

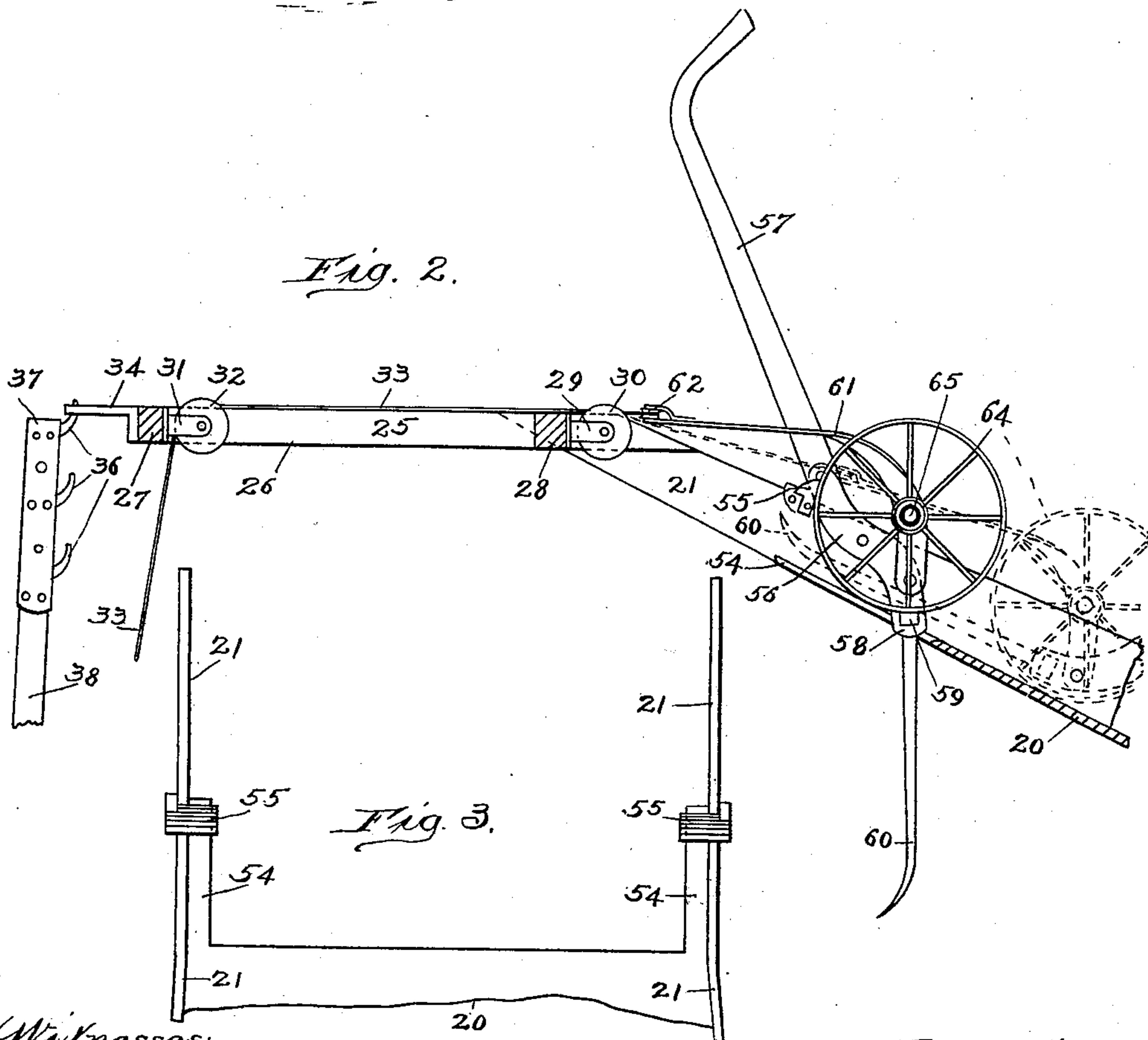
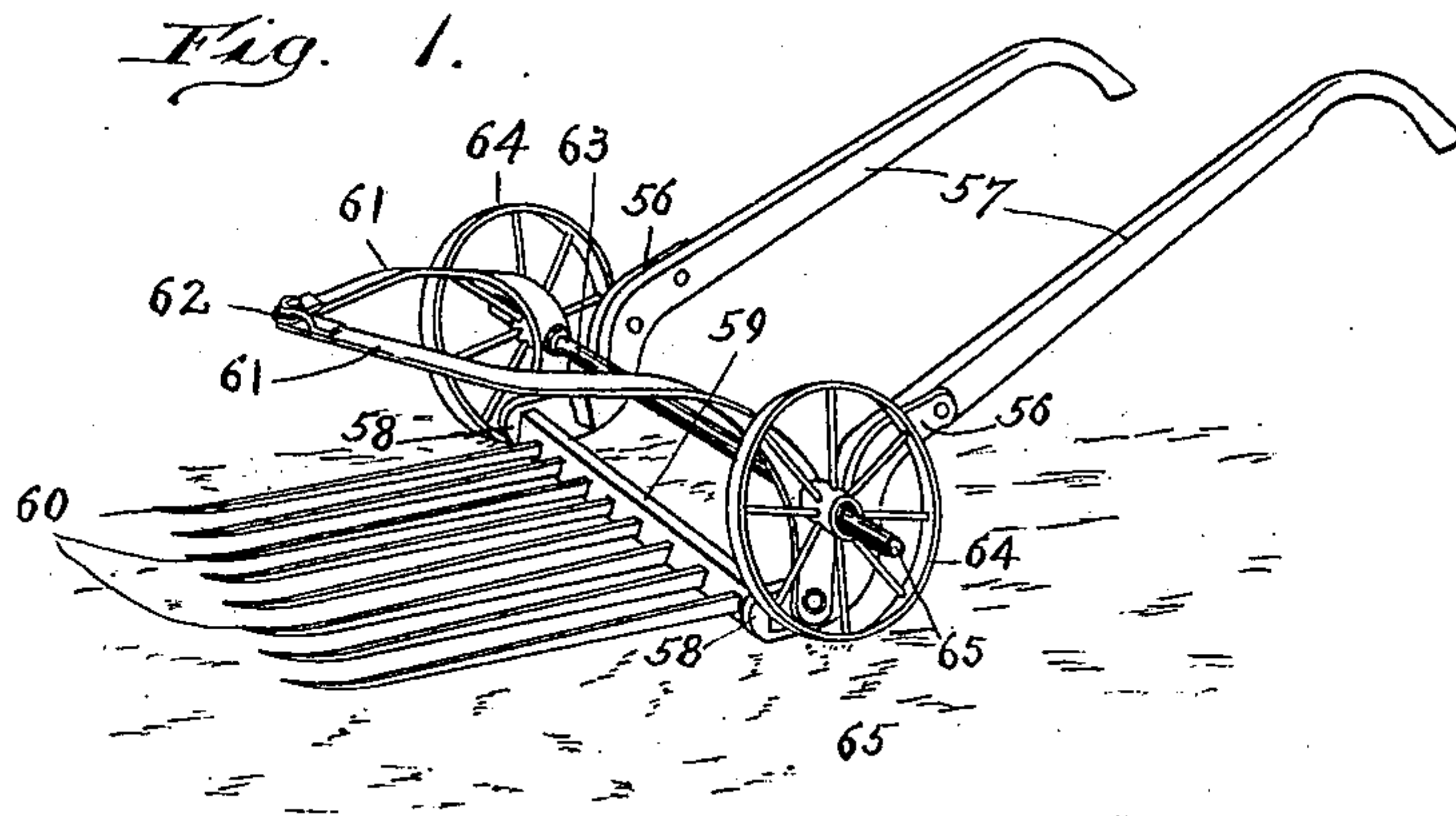
No. 886,705.

