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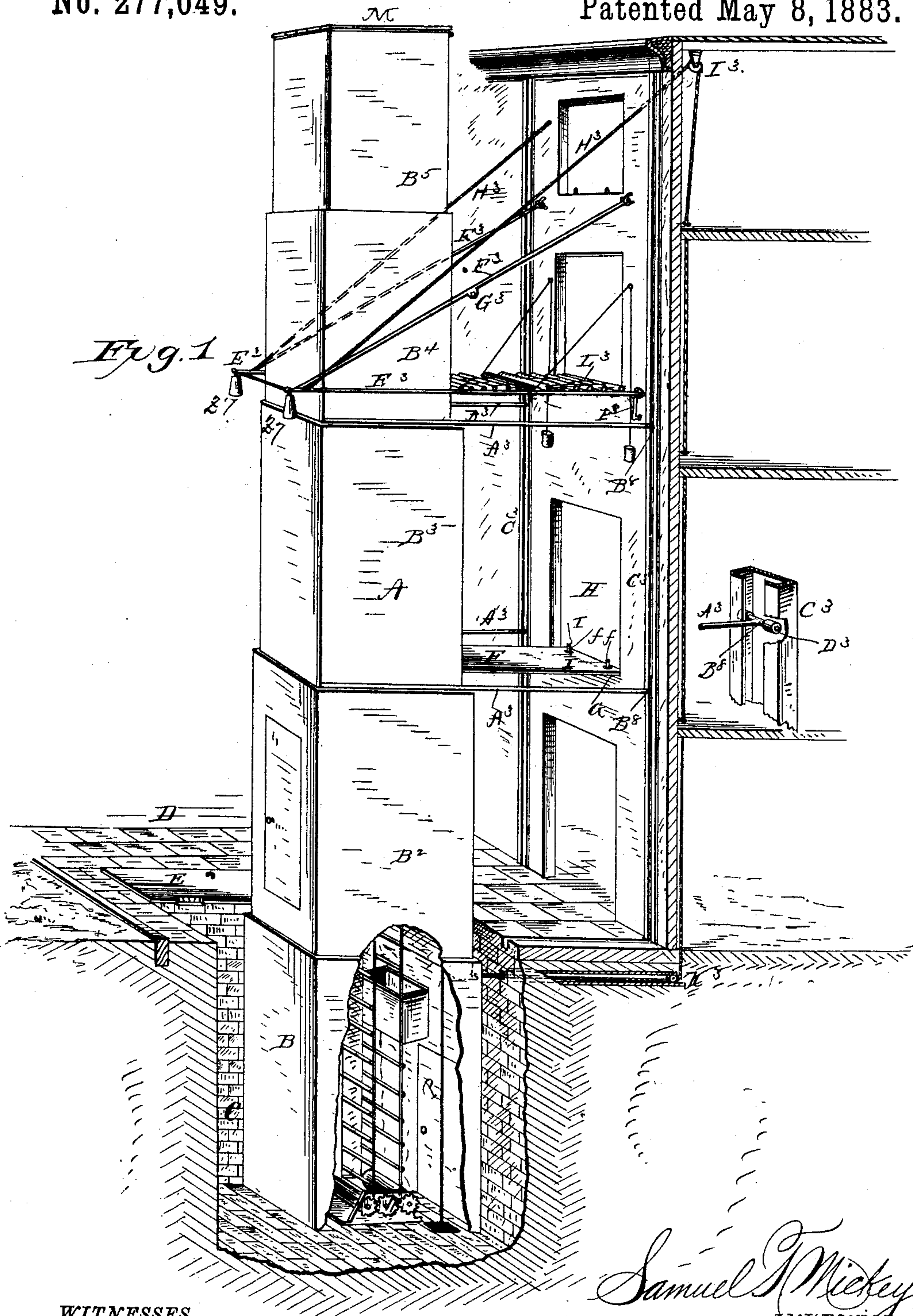
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S. T. MICKEY.

# FIRE ESCAPE.

No. 277,049.

Patented May 8, 1883.



