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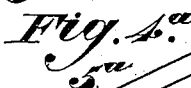
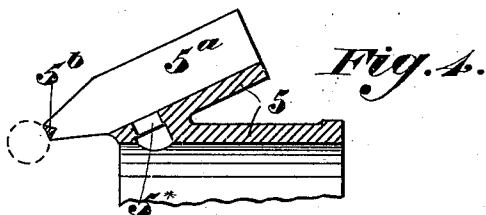
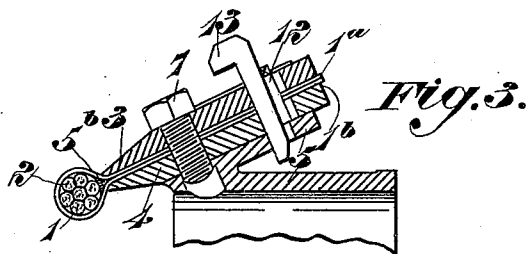
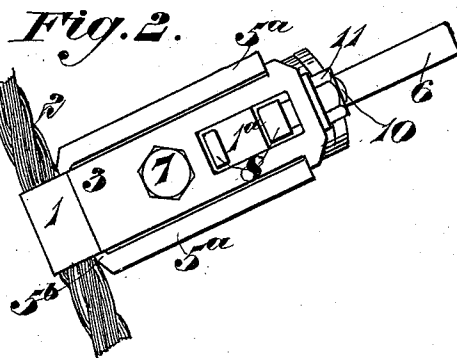
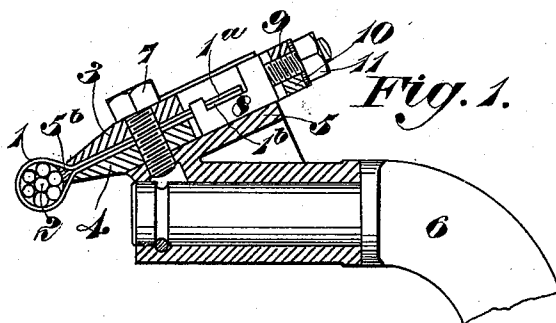
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J. P. ROE.

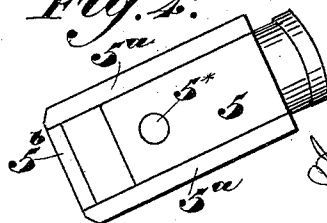
APPARATUS FOR TRANSPORTING LOADS BY TRAVELING CABLES.

No. 530,720.

Patented Dec. 11, 1894.



*Witnesses*  
A. L. Boyle  
M. F. Boyle



*Inventor*  
John Pearce Roe  
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(No Model.)

