

No. 722,552.

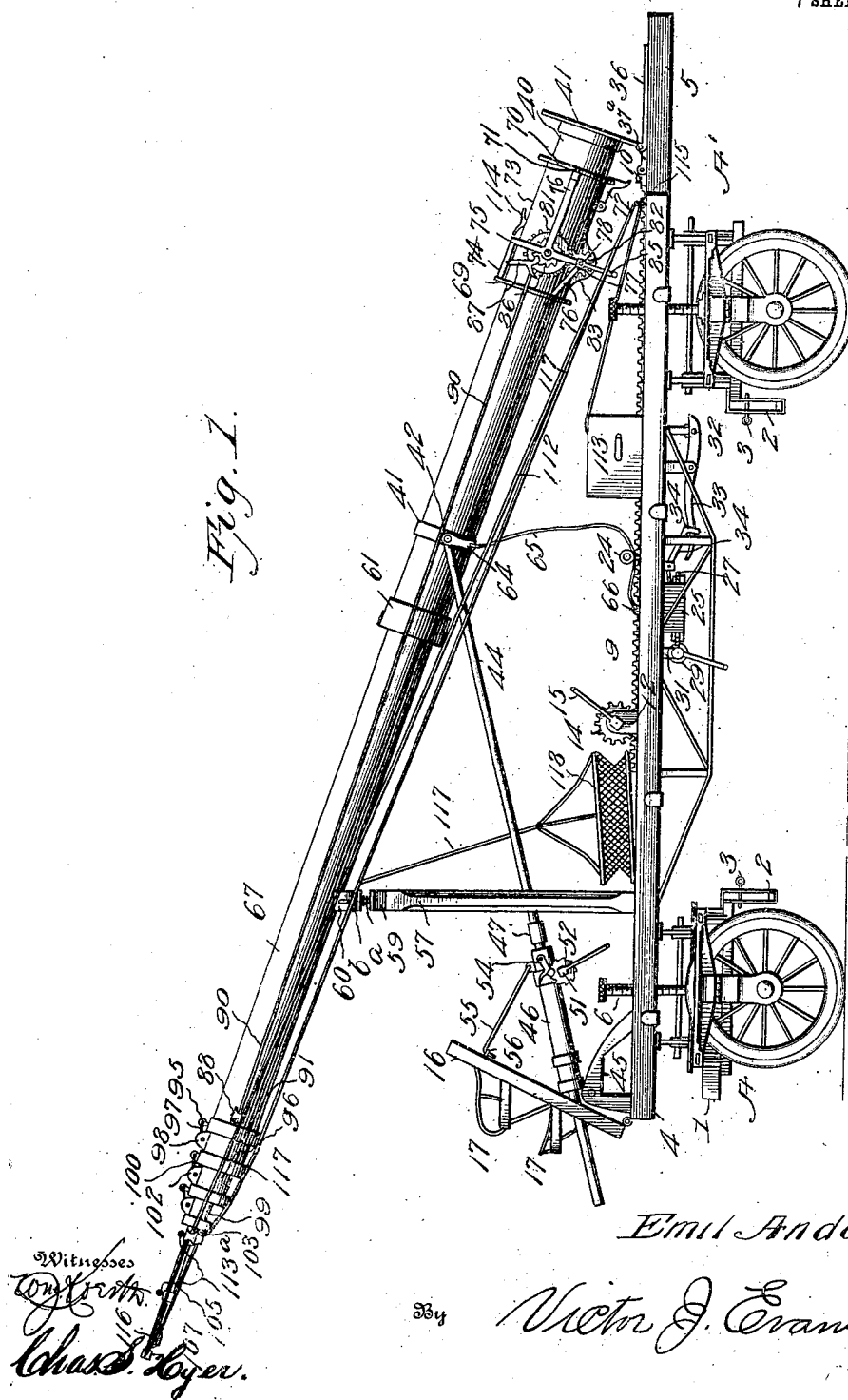
PATENTED MAR. 10, 1903.

E. ANDERSON.
FIRE ESCAPE.

APPLICATION FILED NOV. 14, 1902.

NO MODEL.

7 SHEETS—SHEET 1.



No. 722,552.