PATENTED MAY 5, 1908.

LE GRAND KNIFFEN.
LOADING APPARATUS FOR WAGONS AND THE LIKE.

APPLICATION FILED NOV. 14, 1907.

4 SHEETS—SHEET 1.



Witnesses:
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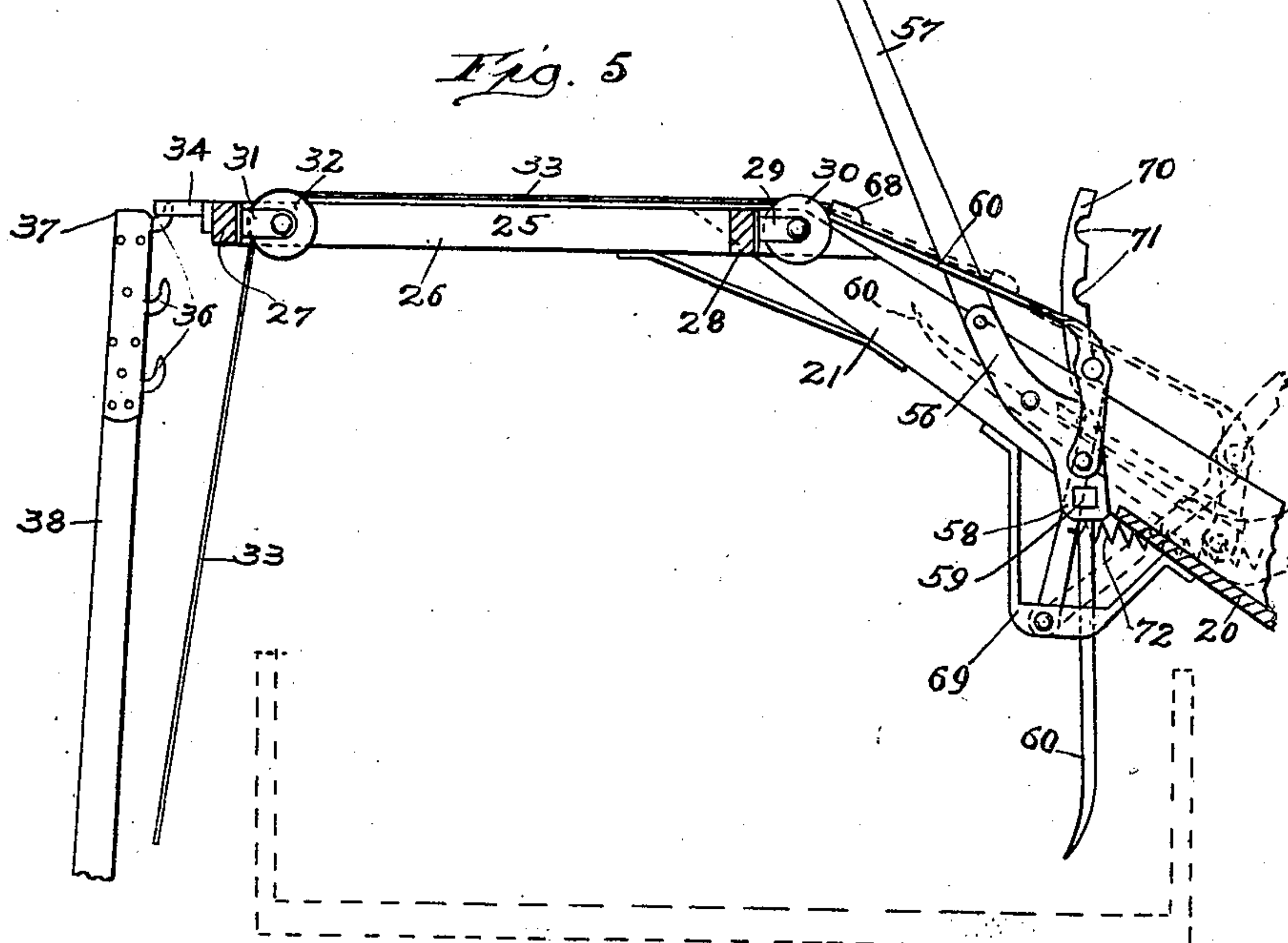
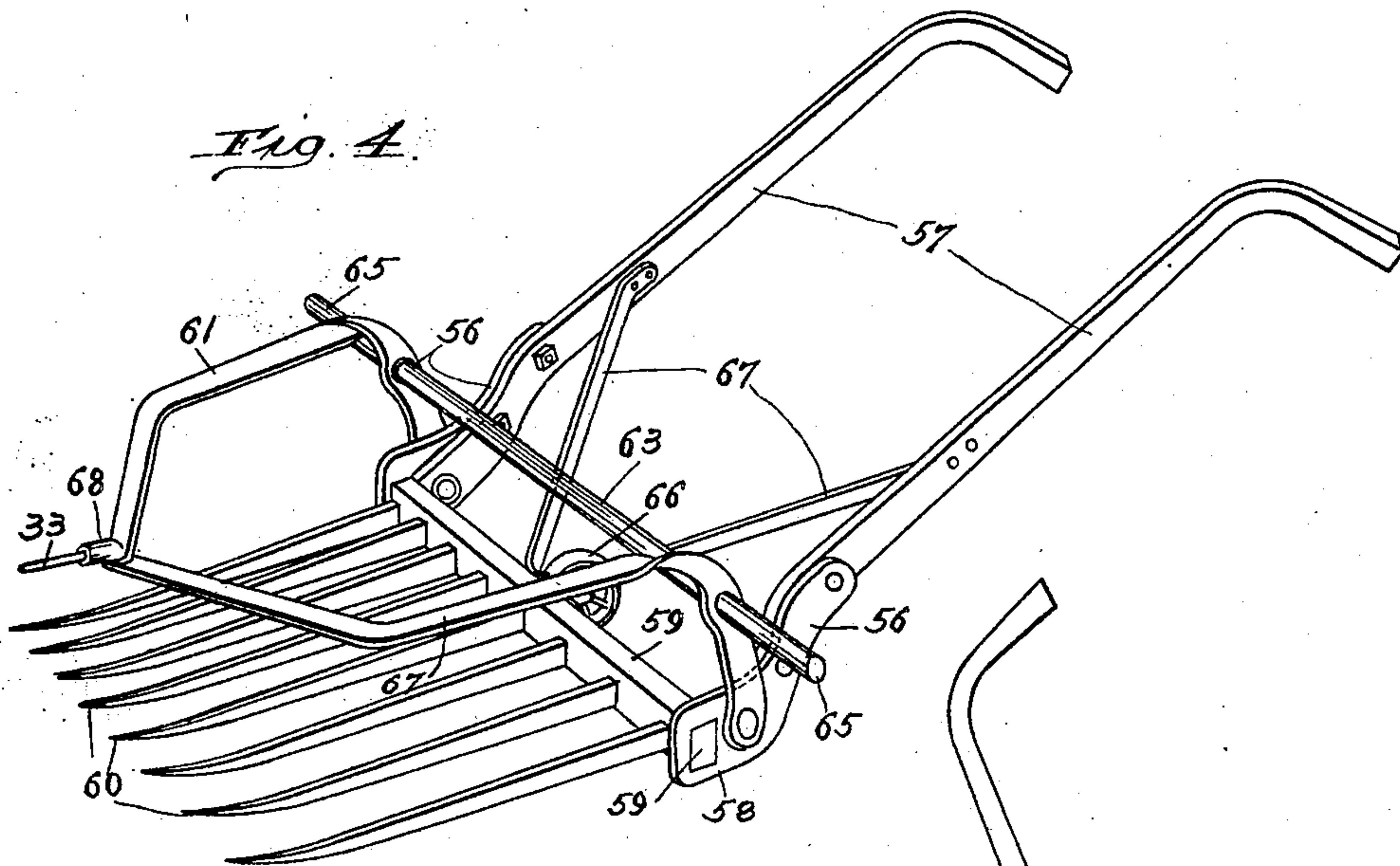
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Witnesses

