June 15, 1926. 1,589,203

J. R. MERRIFIELD

FREIGHT STACKER

Filed June 25, 1925

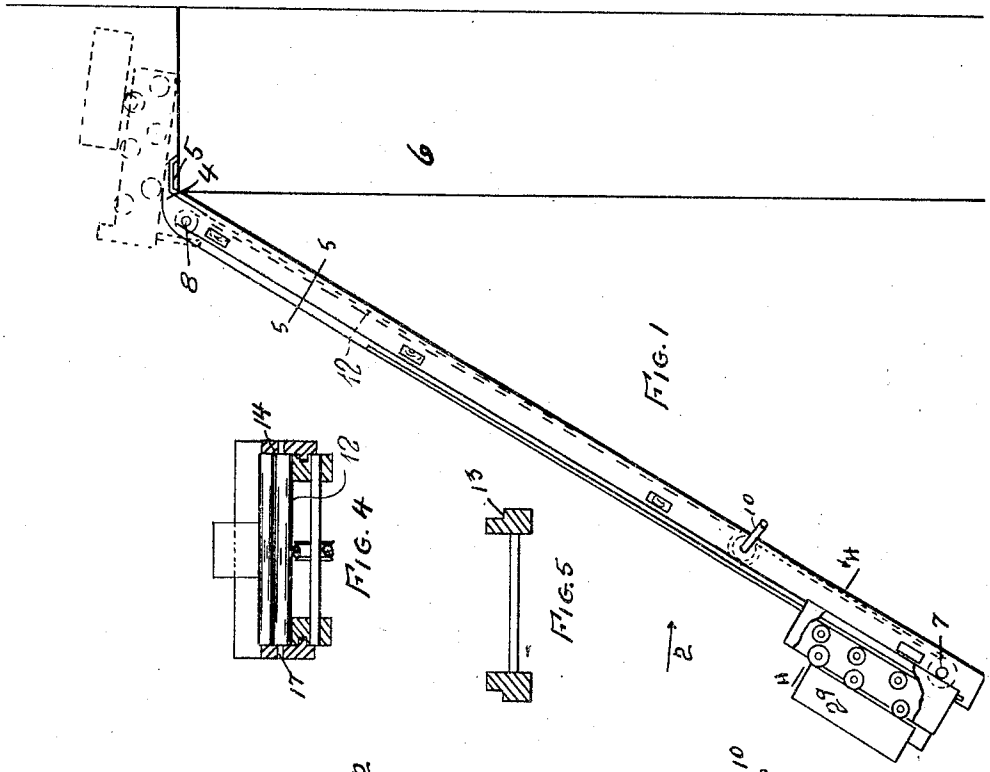

FIG. 1

FIG. 4

FIG. 5

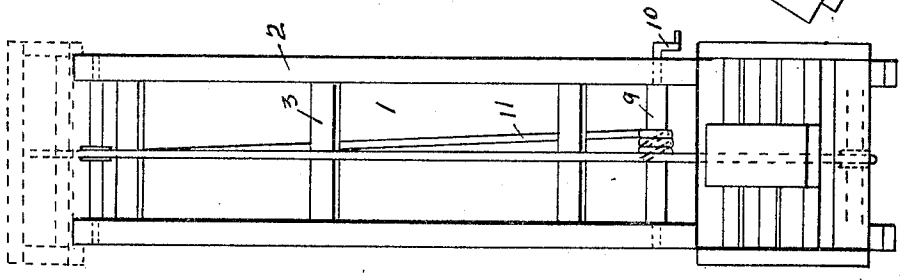

FIG. 2

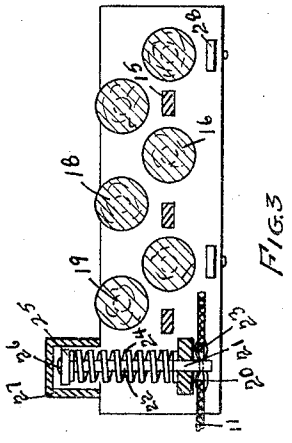

FIG. 3

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BY
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Patented June 15, 1926. 1,589,203

UNITED STATES PATENT OFFICE.

JOHN R. MERRIFIELD, OF OAKLAND, CALIFORNIA, ASSIGNOR OF TWENTY-FOUR AND ONE-HALF ONE-HUNDREDTHS TO GEORGE A. MARSHALL AND TWENTY-FOUR AND ONE-HALF ONE-HUNDREDTHS TO W. A. WILSON, BOTH OF OAKLAND, CALIFORNIA.

FREIGHT STACKER.

Application filed June 25, 1925. Serial No. 39,453.

My invention is a freight stacker particularly adapted for warehouse use to stack box freight, but it may also be used as a cargo loader for vessels or in general as a freight elevator.

An object of my invention is to mount a carriage on a pair of rails and by means of an endless cable mounted on a drum to run the carriage up the rails and have it automatically tilt at the top of the stack of goods and dump or properly deposit the load on the top of the stack.

Some of the details of my invention comprise the carriage having a set of rollers to run on the rails and a set of freight rollers upon which the load is carried. An endless cable is attached to the carriage by means of a stem fastened through a socket and having a spring tensioned between the frame and a plate on the end of the stem. In this manner the carriage may be pulled up the tracks and at the upper end the forward end of the carriage will tilt thereby compressing the spring and allowing the rear end of the carriage to become elevated. The load will then roll off the freight rollers.

My invention will be more readily understood from the following description and drawings, in which:

Figure 1 is a side elevation of my freight stacker showing the carriage in its lowermost position and dotted in the dumping position.

