

(No Model.)

3 Sheets—Sheet 1.

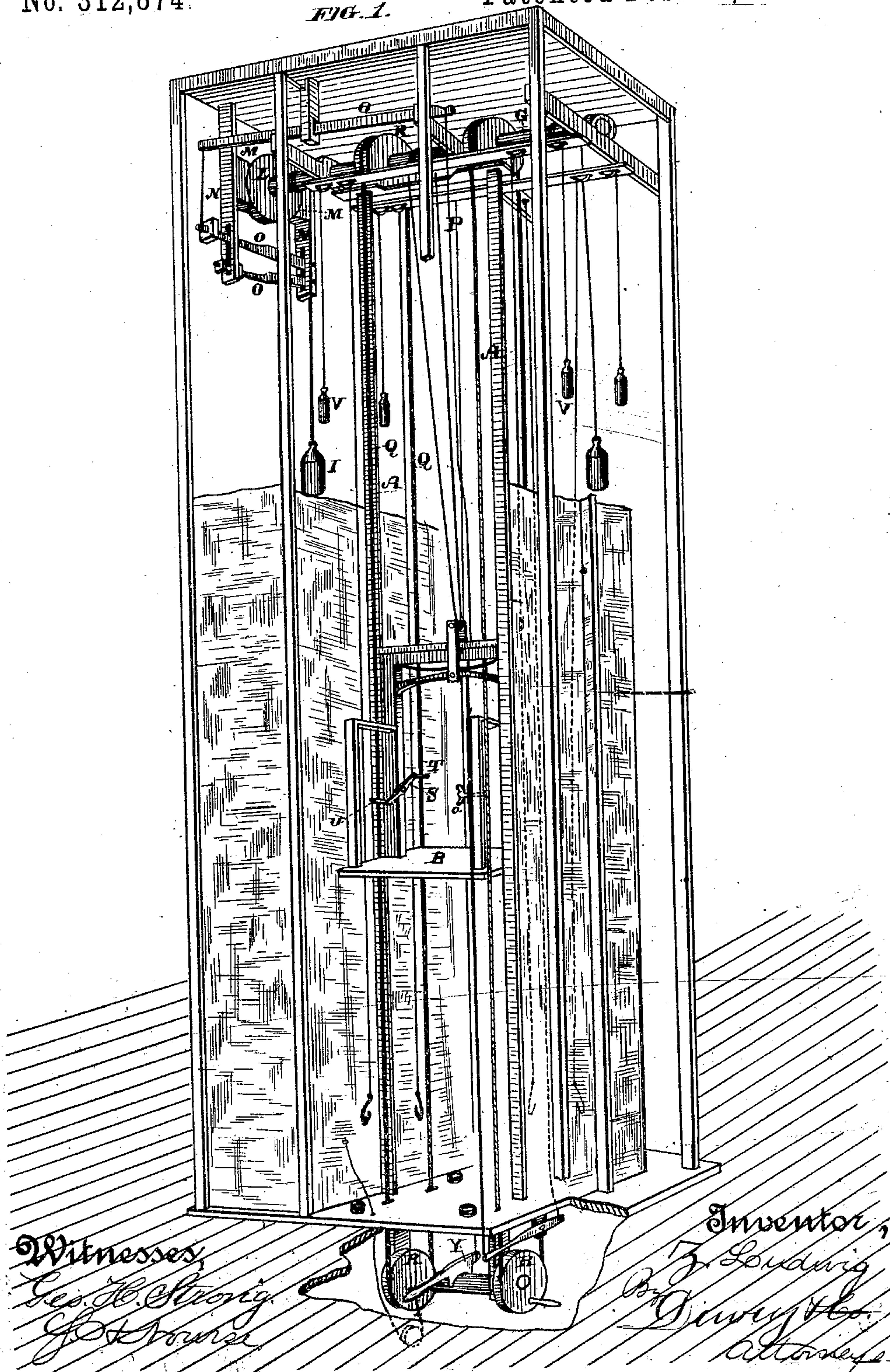
Z. LUDWIG.

FIRE ESCAPE.

No. 312,874.

Patented Feb. 24, 1885.

FIG. 1.



(No Model.)

