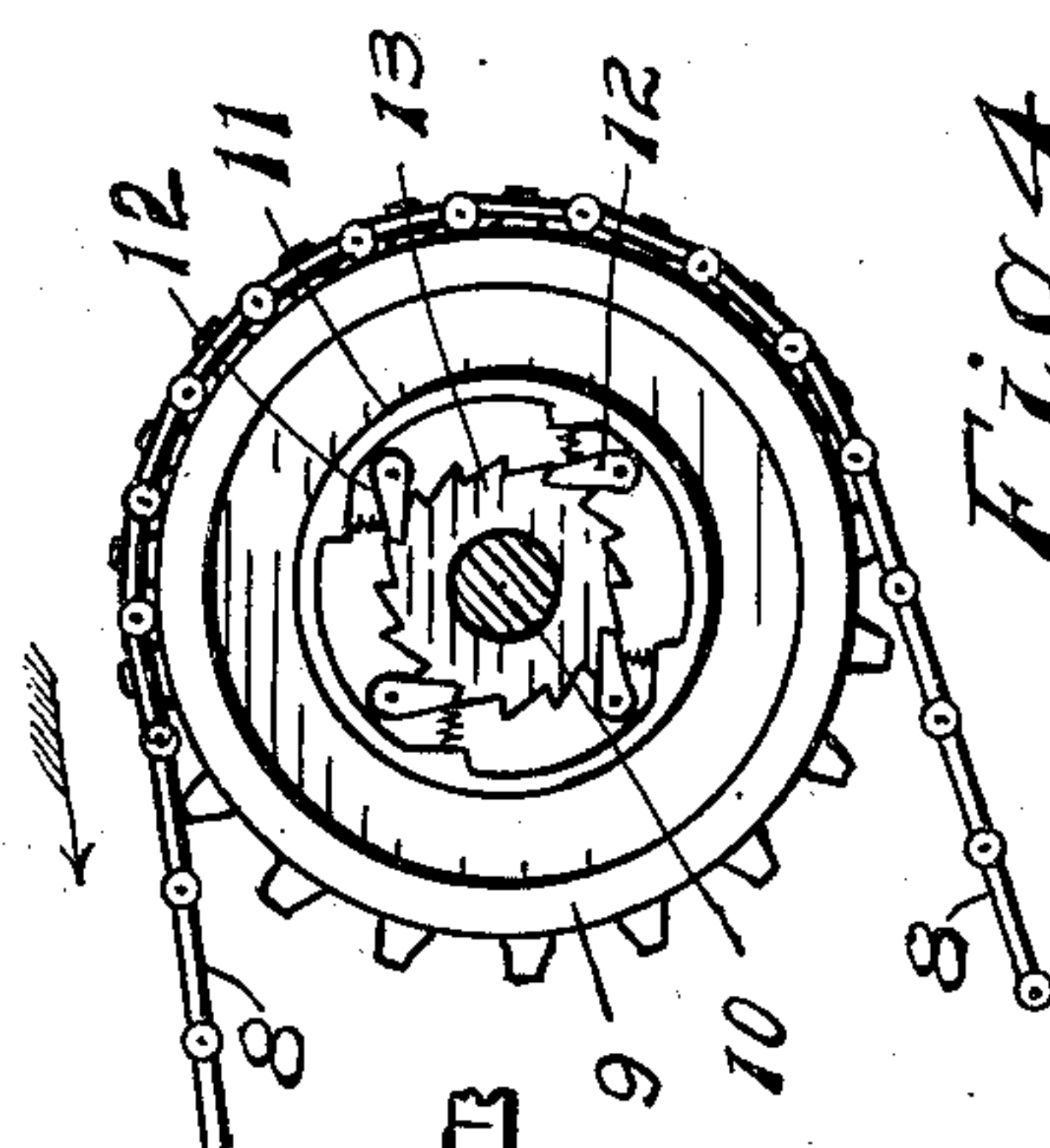


Fig. 3.

