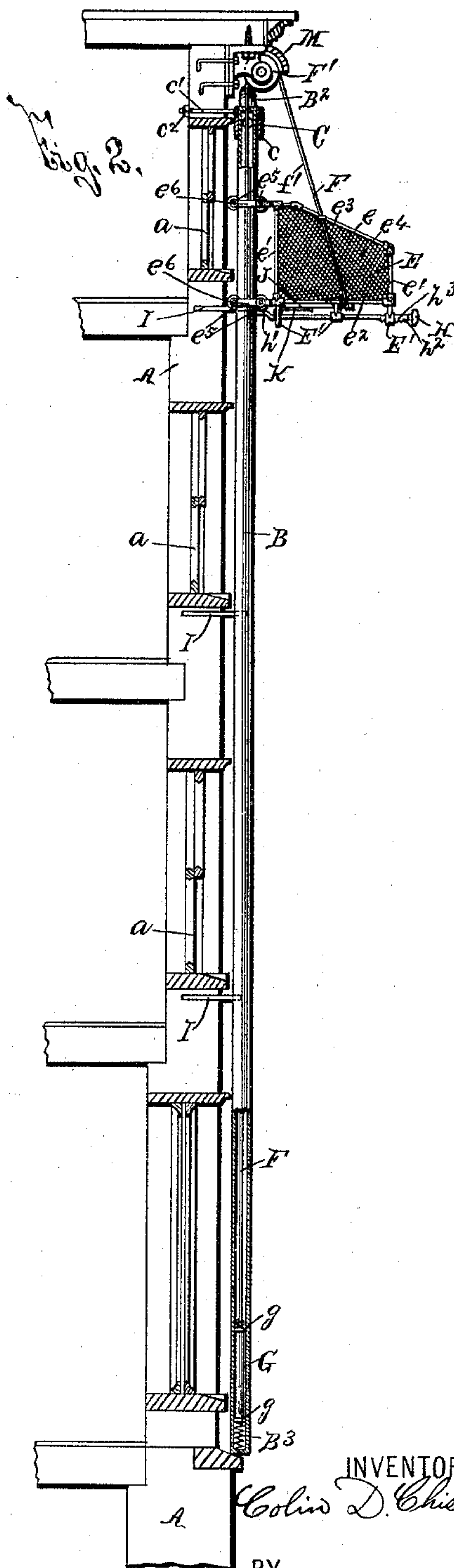


2 Sheets—Sheet 1.

Patented May 9, 1893.

No. 496,997.



WITNESSES:

H. C. Chase,
P. Schoeneck

INVENTOR

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BY

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Ray Wilkinson & Son
ATTORNEYS

