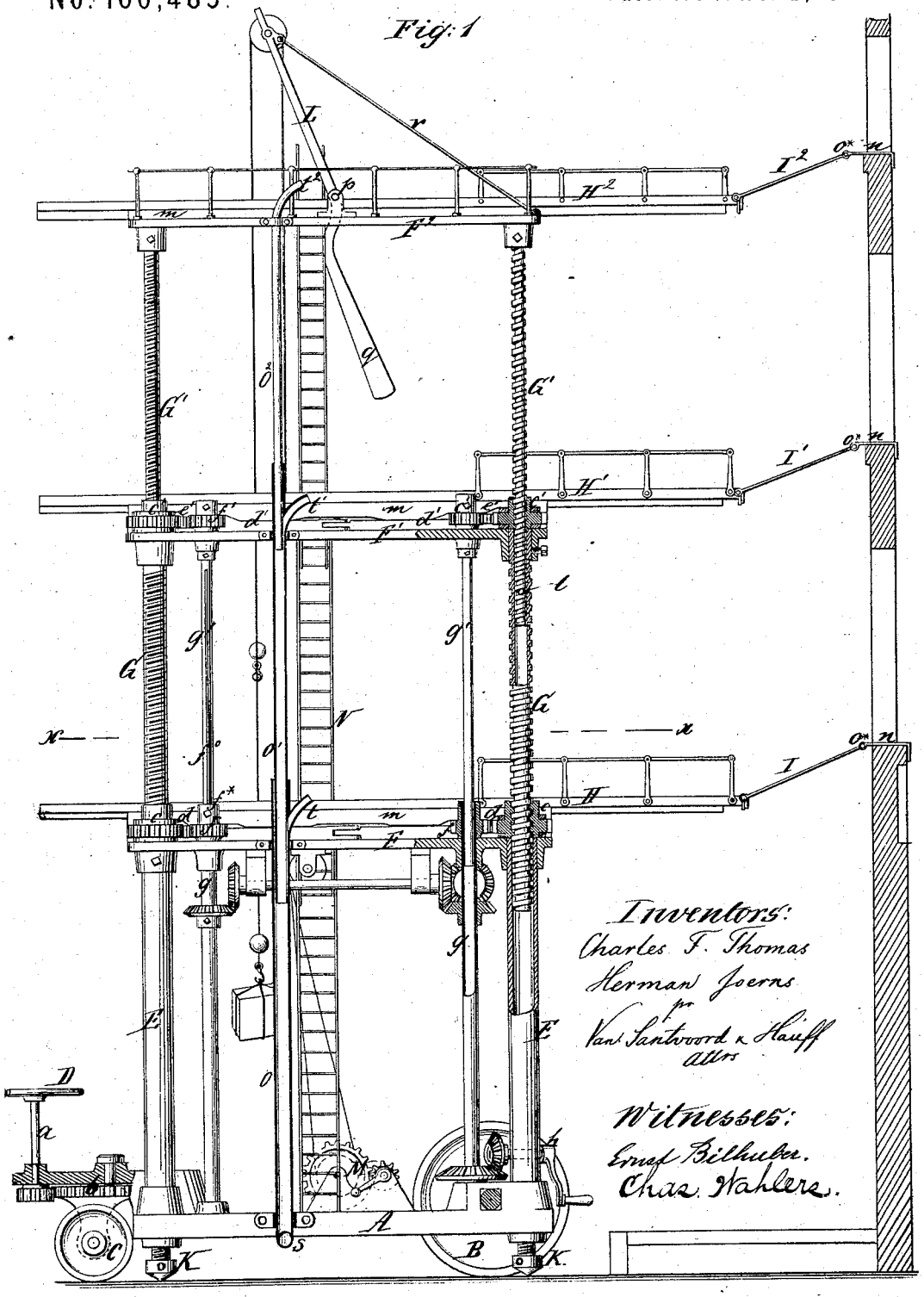
2 Sheets--Sheet 1.

C. F. THOMAS & H. JOERNS.

Fire-Escape Elevator.