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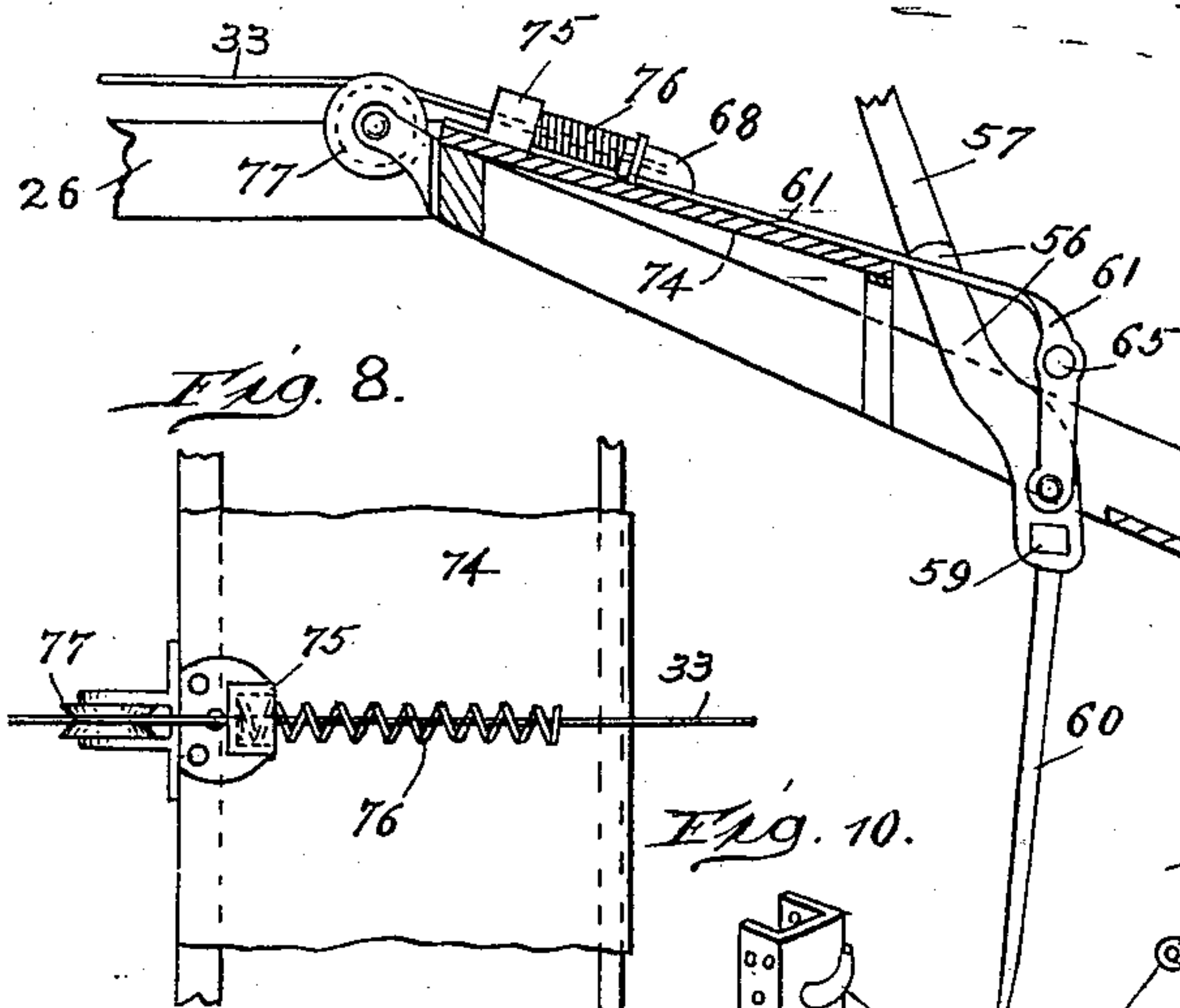
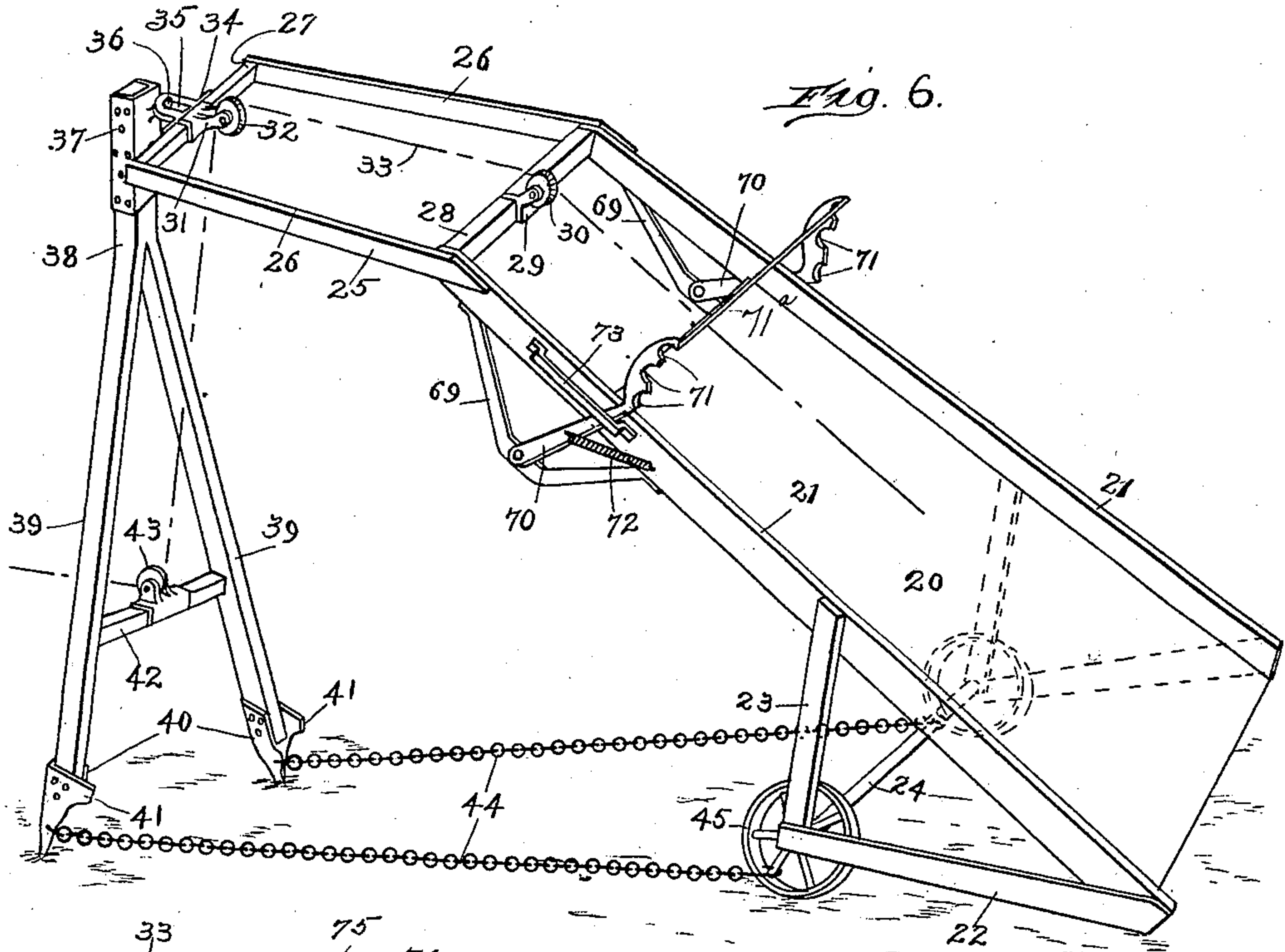
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4 SHEETS—SHEET 3.



