

J. C. FITZGERALD.
RAISING AND LOWERING CARRYING APPARATUS.
APPLICATION FILED DEC. 30, 1911.

1,056,092.

Patented Mar. 18, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

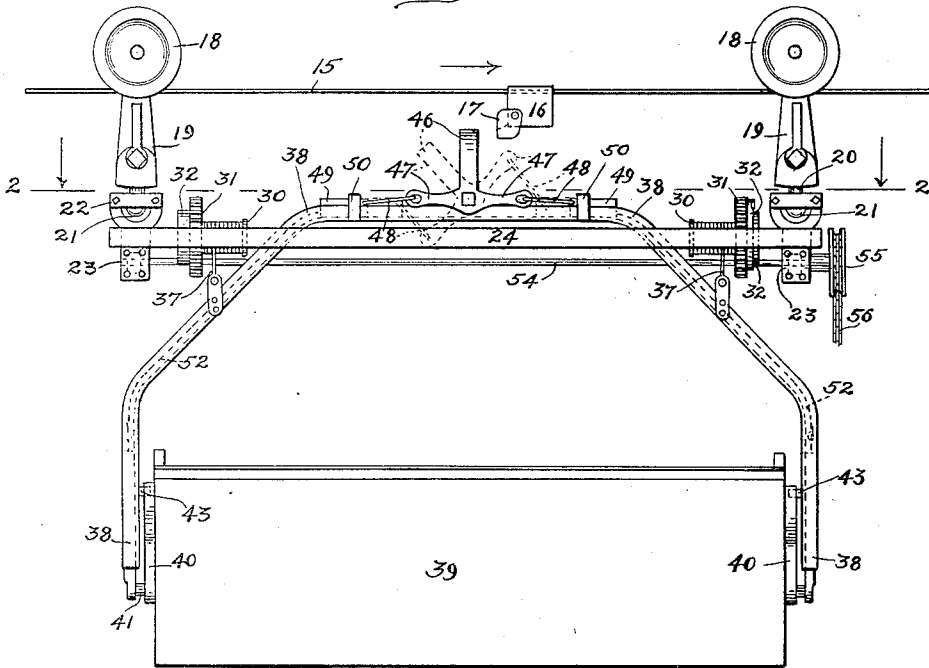


Fig. 2.

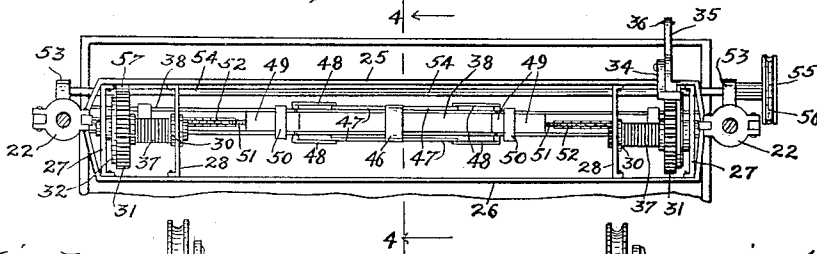


Fig. 3.

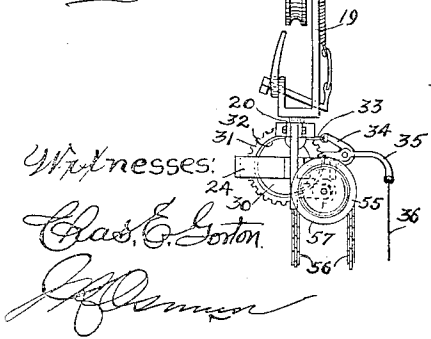


Fig. 5.

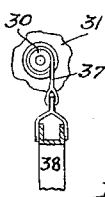
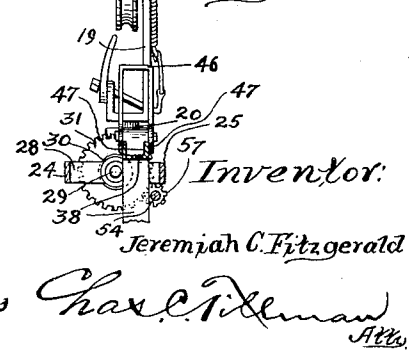


Fig. 4.



