

L. F. HADDON.

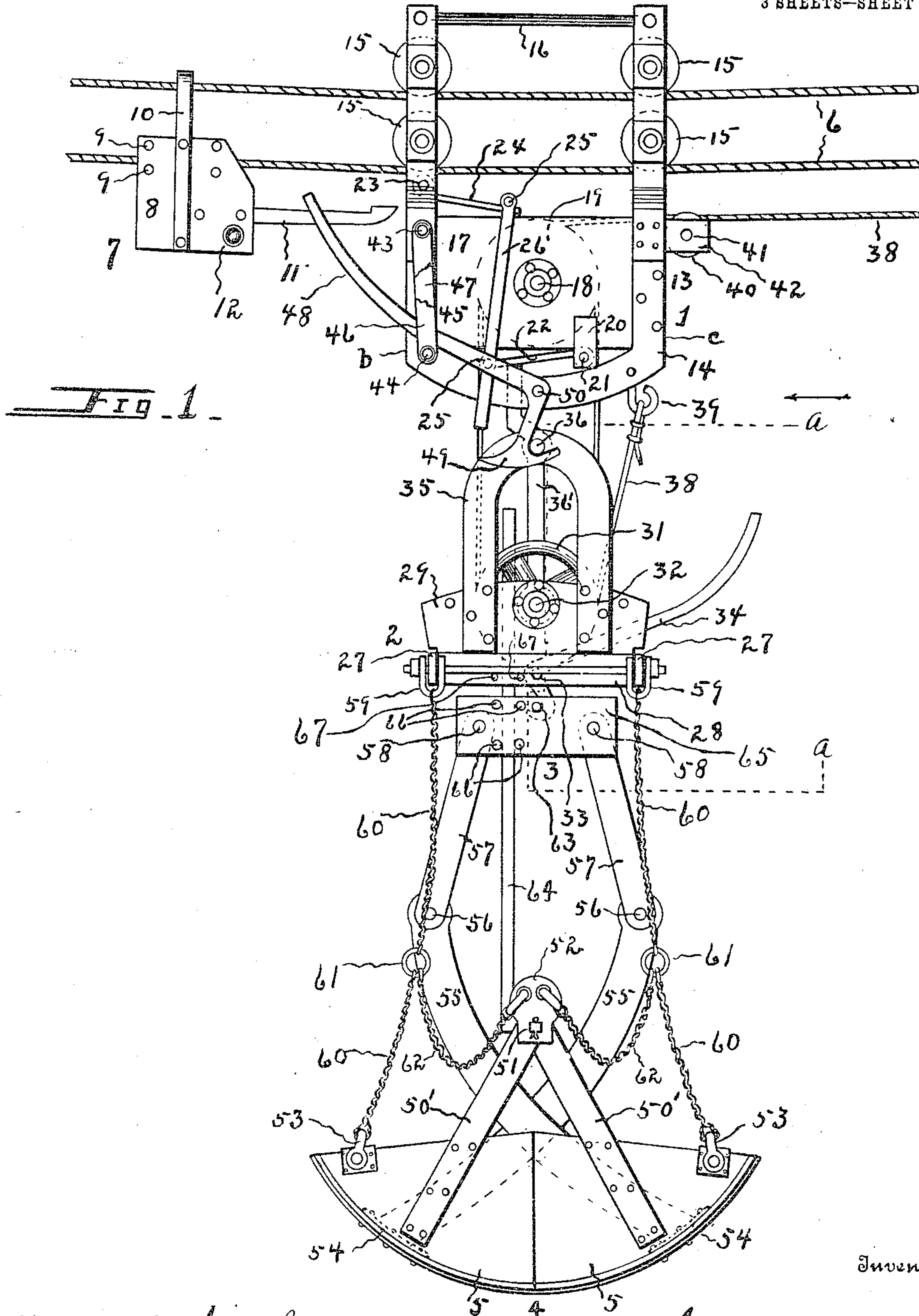
CARRIER.

APPLICATION FILED APR. 26, 1909.

959,733.

Patented May 31, 1910.

