F. GAHM.

WAGON DUMP AND ELEVATOR.

APPLICATION FILED NOV. 2, 1908.

914,565. Patented Mar. 9, 1909.

3 SHEETS—SHEET 1.

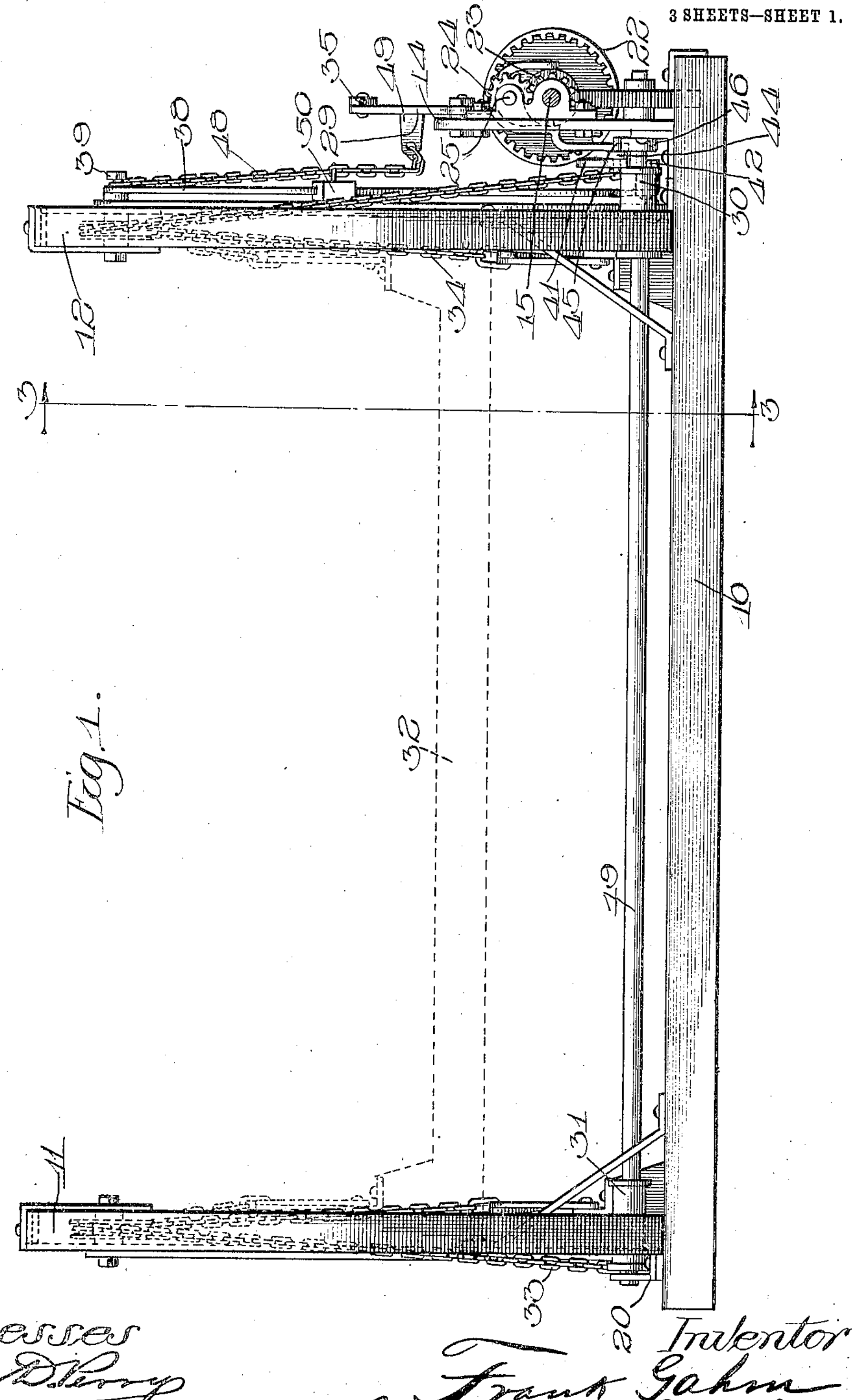

Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 3.

