No. 652,621.

Patented June 26, 1900.

F. M. LEPORE.

FIRE ESCAPE.

(Application filed Dec. 30, 1899.)

(No Model.)

2 Sheets—Sheet 1.

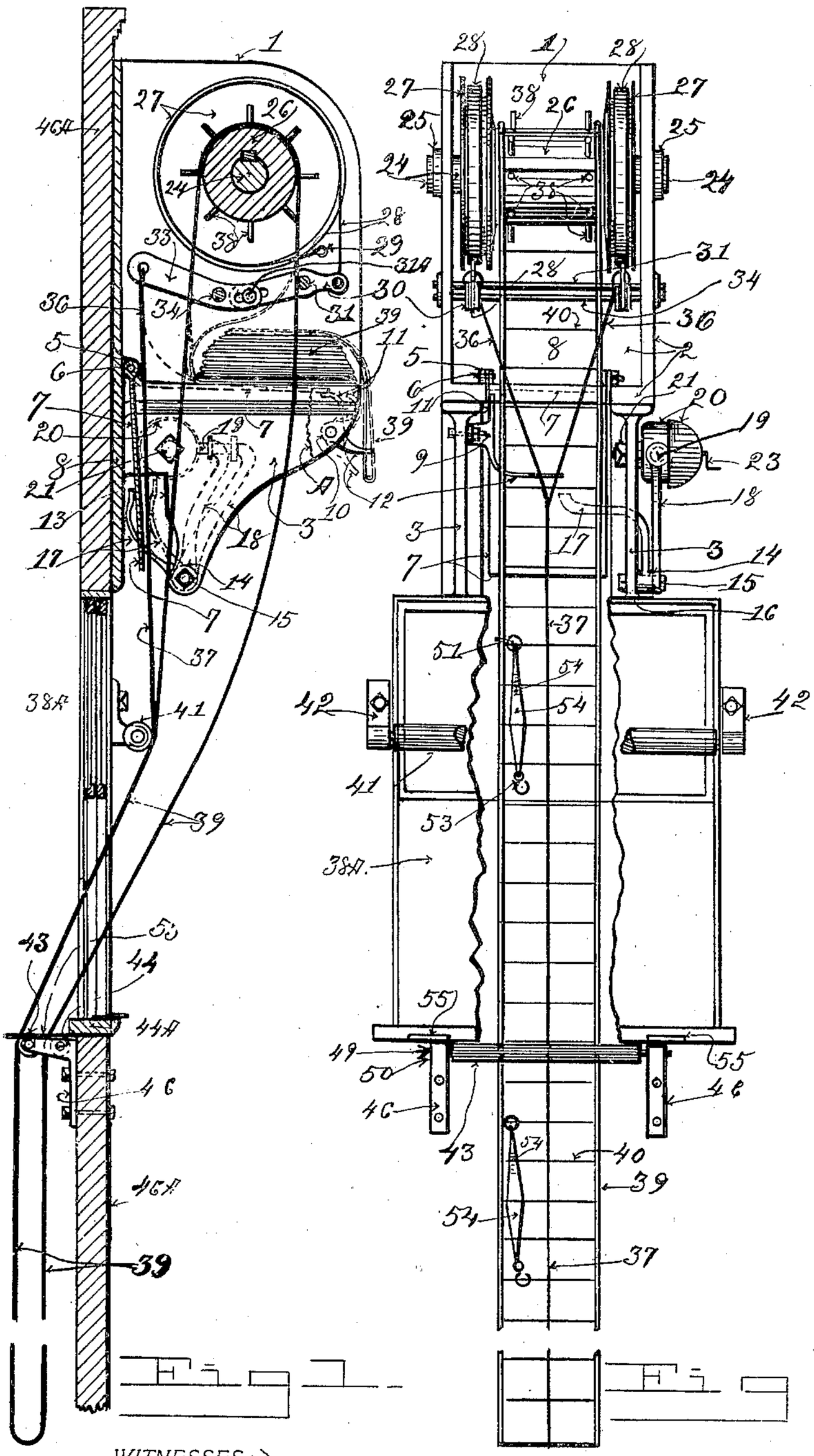

Fig 1.

