I. KNAPKE & M. LANGE.

FIRE ESCAPE.

APPLICATION FILED NOV. 30, 1907.

925,922. Patented June 22, 1909.

3 SHEETS—SHEET 1.

FIG. 1.

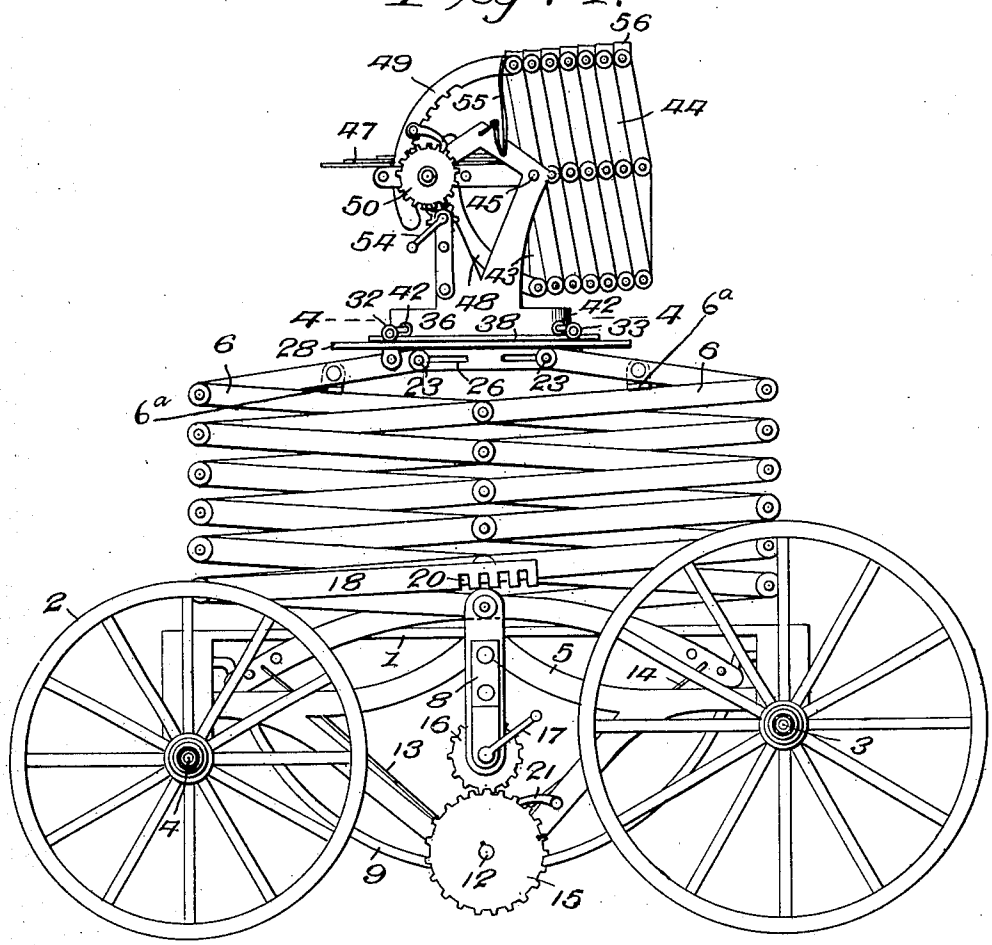
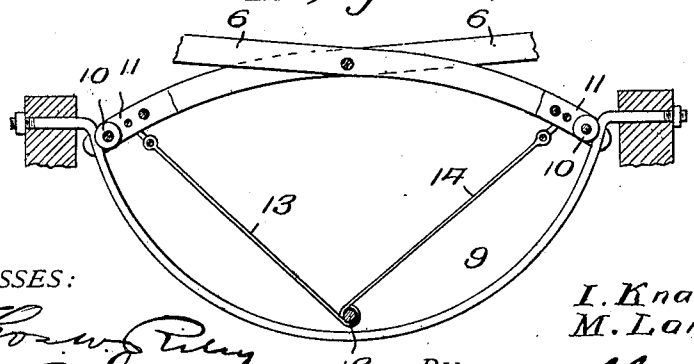


FIG. 3.