**WITNESSES.**

F. L. Ourand  
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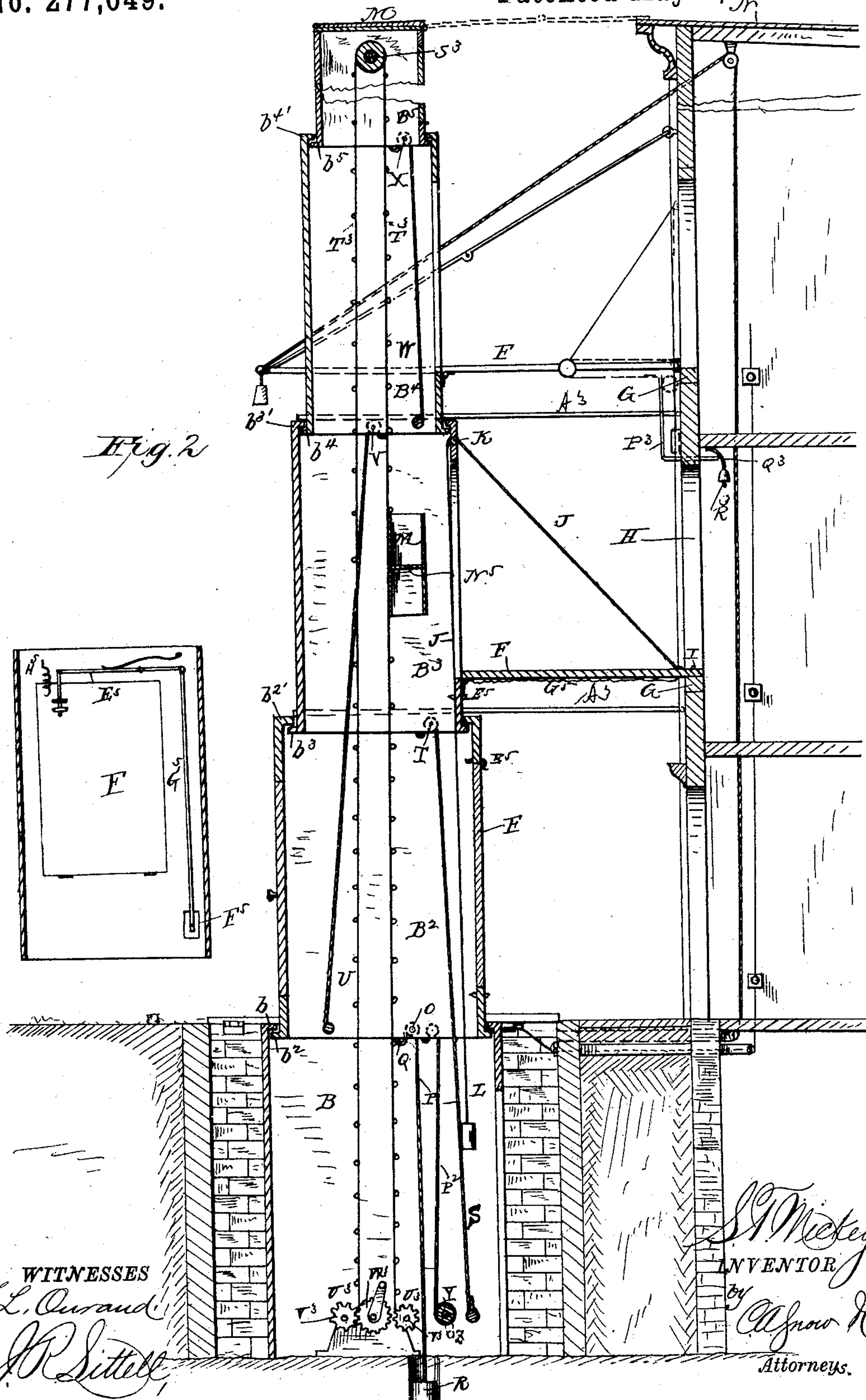