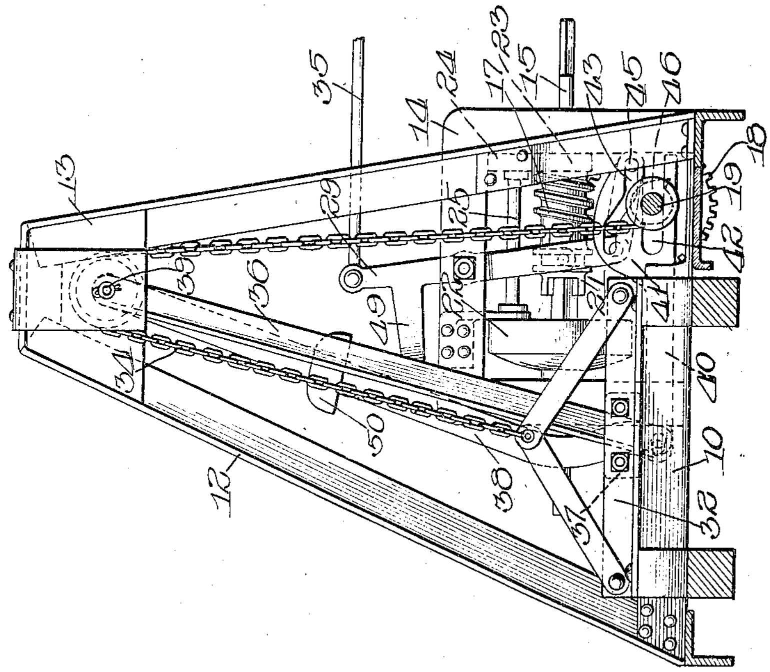
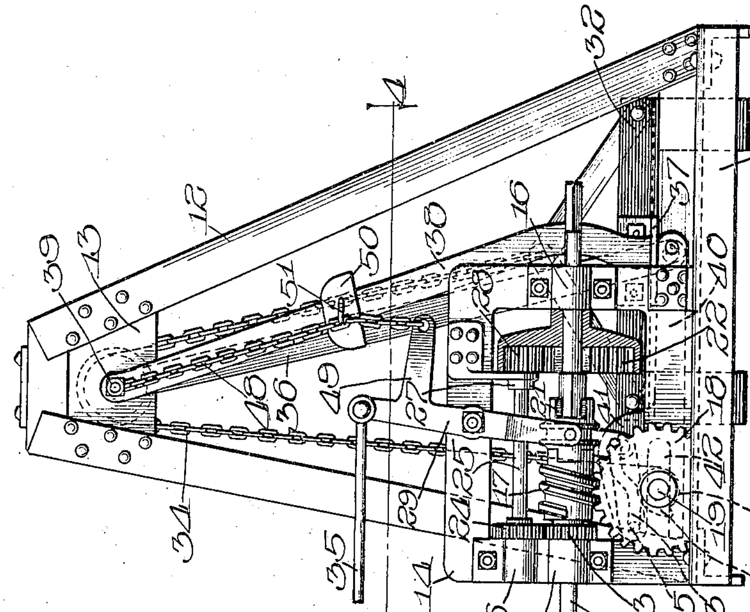


Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 4

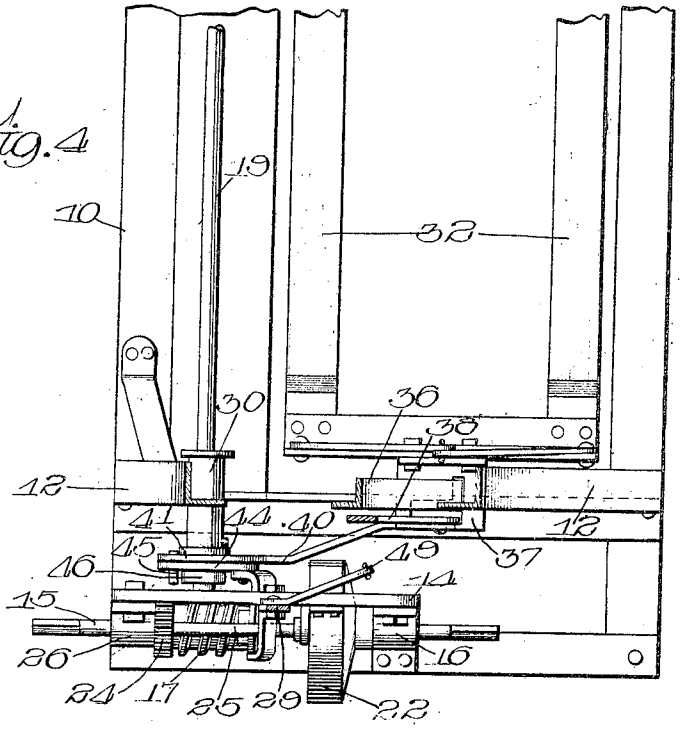


Fig. 5.