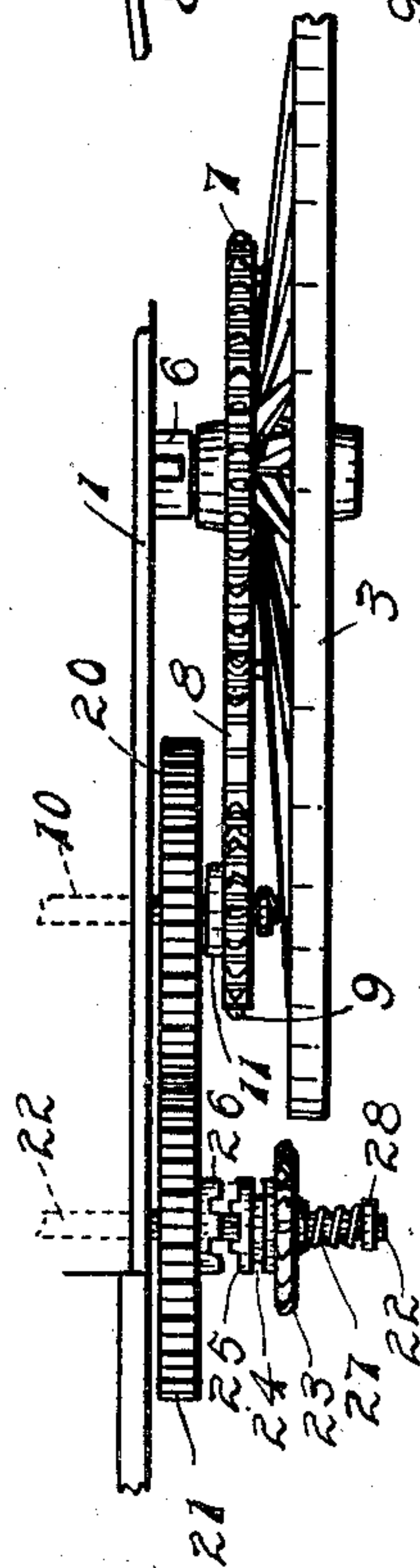


Fig. 4.

Witnesses

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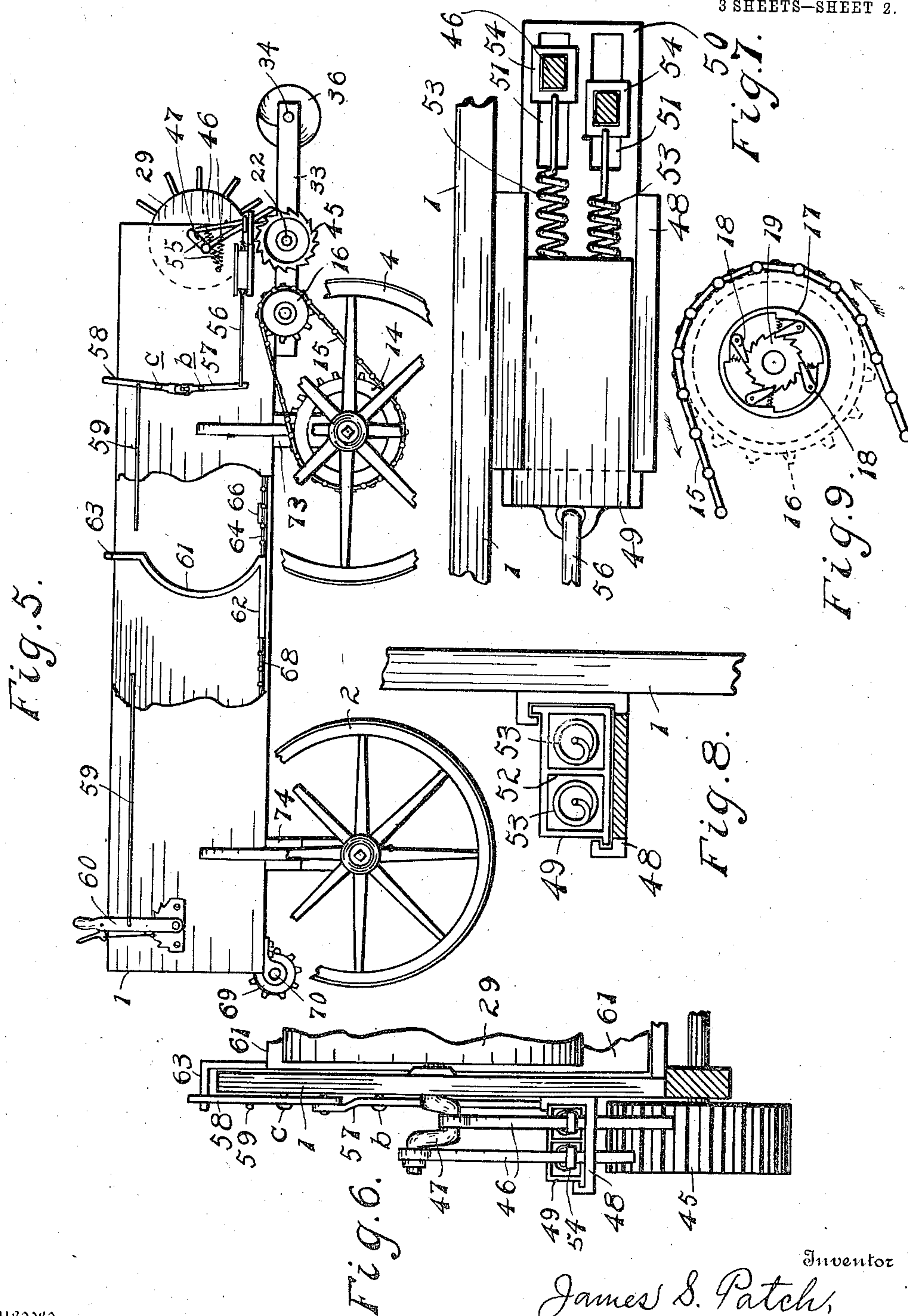
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

