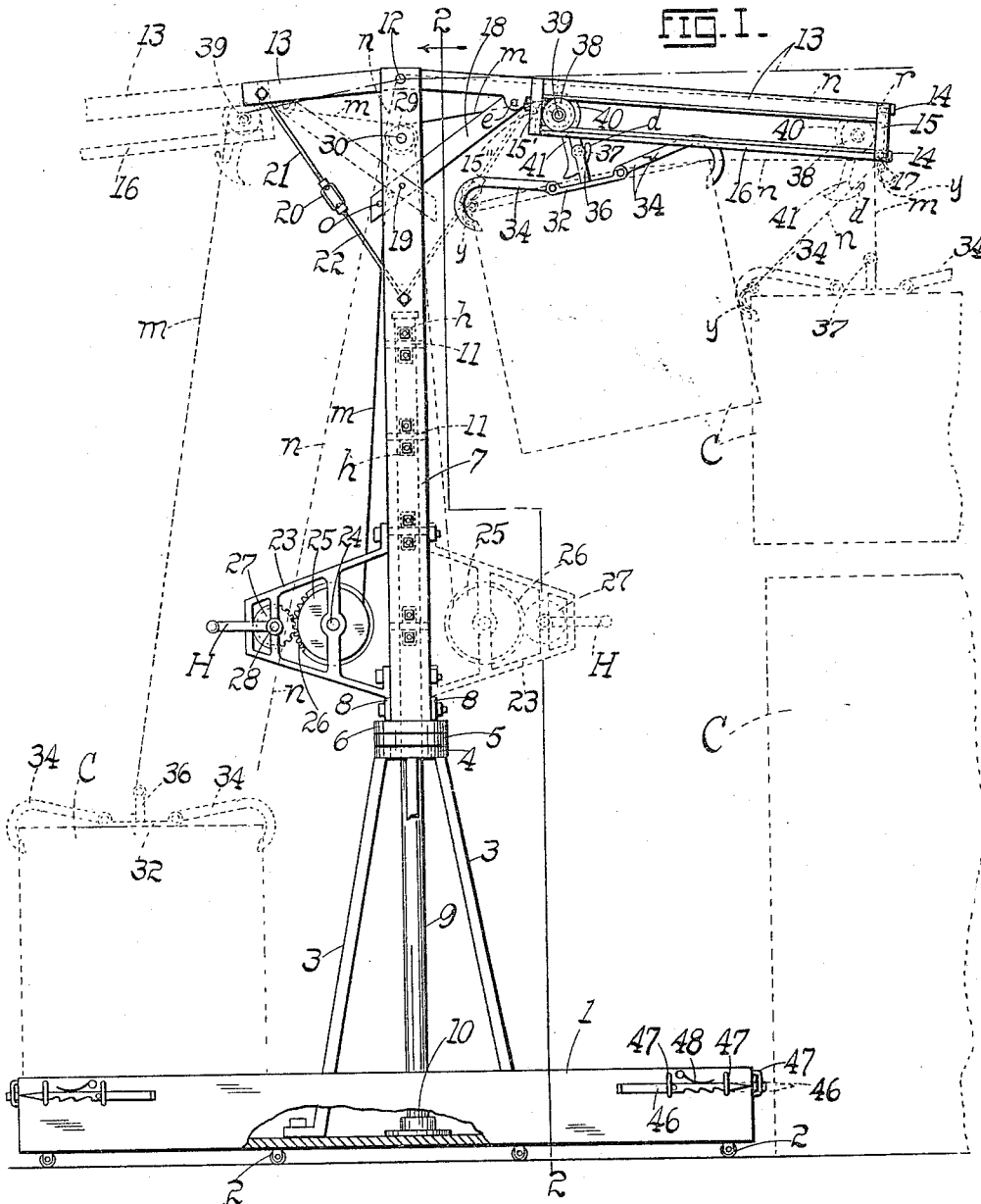


A. NEWELL.
COTTON LOADER.
APPLICATION FILED MAY 2, 1914.

1,138,007.

Patented May 4, 1915.