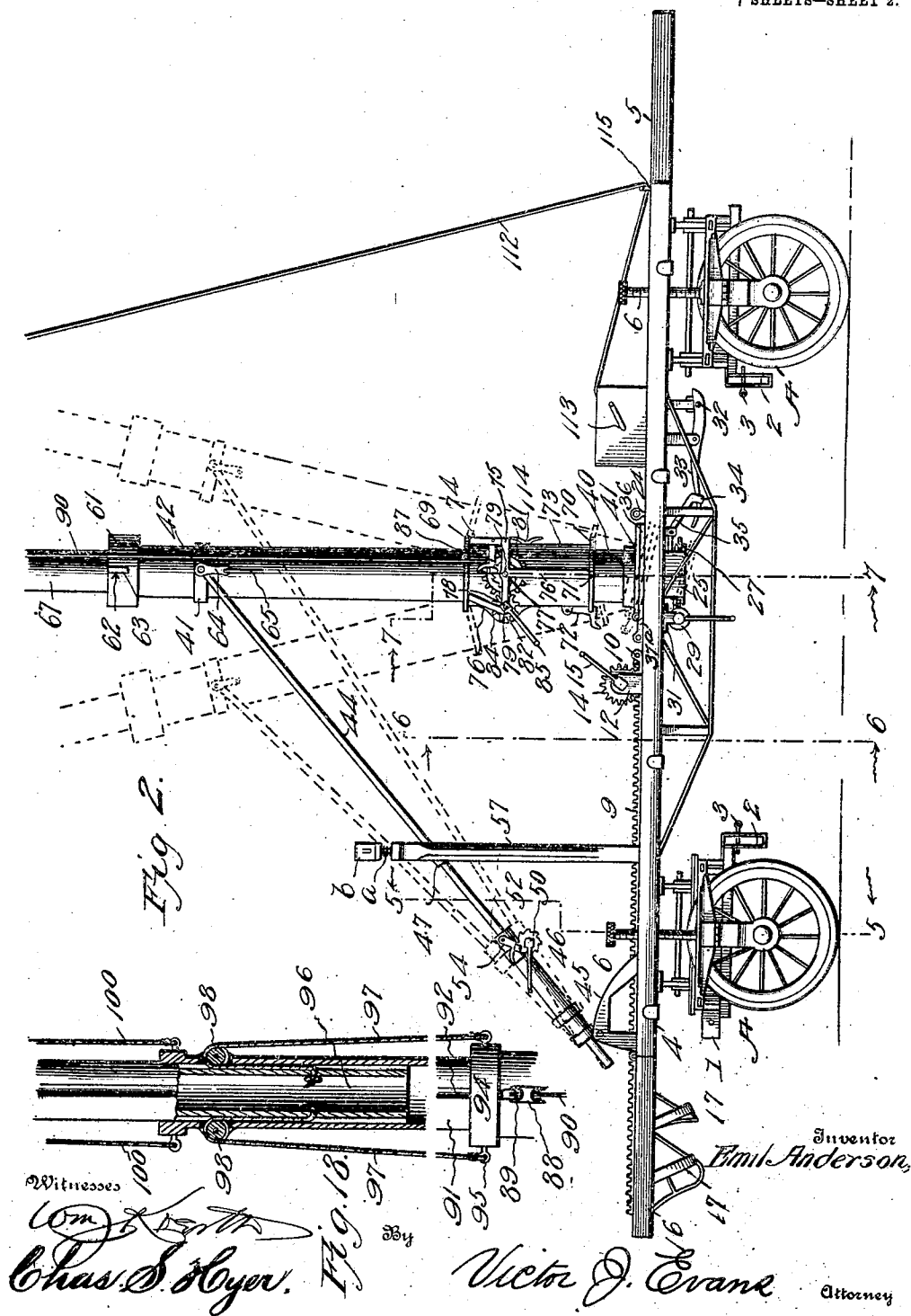
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7 SHEETS—SHEET 2.



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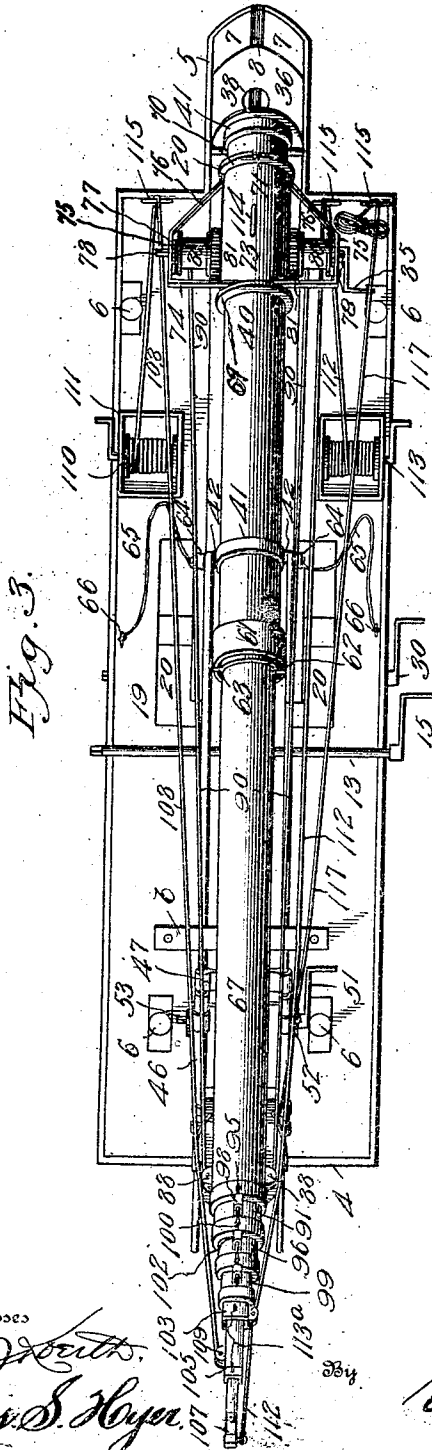
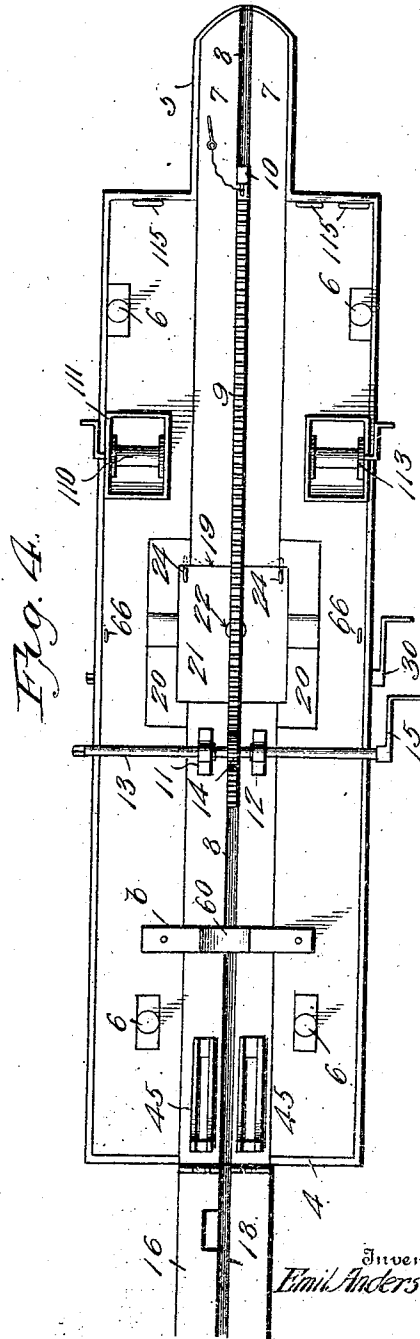
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NO MODEL.