No. 160,485. Patented March 2, 1875.

Fig. 1



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2 Sheets--Sheet 2.

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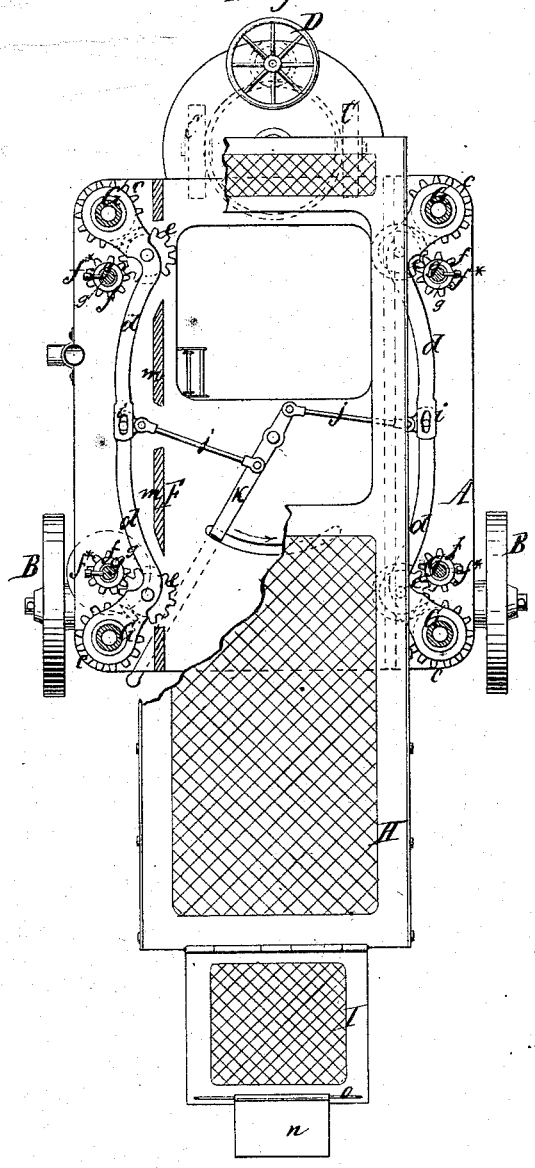
Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES F. THOMAS AND HERMAN JOERNS, OF NEW YORK, N. Y.

IMPROVEMENT IN FIRE-ESCAPE ELEVATORS.

Specification forming part of Letters Patent No. **160,485**, dated March 2, 1875; application filed January 29, 1875.

To all whom it may concern:

Be it known that we, CHARLES F. THOMAS and HERMAN JOERNS, both of the city, county, and State of New York, have invented a certain new and Improved Elevator, of which the following is a specification:

This invention is illustrated by the accompanying drawings, in which—

Figure 1 represents a longitudinal vertical section. Fig. 2 is a horizontal section in the plane *x x*, Fig. 1.

Similar letters indicate corresponding parts.

The object of this invention is to provide a ready means of communication between the several stories of dwellings, warehouses, factories, and other buildings, independent of their internal arrangements.