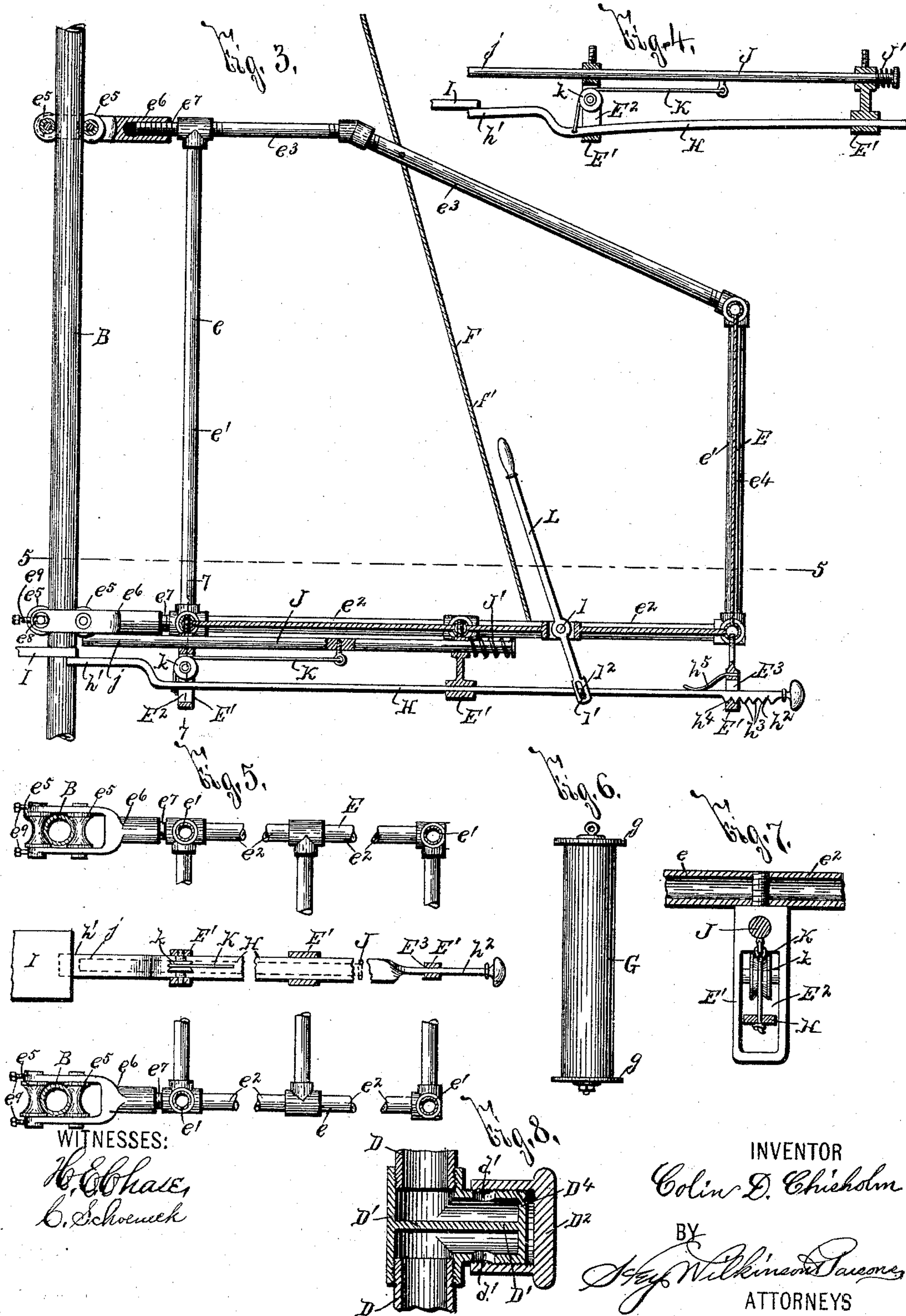
(No Model.)

2 Sheets—Sheet 2.

C. D. CHISHOLM.
AUTOMATIC FIRE ESCAPE.

No. 496,997.

Patented May 9, 1893.



UNITED STATES PATENT OFFICE.

COLIN D. CHISHOLM, OF CANANDAIGUA, NEW YORK.

AUTOMATIC FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 496,997, dated May 9, 1893.

Application filed May 11, 1892. Serial No. 432,583. (No model.)

To all whom it may concern:

Be it known that I, COLIN D. CHISHOLM, of Canandaigua, in the county of Ontario, in the State of New York, have invented new and useful Improvements in Automatic Fire-Escapes, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in fire escapes, and has for its object the production of a simple and effective device of economical construction; and to this end it consists, essentially, in an upright tube, an outlet tube arranged along side of the upright tube with its opposite ends connected to the corresponding ends of the upright tube and provided with a central partition, and a pair of outlets on opposite sides of the partition, a cap for opening and closing the outlets, a carriage movable lengthwise of the upright tube, and a weight movable within the tube between its opposite extremities connected to the carriage.

The invention furthermore consists in a pair of upright tubes connected together at their opposite extremities, and in the detail construction and arrangement of the parts, all as hereinafter more particularly described and pointed out in the claims.

In describing this invention, reference is had to the accompanying drawings, forming a part of this specification, in which, like letters indicate corresponding parts in all the views.

Figure 1 is a front elevation of my invention shown as secured to a portion of a building. Fig. 2 is a longitudinal vertical sectional view, taken on line —2—2—, Fig. 1. Fig. 3 is a detached vertical sectional view of the carriage and a portion of one of the upright tubes of my invention. Fig. 4 is a detail view, illustrating the operative position of a stop on the carriage for engaging a stationary stop on the wall of the building and holding the carriage from upward or downward movement. Fig. 5 is a transverse sectional view, taken on line —5—5—, Fig. 3, portions thereof being broken away. Fig. 6 is an elevation of the detached weight or plunger within the tubes. Fig. 7 is a vertical sectional view, taken on line —7—7—, Fig. 3, and Fig. 8 is a detail vertical sectional view

of the central portion of the outlet tube illustrating the partition therein, the outlets on opposite sides of said partition and the cap for opening and closing said outlets.