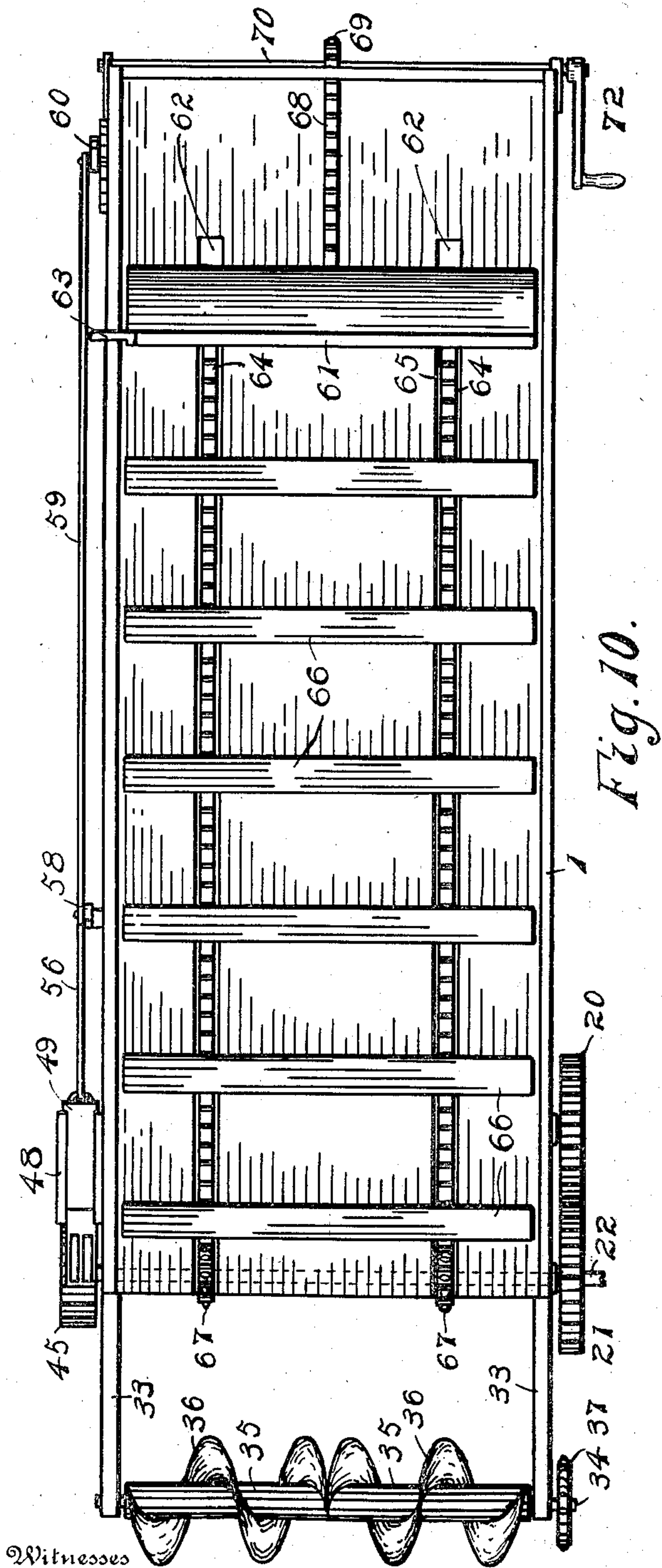


Fig. 10.