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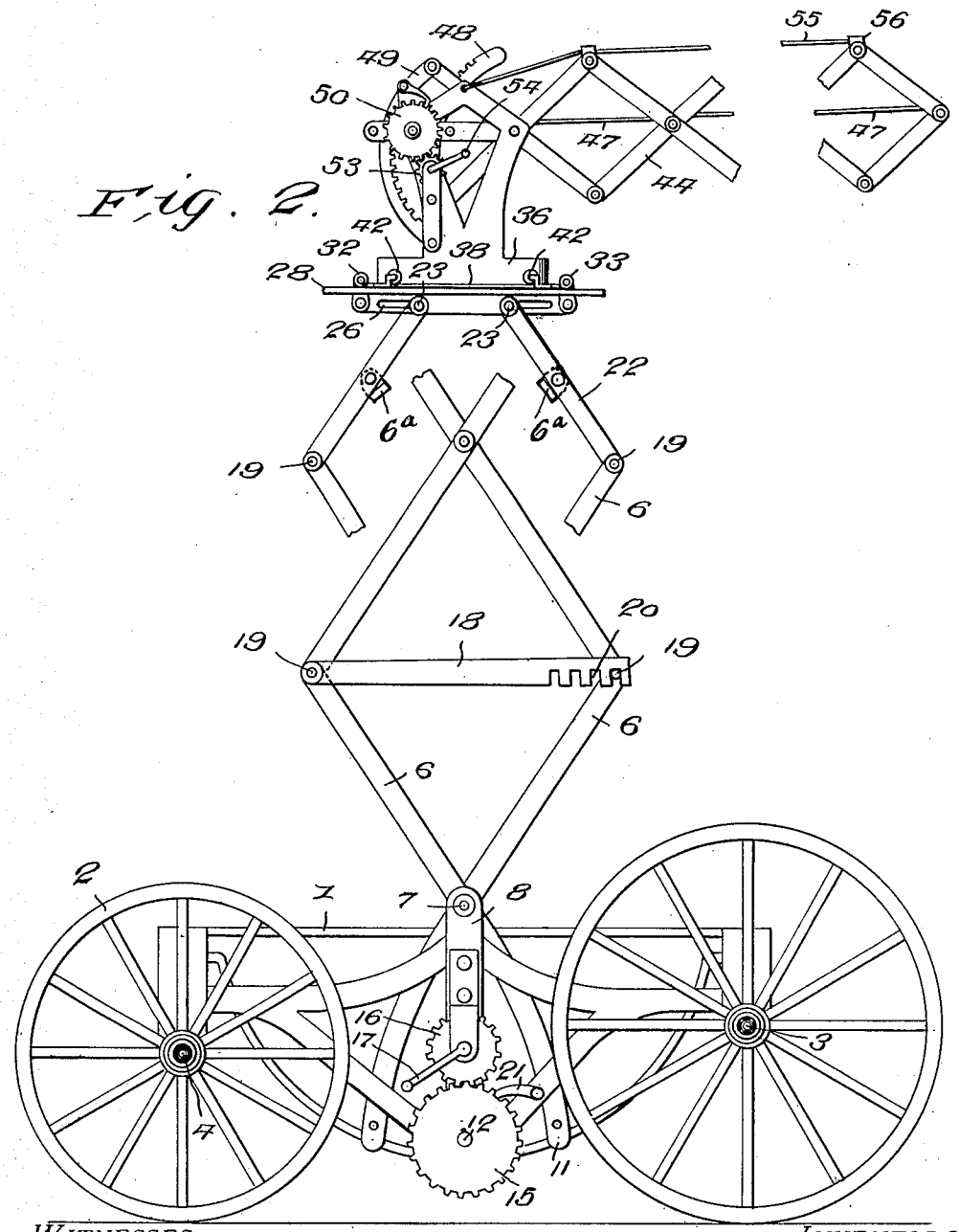
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 4.

