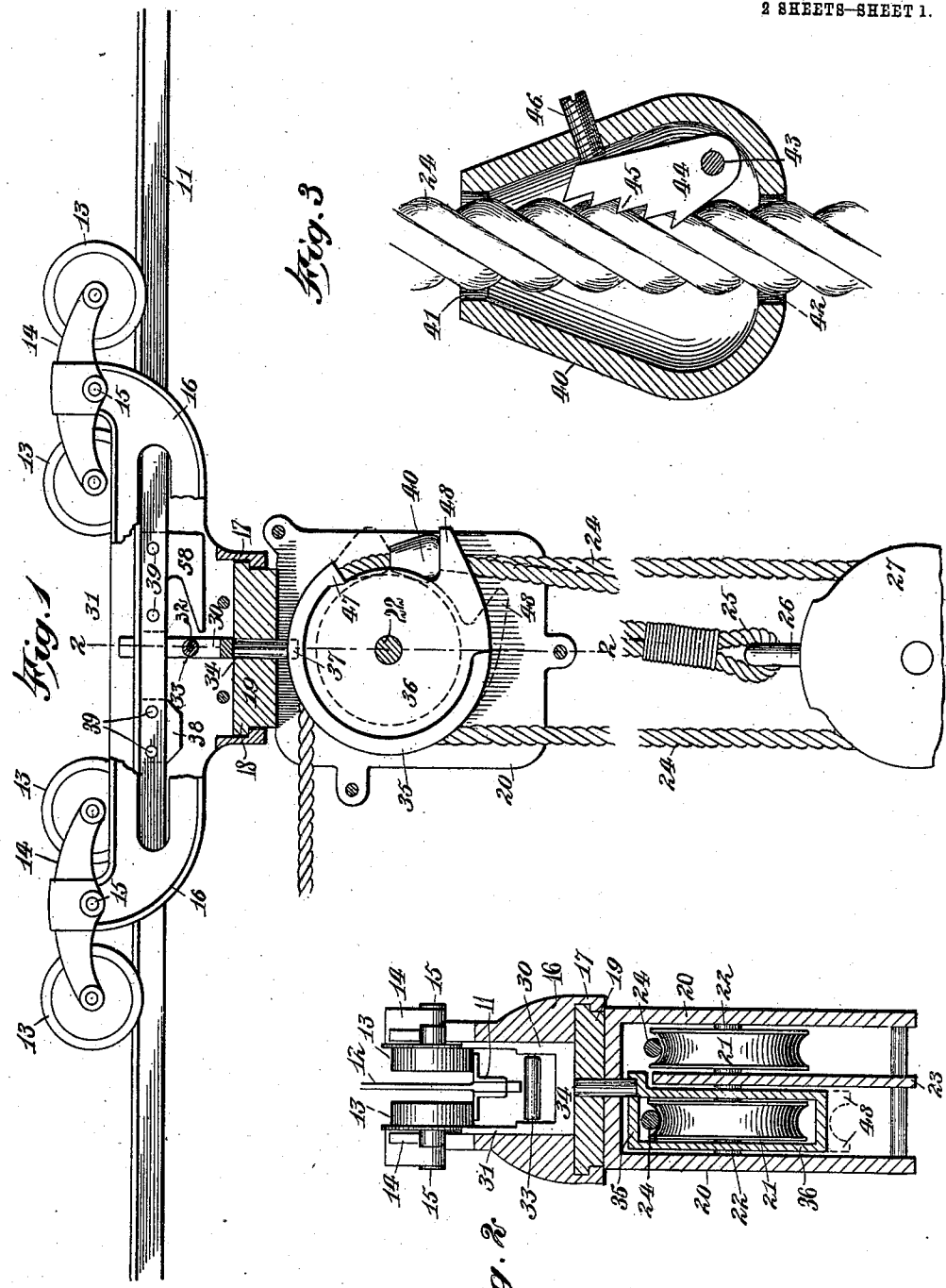


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 AUTOMATIC CARRIER.  
 APPLICATION FILED JULY 12, 1910.

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Patented Dec. 6, 1910.  
 2 SHEETS—SHEET 1.



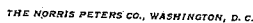
WITNESSES:  
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*Fig. 2*

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2 SHEETS—SHEET 2.



# UNITED STATES PATENT OFFICE.

MARTIN HUBERT CAWLEY, OF EPWORTH, NORTH DAKOTA.

## AUTOMATIC CARRIER.

977,929.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed July 12, 1910. Serial No. 571,629.