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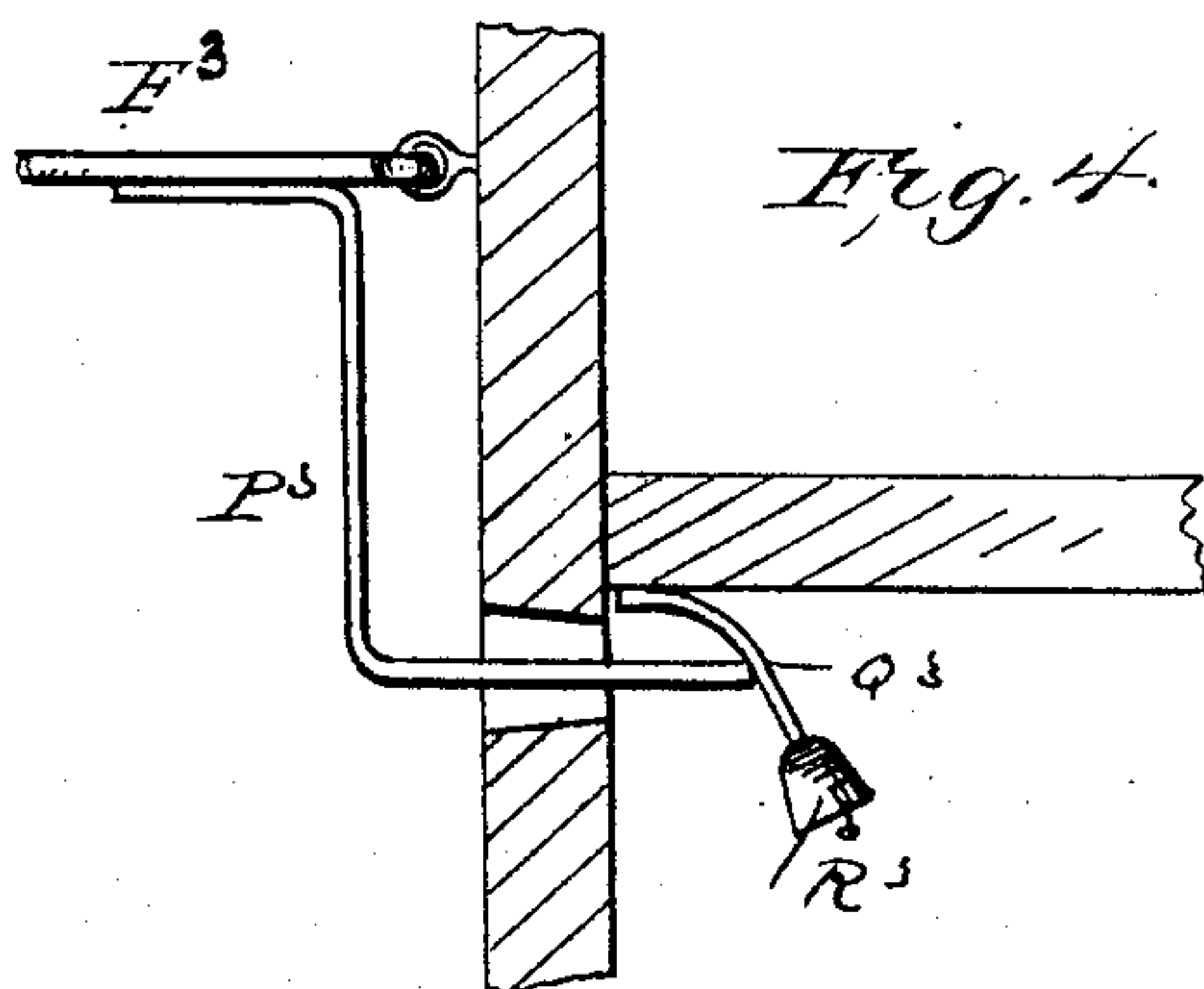
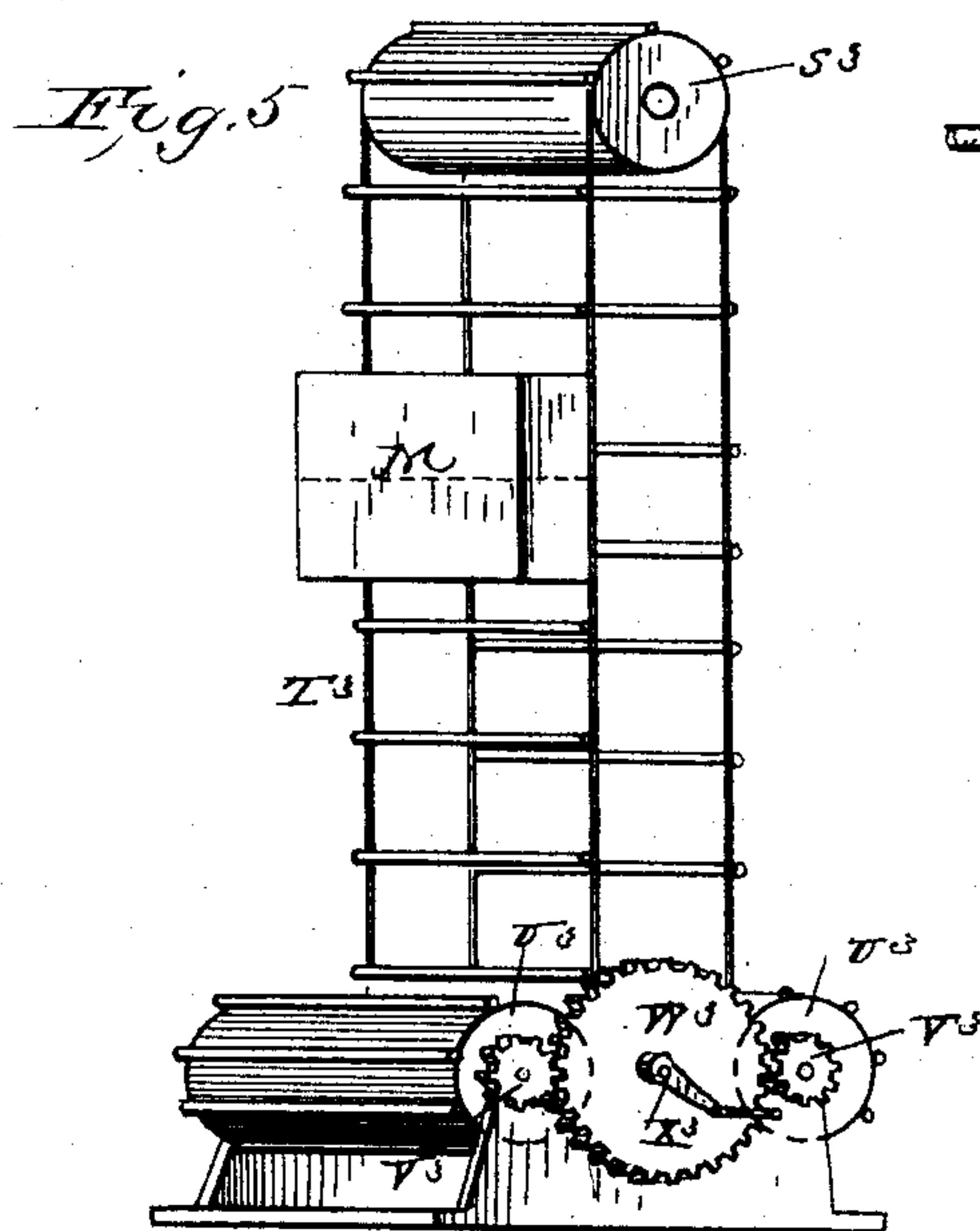