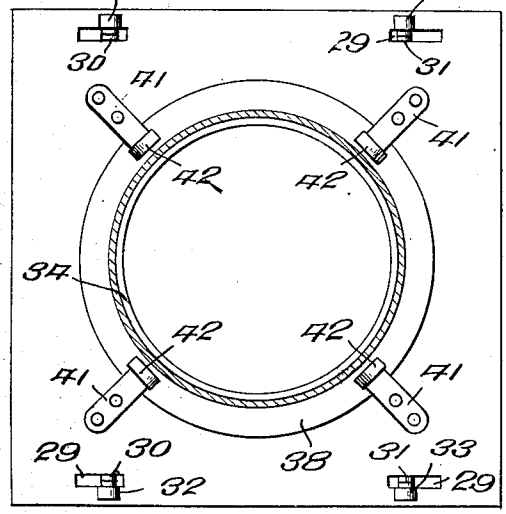


Fig. 5.

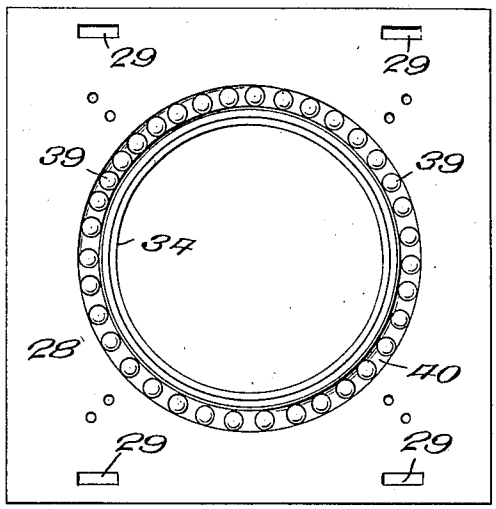


Fig. 6.

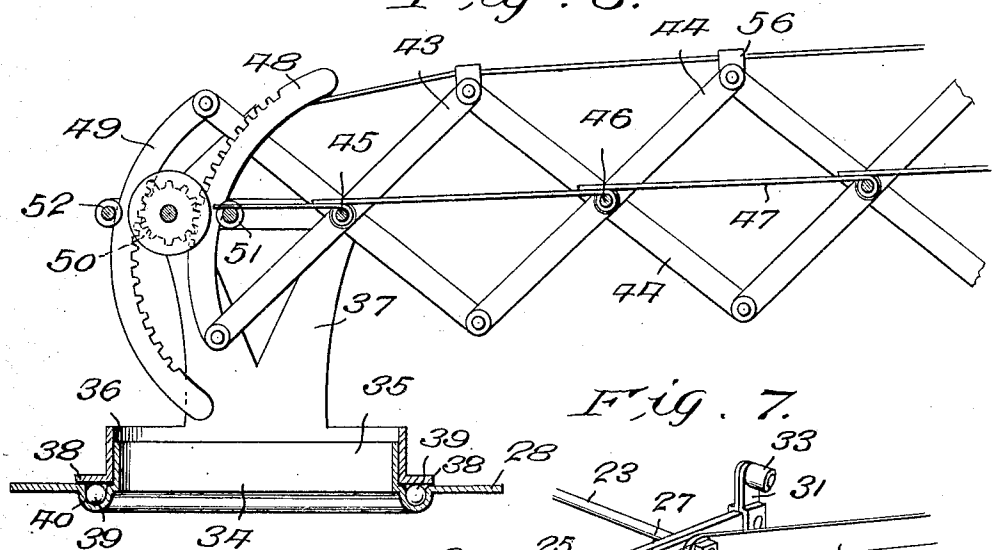
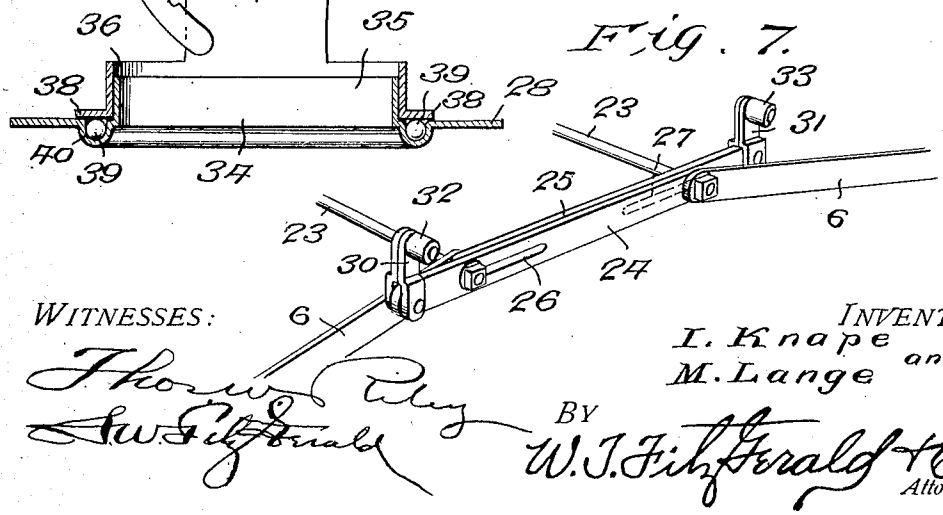