3 Sheets—Sheet 2.

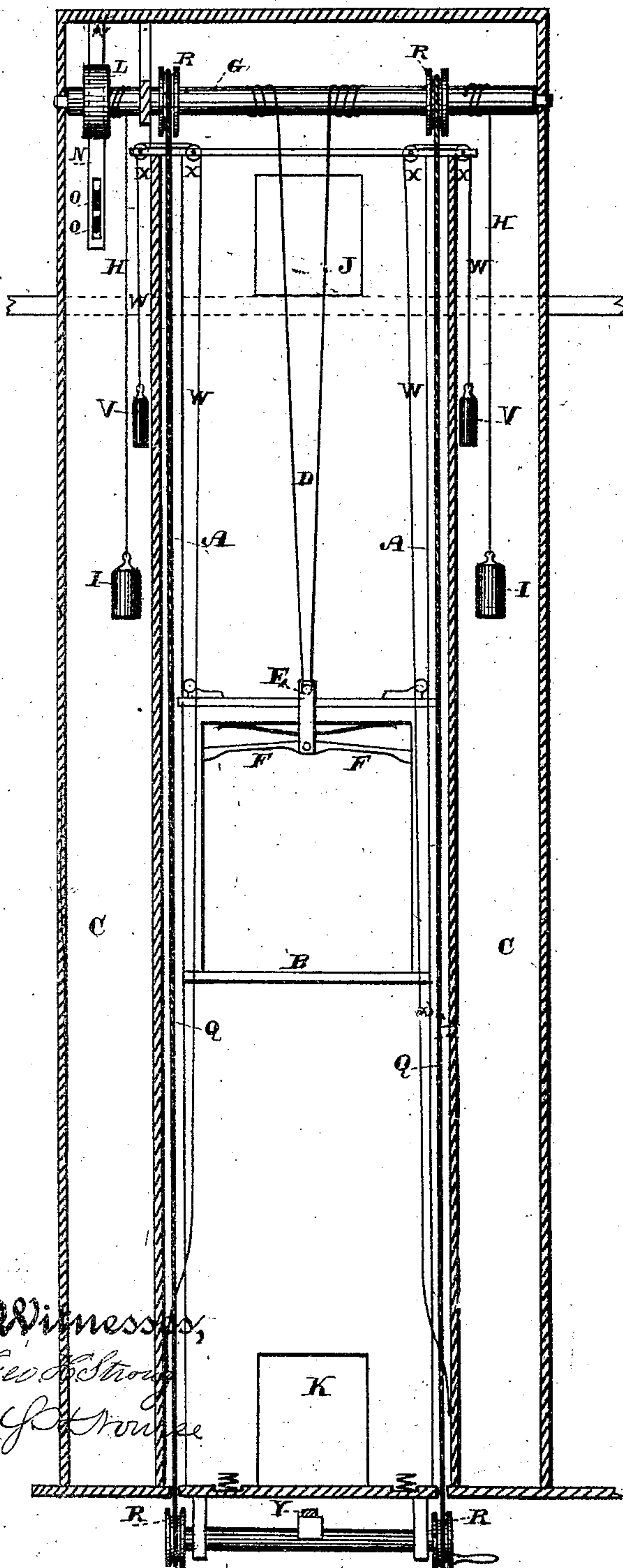
Z. LUDWIG.

## FIRE ESCAPE.

No. 312,874.

