

No. 738,705.

PATENTED SEPT. 8, 1903.

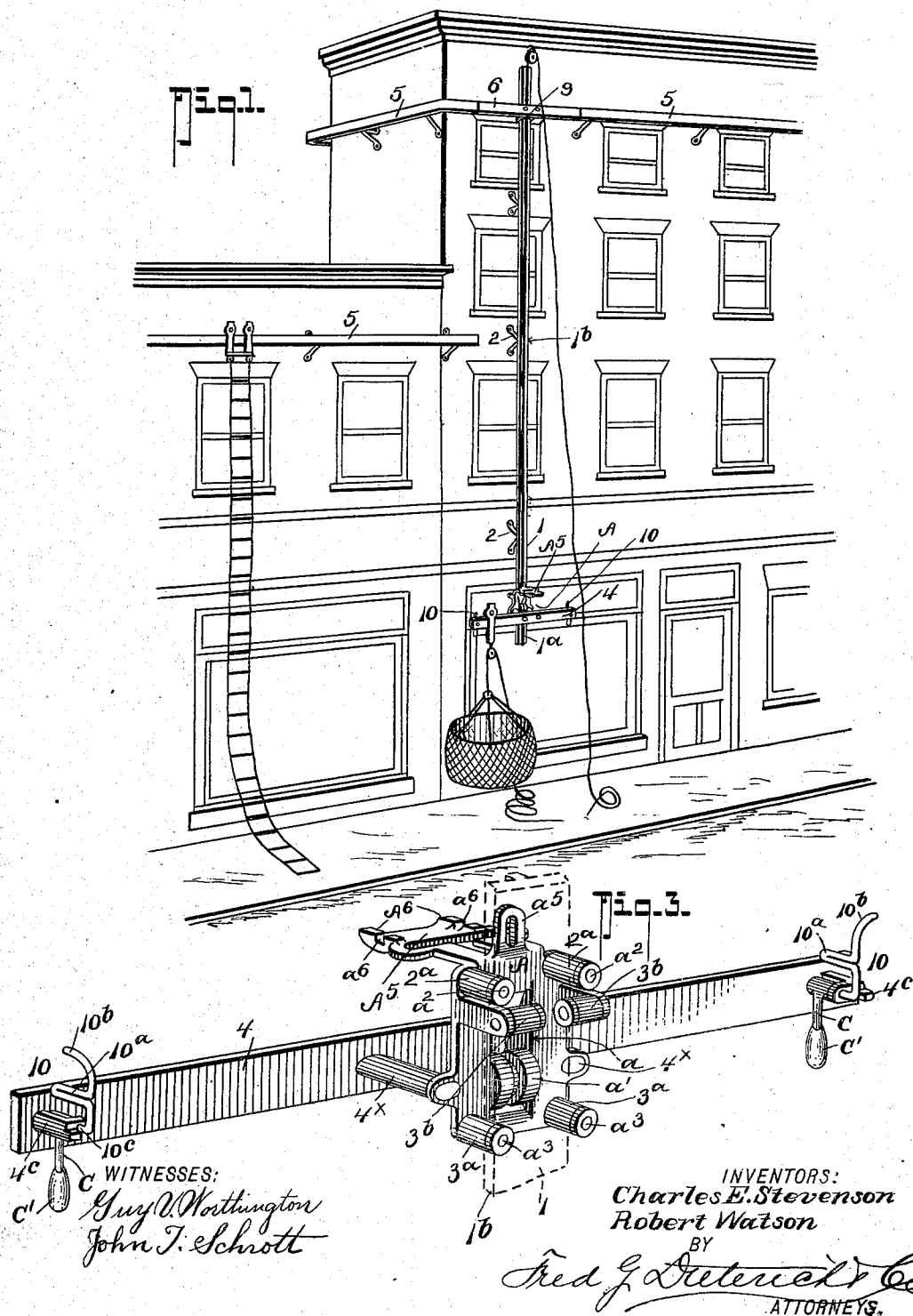
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APPLICATION FILED JAN. 29, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