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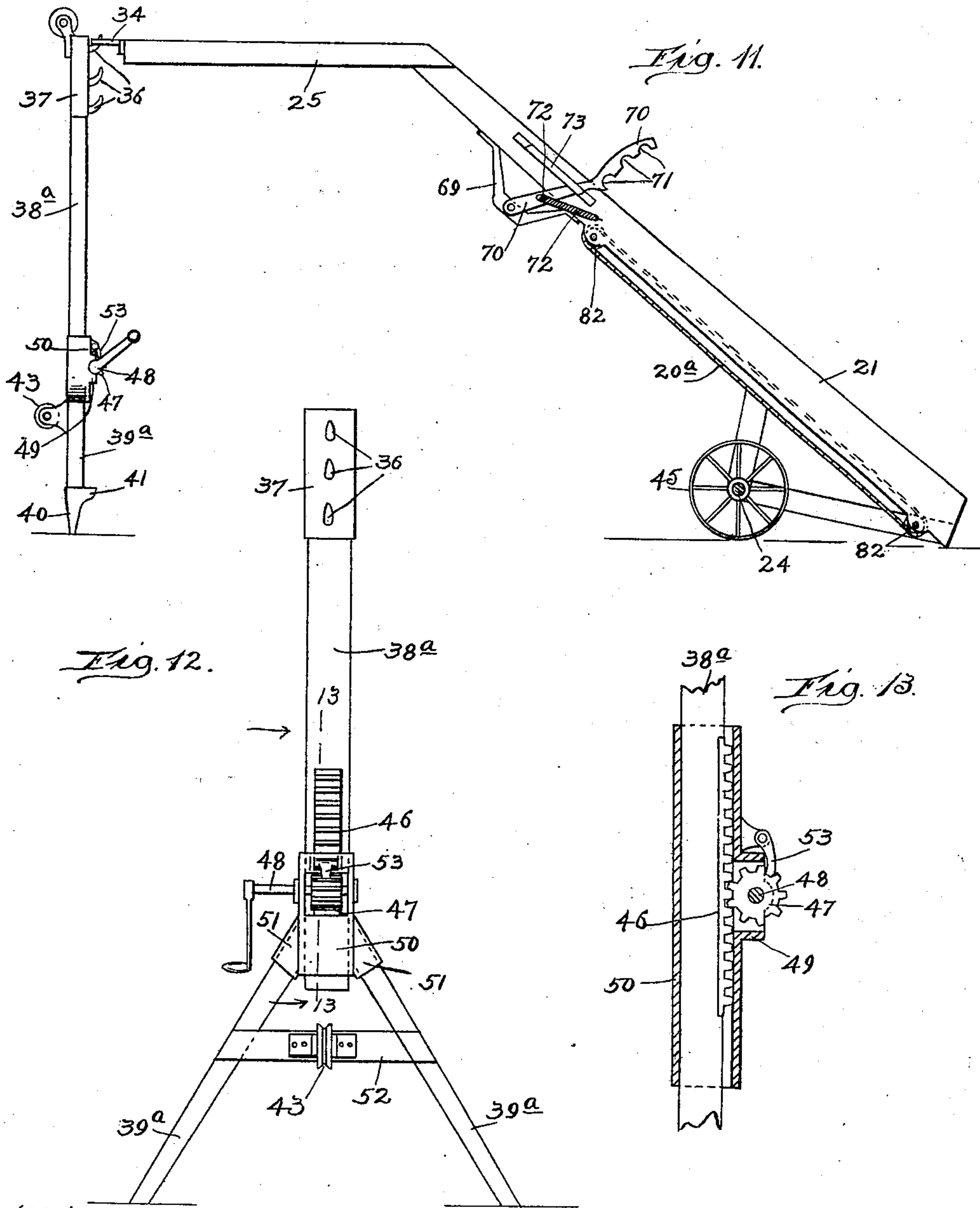
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UNITED STATES PATENT OFFICE.