Fig 2.

WITNESSES:

Bessie Thompson

Claude A. Dunn.

INVENTOR.

Felix M Lepore

BY

H. S. Bailey ATTORNEY.

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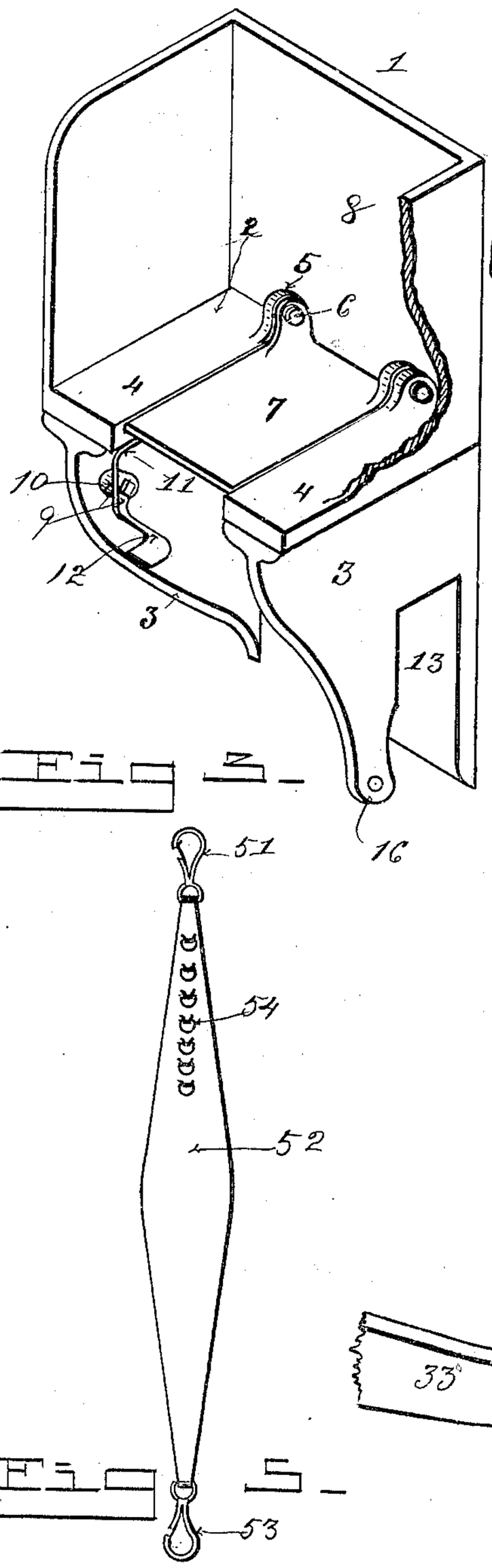

FIG 1.