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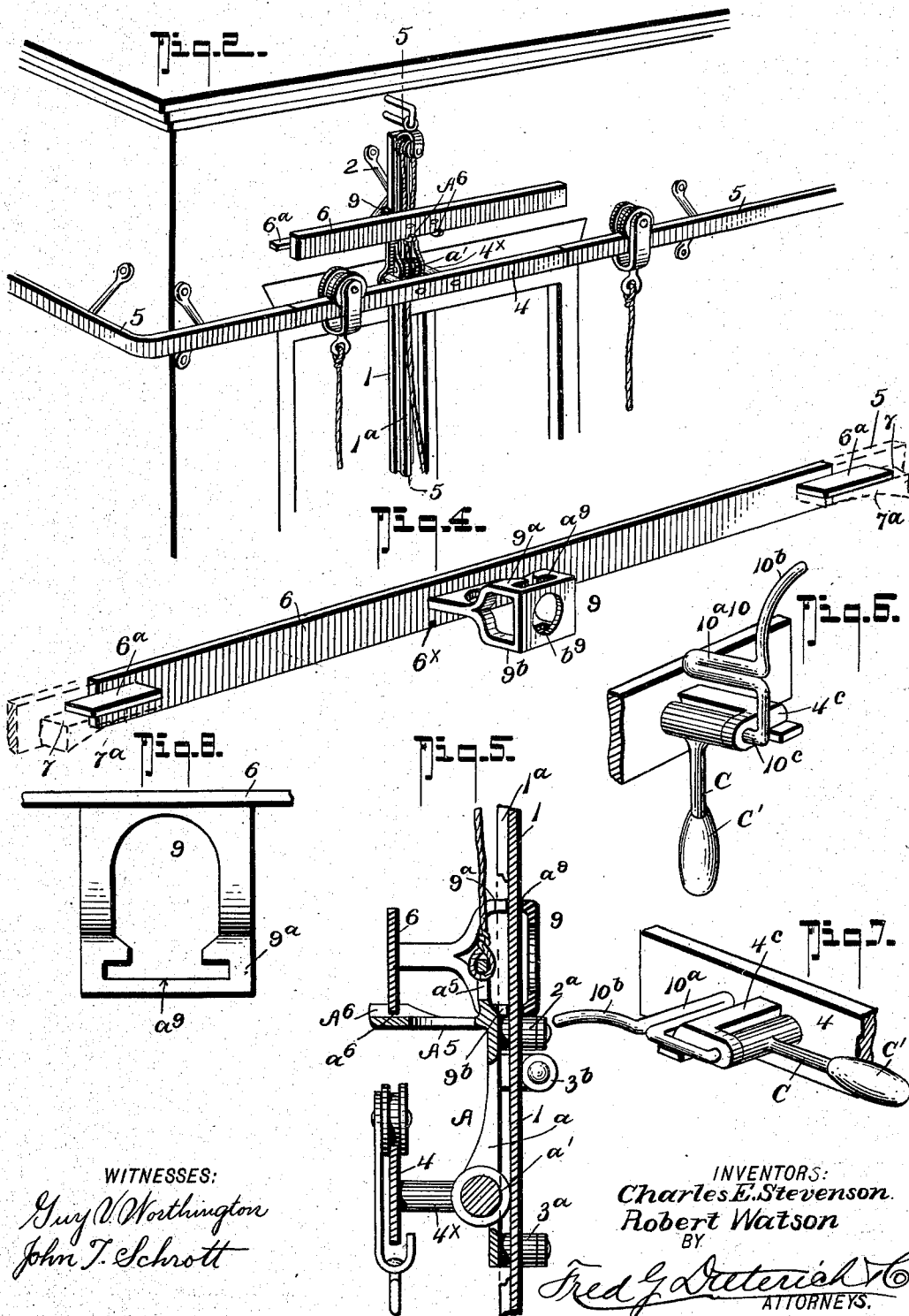
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# UNITED STATES PATENT OFFICE.

