(No Model.)

W. H. RUSSELL.

FREIGHT ELEVATING AND TRANSPORTING APPARATUS.

No. 404,658. Patented June 4, 1889.

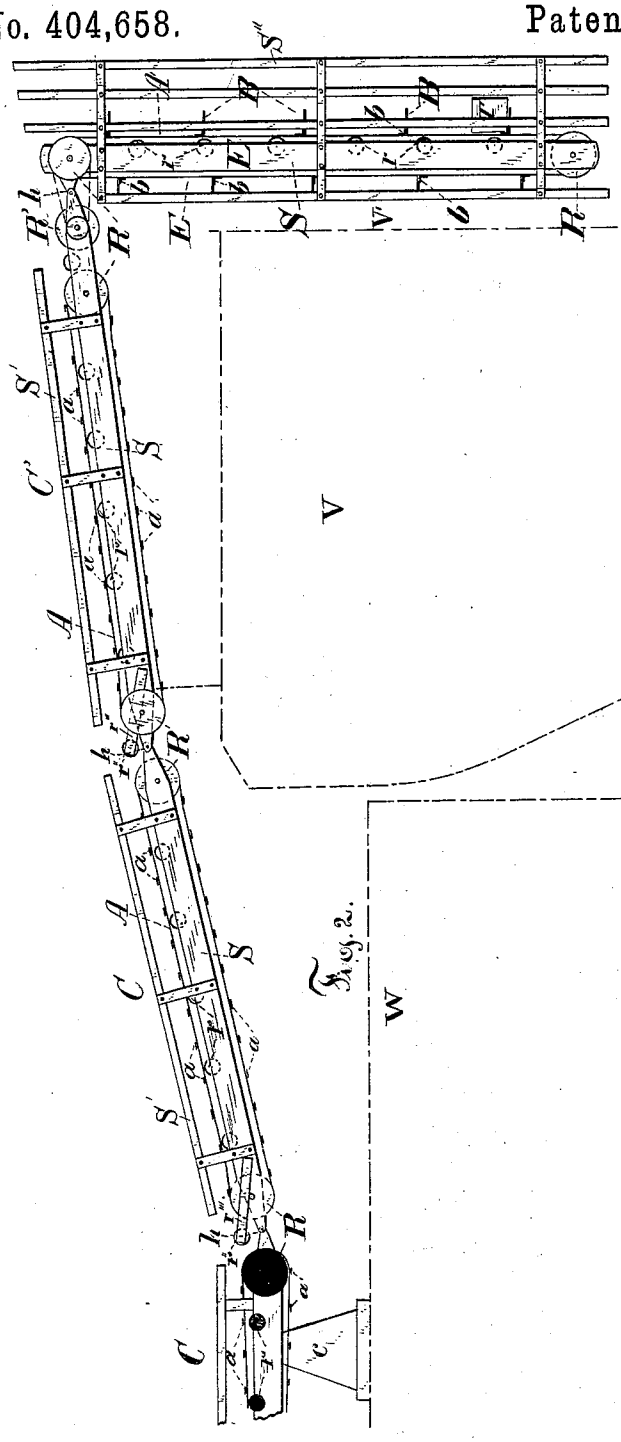


Fig. 2.

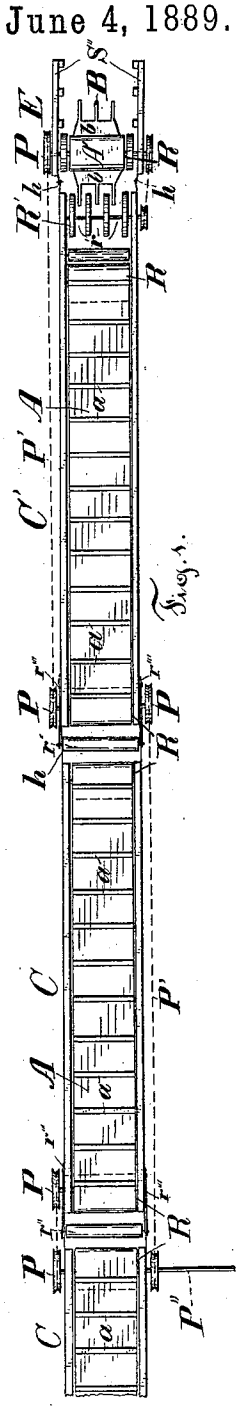


Fig. 1.

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UNITED STATES PATENT OFFICE.

WILLIAM H. RUSSELL, OF VANCOUVER, BRITISH COLUMBIA, CANADA, ASSIGNOR OF ONE-THIRD TO GIDEON ROBERTSON.

FREIGHT ELEVATING AND TRANSPORTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 404,658, dated June 4, 1889.

Application filed May 10, 1888. Serial No. 273,506. (No model.) Patented in Canada February 18, 1888, No. 28,542.

To all whom it may concern:

Be it known that I, WILLIAM H. RUSSELL, of Vancouver, in the Province of British Columbia, in the Dominion of Canada, have invented new and useful Improvements in Freight Elevating and Transporting Apparatus, (for which I have obtained a Canadian patent, No. 28,542, dated February 18, A. D. 1888;) and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to apparatus for elevating and transporting freight from the holds of vessels and the like to the wharf, sheds, or other storage or receiving places, and also for loading vessels by conveying goods from the storage-place to the hold.