LE GRAND KNIFFEN, OF CHICAGO, ILLINOIS.

LOADING APPARATUS FOR WAGONS AND THE LIKE.

No. 886,705.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed November 14, 1907. Serial No. 402,054.

To all whom it may concern:

Be it known that I, LE GRAND KNIFFEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Loading Apparatus for Wagons and the Like, of which the following is a specification.

My present invention relates to improvements in a loading apparatus of the type disclosed in Letters-Patent No. 835,624, issued to me for improvements in a loading apparatus for wagons and the like on November 13th, 1906, and is intended to be used for the same purpose as the apparatus set forth in said patent, that is, for loading wagon-boxes and other elevated receptacles from the ground or usually from a point lower than the receptacle to be loaded with manure, ore, earth, gravel, sand, grain, and the like, which consists, when in operation, of an inclined chute having one end resting on or near the ground, and its other end extended above the wagon-body or receptacle to be loaded, and in which the manure or other material to be loaded is moved by a carrier in the form of a fork, scoop, or scraper along the floor, or sometimes with the floor of the chute, from the ground, and dumped into the receptacle at or near the upper end of the chute.

In my patent above referred to, the inclined chute is shown as being provided near its upper end with depending brackets to rest on the rave or upper edge of the wagon-body when the apparatus is in use, and in many of the loaders of the above-named type now in common use, the front or upper end of the chute rests directly on the body or receptacle to be loaded. In either of the above-named cases, it is obvious that when the portion of the wagon-body or receptacle adjacent to the resting place thereon of the chute has been filled, it is necessary to raise the chute from the body so that their positions with respect to one another can be changed in order to fill the other portions of the body. This operation of raising the chute from the wagon-body or receptacle involves some labor and loss of time, for it is manifest, that the carrier cannot be operated so as to load the body or receptacle while it is being moved or while the chute is being raised to permit of such movement.

In my aforesaid patent, as well as in Patent No. 844,524, issued to me for improvements in a manure fork or carrier on

the 19th day of February, 1907, is disclosed a fork or carrier somewhat similar in construction to that employed in my present application, and also in conjunction with an inclinable chute upon which it is adapted to travel in the operation of loading. The forks or carriers constructed according to the said patents are adapted to be drawn up the inclined chute by a rope or cable attached at one end to the bail of the carrier, and to be partially rotated or tilted when at the proper point on the chute to dump its load, by means of the draft through the bail. In the above-named construction of the forks or carriers the handles thereof, by reason of the draft through the bails, have a strong tendency to rise in the forward movement of accumulating a load on the carrier, thus causing great strain to the hands and arms of the operator.

Some of the objects of the present invention are, to overcome the above-named objections and difficulties by providing means to be used in conjunction with the front or elevated end of an inclinable chute, whereby it will be supported at said end above and across the receptacle or wagon-body so that the latter may be moved in the operation of loading in order that it may be properly filled and without requiring movement of the chute; and also by furnishing a fork or carrier, to be used conjointly with an inclinable or inclined chute, which carrier shall be of such construction that when it shall have been drawn up the chute to a suitable point thereon it will be caused to partially rotate or to be tilted so as to dump its load by reason of the gravity of the latter, and also of such construction as to lessen or entirely obviate the tendency of its handles to rise in its forward movement in the operation of collecting a load thereon, thus relieving the operator of great strain.

Still another object is to furnish means for sometimes gradually retarding, then permanently stopping and permitting the carrier to dump its load, and then returning it to its normal position at the lower end of the chute.

Various other objects and advantages will be disclosed in the subjoined description and explanation.

In the accompanying drawings, which serve to illustrate the invention—Figure 1 is a perspective view of a manure fork or carrier forming a part of the loading apparatus and

embodying one form thereof. Fig. 2 is a view in side elevation partly in section of the upper portion of the inclined chute of the loading apparatus, showing a portion of the means for supporting the upper end thereof, and illustrating by continuous lines the carrier thereon in its tilted position, and by dotted lines the position it will occupy while traveling up the inclined chute. Fig. 3 is a plan view of a portion of the upper part of the inclined chute of the apparatus. Fig. 4 is a perspective view of a modification in the construction of the fork or carrier. Fig. 5 is a view in side elevation partly in section of the upper portion of the inclined chute of the apparatus and a part of the support for the upper end thereof, showing a modification in the construction of the chute, and illustrating by continuous lines the modified form of the carrier in its tilted position thereon, and by dotted lines the position the carrier will occupy when about to be tilted or dumped. Fig. 6 is a perspective view of the inclined chute constructed as shown in Fig. 5, showing the complete support for the upper end thereof. Fig. 7 is a longitudinal sectional view of the upper portion of the chute, showing another modification in its construction and illustrating a portion of the carrier or fork in its tilted position. Fig. 8 is a fragmental plan view of the supplemental platform and spring retarder and returner for the carrier illustrated in Fig. 7. Fig. 9 is a detail view of a portion of the bail of the carrier, showing a modification in its construction. Fig. 10 is a detached perspective view of a rack used on the upper part of the support for the front or upper end of the inclined chute. Fig. 11 is a view in side elevation of the inclined chute and the support for its upper end, illustrating still another modification in the construction of the former, as well as a modification in the construction of the support. Fig. 12 is a rear view in elevation of the support for the upper end of the inclined chute shown in Fig. 1, showing means for vertically adjusting the same; and Fig. 13 is a vertical sectional view taken on line 13—13 of Fig. 12 looking in the direction indicated by the arrows.

Like numerals of reference, refer to corresponding parts throughout the different views of the drawings.