*To all whom it may concern:*

Be it known that I, MARTIN H. CAWLEY, a citizen of the United States, and a resident of Epworth, in the county of Montrail and State of North Dakota, have invented a new and Improved Automatic Carrier, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide in an apparatus of the character set forth, means for locking at hoisting stations the carrier employed and for automatically releasing the same; to provide adjustable devices for regulating the height to which the load is to be raised; to provide a system of temporary automatic releasing and holding devices located at intermediate stations on the carrier track; to provide a swivel connection between the carrier and the hoisting devices therefor, whereby the carrier may be operated at different angles from the source of power; and to provide a construction which is simple, economical and durable.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a side elevation, partly in section and fragmentary in form, of a carrier and hoisting devices connected therewith, constructed and arranged in accordance with the present invention; Fig. 2 is a vertical section taken on the line 2—2 in Fig. 1; Fig. 3 is a detail view, on an enlarged scale and in vertical section, showing the bob for suspending the load when the operating cable is held in locked position on the hoisting devices; Fig. 4 is a side elevation of a carrier system constructed and arranged in accordance with the present invention, and showing in connection therewith a hoisting carrier; Fig. 5 is a detail view, partly in section and on an enlarged scale, showing the carrying shield and locking bolt therefor, and the releasing dogs and stops disposed at the end of the tracks forming the carrier system; and Fig. 6 is a view similar to Fig. 5, showing the shield and the locking bolt therefor in locked position.

The system for which the present invention is intended employs a series of carrying tracks 11, 11, which may have many switches, side chutes or other ramifications. The

tracks 11, 11 are suspended from the ceiling structure of the building by hangers 12, 12. On the tracks 11, 11 are mounted one or more trucks, which trucks in the present instance are provided with carrying wheels 13, 13 joined by side bars 14, 14 which form independent advance and following trucks pivotally mounted at 15, 15 to depending body frames 16, 16. In the present instance the frames 16 are disposed at the side of the tracks 11, the trucks formed by the side bars 14 and wheels 13 being projected from the sides of the said frames.

Attached to the lower sides of the frames 16 is a collar 17, on the inner side whereof is formed an annular groove to receive the extended flange 18 of a swivel head 19. The head 19 is circular in form, and is rigidly connected with the cheek pieces 20, 20 of the casing for the pulleys 21, 21. The pulleys 21, 21 are supported on independent trunnions 22, 22, mounted in bearings formed in the cheek pieces 20, 20 and in a dividing partition 23. The pulleys 21, 21 are arranged substantially as shown in Fig. 2 of the drawings, to carry a cable 24, which is reeved over the said pulleys, and one strand whereof is anchored at the looped end 25 to an eyelet 26 formed on the lower pulley block 27, if the same is constructed as shown in Fig. 1, or upon a loop 28 if constructed as shown in Fig. 4 of the drawings. In either case the block 27 or loop 28 is provided with a hoisting hook 29.

In operating the present system the single cable 24 is used, and this is connected at the free end to a winding drum provided on the engine operating the system. It will be understood that the head 19, swiveling as it does in the collar 17 formed on the frames 16, permits the cheek pieces 20, 20 to rotate in alinement with the power source in various dispositions or arrangement of the carrier frames 16 and the wheels 13, 13 thereof.

The cable 24 is employed for elevating or lowering the load to be carried on the wheels 13, 13. For this purpose it is necessary to lock the carriage in position on the track, else the draw of the cable in the horizontal direction would cause the carriage to travel over the said track. The carriage is locked by a yoke 30, between the upwardly extended arms 31, 31 whereof is mounted a cross shaft 32, on which is rotatively mounted a roller 33. The yoke 30 is provided at the lower end, and extended from the lower bar

thereof, with a bolt 34. The bolt 34 is loosely extended through the head 19 and normally rests upon the top of the extended flange 35 of a shield 36 disposed about one of the pulleys 21, and rotatively mounted on the trunnions 22 of the said pulley. The flange 35 is provided at a certain point with a recess or pocket 37, into which the lower end of the bolt 34 drops when alined therewith. In the raised position of the bolt 34 and yoke 30, the shaft 32 and roller 33 carried thereby rest in the path of a stop plate 38. The stop plate 38 is rigidly secured at 39, 39 by rivets or other suitable fastening devices to the track 11, and at the outer extremity thereof. The plate 38 is a permanent and fixed attachment to the track 11. It will be seen that when the yoke 30 is raised, the end of the bolt 34 resting upon the solid upper surface of the flange 35, the plate 38 forms a positive detent for retaining the carriage in the stationary position on the track 11. It is to release the carriage by permitting the yoke 30 to drop from engagement with the plate 38 that I have provided the bob 40. The bob 40 is a hollow metal ball, the ball having at the upper end a perforation 41 and at the lower end a perforation 42. The perforations 41 and 42 are alined, and have an area sufficient to pass the cable 24. Pivotaly mounted within the bob 40, and on a shaft 43, is a gripping jaw 44. The gripping jaw 44 is provided with a face having serrations 45 adapted to bite into the body of the cable 24 when moved into contact therewith. It is to move the jaw 44 in contact with the cable 24 that I have provided the set screw 46. When the set screw 46 is turned to advance it impinges upon the jaw 44 to force the same into engagement with the cable 24. The jaw 44 is disposed in the upwardly extended position, and the serrations 45 in the face thereof are so arranged that the weight pulling downward on the cable 24 has a tendency to cause the said serrations to the more firmly grip the said cable. It will be understood that the bob 40 is adjustable on the said cable, so that the height at which the load shall be lifted from the floor or truck before the carriage is released to travel on the track 11, may be regulated and varied at will.