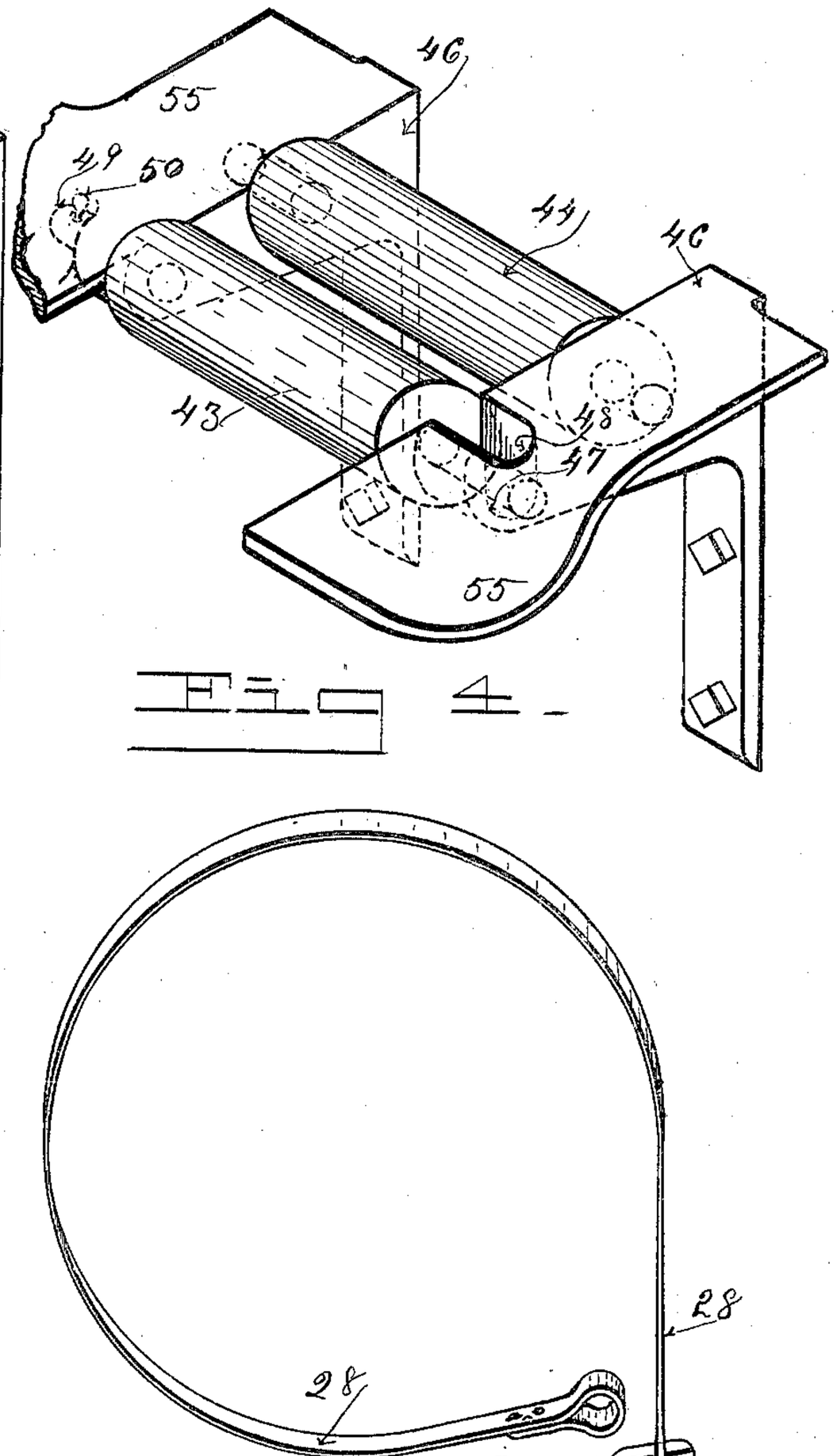

FIG 4.

FIG 5.

FIG 6.

WITNESSES:
Bessie Thompson
Claude. A. Dunn.

INVENTOR.
Felix M Lepore
BY
A. S. Bailey
ATTORNEY.

UNITED STATES PATENT OFFICE.

FELIX M. LEPORE, OF DENVER, COLORADO.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 652,621, dated June 26, 1900.

Application filed December 30, 1899. Serial No. 742,152. (No model.)

