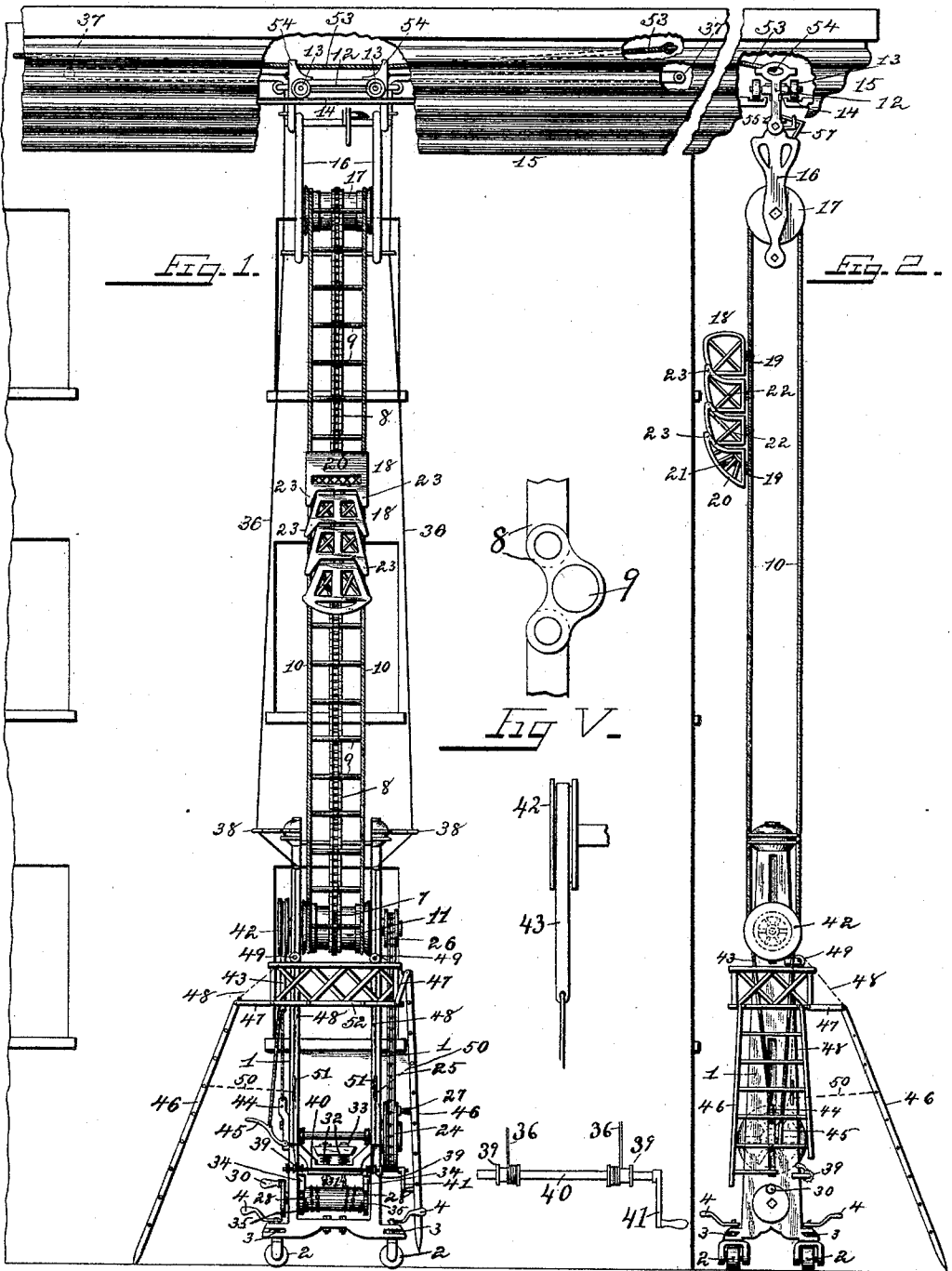


T. J. VENEMA.
FIRE ESCAPE.

No. 498,997.

Patented June 6, 1893.



WITNESSES,
Nathaniel Samaras
M. C. Hillyard.