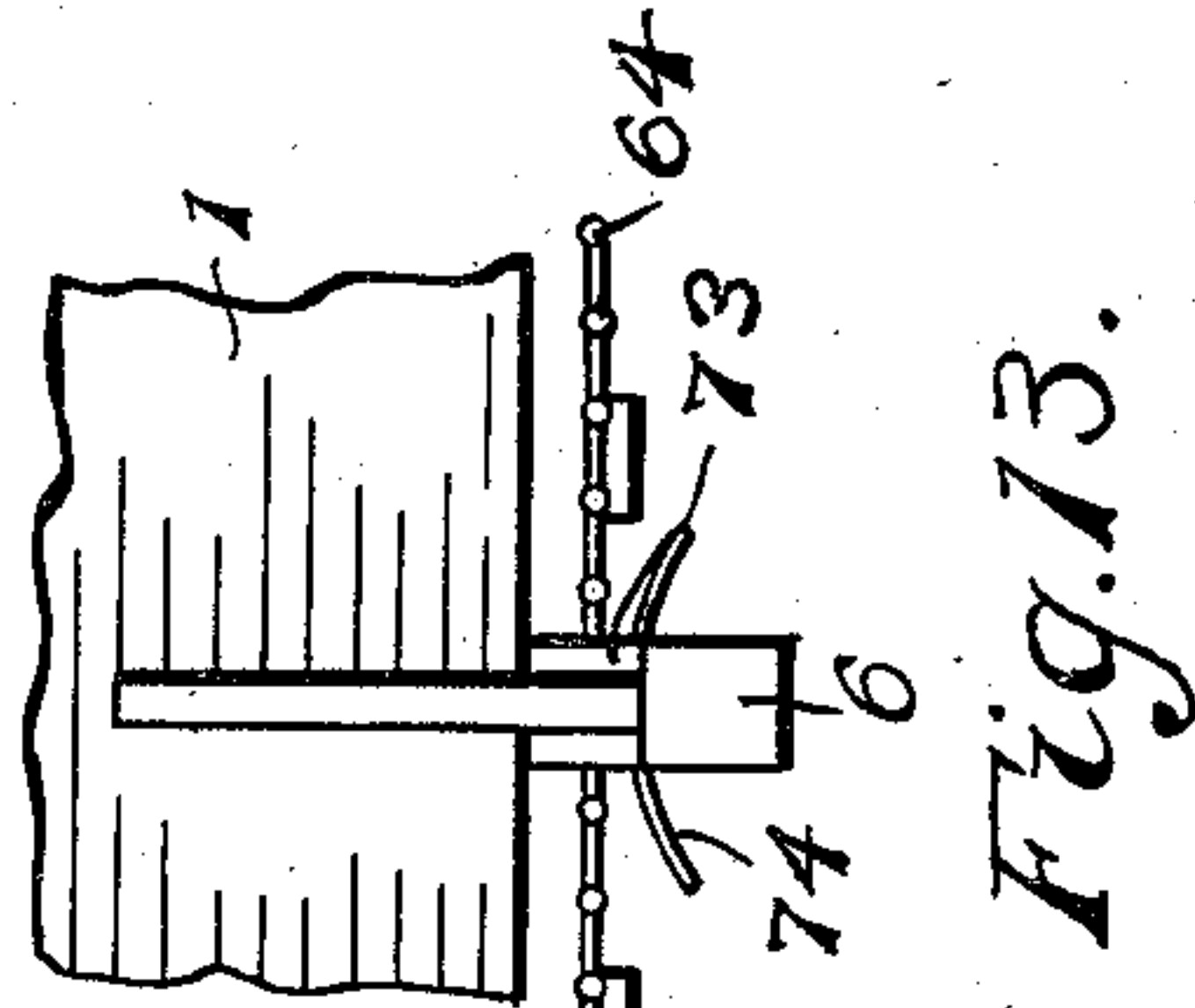


Fig. 13.