This invention consists in the combination of a series of telescopic columns, screws, shaftings, ladders and water-pipes, raising and sliding platforms, traps and grapnels, balance-derrick and hoisting apparatus, and jack-screws, the elevating and depressing to be accomplished by suitable devices, hereinafter shown and described, the whole to be mounted on wheels; also, in the combination of two or more platforms, the lowest of which is supported by two or more hollow columns which rise from a truck resting on three more wheels, while the upper platform or platforms are supported by screws which fit the hollow columns, and which are operated by nuts, to which a revolving motion is imparted by suitable mechanism, in such a manner that by turning said nuts the upper platform or platforms are raised to a considerable height, and access can be gained to the upper stories of a building. Each of the platforms is provided with guideways, in which move slides, and by pushing these slides out toward the building, to the upper stories of which it is desired to gain access, the windows of said stories can be easily reached. With each of said slides is combined a hinged trap provided with a grapnel, which can be made to catch over the window-sills, so that the ingress and egress to and from the upper stories of a building is rendered safe, and that persons or goods inclosed in the building can be readily removed. The grapnels slide on rods secured to the traps, so that the same can be adjusted to suit the position of the windows, on the sills of which they are to be fastened. To each of the several platforms there are one or more telescopic ladders attached, extending from the top to the bottom, enabling persons to descend to the pavement. With the upper platform is combined a balanced derrick, which can be readily raised and adjusted in its working position, and which, when thus adjusted, serves to lower goods or other articles to be removed from the building. With the several platforms is combined a telescopic water-tube provided with discharge-nozzles, one for each platform, and with a supply-nozzle at its bottom end, so that when the platforms are elevated the telescopic tube extends, and water can be readily forced up to either story. When three or more platforms are used, the motion to the nuts of the elevating-screws is transmitted by means of telescopic shafts, which extend automatically as the platforms are raised.

In the drawing, the letter A designates a truck, which is supported by two hind wheels, B B, and by one or two steering-wheels, C, the position of which is governed by a hand-wheel, D, mounted on a vertical shaft, *a*, which is geared together with a cog-wheel, *b*, from the bottom surface of which extend the bearings of the axle of the front wheels; or, instead of this mechanism, any other suitable steering mechanism may be employed. From the truck-frame A rise two or more columns, E, the height of which is to be equal to the mean height of the lower stories of store-houses or of dwelling-houses, so that a platform, F, secured to the tops of said columns, is about on a level with the first-story windows. The columns E are hollow, and they form the guides for screws G, to the upper ends of which is secured the second platform, F. The screws G engage with nuts *c*, which are confined in lever-frames *d*, so that by turning said nuts the screws G are moved up or down. The length of said screws is equal to the height of the columns E, or nearly so, and by their action the second platform F^1 can be raised to a level with the second-story window.

The nuts *c* are round, and provided on their peripheries with cogs, which can be geared together by intermediate cog-wheels *e*, with pinions *f* mounted on vertical shafts *g*, which are geared together with each other and with the driving-shaft *h*, as shown in Fig. 1. The intermediate cog-wheels *e* are mounted in the lever-frames *d*, and these lever-frames are connected by pivots *i* and connecting-rods *j* to a shipping-lever, *k*, Fig. 2, so that by moving this shipping-lever to the position shown in said figure, the nuts *c* of all the screws are thrown in gear with the driving mechanism, and by turning the driving-shaft the second platform F^1 is raised.

By moving the shipping-lever *k* in the direction of the arrow marked near it in Fig. 2 the nuts *c* are thrown out of gear with the driving mechanism, and the platform F^1 remains at rest.

The screws G are bored out to form the guides for screws G^1, to the upper ends of which is secured the third platform F^2. The screws G′ are raised by nuts *c′*, which are constructed like the nuts *c*, and receive their motion by intermediate gear-wheels *e′* and pinions *f′*, which latter are mounted on vertical shafts *g′*, while the intermediate gear-wheels *e′* are thrown in or out of gear by lever-frames *d′*, and by a shipping-lever constructed like the lever-frames *d* and shipping-lever *k*, which control the motion of the second platform F^1.

If the third platform F^2 is applied, the vertical shafts *g* are bored out to receive the shafts *g′*, and the pinions *f*, which are firmly mounted on the upper ends of the shafts *g*, are provided with screws *f**, which engage with grooves f^0, formed in and extending nearly throughout the entire length of the shafts *g′*, so that when the platform F^1 rises these shafts are drawn out without being thrown out of gear with the driving mechanism.

The screws G′ are provided with stops *l* (see Fig. 1) near their bottom ends, so that they cannot be raised beyond the desired height; otherwise the upper platform F^2 might be elevated to such a point that it would lose its proper support.