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## HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 738,705, dated September 8, 1903.

Application filed January 29, 1903. Serial No. 141,085. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES EDWARD STEVENSON, residing at Nanaimo, in the Province of British Columbia and Dominion of Canada, and ROBERT WATSON, residing at Seattle, county of King, and State of Washington, have invented certain new and useful Improvements in Hoisting Apparatus, of which the following is a specification.

10 This invention relates to that type of improvements in hoisting apparatus in which a horizontally-disposed overhead trolley-rail is fixedly supported and which consists of separated portions and in which apparatus is included a supplemental trolley-rail section arranged to be elevated into alinement with the overhead fixedly-held trolley-rail and which is utilized as a lift for hoisting fire-escape appliances and the like, and our said present invention more specifically refers to improvements in that type of hoisting and fire-escape apparatus disclosed in our Patents No. 656,067, dated August 14, 1900, and No. 619,105, dated February 7, 1899.

25 In the construction of the apparatus disclosed in the patents above referred to the overhead trolley-rails comprise fixedly-held sections permanently attached to the building and which, at suitable points, especially adjacent or in line with the "climber" or vertical guides on which the lift or elevating devices travel, are separated and so remain during a normal condition—that is, at times when there is no exigency for the lift devices.

35 From practical experience we have found that when our protective fire-escape system or hoisting apparatus is utilized on warehouses or other structures where conditions make it desirable to elevate scaffolding, decorators' or painters' ladders, or general hoisting of goods it is desirable that the trolley-rail section on the upper part of the building or other structure should be of a continuous character—that is, not separated—whereby  
45 an elevating trolley or carriage can be conveniently moved over the entire length of the trolley-rails from one side of the building or

structure to the other, as the complete length of the said rail may permit.

Our present invention therefore primarily has for its object to provide a means whereby to maintain the overhead trolley-rails as continuous members under normal conditions and yet permit of the coöperation therewith of the form of lift or fire-escape elevating devices shown in our patents before referred to; and to such end our invention comprehends generally a fixedly-held guide or trolley rail having a portion detachably joined with the remainder thereof and adapted, when the supplemental rail-section carried on a hoisting-frame is elevated into alinement with the fixedly-held trolley-rail, to be moved out of its coöperative position with the fixed trolley-rail sections, whereby to permit the supplemental rail to perform the function thereof set out in our former patents and to return to a position in alinement with the said fixedly-held trolley-rail and complete the continuity thereof when the lift or elevating devices and the supplemental rail-section carried thereby are again lowered.

Our present invention in its more complete make-up includes a new form of stop projection on the supplementary rail-section for holding the trolley mounted thereon from running off the ends thereof, and it also embodies certain novel features of construction and peculiar combination of parts, all of which will hereinafter be fully explained, and specifically pointed out in the appended claims, reference being had to the drawings, in which—

Figure 1 is a perspective view of our hoisting and fire-escape apparatus, the hoisting devices being at their lowermost position and the overhead trolley-rail a continuous member. Fig. 2 is a similar view, on a slightly-enlarged scale, of a portion of the upper part of the building, the trolley-rail, and the hoisting devices, the latter being at their elevated position and the detachable trolley-rail member moved out of alinement and supported in a plane above the trolley-rail. Fig. 3 is a de-

tail perspective view on the traveler or lifting-head and the supplementary rail-section which forms a coöperative part thereof. Fig. 4 is a similar view of the detachable trolley-rail member and the head portion connected therewith. Fig. 5 is a vertical section taken practically on the line 5 5 of Fig. 2, and Figs. 6 and 7 are detail views of the stop member hereinafter especially referred to. Fig. 8 is a plan view of the rail-casting hereinafter referred to.

In our present construction of hoisting and fire-escape apparatus the vertical guide-bar 1 is rigidly attached to the wall of the building or other structure by offsetting brackets 2 2, as shown in Figs. 1 and 2, and the said bar is preferably smooth, but it may have apertures therein, as shown in our Patent No. 619,105. The bar 1 in our present structure is, however, T-shaped in horizontal sections, but forms the same functions of the guide-bar disclosed in our patent referred to—that of a slotway and support and a guide.

The head or carrier-frame A, as best shown in Fig. 3, consists of a strong cast body having a central aperture *a*, in which is transversely journaled a deep groove guide-roller *a'* for engaging and riding on the front vertical flange 1<sup>a</sup> of the member 1, and at a point above and below the roller *a'* the frame A has rearwardly-projecting stud-axes *a*<sup>2</sup> *a*<sup>3</sup> and *a*<sup>3</sup> *a*<sup>3</sup>, on which are mounted solid guide-rollers 2<sup>a</sup> 2<sup>a</sup> and 3<sup>a</sup> 3<sup>a</sup> for engaging the said edges 1<sup>b</sup> of the member 1, the rollers 3<sup>a</sup> 3<sup>a</sup> having flared or rimmed outer edges to more firmly connect with the edges 1<sup>b</sup> of the member 1. 3<sup>b</sup> 3<sup>b</sup> designate a pair of rollers which are disposed at right angles to and just below the upper set of guide-rollers 2<sup>a</sup> 2<sup>a</sup>, which bear against the rear face of the member 1, the several rollers just described having such relation to each other and to the guide member 1 whereby to insure a steady and accurate travel of the head A up and down the guide member 1.