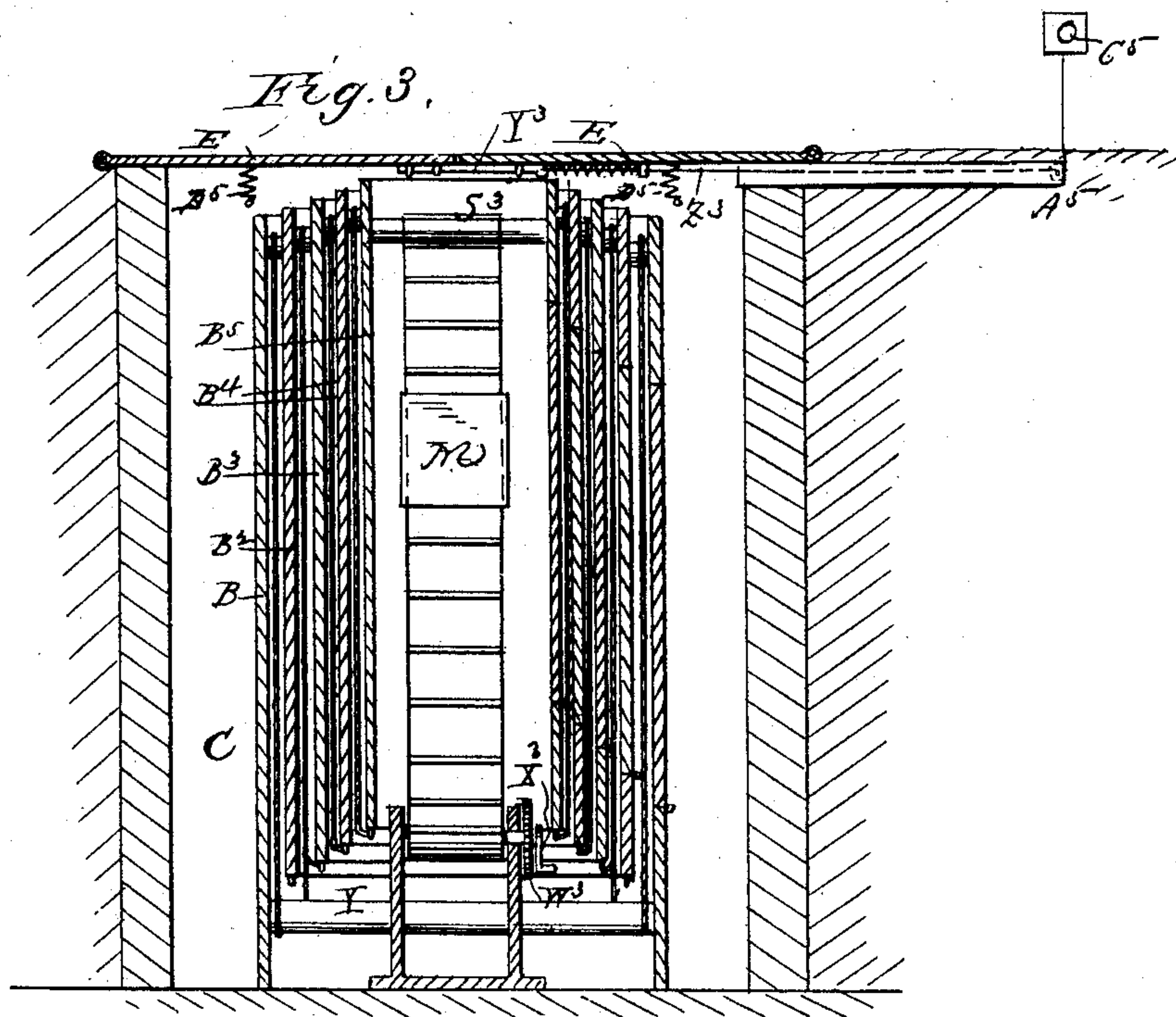
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# UNITED STATES PATENT OFFICE.