2 SHEETS—SHEET 1.



WITNESSES:

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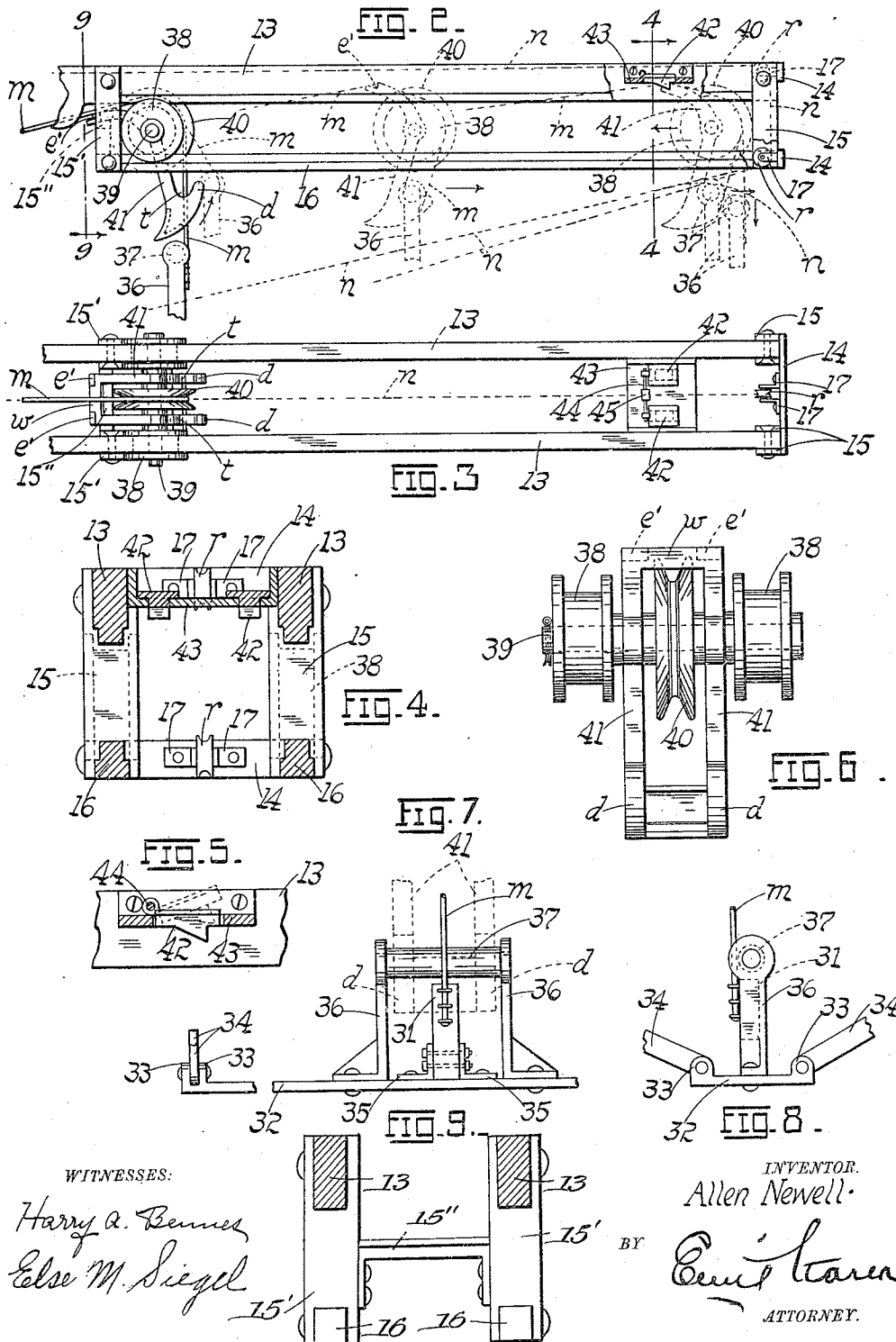
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2 SHEETS—SHEET 2.



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COTTON-LOADER.

1,138,007.

Specification of Letters Patent.

Patented May 4, 1915.