7 SHEETS--SHEET 3.



Witnesses
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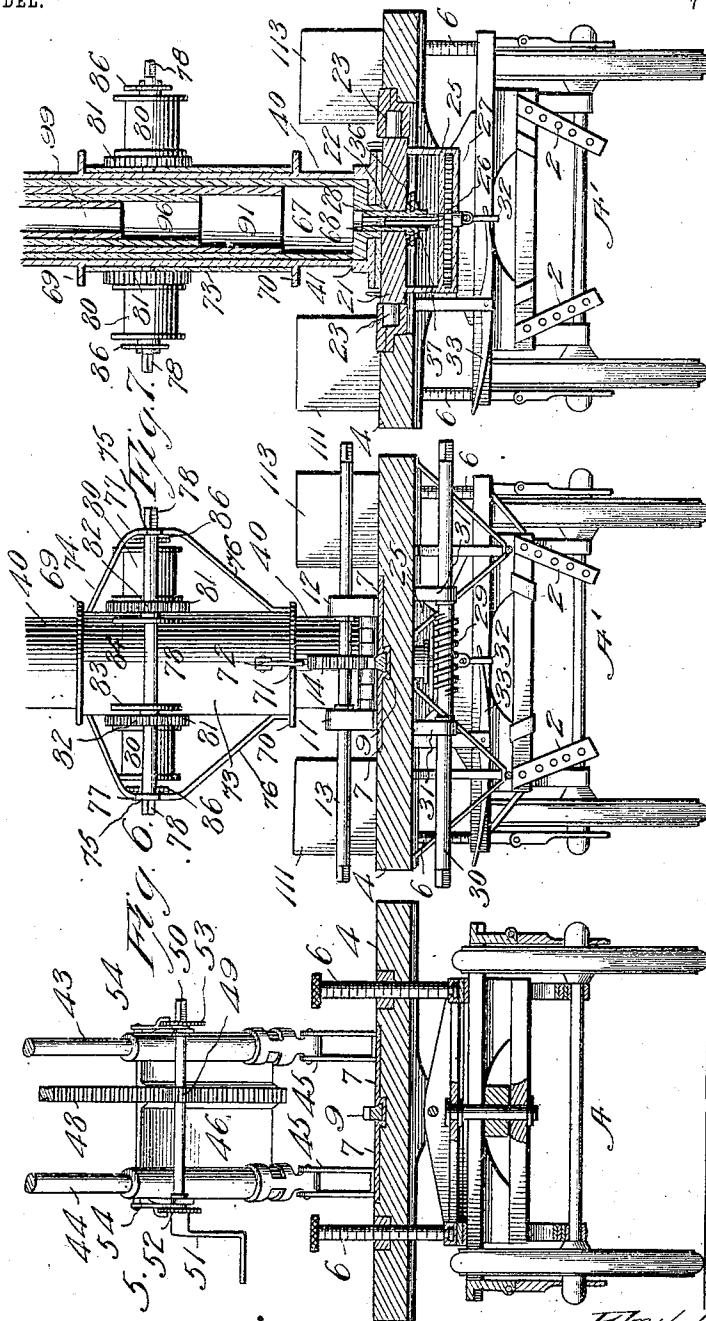
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NO MODEL.

7 SHEETS—SHEET 4.



Witnesses

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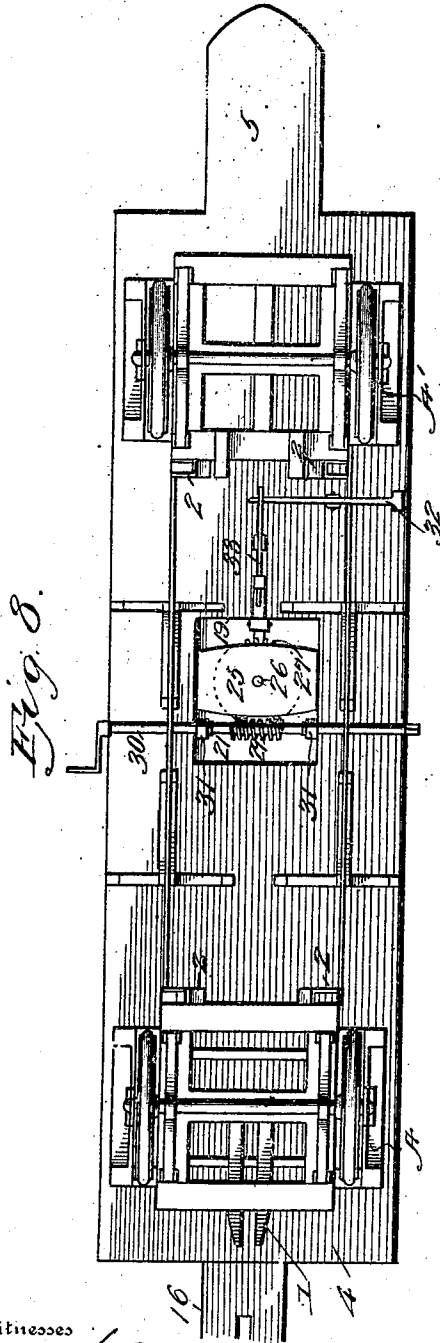
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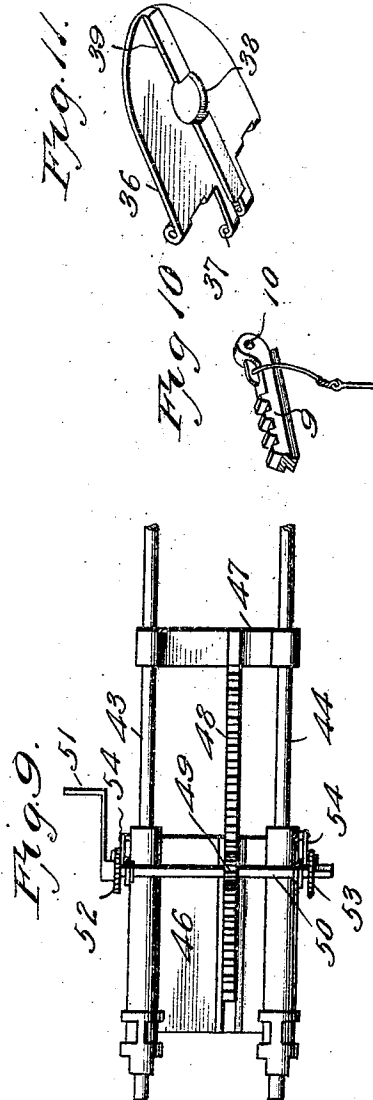
NO MODEL.