INVENTOR.
Tjark Jans Venema
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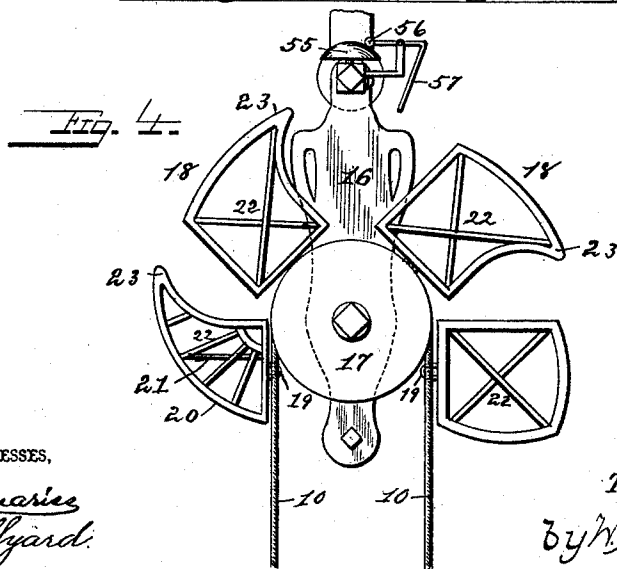
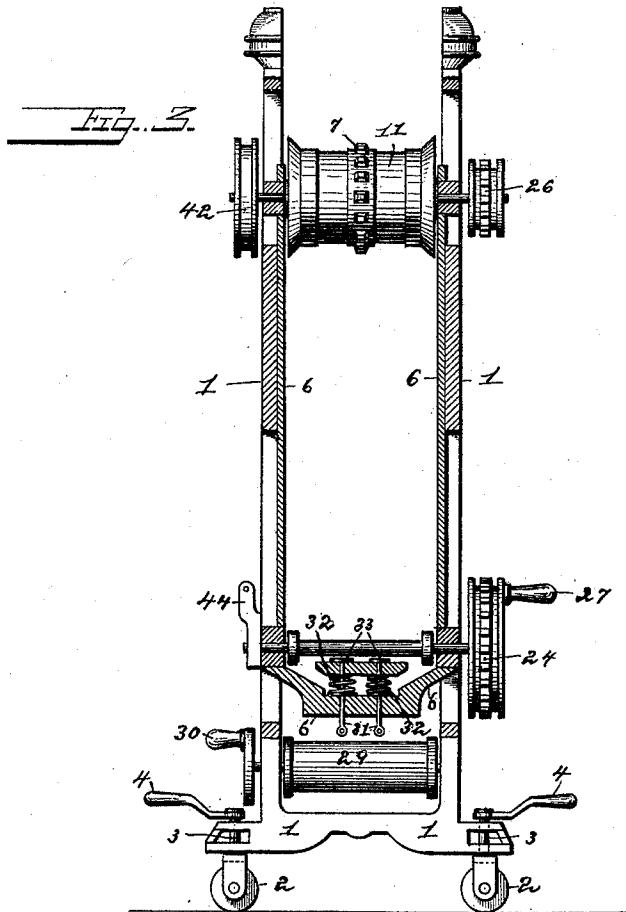
(No Model.)

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UNITED STATES PATENT OFFICE.

TJARK JANS VENEMA, OF GRAND RAPIDS, MICHIGAN.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 498,997, dated June 6, 1893.

Application filed March 15, 1893. Serial No. 466,117. (No model.)

To all whom it may concern:

Be it known that I, TJARK JANS VENEMA, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of fire escapes in which rope ladders are used to reach high windows in the side of a house, and its object is to provide for a single building or for a row of buildings a ladder which may be readily moved from one column of windows to another; this ladder to be mounted to revolve like a belt around pulleys or drums and to carry one or more cars whereby persons or merchandise may be safely landed from the upper windows of a burning building.

To this end my invention consists in the construction and combination of parts forming a revolving fire escape, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure I is a front view of a fire escape, according to my invention and Fig. II, is a side view of the same. Figs. III and IV, are enlarged views of details thereof. Fig. V, shows details enlarged.

1 indicates the body or main frame of my fire escape, mounted to be rolled along upon caster wheels 2. The vertical stem 3 of each caster is provided with a lever 4 whereby each caster may be turned to guide the frame in the desired direction.