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To all whom it may concern:

Be it known that I, ALLEN NEWELL, a citizen of the United States, residing at Decatur, in the county of Wise and State of Texas, have invented certain new and useful Improvements in Cotton-Loaders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in cotton loaders; and it consists in the novel features of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the loader or crane embodying my invention; Fig. 2 is an enlarged side elevation of the portion of the crane-arm which supports the track for the load; Fig. 3 is a top plan of the part shown in Fig. 2; Fig. 4 is an enlarged vertical cross-section on the line 4-4 of Fig. 2; Fig. 5 is an enlarged longitudinal sectional detail through the plate supporting the locking dogs or pawls; Fig. 6 is an enlarged elevation of the carriage, with the frame thereof swung to the position assumed thereby when carrying a load; Fig. 7 is an enlarged side elevation of a portion of the frame or plate carrying the grappling hooks which seize the load; Fig. 8 is an end view of said plate; and Fig. 9 is an enlarged vertical cross-section on the line 9-9 of Fig. 2.

The present invention is primarily directed to improvements in apparatus for loading cotton bales (either gin or compress) onto box cars, especially with a view of utilizing the head room or space usually left unoccupied between the roof of the car and the bales stacked on the floor in the prevailing practice of loading cars.

The object of the invention is to construct a loader or crane which has a maximum capacity for adjustment both in the matter of direction and position, whereby a load or bale once picked up by the crane may be deposited at the desired point within the car in a minimum space of time and with the least possible manipulation. It is thus a time saver and economizer, the parts being so related that they readily respond to one another, thereby imposing on the operator a minimum amount of exertion. The advantages of the invention will be apparent

from a detailed description thereof, which is as follows:

Referring to the drawings, 1 represents a suitable platform or base provided with rollers or casters 2, whereby the same may be moved from one point to another, the base having secured thereto a standard 3 terminating at the top in a ring 4 which is interiorly screw-threaded, a bearing plate 5, being screwed to said ring. The plate 5 is provided along its upper surface with an annular race-way for the ball bearings *a*, a complementary race-way being formed for said balls in an upper plate 6 forming the bottom of the vertical rotating frame composed of the posts 7, 7, the bases of the latter being bolted to the ribs or flanges 8, 8, cast with or secured to, the plate 6 in any well known mechanical manner. The members 4, 5, 6, are traversed by a pipe-staff 9 secured at the lower end to a bearing 10 on the base 1, the staff passing loosely through the plate 6 and terminating at the top at a point somewhat beyond and above the center of the posts 7, 7, the posts being rotatably connected to the staff 9 at points above the plate 6 by guide bearings or plates 11, bolted to the posts through the lugs *h* formed with the plates, the staff passing loosely through said guide plates 11, the axis of the staff being coincident with the axis of rotation of the frame composed of said posts 7, 7. For convenience, and because the members 7, 7, revolve as a unit about the axis of the staff 9, the frame composed of said posts 7, 7, will hereinafter be referred to as the vertical rotatable post unless purposely otherwise designated. Mounted at the top of the post (7, 7,) about a pivotal pin 12 is a bent lever 13 preferably made in the form of a frame, the sides of which are horizontally braced at the free end of the long arm of the lever by the cross plates or spacing pieces 14, 14, the said sides being further provided with pairs of vertical posts or spacing pieces 15, 15', the former being at the free end of the long arm of the lever, and the latter being disposed at a point removed a suitable distance from the rotation axis (pin 12) of the lever. These posts serve to support the rails or tracks 16, 16, disposed below the member 13 proper, though in effect the rails may be considered as a part of the long arm of the lever. The lever as a whole on the other

hand may be said to constitute the oscillating weight-supporting arm or jib of the crane. The cross-pieces 14 each support a pair of angle-brackets 17, 17, between which are mounted guide rollers *r, r*, for a purpose presently to appear. The long arm of the lever 13 being the heavier (besides supporting the weight to be lifted as presently to be seen) is propped up to the necessary degree by the struts 18, 18, pivotally secured at their upper ends to the sides of the lever by pins *e, e*, the lower ends being coupled to the post 7, 7, by a bolt or rod 19 inserted through the post and through any one of a series of holes *o* in the struts. By providing a series of holes *o* in the struts 18, the bolt 19 may be inserted into any alining pair of them to impart any desired elevation (within certain limits) to the lever 13 as indicated by the dotted line in Fig. 1 (said line representing the position of the longitudinal axis only, of said lever, to avoid confusion from a dotted representation of the entire lever).