3 SHEETS—SHEET 1.



Inventor

Witnesses

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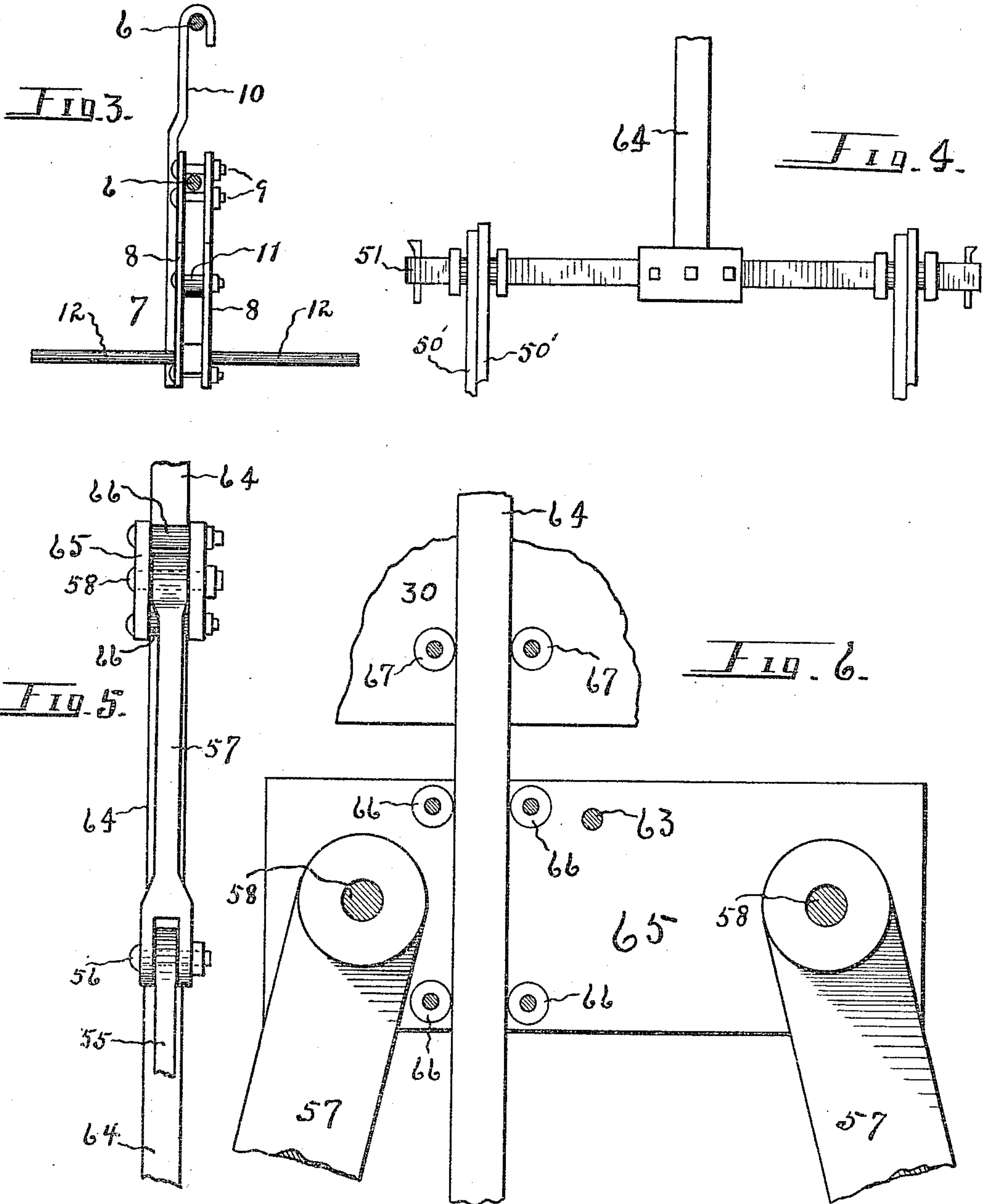
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UNITED STATES PATENT OFFICE.

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CARRIER.

959,733.

Specification of Letters Patent.

Patented May 31, 1910.

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To all whom it may concern:

Be it known that I, LEONARD F. HADDON, a citizen of the United States, residing at Louisville, in the county of Cass and State of Nebraska, have invented certain new and useful Improvements in Carriers, of which the following is a specification.

This invention relates to a class of mechanism known as carriers and is especially useful in connection with excavating, mining or dredging, where the load is moved up an incline from the loading to the dumping place, the load being sustained by the carrier; said carrier being supported upon an overhead trackway and where the operation of moving the load is effected by a pull-rope or cable suitably controlled at the dumping place, the receptacle being returned empty to the loading place by gravity.

The carrier is illustrated in connection with a receptacle known as the "clam shell" bucket, the two segmental members being forced into "open" and "closed" relation by well known means, to effect loading and unloading.

One of the objects of the invention is to provide means for holding the carrier at the loading place reliably, until released.

Another object is to provide means for reliably releasing the carrier after the bucket is loaded.

Still another object is the provision of a construction comprising as few parts as possible consistent with reliable operation, with a view to economy in manufacture and durability in wear.