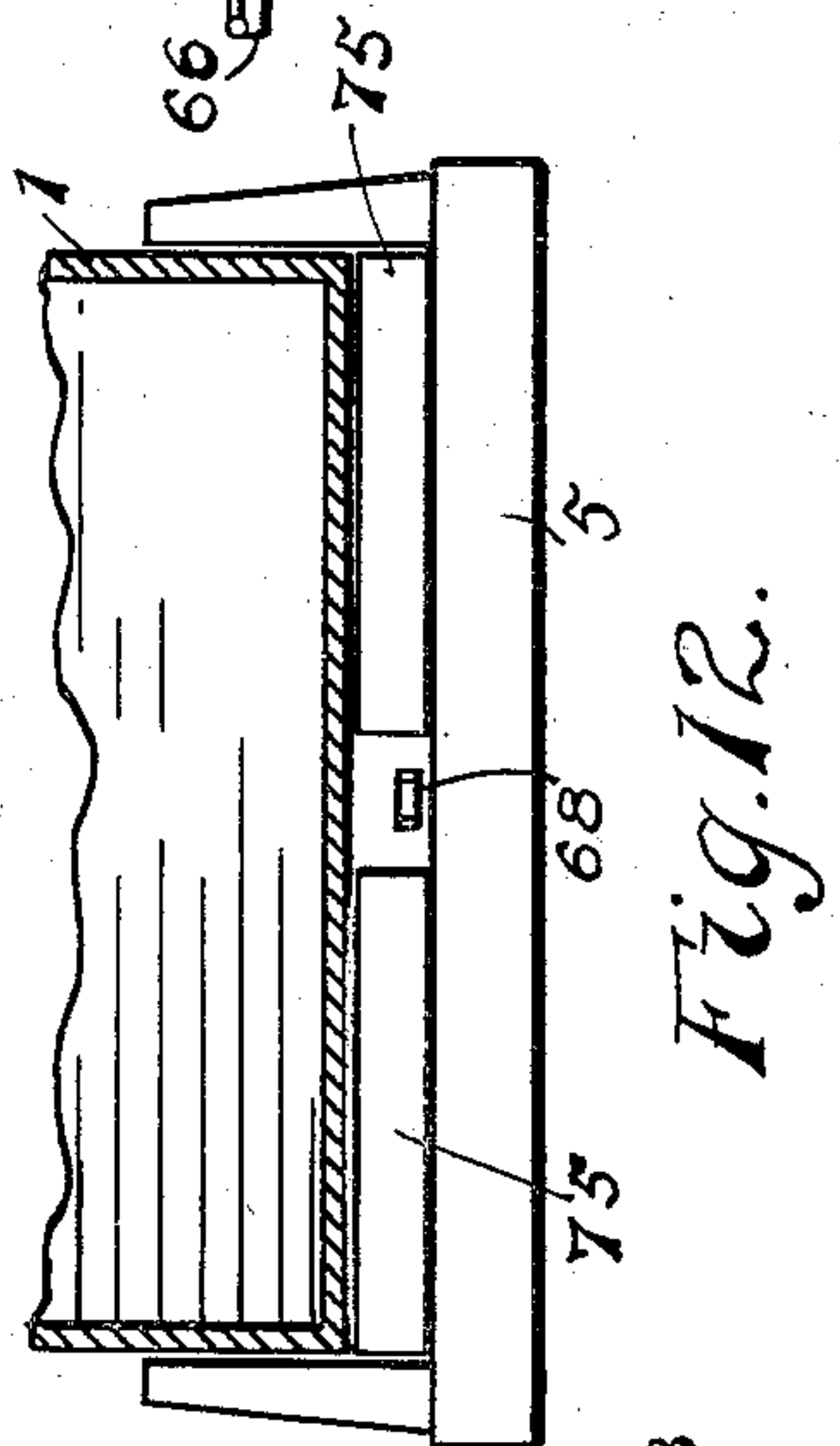


Fig. 12.