The frame of the apparatus comprises an inclinable chute, which consists of a floor 20 and an upright side piece 21 at each of the side edges of the floor, and a support for the front or upper end of the chute when in its elevated position to permit the wagon or other receptacle to be driven thereunder. The chute is preferably mounted by means of brace-bars 22 and 23 secured at one of their ends to each of the side pieces 21 on a wheeled axle 24, which bars have their other ends connected to said axle so that the chute

may be easily moved from one place to another and placed in an inclined position when desired.

As shown in Figs. 2, 5, 6 and 7 of the drawings, the floor 20 of the chute terminates at some distance below the upper ends of the side pieces 21, thus providing an opening through which the tines of the fork or carrier may pass in the operation of tilting its load, as will be presently explained. The upper end of the chute is provided with an extension, which is designated as a whole by the numeral 25, and consists of two parallel side pieces 26 secured at one of their ends to the upper portion of the sides 21 of the chute, a cross-piece 27 which unites their front ends, and a cross-piece 28 which unites the upper ends of the side pieces 21 of the chute at their juncture with the sides of the chute extension. Journaled on a suitable bracket secured to the middle portion of the rear cross-piece 28 of the chute extension is a grooved pulley 30, and journaled on a bracket 31 secured to the middle portion of the cross-piece 27 of the extension is another grooved pulley 32, which pulleys are for the support of a rope or cable 33, which is attached at one of its ends to the fork or carrier, and may be connected at its other end to a horse or other suitable power employed for drawing the carrier while being loaded and up the inclined chute. The middle front portion of the cross-piece 27 is provided with a bracket 34 having an opening to receive one of the projections 36, which are formed or provided on a channeled piece 37 at suitable distances apart one above the other, thus constituting a rack for the adjustment of the chute extension 25, which will normally be supported in substantially a horizontal position. The neck or channeled piece 37 is secured on the upper portion of an upright 38, which preferably has two downwardly divergent prongs 39, on the lower end of each of which is secured a spur 40 to be used for anchoring the ends of the prongs 39 in the ground, and in order that the spurs may be forced into the earth or floor, each of them is preferably provided with a projection 41, on which a foot may be placed, or by means of which they may be driven into a hard surface. The lower portions of the prongs 39 are secured together by means of a brace 42, on the middle portion of which is journaled a grooved pulley 43 used for the passage of the cable or rope 33 for the carrier. As the rope or cable 33 for the fork or carrier passes over the pulleys 30 and 32 and under the pulley 43 on the support for the front end of the chute, it is evident that the lower portion of the upright 38, or of its prongs 39, will have a tendency, by reason of the action of the rope or cable, to be moved from the chute, and as the apparatus is sometimes used on concrete floors,

frozen ground, or other hard surfaces so that the spurs cannot be forced into the same, I may sometimes connect each of the spurs 40, when the same are used, and when they are omitted, to the lower ends of the prongs 39 by means of chains or cables 44 to the wheels 45 of the axle 24 which supports the chute, and allow the chains to lie on the ground so that they may be driven over by the wagon to be loaded, and thus prevent the forward movement of the lower portion of the support, as will be apparent by reference to Fig. 6 of the drawings.

Instead of using the support for the front or upper end of the chute and its extension above described and shown in Figs. 2, 5 and 6 of the drawings, I may employ one constructed as shown in Figs. 11, 12 and 13, in which an upright 38^a equipped at its upper end with a rack 37, as before, is employed, and this upright has on its lower rear portion a rack-bar 46 to engage a pinion 47 mounted on a crank-shaft 48, which is journaled in the sides of a boss 49 formed or produced on a hollow piece or casting 50, which is provided on each of its sides with a downwardly and outwardly inclined socketed piece or portion 51 to receive the upper ends of legs or prongs 39^a which are united together by a brace 52, on the middle of which is journaled a grooved pulley 43 for the passage of the rope or cable for the carrier. Pivotally secured at one of its ends to the casting 50 at a point above the pinion 47 is a pawl 53, which engages the said pinion and will prevent its reverse movement. In this modified construction of the support the prongs or legs 39^a may be equipped with the spurs 40, as shown in Fig. 11, or they may be omitted, as shown in Fig. 12, and it is obvious that the chains 44 shown in Fig. 6 may be connected to the legs 39^a or the spurs thereon and to the wheels of the chute as in the other construction and above described.

As shown in Figs. 2 and 3 of the drawings, the floor 20 of the chute is provided at its upper end and at each of the side pieces 21 with an extension 54, which form tracks for the wheels of the carrier when the same is so equipped, in order that the carrier may pass far enough above the upper end of the floor to tilt and dump its load. Each of the sides 21 in the present construction of the chute is provided with a block or stop 55 located near the upper ends of the extensions 54, and said blocks or stops are employed as buffers to stop the forward movement of the wheels of the carrier.

The carrier, which forms a part of the invention or apparatus, may be of any desired form or construction, such as a scraper, scoop or fork for gathering and holding the manure or material, but there are certain novel features in the construction and arrangement of the parts which may be employed on any of

the general forms of carriers that are novel and of which I am the inventor and will hereinafter claim. In the present instance, and referring now to Figs. 1 and 2, I have shown a pronged or tined carrier which consists of two upright side members 56 which are counterparts of one another and preferably of about the shape shown. Secured to each of these members is a handle 57, which project rearwardly and upwardly and are for the use of the operator in guiding the carrier when the same is being loaded or filled. On a front and downwardly extending portion 58 of each of the members 56 is horizontally secured a cross-head 59, and said cross-head or bar carries a series of forwardly extending tines 60, which may be secured at their rear ends to the cross-head or bar in any suitable manner. Pivotally secured to the extensions 58 of the side members 56 and rearwardly of the cross-head 59 are the rear ends of the arms of the bail 61, the front end of which is provided with a pulley 62, or means for engagement with one end of the rope or cable 33 which passes over the pulleys 30 and 32 as before stated. The rear portions of the arms of the bail 61 are connected by means of a rod or shaft 63 which extends some distance outwardly beyond each of the bail arms, and this rod or shaft not only acts as a brace for the bail arms but also as an axle for wheels 64, one of which is mounted on the rod 63 near each of its ends, and as shown in Figs. 1 and 2 are of considerable size and are arranged so as to hold the lower portion of the side members 56 at a slight distance from the ground or surface on which they travel. As the ends of the rod or shaft 63 project some distance beyond the outer ends of the hubs of the wheels 64, it will be evident that said extended portions 65 of the rod or shaft 63 may be employed in conjunction with certain devices as will be hereinafter explained for retarding and stopping the forward movement of the carrier when it reaches the point on the chute for dumping its load.

