

No. 777,648.

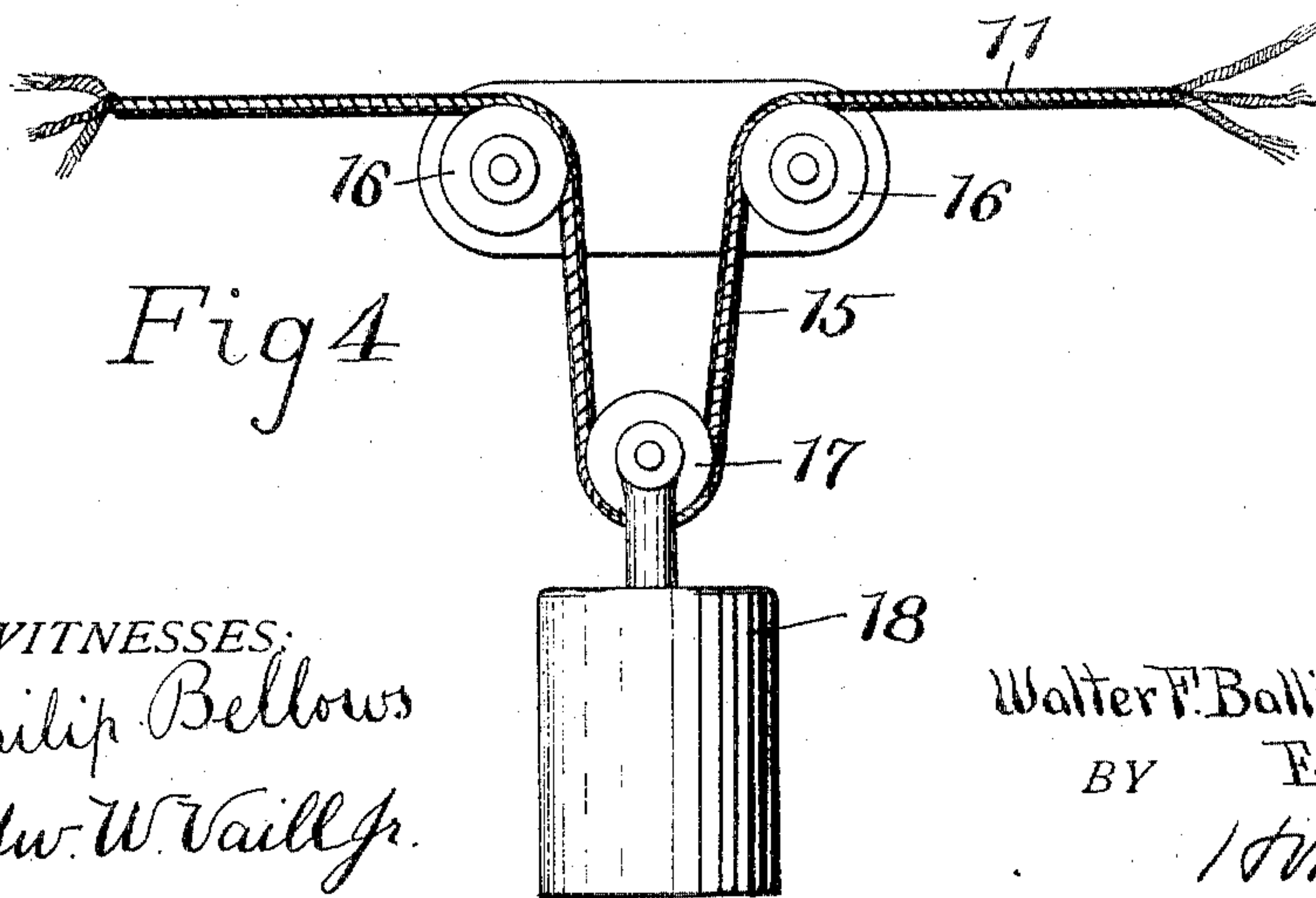