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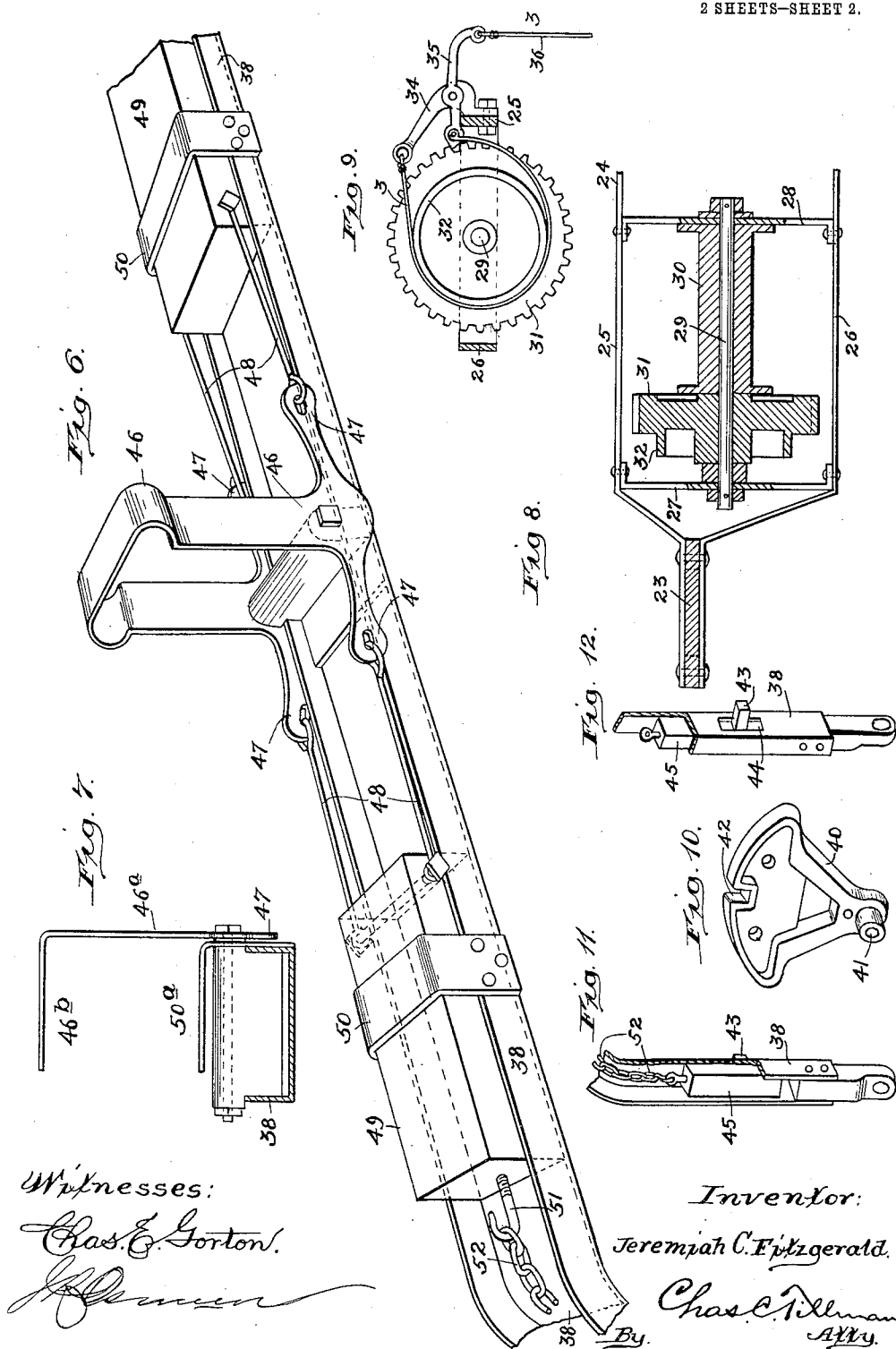
By Chas. C. Tillman
Att.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JEREMIAH C. FITZGERALD, OF KILBOURN, WISCONSIN.