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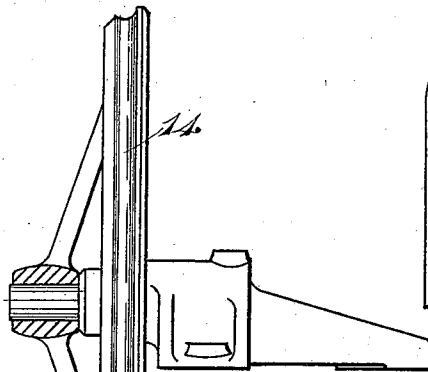
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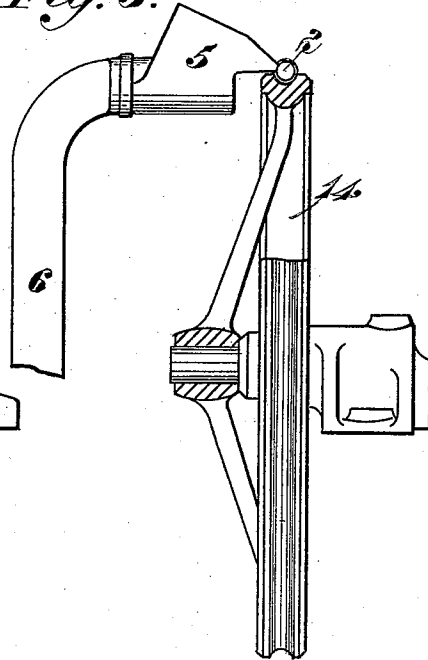
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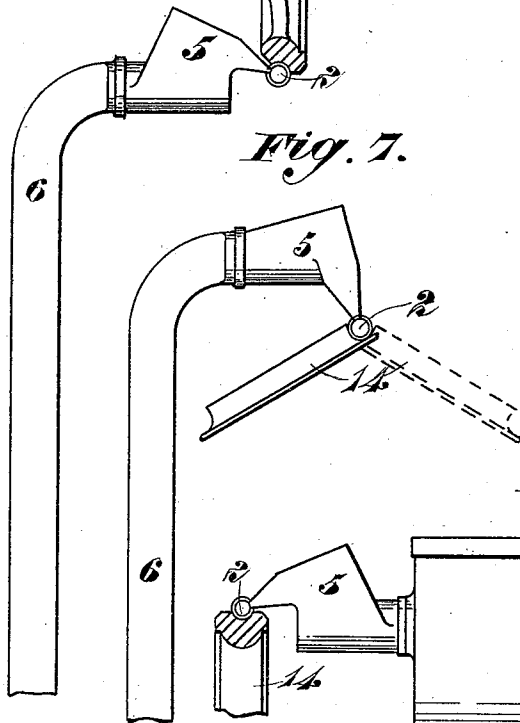
*Fig. 6.*



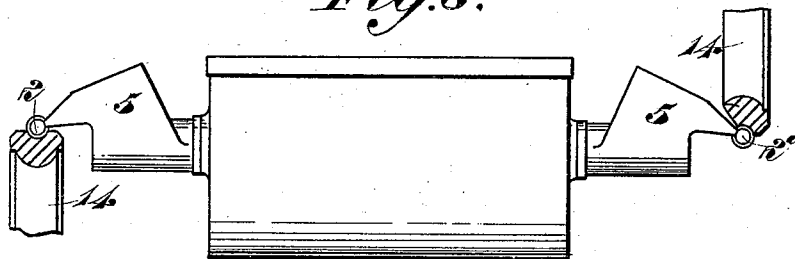
*Fig. 5.*



*Fig. 7.*



*Fig. 8.*



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(No Model.)

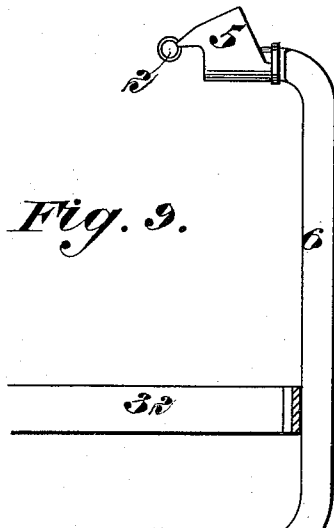
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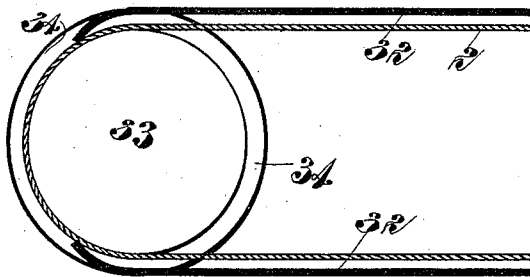
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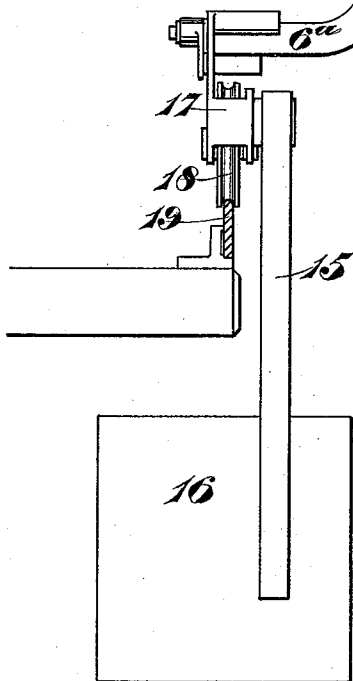
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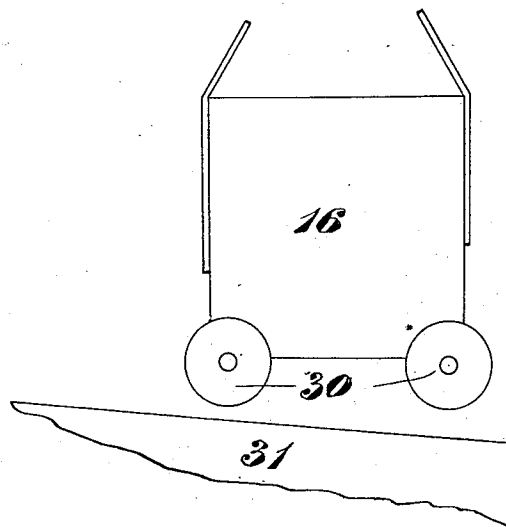
*Fig. 9.*