—A— represents a building of any desired form, size, and construction to which it is desirable or intended to secure a fire escape.

—B—B— are tubes arranged on the outside of the building, and —C—C— supports for the upper ends of the tubes, the remaining portions of the tubes are preferably unsupported in order that the same may yield slightly upon the up and down movement of the carriage presently described should there exist any inequalities in the outer surfaces of the tubes.

The supports —C—C— may be of any desirable form, size, and construction, but preferably consists of the engaging end or eye —c— suitably secured to the tubes —B—B— as by bolts, rivets, &c., and of the shank or attaching end —c'—, which may be secured in position by a nut —c²—.

—B'¹—B²— are cross tubes between the corresponding extremities of the upright tubes —B—B—, the central portion of the upper cross tube —B²— being preferably curved upwardly.

—D— is an outlet tube arranged along side of the right hand upright tube —B— with its opposite ends formed with arms —d—d— connected to the corresponding ends of the tube —B—.

—D'— is a partition interposed between the extremities of the tube —D— for subdividing the passage therein, and —d'—d'— outlets arranged on opposite sides of said partition and adapted to be opened and closed by a suitable cap —D²—. As best seen in Fig. 8 the partition —D'— and outlets —d'—d'— are formed in a —T— shaped connection interposed between the extremities of the pipe —D— and at a point in sufficient proximity to the ground to permit ready engagement with the hand of the cap —D²—, which preferably consists of a hollow socket screwing upon a projecting nipple —D⁴— having the outlets —d'—d'— formed in its peripheral side walls.

—E— is a carriage movable lengthwise of the tubes —B—B— and connected by flexible connections —F—F— to weights —G—G—

movable within the tubes —B—B—. The carriage —E— may be of any desirable form, size, and construction, and is here shown as consisting of an open frame —e— composed of upright corner pipes or bars —e'—e'— and connecting cross pipes —e²—e³—. Between these pipes or bars —e—e²— are strips of wire netting —e⁴— for forming the sides of the carriage. This construction of carriage is particularly practical, strong, and economical, but it is evident that it may be greatly varied as the sides may, if desired, consist of sheet iron or of wood or other similar material.

The connections —F—F— may consist of either wires, ropes, cables, or chains formed of suitable material, and they are passed over pulleys —F'—F'— and arranged with their outer ends —f'—f'— secured to the carriage in any desirable manner, and their inner ends secured to the weights or plungers —G—G—.

Provided upon the plungers —G—G— are washers or flexible shoulders —g—g— formed of leather, rubber, or other suitable material for closely fitting the interior of the tubes —B—B—, as the weights or plungers are raised or lowered by the descent or elevation of the carriage —E—.

In operation the cap —D²— is so adjusted as to partly uncover the outlet openings —d'—d'—, and, as the plungers —G— ascend with the descent of the carriage when containing one or more occupants the air enters the lower opening —d'— and passes through the lower extremities of the tube —D— to the lower extremities of the tubes —B—B—; and from the upper extremities of the tubes —B—B— downwardly through the upper end of the pipe —D— and outwardly from the upper outlet opening —d'—. The cap —D²— is preferably so adjusted, however, that the air escapes but slowly from the opening —d'—, and is consequently considerably compressed within the upper ends of the tubes —B—B— for preventing sudden upward movement of the weights —G—G— and effecting a gradual downward movement of the carriage. As soon as the occupants of the carriage alight or are removed the weights —G—G—, which counterbalance the weight of the carriage, and the ropes or connections —F—F— secured thereto, immediately return the carriage to its normal elevated position, and the air then escapes from the lower opening —d'— and enters at the upper opening —d'—. If the cap —D²— is operated to close the openings —d'—d'— when the carriage is in its low down position, the same ascends upwardly until the compression of the air prevents the further movement of the weights or plungers, and the carriage then remains stationary, and will be immediately elevated upon uncovering the openings —d'—d'—.

