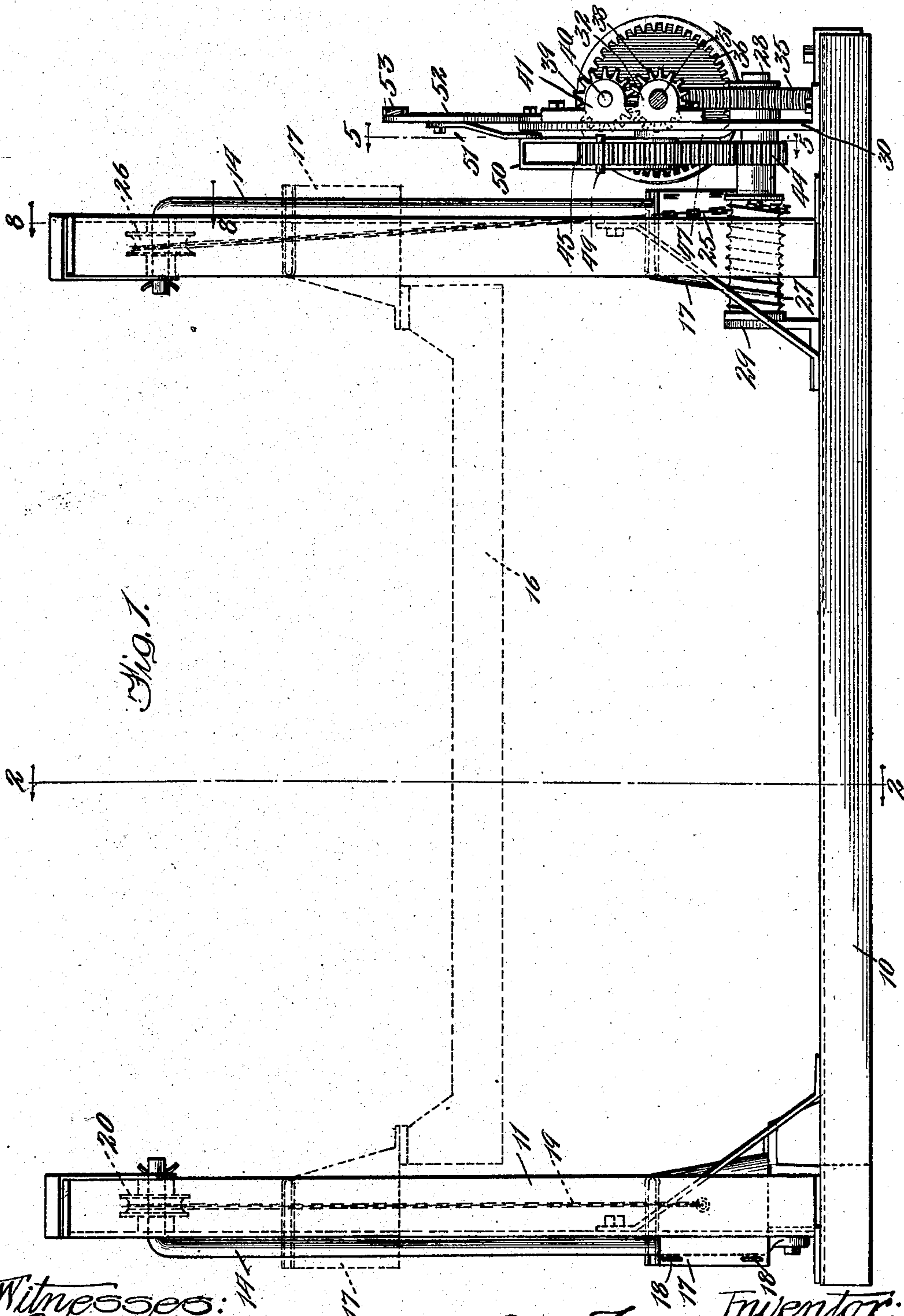


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APPLICATION FILED JAN. 27, 1908.

Patented Dec. 1, 1908.
3 SHEETS—SHEET 1.