Figure 2 is an elevation of Figure 1 in the direction of the arrow 2.

Figure 3 is a longitudinal section of the carriage showing the attachment of the endless cable to the spring connected stem.

Figure 4 is a cross section of the stacker and carriage on the line 4—4 of Figure 1.

Figure 5 is a cross section of the track on the line 5—5 of Figure 1.

The track is designated generally by the numeral 1 and comprises side rails 2 connected by cross ties 3, the rails are bevelled at the upper end 4 and have a bent metal hook 5 attached to the back of the rails to form a hook to engage the top of the stack of goods which is indicated in Figure 1 as a stack 6 of boxes or crated goods. Lower and upper pulleys 7 and 8 are mounted on suitable shafts having bearings in the side rails and a drum 9 is mounted at a convenient elevation and has a crank 10 by which it may be manipulated. The endless cable 11 is wound on the drum a few turns and leads over the upper and lower pulleys with the top rope being substantially on the level of the surface of the rails. Each of the rails is provided on the outside edge with a groove 12 which extends from the upper portion to the lower end. The upper segment of the rail is removed at the upper portion leaving an open corner as indicated at 13 in Figure 5.

The carriage is constructed as follows:— a pair of flank boards 14 are held the proper distance apart by cross bars 15 and have journalled between the flank boards a series of wheel rollers 16 having shafts 17 which are mounted in the flank boards. A series of freight rollers 18 are situated at the upper part of the carriage and have shafts 19 journalled in the flank boards. A cross tie 20 of substantial construction connects the flank boards at the rear end of the carriage and has a socket 21 therethrough. A stem 22 is slidable through said socket and has a pair of staples or swivels 23 connected to its lower end to which the endless cable 11 is secured. The cable may be made continuous with some kind of a take up device for the slack at the connection to the stem 21 or the two ends of the cable may be attached to the swivels. A spring 24 is coiled about the stem and tensioned between the cross tie 20 an abutment washer 25 secured to the upper end of the stem by riveted head 26. A box 27 is built over the upper end of the stem and extends from side to side of the carriage to support the load. A series of tongues 28, or one long tongue, are positioned on the inside of the flank boards to engage in the grooves 12 in the side rails.

The manner of operation of my stacker is substantially as follows: Presuming that the carriage is in the position shown in Figure 1 the load 29, such as a box, or crated goods, is placed on the carriage resting on the freight rollers 18 and bearing against the box 27. The crank 10 is then operated to elevate the carriage. When it reaches the top the carriage will tilt over the stack as shown in Figure 1 and on continued upward movement the spring 24 will be compressed so that the stem 21 will be drawn out thereby allowing the carriage to tilt downwardly at the front end. This movement together with the slight jolt will start

the load 29 sliding on the freight rollers 18 and thereby deposit the load on top of the stack. As the crank is rotated in the opposite direction to draw the carriage downwardly the box or crate will be left stacked in proper position. It will be noted that the tongues 28 will fit in the recess 13 at the upper end of the rails and follow down the groove 12 at the lower end. This engagement of the tongues and the grooves will prevent the carriage tipping over backward, no matter how steep the inclination on which it is operated.

My invention may be considerably changed to suit different requirements and may be altered in size and in details of construction without departing from the spirit thereof. It will be noted that an important feature of my invention is the means for attaching the carriage to the cable at the rearward end so that it may tilt to deposit the freight loaded on the carriage. It is quite obvious that this principle might be used in a conveyor having a bucket or the like to elevate material in bulk which is to be dumped at the upper end of the tracks.

Having described my invention, what I claim is:

1. A freight stacker comprising in combination a track, a carriage mounted thereon, a cable attached to the carriage at the rear end thereof, such attachment being made to yield transversely relative to the carriage so as to allow the latter to tilt forward at the upper end of the rails and to tilt backward before its downward descent.

2. A freight stacker as claimed in claim 1, in which the attachment of the cable to the carriage comprises a stem slidably mounted in the carriage and a spring to retract the stem.

3. A freight stacker comprising in combination a track having a pair of side rails, a carriage having a series of wheels or rollers running on the track and a series of freight rollers adapted to support the freight, a cable attached to the rear end of the carriage, such attachment being constructed and adapted to allow the carriage to tilt forward at the upper end of the rails and to tilt the carriage backwardly as it starts its downward descent, a cross tie positioned at the rear of the carriage and having a stem slidably mounted to extend downwardly therethrough, a spring tensioned between the cross tie and the upper end of the stem, a guide for the upper end of the stem and means to attach the cable to the lower end of the stem.

4. A freight stacker, comprising in combination a track having a pair of side rails, a groove extending part way along said rails and an open section at the upper ends of the rails, pulleys at the top and bottom of the track, a drum positioned between the rails, a cable passing over the pulleys and around the drum, a carriage having flanking boards with cross bars, tongues on the flanking boards, a series of wheels or rollers between the flanking boards adapted to roll off the tracks, a series of freight rollers between the upper portions of the flanking boards adapted to support the freight and a resilient connection at the rear end of the carriage to the cable, such connection being constructed and adapted to allow the carriage to tilt forwardly at the end of the track and to tilt the carriage backwardly as it starts its downward movement.

5. A freight stacker as claimed in claim 4, in which a cross tie is positioned at the rear of the carriage between the flanking boards, having a stem slidably mounted to extend downwardly therethrough, a spring tensioned between the cross tie and the upper end of the stem, a guide for the upper end of the stem and means to attach the cable to the lower end of the stem.

In testimony whereof I affix my signature.

JOHN R. MERRIFIELD.