To all whom it may concern:

Be it known that I, FELIX M. LEPORE, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Fire-Escapes; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in fire-escapes; and the objects of my invention are, first, to provide an endless-ladder fire-escape the speed of which can be regulated by persons using it or by persons on the ground; second, to provide a fire-escape by which sick persons can be lowered from a burning building by attendants; third, to provide an alarm-sounding fire-escape. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a partial side elevation and a partial section of my improved fire-escape, the portion from the line A out to the end being in side elevation and the rest in section and showing a section through a fragment of a wall of a building. Fig. 2 is a front view of the fire-escape with the walls of the building left out, but with fragments of the window shown. Fig. 3 is a detail in perspective of the supporting-cabinet. Fig. 4 is a perspective view of the guide-rollers and bracket that hold the ladder of the fire-escape clear of the sides of the window-frame. Fig. 5 is an elevation of a body-supporting belt, and Fig. 6 is a detail in perspective of the compound brake-levers and brake-band,

Similar figures of reference refer to similar parts throughout the several views.

Referring to the drawings, the numeral 1 designates a cabinet. It comprises a box-shaped structure 2, supported on brackets 3. In the floor 4 of the box portion I hinge by the ears 5 and pins 6 a trap-door 7, which is arranged to swing down against the back 8 of the cabinet. This floor is held normally in horizontal position by the trip-latch 9, which comprises a hub portion 10, with two oppositely-arranged arms 11 and 12. The hub is pivotally secured to the inside of one of the brackets. The arm 11 is formed to extend with its end under and supporting the trap-door, the center of the hub and the end of the arm being placed in a substantially-vertical plane, so that the weight of the door comes in a vertical line through the end and hub-center and holds the trip-latch against accidental displacement. The opposite arm 12 extends to one side and projects beyond the edge of the cabinet and trap-door and into the central portion of the path and position of the rounds of the ladder.

In one of the brackets a recess 13 is formed, and a two-armed lever 14 is pivoted by a bolt 15 to a depending portion 16 of the bracket adjacent to said recess. One arm 17 of this lever is formed with a bend and extends through the recess to the central portion and near the back of the cabinet, so that as the trap-door swings down it will strike it and move it back against the back of the cabinet. The other arm 18 extends to and is arranged to stand close to or in contact with the push release-pin 19 of a spring-actuated alarm-bell of the rapid-striking type.

The bell 20 is secured by a bolt 21 to the side of the bracket. The bell illustrated is one of a type in common use the actuating-spring of which is wound by turning the dome portion. A crank 23 may be attached to the dome for turning the dome for this purpose.

In the cabinet I journal a shaft 24 in bearings 25, and to the shaft a drum 26 is secured. The drum has a brake-flange 27 at each end, around each of which a pliable brake-band 28 is secured to a bolt 29, which is secured to the cabinet, and the opposite end is secured to one end of a rock-lever 30, which is pivotally mounted at about one-third of the length of the lever from the end to which the brake-band is connected on a rod 31, which passes across the cabinet through its sides. The opposite end of the rock-lever is pivotally attached by a bolt 31^A to one end of a lever 33, that is also pivoted at about one-third of its length from the end that is pivotally attached to the lever on a rod 34,

that passes across the cabinet and is secured in its sides. The opposite ends of both of the levers 33 are secured to ropes 36, which are connected to a single brake-rope 37, which is long enough to reach to the ground from the floor of the building at which the fire-escape is placed. These four levers, with the brake-bands and rope, comprise a compound brake, which has a leverage of about five to one, as illustrated, and can be given any leverage desired by increasing the length of the lever 33 between its pivotal support and the rope.

The drum contains a plurality of radially-arranged projecting pins 38, that are placed equidistant and at the same distance apart as the rounds of the ladder.

The ladder 39 is preferably an endless wire-rope ladder and is adapted to rotate around the drum; but in some cases a single stationary ladder may be used, if desired. The rounds 40 may be constructed of iron rods or wire rope, if desired, and may be attached to the sides in any convenient manner. The rounds engage the pins 38 of the drum and prevent the ladder from slipping on its surface, so that it is under control of the brake.