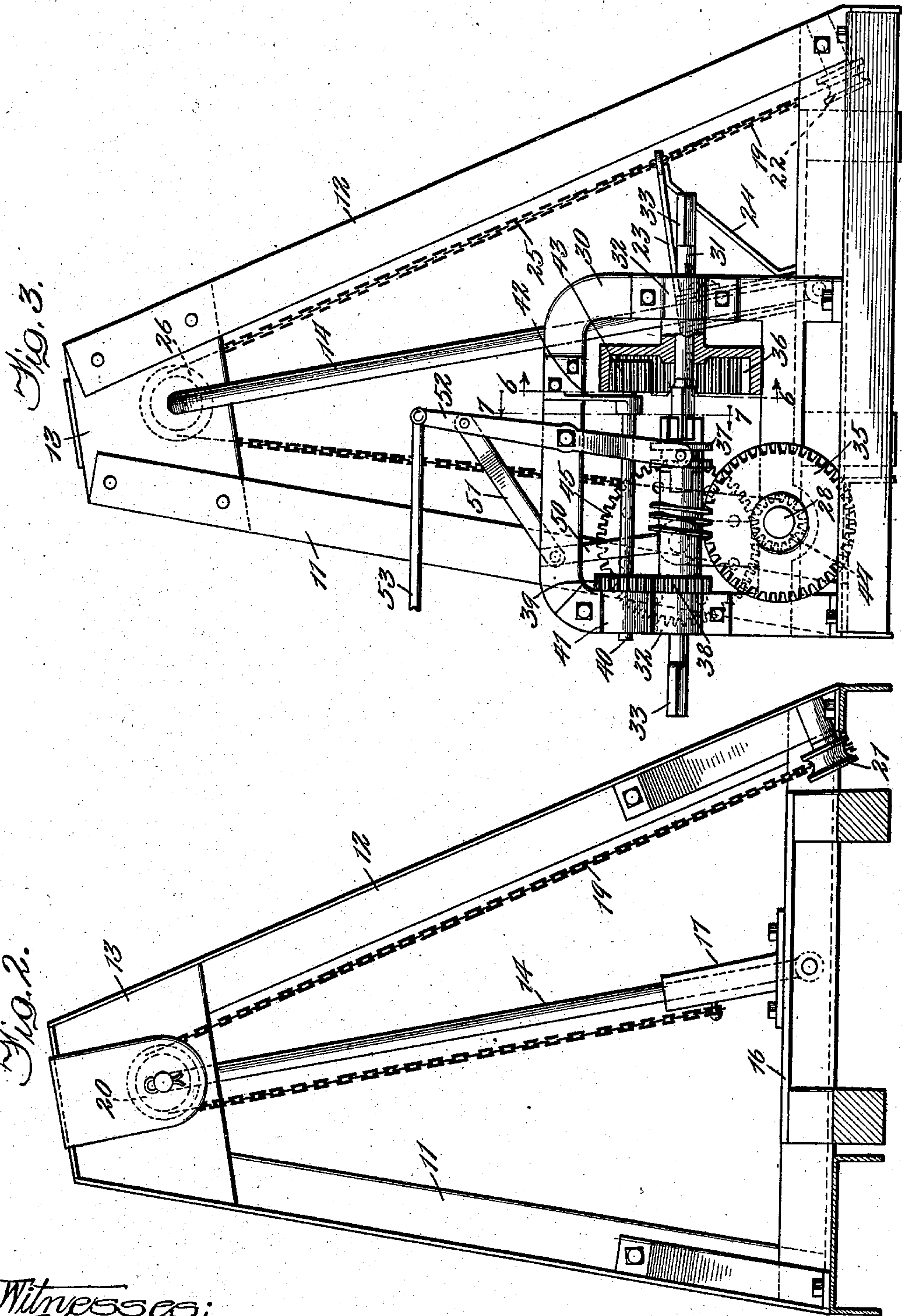
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