7 SHEETS—SHEET 5.



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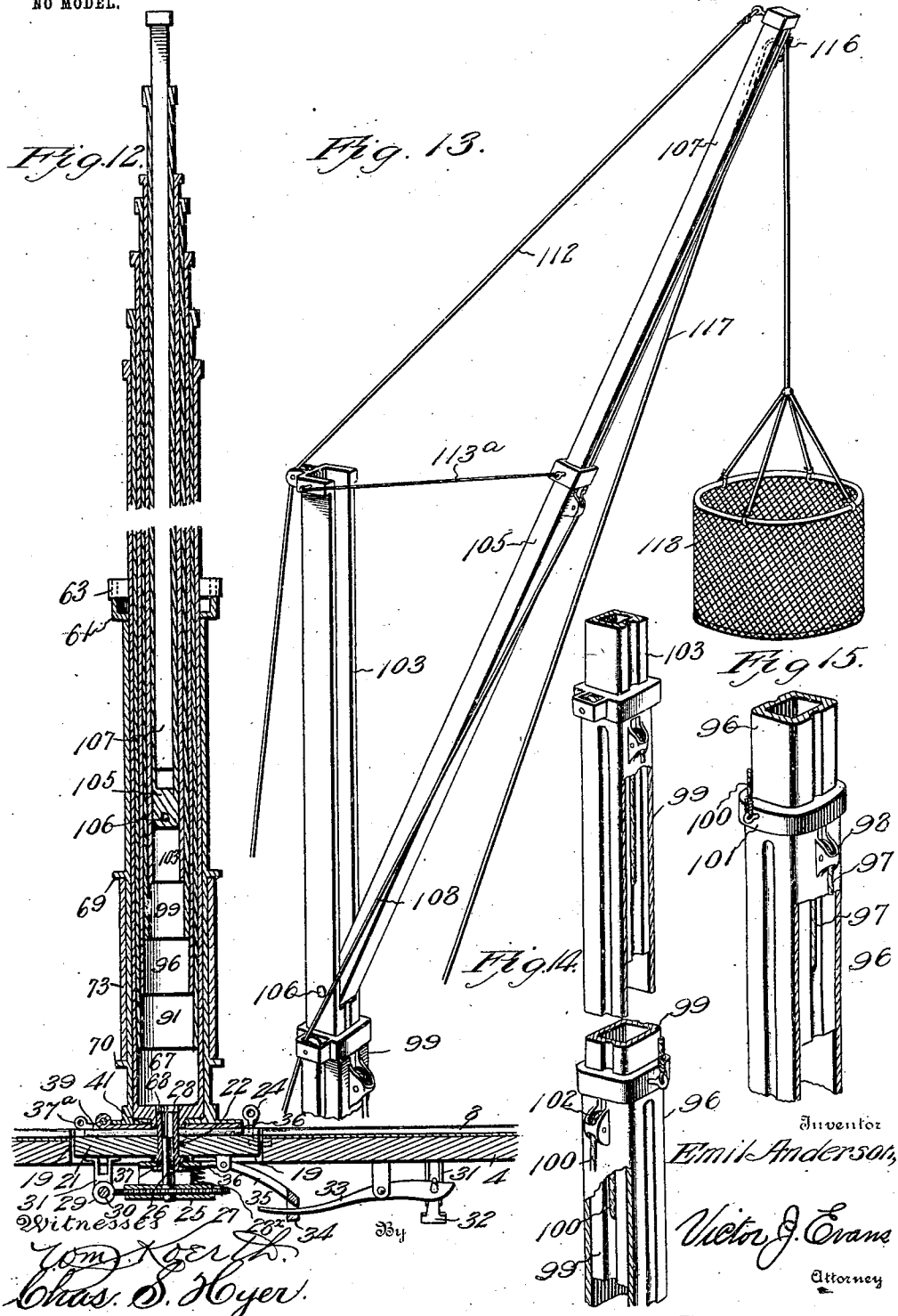
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7 SHEETS—SHEET 6.