In Figs. 4 and 5 of the drawings I have shown a modification in the construction of the fork or carrier, and also a modification in the construction of the chute and the means for stopping the carrier in order that it may tilt or dump by reason of the gravity of its load, which operation is also performed by the constructions employed in Figs. 1, 2 and 3 of the drawings, but through different instrumentalities. The construction of the fork or carrier shown in Fig. 4 and now under consideration is substantially the same as that shown in Fig. 1, except that the wheels are omitted from the lateral extensions 65 of the rod or shaft 63, and a small wheel or roller 66 is journaled about midway of the cross-head on its rear portion, which is employed for assisting the movement of the carrier in its descent on the chute. In this

modified form of the carrier the handles 57 thereof are shown as being braced to the cross-head 59 by means of bars 67, and the front end of the bail is provided with an
 5 apertured head 68 for the reception and retention of one end of the cable 33 which draws the carrier. The construction of the chute, its extension and support therefor illustrated in the modified form shown in
 10 Figs. 5 and 6 is similar to that shown in Fig. 2 and above described, except that the tracks or extensions 54 of the upper portion of the floor 20 of the chute are omitted, and a modified means of stopping the forward progress
 15 of the carrier is employed, which means consists of a depending bracket 69 secured to the lower surface of each side of the chute at about the upper end of the floor 20 thereof. On each of the brackets 69 is pivotally se-
 20 cured at its lower end a lever 70, the upper portion of each of which extends above the sides 21 of the chute and is provided with recesses 71 to receive the extensions 65 of the rod or shaft 63 on the bail of the carrier, and
 25 are united by a cross-piece 71^a at their upper ends. Each of the levers 70 is actuated by means of a spring 72, one end of which is connected to the chute and the other end to the lever between its ends, and the levers are
 30 movably held in place against the sides 21 of the chute by means of straps 73 secured at their ends to said sides.

In Figs. 7 and 8 is shown another modification in the construction of the chute and
 35 means for stopping, retarding and returning the carrier, which consists in omitting the spring-actuated levers 70 and in employing a platform 74 mounted across the upper por-
 40 tion of the sides of the chute, and having on its upper front portion at about its middle a block or head 75 to which is secured one end of a spring coil 76, the other end of which is free and when in its normal or expanded
 45 position will rest near the rear edge of the platform 74, near or at the front portion of which is journaled a grooved pulley 77 over which the cable 33 passes. In this modified
 50 construction, one end of the cable or rope 33 is secured to the front end 68 of the bail arms 61 and the other end to a horse or other source of power, and it will be seen in Fig. 8 that the cable passes through the coils of the
 55 spring 76 and also through an opening in the block or head 75 so that when the carrier is tilted as shown in Fig. 7 by reason of the gravity of its load, as soon as a sufficient por-
 60 tion of the carrier has passed over the upper end of the floor 20 of the chute the front end of the bail will strike the platform 74, and as it moves forwardly the enlargement 68 thereon will contact with the free end of the
 65 spring 76 which will gradually restrict the forward movement of the bail and carrier and then finally stop the same, and then by reason of the spring will force the upper por-

tion of the carrier rearwardly over the upper end of the floor 20, thus permitting it to descend on the chute.

In Fig. 9 is shown another modification in the construction of the front portion of the
 70 bail of the carrier, which consists in providing the front part of the arms 61 of the bail with a rod 78 having at its front end an eye 79 in which one end of the cable or rope 33 may be secured, and near said end is mov-
 75 ably mounted a collar or plate 80 to which one end of a spring 76^a is secured, the other end of which is fastened to a collar or plate 81 rigidly mounted on the rod 78 near the front ends of the arms 61 of the bail. When this
 80 modification is used, the operation is practically the same as that performed by the constructions shown in Figs. 7 and 8, for it will be understood that as the rod 78 of the
 85 bail is drawn upwardly on the platform 74 the plate or collar 80 may impinge any projection, such as the block 75 through which the cable passes and through which, in this
 90 instance, the front portion of the rod 78 will pass, when the spring 76^a will be contracted until the carrier is tilted, when by slackening the cable the spring 76^a will exert itself and
 95 force the carrier rearwardly so as to permit it to descend on the chute.

In Fig. 11 is shown a modification in the
 95 construction of the body of the chute, which consists in providing it with a belt-like or endless floor 20^a which passes over rollers 82 transversely journaled on the sides 21 of the
 100 chute near their upper and lower ends.

From the foregoing and by reference to the drawings it will be understood and clearly seen that by elevating the front end of the chute and its extension and supporting
 105 the same by means of a suitable support the wagon, manure-spreader, or other receptacle to be loaded, may be moved under the chute without interference with or movement of
 110 the latter so that the wagon-body or receptacle may be properly filled, and it is obvious that by means of my improved support for the upper or front end of the chute and its
 115 extension the same may be inclined to the desired or proper degree. After the wagon-body or receptacle to be loaded has been properly placed under the inclined chute, it
 120 is apparent that when the carrier constructed as shown in Figs. 1 and 2 of the drawings has been loaded by a forward movement into a manure pile or other material, which move-
 125 ment is caused by power applied to the rope or cable passing over the pulleys of the apparatus, it will be caused to ascend the inclined chute until the wheels 64 strike the
 130 stops 55 on the side rails of the chute, thus preventing further forward movement of the carrier, and in this operation permitting the carrier to be tilted and its load dumped
 135 through the instrumentality of the gravity of the load. As soon as the load shall have

been discharged from the tines or support therefor and the rope 33 slackened, it is manifest that the weight of the carrier and the action of the wheels 64 thereof will cause it to descend on the chute, in the beginning of which operation the tines 60 or support for the load will be drawn across the top of the floor 20 of the chute and thus remove manure and other material clinging thereto.

When the wheeled construction of the carrier is employed I prefer to use the stops 55 on the sides of the chute for preventing further forward movement of the carrier at the dumping point on the chute, but in some instances I may dispense with the stops 55 and employ the spring-actuated levers 70, clearly shown in Fig. 6, to engage at their upper ends either the outer portion of the hubs of the wheels 64 or the extensions 65, through said hubs, of the rod or shaft 63 on which the wheels are mounted. When the spring-actuated levers 70 are employed for this purpose, it is apparent that they will gradually restrict the forward movement of the carrier and then entirely stop its movement until it has been tilted and dumped of its load, after which the springs will exert themselves so as to cause the backward movement of the carrier and its descent on the chute which operation the wheels 64 will greatly facilitate, and it will also be understood that these wheels being of considerable size will readily pass over obstructions on the chute in the upward movement of the carrier, and also that they will render the loading of the carrier more easy.