6 is a sash fitted to slide vertically in the frame 1, and 7 is a sprocket wheel journaled to revolve in the sash to carry a chain 8, upon which is mounted a series of rungs 9 forming parts of the revolving ladder, and 10, 10 are ropes mounted as belts upon the drum 11 which carries the sprocket wheel 7. The rungs 9 are secured at their ends to the ropes 10 so that the chain, the ropes, and the rungs comprise a rolling ladder to travel around the drum 11 and its sprocket wheel 7.

12 is a trolley whose wheels 13 are fitted to roll upon tracks 14, suspended beneath or within the cornice 15 of the building, or of a row of buildings.

16 is a hanger suspended from the trolley 12 and 17 is a drum journaled in the hanger to serve as a pulley over which the ladder comprising the chain 8 and ropes 9, travels.

18 represents a car made in three or more sections each section being independently secured to the chain and ropes of the ladder by means of a pair of hasps 19 passing around one of the rungs 9, so that when the ladder passes over the drums the sections of the car may separate from each other and swing apart to accommodate the curve of the ladder. The lower section 20 is provided with a floor 21 on which the rider may stand, and each section has outwardly projecting sides 22 to prevent timid persons from falling off at the sides, and each of these sides is shaped with a projecting ear 23 to overlap a portion of a side above in order that the edge of the car may be complete throughout its height without danger of catching the clothing of the rider. There may be any number of these cars upon one ladder, and whenever it is desirable for the ladder to operate in a reciprocating manner instead of revolving, the car may be made in one continuous piece without the sectional divisions described.

24 is a sprocket wheel journaled in the sash 6 and connected by a chain 25 with another sprocket wheel 26 that is rigidly mounted on the shaft of the drum 11, and 27 is a crank whereby the sprocket wheel 24 may be operated by a person standing upon the ground.

28 represents one or more chains connected with the sash 6 and wound upon a drum 29 which is provided with a crank 30 for that purpose. This chain or chains 28 is connected with the sash 6 by means of bolts 31 passing through springs 32 and connected therewith by means of a plate 33 resting thereon.

34 represents pawls adapted to engage ratchet teeth 35 around the drum 29.

36 is a cord or light rope attached to a trolley 12 and extending each way around rollers 37 located at the ends of the path of the trolley, thence returning to the trolley and passing down beside the ladder and beside the frame through suitable loops 38, to a pair of spools 39, which are fixed upon the shaft that is journaled on the main frame and provided with a crank 41. The cord running from one end of the house or from one end of

the trolley path down one side of the ladder is wound one way upon the spool, and the cord from the other end of the path running down the other side of the ladder is wound the opposite way around the other spool, so that whenever the crank 41 is revolved it will pull upon one end of the cord and draw the trolley along in that direction, the other end of the cord being unrolled at the same time to permit the trolley to be so moved; and by turning the crank the other way the trolley will be drawn in the opposite direction. The rollers 2 enable the main frame to be readily rolled along by hand until it is directly beneath the trolley and the ladder may be so located in front of any column of windows of the building to which it is attached. By turning the crank 30 the chain 28 may be wound upon the roller 29 until the whole sash 6 with the drum 11 mounted therein is drawn down enough to take up the slack of the ladder by stretching the ladder between the rollers 11 and 17. Then by operating the crank 27 the drum 11 will be revolved carrying with it the ladder and any person or merchandise which may be in the car 18 or upon any of the rungs 9.

42 is a pulley fixed to the shaft of the drum 11 to be used for the purpose of applying a brake by any ordinary means such as the friction strap 43, which is secured at one end to an attachment 44 of the sash 6, and at the other end to a lever 45, which is also attached to the sash, the middle of the strap passing over the pulley 42.

46 represents ladders of the usual stiff form hung by their upper ends to the sides of the main frame by means of pivoted arms 47.