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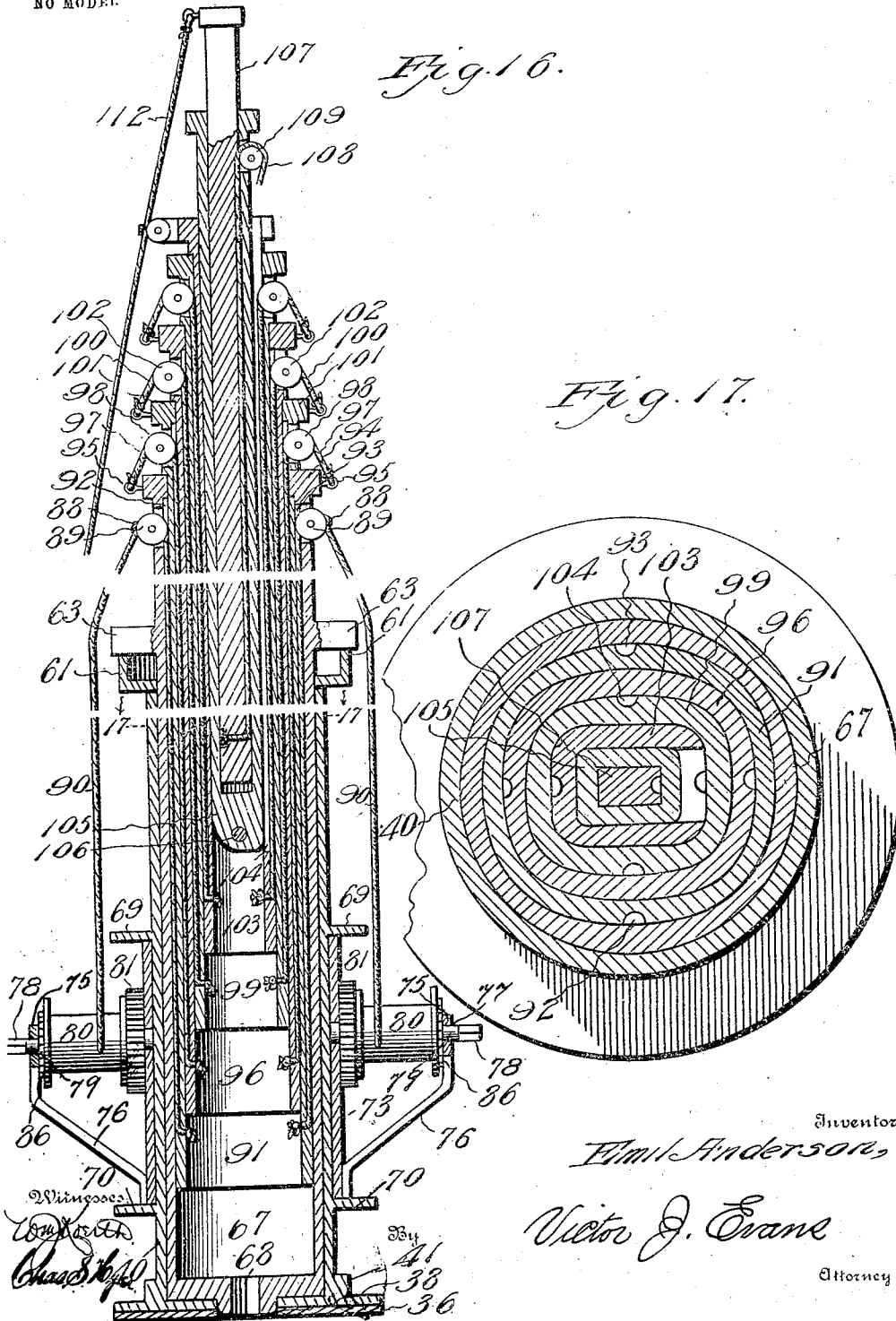
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FIRE ESCAPE.

APPLICATION FILED NOV. 14, 1902.

NO MODEL.

7 SHEETS—SHEET 7.



UNITED STATES PATENT OFFICE.

EMIL ANDERSON, OF PHILADELPHIA, PENNSYLVANIA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 722,552, dated March 10, 1903.

Application filed November 14, 1902. Serial No. 131,341. (No model.)

To all whom it may concern:

Be it known that I, EMIL ANDERSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to improvements in fire-escapes of a class which involve portability and extensible spars; and the objects are, first, to provide a wheeled truck of particular construction whereon the mechanism is mounted; second, to provide an extensible spar of particular and novel construction and adapted to be elevated and extended in vertical direction; third, to provide an extendible spar mounted on a hinged base, means to slide the base and elevate the spar, and means to tilt the spar laterally. Other objects will be discerned and stated in the description.

With these objects in view the invention consists in the novel construction of parts and their operative combination and aggroupment, as will be hereinafter fully specified and the novelty thereof particularly pointed out and distinctly claimed.

I have fully and clearly illustrated the apparatus in the accompanying drawings, to be taken as a part of this specification, and wherein—

Figure 1 is a side view of the apparatus, showing the device or apparatus in the position it is carried on the truck. Fig. 2 is a side view showing the spar in vertical position and its lateral positions indicated by dotted lines. Fig. 3 is a top plan view of the apparatus as assembled on the truck. Fig. 4 is a top plan view of the floor of the truck, showing the mechanism for moving the base of the spar, the longitudinally-movable rack, the winding-drums for taking up the cords or cables, and the tiltable table. Fig. 5 is a transverse section taken on the line 5 5 of Fig. 2, showing the means for adjusting the floor of the truck and means for lifting and holding the spar. Fig. 6 is a transverse section taken on the line 6 6 of Fig. 2 looking in the direction of the arrows. Fig. 7 is a transverse section through the floor of the truck, taken on the line 7 7 of Fig. 1, showing the telescopic spar in conventional arrangement and showing in detail the means for turning

the revoluble section of the spar on its axis and showing the tilting plate as mounted on its trunnions. Fig. 8 is a bottom plan view of the truck, showing the means for rotating the spar and the means for depressing the spring-actuated sleeve. Fig. 9 is a bottom plan view of the means for actuating the struts for assisting in elevating the spar. Fig. 10 is a fragmentary detail view of the rack which draws the base of the spar. Fig. 11 is a detail perspective view of the hinged base-plate of the spar. Fig. 12 is a vertical central section of the extensible spar shown in conventional telescopic arrangement and showing in sectional view the mechanism for engaging with the base of the spar and for rotating it. Fig. 13 is a detail view in elevation of the upper extensible section of the spar and the hinged or pivotally-supported member turned partially outward, with the basket suspended from the end. Fig. 14 is a detail view of a portion of one of the interior sections of the spar, which is made substantially square in cross-section. Fig. 15 is a detail view similar to Fig. 14. Fig. 16 is a longitudinal central section through the spar, showing the sections nested and the arrangement of the cords which operate to extend them. Fig. 17 is a transverse section through the spar, taken on the line 17 17 of Fig. 16. Fig. 18 is a detail view of a portion of the spar, partly in central longitudinal section, showing certain of the rope connections.

In the drawings similar designations refer to the same parts as they appear in the several illustrations, and reference being thereto had, A designates the front truck, mounted on wheels and provided with fifth-wheel appliances and tongue-socket 1, and A' designates the rear truck, of any suitable construction and preferably held rigid with the platform or body mounted on and carried by the trucks. To the inner end of each truck-frame is secured oppositely-arranged keepers 2, formed with vertical slots or openings, as shown, in which the ends of brace-rods (not shown) may be detachably secured and arranged to steady the apparatus against tilting laterally. I have shown pins 3, which can be disposed in holes in the keepers and pass through the brace-rods in the usual manner.