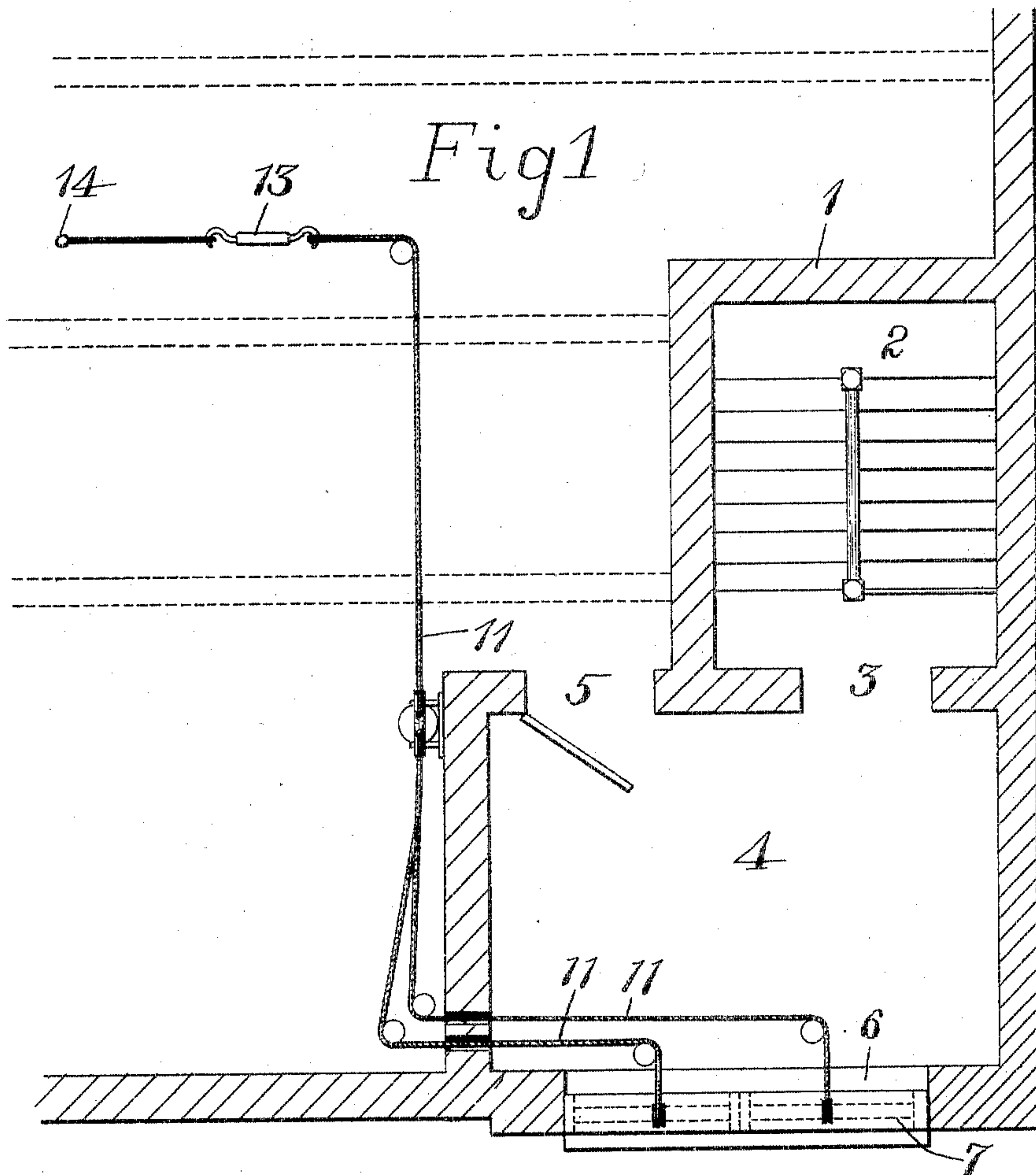
PATENTED DEC. 13, 1904.