With these and other objects in view the invention presents a novel combination and arrangement of parts as described herein, pointed out by the claims and as illustrated in the drawing, it being understood that changes in the form, proportion, size and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing, Figure 1 is a front or side, exterior view of my invention. Fig. 2 is a transverse end view of the carrier, the hoisting-block and toggle-block being sectioned on line *a a* of Fig. 1, the operating-cable being removed. Fig. 3 is an end view of the stop-plate. Fig. 4 is a detail relating to the bucket-shaft. Fig. 5 is an enlarged detail showing an end view of the toggle-block,

and parts mounted thereon. Fig. 6 is a side view of the toggle-block, one of its side plates being removed to show location of rollers, a part of the hoisting-block also being shown.

Fig. 1 in the drawing illustrates a carrier supported upon cables, and shows relative position of the several parts connected therewith after the bucket has been loaded, the carrier being detached from the stop-block for a movement from the loading place to the dumping place, means for sustaining the cables not being shown.

In the drawing, numeral 1 indicates a carrier, 2 the hoisting-block, 3 the holding-head or toggle-block and 4 a bucket consisting of movable members or scoops 5.

The cables above mentioned are indicated at 6, one being disposed below the other. I provide a stop-block 7 consisting of parallel plates 8 secured rigidly by bolts 9 upon the lower cable and having an upwardly extending arm 10 secured upon the plates, the arm terminating in a hook for engagement with the upper cable. I provide the hook or detent bar 11 secured between and projecting forwardly of plates 8; also I provide the tripping-bars 12 extending outwardly from said plates 8, the uses of these parts to be presently described; and it will be understood that the stop-block may be secured as described to terminate the movement of the carrier at any desired loading point along the course of the cables. The carrier consists in part of the two hangers 13, each having extensions 14 rigidly secured upon their lower extremities, and upon these parts are mounted devices now to be described.

The hangers are preferably U-shaped and are curved transversely so that their upper parts are disposed near each other for mountings therebetween of rollers or sheaves 15 to be supported upon the cables, and, secured upon and extending between the upper terminals of the U-shaped hangers, is brace rod 16. The hangers, therefore, are disposed upon opposite sides of cables 6, the lower parts thereof being spaced apart for the mounting therebetween of certain devices which will be explained.

Upon the lower part and inner side of each U-shaped hanger and extending between the front arms *b* and rear arms *c* thereof are rigidly secured supporting-plates 17 to furnish a mounting for the transverse shaft 18

disposed therebetween, and mounted loosely upon said shaft are the pair of sheaves 19.

Upon the outer sides and extending below plates 17 are secured brackets 20 and upon their lower ends is mounted, at 21, the contact-plate 22. At 23, upon arms *b* of the hangers is pivotally mounted the contact plate or latch 24. Plates 22 and 24 extend in directions toward each other, and upon the terminals of these plates are pivotally mounted at 25, links 26, and, as is apparent, if the lower plate is swung upwardly the upper plate will have a corresponding movement, since these plates are connected by the links.

Hoisting-block 2 consists of a compact framework with certain devices mounted thereon now to be briefly described. It has a base comprising, preferably, the end plates 27 and side plates 28; upon the inner side of the side plates are rigidly secured the supporting-plates 29 which extend considerably above the base; parallel with the supporting plates are the intermediate reinforcing plates 30; the pair of sheaves 31 are loosely mounted upon shaft 32, said shaft being mounted upon and traversing, transversely, plates 29 and 30; and at 33 is shown, disposed parallel with shaft 32, a shaft used for the mounting of dog 34.

Inverted U-shaped arms 35 are secured to supporting-plates 29 and extend upwardly therefrom, shaft 36 traversing their upper ends, said shaft being substantially parallel with the other shafts mentioned. I provide the releasing-bar 36' having its lower end loosely mounted upon shaft 32; between its terminals, this bar is loosely mounted upon shaft 36. Washers 37 may be mounted upon shaft 32 between sheaves 31 and the releasing bar.

A fall rope or operating cable is shown at 38; one of its ends is secured upon hook 39, supported upon the hangers of the carrier and from thence is extended in a well known manner to an engagement, in alternation, of the sheaves of the hoisting-block and carrier, and then engages roller 40, this roller being mounted loosely upon shaft 41, said shaft having a support upon brackets 42 secured to the hangers.

It will be understood that the carrier and a load attached thereto, by use of operating cable 38, may be drawn from the loading place, the power for this purpose (generally a rotatable drum) being located at the dumping place, and after being dumped, the carrier and parts connected thereto will return upon the trackway to the stop plate by gravity, the operating cable being paid out or loosened for this purpose.