On the truck-frames is provided a floor or

platform 4; made strong and of such width and length as will suit it to carry the mechanism mounted thereon. At the rear end the floor is provided with a rigid extending piece 5 to afford convenient lodgment for the base of the spar when disposed for transportation, as indicated in Figs. 1 and 3 of the drawings. The platform or floor is provided at the front and rear portions with adjusting-screws 6, which are projected through the floor and bear with their lower ends on the side pieces of the truck-frames, so that the floor may be adjusted vertically and maintained in proper position. On the floor are secured plates 7, running lengthwise of the floor and extending over the extension 5, and between the inner edges of these plates is a dovetail channel or groove 8, wherein is slidably arranged a coincidentally-shaped rack-bar 9, provided with a perforated lug 10 at one end to detachably connect the bar to the base of the spar. Mounted on the plates 7 at a suitable point are oppositely-arranged standards 11 12, formed with bearings through them, wherein is journaled a shaft 13, having mounted thereon between the standards a pinion 14, which engages the teeth of the rack 9 and serves to move the rack in either direction. The shaft, with the pinion, is operated by a crank-handle 15, which may be connected to either end of the shaft, or a crank may be used at both ends, if desired. To the front end of the floor or platform is hinged or jointed a plate 16, adapted to turn down into horizontal position, as seen in Figs. 2 and 4, into alinement with the face of the platform, or to be turned up and inclined back, as seen in Fig. 1 of the drawings, in which latter position it constitutes a support for the driver's seat or seats 17, which consist of bottom pieces provided with arms of any suitable style. In the back face of the plate 16 is formed a groove or channel 18 in alinement with the groove 8, so that the rack-bar may in its movements extend into the groove 18 and be held in proper relation for its entire length. Midway of the length of the floor is made an opening 19, bounded by the severed ends of the floor-plates 7 and by side plates 20, and in the opening thus formed is posited a table 21, formed with a central opening 22, through which a turning-plug projects and extends vertically through the base of the spar when that element is brought into alinement therewith, as herein-after stated. The table 21 is formed with central laterally-extending trunnions 23, journaled in bearings in the side plates 20, and centrally and lengthwise of the table is a groove, as shown, which aligns with the groove in or between the floor-plates and through which the rack-bar 9 travels. It will be seen that the table has a limited tilting movement, so that the spar when standing thereon may be inclined in either direction, as shown in Fig. 2 of the drawings by the dotted lines. To prevent the table from being tilted except as may be desired or re-

quired, catches 24 are provided, which engage under the floor and hold the table in alinement with the face of the platform. To the under side of the table is secured a plate 25, constituting a housing wherein is journaled a short vertical shaft 26, on which is fixedly mounted a gear-wheel 27. The portion of the shaft 26 which extends above the wheel 27 is made angular, as shown, and has fitted to slide thereon a turning-sleeve 28, also having an angular exterior conformation adapted to fit in an angular opening in the lower end of the revoluble section of the spar and turn it on its axis. The sleeve 28 and the wheel 27, with its shaft, and the turning-sleeve 28 are turned by means of a worm 29 on a shaft 30, journaled in hangers 31, rigidly secured to the under side of the table, as shown, the shaft being provided with a crank-handle to operate it. In order that the turning-sleeve 28 may be withdrawn from engagement with the spar or be depressed to prevent interruption of the progress of the rack-bar 9, I provide levers to move the sleeve. These levers consist of a bar 32, pivotally mounted under the platform and preferably arranged in transverse direction thereto. The inner end of this bar 32 has loose connection with the second lever 33, pivotally supported from the platform and having its inner end slidingly disposed through a loop 34 on the end of a lever 35, fulcrumed to the under side of the table 21. The inner end of the lever 35 is forked, as at 36, the forks engaging in an annular groove 37 in a collar on the turning-sleeve 28 and depressing it against the force of the spring 28^x. It will be perceived that when the outer end of the bar or lever 32 is moved in upward direction its inner arm will move the lever 33 to actuate lever 35 to draw the turning-sleeve 28 down either from engagement with the spar or so that it will not impede or stop the movement of the rack-bar 9.

36 designates a plate hinged to the base of the relatively stationary section of the spar and formed with connecting-lugs 37^a to detachably engage with the lug 10 on the end of the rack-bar 9. The plate 36 has an opening 38, through which the turning-sleeve 28 passes into the opening in the bottom of the spar, and is also formed with a longitudinal rib 39 on its under face to slidingly engage in the groove 8 of the platform. The base of the lowermost section 40 of the spar is formed with a base-piece 41 coincident in shape to the plate 36 and is connected by the hinged joint to said plate. The lowermost section of the extensible spar is designated by the reference-numeral 40, and consists of a cylindrical shell of the required length and diameter to adapt it to the purposes intended, and because of its hinged connection to the base plate 36 it may be disposed in inclined position, as seen in the drawings, or it can be, through the agency of the rack-bar, made to assume a vertical position, as seen in Fig. 2

of the drawings. This section 40 is relatively stationary to the other sections of the spar, being neither rotatable nor extensible.

Adjacent to the upper end of the spar-section 40 is secured a collar 41, having laterally-projecting and alining lugs or studs 42, on which are pivotally disposed strut-rods 43 44. At the front end of the platform are secured oppositely-placed benches 45, provided with suitable bearings, wherein is pivotally supported a plate 46, formed with sleeves at each side, wherein are slidably disposed the strut-rods 43 44. At a point in advance of the plate 46 a cross-bar 47 is rigidly secured to the strut-rods, and secured to the cross-bar is a rack-bar 48, which extends frontward under the plate 46 and is engaged by a pinion 49 on a shaft 50, mounted in bearings fixed to the under side of the plate. A crank-handle 51 is provided to turn the shaft 50. Ratchet-wheels 52 53 are mounted on the shaft, which are engaged by suitable pawls 54 to prevent back movement of the strut-rods and to hold them in such position as they may be moved longitudinally.

