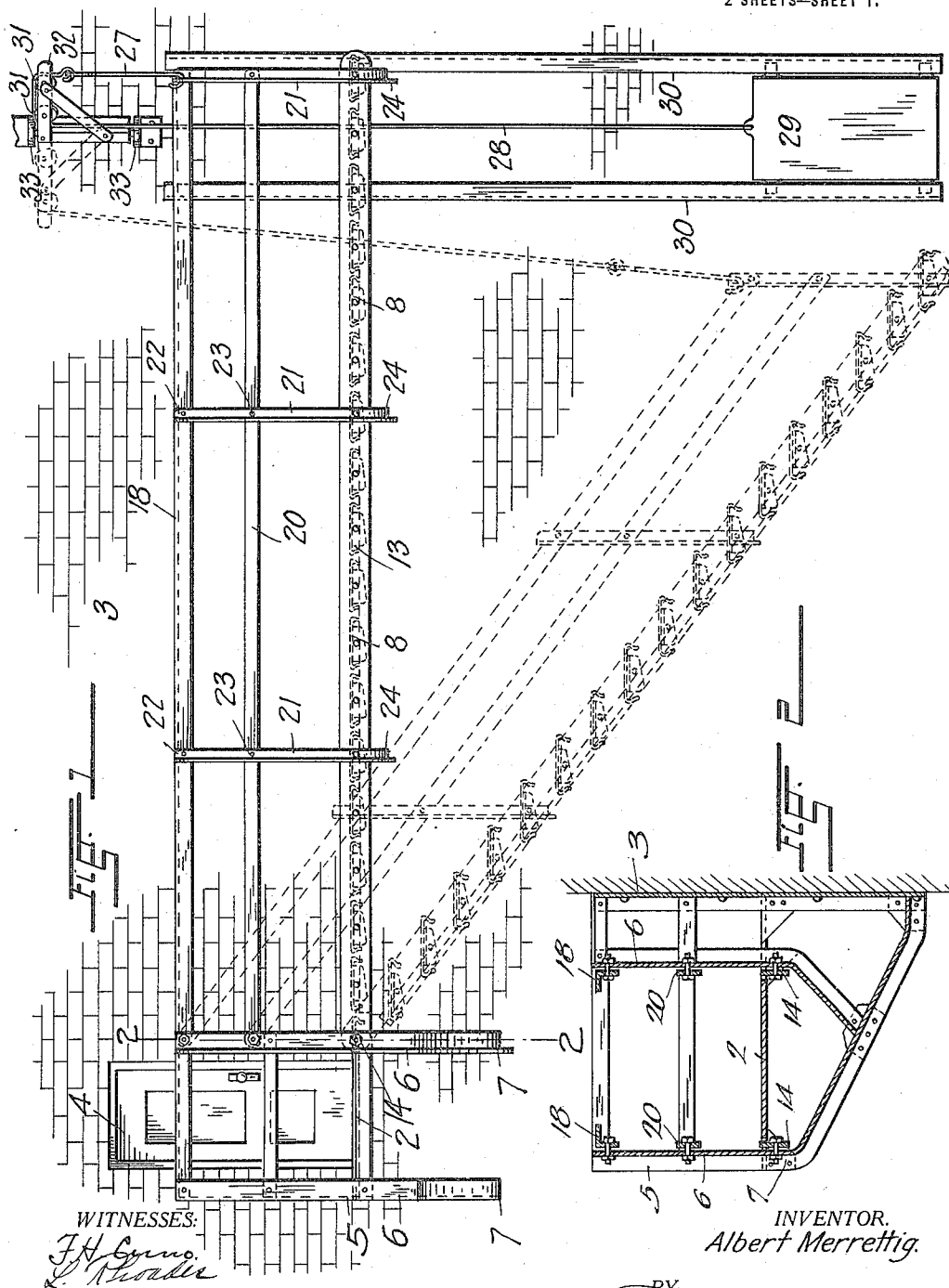


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FIRE ESCAPE.
APPLICATION FILED MAR. 10, 1915.