RAISING AND LOWERING CARRYING APPARATUS.

1,056,092.

Specification of Letters Patent.

Patented Mar. 18, 1913.

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To all whom it may concern:

Be it known that I, JEREMIAH C. FITZGERALD, a citizen of the United States, residing at Kilbourn, in the county of Columbia and State of Wisconsin, have invented certain new and useful Improvements in Raising and Lowering Carrying Apparatus, of which the following is a specification.

This invention relates to overhead or elevated carrying apparatus of the class in which a car or receptacle is suspended from a wheeled-carrier or frame adapted to travel on an elevated track or cable, and while it is especially intended for use on such apparatus employed about barns for transporting grain, silage, and other kinds of feed, manure and litter, from one place to another, yet it applies also to carriers of the above named class, which may be used for handling or transferring from place to place, ore, coal, ashes, and the products of mills and factories, as well as, for analogous purposes, and it consists in certain novel features of construction, combination, and arrangement of parts or elements thereof, as will be hereinafter fully described and particularly pointed out in the claims.

The objects of the invention, in part, are, first, to provide a carrying apparatus of the above named general character, which shall be simple and inexpensive in construction, strong, durable, and efficient in operation; second, to provide means for easily raising and lowering the car or receptacle of the apparatus to any desired elevation and for securely maintaining it upright in such a position, until it shall have reached a predetermined point on the track, where it may be automatically or manually released and discharged of its load; third, to furnish an improved frame for parts of the apparatus and a bail for the car or receptacle, which shall be of such construction and operatively arranged with respect to one another as well as to the track and receptacle, that the latter may be locked at both of its ends to the bail, and supported thereby in such a manner as to always hang directly under the track, and so that in raising the receptacle through the said frame directly beneath the track, thus holding the trigger carried by the bail in the proper position below the track to come in contact with the trip on the latter as the apparatus travels on the same; fourth, to provide a quick and substantially

frictionless mechanism for raising and lowering the bail and receptacle thereon in a vertical line from the track, and to furnish said mechanism with reliable and effective means for governing the descent of the receptacle or car; and fifth, to provide a simple and efficient tripping mechanism for the car or receptacle, which shall be of such construction that the car may be automatically locked at each of its ends to the ends of the bail, and when traveling in either direction on the track, will be instantly released and permitted to turn on its bearings and discharge its load.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In the accompanying drawings which serve to illustrate an embodiment of the invention, Figure 1, is a view in side elevation of a portion of an elevated track showing in side elevation an apparatus embodying the invention mounted thereon and illustrating by continuous lines the parts in their raised and operative positions for travel on the track, and by dotted lines the position the trigger will assume after having come in contact with the trip of the track. Fig. 2, is a plan sectional view taken on line 2—2, of Fig. 1, looking in the direction indicated by the arrows, showing a portion of the car or receptacle broken away. Fig. 3, is an end view of the controlling end of the truck or main frame of the apparatus showing the raising and lowering mechanism for the bale and car mounted thereon, as well as the brake and dog for said mechanism, but with the bale and car omitted. Fig. 4, is a cross sectional view taken on line 4—4, of Fig. 2, looking in the direction indicated by the arrows. Fig. 5, is a view partly in section and partly in elevation of a portion of one of the drums and a part of the car supporting bail. Fig. 6, is an enlarged perspective view of the upper portion of the bail showing one form of the trigger and part of its connections which operates the locking bolts or members for locking and releasing the car on the bail. Fig. 7, is a cross sectional view through a part of the upper portion of the bail showing a modification in the construction of the trigger and in a guide member of the bail. Fig. 8, is a plan view partly in section of a portion of the truck or main frame of the apparatus. Fig. 9, is a view partly in section and partly in elevation of