When the carrier is constructed as shown in Fig. 4 of the drawings and according to the description thereof, the operation is substantially the same as above set forth, except that the lateral projections 65 on the rear portion of the bail will engage the upper ends of the levers 70 when the carrier reaches the dumping point on the chute, and will be first gradually retarded in its forward movement then entirely stopped, thus permitting it to be tilted and its load dumped by reason of the gravity of the latter, when it will be, through the action of the springs 72, forced rearwardly and permitted to descend on the chute to the ground.

When the constructions shown in Figs. 7 to 9, inclusive, are employed, it is apparent that the tilting operation of the carrier will be automatically accomplished by the reason of the gravity of its load and that the forward movement of the carrier will first be retarded then entirely stopped, and then reversed, so that the carrier may descend on the chute by means of the springs 76 and 76^a which co-act with the bail of the carrier to accomplish said results.

Particular attention is called to the fact that the agencies or elements of the carrier which co-act with the spring-actuated levers

70, coil-spring 76 or stops 56 and 75, are all located on the bail of the carrier. It will also be evident from the above description that the apparatus is susceptible of considerable modification without material departure from the principles and spirit of the invention, and for this reason I do not desire to be understood as limiting myself to the precise form and arrangement of the several parts of the device as above set forth in carrying out my invention in practice.

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

1. The combination with an inclined chute having an opening in its upper portion between its sides, of an upright having at its upper portion means to engage the upper portion of the chute and on its lower part a rack-bar, a hollow piece or casting on the lower portion of the upright, legs supporting said hollow piece, a crank-shaft journaled on the hollow piece, and a pinion on the crank-shaft and in mesh with the rack-bar on the upright.

2. The combination with a wheeled and inclinable chute having an opening in its upper portion between its sides, of an upright connected at its upper portion to the upper part of the chute and having two downwardly divergent supporting legs or prongs, a pulley journaled on the upper portion of the chute, another pulley journaled on the lower portion of the upright, and connections uniting the lower portions of the legs or prongs of the upright to the wheels of the chute.

3. The combination with a chute adapted to be placed in an inclined position, of a carrier adapted to travel on the chute, said carrier comprising a material supporting body portion and a bail pivotally connected at its rear ends to the sides of the body of the carrier, means on the bail of the carrier, and cooperating means therewith on the chute to prevent further forward movement of the carrier whereby it will be caused by gravity to tilt at the upper end of the floor of the chute and discharge its load.

4. The combination with a chute adapted to be placed in an inclined position, of a carrier adapted to travel on the chute, said carrier comprising a material supporting body portion and a bail connected at its rear ends to the sides of the body of the carrier, means on the bail of the carrier and cooperating means therewith on the chute to first retard the upward progress of the carrier near the upper end of the chute then prevent further forward movement of the carrier whereby it will be caused to tilt at the upper end of the floor of the chute and discharge its load.

5. The combination with a chute adapted to be placed in an inclined position, of a carrier adapted to travel on the chute, said carrier comprising a material supporting body

portion and a bail pivotally connected at its rear ends to the sides of the body of the carrier, means on the outer side of each of the arms of the bail and automatically co-acting means therewith on the chute to prevent further forward movement of the carrier whereby it will be caused to tilt at the upper end of the floor of the chute and discharge its load.

6. The combination with a chute adapted to be placed in an inclined position, of a carrier adapted to travel on the chute, said carrier comprising a material supporting body portion and a bail pivotally connected at its rear ends to the sides of the body of the carrier, means on the outer side of each of the arms of the bail and coöperating means therewith on the chute to prevent further forward movement of the carrier whereby it will be caused to tilt at the upper end of the floor of the chute and discharge its load and then be moved rearwardly on the chute.

7. The combination with a chute adapted to be placed in an inclined position and having an opening in its upper part between its sides, of a carrier adapted to travel on the chute, said carrier comprising a material supporting body portion and a bail pivotally connected at its rear ends to the sides of the body of the carrier, an outward lateral projection on the rear portion of each of the arms of the carrier, a lever mounted on each side of the opening in the chute to engage said projections on the bail of the carrier whereby the same will be partially rotated or tilted to discharge its load through said opening and its further forward movement prevented.

8. The combination with a chute adapted to be placed in an inclined position and having an opening in its upper part between its sides, of a carrier adapted to travel on the chute, said carrier comprising a material supporting body portion and a bail pivotally connected at its rear ends to the sides of the body of the carrier, an outward lateral projection on the rear portion of each of the arms of the carrier, a spring-actuated lever mounted on each side of the opening in the chute to engage said projections on the bail of the carrier whereby the same will be partially rotated or tilted to discharge its load through said opening and its further forward movement prevented, and whereby after the load of the carrier is discharged said carrier will be moved rearwardly by the spring-actuated levers.

9. The combination with a chute adapted to be placed in an inclined position and having an opening in its upper part between its sides, of a track or floor extension of the chute at each side of the opening therein, a

carrier adapted to travel on the chute, said carrier comprising a material supporting body portion and a bail pivotally connected at its rear ends to the lower portion of the body of the carrier, an outward lateral projection on the rear portion of each of the arms of the bail, a wheel mounted on each of said projections, and means on the chute near the opening therein to prevent further forward movement of the carrier whereby it will be caused to tilt through said opening in the chute and discharge its load.

10. The combination with a chute adapted to be placed in an inclined position and having an opening in its upper part between its sides, of a carrier adapted to travel on the chute, said carrier consisting of a material-supporting-body-portion and a bail pivotally connected at its rear ends to the sides of the body of the carrier, an outward lateral projection on the rear portion of each of the arms of the bail, a lever mounted on each side of the opening in the chute to engage said projections on the bail of the carrier and transversely connected together at their upper ends, whereby the carrier will be partly rotated or tilted to discharge its load through said opening and its further forward movement prevented.

11. The combination with a chute adapted to be placed in an inclined position and having an opening in its upper part between its sides, of a carrier adapted to travel on the chute and having an outward lateral projection at each of its sides on its rear portion, a spring-actuated lever mounted on each side of the opening in the chute to engage said projections of the carrier and united together at their top so as to cause them to act conjointly on said projections, whereby the carrier will tilt or partly rotate to discharge its load through said opening and its further forward movement prevented.

12. The combination with a chute adapted to be placed in an inclined position, of a lever pivotally secured to each side of the chute near its upper end and having recessed extensions above the chute, and a connection transversely uniting the upper ends of the levers.

13. The combination with a chute adapted to be placed in an inclined position, of a spring-actuated lever pivotally secured to each side of the upper portion of the chute and having recessed extensions above the same, and a connection transversely uniting the levers at their upper ends.

LE GRAND KNIFFEN.

Witnesses:

CHAS. C. TILLMAN,
M. A. NYMAN.