1,166,141.

Patented Dec. 28, 1915.

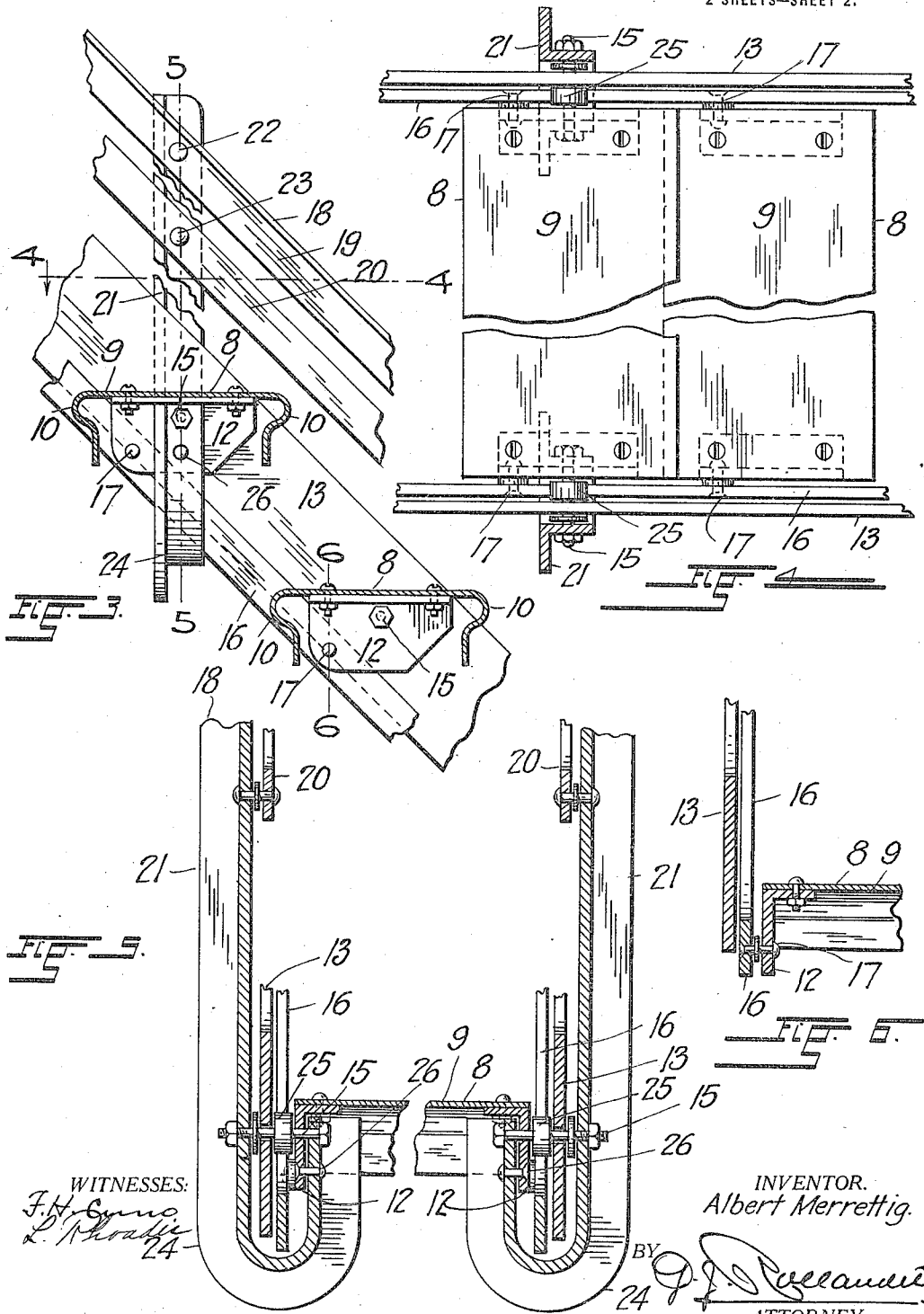
2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ALBERT MERRETTIG, OF DENVER, COLORADO.