- a portion of the truck frame showing a brake and dog for controlling the operation of one of the raising and lowering drums for the bail and car. Fig. 10, is a detached perspective view of one of the brackets which are secured on the ends of the car or receptacle, and Figs. 11, and 12, are perspective views of the lower portion of one end of the bail.
- Like numerals of reference refer to corresponding parts throughout the different views of the drawings.
- The reference numeral 15, designates a portion of an elevated track which may be made of a more or less flexible cable, or of rigid material, and suitably supported at the desired elevation from the ground. This track may have secured thereon at a suitable point a depending bracket 16, on the lower portion of which may be pivotally secured a trip 17, which is free to move upwardly in one direction, but restricted in its movement in the other direction, in order to enable the carrying apparatus which travels on the track 15, to pass said trip when going in one direction, without being influenced thereby or, in other words, without having its trigger thrown thereby, but when the apparatus travels in the other direction, said trip will contact with the trigger of the apparatus and throw the same. Adapted to travel on the track 15, are wheels 18, both of which are journaled on the upper end of depending hangers 19, each of which hangers is provided at its lower end with a downward extension 20, having a head 21, on its lower end. Each of the extensions 20, of each of the hangers 19, is swiveled or rotatably mounted in the upper portion 22, of an upright bracket 23, one of which is employed at each end of the truck or main frame which is designated as a whole by the reference numeral 24, see Figs. 1, and 2, of the drawings, thus allowing the wheels 18, to turn at various angles with relation to the truck frame, so as to permit the carrier to easily round curves and to be brought into exact alinement on a straight stretch of track. The truck or main frame of the apparatus comprises two parallel members or rails 25, and 26, which are spaced some distance from one another and have their end portions intumed or approximated and secured to the brackets 23, below the heads or upper parts 22, thereof, in which parts the extensions 20, of the hangers 19, are swiveled. The side rails or members 25, and 26, of the truck or main frame 24, are braced near each of their ends by means of transversely disposed bars 27, and inwardly of each of such bars by means of a similarly disposed bar 28, which bars not only act as braces for the side rails or members 25, 26, of the truck frame, but also serve to support shafts 29, one of which is journaled on each pair of the bars 27, and 28, and longitudinally with respect to the truck frame as will be clearly understood by reference to Figs. 4, and 8, of the drawings, in the latter of which figures as well as Fig. 2, it will be seen and understood that the upright brackets 23, on which the ends of the side rails 25, and 26, of the truck frame 24, is mounted, are located on one side of the longitudinal axis of said frame. Mounted on each of the shafts 29, is a drum 30, which has fixed to its outer end a gear 31, one or both of which gears has on its outer surface an annular extension or brake drum 32, against which extension a brake band 33, contacts, one end of which band is secured to one end of an arm 34, which is mounted at its further end on one side of the truck frame 24, near one end thereof, and said arm projects upwardly and inwardly toward the extension 32, as is clearly shown in Fig. 9, of the drawings. Pivotally secured on the arm 34, is a dog 35, one end of which is adapted to engage the teeth of the gear 31, and has pivotally connected thereto the end of the bracket band 33, opposite that which is connected to the arm 34, so that, when the inner end of the dog 35, is disengaged from the teeth of the gear 31, which may be done by means of a cord or connection 36, attached to the outer end of the dog 35, the band 33, may be tightened on the extension 32, and its frictional contact therewith increased or regulated so as to govern the movement of the drum 30, to which the brake controlled gear 31, is connected. Connected at one of its ends to each of the drums 30, is a chain or other flexible connection 37, the other of each of which is connected to a bail 38, which is herein shown as being formed of channel iron, or as having a channel on its outer surface, but which may be tubular or of other construction. As shown, this bail is substantially of an inverted U-shape, and has pivotally mounted between its lower or free ends a car or receptacle 39, of any suitable size, shape and material, which is employed for holding the material to be transported from place to place by the apparatus. The upper portion of the bail 38, is disposed horizontally as shown in Fig. 1, and projects some distance above the points at which the flexible connections 37, on the winding drums 30, are connected, so that when the bail and carrier are raised to operative position for transferring a load, the upper portion of the bail will extend through the open truck frame 24, or between the side rails thereof, in which operation it will be understood that as the drum or winding shafts 30, are journaled at one side of the upright brackets 23, of the truck frame, and that as the cords or connections 37, are unwound from and wound on said drums, at their surfaces ad-