SAMUEL T. MICKEY, OF SALEM, NORTH CAROLINA.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 277,049, dated May 8, 1883.

Application filed January 8, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL T. MICKEY, a citizen of the United States, residing at Salem, in the county of Forsyth and State of North Carolina, have invented a new and useful Fire-Escape, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to fire-escapes, and has for its object to provide a simple, inexpensive, and efficient means of escape, that will be perfectly burglar-proof and safe from the depredations of malicious persons, that can be automatically thrown into position for use, and that will be secure when in position for use against being blown over or displaced by the wind or other forces.

In the drawings, Figure 1 is a perspective view of my improved fire-escape when in position for use. Fig. 2 is a vertical longitudinal sectional view, taken through the fire-escape and the building to which it is applied. Fig. 3 is a vertical longitudinal sectional view of the escape when out of operation. Fig. 4 is a vertical sectional view in detail, illustrating the alarm mechanism. Fig. 5 is a detail perspective view of the double ladder mechanism.

Referring to the drawings, A designates a telescopic tower that is formed of several sections, B, B<sup>2</sup>, B<sup>3</sup>, B<sup>4</sup>, and B<sup>5</sup>, respectively, which, when not in use, are concealed in a burglar-proof vault, C, under the sidewalk D, or at any other desired point. These telescoping sections of the escape-tower are all received into the lower or base section, B, when not in use, and they are retained in the vault C by trap doors E E, as shown. The sections are preferably formed rectangular, and the base-section B is provided with an intumed flange, b, at its top, and under this flange b projects a corresponding flange, b<sup>2</sup>, that extends from the lower edge of the next section, B<sup>2</sup>. In like manner the section B<sup>2</sup> is provided with an inwardly-extending flange, b<sup>2'</sup>, at its top, which engages an outturned flange, b<sup>3</sup>, arranged at the bottom of the next section, B<sup>3</sup>. Section B<sup>3</sup> is provided with a top flange, b<sup>3'</sup>, under which projects the bottom flange, b<sup>4</sup>, of the next section, B<sup>4</sup>, which latter section has a top flange, b<sup>4'</sup>, that is engaged by the bottom flange, b<sup>5</sup>, of the top section, B<sup>5</sup>. These flanges of the dif-