The vertical adjustment of the lever arm referred to is made with the assistance of a conventional turnbuckle 20 at the adjacent ends of the adjusting rods 21, 22, whose opposite ends are respectively pivotally secured in any mechanical manner to the side members of the short lever arm and to the posts 7, 7, (Fig. 1). During the adjustment the bolt 19 is of course withdrawn, and then inserted through the holes *o, o*, of the struts when such holes are alined or in register with, the corresponding holes made in the posts 7, 7, for the reception of the bolt. This will be perfectly obvious from Fig. 1 of the drawings.

Bolted (or otherwise secured) to the posts 7, 7, are brackets 23, 23, which serve to carry the shaft 24 of a spool or drum 25, one end of the shaft carrying a gear-wheel 26 which meshes with the terminal pinion 27 on a parallel shaft 28 supported by the brackets, the opposite end of the shaft being provided with a crank or handle *H*. Adapted to wind around the drum is a cable *m*, said cable passing over a sheave or grooved pulley 29 mounted on a shaft or spindle 30 between and near the upper ends of the posts 7, 7, the outer or free end of the cable being secured to an anchor or post 31 on the grapple-hook supporting plate or member 32, the latter being preferably oblong and of sufficient length to span a considerable portion of a given face of a bale of cotton *C*, the corners of the plate being provided with pairs of lugs or ears 33 between which are pivoted the grapple-hooks or irons 34, by means of which the bale of cotton *C* is gripped as quite obvious from the drawings. The anchor 31 is preferably secured to the plate 32 by means of angle pieces 35 (Fig. 7) or in any other suitable mechanical manner,

and occupies a position between the brackets 36, 36, and beneath the cross member or roller 37 carried by the brackets, the parts 36, 36, 37, forming as it were, a handle for the plate 32. Passed over the guide rollers *r, r*, previously referred to, and along the arm 13 over the pin 12 to a point within easy reach of the operator, is a cable *n* whose outer end is hooked to the bale *C* on the side nearest the posts, 7, 7, for the purpose of drawing the load outwardly along the rails 16, 16, when said rails are horizontal or have not sufficient inclination to allow the load to gravitate of its own accord toward the free or outer end of said arm 13. When not in use the hook end *y* of said cable *n* is drawn up close to the lower guide roller *r* as shown dotted in Fig. 1.

The rails 16, 16, are traversed by the flanged rollers or wheels 38, the flanges of the wheels engaging the sides of the rails and the members 13, 13, respectively and thus preventing the wheels from leaving the rails (Fig. 8). The wheels are loosely mounted on an axle 39, the latter having mounted at the center thereof a grooved loose pulley or sheave 40, over which the cable *m* passes after leaving the pulley 29 and before it is attached to the post 31 of the grapple-carrying plate 32. Spanning the pulley 40, and disposed between the wheel 38, 38, and freely oscillatable about the axle 39, is a pendent frame 41, the portion above the suspension axis of the frame curving from the axis in one direction (Fig. 2), the portion below the suspension axis terminating in hooks *d* curving in the opposite direction and forming resulting depressions or saddles *t* with the main body of the frame, for the support of the cross-member or roller 37 of the handle of the plate 32. When no weight is suspended from the frame 41, the latter assumes a position (when hanging freely) substantially as shown at the left hand end in Fig. 2, the center of gravity of the frame being so disposed as to cause the portion of the frame below the suspension axis to assume a slight inclination to a vertical plane through said axis, and bringing the saddles *t* in substantial vertical alinement with the periphery of the groove of the sheave 40 (on the side remote from the posts 7, 7,). When a weight of any consequence is suspended from the saddle *t*, the pendent frame 41 assumes a position on the order of the middle and right hand dotted illustrations in Fig. 6, that is to say, the upper portion of the frame or that above the axis of suspension is oscillated upwardly so that if the frame be allowed to travel along the rails 16, the upper cross-bar *w* thereof (Fig. 6) will rub against the under surfaces of the gravity pawls or dogs 42 projecting through and beneath the flanged plate 43 secured between

the sides of the arm 13 near the outer end thereof, the pawls being hinged about a hinge-pin 44 carried in a supporting bearing 45 on said plate. In passing under the pawls the frame lifts the pawls, and after it has passed beyond the pawls the latter drop back to their lowest position, and thus lock the frame against a return movement, suitable recesses or notches e' , e' , at the opposite ends of the cross member w of the frame engaging the rear ends of the pawls and shouldering the frame against the pawls which thus prevent the loaded frame from moving past the pawls in the opposite direction (Fig. 2).