5 jacent to a longitudinal line drawn through the frame 24, and through the brackets 23, thereof, the bail 38, and the receptacle 39, will be operated on a vertical line from the track 15, so that when the bail is raised to its uppermost position it will lie directly under said tracks so that the trigger which the bail carries will be in position to contact with the trip 17, on the track as will be presently explained.

10 Mounted on each end of the car 39, or receptacle, is a locking plate 40, which has at its lower portion a bearing 41, to each of which one end of the bail 38, is pivotally connected. These plates 40, are mounted on the receptacle or car 39, so that their bearings 41, will be nearer the bottom of the receptacle than its top, when the same is in its upright or loaded position, in order that its upper portion may be heavier than its lower part, to the end that, when the car is released or unloaded from the bail it will automatically tilt on its bearings. The upper portion of each of the plates 40, is upwardly curved and is provided with a recess 42, to receive a projection 43, or locking bolt, with which each of the weights 44, is provided, which bolts extend through suitable openings 44, in the lower portion of the bail near each of its ends, and are projected from weights 45, one of which is located in the bail near each of its ends.

The upper or horizontal portion of the bail 38, has pivotally mounted thereon at about its middle portion an upwardly extended trigger 46, which is substantially of an inverted U-shape as shown in Fig. 6, of the drawings, and has extended in opposite directions from the lower portion of each of its sides, arms 47, to the outer ends of each of which is loosely secured a connection 48, the other ends of which are secured in pairs to a movable member 49, one of which is located in the channeled portion of the bail 38, on each side of the trip 46, and is movably held in said channel by means of a trap 50, which is extended over the member 49, and secured at its end to the sides of the bail. The outer end of each of the members 49, has secured therein a screw hook 51, to each of which is attached one end of a chain or flexible connection 52, which connections are extended downwardly in the channel of the bail and are connected at their other ends to the weights 45, which carry the locking bolts for the receptacle. By this arrangement it is evident that when the car 39, and bail 38, are in their raised positions as shown in Fig. 1, of the drawings, the trip 46, will be projected into the path of the trip 17, and that in the progress of the apparatus in the direction indicated by the arrow, the trip 17, will contact with the trigger 46, and throw it to about the position indicated by dotted lines, in which

operation it is evident that the weights 45, will be drawn upwardly by reason of their connections with the arms 47, on the trigger, thus removing the locking bolts 43, from the recesses 42, of the plates 40, on the receptacle, thereby releasing the latter and permitting it to turn on its pivots and discharge its load.

Instead of making the trigger of the shape shown in Fig. 6, and above described, the trigger 46^a, of the construction shown in Fig. 7, may be employed, which trigger consists of an upright portion pivotally secured at its lower end to one side of the bail 38, having at its upper portion a horizontally disposed part 46^b, which is projected over the bail and so as to extend into the path of the trip 17, on the track.

A modified construction of the straps used for movably holding the members 49, in place on the bail, is shown in Fig. 7, which may be sometimes employed, and which consists of an angular piece 50^a, secured at its lower end to one side of the bail and extended at its upper portion transversely thereof and above the member which it guides. In the modification of the trigger shown in Fig. 7, the lower portion thereof is provided with arms 47, as in the other construction, and said arms are connected by means of links or connections 48, to the members 49, at one side only thereof.