My fire-escape is intended to be placed at the ends of halls or in rooms and over a window 38^A or doorway, and as it would rub against a window-sash unless some means is provided to hold it away from the sash I provide a roller 41, which is journaled in brackets 42, that are secured to the inside of a room or hall on each side of the window or door. I also arrange, preferably, a pair of rollers 43 and 44 just below the window or door sill 44^A, in order to hold the ladder away from the sill. These rollers are supported in brackets 46, which are bolted to the building 46^A. The outer roller is arranged to have one of its ends lift out of its bearing 47, and a recess 48 is formed through the top of the bracket for this purpose. The opposite end is loosely journaled to allow the free end to be raised several inches. Its axle 49 contains a split pin 50, which prevents the roller from being accidentally displaced from the bracket when the free end is raised, which is done to allow the inside of the endless ladder to be placed against the inside roller; but in the excitement of a fire if the ladder should be simply dropped over the outside roller the latter would not be rendered inoperative, as both sides of the ladder would slip by each other. To the ladder at intervals of several feet I secure by, preferably, a hook-spring 51 one end of a body-band 52, the opposite end of which is also provided with a spring-hook 53, and to the band nearest the end that is secured to the ladder I secure a plurality of eyes 54, to which the hooks at the free end may be attached. This band is adapted to be hooked around the waists of timid, sick, and weak persons by employees or firemen and secure them from falling while a person may descend with them. The ladder and the brake-rope should reach fully to the ground, so that the brake-rope can be manipulated from the ground. To the outside of each bracket a platform 55 is attached, which extends along its side and out in front of the sides of the ladder, but preferably not across the front of the ladder. These platforms enable a firm footing to be had from the window-sill to the front of the ladder. When the fire-escape is not in use, the trap-door is closed and the trip-latch is placed under its edge, as shown in Figs. 1 and 3. The ladder and brake-rope are then laid in straight layers on the door with the end of the ladder hanging a foot or two over the edge. The arm 12 of the trip-latch then extends through the ladder between the adjacent rounds. When a fire breaks out, the first person to reach the fire-escape simply grasps the end of the ladder and pulls it down, which trips the trip-latch and moves it from under the door, allowing the door to swing down and dump the ladder on the floor, from which it is picked up and thrown out of the window. The outside roller should then be raised and the inside of the ladder should be placed between the two rollers. The fire-escape is then ready for use and persons have simply to grasp the brake-rope with one hand, step on the ladder, and let the ladder and drum rotate by their weight, or if there are attendants on the ground they can handle the brake-rope, while the people in the building step on and move down the ladder. The minute the trap-door drops it strikes the arm 17 of the bell-ringing lever and carries it back against the back of the cabinet and causes the arm 18 to press the bell-releasing pin and hold it in, which releases the bell-ringing mechanism and allows the bell to ring an alarm until its spring is run down.

My invention is simple, safe, and practical and inexpensive to manufacture and to apply to buildings.

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

1. In a fire-escape the combination of a box-shaped cabinet, a drum mounted in said cabinet having a brake-flange at each end, brake-bands pivoted at one end in said casing and surrounding each of said brake-flanges and secured at their opposite ends to one end of a lever, a pivotal support for said lever, a second lever pivotally secured to the free end of said first-named lever, a pivotal support for said second lever and a brake-operating rope secured to the free end of said second lever, substantially as described.

2. In a fire-escape the combination of a drum having projecting pins radiating from its surface at its opposite ends, a brake-flange on each end of said drum, a pliable brake-band surrounding each of said brake-flanges, a compound lever connected to one end of each of said brake-bands, and a brake-rope secured operatively to said brake-levers with an endless wire-rope ladder comprising suit-

able sides and rounds arranged to roll on said drum and engage said pins with its rounds, substantially as described.

3. In a fire-escape, the combination of the cabinet, the drum journaled in said cabinet, the endless ladder mounted to roll on said drum, the projecting pins, the brake-bands, the brake-levers and the brake-rope with the trap-door hinged to said cabinet and the trip-latch arranged in the path of said ladder, substantially as described.

