

D. F. YOUNGBLOOD.
FIRE ESCAPE.
APPLICATION FILED DEC. 3, 1915.

1,200,686

Patented Oct. 10, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

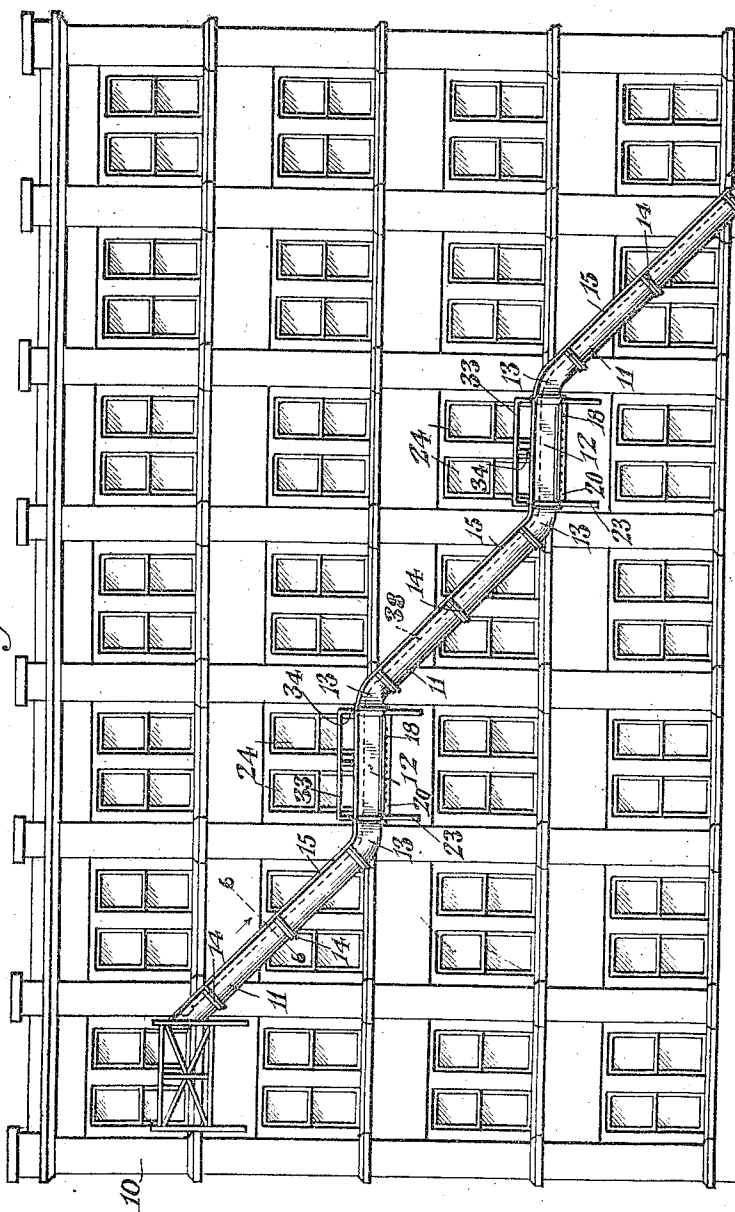
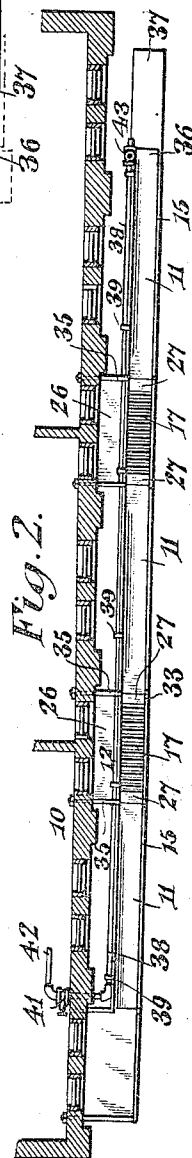
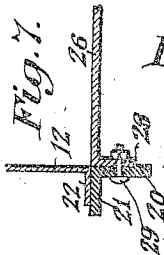


Fig. 2.