Journalled on laterally disposed extensions 53, with which the uprights 23, of the frame are provided below said frame, and longitudinally therewith is a main shaft 54, which has at one of its ends a grooved wheel 55, over which is passed an endless chain 56, which hangs down a sufficient distance to be within easy reach of the operator and by means of which the shaft 54, may be turned. This shaft is provided with a pair of pinions 57, at suitable points thereon to engage the gears 31, on the drums 30, so that when the shaft 54, is turned in the proper direction the drum or winding shafts 29, and the drums 30, thereon will be rotated in the proper direction to wind the connections 57, thereon and thus raise the car to the desired position where it will be held by means of the dog 35, which engages the teeth of one of the gears 31. When it is desired to lower the car, it is apparent that by pulling downwardly on the car 36, the dog 35, will be released from the gear, when the car will descend by reason of its gravity, in which operation its descent can be regulated by pulling down on the car 36, which will tighten the brake band 33, on the extension 32, thus retarding the movement of the car.

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

1. In an apparatus of the class described, the combination with a truck or main frame,

of a supporting wheel mounted thereon near each end thereof and above the same, a pair of winding shafts longitudinally journaled on said frame in alinement with one another, 5 a main shaft journaled longitudinally with respect to said frame, and gears uniting said shaft and the winding shafts.

2. In an apparatus of the class described, the combination with a truck or main frame, 10 of a supporting wheel mounted thereon near each end thereof and above the same, a pair of winding shafts longitudinally journaled on said frame in alinement with one another, a drum on each of said shafts, a main shaft 15 journaled longitudinally with respect to said frame, and gearing uniting said shaft and the winding shafts.

3. In an apparatus of the class described, the combination with a truck frame consisting of an open frame, of a supporting wheel 20 mounted thereon near each end thereof and above the same, a pair of winding shafts longitudinally journaled on and within said frame, a main shaft journaled longitudinally with respect to said frame, gearing 25 uniting said shaft and the winding shafts, and means to turn the main shaft.

4. The combination with a truck or main frame having an opening therein, of a supporting wheel mounted thereon near each 30 end thereof and above the same, a winding shaft longitudinally journaled on the frame within its opening near each end of the frame, a main shaft journaled longitudinally with respect to said frame and geared 35 to the winding shafts, a receptacle supporting bail adapted to be projected at its upper portion through the opening in the frame when raised, connections uniting the bail 40 and the winding shafts, a trigger pivotally mounted on the upper portion of the bail, and means uniting said trigger and the ends of the receptacle for locking and releasing the latter.

5. The combination with an open truck or main frame, of a supporting wheel mounted 45 thereon near each end thereof and above the same and at one side of the longitudinal axis of said frame, a winding shaft longitudinally journaled centrally of the frame within its opening and near each end thereof, a 50 main shaft journaled longitudinally with respect to said frame and geared to the winding shafts, a receptacle supporting bail adapted to be projected, when raised, at its 55 upper portion through the open frame, connections uniting the winding shafts and said bail whereby said connections and the bail will operate in substantially a vertical plane 60 with the supporting wheels.

6. The combination with an open truck or main frame, of a supporting wheel mounted 65 thereon near each end thereof and above the same and at one side of the longitudinal axis of said frame, a winding shaft longitudi-

nally journaled on the frame within its opening and near each end thereof, a main shaft journaled longitudinally with respect to said frame and geared to the winding 70 shafts, a bail downwardly extended at its ends and adapted to be projected, when raised, at its upper portion through the frame, a receptacle pivotally mounted on the bail between its lower portions and having 75 a catch on each of its ends, a trigger pivotally mounted on the upper portion of the bail, a weighted locking bolt movably mounted on each of the lower portions of 80 the bail and adapted to engage the catches on said receptacle, connections united at one of their ends to the weights of the locking bolts and at their other ends to said trigger, 85 connections uniting the winding shafts and said bail whereby said connections, the bail, and the trigger thereon, will operate in substantially a vertical plane with the supporting wheels.