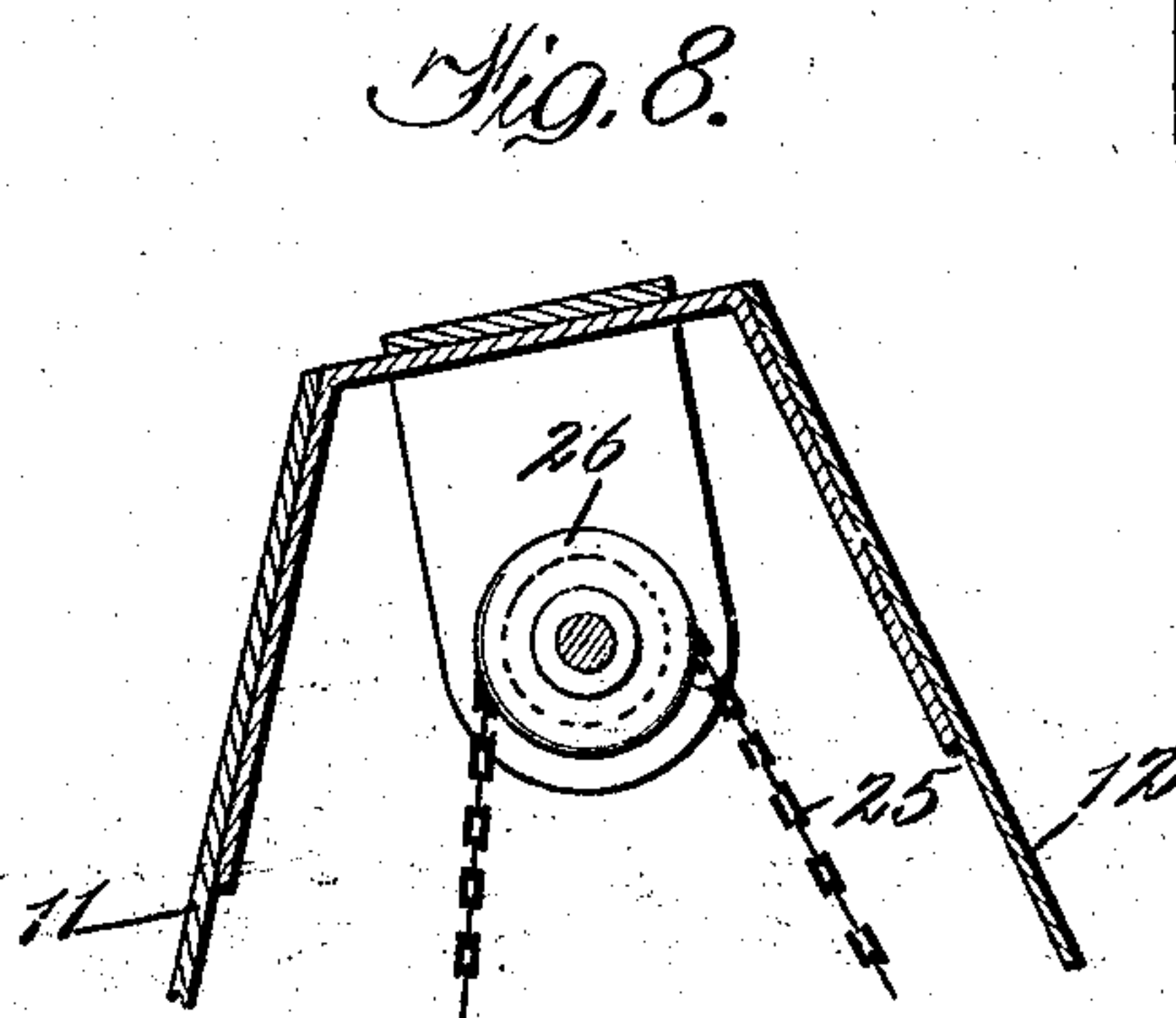
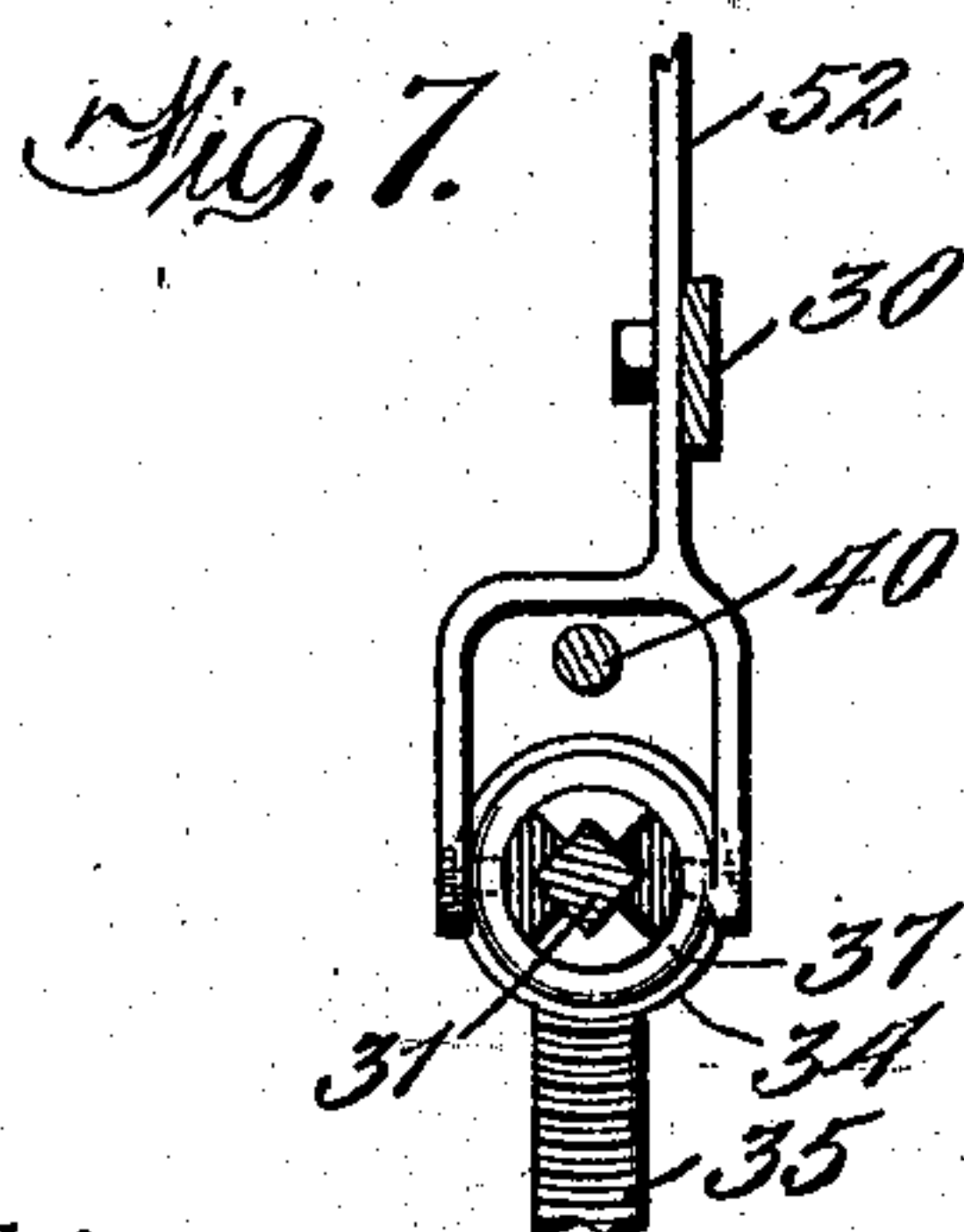