48 is a cord connected with the upper end of each ladder 46, thence passing over a pulley 49 whereby the ladder may be drawn up to hang close beside the frame, or it may be placed in a bracing position and be so held by means of cords 48 and 50, which after being drawn tight may be secured to a cleat 51 of the frame. These bracing ladders may be arranged to give stability to the main frame while handling heavy weights in service, and at the same time they serve for persons to descend upon from the base of the revolving ladder at the roller 11 to the ground, and there should be a platform 52 upon the frame at the average distance of the said roller 11 from the ground. The spring 32 is for the purpose of giving an elastic or yielding strain upon the sash and the revolving ladder by means of the chain 28, because if the strain were rigid the ladder chain 8 would be in danger of being broken by weights suddenly thrown upon it.

53 represents a strong cable, iron rod, or similar reliable support, passing through an eye 54 in the upper part of the trolley 12 and firmly secured at its ends to the corners of the building, as a last resort for holding the trolley and the ladder attached thereto if the tracks 14 were to give way at any point on

account of their supports being destroyed by fire or otherwise, and I attach this cable 53 to the building at its corners because the corners remain sound longer than any other part of the building in a serious fire. The elastic strain required upon the sash 6 to keep the ladder taut in service may be obtained by interposing different styles of springs between the chain 28 and the sash, or the sash might possibly be weighted heavily enough to accomplish the same purpose without the aid of the chain 28 and the winding roller 29. The whole device may be boxed or otherwise suitably housed against the side of the building when not in service.

55 represents a bell located upon the hanger 16 and provided with a hammer 56 having a lever 57 projecting into the path of the car 18, so that every time the car passes over the top drum the bell will be sounded giving notice to people waiting at the window that the car is approaching.

Many persons would feel sufficiently safe in stepping out upon the ladder rungs at any point and holding by their hands to other rungs while descending, but women and children and aged or infirm persons would feel much safer when standing upon the floor of the car fenced in by its sides.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

1. The combination in a fire escape, of a trolley adapted to travel along the cornice of a house; a drum journaled on the trolley; a frame mounted upon caster wheels on the ground; a drum journaled in the frame; a ladder of flexible material mounted to revolve on the said two drums and levers upon the stems of the said casters whereby they may be guided, substantially as described.

2. The combination in a fire escape, of a frame on the ground; a drum journaled upon an attachment to a building over the frame; a sash fitted to slide up and down in the frame; a winding drum journaled in the sash; an escape ladder mounted to revolve on the said two drums and means for drawing down upon the sash at will to hold the ladder taut, substantially as described.

3. The combination in a fire escape, of a frame on the ground; a drum journaled upon an attachment to a building over the frame; a sash fitted to slide up and down in the frame; a winding drum journaled in the sash; an escape ladder mounted to revolve on the said two drums; another winding drum journaled in the said frame; a chain wound upon the last named drum and an elastic connection between the chain and sash, substantially as described.

4. The combination in a fire escape, of a frame on the ground; a drum journaled upon an attachment to a building over the frame; a sash fitted to slide up and down in the frame; a drum journaled to revolve in the sash; an escape ladder mounted to revolve on

the said two drums, and means substantially as described for giving the sash a yielding strain upon the ladder and for adjusting the sash to the length of the ladder and position of the frame, substantially as described.

5 The combination in a fire escape, of a trolley mounted upon rails upon a projecting portion of a house; an escape ladder hung upon the trolley and a safety cable passing
10 freely through an eye in the body of the trolley and secured at its ends to the house, substantially as described.

6. The combination in a fire escape, of a trolley mounted to travel upon rails on a projecting portion of a house; an escape ladder
15 hung upon the trolley, and a support for the lower end of the ladder; a pair of spools journaled in the said support and provided with a crank, and a cord connected with the trolley
20 and passing around pulleys at the ends of the

trolley path, thence back to the trolley and down to the aforesaid spools, one end to be wound one way and the other end the other way around the spool substantially as described, whereby turning the spool crank will
25 move the trolley to and fro on its rails.

7. The combination in a fire escape, of a ladder extending up the side of a house; a frame supporting the lower end of the said ladder, and a series of other ladders each hung
30 to the frame by a stiff link and stay cords and adapted to stand bracing or to be swung to the sides of the frame upon the said hangings, substantially as described.

In testimony whereof I affix my signature in
35 presence of two witnesses.

TJARK JANS VENEMA.

Witnesses:

HERMAN P. HUGENHOLTZ,
LIZZIE QUARTEL.