W. F. BALLINGER & E. G. PERROT.
INCLOSED OR TOWER FIRE ESCAPE.

APPLICATION FILED MAY 16, 1904.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:
Philip Bellows
Edw. W. Vaill Jr.

INVENTORS
Walter F. Ballinger ^{2d}
BY Emile G. Perrot.
10 Me. Tel. S.
ATTORNEY.

No. 777,648.

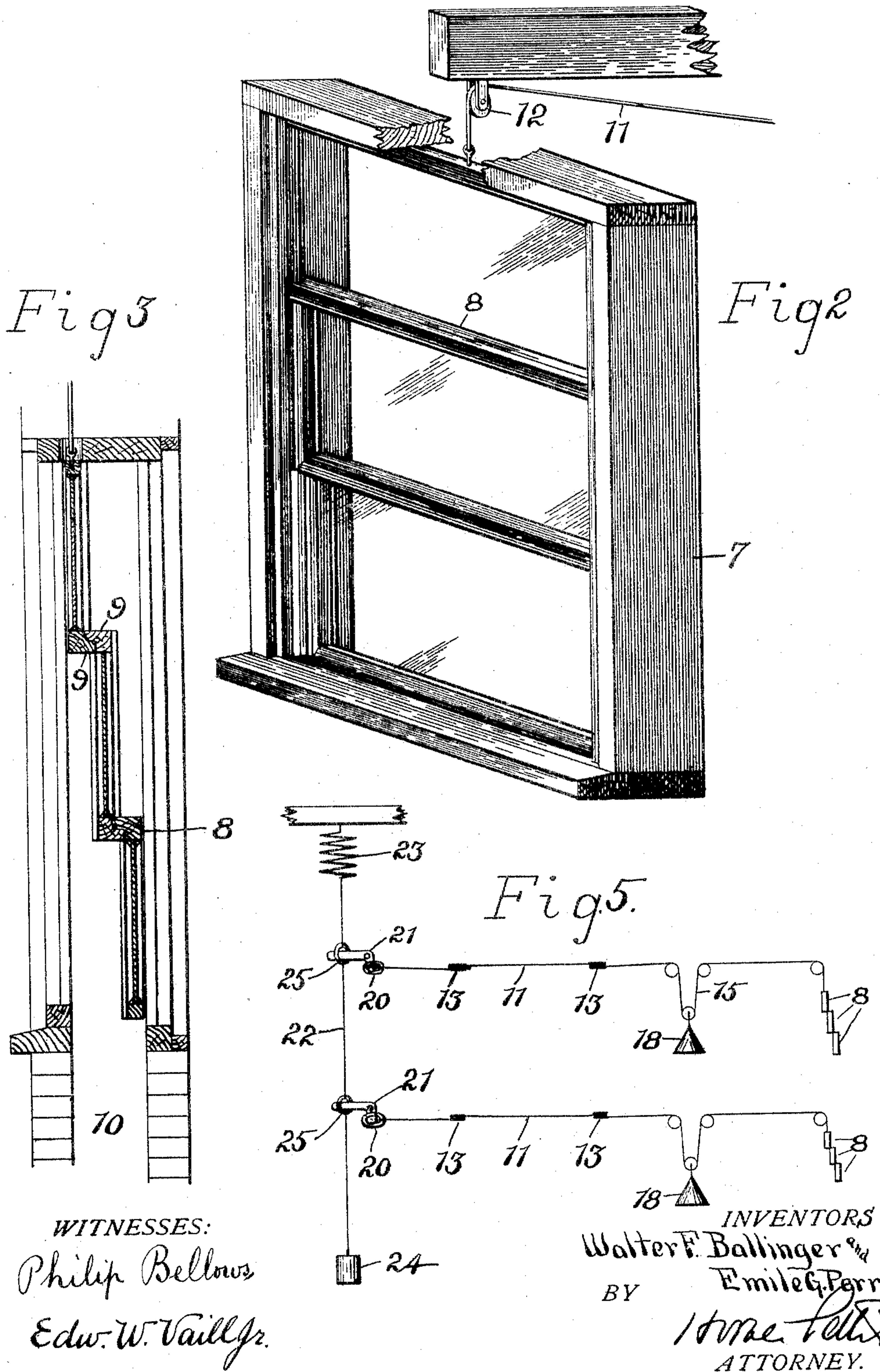
PATENTED DEC. 13, 1904.