Each of the platforms F F^1 F^2 is provided with guideways or rails *m*, on which moves a slide, H H^1 H^2, said rails being provided with flanges, which engage with grooves formed in the edges or under surfaces of the slides, so that when said slides are drawn out, as shown in Fig. 1, they are not liable to lose their hold on their guide-rails. The motion of the slides may be facilitated by interposing anti-friction rollers between them and their guide-rails. Said slides are by preference made of perforated sheet metal, or simply of a series of metal bars, so as to reduce their weight as much as practicable. Each of the slides is provided on one or both ends with a trap, I I^1 I^2, which is hinged, so that it can be folded in or turned out to the position shown in Fig. 1. On the outer end of each trap is secured a grapnel, *n*, which swings and slides on a bar, *o**, Fig. 2, so that when the platforms F F^1 F^2 are elevated to a level with the windows of the various stories in a building the traps I I^1 I^2 can be turned out and secured to the windows by means of their grapnels, which catch over the sills of the windows, as shown in Fig. 1.

The advantage of the hinged traps and of the laterally-adjustable grapnels will be readily seen, if it is considered that in many cases the platforms when raised may not be exactly on a level, nor precisely in line, with the several stories.

The position of the platforms or slides in respect to the windows of the several stories of a building can also be regulated to some extent by means of jack-screws K, which are secured beneath the truck-frame A. By means of these jack-screws the entire apparatus can be raised off its wheels, and the jack-screws can be readily so adjusted that the apparatus will stand firmly on the ground, and at the same time the whole apparatus can be placed level or slightly inclined in either direction, as may be requisite, in order to throw the platforms and their slides in the desired position.

On the upper platform F^2 is mounted a derrick, L, which swings on gudgeons *p*, and is balanced by weighted arms *q*, so that it can be turned up to its working position with comparatively little power.

When raised, the derrick is retained in position by braces *r*, which can be made to engage with staples or eyebolts secured in the upper platform. This derrick acts in connection with a windlass, M, mounted on the truck-frame A, and it serves to lower merchandise or other articles, or infirm or timid persons who are unable to descend otherwise.

With the platforms F F^1 F^2 is combined an extension-ladder, N, which is extended and contracted as the platforms are raised or lowered, and by means of which firemen and other persons can ascend and descend.

On the edges of the platforms F F^1 F^2 and of the truck-frame A is secured a telescopic water-tube, O O^1 O^2, which is provided with a receiving-nozzle, *s*, at its lower, and with discharge-nozzles *t* t^1 t^2 at or near the upper, ends of its sections. Each of these nozzles is to be provided with a stop-cock to facilitate the using of them separately. By connecting the receiving-nozzle with a hydrant or with a fire-engine, and the discharge-nozzle with suitable hose-pipes, water can be forced up to any desired height without danger of bursting the hose; and by combining this telescopic pipe with the platforms F F^1 F^2 an apparatus is obtained which enables the firemen to throw the water on the very heart of a fire in any place of a building, so that such fire can be readily and quickly put out.

If desired, the telescopic water-tube O O^1 O^2 may be connected to the extension-ladder N, so that the nozzles *t* t^1 t^2 correspond to several

sections of said extension-ladder, and that both the sections of the ladder and of the water-tube will extend and contract together.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination of two or more frames or platforms, the lowest one of which is supported by two or more hollow columns rising from a truck-frame, while the upper platform or platforms are supported by screws, to which a rising and falling motion is imparted, substantially in the manner herein shown and described.

2. The combination of two or more platforms, F F^1 F^2, hollow columns E, screws G G′, nuts *c c′*, shafts *g g′*, and lever-frames *d d′*, which carry intermediate cog-wheels *e e′*, and which are connected to suitable shipping-levers, substantially in the manner set forth.

3. The combination of hinged traps I with the slides H, platforms F, hollow columns E, and elevating-screws G, substantially as set forth.

4. The combination of grapnels *n* with the traps I, slides H, and platforms F, substantially as described.

5. The combination of a balanced derrick, L, with a platform, F^2, screws G^2, and hollow columns E, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 26th day of January, 1875.

CHAS. F. THOMAS.
HERMAN JOERNS.

Witnesses:
W. HAUFF,
E. BILHUBER.