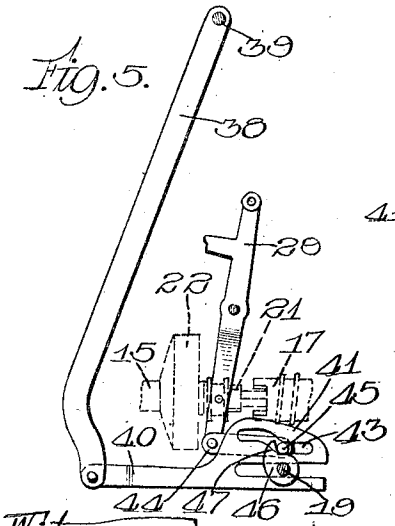


Fig. 7.

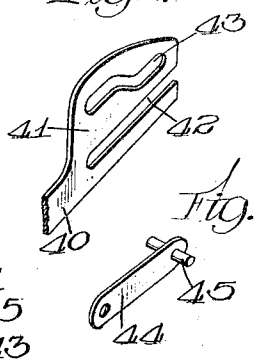
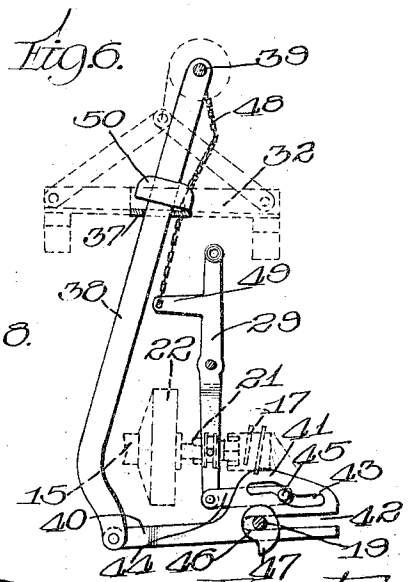


Fig. 8.

Fig. 6.



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WAGON DUMP AND ELEVATOR.

No. 914,565. Specification of Letters Patent. Patented March 9, 1909.

Application filed November 2, 1908. Serial No. 460,676.

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.

This invention relates to devices for raising the front end of a vehicle in order to enable the contents to be readily dumped therefrom.

It has for its leading object to provide improved means for automatically throwing the operative mechanism out of action at the predetermined limit of the upward movement of the platform that supports the front wheels of the vehicle and also at the conclusion of its downward movement. I accomplish this object by the means shown in the drawings and hereinafter more specifically described.

That which I believe to be new will be set forth in the claims.

In the drawings:—Figure 1 is a front elevation of my improved mechanism. Fig. 2 is an end view of the machine, the internal gear wheel being shown in section. Fig. 3 is a vertical section through the base of the machine at line 3—3 of Fig. 1, showing in elevation the opposite side of the framework and mechanism connected therewith that is represented in Fig. 2. Fig. 4 is a horizontal section at line 4—4 of Fig. 2. Fig. 5 and Fig. 6 are details, illustrating different positions of the shifting mechanism, Fig. 5 showing the parts in the position assumed just prior to the withdrawal of the clutch from engagement with either the internal gear or the worm. Some of the parts are shown in broken lines. Fig. 7 is a perspective view of the outer end of the slotted shifting plate. Fig. 8 is a detail of the short link pivoted to the shifting lever and engaging the slotted plate shown in Fig. 7.

Referring to the several figures of the drawings, in which corresponding parts are indicated by the same reference characters, 10 indicates a rectangular frame forming the base of the machine.

11 and 12 indicate two supporting frames of ordinary construction secured upon the base near opposite ends thereof. Each frame 11—12 consists, as shown, of bars secured together near their upper ends by a plate 13.

The base and supporting frames are substantially the same as shown in my allowed application, filed January 27, 1908, Serial Number 412,854, and much of the operating mechanism about to be described is also the same as in that application and hence but a brief description of such parts as are found therein will suffice here.