FIRE-ESCAPE.

1,166,141.

Specification of Letters Patent.

Patented Dec. 28, 1915.

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To all whom it may concern:

Be it known that I, ALBERT MERRETTIG, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to improvements in fire escapes and its primary object resides in providing a stairway of simple construction which normally extends in substantially horizontal alinement with a landing at which its upper end is connected and which is capable of moving automatically to a downwardly slanting position, by the weight of a person or persons occupying a position on its steps. The stairway comprises a railing which is pivotally connected with a fixed support on the landing, and a series of steps which are operatively connected with each other and with the railing so that their treads will always maintain a horizontal position, irrespective of the angular position of the stairway with relation to the landing. When the stairway is in its normal position in horizontal alinement with the landing, the treads of its steps extending in a horizontal plane, constitute conjointly a floor to which the landing affords access. A person walking from the landing onto this floor causes the stairway to automatically move to a slanting position whereby to enable the person to descend to a lower level, it being understood that by reason of the continuous horizontal position of the treads of the steps they provide a secure foothold to the person standing thereon, during the downward movement of the stairway. After a person has descended the stairs, the latter being relieved of the weight which caused its downward movement, automatically returns to its normal position, unless prior to one person leaving the stairs at the lower end thereof, another person has moved onto the same from the landing, in which case the stairway remains in its operative position.

An embodiment of my invention is shown in the drawings in the various views of which like parts are similarly designated, and in which,

Figure 1 represents my improved fire-escape applied to the side of a building, the slanting or operative position of the stairway having been shown in broken lines, Fig. 2, is a horizontal section taken along the line 2—2, Fig. 1, Fig. 3, is a sectional view of two of the steps of the stairway and the therewith coöperative parts in the position they occupy when the stairway is in its operative position, Fig. 4, a section along the line 4—4, Fig. 3, Fig. 5, a section taken along the line 5—5, Fig. 3, and Fig. 6, a section along the line 6—6, Fig. 3.

In Fig. 1 of the drawings, the numeral 2 designates the landing of the fire escape which consists of a balcony secured exteriorly of the wall of a building 3, to which access may be had through a window or door 4. The balcony has a railing 5 which at the end at which the fire-escape connects with the landing, is open. The railing includes at its open end, a pair of uprights 6 which are bent inwardly to connect with the wall below the floor of the landing as at 7.

My improved fire-escape consists as mentioned hereinbefore, of a stairway comprising a series of coöperatively connected steps and one or two railings. The steps which like the other parts of the appliance, are made of metal, are as is best shown in Fig. 3 of the drawings, composed of plates the longitudinal edges of which are bent downwardly to form the nosings. The plates are at their ends secured to angle plates which provide the downwardly extending flanges 12 by means of which the steps are pivotally connected between two parallel stringers 13. The stringers are at their upper ends pivotally secured to the uprights 6 of the balcony at points 14 adjacent the floor of the same. The pivotal connections between the steps and the stringers are established by means of bolts 15, and the steps are coöperatively connected to move in synchronism about their said pivots by two parallel connecting bars 16 which extending alongside the stringers, are pivotally connected with the flanges 12 of the steps as at 17.

Railings 18 which are disposed at opposite sides of the stairway are each com-

posed of two longitudinally extending parallel rail members 19 and 20 which at their upper extremities are pivotally connected with the upright 6 of the railing of the balcony, and a number of upright members 21 which are pivotally connected with the longitudinal members as at 22 and 23, and with the stringers by means of the same bolts 15 which are used for the pivotal connection of the steps with the same. The lower extremities of the upright members 21 are bent into U-shape to provide saddles 24 which loosely embrace the stringers, the connecting bars and the flanges of the steps at the points at which the members are applied.