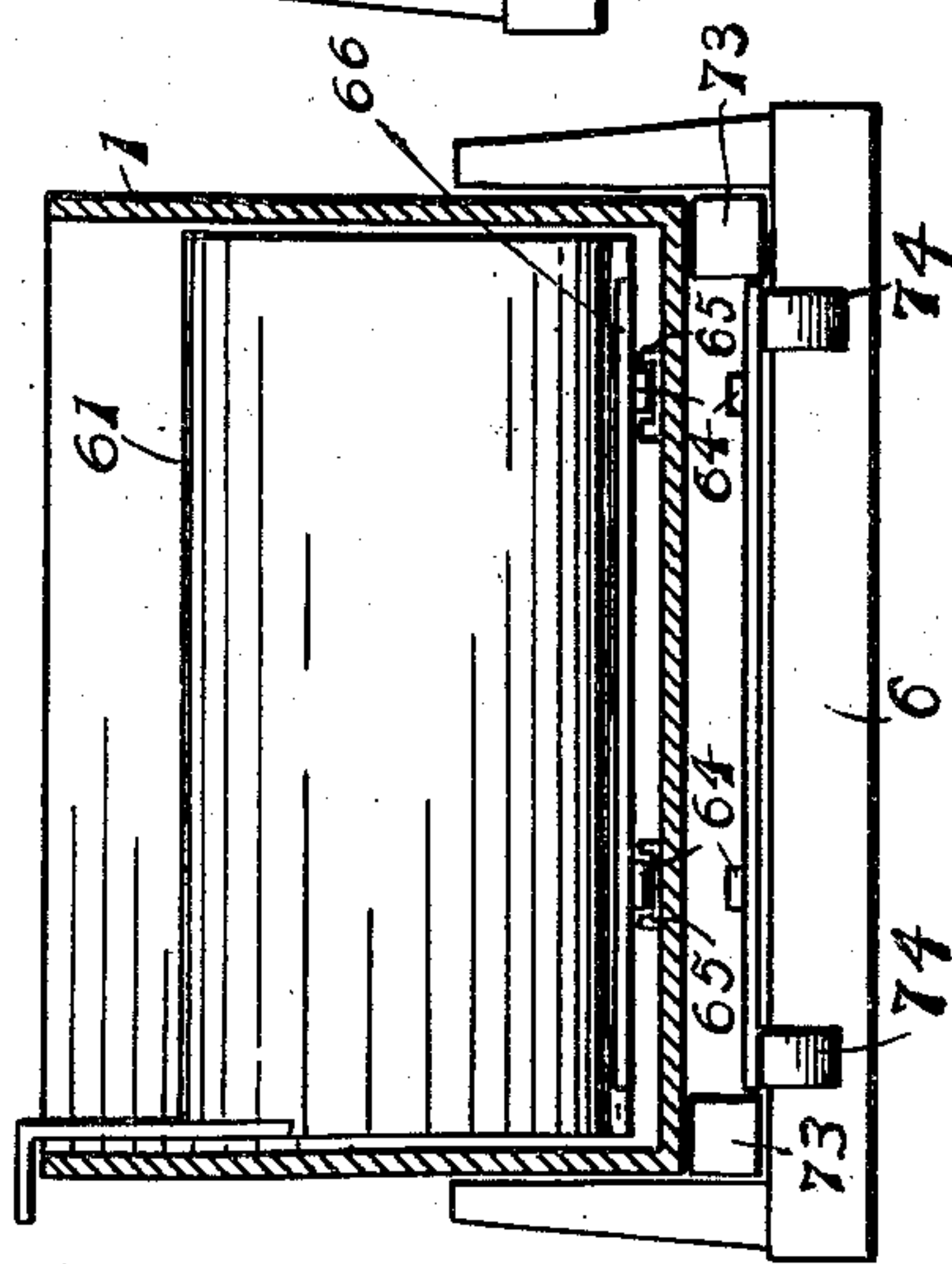


Fig. 11.

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UNITED STATES PATENT OFFICE.

JAMES S. PATCH, OF MILLEDGEVILLE, ILLINOIS.

MANURE-SPREADER.

SPECIFICATION forming part of Letters Patent No. 785,227, dated March 21, 1905.

Application filed July 18, 1904. Serial No. 216,931.

To all whom it may concern:

Be it known that I, JAMES S. PATCH, a citizen of the United States, residing at Milledgeville, in the county of Carroll and State of Illinois, have invented certain new and useful Improvements in Manure-Spreaders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention has reference to manure-spreaders, and embodies certain novel devices for operating the distributing-cylinder and for operating the apron for conveying the manure toward the distributing end of the box and automatically stopping the same when a desired point has been reached.

The construction of my invention is such that it can with very little trouble be used in place of the usual wagon-box on the ordinary running-gear.

In the drawings, Figure 1 is a side elevation of my invention mounted on suitable running-gear. Fig. 2 is a detail showing a portion of the cylinder-operating mechanism in end elevation. Fig. 3 is a plan view showing portions of the power-conveying mechanism in detail. Fig. 4 is an enlarged detail exhibiting the means for imparting movement to the main shaft. Fig. 5 is a side elevation showing that side of the device opposite to the side shown in Fig. 1. Fig. 6 is a detail showing parts of the apron-operating mechanism in end elevation. Fig. 7 is a plan view of the mechanism for controlling the pawls. Fig. 8 is an end view thereof. Fig. 9 is a detail exhibiting further mechanism for imparting movement to the main shaft. Fig. 10 is a plan view showing the bed of the wagon and apron mechanism thereon. Fig. 11 is a transverse vertical section in rear of the rear bolster as shown by broken lines 11 11 in Fig. 1. Fig. 12 is a similar view in rear of the front bolster as shown by broken lines 12 12 in Fig. 1. Fig. 13 is a detail showing parts of my invention appurtenant to the rear bolster.

Similar ordinals refer to similar parts 50 throughout the several figures.

1 is the body or box of the manure-spreader, 2 2 the front carrying-wheels, and 3 and 4 the rear carrying-wheels, of an ordinary running-gear, on the bolsters 5 and 6 of which the box 1 is supported. On the inner face of the wheel 3 is fixed a gear-rim 7, connected by a sprocket-chain 8 with a sprocket-wheel 9, loosely supported on the main shaft 10, extending across the under side of the box 1 and suitably journaled thereto. Integral with the wheel 9 is a collar 11, on the inside of which a series of spring-pawls 12 are secured to the face of the wheel 9 and engage a ratchet-wheel 13, fixed to the shaft 10. The wheel 4 is provided with a gear-rim 14, corresponding to the rim 7 on the wheel 3 and connected by a sprocket-chain 15 with a sprocket-wheel 16, loosely supported on the shaft 10, so as to rotate independently thereon. Integral with the wheel 16 is a collar 17, inclosing spring-pawls 18, which engage a ratchet-wheel 19, fixed on the shaft 10. In the forward movement of the wagon the rotation of the wheels 3 and 4 causes the wheels 9 and 16 to rotate in unison and simultaneously impart movement to the shaft 10, whereas if either of the wheels 3 or 4 is stationary while the other is in motion or is being given a backward movement the shaft 10 can continue to operate independently thereof.