14 indicates a vertically-arranged metal frame suitably secured to the base 10 just beyond the outer face of the frame 12 already referred to.

15 indicates a drive shaft suitably mounted in bearings 16, the ends of said drive shaft being squared as indicated to adapt it to have connection at either end to an ordinary tumbling rod.

17 indicates a worm loosely mounted on the drive shaft, which worm meshes with a worm-wheel 18 fast on the end of a shaft 19 that extends longitudinally of the base and is journaled at its opposite end near the upright frame 11 in a suitable bearing 20 (see Fig. 1).

21 indicates the clutch on the drive shaft 15, the clutch being so connected with the shaft as to turn therewith and also being free to move longitudinally on the shaft. As shown in Fig. 2, that portion of the shaft on which the clutch moves is squared.

22 indicates an internal gear of comparatively large size loosely mounted on the drive shaft. The clutch is located on the shaft between the worm 17 and the internal gear 22 and has its ends adapted to engage with either of said parts.

23 indicates a pinion formed with or made fast to the end of the sleeve on which is formed the worm 17.

24 indicates another pinion meshing with the pinion 23, said pinion 24 being fast on the end of a counter shaft 25 suitably mounted in bearings 26 and 27. At the opposite end of the shaft 25 is mounted another pinion 28 which engages the internal gear 22.

29 indicates a lever pivoted to the upper bar of the frame 14, as clearly shown in Fig. 2, and having a suitable engagement at its lower end with the double-ended clutch 21, whereby this lever, by being rocked upon its pivot, may cause such clutch to engage either with the worm or the internal gear.

All of the foregoing mechanism is substan-

tially the same as that shown in my said application, with the exception that in said application the shaft 19 is a short shaft having mounted upon it a single winding drum, whereas in my present application it is shown as a long shaft upon which are mounted two winding drums 30 and 31 (see Fig. 1).

32 indicates the movable platform upon which the front wheels of a wagon are adapted to be driven. At each end of this platform is secured one end of a chain which passes over a pulley mounted in the upper end of one of the upright frames and having its other end secured to one of the drums referred to. The chain adjacent to the upright frame 11 is indicated by 33, and the other chain by 34.

35 indicates a rod pivotally secured to the top of the pivoted lever 29 through which an attendant may operate such lever to throw the clutch 21 into engagement with either the worm 17 or the internal gear 22.

36 indicates bars each rigidly secured at its upper end to the upper end of one of the vertical end frames and at its lower end rigidly connected with the base. The movable platform is suitably connected with each of these rigid bars by any suitable guiding devices, such, for example, as the loops 37 (see Fig. 2), each loop being secured to and projecting from one end of the movable frame.

38 indicates a long bar pivotally connected at its upper end at 39 to the outer face of the vertical end-frame 12. This bar 38, when the movable platform 32 is in its lower position, as in Fig. 2, will stand at a suitable inclination, being practically parallel with the bar of the inclined frame that is, as shown, somewhat sharply inclined. At its lower end this bar 38 is given a considerable curve, as clearly shown in Fig. 2, the lower end entering or otherwise engaging the adjacent loop 37, as shown in Fig. 4.

40 indicates a bar pivotally attached at its inner end to the lower end of the long bar 38 below the loop 37 and at its forward end provided with an enlarged plate portion 41 in which is formed two slots, the lower of said slots 42 being straight and open at its forward end, and the other of said slots, which is indicated by 43, having its inner portion higher than its forward portion, the two end portions of the slot being connected by a diagonal portion, as clearly shown in Figs. 3 and 7. The lower slot 42 receives the rod 19 that carries the worm wheel 18 and the two winding drums.

44 indicates a link pivotally connected at its inner end to the lower end of the shifting lever 29 and at its other end is provided with a fixed pin 45 that projects from both sides of said link. This link lies close along against the slotted head or plate portion 41, and the pin 45 projecting out from that side of the link next to the said slotted head or plate portion enters the irregular-shaped upper slot 43.

46 indicates a small roller fixedly secured upon a reduced portion of the rod 19, such roller lying immediately next to the inner face of the lower bar of the small frame 14. This roller is provided with a projecting tooth 47, as clearly shown in Figs. 5 and 6, said tooth being adapted to engage the pin 45 on the link 44 when said pin is moved out of the higher portion of the slot 43.