*Fig. 10.*



*Fig. 11.*



*Fig. 12.*

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*John Beaver Roe*  
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(No Model.)

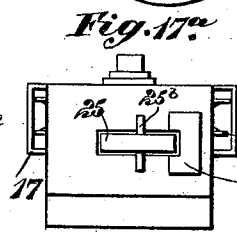
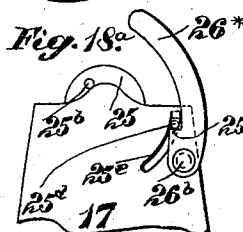
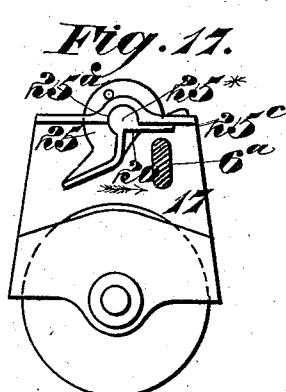
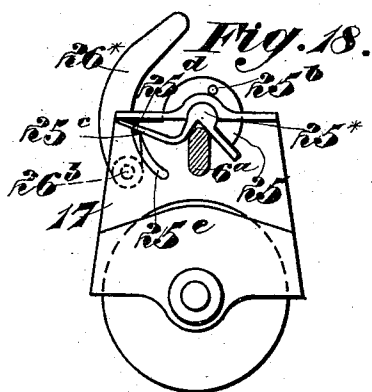
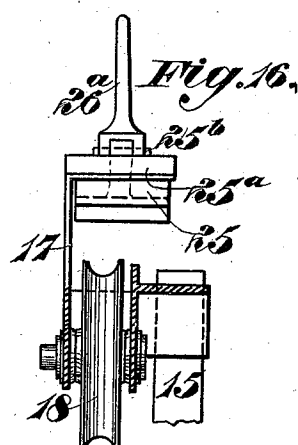
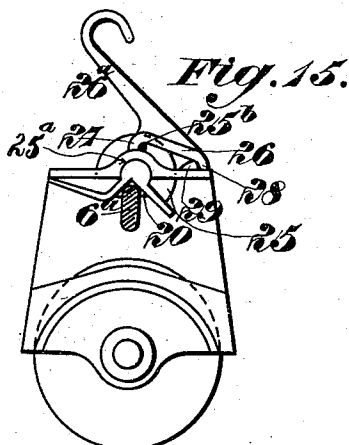
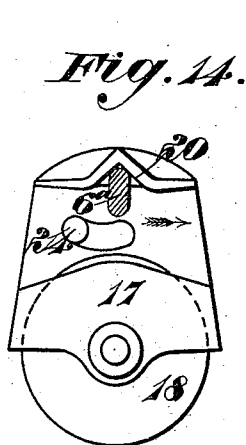
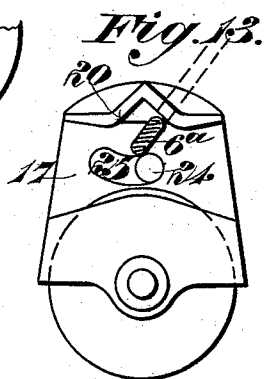
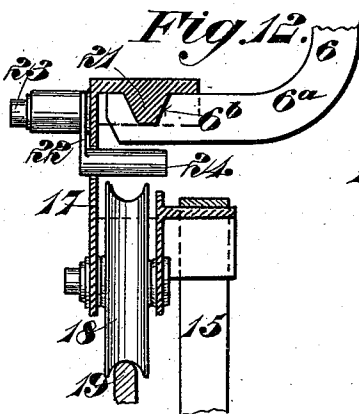
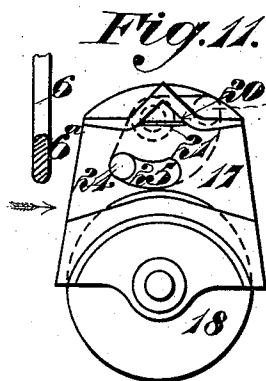
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J. P. ROE.