Upon the outer side of arms *b* of each hanger are secured at 43 and 44 the upright guides 45, each comprising an outer and an inner plate, indicated respectively at 46 and 47; these plates are spaced apart and se-

cured at their ends as shown, preferably by bolts, thereby providing longitudinal openings for the seating therein of the curved arms 48 of dogs 49, said dogs being mounted at 50 upon the lower ends of the hangers.

Upon the ends of each scoop 5 is rigidly secured arms 50', said arms, at their upper ends, having pivotal mountings upon and near the ends of shaft 51. Shaft 51 is somewhat longer than the bucket; its ends are formed angular in cross section and, upon these angular portions are seated ears or holders 52. Clips 53 are secured upon the ends and near the sides of each scoop; midway between the ends of each scoop and secured at 54 upon the inner sides thereof is a bucket-arm 55 which extends, inclined upwardly, above the opposite scoop, its upper end having a pivotal mounting at 56 with a link 57, and links 57 are pivotally mounted at 58 upon the ends of the toggle-block 3.

At four corners of hoisting-block 2, a clip 59 is provided, and upon each clip 59 a chain 60 is secured, the opposite end of the same being secured upon one of clips 53; rings 61 are mounted intermediate the ends of chains 60, and, extending between ears 52 and rings 61, and connected therewith, are chains 62.

At 63 is indicated the supporting-bar or shaft of the toggle-block which may be engaged by dog 34, and when the load has been moved to the dumping place, the arm of the dog may be swung inwardly of the hoisting-block, and thereby the bucket, together with all parts below the hoisting-block, will drop downward a short distance, this distance being limited by the length of chains 60; since chains 62 will be slack at that time, the bucket will be opened and emptied by the drop, the lower ends of arms 50' being forced farther apart.

After the bucket has been dumped, the carrier, as has been explained, will by force of gravity, return to the loading place. The normal position of latch 24 is as shown in Fig. 1, its inner end being lower than its opposite end. The carrier moves forwardly to the stop-plate, latch 24 passing into engagement with the terminal hook of detent-bar 11. At the time of the forward movement of the carrier, as described, arms 48 of dogs 49 will be engaged by the tripping-bars 12 of the stop-plate, said arms swinging rearwardly of the carrier, and the operation is such that after the latch is engaged by the detent-bar, shaft 36 will be disengaged from dogs 49; and all of the parts except the carrier will move downward, cable 38 being paid out for this purpose. At this time scoops 5 are separated, dog 34 being disengaged from shaft 63; also the connected ends of links 57 and bucket-arms 55 are at this time thrown farther apart and the toggle-block is disposed at a considerably lower altitude than shown in Fig. 1. The oper-

ator pays out cable 38 until the scoops rest upon the material to be loaded. During this time shafts 32, 33 and 63 must be kept in alinement, otherwise the scoops would not be under control and dog 34 would not engage shaft 63 when the hoisting block moves upward, and therefore alining bar 64 is provided.

The lower end of the alining-bar is rigidly mounted upon shaft 51. It is disposed between the side-plates 65 of the toggle-block and between sheaves 31 of the hoisting-block. I provide roller guides 66 between plates 65 of the toggle block; also I provide rollers 67 between side plates 28 of the hoisting-block. The alining-bar is at all times disposed between and is engaged by these rollers, whereby the strains and stresses coming upon this bar during the sliding movements of the blocks mentioned, are adequately sustained, and a reliable engagement of dog 34 with shaft 63 is effected.

As soon as the scoops rest upon the material to be loaded the hoisting block continues to descend until it rests upon the toggle-block, and dog 34 will at that time engage shaft 63. As soon as operating cable 38 is drawn toward the dumping place, scoops 5 will be closed since the upper ends of bucket-arms 55 are forced toward each other.

The lower end of releasing-bar 36' is loosely mounted upon shaft 32 between sheaves 31. Intermediate its ends it is loosely mounted upon shaft 36, and its upper end is adapted to make contact with plate 22. When the hoisting-block is elevated the upper terminal of the releasing-bar causes plate 22 to swing upward, thereby releasing latch 24 from the detent bar, and the carrier with its load may then be moved to the dumping place, by operation of cable 38. It will be noted that the releasing bar has a mounting entirely disconnected and apart from the bucket or toggle block and, therefore, its operation is not effected by the objectionable swinging movement, upon dog 34, of said bucket, at the time of elevating the load. Also since the releasing rod is mounted upon two shafts and at different points with reference to its length, its operation, in connection with the latch frame, is certain.