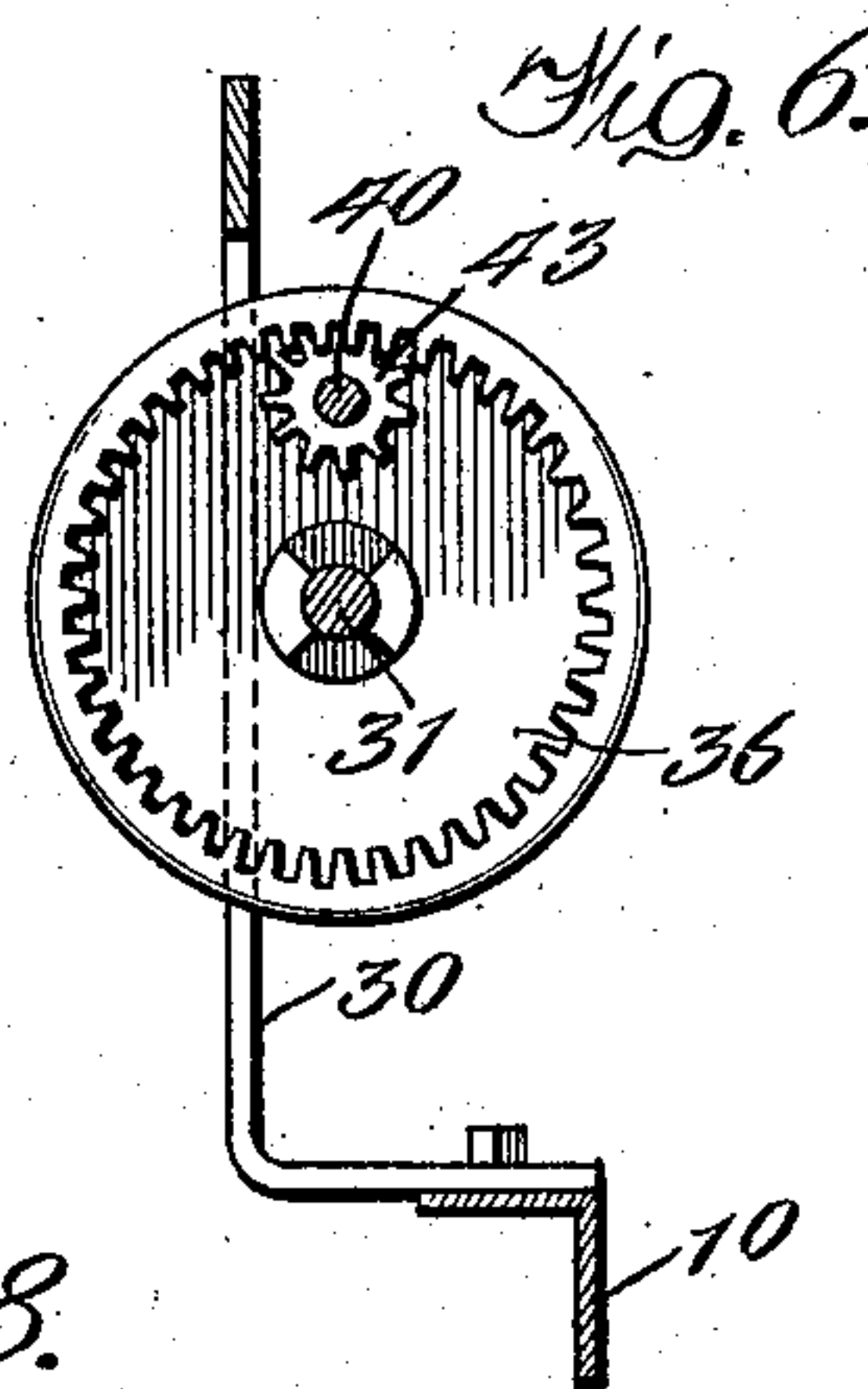
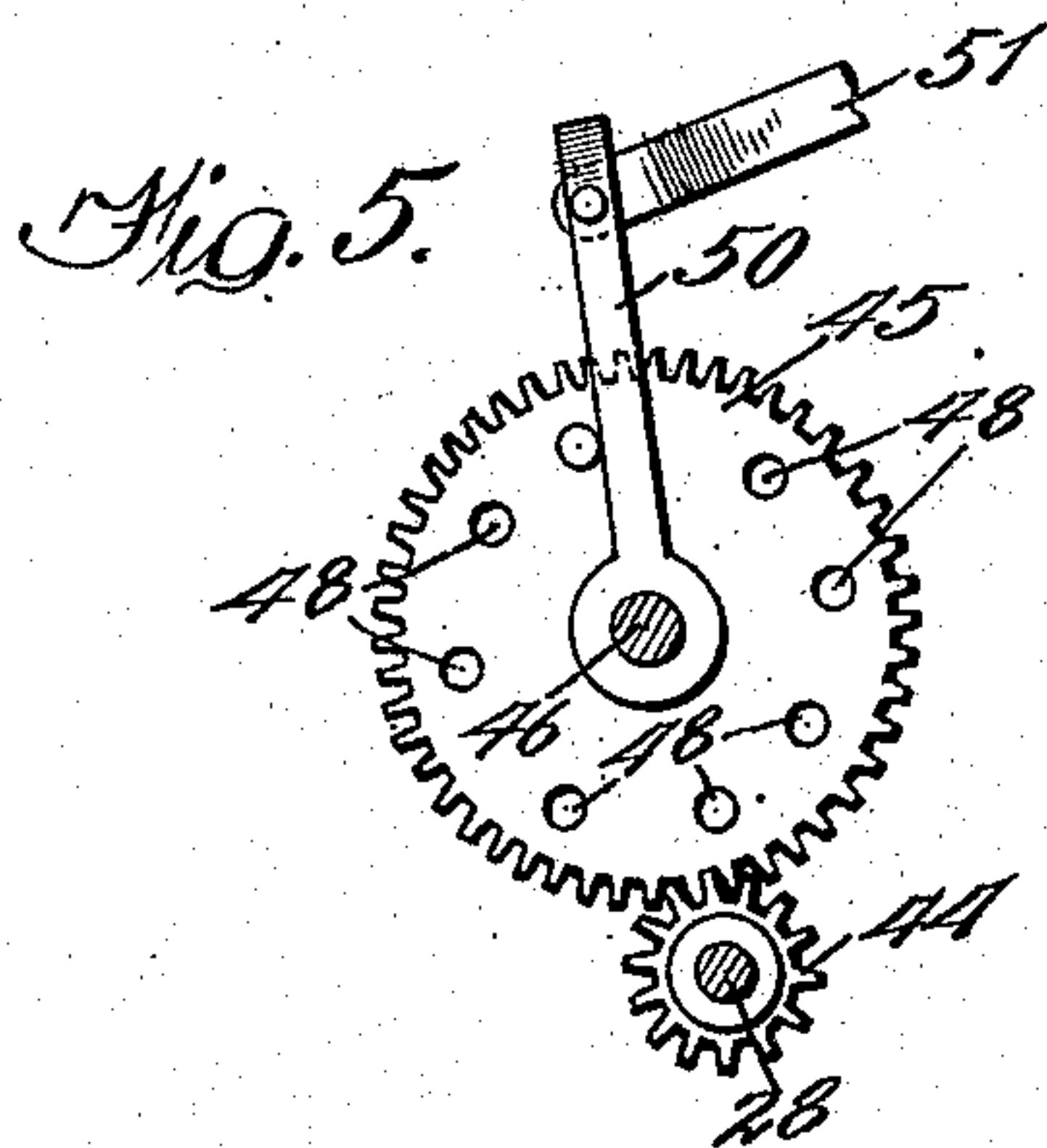
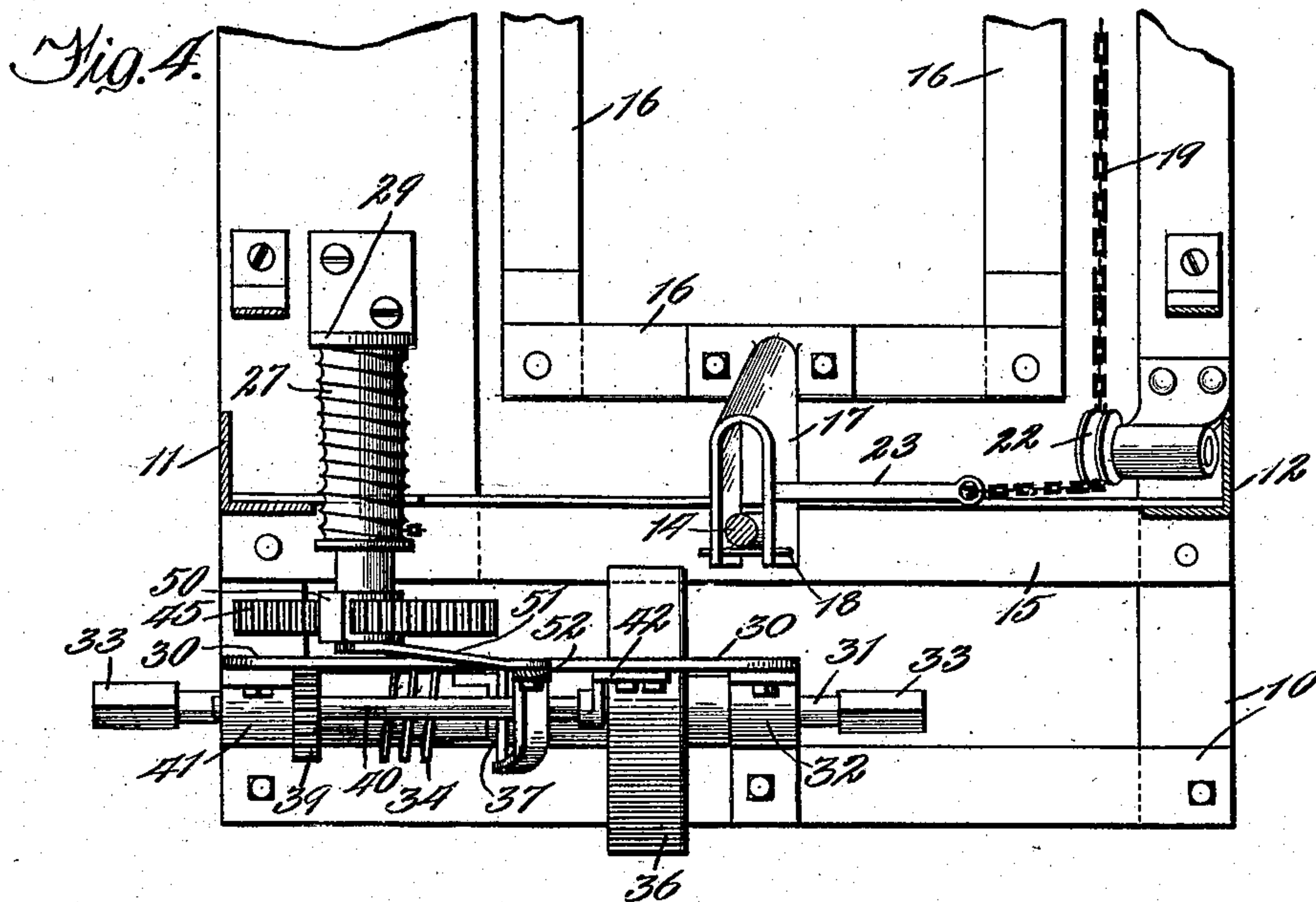
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UNITED STATES PATENT OFFICE.