APPARATUS FOR TRANSPORTING LOADS BY TRAVELING CABLES.

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*Witnesses*  
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M. F. Boyle

*Inventor*  
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# UNITED STATES PATENT OFFICE.

JOHN PEARCE ROE, OF LONDON, ENGLAND, ASSIGNOR TO THE ROPEWAYS  
SYNDICATE, LIMITED, OF SAME PLACE.

## APPARATUS FOR TRANSPORTING LOADS BY TRAVELING CABLES.

SPECIFICATION forming part of Letters Patent No. 530,720, dated December 11, 1894.

Application filed October 23, 1893. Serial No. 488,910. (No model.) Patented in England May 19, 1893, No. 10,039; in France January 12, 1894, No. 235,470; in Belgium January 16, 1894, No. 108,098; in Spain February 15, 1894, No. 15,373, and in New South Wales March 6, 1894, No. 4,904.

*To all whom it may concern:*

Be it known that I, JOHN PEARCE ROE, a subject of the Queen of Great Britain and Ireland, residing at 150 Leadenhall Street, in the city of London, England, have invented Improvements in Apparatus for Transporting Loads by Means of Traveling Ropes or Cables, (for which I have obtained patents in Great Britain and Ireland, dated May 19, 1893, No. 10,039; in Spain, dated February 15, 1894, No. 15,373; in France, dated January 12, 1894, No. 235,470; in Belgium, dated January 16, 1894, No. 108,098, and in New South Wales, dated March 6, 1894, No. 4,904,) of which the following is a specification.

This invention of improvements in apparatus for transporting loads by means of traveling ropes or cables (hereinafter referred to as ropes), has reference to improved constructions of clips suitable for permanent attachment to the traveling rope or ropes; and to improved constructions and arrangements of parts whereby the boxes for containing the loads to be transported can be readily attached to and detached from hangers connected with the said clips; and in order that the nature of this invention may be fully understood, I will proceed to explain the same by aid of the accompanying drawings, in which—

Figures 1 and 2 are respectively a vertical section, partly in elevation, and a plan, showing a clip constructed according to this invention applied to a traveling rope. Fig. 3 is a similar view to Fig. 1, illustrating a modification. Figs. 4 and 4<sup>a</sup> are respectively a vertical section and a plan of the clip box alone. Figs. 5 to 8 inclusive, are end elevations each partly in section, showing the form and arrangement of the clips under different circumstances. Fig. 9 is an end elevation partly in section, showing a clip with means whereby its hanger can be readily attached to and detached from a lower hanger connected with the box containing a load to be transported. Fig. 10 shows in plan, means for guiding the clip hangers as hereinafter described. Fig. 11 shows in side elevation, and to a larger scale than Fig. 9, one construction of box for connecting the lower hanger to the clip hanger which is shown as about to enter the