4 designates what we shall hereinafter term the "supplemental" trolley-rail, which corresponds in height to the horizontal stationary rail-sections 5 5, secured to the top of the building, of which there may be a number in different horizontal planes to suit the height of the building, and they may be made to extend over one or more sides of the building and so disposed that a trolley carrying a ladder, a basket, bucket, or other article may be hoisted thereon from the carrier or lift-frame elevated supplemental rail 4. The supplemental rail 4 is fixedly secured to the carrier-frame A, as best shown in Fig. 3, from which it will be noticed the rail 4 is mounted on the stud-brackets 4<sup>x</sup> 4<sup>x</sup>, projected forwardly from and forming a part of the frame A.

In our present invention a stop is mounted on each end of the supplemental trolley-rail for keeping a trolley mounted on said rail from running off the ends thereof acciden-

tally. The stops (designated generally by 10) each consist of a member 10<sup>a</sup>, that lies in the plane of travel of the lower edge of the rollers of a trolley that may be mounted on the rail 4, and the said member at one end terminates in an upwardly-extending curved finger 10<sup>b</sup>, the purpose of which will presently appear, and at the other end it is in the nature of a short shaft 10<sup>c</sup>, held to work in the bearings 4<sup>c</sup> on the rear face of the rail 4, and the shaft portion 10<sup>c</sup> is an integral part of a pendent arm C, heavily weighted, as at C', to normally hold the stop 10 in the position shown in Fig. 6 and for preventing accidental running off of the trolley T, Figs. 1 and 3. The frame A has a suitable eyepiece *a*<sup>5</sup> to receive the lift end of the elevating-cable.

6 designates what we term the "detachable" trolley-rail section, which under normal or ordinary conditions lies in the plane of and forms a continuation of the fixedly-held trolley-rail sections at the upper end of the building. At each end the rail 6 has a horizontally-extended member 6<sup>a</sup> 6<sup>a</sup>, secured to or integrally formed on the rear face of the rail, which form supporting members to engage the rest-brackets 7 7, one on each of the adjacent ends of the separate trolley-rail sections that the rail 6 brings into connection, (see Fig. 2,) and the said rest-brackets 7 7 have downwardly-curved portions 7<sup>a</sup> 7<sup>a</sup>, with which the curved fingers 10<sup>b</sup> of the stops engage in the manner and for the purpose presently explained. The detachable trolley-rail section 6 is also joined with a carrier-frame slidably mounted on the vertical guide 1, and the said frame consists of a casting 9, that projects rearwardly from the rail 6 in a horizontal plane. This casting, as is clearly shown in Fig. 4, is bifurcated and bent to form top 9<sup>a</sup> and a bottom 9<sup>b</sup> of a housing adapted to freely slide on the vertical guide 1, and to properly hold the said housing on the said guide 1 its top and bottom members have T-shaped slotways *a*<sup>9</sup> *b*<sup>9</sup>, shaped to fit the T-shaped guide 1, and to lighten the frame 9 it is made skeleton shape, as shown.

By referring now more particularly to Fig. 5, it will be noticed that rails 4 and 6 are disposed in the same vertical plane, and the frame A has an integral outwardly-extended horizontally-disposed lift-bracket A<sup>5</sup>, which is widened in the direction of the length of the rails 4 and 6 and has upturned portions *a*<sup>9</sup> *a*<sup>9</sup>, having notched seats *a*<sup>8</sup> to connect with the notches or depressions 6<sup>x</sup> in the bottom of the rail 6 to insure a perfect engagement of the two parts *a*<sup>9</sup> and *a*<sup>8</sup> and keep the member 6 and its carrier-frame 9 from undue wobbling during the operation of lifting the rail-section 6.

In the practical application of our invention the frame A with the supplemental trolley-rail 4 and the trolley devices to be elevated thereby may be kept mounted on the lower end of the guide 1 for instant use; but

this is not absolutely necessary, as the said parts are so arranged that they can be quickly slipped onto the lower end of the guide or climber-rail 1.