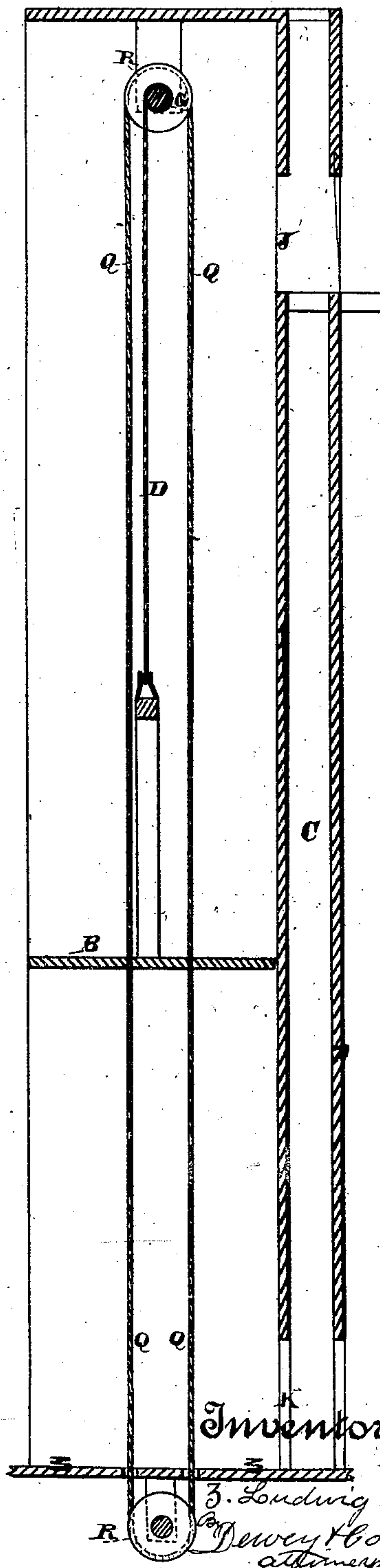
Patented Feb. 24, 1885.

FIG. 2.



Witnesses,  
Geo. A. Strong  
J. A. Strong

**FIG. 3.**



Inventor

3. Ludwig  
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(No Model.)

3 Sheets—Sheet 3.

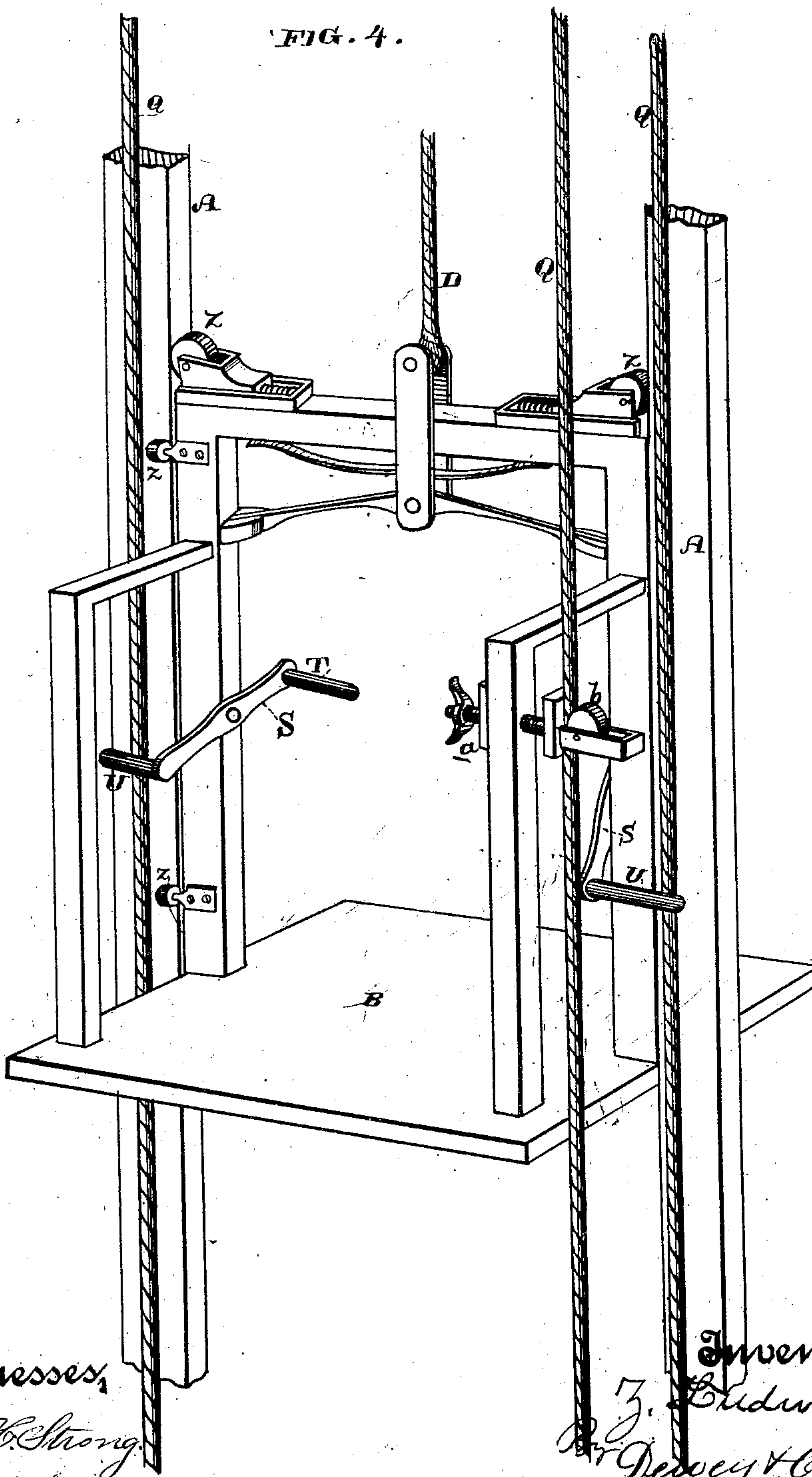
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FIRE ESCAPE.