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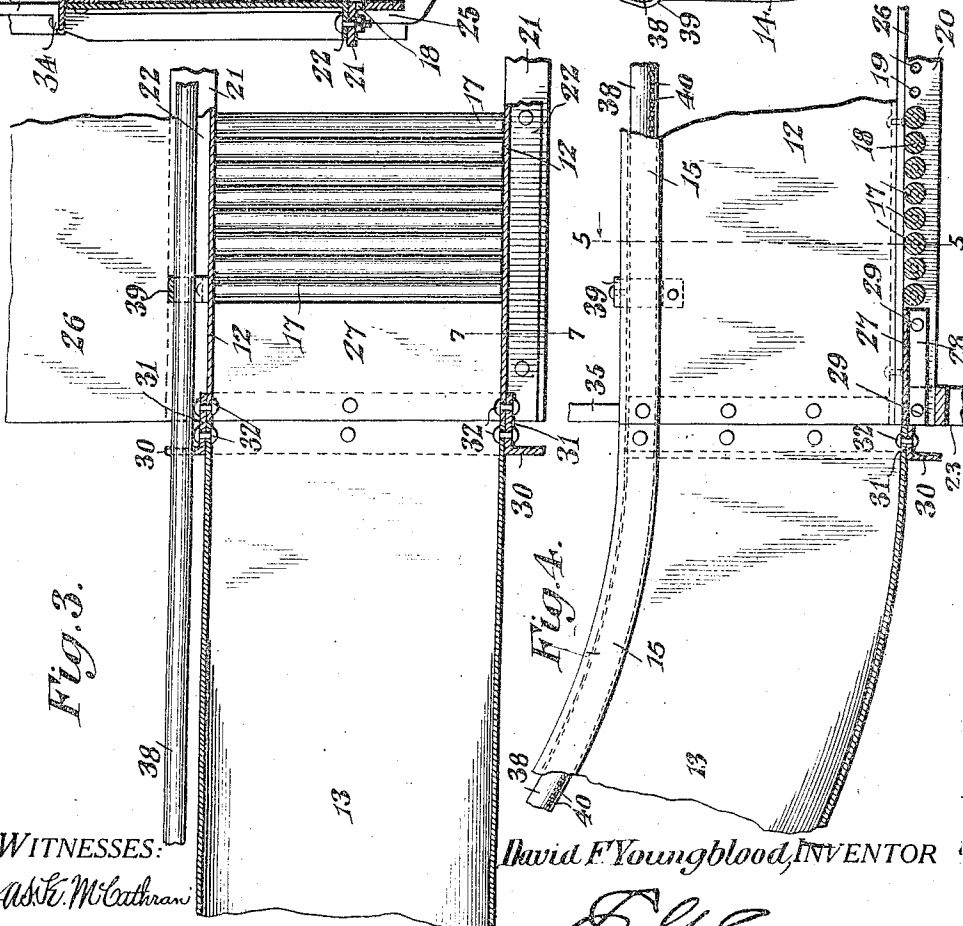
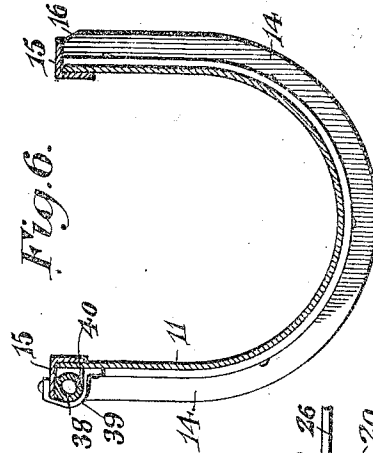
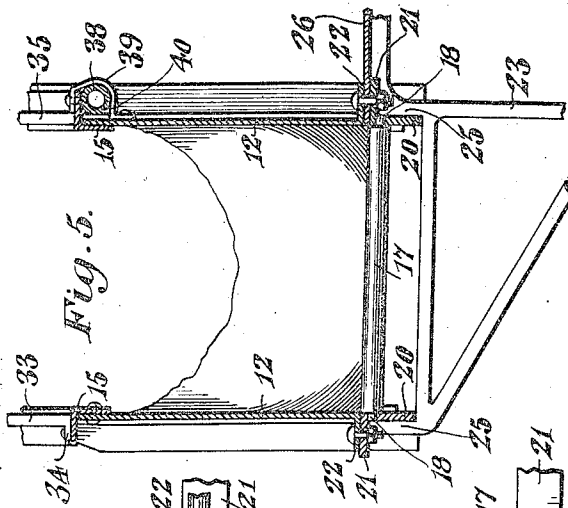
FIRE ESCAPE.

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UNITED STATES PATENT OFFICE.

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FIRE-ESCAPE

1,200,686.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DAVID F. YOUNGBLOOD, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Fire-Escape, of which the following is a specification.