said box. Fig. 12 is a cross section thereof, partly in elevation, showing the lower end of the clip hanger engaged with the said box. Figs. 13 and 14 are similar views to Fig. 11, but showing the lower end of the clip hanger in different positions. Figs. 15 and 16 are similar views to Figs. 11 and 12, the lower end of the clip hanger being shown engaged with the box in Fig. 15, and omitted in Fig. 16. Fig. 17 is a similar view to Fig. 15 but showing certain parts in a different position. Fig. 17<sup>a</sup> is a plan view of the box shown in Figs. 15, 16 and 17 with the locking device removed. Fig. 18 is a similar view to Fig. 15 illustrating a modified arrangement. Fig. 18<sup>a</sup> is a side elevation showing the opposite side of the box and locking device to that shown in Fig. 18. Fig. 19 is a diagrammatic view hereinafter referred to.

Referring to Figs. 1 and 2, 1 is a thin metal strap that may advantageously be of steel, shaped to fit the rope 2 over which it is sprung when being attached thereto, and the end portions 1<sup>a</sup> 1<sup>b</sup> of which are placed between two superposed plates 3—4 fitted into a clip box 5 in which the bucket hanger 6 is journaled. The said plates are compressed upon the said end portions of the metal strap by any suitable means, such as a set screw 7 arranged to screw into a hole 5\* in the clip box near the rope end thereof, and means are provided whereby, after a certain amount of compression has thus been effected, the metal strap 1 can be drawn up so as to cause it to close tightly on the rope, after which the set screw 7, or equivalent device, is finally tightened down, thereby firmly securing the clip to the rope. In the arrangement shown in Figs. 1 and 2, the end portions 1<sup>a</sup> 1<sup>b</sup> of the strap are drawn up by a hook shaped device 8, one end of which enters a hole in the said end portions of the strap and the other end of which is provided with a screw threaded extension 9 that passes through a bridge piece 10 formed on, or it may be bearing against, the adjacent ends of the plates 3, 3<sup>a</sup>, the said extension being fitted with a tightening nut by which the said device 8 can be forcibly drawn up. In the arrangement shown in Fig. 3, a gib 12 and cotter 13 are employed for tightening up the metal strap 1.

The clip box 5, (Figs. 4 and 4<sup>a</sup>) which may be made as a casting, is constructed with sides 5<sup>a</sup> that are connected at the nose end of the box by a V-shaped abutment piece 5<sup>b</sup> which takes against the rope when the clip is to be applied thereto, and forms a support against which the metal strap 1 pulls. Between this abutment and the lower portion of the clip box is a slot or opening, as shown more clearly in Figs. 4 and 4<sup>a</sup>, through which the lower portion of the metal strap 1 passes and which is nearly closed by the lower plate 4 when the parts are secured together. By the construction described, as the V-shaped abutment piece 5<sup>b</sup> bears against the rope, the weight of the load will, to a large extent, be taken directly by it, so that the function of the metal strap is practically limited to effecting a tight connection between the rope and the clip box, the strap being relieved of any bending action due to the weight of the load carried.

Clips constructed as described may be mounted to extend from the rope at any convenient angle to the horizontal, or vertical, according as it is desired to pass the clips over, or under sheaves 14, see Figs. 5 and 6 respectively, or to work the clips at such an angle, see Fig. 7, as to allow of their passing canted sheaves for working horizontal angles of the rope. They are suitable for fixing the loads to a single rope 2, Figs. 5, 6 and 7, or to a pair of ropes 2, 2<sup>a</sup>, Fig. 8 in which latter case two clips such as described are combined together.

To admit of the boxes for containing the loads to be transported, being readily attached to and detached from the hangers 6 connected with the clips, so as to permit of such boxes being readily set in motion and brought to rest, as may be required, at stations, the lower end of each of the said hangers (hereinafter called for distinction the clip hangers), is adapted to take into and become engaged with a fixed or movable recessed portion of a box or frame (hereinafter called a box) connected to the upper end of the hanger (hereinafter referred to as the lower hanger) directly supporting the load.