ferent sections serve as guides as the tower is being extended, and also limit extension of the latter, so that the sections will not pass entirely out of the next lower section. The sections just described correspond in height to a story of the building to which my improved fire-escape is connected, and any or all of the sections are provided with doors F, that face the building, and are designed to open downwardly and rest on the sill G of the window H, thereby forming a bridge between the window and the tower. These doors are preferably provided with perforations f, that are received over pins or nibs I, projecting from the sill of the window, by which arrangement the doors are held firmly in position when they are down, and also serve to steady the tower. To enable the doors to be governed from the ground, a line, J, extends from the top of the door up over a pulley, K, inside the section, and to the bottom of the tower, where its lower end, L, is weighted to break the fall of the door to the window-sill. By means of this line J the door may be raised when it is desired to lower the sections into the base-section, and may be otherwise governed from the ground.

The top M of the top-section, B<sup>5</sup>, (or only a portion of the top, if preferred,) is hinged on the side next the building, so that the said top can be thrown over to the roof N of the building to form a bridge thereto for the use of firemen, or to persons to escape from an adjoining building by way of the roof.

The trap-doors E E, that cover the vault in the sidewalk, can be opened from either the inside or outside of the building, and when they are opened the tower will rise automatically by means of the following mechanism: At each of the upper corners of the lower section of the tower is journaled a pulley, O, over which passes a rope or cable, P, that is secured to the lower edge of the second section, B<sup>2</sup>, as shown at Q, and is provided at its lower end with a heavy weight, R. The weights R must be sufficiently heavy to overbalance the combined weight of all the sections of the tower above the base-section, and also the hoisting and escape mechanism in them. From inside the lower section, B, extend cords or cables S, that pass up and over pulleys T, journaled at the top of the second section, B<sup>2</sup>, and



are secured to the lower portion of the next upper section, B<sup>3</sup>. In like manner ropes or cables U extend up and over pulleys V, journaled at the top of the third section, B<sup>3</sup>, and are secured to the lower portion of the next section, B<sup>4</sup>. W are like cables, that extend up and over pulleys X, journaled at the top of the fourth section, B<sup>4</sup>, and secured to the lower portion of the top section, B<sup>5</sup>. The elevating-cables S U W are secured at their bottom either to one of the lower sections, as shown, or to the bottom of the vault. By means of this mechanism, when the trap-door releases the telescoped sections of the tower by being opened, the cables P P will be drawn down by the weights R, which will cause the next section, B<sup>2</sup>, to be elevated out of the base-section B, and simultaneously with this movement of the section B<sup>2</sup> the remaining upper sections will also be raised by means of the cable-connections between the different sections. Where more telescoping sections are provided than I have herein shown, each additional section is provided with a like arrangement of connecting-cables.

To provide for any emergency, should the weights for any reason fail to perform their function of automatically extending the tower, I prefer to have a duplicate arrangement of cables, P<sup>2</sup> P<sup>2</sup>, that are arranged like cables P P, except that their lower ends, instead of being secured to the weights, are fastened to a rotary drum, Y, which is arranged within the lower section, B, and is operated by a crank, Z. By means of this drum the cables P<sup>2</sup> P<sup>2</sup> may be wound thereon to effect the extension of the tower in the same manner as the cables P P. Horse, steam, or any other power may be used to operate this drum.

When the tower has ascended to its full height suitable props (not shown in the drawings) are designed to be placed or to move automatically under the edge of the second section, B<sup>2</sup>, to provide an auxiliary support while the tower is extended.

From the different sections, at both sides, extend two bars or rods, A<sup>3</sup>, that are provided with T-heads B<sup>3</sup>, which slide in parallel guides C<sup>3</sup>, secured vertically on the building, as the tower is extended. Besides serving as guides for the different sections as the tower is extended, these rods A<sup>3</sup> also serve to brace and steady the tower against wind or other forces when it is in position for use. To facilitate movement of the T-heads of the said rods in the continuous guides on the building, the heads B<sup>3</sup> are provided with friction-rollers D<sup>3</sup>, as shown.