Fixed on the shaft 10, near the sprocket-wheel 9, is a gear-wheel 20, meshing with a similar gear-wheel 21, loosely supported on a rotary shaft 22, suitably journaled to the under side of the box 1, near the rear end thereof. On the end of the shaft 22 is a sprocket-wheel 23, having a collar 24 integral therewith and provided on its inner face with a clutch 25, adapted to engage a clutch 26 on the outer face of the wheel 21. The wheels 21 and 23 and intervening parts are all adapted to rotate upon the shaft 22 independently thereof. The clutches 25 and 26 are normally held in engagement by means of an extensible coiled spring 27 interposed between the wheel 23 and a collar 28, fixed to the end of the shaft 22.

29 is the usual distributing-cylinder, fixed on a rotary shaft 30, journaled in the sides of the box 1, above the shaft 22. Secured on the end of the shaft 30, above the wheel 23, is a sprocket-wheel 31, to which movement may be imparted from the wheel 23 by means of a sprocket-chain 32 connecting the same. By this means movement is communicated from the driving-wheels 3 and 4 to the cylinder 29 whenever the clutches 25 and 26 are in engagement.

Projecting from the rear of the box is a pair of supports 33, in which is journaled a rotary shaft 34, upon which is fixed a roller 35, carrying a double spiral 36 36, Fig. 10. On the end of the shaft 34 is a sprocket-wheel 37, actuated from a similar wheel 38 on the shaft 30 by means of a sprocket-chain 39 connecting such wheels.

Pivoted to the side of the box 1 is a bell-crank lever 40, the long arm of which is forked to engage the collar 24, while the short end is connected by a rod 41 to the forward end of a similar lever 42, also pivotally secured to the side of the box, as at *a*. The rear arm of the lever 42 is connected, by means of a rod 43, with a hand-lever 44, fulcrumed to the side of the box, near the front end of the wagon, and provided with the usual pawl-and-ratchet device by which its operation is controlled. By throwing the lever 44 forward the clutches 25 and 26 are thrown out of engagement and the rotation of the cylinder 29 ceases. Upon releasing the lever 44 the clutches 25 and 26 are again forced into engagement by the spring 27.

Referring to Figs. 5 to 9 inclusive, 45 is a broad-faced ratchet-wheel fixed on the end of the shaft 22 and engaged by a pair of ratchet-arms 46, pivotally secured at their upper ends to a double crank-shaft 47 on the end of the shaft 30 and integral therewith. 48 represents a bracket secured to the side of the box 1, in which a box 49 has longitudinal movement. The bracket 48 is projected rearwardly into a frame 50, having slots 51, through which pass the arms 46. The box 49 is divided longitudinally by a partition 52, on each side of which is an extensile coiled spring 53, secured at their forward ends to the inner end of the box 49 and at their rear ends to square collars 54, loosely embracing the arms 46. The arms 46 are supported at a point immediately above the shaft 22, and the lower ends of such arms extend downwardly on the side of the wheel 45, so that the force of gravity tends to keep such arms in contact with such wheel; but to prevent the jumping of such arms away from and out of engagement with the ratchet-wheel a flexible spring 55 is secured to each of the arms, the other ends of said springs being attached to the side of the box 1. 56 represents a rod fastened at one end to the box 49 and at the other to the lower end of a lever 57, fulcrumed to the

side of the box 1, as at *b*. Flexibly connected with the lever 57 by means of a pin-and-slot arrangement is a lever 58, fulcrumed to the box 1, as at *c*, and connected above its pivotal point by a rod 59, with a hand-lever 60 fulcrumed to the box 1, near the front end thereof, and provided with the usual pawl-and-ratchet device for the controlling of such lever.

61 is a movable scoop supported by two or more shoes 62 and provided at its upper edge with an angular projection 63, adapted to engage the upper end of the lever 58 in the rearward movement of such scoop. To the base of the scoop 61 is secured a pair of sprocket-chains 64, operating in tracks 65 on the bottom of the box 1. Secured on the chains 64 is a series of transverse slats 66, and at the rear end of the box 1 such chains are engaged by sprocket-wheels 67, fixed on the shaft 22. A sprocket-chain 68 is also secured to the base of the scoop 61, centrally thereof, passing over a sprocket-wheel 69 on a shaft 70, journaled to the box 1, at the front end thereof, and secured to a cross-bar 71, Fig. 1, to which cross-bar the ends of the chains 66 are also fastened. At one end the shaft 70 is provided with a crank 72.

In the operation of the machine the slats 66 pass downwardly at the rear end of the wagon and beneath the wagon, blocks 73 being secured to the lower face of the wagon-bed, just above the rear bolster 6, to provide a passage-way for such slats, the passage of the slats above the bolster being aided by means of guides 74, secured to the upper face of the bolster. By means of blocks 75, also fastened to the bed of the wagon, above the bolster 5, a passage-way is provided for the chain 68 above such front bolster.