48 indicates a short piece of chain secured at its upper end, at a point near the upper end of the end-frame 12, preferably around the end of the pivot 39 and secured at its lower end to a laterally-extending arm 49 formed with or connected to the pivoted shifting lever 29.

50 indicates a slide, preferably in the form of a block, arranged so as to be freely movable up and down on the long pivoted lever 38. This slide carries means for detachably engaging the short section of chain 48, such means being preferably in the form of a hook 51, as indicated.

It will be understood from the description given in my said former application that when the clutch is in engagement with the worm the shaft 19 will be driven in a direction to wind up the lifting chains so as to elevate the platform 32, while, when the clutch is in engagement with the internal gear, said shaft will be reversely rotated to allow the lifting chains to unwind to permit the descent of the said platform, and I need not therefore more fully describe this operation.

Referring now to the means employed for effecting the throwing out of the clutch from engagement with either the worm or the internal gear, when the parts are in the position shown in Fig. 2, wherein the clutch is in engagement with the worm and the platform is lowered, the pin 45 will be at the forward end of the lower portion of the slot 43 but will be gradually withdrawn along said slot as the platform rises, owing to the loop pressing on the curved rear edge of the long pivoted lever 38, causing such lever to swing slightly forward,—and I mean by forward toward that edge of the machine nearest the rod 19,— and, as the platform continues to rise, the loop will come in contact with the slide 50, forcing said slide upward on said bar 38, and, through the short section of chain 48, with which the slide is connected through the hook 51, a pull will be exerted on the arm 49 that is formed with or secured to the shifting lever 29, causing such lever to turn on its pivot, and, through the link 44, that is pivoted to the lower end of the lever, causing the pin to ride up the inclined portion of the slot 43, where it remains at rest at about the beginning of the straight upper portion of said slot. The shifting of this lever 29 in this manner throws the clutch out of engagement with

the worm, leaving it midway between the worm and the internal gear, so that the further rotation of such clutch and the shaft on which it is mounted has no further effect in the way of causing a movement in either direction of the movable platform. The height to which the platform is to be lifted can of course be regulated by the point of attachment of the slide 50 to the short chain 48. When it is desired to cause the descent of the movable platform, the operator, through the rod 35, will shift the lever 29 so as to cause an engagement of the clutch with the internal gear 22, and such movement will throw the pin 45 back to the end of the upper portion of the slot 43. The continued rotation of the drive shaft will then, as already fully described in my said former application, cause a reverse rotation of the rod 19 so as to unwind the lifting chains therefrom. Now, as the platform descends, the loop on its end that embraces the long pivoted lever 38, will, as it strikes the curved lower portion of such bar, cause the bar to turn on its pivot 39 slightly whereby the bar 40, connected to its lower end, will be moved back sufficiently to cause the pin 45 to move down the inclined part of the slot 43 into position to be engaged by the tooth 47 on the small roller 46. Such engagement, as the roller continues to rotate, will cause a forward pull on the link 44 that carries such pin and will necessarily cause a pulling on the lower end of the shifting lever 29 that will draw the clutch out of engagement with the internal gear, such clutch remaining free of the internal gear and free of the worm until it is again shifted by the operator through the rod 35.

By the means described, I provide very simple and effective means for automatically shifting the clutch out of engagement with either of the driving devices.

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

1. The combination with a movable platform, a lifting chain therefor, a rotatable winding shaft with which said chain is connected, two sets of mechanism adapted to rotate said shaft in different directions, a drive shaft, a clutch on said drive shaft adapted to engage either of said sets of mechanism, and a pivoted lever for shifting said clutch, of a swinging bar, means secured to one end of said platform and slidingly engaging said bar and adapted to cause said bar to swing when near one end of the movement of said platform, a longitudinally-movable bar connected to said swinging bar and provided with a head having a slot, a link pivotally attached to said shifting lever, a pin carried by said link and extending into said slot, and a rotating device adapted to engage said pin to pull the link forward, and, through the said shifting lever, move the clutch out of engagement with one of said sets of mechanism.

