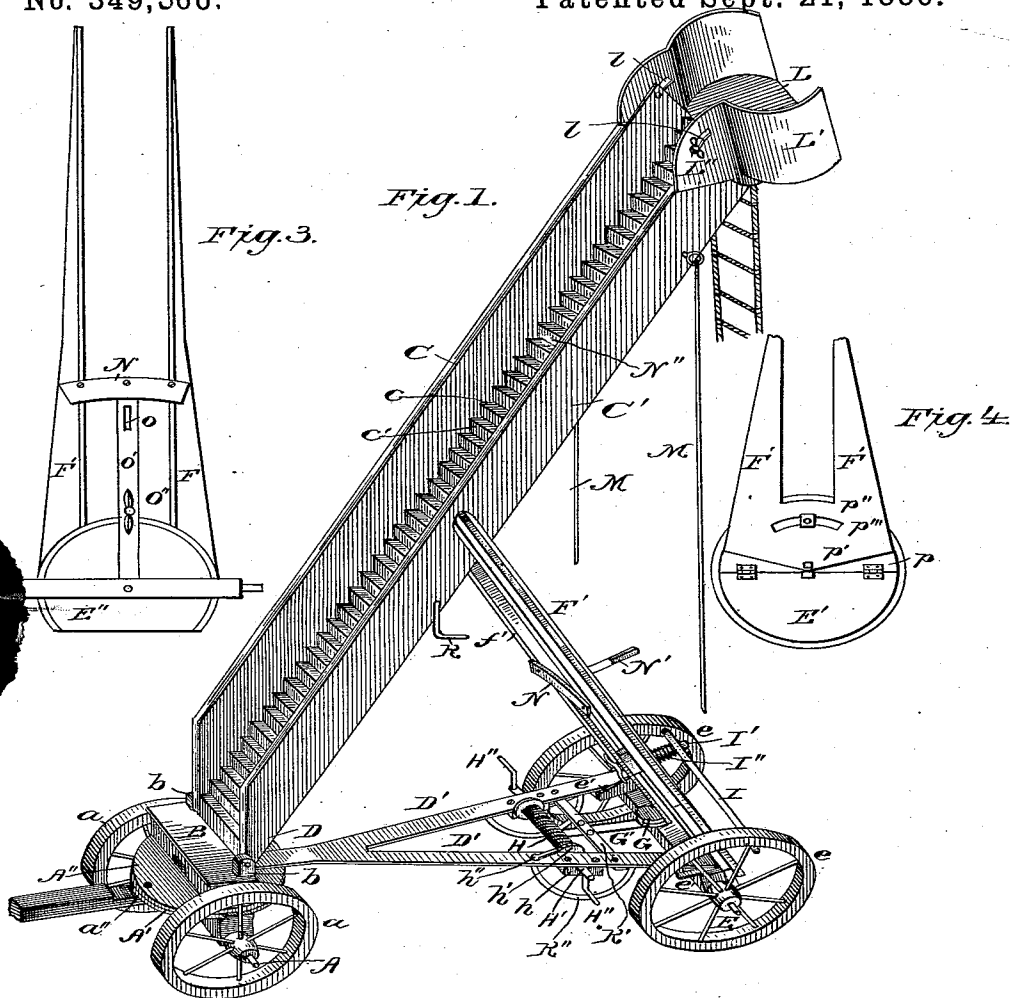


O. H. ROUNDS.

FIRE ESCAPE.

No. 349,366.

Patented Sept. 21, 1886.