The bob 40 is placed upon the vertically disposed strand of the cable 24 which is directly in line with and passes within the shield formed on one of the pulleys 21. When the cable is thus provided with the bob 40, and is drawn upon from the source of power, the strand of cable rises and the bob 40 in time impinges upon the open end 47 of the said shield and rotates the said shield backward until the perforation 37 in the said shield is alined with the bolt 34, and permits the same to drop therein. It will be seen that with the dropping of the

bolt 34, and the yoke carried thereby, the shaft 32 and roller 33 are carried out of engagement with the plate 38 and the carrier is at liberty to travel over the said track 11. A continued pull on the cable 24 from the source of power results in the carrier, with its suspended load, traveling over the track under the control and management of the operator of the source of power. The shield 36 is now locked in position against rotation. The shield is provided with hooks 48, 48, which are disposed with reference to the end 47 of the said shield substantially as shown in Figs. 1, 5 and 6 of the drawings. The hooks 48 are further arranged to extend horizontally, or in position to enfold the cable 24 under the bob 40 when the bolt 34 of the yoke 30 is held in the recess 37 in the flange 35 of the shield 36. When now the cable 24 is slackened between the carrier and the source of power, the bob 40 settles back to rest upon the hooks 48, 48. The shield 36 being maintained by the bolt 34 from rotating, the said bob 40 and the load carried on the cable 24 are supported from the hooks 48, 48.

At intervals on the track 11 are provided pivotally mounted stop plates 49, 49. The plates 49, 49 are pivoted at 50, 50 and are each provided with a forwardly extended nose 51 and an upwardly extended lever arm 52. Extended from the side of the track 11, and disposed between the said nose 51 and lever 52, is a stop pin 53, provided to limit the movement of the plate 49 by the impingement thereon alternately of the nose 51 and the lever arm 52. To the lever arms 52, 52 are connected operating lines 54, 54, which are reeved over guide pulleys 55, 55 mounted on the extended ends of brackets 56, 56, said brackets being rigidly secured to the hangers 12, 12 by plates 57, 57.

The operation of a conveyer system and a hoisting carrier constructed and arranged as above described, and when provided with the pivoted stop plates 49, 49, the stationary plate 38 and a stationary dog 58, is as follows: Assuming that the apparatus is in the position shown in Fig. 4 of the drawings, wherein the cable 24 has been slacked away to lower the hook 29 to receive a load, and that the load has been secured to the said hook, the load is then raised by drawing upon the cable 24. While thus drawing upon the cable 24 the carrier is held stationary on the track 11 by the plate 38 blocking the way of the shaft 32 and roller 33 mounted thereon of the yoke 30, and this by reason of the fact that the bolt 34 rests upon the solid surface of the flange 35 of the shield 36. When the cable 24 has been drawn upon sufficiently to raise the bob 40 to impinge upon the end 47 of the shield 36, the further movement of the cable 24 results in the rotation of the shield 36, which car-