The upper portion of each of the lower hangers, or the box attached thereto, is provided with a wheel or there may be more than one; and at the station where the load is to be disconnected from the clip hanger, there is a rail so fixed that the rope and rail gradually approach each other for a certain length of travel, the arrangement being such that upon a load approaching the station, the said wheel will take onto the rail, and after the wheel has traveled a certain distance thereon, the weight of the load will be relieved from the clip hanger which will then become lowered relatively to the box so as to be moved out of the recessed portion of such box and be free to pass out of the same, leaving the load suspended on the rail. For coupling a load to the clip hanger, a rail is provided at the station, so arranged in respect

to the rope, that upon running the load upon it by means of its supporting wheel, such wheel will gradually recede from the rope and will be brought into such a position as will enable a moving clip hanger to enter the box connected with the lower hanger and become engaged therewith, whereupon the load will be put in motion and will travel along the rail, until the clip hanger is brought home into the recess in the box, and the weight again taken by the rope.

In Fig. 9, 6 is the clip hanger, 15 the lower hanger carrying the box 16 for containing the load to be carried, and 17 the box connected to the upper portion of the lower hanger and by which such hanger can be connected, when required, to the lower end 6<sup>a</sup> of the clip hanger. 18 is a wheel journaled in the box 17, and 19 is a fixed rail at a station upon which the wheel 18 is caused to run for the purpose of effecting the connection and disconnection of the clip hanger 6 and box 17 hereinbefore described.

The box 17 shown in Fig. 9, and to a large scale in Figs. 11 to 14 inclusive, is formed with a A-shaped recess 20 divided by a transverse rib 21 adapted to enter a corresponding recess 6<sup>b</sup> in the lower bent end of the clip hanger, and in conjunction with such recess there is provided an oscillating device 22 in the form of a plate journaled upon a pin 23 fixed to the box 17 and provided with a pin or projection 24 that extends through a curved slot 25 in the back of the box. As will be seen the arrangement is such that when the lower end 6<sup>a</sup> of the clip hanger enters the box 17, in the direction of the arrow Fig. 11, it acts upon and moves the said pin or projection 24 to the right and into such a position Fig. 13 that it will prevent the hanger passing onward through the box 17, in a sidewise direction, until after it has fully entered the recess 20 therein. When the lower end of the clip hanger is moved upward relatively to the box so as to enter the recess therein, the oscillating device 22 will be returned into its normal position (Fig. 14) by gravity under the action of a weight 22\* or it may be by a spring, so that, when on reaching a station and the load is again taken by a shunt rail, the lower end of the clip hanger will be free to pass forward out of the box.

In the arrangement shown in Figs. 15, 16, 17 and 17<sup>a</sup>, the recess 20 with cross rib 21 into which the lower end of the clip hanger takes, instead of being formed in the box 17 as in the arrangement last described, is formed in a separate oscillating device 25 journaled in a bearing 25<sup>a</sup> in the top of the box. This device is supported by a pin 25<sup>b</sup> fixed thereto and arranged to bear upon the upper side of the box. The said oscillating device is so arranged that when it is in one position (Fig. 15), the lower end of the clip hanger will be free to enter and attach itself, and when in another position (Fig. 17), the said hanger will be free to pass out at the other side of

the box. The center 25\* about which this oscillating piece turns, is as shown, arranged slightly in advance of the apex of the recess 20, into which the clip hanger takes, so that when the load is suspended the oscillating piece will be kept in its first position Fig. 15 by the action of the load, but when a shunt rail takes the weight of the load and the clip hanger moves relatively downward and side- wise it will liberate the wing 25° of the oscillating device and will allow it to tilt down so that the clip hanger will be left free to pass onward in a sidewise direction and out of the box as indicated in Fig. 17.