On account of the heavy frame work of the latch frame which comprises links 26 and plates 22 and 24, the contact of latch or plate 24 with the hook of detent-rod 11 is certain after they enter into engagement, and the carrier is thereby reliably secured at the loading place until released by the means described.

It often happens in ordinary constructions of the class of carriers described, that the fall-rope or operating cable becomes loose and leaves its seating upon the sheave at the

time it is paid out, thereby causing delay and inconvenience in its adjustment; and therefore I provide a central plate 68 preferably mounted upon shaft 18 and located closely adjacent to the upper pair of sheaves 19, thereby filling the space, substantially, between these sheaves, for preventing displacement of said operating-cable.

An objectionable feature heretofore in the operation of overhead carriers of this class has been the frequent breakage of the alining-bar. The strain upon this bar is very great and if it has a considerable length it often becomes broken or bent. In constructions, therefore, where the alining-bar is depended upon to release the connection of the carrier and stop-plate, it is not reliable. It will be noted that the alining-bar of the present construction is controlled between rollers 66, and performs the single function of controlling the bucket-shaft 51, and, therefore, is not liable to become bent or injured. Also the releasing-bar of the present construction performs its function at the lower end of the carrier and does not traverse between the sheaves of the carrier, thereby tending to provide reliable operation.

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

1. The combination with a supporting cable, of a detent-bar and transverse engaging-arms thereon, a carrier comprising a frame supported upon said cable; a hoisting-block having an upright releasing-bar secured thereon; an operating cable for said block; sheaves on the carrier frame and on the hoisting-block over which the operating cable runs; dogs upon the carrier arranged to make engagement with the hoisting-block, each of said dogs having an arm disposed outwardly of the plane of the carrier and arranged to make contact with the transverse engaging-arms of said detent bar; an upper contact-plate pivotally mounted upon the carrier for engaging said detent-bar; and a lower contact-plate pivotally mounted upon the carrier and connected to the upper contact-plate; said releasing-bar arranged to engage the lower contact-plate during one of the movements of the hoisting-block.

2. A carrier as described, comprising, in combination with an overhead trackway, a stop-plate secured upon the trackway and provided with a detent-bar, a pair of hangers supported by the trackway and disposed below and outwardly thereof; an upper contact-plate arranged to engage the detent-bar; a lower contact-plate; said contact-plates having one of their terminals pivotally mounted upon said hangers, their opposite terminals having a pair of links mounted therebetween; a pair of dogs mounted upon the hangers; a hoisting-block disposed below the hangers; a flexible operating

strand connected between the hangers and hoisting-block; and a releasing-bar mounted upon and having a terminal disposed above said hoisting-block; and members carried by the hoisting block with which said dogs engage, said releasing bar contacting with the lowermost contact-plate when the hoisting block moves upwardly.

3. A carrier for the purpose described, comprising, in combination with an overhead trackway, a stop-plate secured upon the trackway and provided with a detent-bar and with transverse tripping bars; a pair of hangers supported by said trackway and disposed below and outwardly thereof, each having a pair of upright guide bars secured upon their outer sides; an upper contact-plate; a lower contact-plate; said contact-plates having one of their ends pivotally mounted upon said hangers, their opposite ends having a link pivotally mounted therebetween; dogs mounted upon the hangers and having arms seated between said guide bars; a hoisting-block disposed below said hangers and arranged to be engaged by said dogs, said hangers being movable upon the trackway to cause an engagement of the arms of said dogs with the tripping-bars, the upper contact-plate making engagement with said detent-bar, the arms of the dogs moving between said guide-bars.

4. The combination with a pair of track-

way cables, one above the other, of a detent carrying member secured thereon, a projecting detent hook extending therefrom substantially parallel with said cables, a carrier mounted to travel upon said cables, an upper latch plate pivotally mounted upon the carrier and arranged to engage the detent hook, hoisting cable sheaves mounted in said carrier, a hoisting cable passing thereover, a second latch plate pivotally mounted upon the carrier, a bar connecting said latch plates, a hoisting block, a pair of shafts extending transversely therethrough, the ends of the uppermost of said shafts projecting beyond the sides of the hoisting block, dogs pivotally mounted upon the outer and lower portions of the carrier and arranged to engage the projecting ends of the last named shaft, forwardly and upwardly curved arms carried by said dogs, transversely extending bars projecting from the sides of the detent carrying member with which said arms engage, and a release bar extending vertically from the hoisting block and engaging both of the transverse shafts of said hoisting block.

In testimony whereof I have affixed my signature in presence of two witnesses.

LEONARD F. HADDON.

Witnesses:

HIRAM A. STURGES,
GEORGE L. HUNT.