It will be perceived that when the base of the spar is drawn toward the front end of the platform the movement operates to elevate it in the direction of verticality, because of the pivotal connection of the strut-rods, which serve as a point on which the spar swings. When the spar has been raised to vertical position, it is held in such position by the strut-rods; but if it be necessary to tilt the spar to the left, as shown in dotted lines in Fig. 2 of the drawings, the strut-rods are drawn toward the front end of the platform, in which movement the plate at the base of the spar tilts on its hinge connection; but should it be required to tilt the spar to the right, as shown in dotted lines in Fig. 2 of the drawings, then the catches or locks of the table are released, the table being then free to be tilted on its bearings. Then by extending the strut-rods the spar will be correspondingly tilted.

To the plate 46 are pivotally secured hooks 55, which engage in eyes or staples 56 in the hinged seat plate or piece and hold it in position when occupied as a seat by the driver.

Erected on the platform is a frame constituting a support on which the spar rests and is held when posited in inclined position, as shown in the drawings in Figs. 1 and 3. This supporting-frame comprises oppositely-placed standards 57 58 of such height as may be required and having their upper ends united by a strong cross-piece 59, on which are mounted cushion-springs *a*, which carry a bolster-piece *b*, formed with a curved recess 60, wherein the spar rests.

On the upper end of the spar-section 40 is loosely and revolvably secured a collar 61, which is formed with diametrically opposite recesses 62 to take in bearing-lugs 63, projecting from the second section of the spar.

To the lugs 42 of the collar 41 are pivotally

hung arms or links 64, to which are secured the upper ends of guy-ropes 65, which may be secured at their lower portions to staples 66 at the sides of the platform, and thus stay the spar against lateral displacement.

In the spar-section 40 is placed the second spar-section 67, which extends to the bottom of the section 40 and is revoluble but not extensible in its position. In the bottom of the section 67 is an angular opening 68, in which the turning plug or sleeve 28 engages and serves to turn the section 67 on its axis.

On the spar-section 40 are formed collars 69 70, rigid therewith, the collar 70 being provided with radial notches 71, wherein a locking-lug 72 engages to lock the sleeve 73 against rotary movement in the respective positions to which it may be turned. Between these collars is rotatably mounted the cylindrical sleeve 73, which has suitable bearings (not shown) made diametrically opposite to each other. A frame is provided to hold the winding mechanism carried by the sleeve 73. This frame comprises a cross-bar 74, rigidly secured at its middle to the sleeve and at its ends directed downward and then carried horizontally, forming end bars 75, formed with bearings posited in alinement with the bearings in the sleeve 73, and the frame end bars are carried inward and upward, as at 76, and have their ends fixed to the sleeve. At the angle of each of the end bars 75 and brace-bars 76 is formed a bearing 77, wherein is journaled the winding-shaft 78. Between each end bar and the bearing in the sleeve is mounted a shaft 79, whereon is a winding-drum 80, at the inner end of which is secured a toothed wheel 81, which is engaged by a pinion 82 on the shaft 78. This shaft 78 also has bearing in bearing-ears 83 84, secured to the sleeve 73, substantially as seen in the drawings. On the sleeve 73 is hung the locking-lug 72, which engages by gravity in any one of the notches 71 in the collar 70 to hold the sleeve locked against rotation on the lowermost section of the spar, as heretofore mentioned. The shaft 78 is provided with a crank-handle 85, by which it is rotated. Ratchet-wheels 86 are mounted on each drum-shaft or secured to the outer ends of the drums, and pawls 87 engage therewith to hold the drums from return movement.

At the upper end of the revoluble spar-section 67 or closely adjacent to the upper end thereof are oppositely-placed bearing-ears 88, in which are journaled grooved pulleys 89, over which lifting cords or cables 90 are arranged. The cords 90 have their lower ends secured to the drums 80 and thence are carried up over the pulleys 89, thence through apertures in the spar-section 67, and from thence are carried down and have their ends inside the spar-section secured to the lower end of the first extensible spar-section 91, as seen in Fig. 16 of the drawings. The spar-section 91 is thus lifted vertically within the revoluble section 67. The section 91 is made

with oppositely-arranged longitudinal channels or grooves 92 93 to afford cord-space for the lifting-cords 90 to move in. About the upper end of the section 67 is secured a collar 94, formed with diametrically disposed perforated lugs 95. In the extensible section 91 is slidably posited the second extensible spar-section 96, having opposite channels to accommodate the lifting-cords by which it is extended. To the lugs 95 are fastened the ends of lifting-cords 97, which are carried up over grooved pulleys 98, mounted at opposite sides of the section 91, thence through perforations in the section and carried down on the inner side thereof, and have their ends suitably secured to the base of the spar-section 96.

Within the spar-section 96 is slidably and extensibly posited the spar-section 99, having a lifting-cord 100, attached to a collar 101 on the spar-section 96 and from thence carried over a pulley 102 adjacent the top of the spar-section, as shown in the drawings.

Within the spar-section last named is extensibly arranged the terminal spar-section 103, made U-shaped in cross-section, and in the groove or channel 104 thus formed is pivotally supported an angular section 105, adapted to lie within the said channel and to swing outward on its pivot 106, as shown in the drawings, for the purpose of reaching laterally any object.

Within the hinged spar-section is slidably disposed an extensible rod 107, which is intended to be projected longitudinally of the spar-section, which extension is accomplished by means of a cord or like cable 108, secured to the outer end of said rod and carried over a sheave 109 on the end of the section, and from thence extends to a winding drum or reel 110, journaled in a casing 111, mounted on the platform.

To the end of the extensible rod 107 is fixed a cord 112, which extends down and is secured to a windlass 113, whereby when the spar is extended to its limit or to the point desired it may be collapsed or telescoped by drawing downward on the cord 112.

It will now be perceived that the various sections of the spar are simultaneously extended, with the exception of the terminal bar 107, and that they are collapsed in the reversed order of their extension.

To the topmost spar is connected one end of a stay rope or cable 113^a, the other end of which is fastened to the hinged section to stay it and prevent it being carried out farther than intended.