To prevent the passage of the lower end of the clip hanger through the box when coupling, the oscillating piece 25 is locked in the first position by means of a locking device which consists of a bar 26 (Fig. 15) formed with a shoulder 27 engaging with the pin 25<sup>b</sup> on the oscillating device, and with a shoulder 28 engaging a fixed projection 29 on the top of the box.

The locking device may, as in the arrangement shown in Figs. 15 and 16, be arranged as a loose part that can be entirely removed from the box 17, as shown in Figs. 17 and 17<sup>a</sup>, in contact with a suitably arranged stud which is fixed to the station frame so as to be in the path of the upwardly extending arm 26<sup>a</sup> of the said locking device and upon which the said loose part will be left suspended by its hooked arm 26<sup>a</sup> when the clip apparatus passes onward; or the said locking device may as shown in Figs. 18, 18<sup>a</sup> be made in the form of an arm 26\* pivoted to the box 17 at 26<sup>b</sup> and formed with a shoulder 25° adapted to engage with a pin 25<sup>a</sup> that extends from one side of the oscillating device and projects through a slot 25° in the side of the box. When the arm is in the position shown it serves to hold the said oscillating device in the position shown until the lower end of the clip hanger has entered the recess therein, the said arm being so arranged that when this has taken place it will merely be tripped by contact with the aforesaid stud, fixed to the station frame so as to release the said oscillating device.

Instead of suspending the load from the shunt rails when required, by means of one or more wheels 18 at the upper end of the lower hanger 15, the boxes 16 for carrying the loads may as shown in Fig. 19, be each provided with wheels 30 arranged to take upon a floor 31 (or rails) having an inclination to the rope, and thus adapted to perform the same functions as the shunt rails hereinbefore referred to. After each clip hanger has been released from the box at the upper end of a lower hanger, it may be automatically guided or moved sidewise out of the box (Fig. 17) by means of one or more suitably arranged guide bars 32 shown in sectional elevation in Fig. 9 and in plan in Fig. 10. The guide bars in the latter figure are shown arranged in proximity to a rope sheave 33, a flange 34 on

which is arranged to also act as a guide to hold the clip hanger in the disengaged position.

What I claim is—

1. A clip for permanent attachment to a traveling rope comprising a clip body, a separate metal strap encircling said rope and fixed to said clip body, and a tightening up device for simultaneously drawing up both ends of said strap, substantially as herein described.

2. A clip for permanent attachment to a traveling rope, comprising a clip body against one end of which said rope can abut, a sheet metal strap of approximately uniform thickness made separate from said clip body adapted to fit around the rope to which the clip is to be fixed and having its end portions brought close together, means for simultaneously drawing up the two end portions of said strap so as to firmly connect said rope to said clip body, and means for fixing the end portions of said strap upon said clip body substantially as herein described.

3. A clip for permanent attachment to a traveling rope, comprising a clip box provided at its nose end with an abutment for the rope and with a slot between said abutment and clip box, a metal strap made separate from said clip box and adapted to fit said rope, the end portions of said strap being arranged to pass over and below said nose and one of them to pass through said slot so that they can be brought close together, means for drawing up said strap so as to force the rope upon which it is fitted against said abutment, and means for clamping the end portions of said strap upon each other and upon said clip box substantially as herein described.

4. A clip for permanent attachment to a traveling rope, comprising a clip box provided with a longitudinal abutment for said rope and with a slot between said abutment and clip box, a sheet metal strap made separate from said clip box and adapted to fit said rope, the end portions of said strap being arranged to pass over and below said nose and one of them to pass through said slot so that they can be brought close together, plates between which the juxtaposed end portions of said strap are clamped and held against said abutment, means for drawing up the end portions of said strap, and means for forcing said plates together and for connecting them to said clip box substantially as herein described.

5. The combination in a clip for permanent attachment to a traveling rope, of a clip box the sides of which are connected at the nose end by a V-shaped abutment 5<sup>b</sup>, a metal strap arranged to pass above and below said abutment and around the rope to be held against the same, and having its end portions brought close together, plates between which the juxtaposed end portions of said strap are directly clamped, means for simultaneously drawing up both end portions of said strap, and a screw for tightening said plates upon

the end portions of said strap and for connecting them to said clip box substantially as herein described.