This invention relates to an improved fire escape of the chute type, and has for an object to provide a device of this character, which will land persons quickly and safely on the ground from various stories of a building, and which will not become congested or jammed by persons entering the chute from intermediate stories, during the passage of persons from the upper stories through the chute.

Another object of the present invention is to provide a practical device which may be easily and economically installed or erected against the side of a building, and to provide a device which is particularly adapted for school buildings, and the like, where large numbers of children have to be managed in case of fire, so as to provide a means for their quick and safe exit from the various floors of the building, to prevent congestion of the chute, the falling out of persons from the chute during their passage therein, and to prevent persons in the chute from stopping at any point intermediate the ends of the chute.

Another purpose of the invention is to provide a means for protecting the chute and the persons in the chute from fire, should the flame issue from windows beneath or adjacent to the chute, the invention in this respect, comprising a means for passing a water sheet or curtain down against the inner side of the chute to keep the chute in a cool condition and to ward off the heat and flame.

Other objects and advantages of this invention will be more particularly brought out in the following description of the present preferred embodiment of this invention, the same being illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of a building having the improved chute of this invention applied thereto. Fig. 2 is a horizontal section, taken through the top of the building and looking down upon the improved fire escape as applied thereto. Fig. 3 is a detail fragmentary view in horizontal section enlarged, of one end of a horizontal portion

or landing of the chute and the connecting elbow, or angle section which joins the horizontal portion to one of the inclined sections. Fig. 4 is a longitudinal sectional view, taken through the structure shown in Fig. 3. Fig. 5 is a transverse section through the horizontal portion of the chute, taken on the line 5—5 of Fig. 4, and looking in the direction of the arrow indicated in Fig. 4. Fig. 6 is a transverse section through the inclined portion of the chute, taken on the line 6—6 of Fig. 1. Fig. 7 is a detail sectional view of the bottom construction of the horizontal portion of the chute, taken on the line 7—7 of Fig. 3.

Referring to these drawings, wherein like parts are designated by similar numerals of reference throughout the several views, 10 designates a building, shown in the present instance, as being four stories high, and having applied to the side thereof, the improved fire escape.

The improved fire escape comprises a plurality of inclined or vertical sections 11, a plurality of intermediate horizontal sections or landings 12, and a plurality of angle sections or elbow sections 13, which join the opposite ends of the horizontal sections 12 to the respective upper and lower ends of the inclined or vertical sections 11, so as to complete the chute and provide an uninterrupted passage from top to bottom of the fire escape.

Each of the vertical sections 11 preferably comprises a body of sheet iron, which is bent substantially U-shaped in cross section, and is provided with a rounded bottom, as shown in Fig. 6. This body 11 of sheet metal is made of substantial thickness, and is held in U-shape by means of forms or braces 14 of angle iron construction, one flange of which lies flat against the outer surface of the sheet metal body, while the opposite flange extends outward to provide a reinforcement to prevent the bending or buckling of the section 11. The upper edge of the body of sheet metal 11 is reinforced and held in place at each side of the chute by stiffening angles 15, the vertical flanges of which lie against and are preferably riveted to the upper edge of the body 11, while the horizontal flanges of the stiffening angles 15 extend outwardly from the body 11, and lap over the upper ends of the forms or braces 14, as shown in Fig. 6. For the purpose of preventing sharp corners, the outer flanges of the forms or

braces 14 are beveled, as at 16, and terminate beneath the horizontal flanges of the stiffening angles 15. It is, of course, understood that the forms or braces 14 as well as the body may be given any other suitable shape than the U-shape disclosed.