As clearly seen at Figs. 1 and 2 the lower cross tube —B'— is connected to the tubes —B—B— above their extreme lower end for forming cushions for the weights or plungers

—G—G—, and within these lower ends of the tubes are springs —B³—B³— for further cushioning the weights or plungers upon their downward movement.

To facilitate up and down movement of the carriage the same is provided with rollers —e⁵— adapted to engage the front and rear faces of the tubes —B—. These rollers are journaled in an adjustable support —e⁶—, Figs. 3 and 5, mounted on the projecting screw threaded stud —e⁷— of the frame —e—, and the trunnions of the rear roller —e⁵— are mounted in slots —e⁸— in the supports —e⁶—, and are adjusted by a bolt or rear support —e⁹— movable in the support —e⁶—.

—H— is a movable stop upon the carriage for engaging stops —I—I—I— projecting outwardly from the wall of the building —A—, and so arranged that, when engaged by the stop —H—, the carriage is directly opposite one of the windows —a—a—a— or other openings in said building wall. The stop —H— is rectilinearly movable in bearings —E'—E'— depending from the base of the carriage, and its inner end —h— is yielding and movable up and down in a slot —E²— in the inner bearing —E'—.

—J— is a stop bar rectilinearly guided in the two inner bearings —E'—E'— and arranged with its inner end —j— slightly separated from the adjacent extremity —h'— of the stop —H— and adapted to engage the upper faces of the stops —I—.

Connecting the stops —H—J— is a cord —K— passed over a pulley —k—. After the stop —H— is arranged so as to engage the under face of one of the stops —I— the extreme inner end —h'— of said stop engages the under face of the stop —I—, and, by the upward movement of the carriage, is deflected downwardly as shown at Fig. 4. The movement of the extremity —h'— of the stop —H— draws the stop —J— inwardly and engages its inner end with the upper face of the stop —I—, as also seen at Fig. 4, thus firmly holding the carriage in its adjusted position. The stop —H— may be withdrawn from operative position by a suitable hand engaging lever —L— or other analogous device pivoted at —l— to the carriage and provided with a slot —l'— engaging a pin —l²— upon the stop —H—. A spring —J'— upon the rear end of the stop —J— immediately retracts the same upon the upward movement of the free downwardly deflected end of the stop —H—, and the carriage is then free to move up or down. The projecting ends of the stops —I— are of unequal length, and the stop —H— is regulated for engagement with one or the other of said stops so as to permit the same to engage the lower one or the one next above. To effect this regulation each stop is of less projection than the next upper one, and the outer end —h²— of the stop —H— is movable in a slot —E³— in the outer bearing —E'— and is provided with teeth —h³— nor-

mally forced into engagement with a locking-projection —*h*⁴— in said bearing by means of a suitable spring —*h*⁵—.

When desired to engage the stop bar —*H*— with one of the projections —*I*— the same is forced inwardly until the proper tooth —*h*³— engages the locking projection —*h*⁴—, and the inner end of the bar will then fail to engage all stops below the one with which it is designed to engage the same.

In order to prevent to a certain extent the exposure of my invention to the effects of rain, snow, and sleet, I secure above the rollers —*F*—*F*— a guard or hood —*M*—, which may be of any desirable form, size, and construction, and is preferably held in position by bolts or other securing means —*m*—.

It will be readily apparent to one skilled in the art that one of the upright tubes —*B*— of my improved invention may be dispensed with, and the carriage —*E*— moved lengthwise of the remaining tube in the same manner as in the described construction of my invention it is moved lengthwise of both of said tubes.

The operation of my fire escape will be readily perceived from the foregoing description and upon reference to the drawings, and it will be particularly noted that the same is simple in construction, economical in manufacture, and durable and practical in use, and that the detail parts may be considerably varied without departing from the spirit of my invention; hence I do not herein limit myself to such precise detail construction and arrangement.

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

1. In a fire-escape, the combination with an upright tube, and a second tube provided with an outlet opening and arranged along side the former tube and connected to the opposite extremities thereof; of a carriage movable lengthwise of the former tube, and a weight, movable within the former tube between its opposite extremities, and connected to the carriage, substantially as and for the purpose set forth.