Witnesses  
Harry S. Roberts  
Fred Rounds

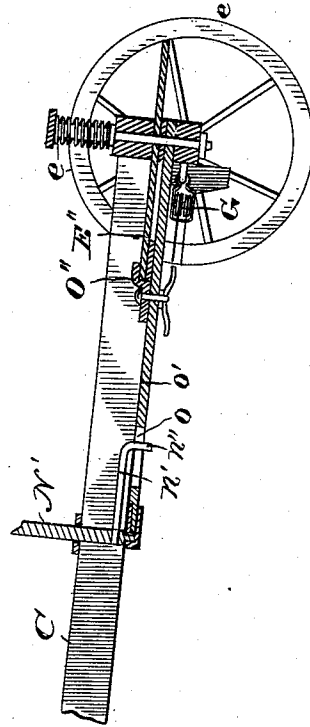
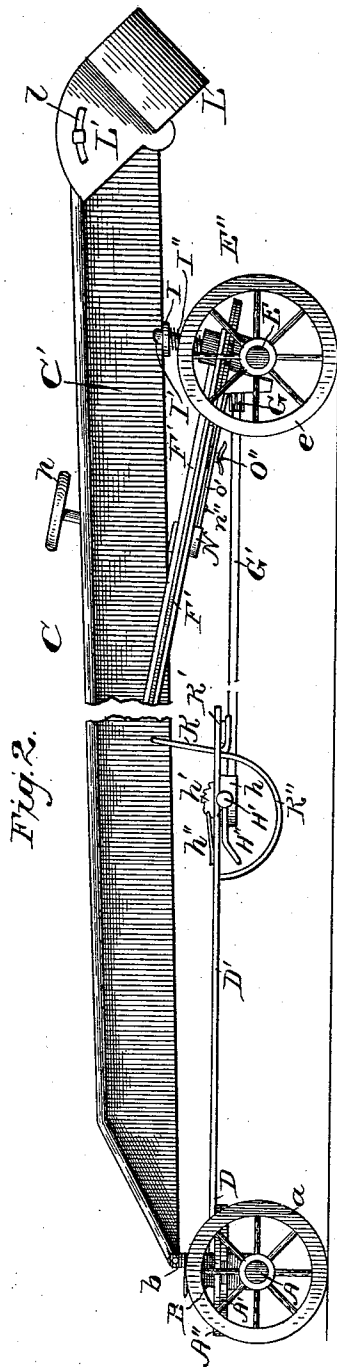
Inventor  
O. H. Rounds  
By my Attorney  
J. E. Duff

O. H. ROUNDS.

FIRE ESCAPE.

No. 349,366.

Patented Sept. 21, 1886.



Witnesses  
Harry S. Roberts  
Fred Rounds

Inventor  
O. H. Rounds  
By his Attorney  
J. E. Duffy

# UNITED STATES PATENT OFFICE.

OZIAL H. ROUNDS, OF WELLAND, ONTARIO, CANADA.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 349,366, dated September 21, 1886.

Application filed April 26, 1886. Serial No. 200,199. (No model.)

*To all whom it may concern:*

Be it known that I, OZIAL H. ROUNDS, of Welland, in the county of Welland, Province of Ontario, Canada, have invented certain new and useful Improvements in Fire-Escapes and for other Purposes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to fire-escapes, and especially to that class known as "escape-ladders;" and it has for its object to provide a machine of this class which shall be easy to operate, cheap, simple, and powerful in action, capable of being transported readily from place to place, and of being quickly raised into position in a very small space.

With these objects in view my invention consists in the improved construction, arrangement, and combination of parts, hereinafter fully described, and afterward specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of my improved device in its raised or operative position. Fig. 2 is a view in side elevation of the device in its lowered or inoperative position, or in the position the parts assume as a truck for transportation from place to place. Fig. 3 is a detail view, being a bottom plan view of the rear axle and its attached hounds and steering apparatus removed from the truck. Fig. 4 is a detail view, being a top plan view, showing my most improved construction of hounds for the rear truck constructed to admit of a side inclination of the raised ladder, when desired. Fig. 5 is a longitudinal vertical section through the rear portion of the device, showing particularly the steering apparatus and the manner of hinging the raising-arms to the rear axle.

The same letters of reference mark corresponding parts wherever they occur in the various figures of the drawings.

Referring to the drawings by the letters of reference, A is the front axle, provided with wheels *a a*, of ordinary construction, and having secured rigidly to it a disk, A', which

forms the bottom plate of the "fifth-wheel." Upon this is laid a disk, A'', which forms the top plate of the fifth-wheel, the disk A'' being adapted to turn on the disk A around a king-bolt (not shown) which passes through them and the central point of the axle, after the manner of king-bolts in ordinary vehicles. A suitable lock bolt or pin may be placed in an aperture or perforation, *a'*, which passes through both plates and serves to lock the two plates together when it is desired to elevate the ladder, as hereinafter explained, in order to prevent the ladder from swinging sidewise and falling.