The landings or horizontal portions of the fire escape are, as shown in Fig. 5, rectangular in cross section. The bottom of the horizontal section 12 comprises a plurality of rollers 17, which lie close together, and are provided upon their opposite ends with spindles or trunnions 18 of reduced diameter, and which are journaled in bearings 19, provided in a pair of vertical flanges 20 of angle irons, which support the bottom of the horizontal section 12. These angle irons have their horizontal flanges 21 extending outwardly from the rollers 17, and receive against their upper faces the outturned flanges 22 of the sheets of metal, comprising the body 12 of the horizontal sections. The horizontal section 12 is supported upon a bracket 23 secured to the side of the building 10, beneath the window 24 of the building, the horizontal section 12 being given suitable length to accommodate the vertical or inclined sections 11 irrespective of the distance between the balconies or landings at the different floors, which balconies or landings must be located adjacent to the windows. The bracket 23 is provided in its upper edge with opposed and inwardly facing shoulders 25 against which the vertical flanges 20 are seated, as shown in Fig. 5, so as to support these flanges 20, prevent the spreading of the flanges, and to thus ably hold the horizontal section 12, in place. The horizontal flanges 21 of the bottom angle irons of the section 12 rest against the upper edges of the brackets 23, so that the sides of the body 12 are amply supported, and the rollers 17 are firmly held from springing upwardly out of place. A platform 26 extends between the inner side of the section 12, and the window 24, as shown in Figs. 2 and 5 of the drawings, the outer edge of the platform 26 being preferably secured between the flange 22 of the sheet metal side of the section 12 and the horizontal flange 21 of the bottom angle. It is, of course, understood that any number of rollers 17 may be mounted in the bottom of the section 12. In the present disclosure the rollers terminate short of the opposite ends of the section 12 and smooth bottom plates 27 fill in the opposite ends of the section 12, and are provided with depending flanges 28, which lie against the horizontal flanges 20 of the bottom angle irons, and are secured thereto by bolts 29, or other suitable fastening devices. These smooth bottom plates 27, which fill the opposite ends of the section 12, provide suitable continuations of the bottoms of the adjacent elbow sections 13, and provide smooth and

somewhat yielding members to receive the persons as they are delivered from the bottom of the adjacent inclined section. It will be noted that throughout the construction of the chute, where the angle irons and flanges bear against each other or overlap, the same are secured together by bolts or rivets, so that the chute may be made from substantial stock material, the parts being formed from angle iron and sheet metal, but few of the parts such as the brackets 23, being of special or peculiar construction.

The connecting or elbow section 13, which is made of sheet metal, is bent into substantially U-shape at one end, into the form shown in Fig. 6, and registers at one end of the horizontal section with the lower end of one of the inclined sections 11, and at the opposite end of said horizontal section with the upper end of the adjacent lower inclined section 11. The body 13 of this connecting or elbow section develops throughout its length from a U-shape cross section to a substantially rectangular cross section to merge into and register with the end of the horizontal portion 12 of the chute. This development of the section 13 is shown in Figs. 3 and 4 of the drawings, and is also indicated in Fig. 1 of the drawings. The forms or braces 30, which are employed at the meeting edges of the sections of the chute, and at the meeting edges of the sheet metal which may occur at any convenient part of the sections of the chute, are provided with elongated or widened base flanges 31 adapted to overlap the meeting ends of the sheet metal, as shown in Figs. 3 and 4, and are secured to the opposite edges of the sheet metal by rivets 32 to hold the body of the chute to the form and also hold the edges of the sheet metal closely together. In this manner, the meeting edges of the sheet metal are reinforced by a form or brace having the perpendicular or outstanding flange or leg to insure the rigidity of the body.

The stiffening angle 15 extends from top to bottom of the chute throughout all of the sections 11, 12 and 13, so as to reinforce the upper edges of the sheet metal bodies of the various sections and provide a smooth uninterrupted rail along each upper edge of the chute.

At the balconies or landings, each section 12 is provided with an upstanding railing 33, which, as shown particularly in Fig. 5, is secured to the horizontal leg of the stiffening angle 15 by a foot or web 34 struck laterally from the lower end of the rail 33 and riveted to the horizontal leg of the angle 15. This rail 33 rises upwardly a desired distance above the stiffening angle and extends throughout substantially the entire length of the section 12. At each end of the platform 26, a safety rail 35 is provided, the same rising from the inner stiffening angle

15 and extending inwardly toward the building 10, and being secured thereto, as shown in Fig. 2. Thus, persons leaving the window 24 and passing over the platform 26 to the chute are held from accidentally falling from the platform 26, should the same become congested in case of panic, or the like.

The bottom of the chute is provided with an apron 36, which is curved forwardly from the lower inclined section 11 and laps over upon a horizontal ground landing 37 made of any suitable material for receiving the persons, as they are delivered from the chute, and which is of sufficient size and length to afford a gradual stop for the persons delivered from the chute and to prevent congestion at the lower end thereof.

For the purpose of protecting the chute from the heat of fire, a water pipe 38 is provided, the same being supported beneath the horizontal leg of the stiffening angle 15, at the inner side of the chute, and extending from top to bottom thereof. This pipe 38 is held in place by a plurality of straps 39, which, as shown in Figs. 3, 4 and 5, are secured to the horizontal leg of the stiffening arm 15 at one end, are lapped around the under side of the pipe 38, and are riveted or otherwise suitably secured to the body of the chute at their opposite ends, so that the straps hold the pipe 38 rigidly and closely against the inner upper edge of the body of the chute. This pipe 38 is provided throughout its length with a plurality of relatively small openings or perforations 40, through which is adapted to flow water from the pipe, the water being projected in fine streams against the inner side of the body of the chute so that the water spreads, and the fine streams merge into a continuous sheet or curtain, which flows down against the inner side of the chute, and trickles or drops off the chute from the bottom thereof. Thus, the inner side of the chute is kept in a cool condition, and flame is warded off, so that there will be no danger of the chute becoming overheated.