FRANK GAHM, OF STREATOR, ILLINOIS.

WAGON DUMP AND ELEVATOR.

No. 905,170.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed January 27, 1908. Serial No. 412,854.

To all whom it may concern:

Be it known that I, FRANK GAHM, a citizen of the United States, residing at Streator, in the county of Lasalle, State of Illinois, have invented certain new and useful Improvements in Wagon Dumps and Elevators, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to devices designed to raise the front end of a wagon in order to dump the contents therefrom.

It has for its objects to provide improved mechanism for raising and lowering the platform upon which the front wheels of the wagon rest; to provide improved means for automatically stopping the upward movement of the said platform at any predetermined point; to provide an improved construction and arrangement of guiding supports for the said movable platform and to improve generally the construction and operation of devices of this general character. I accomplish these objects by the construction and arrangement of parts as shown in the drawings and hereinafter specifically described.

That which I believe to be new will be pointed out in the claims.

30 In the drawings:—Figure 1 is a front elevation of my improved machine. Fig. 2 is a vertical section taken at line 2—2 through the base of the machine and the movable elevator. Fig. 3 is an end view of the machine, partly in section. Fig. 4 is a top or plan view, partly in horizontal section, of one end of the machine. Fig. 5 is a detail, being a vertical section at line 5—5 of Fig. 1. Fig. 6 is a detail, being a vertical section at line 6—6 of Fig. 3. Fig. 7 is a detail, being a vertical section at line 7—7 of Fig. 3. Fig. 8 is a detail, being a vertical section at line 8—8 of Fig. 1.

45 Referring to the several figures of the drawings, in which corresponding parts are indicated by like reference numerals,—10 indicates a base consisting of a rectangular frame the bars of which may advantageously be formed from sheet metal bent into the form of angles and channels as shown. Secured upon this base and near opposite ends thereof, are two supporting frames each consisting of bars 11—12, preferably made of angle-irons, the bars of each frame converging towards their upper ends and being united by a suitable plate 13 bolted or other-

wise attached to them. As shown, each bar 12 is materially more inclined than its co-acting bar 11.

14 indicates a rod at each end of the machine, each of said rods being secured at its upper end to one of the plates 13 and at its lower end secured to the supporting base. One of these rods,—namely that one shown at the left-hand side of Fig. 1, and also shown in Fig. 2,—is, in the construction shown, secured directly to one of the end-pieces of the supporting base, while the rod near the opposite end of the machine is secured, as is best shown in Fig. 4, to a cross-bar 15 extending across the base and a short distance from the adjacent end-piece of the base. Both rods 14 are secured rigidly in position, and both are inclined, the inclination being such that their upper ends are nearer the front of the machine than their lower ends. By the front side, I mean that side upon which the wagon approaches and passes onto the machine.

16 indicates a platform rectangular in shape and composed of bars suitably secured together upon which the front wheels of a wagon are adapted to rest so that when the platform is elevated the wagon body will be suitably inclined to adapt the load in the wagon to be discharged at the rear of the wagon. The platform 16 is provided at each of its ends with a suitable device adapted to slidingly engage the parallel rods 14. In the construction shown, such engaging devices are each in the form of a wide metal yoke 17 through the opposite ends of which the pin or pins 18 (see Figs. 1 and 4) are passed to hold the yoke in place. As the platform 16 is moved up and down as hereinafter described, it is evident that by the engagement of the parts 17 with the rods 14 it will be guided by such rods and necessarily will, when moving upward, move also in a slightly forward direction. By providing for this slight forward movement during the raising operation, I avoid materially moving the wagon forward on its rear wheels, as would be the case if the ascent of the platform were in an absolutely vertical direction or if the guide rods were inclined in the direction opposite to that shown. It is because of this manner of moving the platform in an inclined direction instead of perfectly vertically that I give the inclination shown to the bars 12 of the supporting frames. If the platform were to be moved

perfectly vertically, the bars 11 and 12 would naturally be each inclined to the same extent.