Fig. 7.



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UNITED STATES PATENT OFFICE.

IGNATZ KNAPKE AND MICHAEL LANGE, OF SELMA, OREGON.

FIRE-ESCAPE.

No. 925,922. Specification of Letters Patent. Patented June 22, 1909.

Application filed November 30, 1907. Serial No. 404,490.

To all whom it may concern:

Be it known that we, IGNATZ KNAPKE and MICHAEL LANGE, citizens of the United States, residing at Selma, in the county of Josephine and State of Oregon, have invented certain new and useful Improvements in Fire-Escapes; and we 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.

Our invention relates to new and useful improvements in fire escapes and more particularly to that class known as portable fire escapes and our object is to provide a truck for transporting the fire escape from place to place.

A further object is to provide the parts of the fire escape, whereby it may be collapsed and occupy but a minimum amount of space.

A further object is to provide means for elevating the fire escape to various heights.

A still further object is to provide a run-way at the upper end of the fire escape and rotatably mount the same in position thereon and a still further object is to provide means to extend the run-way, whereby the end thereof may be brought into close proximity to a building.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the claims.

In the accompanying drawings which are made a part of this application, Figure 1 is a side elevation of our improved fire escape, showing the same in its collapsed position. Fig. 2 is a side elevation of the fire escape in its elevated position, showing parts thereof broken away. Fig. 3 is a sectional view through the frame of the truck, showing the manner of elevating the fire escape. Fig. 4 is a sectional view as seen on line 4—4, Fig. 1. Fig. 5 is a top plan view of the platform employed for supporting the run-way. Fig. 6 is a detail, sectional view through the run-way and platform therefor, and, Fig. 7 is a detail perspective view of the upper end of the fire escape, showing the manner of adjustably securing the platform thereto.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates the frame of the truck, to which are secured the usual or any peferred form of supporting wheels 2.

Secured to the frame 1 and between the axles 3 and 4, are brackets 5, to which are pivotally secured the lower bars 6 of our improved form of fire-escape, said bars being rotatably mounted on a shaft 7, which shaft extends laterally above the frame 1 and has its ends secured in standards 8 on the brackets 5.

The fire escape proper is constructed by providing a plurality of the bars 6 and arranging them in series, said bars being crossed and pivotally secured together at their ends and at their point of crossing each other, so that said bars may be readily collapsed as shown in Fig. 1, or elevated, as shown in Fig. 2 and, in order to readily move the pivoted ends of the bars toward each other and, thereby, extend the bars to a considerable height, the ends of the lower bars 6 are curved and bifurcated to engage curved guides 9, the ends of which guides are fixed to the frame 1 and are bent in a semicircular form, so that the lower ends of the lower bars 6 will travel thereon at all times.

A sheave 10 is rotatably mounted in the bifurcated ends 11 of the bars 6, which sheaves are adapted to engage and travel on the guides 9, thereby reducing friction between the bifurcated ends and guides to a minimum.