ries the recess 37 into alinement with the bolt 34. As above described, in this engagement of the bolt 34 and the recess 37, the bolt drops into the said recess and the carriage is at liberty to answer the pull of the cable 24 to travel along the track 11. In this position of the shield it will be noticed that the bob 40 is disposed in position on the said shield to rest upon the hooks 48 thereof should the cable 24 be slackened. If it be desired to lower the load at any intermediate station, such as that formed by the disposition of one of the plates 49, then the line 54 connected with the plate 49 is released from its fastenings (which are conveniently disposed on the building structure) and the plate 49 dropped so that the nose 51 of the said plate is disposed in the path of the shaft 32 and roller 33 carried thereby, and to pass under the same. The nose 51 is disposed and inclined so that when the said shaft and roller are forced over the same the yoke 30 and bolt 34 connected therewith are lifted out of engagement with the recess 37 in the shield 36. In this position the shield 36 rotates until the bob 40 is freed from engagement with the hooks 48, when the slackening of the cable 24 will result in the lowering of the load to the floor or waiting truck. When the load is thus deposited it may be desired to remove only part of the load, or from that station reload on the hook 29, and at this station lift the load until the bob 40 rotates the shield 36 to present the hooks 48 in carrying relation to the said bob 40 and the load on the cable. To do this it is necessary to retract the carriage until the shaft 32 and roller 33 carried thereon passes out of engagement with the nose 51. When this is accomplished the operator draws upon the line 54, which results in raising the lever 52 and the nose 51 out of the path of the shaft 32 and roller 33, but presents the plate 49 in the path of the said shaft and roller as the same are raised, by reason of the bolt 34 resting on the outer surface of the flange 35. When now the cable 24 is drawn upon, the carriage is moved slightly until the shaft 32 and roller 33 impinge upon the plate 49 to hold the carriage stationary while the cable 24 operates to lift the load and the bob 40 mounted on the said cable until the bob 40, impinging upon the end 47 of the shield 36, moves the said shield to permit the bolt 34 to drop into the recess 37 thereof, when again the carriage is released from stationary engagement with the track 11, and is free to proceed on its journey.

The above described operation may be repeated any number of times until the carriage is completely unloaded.

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

1. An automatic carrier, comprising a carrier track system; a wheel supported truck having a depending frame; a hoisting mechanism suspended from said frame embodying a hoisting cable; a bolt vertically mounted in guides in said frame; a plurality of movable stop plates mounted upon said track and extensible therefrom; means for removing said stop plates from the path of said bolt; and a wheel infolding in guiding relation the said cable, said wheel having a recess formed in the periphery thereof to receive said bolt in lowered position. 70

2. An automatic carrier, comprising a carrier track system; a wheel supported truck having a depending frame; a hoisting mechanism suspended from said frame embodying a hoisting cable; a bolt vertically mounted in guides in said frame; a plurality of movable stop plates mounted upon said track and extensible therefrom; means for removing said stop plates from the path of said bolt; and a wheel infolding in guiding relation said cable; said wheel having a recess formed in the periphery thereof to receive said bolt in lowered position, and said wheel having a supporting arm to hold the said cable in hoisted position. 75

3. An automatic carrier, comprising a carrier track system; a wheel supported truck having a depending frame; a hoisting mechanism suspended from said frame embodying a hoisting cable; a bolt vertically mounted in guides in said frame, said bolt having at the end adjacent to the said track a horizontally disposed member whereby the said bolt may be lifted; a permanent releasing member mounted on said track and extended therefrom to form an inclined surface, said member being extended into and below the path of said horizontally disposed member; and means for removing the said releasing member from the path of said horizontally disposed member. 80

4. An automatic carrier, comprising a carrier track system; a wheel supported truck having a depending frame; a hoisting mechanism suspended from said frame embodying a hoisting cable; a bolt vertically mounted in guides in said frame, said bolt having at the end adjacent to the said track a horizontally disposed member whereby the said bolt may be lifted; a wheel rotatively mounted on said frame to hold the said bolt in engagement with the said track, said wheel having a recess formed in the periphery thereof to receive said bolt in lowered position; a plurality of operating plates pivotally mounted on said track and having a drop plate arranged to rest in the path of said horizontally disposed member when the same is supported on said wheel, and said plates having an extension arranged to extend under and in the path of said horizontally disposed member to lift 130

the same; a plurality of releasing members pivotally mounted upon the said track and extended therefrom to form inclined surfaces, said members being extended into  
5 and below said horizontally disposed member; and means for removing the said releasing members from the path of said horizontally disposed member.

5. An automatic carrier, comprising a carrier track system; a wheel supported truck having a depending frame; a hoisting mechanism suspended from said frame embodying a hoisting cable; a bolt vertically mounted in guides in said frame, said bolt having  
15 at the end adjacent the said track a horizontally disposed member whereby the said bolt may be lifted; a permanent releasing member mounted on said track and extended therefrom to form an inclined surface, said  
20 member being extended into and below the

path of said horizontally disposed member on said bolt; means for removing the said releasing member from the path of said horizontally disposed member on said bolt; and a fixed plate disposed adjacent to one of  
25 said releasing members and opposite the inclined surface thereof, said fixed member being arranged in the path of the said horizontally disposed member on said bolt when the said bolt and horizontal member are  
30 lifted in position to release the said hoisting mechanism.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MARTIN HUBERT CAWLEY.

Witnesses:

D. H. NELSON,  
H. A. SCHMITZ.