Upon the top of disk A'' is secured a bolster, B, having at each end an upright, *b b*, to which a ladder, (or, more properly, a stairway,) C, is pivoted by means of suitable pins or bolts passing through these uprights and the lower ends of said ladder. Secured to and passing backward from the bolster is a V-shaped structure, which forms, when the ladder is raised, both coupling-poles and hounds of the truck, and when the ladder is lowered forms a backward-projecting support for a portion of the raising mechanism. This V-shaped structure consists of a body, D, and two diverging arms, D' D'.

E is the rear axle, having wheels *e e*, also of ordinary construction.

To the axle E is hinged a disk or plate, E'', to which is secured a pair of forward-projecting bars, F F', which at their front ends are pivotally secured to the ladder C about midway its length. The axle E also has secured to it at its mid-length a block and pulley, G, around which passes a chain or cable, G', the two ends of which are secured to and may be wound upon the drum H upon a shaft, H', mounted in bearing-blocks *h h*, which are secured under the hounds D' D', and provided with suitable cranks or handles, H'', for turning it. It is also provided with a ratchet-wheel, *h'*, with which a pawl, *h''*, pivoted on one of said hounds, engages to hold the drum from turning and prevent the unwinding of the cable, thereby locking it, when desired.

When the truck is in the position shown in Fig. 2, the ladder rests upon a cross-bar, I, supported on springs. These springs may be of any approved form; but for many purposes I deem the construction shown the best. In

this construction posts I' are mounted on the structure, which is hinged to the rear axle, E, and springs I'' I''' are coiled around them. The cross-bar I is perforated and passes over these posts, the posts being a slightly greater distance apart than the width of the ladder C, so that when said ladder rests on the cross-bar, it has a spring-support, and the projecting upper ends of the posts prevent its displacement sidewise. Hooks K, pivoted to the ladder, engage under a cross-bar, K', which connects and is secured to the hounds D' slightly in the rear of the drum, and serve to suspend these arms off the ground when the truck is in the position shown in Fig. 2. These arms are provided with a curved supporting-rod, K'', to rest upon the ground when they are not upheld by the hooks K. The rear axle, E, has also secured to its front side two guideways or pockets, e' e''—one near each wheel—their distance apart being the same as that of the rear ends of the hounds D' D'', and their purpose as hereinafter described.

Secured to the two raising-levers F' is a cross-bar, N, in which is stepped a post, N', which, when the device is in the position shown in Fig. 2, projects through a hole, N'', in the ladder or stairway, and has a hand steering-wheel, n, on its upper end. Projecting rearward from this is a bent bar, n', the end n'' of which enters a slot, O, in a bar, O', which is secured to the rear axle. On the bar is a clamp, O'', for engaging the edge of the disk E'', secured to the rear axle, by means of which it may be either rigidly clamped thereto or allowed to move independently thereof, as may be desired. In Fig. 4 I have shown this disk consisting of two parts, the one stationary and the other, p, hinged to it, and the raising-levers pivoted at p' to this hinged leaf, so that they may move laterally on said pivot. They are secured, when it is preferred that they be made rigid therewith, by means of a set-screw, p'', entering the hinged leaf through a curved slot, p''', as shown.

The ladder C, or stairway, is made entirely of metal, the more effectually to withstand fire, to which it may be exposed when in use, and for the purpose of strength and durability. It is provided with steps consisting of treads e and risers e'. It has pivoted to its upper end a platform, L, and this platform, as well as the stairway C, is furnished with side boards or protecting close railings, (marked, respectively, L' and C'), both of which are finished at the top to form suitable hand-rails.

The platform may be adjusted to assume any proper angle with the stairway, and is secured in such adjusted position by the set-screw L'', working in a curved slot, l, in the railing L'.

Suitable guy-ropes, M, are provided to steady the ladder in its raised position.