Rotatably mounted in the lower portion of the brackets 5, is a winding shaft 12, to which is secured one end of cables 13 and 14, the opposite end of the cable 13 being secured to the lower end of one of the bars 6, while the cable 14 is secured to the lower end of the opposite bar, whereby, when the winding shaft is rotated in one direction, the cables will be wound on said shaft and the lower ends of the bars moved toward each other, which will likewise move the lower ends of the crossed bars above the pivoted bars toward each other and, thereby, extend said bars to a considerable height. The winding shaft 12 is readily operated by providing the opposite ends thereof with gears 15, with which are adapted to mesh, driving gears 16, which are in turn rotatably mounted on the depending ends of the standards 8 and in position to mesh with the gears 15, said driving gears being provided with cranks 17, by which means power may be applied thereto. After the bars have been elevated, they are held in their elevated position by means of latches 18, which are pivotally secured at one end to the rods 19, employed for pivotally securing together the meeting ends of the crossed bars

6, while the opposite ends thereof are provided with notches 20 to receive the pivoting rod 19, employed for securing the opposite bars together, said latches being preferably located at the intersection of the lower crossed bars with the next succeeding set of bars. In conjunction with the latches 18, pawls 21 are mounted on the brackets 5 and have their free ends in engagement with the teeth on the gears 15, thereby preventing the reverse rotation of the winding shaft 12 until the pawls are released from the gears. The uppermost bars 6 are provided with lugs 6[a] adapted to engage the adjacent like bars for the retention of the first-named bars in effective position as against downwardly collapsing under the weight of the superposed parts.

The upper ends of the uppermost bars 6 are provided with links 22, which are pivotally secured at one end to the rods 19, while the opposite ends thereof are secured to bolts 23, which bolts extend through over-lapping plates 24 and 25, one of the bolts passing through a slot 26 in the plate 24 and through an opening in the end of the plate 25, while the opposite bolt extends through a slot 27 in the plate 25 and through an opening in the end of the plate 24, the bolts, when the bars 6 are in their collapsed position, being at the outer ends of the slots.

Located on the plates 24, is a platform 28, said platform having ways 29 therethrough, through which extend arms 30 and 31 carried, respectively, at the free ends of the plates 24 and 25, said arms being of sufficient length to extend above the platform and have pivotally secured to their upper ends, rollers 32 and 33, respectively, which rollers are adapted to engage the upper face of the platform and hold said platform in position on the plates. The central portion of the platform 28 is provided with a circular opening 34, around the edge of which is formed an upwardly extending flange 35, which is adapted to receive a collar 36 of a supporting frame 37, said collar being of sufficient diameter to snugly fit around the flange 35 and rotate thereon. The lower edge of the collar 36 is provided with a base 38, which extends at right angles to the vertical plane of the collar and is adapted to engage bearing balls 39, located in a race 40, formed by depressing a portion of the platform at a point immediately adjacent the lower end of the flange 35 and by so mounting the supporting frame on the platform, said frame may be readily rotated when desired. The supporting frame is held in position on the platform by securing fingers 41 to the upper face of the platform 28, said fingers being spaced an equal distance apart around the collar 36 and having their ends extending over the base 38 and provided with disks 42, which disks are rotatably mounted on the fingers and have their peripheral faces in engagement with the upper face of the base 38 and, by so arranging said fingers and disks, the frame 37 will be held against tilting, and, at the same time, permitted to rotate.

Pivotally mounted on the supporting frame 37, are auxiliary bars 43, to the outer ends of which are pivotally secured a series of similar auxiliary bars 44, all of said bars being arranged in pairs and crossed, the auxiliary bars 43 being pivotally mounted to the frame 37 by means of a rod 45, while each pair of the auxiliary bars 44 are pivotally secured together at their point of crossing, by means of rods 46, said rods being of sufficient length to extend laterally from one set of bars to the opposite set of bars, said auxiliary bars being so arranged that they will extend at right angles to the vertical plane of the fire escape proper when in its elevated position. The auxiliary bars 43 and 44 are adapted to form a run-way, so that persons in a building may travel over said run-way and reach the fire escape proper, the rod 45 and rods 46 having pivotally secured thereto, one end of the slidable sections 47, said sections being of sufficient length to extend from their respective rod to a point beyond the next succeeding rod and over the pivoted end of the next succeeding section, thereby making a continuous platform from the outer to the inner end of the run-way when the run-way is in its extended position. When the fire escape is not in use, the bars 43 and 44 are adapted to collapse, similar to the bars 6, so that they will be in a bunched position adjacent the frame 37, as shown in Fig. 1 of the drawings, and when in this position, the telescoping sections 47 will pass one above the other.