The bolts 15 by means of which the steps and the uprights are pivotally connected with the stringers, extend through both the body portions and the doubled extremities of the uprights as best shown in Fig. 5, washers 25 being used to occupy the spaces on the bolts between the stringers and the flanges of the steps formed by the position of the connecting bars between the same. The upright members 21 are furthermore connected to the flanges of the steps adjacent which they are positioned, by means of rivets 26, whereby the said steps and the respective uprights are permanently secured in their relative positions at right angles to each other. It will be readily seen that this arrangement assures the constant horizontal position of the steps under all conditions.

The parallelograms formed by the various upright members of the stairway, the uprights of the balcony railing, the hand and guard rails 19 and 20, and the stringers 13, maintain by reason of the fixed condition of the uprights 6, the members 21 of the railings of the stairway continuously in a vertical position and the steps with which these upright members are immovably connected, remain in consequence in a horizontal position irrespective of the angular position of the stringers with relation to the balcony.

Inasmuch as all the steps comprised in the stairway are coöperatively connected by the connecting bars 16, the movement of the steps fixed at the lower ends of the upright members 21, about their pivots on the stringers during downward movement of the stairway about its pivotal axis, is communicated to the other steps with the result that the entire series move in synchronism and thereby continuously remain in the position in which the treads of the steps extend in horizontal planes.

The stairway has adjacent its outer end, a bail 27 by means of which it is attached to the end of a cable 28 which at its opposite extremity is connected with a counter-

weight 29 slidably mounted in a guideway formed by a pair of upright angle bars 30 on the wall of the building. The cable is supported upon a pair of sheaves 31 on a swinging bracket 32 which is pivotally mounted between bearings 33 secured to the wall at points above the outer end of the stairway when it occupies its normal horizontal position shown in full lines in Fig. 1. The weight 29 is proportioned so that it slightly overbalances the weight of the stairway when the latter is unoccupied and thereby maintains it normally in its horizontal position. When the stairway is subjected to the weight of a person moving from the landing 2 onto its steps, the combined weights overbalance that of the counterpoise, and the stairway will in consequence move downwardly about its pivotal axis at the end of the landing until its lower end has reached a determinate lower level as indicated in broken lines in Fig. 1. The stairway will remain in this position as long as one or more persons occupy its steps, and as soon as the last person has moved off its lower step, the weight 29 moving downwardly, will automatically return it to its normal position in horizontal alinement with the landing.

Having thus described my invention what I claim and desire to secure by Letters-Patent is:

1. In a fire escape, the combination with a fixed support, of a stairway comprising parallel stringers pivoted on said support, a series of steps having at their ends downwardly extending flanges, a railing including a rail pivoted on the support and an upright pivoted at its upper end to the rail and having at its lower end a saddle loosely embracing one of the stringers, a bolt extending through registering openings of the saddle-end of said upright, a flange of one of the steps, and one of the stringers, a bolt connecting the saddle-extremity of the said upright with the said flange of the said step, means for the pivotal connection of the flanges of the other steps with the stringers, and a connecting bar disposed between one of the stringers and the adjacent flanges of the steps with which they are pivotally connected.

2. In a fire escape, the combination with a fixed support, of a stairway comprising parallel stringers pivoted on said support, a series of steps having at their ends downwardly extending flanges, a railing including a rail pivoted on the support and an upright pivoted at its upper end to the rail and extending exteriorly of one of the stringers, a bolt extending through registering openings in the lower end of said upright, a flange of one of the steps, and the said stringer, a bolt connecting the lower

end of the upright with the said flange,
means for the pivotal connection of the
flanges of the other steps with the stringers,
and a connecting bar disposed between one
5 of the stringers and the adjacent flanges of
the steps with which they are pivotally con-
nected.

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

ALBERT MERRETTIG.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."