19 indicates a chain attached at one end to one of the guide yokes 17 and passing over a pulley 20 that is suitably journaled near the upper end of one of the supporting frames 11—12, and thence down under another pulley 21 that is suitably journaled in one of the rear corners of the base 10 and adjacent to said last-named platform 11—12, and adjacent to the lower end of the bar 12 of said last-named frame 11—12. From this pulley 21 it passes lengthwise of the machine parallel to and near the rear bar of the base 10 (see Fig. 4), and under another pulley 22 up to an arm 23 projecting from the other yoke 17, to which arm the end of the chain is attached. This arm 23, in the construction shown, is braced by a brace 24 extending from the lower portion of the yoke last-named to near the forward end of said arm, as shown in Fig. 3.

25 indicates another chain one end of which is attached to said arm 23 and extending up over a pulley 26 suitably journaled in the upper end of the frame 11—12 that is at the right-hand end of the machine when looking at it as in Fig. 1, and from such pulley it passes down and is attached to a suitable horizontal drum 27 (see Figs. 1 and 4), said drum being fast on a shaft 28. This shaft 28 is journaled at its inner end in a bracket 29, and near its outer end in a frame 30, said bracket and frame being both suitably secured upon the base 10, the bracket being located a short distance from the inner face of the adjacent frame 11—12, while the bracket 30 is located some little distance beyond the outer face of said frame 11—12, as clearly shown in Fig. 1.

31 indicates a driving shaft extending transversely of the base and suitably mounted in bearings 32 that are secured, in the construction shown, to the outer face of the frame 30. The ends of this driving shaft are squared, as indicated at 33, to adapt it to be connected at either end to an ordinary tumbling rod, such as is used in connection with power mechanism employed to operate machinery of this class.

34 indicates a worm loosely mounted on the drive shaft 31, which worm meshes with a worm-wheel 35 that is fast on the end of the shaft 28 that carries the drum 27.

36 indicates an internal gear of comparatively large size also loosely mounted on the drive shaft 31.

37 indicates a clutch on the drive shaft 31, said clutch being so connected with the shaft as to turn therewith and being also free to move longitudinally on the shaft. It may be so mounted in any suitable manner. As shown, (see Figs. 3 and 7) that portion of the shaft on which the clutch moves is

squared. On its opposite faces this clutch 37 is provided with cogs or projections adapted to engage respectively in projections in the end of the sleeve on which the worm 34 is formed and with the internal gear 36, so that either the worm or the internal gear will be properly secured to and rotate with the drive shaft 31.

38 indicates a pinion made fast to the outer end of the sleeve on which is formed the worm 34, said pinion meshing with another pinion located above it. This latter pinion is indicated by 39. This pinion 39 is made fast on a countershaft 40 that is journaled at its outer end in a bearing and at its other end is journaled in a bearing at the end of a short bracket 42 that is suitably secured to the upper bar of the frame 30. (See Fig. 3.) The inner end of this countershaft has secured upon it a pinion 43 that is in mesh with the internal gear 36.

44 indicates a pinion that is secured upon the shaft 28. It is in mesh with a gear 45 journaled upon a stud 46 that projects out from a vertical arm 47 secured to the frame 30. This gear 45 (see Fig. 5) is provided at intervals with holes 48 passing through it into any one of which is adapted to be set a pin 49 (see Fig. 1).

50 indicates an arm pivotally mounted on the stud 46 (see Fig. 5). In the form of construction shown, this arm is doubled upon itself in the form of a yoke, the two members of which lie closely to the two faces of the gear 45. Near the upper end of this arm 50 is pivotally attached one end of a link 51, the other end of said link being pivotally connected to a lever 52, which lever is pivoted, as best shown in Fig. 3, to the upper portion of the gear-supporting frame 30. This lever 52, as best shown in Fig. 7, is bifurcated at its lower end and attached in any suitable manner at opposite sides of the clutch 37.

53 indicates a rod connected to the upper end of the lever 52 and by means of which an attendant can move the lever so as to shift the clutch into engagement with either the worm 34 or the internal gear 36.

In operation, a wagon to be dumped will be driven onto the machine, entering from that side at which are placed the supporting bars 11, and will come to rest with the front wheels of the wagon on the platform 16, while the platform is in its lowermost position to receive the wagon, and, until it is desired to raise the forward end of the wagon, the clutch 37 will have been moved by the attendant through the rod 53 and lever 52 so as to be out of engagement with either the worm 34 or internal gear 36. When all is in readiness for raising the front end of the wagon, the attendant will cause the clutch to be shifted so as to engage the worm and thereupon the worm will of course rotate