2. In a fire-escape, the combination with an upright tube, and a second tube having its opposite extremities connected to the corresponding ends of the former tube and provided with a partition between its opposite extremities and with outlets on opposite sides of the partition; of a carriage movable lengthwise of the former tube, and a weight, movable within the former tube between its opposite extremities, and connected to the carriage, substantially as and for the purpose set forth.

3. In a fire-escape, the combination of a pair of upright tubes, connecting tubes between the opposite extremities of the upright tubes, and a tube provided with an outlet arranged along side of one of the former tubes and having its opposite extremities connected thereto;

of a carriage movable lengthwise of the former tubes, and weights movable within said former upright tubes and connected to the carriage, substantially as and for the purpose specified.

4. In a fire-escape, the combination with a pair of upright tubes, supports for the upper ends of the tubes and connecting cross-tubes between the corresponding ends of the upright tubes; of an outlet tube formed with a pair of outlets and arranged along side one of the former upright tubes with its opposite ends connected to corresponding ends of the said upright tube, a transverse partition arranged within the latter tubes between the outlets thereof, a cap for opening and closing the outlets, a carriage movable lengthwise of the former upright tubes, and weights in the upright tubes connected to the carriage, substantially as and for the purpose specified.

5. In a fire-escape, the combination with a building wall and an upright tube arranged along side of said wall and provided with an outlet; of a carriage movable lengthwise of the tube, a weight, movable within the tube, and connected to the carriage, a series of stationary stops projecting from said wall transversely to the tube, a movable stop on the carriage having a yielding extremity for engaging one face of the former stops, projecting from said building wall and a stop bar on the carriage connected to the yielding extremity of said movable stop, for engaging the opposite face of the stationary stops, projecting from said building wall substantially as and for the purpose specified.

6. In a fire-escape, the combination with an upright tube and a second tube provided with an outlet opening and arranged along side the former tube and connected to the opposite extremities thereof; of a carriage movable lengthwise of the former tube, a weight movable within the former tube between its opposite extremities and connected to the carriage, and a stop movably supported on the carriage for limiting its movement, substantially as set forth.

7. In a fire-escape, the combination of a pair of upright tubes, connecting tubes between the opposite extremities of the upright tubes, and a tube provided with an outlet arranged along side of one of the former tubes and having its opposite extremities connected thereto; of a carriage movable lengthwise of the former tubes, weights movable within said former upright tubes and connected to the carriage, and a stop movably supported on the carriage for limiting its movement, substantially as specified.

8. In a fire-escape, the combination with a building wall and an upright tube arranged along side of said wall and provided with an outlet; of a carriage movable lengthwise of the tube, a weight movable within the tube and connected to the carriage, a series of stationary stops projecting from said wall transversely to the tube, a movable stop supported

beneath the carriage and provided with a yielding extremity for engaging one face of the former stops projecting from said building wall, a stop bar supported also beneath said carriage and connected to the yielding extremity of said movable stop for engaging the opposite face of the stationary stops projecting from said building wall, and a hinged hand-bar having one end arranged within the carriage and the other projecting through the bottom wall of the carriage and connected to actuate said movable stop, substantially as described.

9. In a fire-escape, the combination with an upright tube and a second tube provided with an outlet opening, and arranged alongside of the former tube and connected to the opposite extremities thereof; of a carriage movable lengthwise of the former tube and provided with loosely journaled rollers arranged on opposite sides of said former tube, and a weight movable within the former tube between its opposite extremities and connected to the carriage, substantially as set forth.

10. In a fire-escape, the combination with a pair of upright tubes, connecting tubes between the opposite extremities of the upright tubes, and a tube provided with an outlet arranged along side of one of the former tubes and having its opposite extremities connected thereto; of a carriage movable lengthwise of the former tubes, loosely journaled rollers at the opposite extremities of the carriage arranged on opposite sides of said former tubes, adjustable supports for said rollers, and weights movable within said former tubes and connected to the carriage, substantially as set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 15th day of March, 1892.

COLIN D. CHISHOLM.

Witnesses:

CLARK H. NORTON,
L. M. BAXTER.