W. F. BALLINGER & E. G. PERROT.
INCLOSED OR TOWER FIRE ESCAPE.

APPLICATION FILED MAY 16, 1904.

NO MODEL.

3 SHEETS—SHEET 2.



WITNESSES:
Philip Bellows
Edw. W. Vaill Jr.

INVENTORS
Walter F. Ballinger and
Emile G. Perrot
BY
10me. Peltz,
ATTORNEY.

No. 777,648.

PATENTED DEC. 13, 1904.

W. F. BALLINGER & E. G. PERROT.
INCLOSED OR TOWER FIRE ESCAPE.

APPLICATION FILED MAY 16, 1904.

NO MODEL.

3 SHEETS—SHEET 3.

Fig 6.

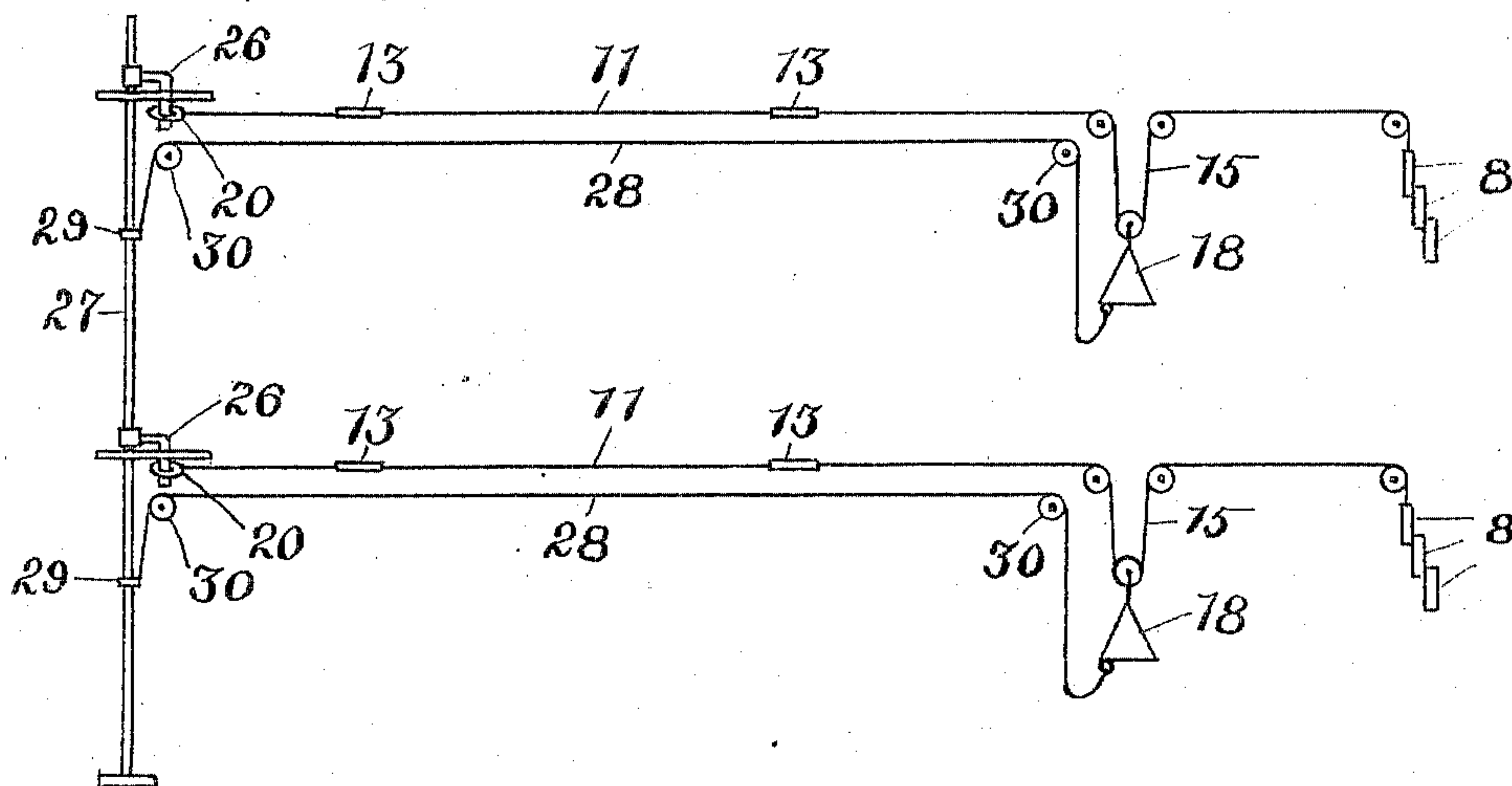
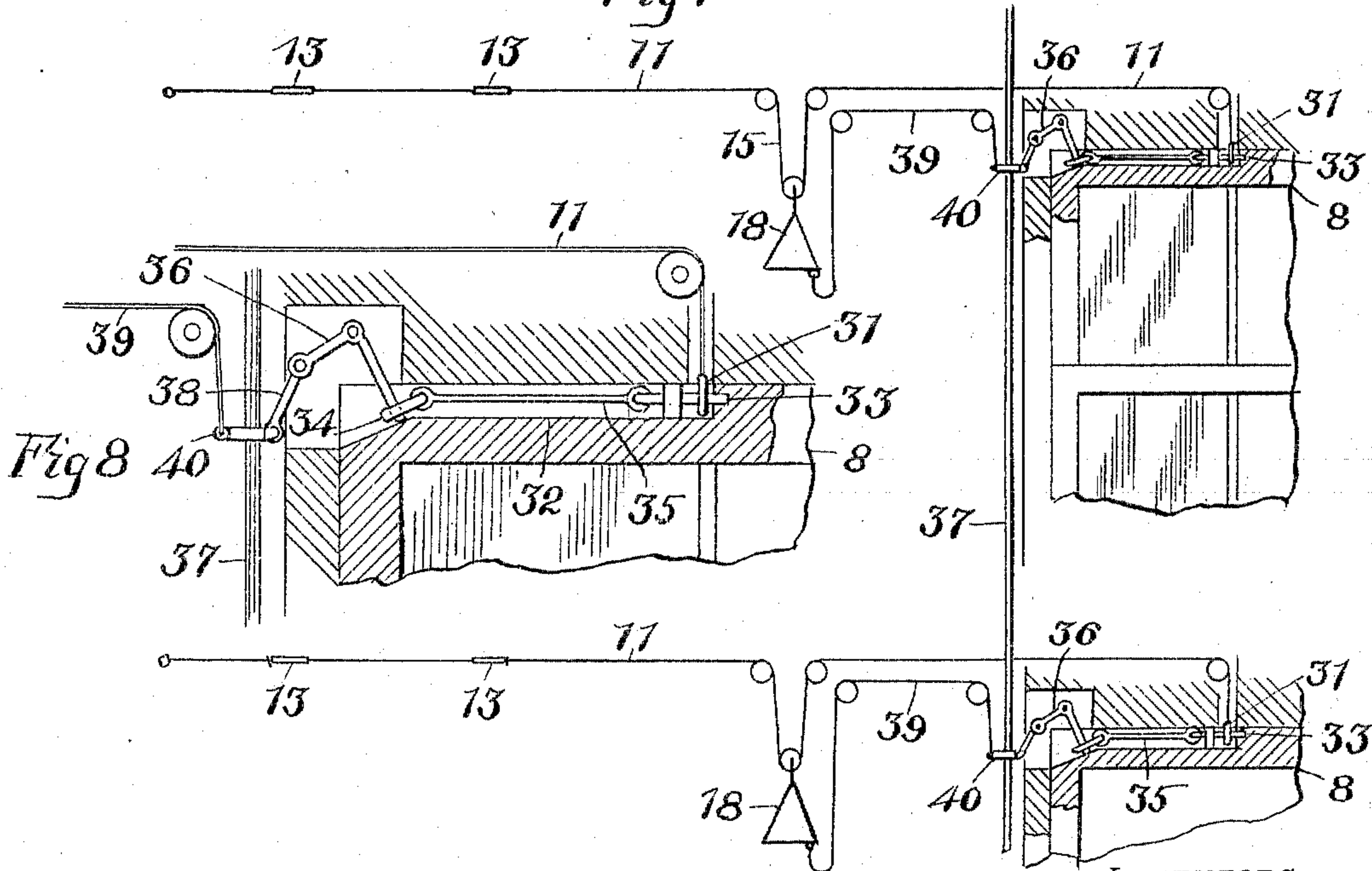