The operation of my improved fire-truck or escape-ladder may be described as follows: The parts being in position shown in Fig. 2, the hooks K are disengaged and the hounds

allowed to drop until they are supported on the ground. By turning the drum the cables are wound thereon, causing the front and rear axles to approach each other and the point of the ladder to which the bars F F' are hinged to rise. The front end of the ladder, being hinged to the bolster on the front axle, becomes the bottom, and the rear end is elevated. The operation being similar to drawing the two ends of toggle-levers together, (the lower half of the ladder representing one toggle-lever and the bars F' the other,) great power is developed, and it is rendered possible, by the exertion of a comparatively small force on the winding-cranks, to raise a very heavy weight, allowing a number of men to be raised on the ladder. As the front and rear axles approach each other, the ladder gradually rises until the rear ends of the hounds D' enter the pockets on the rear axle, which pockets have, by this raising, been brought to a horizontal position, as in Fig. 1, and the limit of the operation is reached. The whole device is now a short truck, bearing a raised and protected stairs with a platform at the top, upon which persons may step from the windows of a building, or from which firemen may operate to great advantage.

It sometimes becomes necessary to slightly move the platform at the top of the stairs to one side or the other in order to reach adjoining windows or other places not accessible otherwise. In order to accomplish this I have devised the construction shown in Fig. 4 as a means for connecting the raising-bar F' adjustably to the rear axle, which devices are constructed as before described, and will, as may be readily seen, permit of this sidewise inclination. I propose, also, in order to make the escape available for persons at windows lower than the platform, to let fall from the edge of said platform a rope or other flexible ladder, as will be readily understood.

The steering apparatus hereinbefore described operates as follows, viz: The clamp O' being released and the bar O' being free to move independently of the disk E'', the tillerman, seated on the ladder, may, by turning the wheel n, cause the post N' to turn, carrying with it the arms n' n'', and moving the bar O' to one side or the other, as desired, the raising-arms F' and disk E'' remaining in the position shown, with the arms F' parallel with and engaging the sides of the ladder.

It will be readily seen that my device is not confined in its operation to the uses set forth. It will be found extremely useful for many other purposes—for instance, for raising heavy poles, such as telegraph-poles, which may be secured to the upper end of the ladder and raised with ease and rapidity. In fact, many instances might be given of uses to which it might be put, which will suggest themselves to the operator.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination, the front axle carrying two superposed disks rotatable with relation to each other, a bolster secured on the upper disk and having secured to it a backward-projecting coupling-pole and hounds, a ladder pivoted to said bolster, a rear axle having hinged and pivotally connected thereto forward-projecting arms, which are pivotally connected to the ladder at their front ends, and mechanism for drawing the trucks together, whereby, when raised, the ladder may be slightly tilted to either side, as set forth.

2. In combination, the front and rear axle having, respectively, backwardly and forwardly projecting arms, the ladder pivotally connected to the front bolster at its lower end and to the forwardly-projecting arms near its mid-length, upright posts secured at the rear axle, springs coiled around them, and a perforated bar fitting over them, upon which the ladder may rest, for the purpose set forth.

3. In combination, the ladder pivotally connected at its lower end to the front bolster, the rear axle having raising-arms pivotally connected to the ladder, a steering apparatus attached to said arms, and the rear axle and its operating-post, passing upward through the ladder and provided with a hand-wheel, as set forth.

4. In combination with the ladder and rear axle, the disk or plate secured to said axle and hinged at its middle, the raising-arms pivoted to the hinged half of said plate, where-

by they may be tilted sidewise, and the securing screw or bolt for maintaining it in its tilted position, as set forth.

5. The combination, with the inclosed metallic stairway provided with metallic sheet railing and hand-rail, of the platform pivoted to the upper end thereof, having similar railing and hand-rail, and adjustable on its pivot, and a securing-bolt for maintaining it in its adjusted position, as set forth.

6. In combination, the front axle having rearward-projecting hounds, which are provided with supporting-legs and a cross-bar, as set forth, and the ladder having hooks to engage with said cross-bar, whereby the hounds may be suspended from the ladder or supported on the ground at will, as set forth.

7. In combination with the rear axle and the disk E', pivoted thereto, the longitudinal slotted bar O', secured to said axle, the raising-levers F', secured to the disk and having cross-bar N, the post N', passing through the ladder and having the steering-wheel at its upper end, and the arms n' n'', secured to said post and entering the slot in the door O', as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

OZIAL H. ROUNDS.

Witnesses:

O. E. DUFFY,  
FRED ROUNDS.