6. A clip for permanent attachment to a rope comprising a clip body, a separate strap fixed thereto, and encircling said rope, and means for tightening said strap upon said rope said means comprising a hook shaped device adapted to engage said strap and provided with a screw threaded extension, a bridge piece through which said extension passes, and a tightening nut fitting the outer portion of said screw threaded extension and bearing against said bridge pieces, substantially as herein described for the purpose specified.

7. In apparatus for transporting loads by means of a traveling rope or cable the combination with a clip adapted to be fixed upon said rope or cable, and a clip hanger suspended therefrom, of a lower hanger for carrying the load to be transported, and a box or frame connected to the upper end of said lower hanger and provided with a recessed portion into which the lower end of said clip hanger is adapted to take so as to support said box or frame and attached parts when said clip hanger moves upward relatively to the lower hanger substantially as herein described.

8. In apparatus for transporting loads by means of a traveling rope or cable the combination with a clip fixed upon said rope and a clip hanger suspended therefrom, of a lower hanger for carrying the load to be transported, a box or frame connected to the upper end of said lower hanger, an oscillating device journaled in the top of said box or frame and formed at its under side with a recess, into which the lower bent end of said clip hanger is adapted to take, and a locking device adapted to prevent the lower bent end of said clip hanger passing completely through the box in a lateral direction until after it has fully entered the recess in the top of the box or frame substantially as herein described.

9. In apparatus for transporting loads by means of a traveling rope or cable, the combination with a clip fixed upon said rope and a clip hanger suspended therefrom, of a lower hanger for carrying the load to be transported, a box or frame connected to the upper end of said lower hanger, an oscillating device journaled in the top of said box or frame and formed with a recess at its under side into which the lower bent end of said clip hanger is adapted to take, and a locking device for holding said oscillating device in the engaging portion until after the said lower end of the clip hanger has fully entered the recess in said device substantially as herein described.

10. In apparatus for transporting loads by means of a traveling rope or cable the combination with a clip fixed upon said rope or cable and a hanger suspended therefrom, of a

lower hanger for carrying the load to be transported, a box or frame connected to the upper end of said lower hanger, an oscillating device journaled thereon and formed with a recess in its under side into which the lower bent end of said clip hanger is adapted to take and a locking device comprising an arm pivoted to said box or frame and provided with a shoulder adapted to hold said oscillating device in position for the lower bent end of said clip hanger to pass into the same, said arm being arranged to project outward in such a manner that it can be tripped by a fixed pin or projection arranged in the path of said arm substantially as herein described for the purpose specified.

11. Apparatus for transporting loads comprising a traveling rope or cable, a clip fixed thereto a clip hanger suspended from said clip and having its lower end bent and formed with a recess a lower hanger carrying a box to contain the load to be transported, a box or frame connected to the upper end of said lower hanger, an oscillating device journaled in said box or frame and formed at its under side with a V-shaped recess and with a transverse rib to engage the recessed lower bent end of said clip hanger, the center of oscillation of said device being arranged slightly to one side of the apex of the V-shaped recess in its under side, a pin or projection adapted to hold said oscillating device in place, and a tripping arm pivoted to said box or frame and provided with a shoulder or abutment adapted to hold said oscillating device in position until after engagement with said clip hanger substantially as herein described.

12. In apparatus for transporting loads by traveling ropes, the combination with a hanger for suspending the box for containing the load to be transported, of a box or frame fitted to the upper end of said hanger and provided with a wheel, an oscillating device journaled in said box or frame and formed with a V-shaped recess in its under side, the center of oscillation of said device being arranged at one side of the apex of said recess, a pin or projection for suspending said device in said box or frame and an arm pivoted to said box or frame and provided with a shoulder or abutment adapted to hold said oscillating device in position to permit the lower bent end of a clip hanger to engage the recess in its under side substantially as herein described.

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

JOHN PEARCE ROE.

Witnesses:

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