The arms 43 are swung upon the rod 45 to extend or collapse the bars 44 by securing to the inner ends of the crossed bars 43, rack arms 48 and 49, which pass to opposite sides of a gear 50, said rack arms being pivoted to the auxiliary bars 43 and the teeth thereon held into engagement with the teeth on the gear 50 by means of guide rollers 51 and 52, respectively, the space between the gear 50 and guide rollers 51 and 52, being such as to receive the rack arms 48 and 49 and it will be readily seen that when the gear 50 is rotated, the auxiliary bars controlled thereby, will be extended or collapsed. The gear 50 is rotated by providing a pinion 53, which meshes with the gear 50 and is provided with a crank 54, by which means the pinion may be rotated. In order to form a guard at the upper edge of the rows of auxiliary bars, to prevent any one from falling off the run-way, a cable 55 is extended along the upper edge of the rows of bars and is secured in position thereon by means of clips 56, which extend over the cable and are fixed to the auxiliary bars, the inner end of the cable being an-

chored in any suitable manner to parts of the supporting frame 37.

In operation, when it is desired to elevate the fire escape, the winding shaft 12 is rotated and the bifurcated ends of the first set of crossed bars moved toward each other, which will result in raising the sets of crossed bars controlled by the lower set of bars until the top-most bars have been elevated to the proper height, when the latches 18 are engaged with the rod 19 and the sections held in their extended positions. A fireman then ascends the fire escape, which is accomplished by providing ladder sections (not shown) or other suitable form of scaling means and after the top of the fire escape is reached, the fireman ascends through the opening 34 and extends the auxiliary bars to form the run-way. The outer end of the run-way is then swung in juxtaposition to parts of a building, so that any persons in the building may reach the fire escape over the runway and descend the ladder sections to the ground.

It will thus be seen that we have provided a fire escape which may be readily transported from place to place and one that can be readily and quickly elevated to various heights and it will further be seen that by providing the run-way at the upper end of the fire escape, communication can be had with a building while the fire escape is at some distance therefrom and it will further be seen that said run-way may be swung in a circle to any position desired.

What we claim is:

1. In a fire escape, the combination with a plurality of crossed bars arranged in series and pivoted together and means to elevate said bars; of links pivoted to the upper set of bars, plates carried by said links and having longitudinal slots therein, bolts extending through said plates and links, a platform on said plates, having ways therein, arms carried by said plates and extending through said ways, rollers on said arms adapted to engage the upper face of the platform, a flange on said platform, a collar surrounding said flange, a base on said collar, fingers secured to said platform and extending over said base, disks on said fingers adapted to engage said base, a frame carried by said collar, a run-way carried by said frame and means to operate said run-way, whereby the same may be extended or collapsed.

2. In a fire escape, the combination with a frame, of crossed bars arranged in series and pivoted together and means to elevate said bars, links pivoted to the upper set of bars, plates carried by said links and having longitudinal slots therein, bolts extending through said plates and links, a platform on said plates having ways therein, arms carried by said plates and extending through said ways, rollers on said arms adapted to engage the upper face of said platform, a flange on said platform, a collar surrounding said flange, a base on said collars, fingers secured to said platform and extending over said base, disks on said finger adapted to engage said base, a frame carried by said collar, a gang-way carried by said frame and means to operate said gang-way, said platform having an angular depression around its central opening and immediately adjacent to said flange, containing bearing balls, said base on said collar resting upon said bearing balls.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

IGNATZ KNAPKE.
MICHAEL LANGE.

Witnesses:
C. W. CRAIG,
MIRIAM L. CHURCHILL.