5 By reason of the peculiar manner in which the frame A is constructed and the cooperative arrangement of the detachable rail 4, the fixed trolley-rail sections, and the frame A it is manifest that when the frame A is elevated with the rail 4 by the pull-rope or cable in reaching the limit of its uppermost position the frame A, through the media of its bracket A<sup>5</sup>, engages the frame 9 and the rail 6 and lifts said rail 6 to a plane above the 15 fixedly-held trolley-rails as the supplemental rail-section 4 is brought into an alining position with the said fixedly-held trolley-rails. Thus the frame A acts both as a carrier to bring the lift or supplemental rail 4 into an operative connection with the fixed rails and as a means for removing the detachable rail 6 and for sustaining said rail 6 in such position that when the frame A recedes to lower the rail 4 the rail 6 with the frame 9 will 25 gravitate back into alinement with the fixed rails and be steadied and properly guided by reason of being supported on the frame A under control of the elevating-cable. In raising the rail 4 into alinement with the fixedly-held rails the fingers 10<sup>b</sup> of the weighted stops 10 engage the rest members on the ends of the fixed rails and said stops are then tilted to such position as to give clearance for trolley T from the rail 4 onto the fixed rails.

35 It will be apparent that in our present construction of apparatus the fixed trolley-rails at the upper end of the building can be utilized for ordinary elevating purposes without danger of the shifting blocks or trolleys running off a separated portion of the rails, as is the case in our former structure.

While we have described and illustrated our invention as especially adapted for fire-escape uses, it is manifest the same can be readily employed for supporting scaffolding, 45 for painting and repairing buildings, church steeples, smoke-stacks, and for hoisting apparatus.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. An apparatus of the character described; comprising in combination with a horizontal trolley-rail, said rail including a detachable 55 section, an upright guide-bar and climbing devices vertically slidable thereon, a supplemental trolley-rail section supported on the climbing device, said climbing device including means for lifting the detachable trolley-section and supporting it above the horizontal trolley-rail when the supplemental trolley-rail, carried by the climbing device, is brought into alinement with the fixedly-held trolley-rail sections, and means for elevating the

climbing device, substantially as shown and described. 65

2. The combination with the fixedly-held and separated horizontally-disposed trolley-rails, and a vertical guide-bar disposed at a point between the separated ends of the horizontal trolley-rails; of a carrier vertically 70 movable on the guide-bar, a rail-section mounted thereon adapted to fit between the separated ends of the fixed horizontal rails whereby to produce a continuous horizontal rail, a climbing device mounted on the vertical guide-bar, a supplemental trolley-rail section carried by the said climbing device, said climbing device including a lift member adapted to engage the carrier upon which the 80 detachable rail-section is mounted, and a means for controlling the vertical movement of the controlling device on the guide-bar, as set forth.

3. In an apparatus as described; the combination with a trolley-rail composed of two fixedly-held separated sections, a vertically-disposed guide-bar, an upper movable rail-section for normally closing the gap between the separated rail-sections, a lower movable 90 rail-section normally disposed below the separated rail-section, a support therefor vertically movable on the guide-bar, another support for the upper rail-section, also movable on the said guide-bar, the support for the lower rail-section having means for engaging 95 and lifting the upper rail-section to a plane above the separated fixedly-held rail-sections as the lower movable rail-section is brought into position to close the gap between the two separated rail-sections, and a means for lifting the support for the lower rail-section, as set forth. 100

4. In an apparatus as described; the combination with a pair of fixedly-held separated trolley-rails; of a movable rail-section which normally closes the gap between the separated ends of the fixedly-held rail-sections, a second movable rail-section in a plane below the other movable rail-section also adapted to 110 close the gap between the separated ends of the horizontal rail-sections, and means for simultaneously lifting the upper movable rail-section out of alinement with the separated horizontal rails as the lower movable rail-section is brought into position to close the gap between the separated rails, and vice versa. 115

5. The combination with two rail-sections, one fixedly held, the other movable and arranged to be brought into or out of alinement; of a trip member on the fixedly-held rail, a detent on the movable rail comprising a weighted member pivotally hung on the movable rail, said member having a portion normally in the plane of the trolley travel on the movable rail and having a finger for engaging the trip member or the fixed rail when 120 125

the movable rail is shifted into an alining position therewith, for the purposes described.

6. In an apparatus of the character described; the combination with the T-shaped  
5 vertical bar; of the frame A slidable on the said bar, said frame having a centrally-disposed slot, an upper and a lower pair of guide-rollers mounted on the rear face of the said frame and projected in a direction at right  
10 angles thereto, a deep groove-roller mounted in the slot in the frame A, another pair of rollers on the said frame arranged to engage the rear face of the guide-bar, and a trolley-rail

section fixedly connected to the front portion of the frame A, all being arranged substantially as shown and for the purposes described. 15

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