Fig 7



WITNESSES:

Edw. W. Taill Jr.
E. Marian Smith

INVENTORS

Walter F. Ballinger &
Emile G. Perrot.

by /s/ M. Peltz
ATTORNEY:

UNITED STATES PATENT OFFICE.

WALTER F. BALLINGER AND EMILE G. PERROT, OF PHILADELPHIA,
PENNSYLVANIA.

INCLOSED OR TOWER FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 777,648, dated December 13, 1904.

Application filed May 16, 1904. Serial No. 208,077. (No model.)

To all whom it may concern:

Be it known that we, WALTER F. BALLINGER and EMILE G. PERROT, citizens of the United States, and residents of the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Inclosed or Tower Fire-Escapes and Devices Appertaining Thereto, of which the following is a full, clear, and complete disclosure.

In certain cities the articles of city government or municipal ordinances prescribe that certain buildings shall be provided with fire-escapes and, if located within the building, shall be entirely separated from the other parts of the building by unbroken fire-wall and shall also be open to the outside air for free ventilation and for the egress of smoke, gases, &c. In connection with the construction required by these rules or ordinances many occupants of the buildings to which the same have been applied desire to use the fire-escape constantly as an ordinary stairway; but owing to the fact that the same is open to the outside air said occupants have been exposed to the extreme cold or to stormy weather, and being lightly dressed for indoor work have been liable to be dangerously affected by the same. The ordinances above referred to have also provided that the openings from the fire-escape to the outside air shall not be provided with or closed by permanent sashes or windows, as the object of the openings would then be frustrated and persons attempting to escape by said fire-escapes in time of fire would be liable to suffocation, owing to the excitement and inattention, which would prevent the opening of said sashes or windows.

One object, therefore, of our invention is to provide sashes or windows for the openings from the said fire-escapes to the outside air such that upon the occurrence of a fire within the building one or all of said sashes or windows will be opened automatically and without the attention of persons desiring to escape from the building.

Our invention also has for another object the providing of certain constructions for automatically operating the sashes or windows when a fire breaks out within the building, es-

pecially for use in connection with vestibuled fire-escapes.

Briefly stated, the present form of our invention comprises a fireproof tower or inclosed fire-escape having a vestibule or landing on each floor, which is also inclosed except for doors communicating with the interior of the building, said vestibule having automatically-operated closures—such as windows, sashes, or doors—which normally keep the fire-escape inclosed from the outside air, so that the same may be used ordinarily as a stairway, while upon the occurrence of a fire said closures will be immediately and entirely removed from one or all of the said openings to allow free ventilation and egress of any smoke, gases, and other dangerous fumes.

Our invention also comprises means for operating all of the windows or sashes of the fire-escape should a fire break out in only one particular floor or room of the building. For a full, clear, and exact description of this form of our invention reference may be had to the following specification and to the accompanying drawings, forming a part thereof, in which—

Figure 1 is a horizontal sectional view of one floor of a building embodying our invention; Fig. 2, a perspective view of the sash or window for closing the opening to the outside air; Fig. 3, a vertical sectional view of the same; Fig. 4, an elevation of an arrangement for holding the sash or window normally in position for allowing the same to be opened and closed in the usual manner. Figs. 5, 6, 7, and 8 are views showing different arrangements for operating the sashes to remove the same from every opening to the outside air from the fire-escape or vestibule should a fire occur in one particular floor or room of the building.