A cleat 114 is fixed to the sleeve on the base-section of the spar, to which the rope of the basket may be secured in a well-known manner, and additional cleats may be provided, as 115, to which the ropes of the top sections of the spar may be secured as desired. To the outer end of the extensible bar posited in the hinged section is fixed a grooved pulley 116, over which a cord or ca-

ble 117 is arranged, to the one end of which is secured a basket or cage 118, the hand portion of the line or cord extending down to some convenient point for manipulation.

The respective functions of the several parts and their coacting arrangement and aggroupment have been particularly stated in the premises of the description, and the uses and operation may now be stated generally, as follows: The apparatus is shown in static position in Fig. 1 of the drawings, ready to be drawn wheresoever required. When the location is reached where its uses are required, the team is detached and the seat-plate is turned down into alinement with the floor of the body or platform. The rack-bar connected to the base-plate of the spar is then actuated through the medium of the pinion to draw the lower end of the spar toward the middle of the platform and onto the table into vertical position. During this movement the strut-rod mechanism is operated to assist in the elevation of the spar. When the base of the spar is drawn centrally onto the table and the opening in its base registers with the turning-sleeve, that element is moved upward by the force of the spring into engagement with the spar, which is then in vertical position. The guy-ropes may then be secured to keep the spar from tilting sidewise and other braces applied to the trucks, as mentioned. The winding-drums on the sleeve at the base of the spar are then turned, which results in the extension of the telescopic sections to their limit, if desired; and then the hinged section falls out of the channel in which it is seated and carries with it the basket to present it where required. Should the distance at which the basket is to be presented be greater than the now inclined hinged section reaches, the rod it contains is extended to supply the deficiency. If it is necessary to swing the basket around on the plane of its height, then the turning mechanism under the platform is operated and accomplishes the purpose. If it becomes necessary to tilt the spar in either direction in the longitudinal line of the platform, then the table is unlocked, which permits it to have a limited rotary movement on its trunnions, and then the strut-rods are shortened or lengthened, as the direction may require. When the work has been accomplished and the basket has descended and delivered its burdens, the winding mechanism on the spar is released and by turning in reverse of the movement which extended the spar the sections descend by gravity into original position. The turning plug or sleeve may then be depressed to disengage it from the spar, and then the rack is operated to move the base of the spar to the point from which it was moved, and it again assumes the inclined position.

It may be stated that when it is required to tilt the spar with the table the rack-bar is disconnected for the time being.

It is apparent that the extensible sections may be more or less than the number illustrated.

Having thus fully described the invention, what is claimed as new is—

1. In a fire-escape, a platform, formed with a longitudinal groove therein, a rack-bar slidably disposed in the groove, a pinion to engage and move the rack-bar, a plate connected to the rack-bar and formed with a tongue to engage said groove, and a spar having its base hinged to the plate.

2. The combination with the rack-bar and the floor in which the rack-bar slides, of a plate hinged to the end of the floor and formed with a groove into which the rack-bar engages.

3. The combination with the floor formed with a groove, and a rack-bar slidably arranged in the groove, of a plate hinged to the end of the floor and provided with a groove to be engaged by the rack-bar, the said groove being in alignment with the floor-groove and rack-bar when the plate is turned down into horizontal position, a seat secured to the plate and adapted to be used when the plate is turned up and back.

4. The combination of a platform formed with a longitudinal channel, a table in the platform having the channel extending across it, a rack slidably arranged in the channel, a spar connected to the end of the rack, and a rotatable pinion to move the rack and pull the spar into vertical position with its base on the table.

5. The combination of a platform formed with a longitudinal channel, a tiltable table in the platform having the channel extending across it, a rack slidably arranged in the channel, a spar connected to the end of the rack, means to lock and hold the table in horizontal position, a revoluble section in the spar, formed with an opening in its base, a spring-actuated turning sleeve to engage in the opening in the base of the revoluble section of the spar, and means to turn the turning sleeve, as set forth.

6. The combination of a platform formed with a longitudinal channel, a tiltable table in the platform having the channel extending across it, a rack slidably arranged in the channel, a spar connected to the end of the rack, means to lock and hold the table in horizontal position, a revoluble section in the spar formed with an opening in its base, a spring-actuated turning sleeve to engage the opening in the base of the spar, means to turn

the turning sleeve, and means to disengage the said sleeve from the opening in the bottom of the revoluble section of the spar.

7. The combination with the spar arranged to slide and tilt on its base, a plate pivotally supported and formed with sleeves at its sides and a groove lengthwise of the plate, struts slidably disposed in the sleeves and having their upper ends pivotally secured to the spar, a rack-bar rigidly secured to the struts and slidably arranged in the groove in said plate, and a pinion to engage and actuate the rack-bar.

8. A spar for a fire-escape, comprising a hollow base-section, a revoluble section therein and extending therefrom, telescoping extensible sections in the revoluble section, connections between the extensible sections whereby they may be extended, a section hinged at its lower end to the terminal extensible section, and an extensible bar in the hinged section.

9. In a fire-escape, the combination of a spar comprising a relatively stationary hollow base-section, a revoluble section therein and extending therefrom, and an extensible section or sections, cord connections to extend the extensible sections, a sleeve mounted on the relatively stationary base-section and turnable thereon, a frame mounted on the sleeve, winding-drums journaled in the frame and having the spar-lifting cords connected thereto.

10. The combination with the extensible spar, of an uppermost extensible section having a longitudinal channel therein, a section hinged at its lower end to the uppermost section and arranged to lie in vertical position and to swing laterally on its hinge, and a bar slidably arranged in the hinged section.

11. The combination with an extensible spar, of a terminal extensible section formed with a longitudinal channel, a hollow section jointed at its lower end to said section, and arranged to fold in said channel and to turn on its hinge into inclined position, a stay to hold it in inclined position, an extensible bar posited in the hollow section, a cord slidably connected to the outer end of the said bar, and a basket suspended from the upper end of the cord.

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

EMIL ANDERSON.

Witnesses:

JOHN J. MCGONIGLE,

ROBERT J. MORRISON.