4. The combination in a fire-escape, of the cabinet, a drum journaled therein, means, including a brake-flange on each end of said drum and a depending-rope, for controlling the rotative speed of said drum, an endless-rope ladder mounted on the surface of said drum and having suitable rounds, projections on said drum adapted to engage said rounds, with a trap-door hinged to said cabinet and adapted to hold said ladder and brake-rope when in disuse, a trip-latch arranged to be tripped by a movement of said ladder to place it in a position of use, and an alarm-bell arranged to be sounded by the falling trap-door, substantially as described.

5. In a fire-escape the combination of the rotatable drum and the endless ladder, a cabinet, brackets arranged to support said cabinet, a trap-door hinged in the floor of said cabinet between said brackets, a trip-latch pivotally secured to one bracket and provided with two arms, one of which is arranged to hold up said trap-door and having the other arm arranged to be engaged by said ladder when it is dislodged from said door, a spring-actuating alarm-bell pivoted to one of said brackets, a two-armed lever pivoted adjacent to said bell, one arm of which is arranged in operative relation to ring said bell, and having the other arm arranged in the path of and adapted to be moved by the downward-swinging movement of said trap-door whereby said two-armed lever is actuated to ring said alarm-bell, substantially as described.

6. In a fire-escape adapted to be placed at windows, the combination of the cabinet and the drum with the endless ladder mounted thereon, the brake-flanges, the compound levers, the brake-rope, and the trap-door hinged in the floor of said cabinet, a trip-latch arranged to support said door an alarm-bell arranged to be actuated by said door, a roller arranged across said window, and a pair of rollers arranged below the sill of said window, brackets adapted to support said rollers and a platform leading from said sill to the front side of said ladder, substantially as described.

7. In a fire-escape to be placed at window and door openings of buildings, the combination of the drum, the supporting-cabinet, the brake-flanges on said drum, the pliable brake-bands surrounding said flanges, and the brake-rope, with a wire-rope ladder arranged to rotate said drum, a trap-door secured in said cabinet, the trip-latch arranged to releasably support said door, the alarm-bell arranged and adapted to be operated by the fall of said door, the brackets bolted to the building below the window-sill, a platform on the outside of each bracket and extending in front of said ladder and two rollers pivoted to said bracket, there being a recess in one of said brackets adapted to allow one end of the outside roller to be raised out of its bearing, and means for securing the opposite end of the outer roller against displacement from its bearing, substantially as described.

8. In a fire-escape, the combination of a box-shaped cabinet secured above a window or door opening, a drum rotatably mounted in said cabinet, brake-flanges on each end of said drum, a pliable brake-band arranged to surround each flange, two levers pivotally attached together at two of their ends, one lever of which is secured to one end of said brake-band, and the other of which is connected to a rope depending from said lever to the ground, pivotal bearings for both of said levers at determined points of their respective lengths, an endless-rope ladder mounted to roll on said drum, projections on said drum arranged to engage the rounds of said ladder, a roller arranged across said window, a second roller at the outside of the sill of said window, a bracket supporting said roller at each end, one of which brackets is vertically slotted to allow said roller to be disengaged quickly from it, a platform on the outside of each bracket leading to the front of said roller, a trap-door pivotally mounted in said cabinet and arranged to support said ladder and brake-rope in a position of disuse, means for locking said trap-door in a position to support the ladder means for unlocking said trap-door and for moving it out of the operative path of said ladder and brake-rope when said ladder is in use, a two-armed lever pivoted to said cabinet, one arm of which is arranged to be engaged by said trap-door, and an alarm-bell arranged to be engaged by the other arm of said lever and to be sounded by the movement of said lever and said trap-door when said ladder drops into a position of use, substantially as described.

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

FELIX M. LEPORE.

Witnesses:
BESSIE THOMPSON,
CLAUDE A. DUNN.