The object of my invention is the construction of a simple apparatus for lifting and transporting freight, consisting of comparatively light and regular packages—such as tea-chests—by means of an elevator from the hold of a vessel or the like and transporting the same to the wharf or other receiving-place and, vice versa, without intermediate handling.

My improved apparatus consists of an elevator and three or more lengths of carriers, all hinged together end to end. The carriers consist each of two side boards framed together and with battened framing at the sides to form a channel, at the bottom of which runs an endless canvas apron over a number of small friction-rollers journaled in said sides and over a large roller, which may be provided with a chain-pulley for a pitch-chain at each end. The elevator is similarly constructed, but is adapted to be placed upright in a ship's hold, provided with a back frame, the endless apron strengthened by leather straps and furnished with brackets or tables secured upon it at intervals for receiving and lifting packages. The elevator may be constructed in sections to reach to any desired depth. The elevator and carriers are hinged together to adapt them to different levels caused by tide and other circumstances.

Figure 1 is a plan or top view of my improved apparatus; and Fig. 2 is an elevation of the same, partly in section, as shown in solid black.

W is the wharf, and V represents a vessel in dotted lines, V′ being the hatchway.

C C C′ are carriers, and E the elevator, the latter placed upright in the hatchway and the carriers extending therefrom to the desired point of discharge, the wharf end being placed on suitable chairs or supports *c*.

The carriers C C′ consist of the sides S, having the battened frames S′ to form guides, the driving-rollers R, journaled at each end, the small friction-rollers *r*, and the endless apron A, running over the rollers R and supported by the rollers *r*, and which may be provided with cross-slats *a*. The carriers and elevator are connected by hinge-joints *h*. In the joints of the carriers, between the two rollers R and without coming in contact with the latter, are placed intermediate rollers *r*″, journaled in arms *r*‴, secured to the sides S to prevent the packages from jamming between the rollers R. The rollers R are provided with chain-pulleys P and connected by pitch-chains P′, motion being given to one of them by a shaft P″, or in some other manner. The elevator consists of similar sides S, with a larger battened guide-frame S″, extending to the back, rollers R, small friction-rollers *r*, and an endless apron A′, strengthened with straps.

To the apron A′ are secured at intervals brackets B, upon which a narrow board *b* is secured, leaving the brackets to project beyond said board like fingers. The brackets B and board *b* form tables B *b*, upon which the packages T are placed to be elevated. In order to afford room for the return or downward passage of the tables B *b* between the top roller R of the elevator and the end roller R of the adjoining carrier C′, I place between the two a roller R′, having deep and wide grooves *r*′, through which the projecting ends of the brackets B may pass, so that only a free space equal to the width of the board *b* need be left between the top elevator-roller R and the extreme diameter of the roller R′. To this grooved roller, which is journaled

conveniently at the end of the adjoining carrier C′, and which may be conveniently constructed of a shaft carrying a number of flat-faced pulleys set a distance apart to form the grooves r', a greater speed may be given than to the rollers R, so as to rapidly forward the packages coming upon it over the top of the elevator. To afford means for tightening the endless apron A′, the lower roller R may be journaled in a bearing adjustable by a screw.

In the example illustrated in Fig. 1 the manner of connecting the rollers and pulleys by pitch driving-chains may be seen; but this may be varied at will or according to the circumstances of the case.

In operation a package T is placed upon the table B b of the elevator E, and is raised to the top and turned over upon the roller R′, which pushes it on the apron of the first carrier C′. Upon this it travels to the end, and is pushed upon the next carrier, and thus continues its journey until it is delivered at the end of the last carrier and removed. The sides S′ and S″ form channels and act as guides, preventing the packages from slipping off. The rollers r may be placed near enough together to prevent any package sagging the apron between two of them, and thus causing it to stick.

I claim as my invention—

1. An apparatus for elevating and transporting freight, comprising a series of carriers and an elevator hinged together endwise to assume different elevations and angles, said carriers and elevator consisting of channels the bottoms of which consist of traveling aprons running over a driving-roller at each end and intermediate friction-rollers, said driving-rollers connected for transmitting motion from one to another, and said elevator-apron provided with brackets or tables to receive the packages, substantially as set forth.

2. An apparatus for transporting freight, comprising sides S and framing S′, forming a channel, driving-rollers R, journaled at the ends, and some of them provided with pulleys P, friction-rollers r, journaled at intervals between the driving-rollers, suspended rollers r'' at the joint, endless apron A, running over the driving-rollers and supported upon the friction-rollers, the hinges h at the ends of said sides, the rollers R′ r', and chains P′ upon the said pulleys P, for receiving and transmitting motion, substantially as set forth.

3. An apparatus for elevating freight, comprising sides S and frames S″, forming a channel, driving-rollers R, journaled at the ends, and some of them having pulleys P, friction-rollers r, journaled at intervals between the driving-rollers, endless apron A′, running over the driving-rollers and supported upon the friction-rollers, and tables B b, secured to said apron, substantially as set forth.

4. An apparatus for elevating and transporting freight, comprising hinged carriers C, consisting of sides S S′, rollers R, r, and r', apron A, and pulleys P, hinged carriers C′, consisting of sides S, rollers R and r, apron A, pulleys P, and grooved roller R′, elevator E, consisting of sides S S″, rollers R and r, apron A′, tables B b, and a pulley upon one of said rollers R, and the connecting-chains P′, substantially as set forth.

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Witnesses:
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