with the shaft, it being understood that the shaft is continuously in rotation. The effect of thus locking the worm to the shaft is to cause the worm-wheel 35 to rotate, and, through it, turn the drum 27 which is fast on the shaft 28 that the worm-wheel 35 is attached to, and this turning of the drum of course winds up the chain 25 thus exerting through the arm 23 an upward pull on that end of the platform adjacent to the driving devices. The other chain, 19, that is also connected to said arm 23 and passes under the pulleys 22 and 21 and over the pulley 20, of course causes an equal upward pull at the other end of the platform which is slowly and evenly raised. When it has reached the desired height, the pin 49 that has previously been inserted through the proper hole 48 in the gear 45 will come in contact with the arm 50 and cause such arm to rock on its pivot and through the link 51 exert a sufficient pull on the lever 52 to withdraw the clutch 37 from engagement with the end of the worm 34. The continued rotation of the drive shaft thereafter of course has no effect upon the worm, inasmuch as such worm is loose on the shaft. After the dumping operation has been completed, the attendant, through the operating rod 53, will pull said lever 52 over so as to bring the clutch into engagement with the hub of the internal gear which will then be positively driven by the driving shaft. This internal gear, meshing as it does with the small pinion 43 on the countershaft 40, drives such countershaft, and, through the two pinions 39—38,—the latter of which is made fast, as stated, to the worm 34,—drives such worm in the opposite direction from that in which the drive shaft itself rotates, and, consequently, through the worm-wheel 35, rotates the winding drum 27 in a direction to uncoil the lifting chain 25 therefrom, and thus allow the platform to descend. The internal gear is a comparatively large one, and consequently the descent of the platform is made much more rapidly than the platform is raised, which, of course, is a desirable feature.

The clutch is to be automatically released from engagement with the hub of the internal gear when the platform has descended to its lowermost position, and this is accomplished by another pin previously inserted in one of the holes 48 in the gear 45 striking against the arm 50. Or the same pin that accomplishes the disengagement of the clutch from the worm can be employed to effect the disengagement of the clutch from the internal gear if the lower portion of the arm be made of a suitable width. When the clutch is in engagement with the worm so as to lock such worm to the driving shaft during the operation of raising the platform 16, the internal gear will necessarily be turned dur-

ing the entire time owing to the engagement of the pinion 38 that is made fast to the end of the sleeve on which the worm is formed with the pinion 39 carried on the countershaft 40, but the turning of such internal gear at that time has, as will be understood from the description, no effect one way or another on the movement of the platform. It is only when the clutch is in engagement with the internal gear that the movement of said internal gear has any effect upon the movement of the platform, and then only to set in operation the means for causing a quick descent of such platform.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a machine of the class described, the combination with a movable platform adapted to receive the front wheels of a wagon, a flexible connection connected with said platform and adapted to exert an upward pull on the same, and a drum around which said connection is wound, of a drive shaft, a worm and an internal gear both loose on said shaft, a clutch slidably mounted on said shaft and adapted to engage either said worm or said internal gear, a worm-wheel fast on the shaft of the said drum, means for rotating the worm and through it reversing the motion of said worm-wheel and drum when the clutch is in engagement with the internal gear, and means for sliding said clutch on said drive shaft.

2. In a machine of the class described, the combination with a movable platform adapted to receive the front wheels of a wagon, a flexible connection connected with said platform and adapted to exert an upward pull on the same, and a drum around which said connection is wound, of a drive shaft adapted to be continuously driven in the same direction, a worm and an internal gear loose on said shaft, a clutch fast on said shaft and adapted to be moved into engagement with either said worm or said internal gear, a worm-wheel in constant engagement with said worm, a drum fast on the worm-wheel shaft, gearing operated by said internal gear for driving said worm when said clutch engages said internal gear, a pinion on the shaft that carries the worm-wheel and drum, a gear driven by said pinion, means actuated by said last-named gear for throwing said clutch out of engagement with the worm or the internal gear, and an adjustable device carried by said gear for causing the movement of said last-named means at a predetermined time in the operation of the machine.

3. In a machine of the class described, the combination with a movable platform adapted to receive the front wheels of a wagon, a flexible connection connected with said platform and adapted to exert an upward pull on the same, and a drum around

which said connection is wound, of a drive shaft adapted to be continuously driven in the same direction, a worm and an internal gear loose on said shaft, a clutch fast on said shaft and adapted to be moved into engagement with either said worm or said internal gear, a worm-wheel in constant engagement with said worm, a drum fast on the worm-wheel shaft, gearing operated by said internal gear for driving said worm when said clutch engages said internal gear, a pinion on the shaft that carries the worm-wheel and drum, a gear driven by said pinion, and means actuated by said last-named gear for throwing said clutch out of engagement with the worm or the internal gear.

4. In a machine of the class described, the combination with a movable platform adapted to receive the front wheels of a wagon, a flexible connection connected with said platform and adapted to exert an upward pull on the same, and a drum around which said connection is wound, of a drive

shaft adapted to be continuously driven in the same direction, a worm and an internal gear loose on said shaft, a clutch fast on said shaft and adapted to be moved into engagement with either said worm or said internal gear, a worm-wheel in constant engagement with said worm, a drum fast on the worm-wheel shaft, gearing operated by said internal gear for driving said worm when said clutch engages said internal gear, a pinion on the shaft that carries the worm-wheel and drum, a gear driven by said pinion, a swinging arm adjacent to said last-named gear, a connection between said arm and said clutch, and means carried by said last-named gear adapted to be forced against and to move said arm to cause a disengagement of the clutch from the said worm or internal gear.

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