No. 312,874.

Patented Feb. 24, 1885.

FIG. 4.



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# UNITED STATES PATENT OFFICE.

ZACHARIAS LUDWIG, OF OAKLAND, CALIFORNIA.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 312,874, dated February 24, 1885.

Application filed June 12, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, ZACHARIAS LUDWIG, of the city of Oakland, in the county of Alameda and State of California, have invented an Improvement in Fire-Escapes; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an apparatus which is especially used as a fire-escape, although it may be used for other purposes where it is necessary for persons to raise or lower themselves within a building without the use of an engine or any other exterior mechanism.

It consists of a cage or platform suspended by a cable from a drum or roller at the top of the building, having guides between which it travels, suitable safety-catches, and weights suspended from ropes passing around pulleys which are fixed upon the shaft or drum around which the cable passes, a brake and a means for applying the same, so as to regulate the rate of descent, secondary ropes passing around pulleys upon the upper cable-drum, and other pulleys situated beneath the lower floor or point of rest, and levers or arms within the cage, which may be applied to produce friction against the ropes passing around these pulleys to regulate the descent of the cage.

It also consists in the application of supplemental weights having ropes passing over pulleys and leading down into the inside of the well within which the cage moves, with hooks or attachments near the bottom, where they remain attached when out of use. When it is desired to elevate the cage to the top of the shaft or well, two or more of these ropes may be detached from their fastenings and attached to the sides of the cage, so that the additional weights upon the opposite ends of the ropes will assist in raising the cage to the top. Between the walls of the elevator-shaft and the surrounding portions of the building may be formed an air-space, which will carry away any smoke which may enter it, and may also prevent undue heating of the elevator-shaft by reason of the fire surrounding it, so that it will be possible for persons to descend it in case of emergency.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a perspective view showing the ex-

terior frame-work surrounding the elevator-shaft within which the cage travels, a drum, shaft, suspending-ropes, pulleys, weights, brake, and check mechanism. Fig. 2, Sheet 2, is a vertical section of the apparatus taken through a plane of the axis of the shaft. Fig. 3, Sheet 2, is a vertical section taken transversely to the axis of the shaft. Fig. 4 is an enlarged perspective view of the cage, showing a portion of the guides and the check mechanism.

A A are guides upon the inside of the wall or shaft within which the elevator has to work, and B is the cage or platform adapted to move up and down, the shaft being guided by the upright guides A, which retain it in place. The elevator-shaft is preferably entirely closed or sheathed, so as to prevent any drafts of air or entrance of smoke or flames through the sides in case of fire. This elevator shaft or well is preferably surrounded by an open space, C, formed between it and the secondary walls within the building, so that an air-space is formed around the elevator-shaft and independent from it. This space also serves for the weights by which the elevator is operated.

D is a cable or rope by which the cage B is suspended. In the present case I have shown it in two parts, the bight of which is attached to the link E, which extends upward above the center of the upper cross-bar of the cage with the usual safety arms or catches, F, and actuating-spring for use if the rope should break. The two parts of the rope are coiled around the roller or drum G, which extends across above the upper part of the elevator-shaft, and has its ends suitably journaled, so that it may be revolved to wind or unwind the rope. Ropes H are wound around this shaft in the opposite direction from the rope D, and at points above the open spaces C, before described, and these ropes have weights I suspended from their lower ends, these weights being of sufficient size to counterbalance the weight of the cage and any reasonable additional weight which may be placed upon it.