2. The combination with a movable platform, a lifting chain therefor, a rotatable winding shaft with which said chain is connected, two sets of mechanism adapted to rotate said shaft in different directions, a drive shaft, a clutch on said drive shaft adapted to engage either of said sets of mechanism, and a pivoted lever for shifting said clutch, of a swinging bar, means secured to one end of said platform and slidingly engaging said bar and adapted to cause said bar to swing when near one end of the movement of said platform, a longitudinally-movable bar connected to said swinging bar and provided with a head having a slot that is higher at one end than at the other, a link pivotally-attached to said shifting lever, a pin carried by said link and extending into said slot, and a rotating device adapted to engage said pin to pull the link forward, and, through the said shifting lever, move the clutch out of engagement with one of said sets of mechanism.

3. The combination with a movable platform, a lifting chain therefor, a rotatable winding shaft with which said chain is connected, two sets of mechanism adapted to rotate said shaft in different directions, a drive shaft, a clutch on said drive shaft adapted to engage either of said sets of mechanism, and a pivoted lever for shifting said clutch, of a swinging bar, means connected to one end of said platform and slidingly engaging said bar and adapted to cause said bar to swing when near one end of the movement of said platform, a link pivotally attached to said shifting lever, a pin secured to said link, a rotating device adapted to engage said pin to pull the link forward, and, through the said shifting lever, move the clutch out of engagement with one of said sets of mechanism, and means connected with said swinging bar for normally holding said pin out of contact with said rotating device and at a predetermined time allowing said pin to be moved to a position to be engaged by said rotating device.

4. The combination with a movable platform, a lifting chain therefor, a rotatable winding shaft with which said chain is connected, two sets of mechanism adapted to rotate said shaft in different directions, a drive shaft, a clutch on said drive shaft adapted to engage either of said sets of mechanism, and a pivoted lever for shifting said clutch, of a swinging bar curved at its lower end, means projecting from one end of the said movable platform and embracing said swinging bar and adapted to move said bar when in contact with said curved portion of the bar, a link pivotally attached to said shifting lever, a rotatable device adapted to longitudinally move said link and through the said shifting lever move the clutch out of engagement with one of said sets of mechanism, and means connected with said swinging bar for normally

holding said link from being engaged by said rotating device and at a predetermined time causing such engagement.

5. The combination with a movable platform, a lifting chain therefor, a rotatable winding shaft with which said chain is connected, two sets of mechanism adapted to rotate said shaft in different directions, a drive-shaft, a clutch on said drive shaft adapted to engage either of said sets of mechanism, and a pivoted lever for shifting said clutch, of a swinging bar, means secured to said platform and slidingly engaging said bar and adapted to cause said bar to swing when near one end of the movement of said platform, a longitudinally-movable bar connected to said swinging bar and provided with a head having a slot that is higher at one end than at the other, a link pivotally attached to said shifting lever, a pin carried by said link and extending into said slot, and a roller provided with a projecting finger adapted to engage said pin to pull the link forward, and, through the said shifting lever, move the clutch out of engagement with one of said sets of mechanism, said roller being fast on said winding shaft.

6. The combination with a movable platform, a lifting chain therefor, a rotatable winding shaft with which said chain is connected, two sets of mechanism adapted to rotate said shaft in different directions, a drive-shaft, a clutch on said drive shaft adapted to engage either of said sets of mechanism, and a pivoted lever for shifting said clutch, of a swinging bar, means secured to said platform and slidingly engaging said bar and adapted to cause said bar to swing when near one end of the movement of said platform, a longitudinally-movable bar connected to said swinging bar and provided with a head having two slots, one of said slots receiving said winding shaft and the other of said slots being higher at one end than at the other, a link pivotally attached to said shifting lever, a pin carried by said link and extending into said second-named slot, and a rotating device fast on the winding shaft adapted to engage said pin to pull the link forward, and, through the said shifting lever, move the clutch out of engagement with one of said sets of mechanism.

7. The combination with a movable platform, a lifting chain therefor, a rotatable winding shaft with which said chain is connected, two sets of mechanism adapted to rotate said winding shaft in different directions, a drive shaft, a clutch on said drive shaft adapted to engage either of said sets of mechanism, and a pivoted lever for shifting said clutch, of a swinging bar, means extending from one end of the said movable platform and slidingly engaging said bar, and two sets of devices connected with said swinging bar, one of said sets of devices having connection with one end of the said shifting lever and the other set having connection with the other end of said shifting lever, and each adapted when the said platform has reached the limit of its movement in one direction to cause a turning of the shifting lever whereby the clutch will be moved into an inoperative position.

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Witnesses:
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