E<sup>3</sup> E<sup>3</sup> designate beams that are hinged to the building on each side of the sill of the window, and are supported by braces F<sup>3</sup>, likewise hinged to the building, and having a knuckle-joint, G<sup>3</sup>, which admits of the said brace-rods F<sup>3</sup> being folded up against the building when the beams E<sup>3</sup> are in their normal vertical position against the side of the building. These beams are held in this normal position by

lines H<sup>3</sup>, that extend from the outer ends of said beams up over a pulley, I<sup>3</sup>, that is preferably journaled inside the building, and from thence down under pulleys K<sup>3</sup>, suitably arranged and attached to the bottom portion of the second section B<sup>2</sup>. By means of this mechanism, when the said section B<sup>2</sup> rises as the tower is extended, the lines H<sup>3</sup> are gradually released, so as to permit the beams E<sup>3</sup> to gradually fall to a horizontal position, when it will be supported by the braces F<sup>3</sup>. These beams are of proper dimensions to embrace the tower, and this they do automatically as the sections of the latter rise. Besides serving to steady the tower, these beams E<sup>3</sup> can be utilized to support a chain-bridge, L<sup>3</sup>, of any suitable construction, by which inmates of the house can escape from the window to the tower. The bridge may be used to connect the building and the tower, as above described; or it may be arranged, in connection with its supporting-beams, independent of the tower, so that it can be let down, in case of emergency, to give passage to an elevated railway in the street, or to meet a similar structure extending from the building on the opposite side of the street. The beams E<sup>3</sup>, that embrace the tower, may be arranged at any or all of the windows contiguous to the tower, and have weights Z<sup>7</sup> Z<sup>7</sup>, attached to their outer ends, which, by reason of connecting-lines H<sup>3</sup>, assist in raising the tower. The rear ends of the beams E<sup>2</sup> are provided with an angular arm, P<sup>3</sup>, that projects from the under side and extends into the building, where, as the beams fall in case of fire, it engages the spring-support Q<sup>3</sup> of a bell, R<sup>3</sup>, and thereby causes the latter to sound an alarm.

Journaled in the upper section of the tower is a cylindrical roller or drum, S<sup>3</sup>, over which runs the middle portion of a double flexible ladder, T<sup>3</sup>, the ends of which are secured respectively to parallel drums U<sup>3</sup> U<sup>3</sup>, journaled in the lower section of the tower. These drums carry pinions or gear-wheels V<sup>3</sup> at one end that are adapted to be separately or jointly engaged by a large gear-wheel, W<sup>3</sup>, intermediately arranged, and provided with a crank, X<sup>3</sup>, by which it may be operated. By throwing the gear-wheel into engagement with the pinion of the drum at either side, which can be effected by any well-known shifting mechanism, the flexible ladder is wound down on that drum and fed from the other drum over the cylindrical roller S<sup>3</sup> at the top of the tower. Thus one side of the ladder travels upwardly, and can be used to carry firemen or others that it may be desirable to transport to the top of the building, while the other side of the ladder travels downwardly, and carries the inmates of the house who wish to escape. When the operating gear-wheel W<sup>3</sup> is thrown into engagement with both the pinions of the ladder-winding drums, the ladder is wound at the same time on both drums, which overcomes the gravity of the weights R R and draws the sections of the tower down



into telescoped position in the vault. By this means the tower is returned to its normal position when it is desired to throw it out of position for use.

5 To enable the escape apparatus to be thrown into position for operating from the interior of the building, the bolt or catch  $Y^3$ , that retains the trap-doors of the vault down, is connected with a cord,  $Z^3$ , that runs over suitably-disposed pulleys  $A^5$  up into the building, and is provided with a suitable knob,  $C^5$ , or other means at each floor whereby the said cord can be operated to draw the bolt. The trap-doors are instantly forced open after the withdrawal of the bolt by springs  $D^5$ , when the tower automatically rises, and the embracing-beams  $E^3$  automatically fall by reason of their own weight.

20 The doors of each section of the tower are retained closed until the proper time by a spring-catch,  $E^5$ , at their top. When the tower has ascended to its proper height, the top flange of the next lower section engages a projecting nib,  $F^5$ , that is connected by a cord,  $G^5$ , with said retaining-spring, and the latter is caused to release the door, when the latter is started out of perpendicular by spring  $H^5$ . At the same time the said flange engages another nib,  $H^5$ , that is pivoted to a strip,  $J^5$ , engaging the door, and acts as a lever to throw the door out, so that it falls to a horizontal position, as before described.

35 The operation and advantages of my invention will be readily understood. The escape mechanism is completely protected from the weather, and cannot be tampered with or used by burglars or other unauthorized persons. The mechanism may be connected with the city fire-alarm, if desired.