The operation of the main part of my invention is substantially the same as in similar devices now in use. By means of the chain 68 the scoop 61 is drawn to the front end of the machine and the box loaded with manure. In transporting the load the operative parts are held out of gear by means of the lever 44, as hereinbefore shown, and upon reaching the point where it is desired to distribute the load the parts are thrown into gear. The rotation of the cylinder 29 carries the contents of the box, as the same comes in contact therewith, upwardly and rearwardly over such cylinder and in rear of the wagon. At the same time by the operation of the shaft 22 the chains 64 are drawn rearwardly, carrying the slats 66 and scoop 61 and conveying the load to the rear end of the box. When the projection 63 on the scoop comes in contact with the lever 58, it forces such lever rearward a slight distance, operating the lever 57 and forcing the box 49 rearwardly upon the bracket 48, forcing the arms 46 out of engagement with the wheel 45 and stopping the operation of the shaft 22. At the time of operation of the box 49 one of the arms 46 will

be in engagement with the wheel 45; but as the crank 47 continues to rotate such arm is released and, with the other arm 46, held from further engagement with such wheel.

5 As the lever 58 is forced rearwardly it draws with it the lever 60, which is locked in the new position by the pawl-and-ratchet device thereon, preventing the return of the box 49 to its normal position until such lever 60 is
10 operated to return the same thereto. This is usually done after the shield 61 has been returned to a position in the front end of the box. The arms 46 can also be disengaged by the operation of the lever 60.

15 In a machine in which the distributing-cylinder operates in the manner shown herein a large portion of the contents of the wagon is thrown downwardly directly in rear thereof, for which reason I have provided the spirals
20 36, which are so disposed upon the roller 35 as to throw the manure laterally in each direction from the center line of the machine. It will be seen that the spirals 36 are in operation at all times when the cylinder 29 is
25 in rotation.

The great advantage in having the distributing-cylinder adapted to be operated from both of the rear drive-wheels lies in the fact that by such construction the operation of the
30 machine and distribution of the load will be continuous even in going round a corner, which is not the case where the operation is dependent upon one wheel only.

It will be observed that the shaft 22 is dependent for its rotation upon the shaft 30,
35 upon which the cylinder 29 is fixed, and that as a consequence such shaft 22 will be in motion and the device for conveying the contents to the rear of the box be in operation only
40 while the cylinder 29 is in action. On the other hand, the shaft 22 can be thrown out of operation independently of the cylinder, as hereinbefore set forth.

By providing the rear wheels of an ordinary farm-wagon with the gear-rims 7 and 14 the running-gear thereof may be adapted to be used with my device, it being then possible by removing or replacing the chains 8
45 and 15 to use the box 1 interchangeably with the usual wagon-box, hay-rack, &c.
50

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a machine of the class named, the
55 combination with a wagon-box of the shaft 10, journaled on the under side of the box, near the rear end thereof, mechanism for suit-

ably rotating such shaft from either of the rear driving-wheels, independently of the other; the gear-wheel 20, fixed on the shaft 60 10; the rotary shaft 22, journaled on the under side of the box 1, at the rear end thereof; the gear-wheel 21, supported on the shaft 22, so as to rotate independently thereon, and provided with the clutch 26; the sprocket- 65 wheel 23, also supported on the shaft 22, so as to rotate independently thereon, and provided on its inner face with the clutch 25; such clutch being normally in engagement with the clutch 26; the shaft 30, journaled in the sides 70 of the box 1, above the shaft 22; the cylinder 29, fixed on the shaft 30; means for imparting rotation from the wheel 23 to the shaft 30; and means for throwing the clutches 25 and 26 out of engagement, substantially as 75 shown and described.

2. In a machine of the class named, the combination with a wagon-box of the rotary shaft 30, provided on one end with the crank 47; the rotary shaft 22, provided on one end 80 with the ratchet-wheel 45; the arms 46 pivotally secured to, and depending from the crank 47, the lower ends of such arms engaging the ratchet-face of the wheel 45; the bracket 48, secured to the side of the box 1; the frame 85 50, projected rearwardly from the bracket 48 and provided with slots 51; the movable box 49, supported on the bracket 48; springs 53, fixed in the box 49, and loosely engaging the arms 46 at their free ends; and means for suit- 90 ably operating the box 49 from the forward end of the wagon-box, substantially as shown and for the purpose named.

3. The combination of a wagon-body the rotary shaft 22, supported at the rear end of 95 the wagon-body; the ratchet-wheel 45, on the end of such shaft; the rotary shaft 30, supported in the end of the wagon-body, above the shaft 22; a pair of arms 46, eccentrically supported on the end of the shaft 30, and en- 100 gaging the wheel 45, alternately; the movable box 49, supported on the side of the wagon-body; a pair of springs 53, secured in the box 40, and connected with the arms 46; and means for automatically operating the 105 box 49 from the movement of the conveying mechanism, substantially as shown and described.

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

JAMES S. PATCH.

Witnesses:

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FRANCES F. EMMONS.