Referring to the drawings, the numeral 1 indicates a rectangular wall inclosing a stairway 2 from floor to floor, said walls having opening or doors 3 upon each floor or landing. The opening 3 preferably communicates with a vestibule 4, which is also inclosed, with the exception of a door 5, which communicates with the rooms on each floor of the in-

terior of the building. The front or exterior wall of the vestibule is provided with openings 6, which allow free ventilation to the vestibule and stairway when unobstructed by windows, sashes, or other similar devices. Within this opening 6 we provide a suitable form of window-casing 7, which contains one or more slidable window-sashes 8, which are fitted with glass or other transparent material in the usual manner. These window-sashes preferably overlap each other and are constructed with suitable flanges 9, so that the lower ones are suspended from the ones above. The front wall of the vestibule 4 is also provided with a vertical chamber or recess 10, which is adapted to receive the sashes 9 when the same are not covering the opening 6, so that said frames will form no obstruction whatever to said openings. It will thus be seen that the upper frame or sash being suspended in the upper part of the opening 6 the lower frames or sashes will also be suspended in a similar manner, and when the upper sash is lowered all of the sashes will be moved downward with the same.

The upper sash is preferably held in position by a cord or similar suspension device 11, which passes around suitable pulleys or rollers 12 and extends into the rooms of the building, said cord or rope being provided at suitable intervals by fusible links 13 of any suitable or well-known design or pattern. These links are of course adapted to separate when a fire occurs, the parts being held together by a metal which has a low fusing-point. The end of the cord 11 may be attached to any fixed point, as shown at 14, and may be connected with a device for operating all the sashes simultaneously, hereinafter to be more fully described. As means to allow the window frames or sashes to be raised or lowered in the ordinary manner for ventilation or other purposes we provide a loop 15 in the cord 11, which is supported by suitable wheels or rollers 16, said loop being provided at its lower end with a grooved wheel 17, which supports a weight 18, the weight 18 being of sufficient size to hold all the sashes for one or more windows in their normally closed position, while at the same time allowing them to be lowered by hand—that is, the weight slightly overbalance the force required to support the sashes.

When it is desired to operate all the windows or sashes corresponding to one fire-escape when a fire breaks out in one room or on one floor of the building, we may provide the following mechanism (illustrated in Fig. 5) as one arrangement for producing this result: The end of each cord 11, containing the fusible links 13, is provided with a ring 20. Said ring 20 is adapted to fit over the end of a bell-crank lever 21, which has one vertical arm and one horizontal arm. Passing through each floor of the building we provide a verti-

cally-arranged cord or support 22, which is suspended at its upper end by a spring or other balance device 23 and carries at its lower end a weight 24. Said cord 22 is also provided with a series of rings 25, which correspond in position to the horizontal arms of the bell-crank levers 21 when in normal position. The force of the weight 24, combined with the action of the weights 18 upon the cord 22, is just sufficient to keep the rings 25 in position upon the horizontal arms of the bell-crank levers 21. It will thus be seen that should one of the parts of the fusible links 13 become separated the system would become unbalanced by the release of the weight 18 and the rings 25, and the weight 24 would move upwardly. This would allow the rings 25 to slip off the horizontal arms of the bell-crank levers 21, and thereby leave said horizontal arms free to move downward, which, it is obvious, would release the rings 20 from the vertical arms of the bell-crank levers 21, and thereby allow the weights 18 to drop, which would of course release all of the sashes or windows corresponding to the fire-escape and allow the same to drop into their corresponding chambers in the walls.

In Fig. 6 we have shown another form or arrangement of parts for operating all the windows or sashes simultaneously. The cords 11 instead of being attached to bell-crank levers by the rings 20 are adapted to pass over the end of bent arms or hooks 26, which project from and are carried by a vertical rod or support 27, passing through all of the floors of the building. For operating this rod to move the same upward, so that the rings 20 will be disengaged from the arms 26, a cord, preferably of non-combustible material or wire, is attached to the weight 18 at one end and at its other end to the rod 27, as indicated at 29, after passing over suitable wheels or pulleys 30. By this arrangement it will be seen that should the parts of one of the fusible links become separated by heat the weight 18 corresponding to such link would drop and in its downward movement would pull upon the cord 28, and thereby raise the rod 27, so as to disengage all of the rings 20 and allow all of the other weights 18, together with the sashes or other closing devices, to be removed. In this form of the device it will also be seen that the windows may be raised and lowered for the purpose of ventilation in the usual manner.