It is a purpose of this invention to have the pipe 38 connected to the source of water supply at the top of the chute by a valve 41, preferably located inside of the building so as to prevent freezing of water in the supply pipe 42, and to also provide a second valve 43 located adjacent to the ground, which may be furnished water from the general water supply of the building or from a fire apparatus, suitably connected to the valve 43. If it is impossible to reach the valve 41 by reason of the location of the fire in the building 10, access may be readily had to the valve 43, so that in any event water will be supplied to the protecting pipe 38. In providing the horizontal sections with a rolling floor or bottom, congestion in the

chute is prevented, for the rolling floor or bottom maintains the impetus of persons who are delivered from the inclined section 11 of the chute, and prevents any slackening in the speed of the persons passing over the landing 12, so that other persons entering the chute from the landing 12 may readily follow the person who has just passed over the landing, and will not meet any of the persons ahead of them.

It is essential to give the inclined portions 11, a certain pitch, and as the windows 24 in the buildings are differently located, and are at different heights with respect to the different stories in the buildings, it is frequently necessary to elongate the horizontal portions or landings 12, and in such instance, the rollers 17 provide a means for continuing the speed of the persons in the chute, without slackening the speed, and for thus preventing any congestion in the chute, no matter how long the landings or portions 12 have to be made. It is, of course, understood that the bottom of the sections 12 may be given various forms and may have other means than rollers, provided that these bottoms have the anti-friction devices for carrying the persons quickly from one inclined portion 11 to the next.

It will be noted that the rollers or anti-friction devices are located at an angle to the landings, thereby insuring a firm foothold in entering transversely of the chute.

Various changes may be made in the detail construction of the above described form of the present invention, without departing from the spirit of the invention, and within the scope of the following claims.

What is claimed is:—

1. In a fire escape, a plurality of inclined sections, horizontal sections adapted to be arranged opposite the exits of a building to admit entrance to the fire escape and joining the adjacent upper and lower ends of the inclined sections, and an anti-friction bottom in each of said horizontal sections, so constructed and arranged as to facilitate the movement of persons quickly from one inclined section to the next adjacent section while affording sufficient resistance to provide a firm foothold for entering transversely of the chute.

2. In a fire escape, a plurality of inclined sections, a plurality of horizontal sections arranged alternately with the inclined sections and adjacent the exits of a building, said inclined and horizontal sections being arranged substantially parallel to the wall of a building, and rollers carried by the horizontal sections and extending transversely of said wall of the building, whereby to facilitate the travel of persons from one inclined section to the next.

3. In combination with brackets adapted to be secured to the side of a building beneath

windows or other exits, said brackets being provided at their tops with opposed shoulders, angle irons mounted upon the brackets with their vertical flanges seated against the shoulders, transverse rollers mounted at their ends in the vertical flanges of the angle irons, and sheet metal sides arranged along the ends of the rollers and having outturned flanges seated upon and secured to the horizontal flanges of the angle irons.

4. In combination with the sheet metal body, angle iron forms surrounding the outside thereof, with one flange of the iron flat against the body and the other flange extending outwardly therefrom, said forms terminating at the edges of the body, and angles arranged along the edges of the body with their vertical flanges on the inside of the body and their horizontal flanges fitting over the ends of the forms.

5. In a fire escape, the combination with an elongated chute adapted to be arranged in a downwardly inclined position against the side of a building, of a pipe secured along

the upper edge and at the outside of the chute, and provided with a plurality of openings which discharge toward the chute, and means connecting said pipe with a source of water supply, whereby the pipe is caused to deliver streams of water against the outside of the chute to cool and protect the latter.

6. In a fire escape, the combination with a plurality of inclined sections, a horizontal section joining the adjacent upper and lower ends of the inclined sections, a series of rollers arranged in the bottom of the horizontal section with their axes transversely thereof, and smooth plates also in the bottom of said horizontal section at each side of the rollers.

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

DAVID FRANKLIN YOUNGBLOOD.

Witnesses:

J. A. YOUNGBLOOD,
HULL YOUNGBLOOD.