40 The sides of the tower next to the building are to be protected by sheet metal, asbestos cloth, or any other fire-proof material, so as to protect them from the heat and flames in case of fire. If preferred, only a frame-work may be used to support the escape-ladder instead of the inclosed tower herein described, the frame-work being constructed of telescopic sections and operated in the same manner as the sections of the tower. Also, if desired, the tower, instead of being inclosed in a vault, may be built on a platform that can be easily transported from place to place.

50  $M^5$  designates baskets or cars, that are adapted to be removably clamped on the flexible ladder, and to be used to transport invalids and children to the ground, as the cars travel with the ladder. These cars are provided with a bottom,  $N^5$ , centrally arranged, so that if the car is carried over the ladder-drum in the top section of the tower its utility will not be destroyed by its position, since it will always present a compartment. These cars or baskets may also be advantageously used to carry merchandise, goods, furniture, &c., from the burning building.

65 I am aware that telescopic fire-escapes have

before been extended by substantially the herein-described system of ropes and pulleys operated by hand-power applied to a drum; but in my invention the operation is automatically performed by means of the weight system at the bottom, as above described.

I claim as my invention—

1. A fire-escape composed of telescoping sections normally disposed in a vault having a top door or cover, said telescoping sections being arranged to rise and form an escape-tower when the cover of the vault is opened, as set forth.

2. In a fire-escape, the combination, with a tower composed of telescoping sections, of means for extending these sections, consisting substantially of mechanism as follows: ropes or cables passing up and over pulleys journaled at the top of the lower section and secured to the lower portion of the next section, said cables being provided with weights on their ends to overbalance the upper sections of the tower, as set forth.

3. The combination, with a building having continuous guides arranged on the outside of the wall, of a fire-escape composed of telescoping sections normally disposed in a vault and capable of rising to provide an escape-tower, said section being provided with lateral rods having T-heads that slide in the guides on the building as the tower is being extended, as set forth.

4. In a fire-escape, an escape-tower composed of telescoping sections, in combination with beams hinged to the building and arranged to embrace the tower to brace it from lateral displacement while in use, as set forth.

5. The combination of an escape-tower composed of telescoping sections, beams hinged to the building to provide a means of escape from the latter to the tower, and provided with lines for returning them to their normal position against the side of the house, and the said returning-lines extending from the outer ends of the beams up over pulleys and down, and secured to the lower section of the tower, as set forth.

6. The combination of an escape-tower composed of telescoping sections, and having a roller or drum at its top and two parallel drums at its bottom, with a flexible ladder that runs over the top drum and winds on the bottom drum, the latter being provided with gear mechanism that is adapted to be engaged by an intermediate gear-wheel, either separately or jointly, as set forth.

7. In a fire-escape, the combination, with the flexible ladder arranged to run over a roller or drum at its middle portion, of a car or basket (one or more) having an about centrally-arranged bottom, so that the car has a compartment on both sides the bottom, as set forth.

8. In a fire-escape, the combination, with a bell supported inside the building by a spring-bracket, of a beam hinged to the outside of the building and carrying at its hinged end a



projecting angular bracket that is adapted to engage the spring-bracket when the beam is lowered, as set forth.

9. A fire-escape tower composed of telescoping sections corresponding in height to one story of the building, the top of the top section being provided with a hinged section or portion that is to be thrown over on its hinges to the roof of the building so as to form an escape-bridge from the roof to the tower, as set forth.

10. In a fire-escape, the combination of an escape-tower, composed of telescoping sections normally disposed in a vault having a cover, a flexible ladder adapted to wind over or on drums arranged inside the tower, beams hinged to the building at each side the sill of the window, and supported by jointed braces likewise hinged to the building, the said beams being arranged to embrace the tower when it is in position for use, and lines for returning the beams to their normal position against the side

of the building, which extend from the outer ends of the said beams over pulleys to the lower section of the tower to which they are secured, as set forth.

11. In a fire-escape, the combination, with the vault adapted to contain an escape-tower composed of telescopic sections, and provided with a spring-actuated cover or door having a securing-bolt, of an operating-cord secured to the said bolt and extending through the adjoining building, and provided with knobs or their equivalents whereby the cord may be drawn to operate the bolt which releases the cover of the vault, as set forth.

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

SAMUEL TIMOTHY MICKEY.

Witnesses:

Z. G. HEGE,

J. W. ALSPAUGH.