On the sides of the base 1, at the corners thereof are mounted adjustable serrated spits or prongs 46, the same being mounted loosely in bearings or staples 47, 47, the face of the spit opposite the toothed edge being engaged by a flexed spring 48 which holds the spit in any position to which it may have been adjusted in its bearings. The spits act as anchors for holding the base to any object adapted to be penetrated by the pointed ends of the spits, thereby preventing the base and the crane as a whole from tipping over under an excessive weight suspended from the arm 13 thereof. In Fig. 1 one of the spits is driven into a cotton bale C resting on the floor, and should the crane post with its lever arm 13 be swung to bring the weight suspended at the free end of the arm, on the side opposite from the bale engaged by the spit, the latter by being embedded in the bale will hold the crane against possible tipping. The teeth of the spit engaging the outer staple act on the order of a pawl and ratchet preventing the withdrawal of the spit as quite obvious from Fig. 1.

The operation will be apparent from the foregoing description and is substantially as follows: As previously fully described, the crane is bodily rotatable about the axis of the staff 9. Suppose a bale of cotton C is wheeled on to the left of the platform 1 as shown in Fig. 1. The operator thereupon rotates the crane on its ball-bearings until the long arm of the lever 13 is swung to the left, and assuming that the pendent frame 41 (which together with its rollers 38 may be considered as a carrier or carriage) occupies a position at the inner end of the track formed by the rails 16, the operator pays out the cable m by a turning of the crank H and hence a rotation of the drum 25 in proper direction, the grapple-frame or plate 32 with its grapples 34 being applied to the bale. By now drawing in the cable m the load is lifted into the saddles t of the frame 41, after which the crane is swung around any desired number of degrees (in Fig. 1, one hundred and eighty degrees), the carriage still occupying a position at the inner

end of the rails 16. By removing the bolt 19 and operating the turnbuckle 20, the long arm of the lever 13 (which may conveniently be referred to as the track-arm) may be elevated or depressed any desired degree, after which the bolt 19 is reinserted through the struts 18 and posts 7. The adjustment in the matter of the inclination to be imparted to the track-arm should of course be made before the load is suspended from the arm. This adjustment is governed by the size of the bales being handled. If the bale is compress it is smaller than the gin bale and hence the inclination of the track-arm 13 can be greater. In the case of the gin bale the inclination is less or the arm brought to a horizontal. In either event however the adjustment must be made before the load is lifted, as it would be out of question to make the adjustment with a load of 600 pounds suspended from the arm 13. If the track-arm is inclined as shown in Fig. 1, a mere paying out of the cable m will cause the carriage with its suspended load to gravitate to the outer end of the arm. Should the track-arm be horizontal or inclined upwardly (depending on the degree of adjustment imparted thereto by the turnbuckle), the carriage with its load may be pulled toward the outer end of the track-arm by drawing on the cable n , a fact quite obvious from the drawings (see Figs. 1, 2). The object of moving the load to the outer end of the track-arm is to enable the load to be subsequently lowered and deposited at a convenient point removed from the post 7 of the crane. As previously pointed out, when a load is suspended from the carriage, the frame 41 rocks or oscillates sufficiently to trip and raise the pawls 42 as it passes under them in its outward travel along the track-arm, the pawls dropping to their lowest position and arresting the carriage against a return movement once the carriage passes beyond the pawls. That is the situation illustrated in Figs. 1 and 6, the carriage with its load having passed from the inner to the outer end of the track-arm, the load being now ready to be lowered. In Fig. 1 the bale is ready to be deposited on top of a bale resting on the floor. To lower the suspended bale the operator draws on the cable m (by turning the drum 25 in proper direction) which has the effect of lifting the member 37 of the handle of the grapple-plate 32, out of the saddle t formed by the hooks d of the carriage. Once the member 37 is pulled up above the ends of the hooks d , the suspending cable m swings into a vertical position, thus permitting the member 37 to clear the hooks, and allow the suspended load to be lowered (see extreme right hand dotted illustration in Fig. 2, and also Fig. 1). The load being lowered and deposited where desired, the grapples 34

are removed from the load, and are in readiness to be attached to the next bale or load to be lifted.