In Figs. 7 and 8 we have shown a form of automatic releasing device which is similar to that of Fig. 6 with the exception that the cords are released at the ends where the same are attached to the windows or sashes instead of at the inner end of said cords. The details of this construction include a ring or link 31, which is attached to the end of the cord 11. In the sash of the window or other closing device we provide a recess 32, within which is

placed a sliding bolt 33, which is attached to a link or ring 34 by means of any suitable connection 35. Pivoted to the window-frame or the casing surrounding the closure is a bell-crank lever 36, one arm of which is adapted to engage the ring or link 34 and the other arm of which is adapted to be connected with a vertical rod 37 by means of a link 38. The cord 39, one end of which is attached to the weight 18, has its other end attached to or connected with the rod 37, as indicated at 40, after running over suitable wheels or pulleys. In the operation of this form of the device it will be seen that should one of the weights 18 be released by the separation of the parts of a corresponding fusible link the cord 39 would be pulled, which would raise the rod 37, thereby operating all the bell-crank levers 36 connected thereto. Since the inner arms of the bell-crank levers are connected with slidable bolts 33, the same will be withdrawn from the links 31, thereby allowing all of the windows or sashes to drop. In this form of automatic operating device it will be noticed that when the windows have been pulled down for any purpose, such as ventilation or cleaning, the connection for operating the release from any other floor is disconnected, inasmuch as the links 34 are disengaged from the inner end of the bell-crank lever 36.

It is obvious that these means for operating all of the sashes may be arranged in different ways by the substitution of mechanical equivalents and well-known mechanical expedients, and the same may be operated electrically, if desired. The automatic operating devices may also be applied to pivoted as well as to sliding sashes and may be also adapted to operate doors and transoms as well as ordinary windows or sliding sashes.

Having thus described our invention, we do not wish to be understood as being limited to the constructions herein set forth, for changes may be made in the form and arrangement of parts thereof without departing from the spirit and scope of our invention; but

What we claim, and desire to protect by Letters Patent of the United States, is—

1. In a tower fire-escape, the combination with a vertical way, a fireproof wall inclosing the same, openings at each floor of the building, a vestibule for each opening, said vestibule having communication with the interior

of the building and also having openings at each floor communicating with the outside air, means for closing said openings to the outside air and means for automatically removing said closing means from said last-named openings in case of fire.

2. In a tower fire-escape, the combination with a vertical way, a fireproof wall inclosing said vertical way, having doors therein at the different floors of the building, a fireproof wall forming a vestibule adjacent said inclosed way and having doors communicating with the floors of the building, said vestibule being opened to the outside air, means for closing said last-named openings and means for automatically removing said closing means in case of fire.

3. In a tower fire-escape, the combination with a stairway, a fireproof wall inclosing the same and having passages at each floor of the building, a vestibule at each floor formed by a continuation of said fireproof wall and having passages therein communicating with the interior of the building, said vestibule being open at each floor to the outside air, movable means for closing said openings, means for automatically removing said closing means and fusible links connected with said closing means and located within the building for allowing said closing means to be removed in case of fire.

4. In a tower fire-escape, the combination with a stairway, a fireproof wall inclosing the same, having passages at each floor of the building, a vestibule at each floor formed by a continuation of said fireproof wall, said vestibule having passages communicating with the interior of the building and being opened at each floor to the outside air, means for closing the openings, means for removing said closing means, fusible links connected with said closing means and located within the building and means connecting all of the floors for releasing all of said closing means when the parts of one of said fusible links become separated.

In witness whereof we have hereunto set our hands this 14th day of May, A. D. 1904.

WALTER F. BALLINGER.
EMILE G. PERROT.

Witnesses:

EDW. W. VAILL, Jr.,
LEWIS H. VAN DUSEN.