7. The combination with a truck frame having an opening in the central portion 90 thereof, of a supporting wheel mounted thereon near each of its ends above the same and at one side of the longitudinal axis of said frame, a winding shaft longitudinally 95 journaled on the frame near each end thereof and spaced apart at their adjacent ends, a main shaft journaled longitudinally with respect to said frame and geared to the winding shafts, means on one end of the 100 main shaft to turn the same, a bail downwardly extended at its ends and adapted to be projected, when raised, at its upper portion through the opening of the truck frame and between the adjacent ends of the wind- 105 ing shafts, flexible connections uniting each of the winding shafts and the bail, a receptacle pivotally mounted on the bail between its lower portions and having a catch on each of its ends, a trigger pivotally mounted on the upper portion of the bail, and means 110 uniting said trigger and the ends of the receptacle for locking and releasing the latter.

8. The combination with a suitably supported bail having downwardly extended 115 ends, of a receptacle pivotally mounted between the downwardly extended parts of the bail and having a catch on each of its ends, a locking member movably mounted on and near each of the ends of the bail and adapted to engage the catches on said receptacle, 120 an upwardly extended trigger pivotally mounted at its lower portion on the upper part of the bail and having at its lower part oppositely extended arms, a member slidably mounted on the bail on each side of the trigger, connections loosely uniting said 125 members to the arms of the trigger, and flexible connections uniting said members to said locking members.

9. The combination with a bail having downwardly disposed ends, of a receptacle 130

pivottally mounted between said ends and having on each of its ends a catch, a trigger pivottally mounted at its lower portion on the upper part of the bail and having at its 5 upper portion an extension transversely disposed with respect to the bail, oppositely extended arms on the lower portion of the trigger, a member slidably mounted on the bail on each side of the trigger, a link 10 connecting each of said members to one of said arms, a locking member movably mounted on and near each of the ends of the bail and adapted to engage the catches on said receptacle, and connections uniting said 15 locking members and the movable members on the upper portion of the bail.

10. The combination with a suitably supported bail having downwardly disposed ends, of a receptacle pivottally mounted between said ends and having on one of its 20 ends a catch, a locking member movably mounted on one of the lower portions of the bail and adapted to engage the catch on said receptacle, a trigger pivottally mounted 25 on the upper portion of the bail, a movable member slidably mounted on the bail between said locking member and the trigger, a link connecting the movable member and the trigger and disposed in a horizontal 30 plane with the upper portion of the bail, and a flexible connection between the movable member and the locking member.

11. The combination with a suitably supported bail having downwardly disposed 35 ends, of a receptacle pivottally mounted between said ends and having on one of its ends a catch, a locking member movably mounted on one of the lower portions of the bail and adapted to engage the catch on said 40 receptacle, a trigger pivottally mounted on the upper portion of the bail, a movable member slidably mounted on the bail between said locking member and the trigger, a link connecting the movable member and 45 the trigger and disposed in a horizontal plane with the upper portion of the bail, a screw threaded bolt and a connection adjust-

ably secured at one of its ends to the movable member and at its other end to the locking member. 50

12. In an apparatus of the class described, the combination with a truck or main frame, of a supporting wheel mounted thereon near each end thereof and above the same, a 55 winding shaft journaled on said frame, a drum and a gear on said shaft, an arm pivottally mounted on the frame and adapted to engage the teeth of said gear at one of its ends, and provided with means to disengage it. 60

13. The combination with a frame, of a gear mounted thereon and provided with an annular extension, a bracket mounted on the frame adjacent to the periphery of the gear, an arm pivottally mounted on said bracket 65 and adapted to engage the teeth of the gear at one of its ends and having means at its other end to disengage it from the gear and a band surrounding the extension on the gear and secured at one of its ends to the 70 bracket and its other end to the inner portion of said arm.

14. The combination with a suitably supported bail having downwardly disposed ends, of a receptacle pivottally mounted between said ends and having on one of its 75 ends a catch, a locking member movably mounted on one of the lower portions of the bail and adapted to engage the catch on said receptacle, a trigger pivottally mounted 80 on the upper portion of the bail, a movable member slidably mounted on the bail between said locking member and the trigger, a connection loosely uniting the movable member and the trigger and disposed in substantially a horizontal plane with the upper 85 portion of the bail, and a flexible connection uniting the movable member and the locking member.

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