It will be seen that when the cage is in its normal position it will be at the top of the elevator-shaft and opposite the door shown at J. Whenever one or more persons desire to descend, it will only be necessary for them to



step upon the platform, when their weight will overcome that of the counter-balances, and the cage will descend to the bottom of the shaft, when the occupants may escape through the door shown at K.

L is a drum or roller fixed upon the end of the shaft G, and M M are brake-blocks, which press against the sides of this roller. These brake-blocks are fixed to vertical arms N, and levers O are so connected with them that they may be actuated by cords P, which extend down through the elevator shaft or well, and alongside or through the platform or cage, so that the occupant may, by taking hold of the rope P, force the brake shown at M against the roller L with any desired pressure, and thus regulate the rapidity with which the cage may descend.

As an additional check and safety device for this cage, I have ropes Q, which pass over pulleys R<sup>2</sup> at the top and bottom above and below the space traversed by the cage, so that the ropes pass through or close to the edge of the cage or platform.

Upon the side timbers of the cage or platform are fixed lever-arms S, which may be turned about their pivot-pins by means of handles T projecting from them, as shown in Fig. 4. Upon the opposite end of these lever-arms are other projecting arms, U, which press against the ropes Q whenever the handles T are either pushed upward or downward. These arms U pressing against ropes Q compress them against the side timbers of the cage, and thus serve as a check which may be applied with any desired force to assist in regulating the descent of the cage.

When the cage has arrived at the bottom, and it is necessary for it to again go to the top, if the weights already connected with it are not sufficient to carry it up, an additional power may be applied by means of the weights at V. These weights are attached to ropes W, which extend from pulleys X, and thence down inside the elevator-shaft to a point near the bottom, where they are provided with hooks or other means, by which they may be attached to the inside walls of the elevator-shaft. By unhooking these and attaching them to points around the elevator-cage the power of these weights V will be applied so as to assist in again raising it to the top. As many of these weights may be used as may be desired, and it will be seen that when a sufficient number of them are attached to the cage it may be made to carry up one or more persons, if necessary.

Beneath the space traversed by the elevator-cage is a shaft having the lower pulleys, R, before mentioned, around which the check-ropes pass, and this shaft may also have a brake, Y, applied to it in case it is necessary

to bring any further pressure upon it to prevent too rapid a descent of the cage.

The cage may have guide-pulleys at Z, as shown, and these traveling against the guide-timbers of the well or shaft cause it to move very freely.

A is a screw-clamp with a friction-roller, which may be caused to press upon the rope Q, and thus assist to check the descent of the cage, if necessary.

The lower shaft may have a crank or gear wheels, through which power may be applied, if necessary, through the ropes Q, either to check the descent of the cage or to raise it to the top, the ropes Q being in such a case clamped or secured to the cage.

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

1. A fire-escape apparatus consisting of a cage suspended by ropes from a horizontal drum or shaft journaled above the elevator-well, counterbalance-weights suspended from ropes coiled around the shaft in opposite direction, an inclosed well within which the cage travels, and a surrounding chamber or space between the elevator-well and the other portions of the building, as herein described.

2. A fire-escape apparatus consisting of a well with a surrounding open space, a cage or platform suspended from the horizontal shaft above so as to travel within the well, counterbalance-weights I, together with the checks or regulator consisting of ropes Q, passing around pulleys at the top and bottom, and the levers S, with arms U, adapted to press against the ropes, as herein described.

3. A fire-escape consisting of a well having a surrounding air chamber or space, a cage or platform suspended from a horizontal shaft above, so as to move up and down the well, counterbalance-weights I, suspended from the shaft by ropes coiled around it in opposite directions from those which support the cage, and supplemental weights V, with the ropes W, and hooks or attachments by which they may be connected with the cage to assist in raising it, as herein described.

4. A fire-escape consisting of a well with the surrounding air chamber or space, a platform or cage suspended from a horizontal shaft above, and having counter-weights and regulating devices and brakes, as shown, together with the brake-lever Y, adapted to be applied to the lower shaft, as herein described.

In witness whereof I have hereunto set my hand.

ZACHARIAS LUDWIG.

Witnesses:

F. SCHUNNIELPFENNIG,  
GEO. H. STRONG.