An inspection of the right hand end of Fig. 2, will show that the rollers 38 of the carriage are not at their extreme outward limit, there being a slight clearance between the rollers and the braces 15. Now, as soon as the load is lifted from the hooks *d* and finally deposited, the operator pays out the cable *m* sufficiently to permit the carriage to move outwardly the extent of the clearance just mentioned, in which slight movement the notched or recessed end of the frame 41 will disengage itself from the pawls 42, allowing the frame 41 to hang free (without any load to tilt it upwardly) and resume its normal pendent position, in which as already pointed out, the cross member *w* drops below the pawls thus clearing them, and allowing the carriage to be pulled back to the inner end of the track-arm. In lifting a load into the saddles *t*, the cross handle-bar or member 37 rides up the outer convex faces of the hooks *d*, *d*, as clearly shown on the left end in Fig. 2, forcing them back in the direction of the posts, 7, 7, until it has passed off the free ends of the hooks. Immediately the roller 37 clears the hooks, the pendent frame 41 automatically gravitates forward to its normal position, bringing the saddles *t* directly under the member 37, and by a slight slack of the cable *m* the roller 37 is seated in the saddles *t* behind the hooks. It may be stated in passing that between the spacing pieces 15', 15' there is secured a cross-bar 15'' (Figs. 2, 3, 9) having a top sloping surface, and when the carriage is drawn back to the inner end of the arm 13 for loading (left end in Fig. 2), the ends of the upper portion of the frame 41 rest on this sloping surface of said bar, said bar preventing the lower portion of the frame 41 from being pushed upward when the roller 37 first comes in contact with the outer convex faces of the hooks *d*, *d*. Once in the saddles, the weight or load oscillates the upper portion of the frame 41 upward as previously described. Of course if sufficient tension be maintained on the cable *m*, the frame will not oscillate as stated, even with the load suspended from the saddles *t*. This is shown in Fig. 1 where after the load has been lifted into the saddles *t* the operator still holds the cable *m* taut; but the

moment he begins to pay it out so as to permit the carriage and its load to slide to the outer end of the track-arm, the carriage frame will assume the more or less vertical position as shown in the dotted illustrations 60 in Fig. 2.

Having described my invention, what I claim is:

1. In a loader, a track member, a carrier frame suspended about an intermediate axis 65 from said member and normally inclined to the vertical, the lower arm of the frame being provided with a saddle and a contiguous load guiding formation, the frame assuming a substantially vertical position under the 70 weight of the load, means for causing the carrier and its load to travel toward the outer end of the track member, a pawl pivoted to the member with the free end thereof pointing toward the free end of the mem- 75 ber, the portion of the frame above the suspension axis operating to lift the pawl in moving toward the free end of the member, and means on the frame for engaging the pawl upon the dropping of the latter to its 80 normal position, whereby the frame and its load are locked against a return movement.

2. In a loader, a suitable track member, an axle provided with rollers traversing said track, a carrier-frame freely suspended 85 from said axle and extending partly below and partly above the axis of suspension, the upper portion of the frame being provided with a cross-bar, a sheave on the axle between the rollers thereof aforesaid, a saddle 90 on the lower portion of the carrier-frame, means on the frame contiguous to the saddle for guiding the load into the saddle, the cable from which the load is suspended being free to pass over the sheave and over 95 the cross-bar, pawls mounted on the track member and adapted to be tripped by the cross-bar with the passage of the frame and its load along the track, and means for automatically forcing the pawls into locking en- 100 gagement with the cross-bar after the latter has passed the pawls, to prevent return movement of the frame and load.

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

ALLEN NEWELL.

Witnesses:

CICERO GETTYS,
H. M. GOSE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."