W. E. TURNER.

FIRE ESCAPE.

APPLICATION FILED JAN. 15, 1919.

1,316,604.

Patented Sept. 23, 1919.

2 SHEETS—SHEET 1.

FIG. 1.

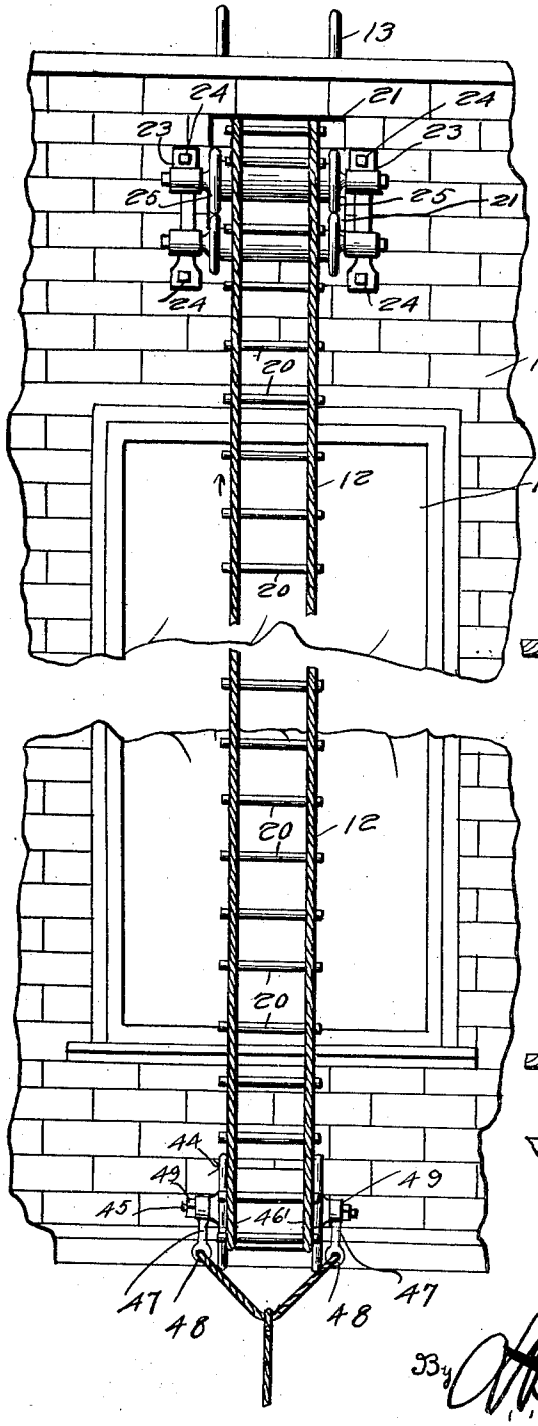


FIG. 3.

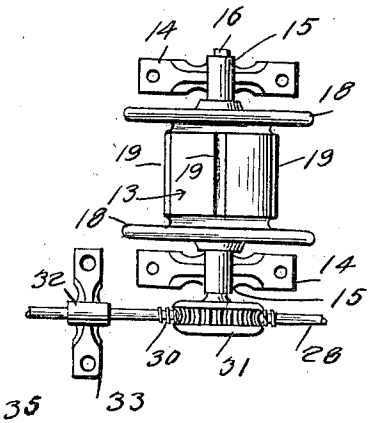
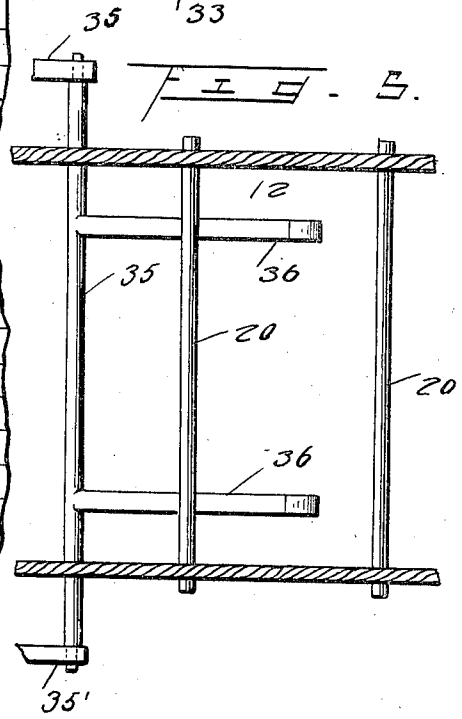


FIG. 5.



Inventor

W. E. Turner.

By [signature]

Attorney.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

W. E. TURNER.

FIRE ESCAPE.

APPLICATION FILED JAN. 15, 1919.

1,316,604.

Patented Sept. 23, 1919.

2 SHEETS—SHEET 2.

FIG. 2.

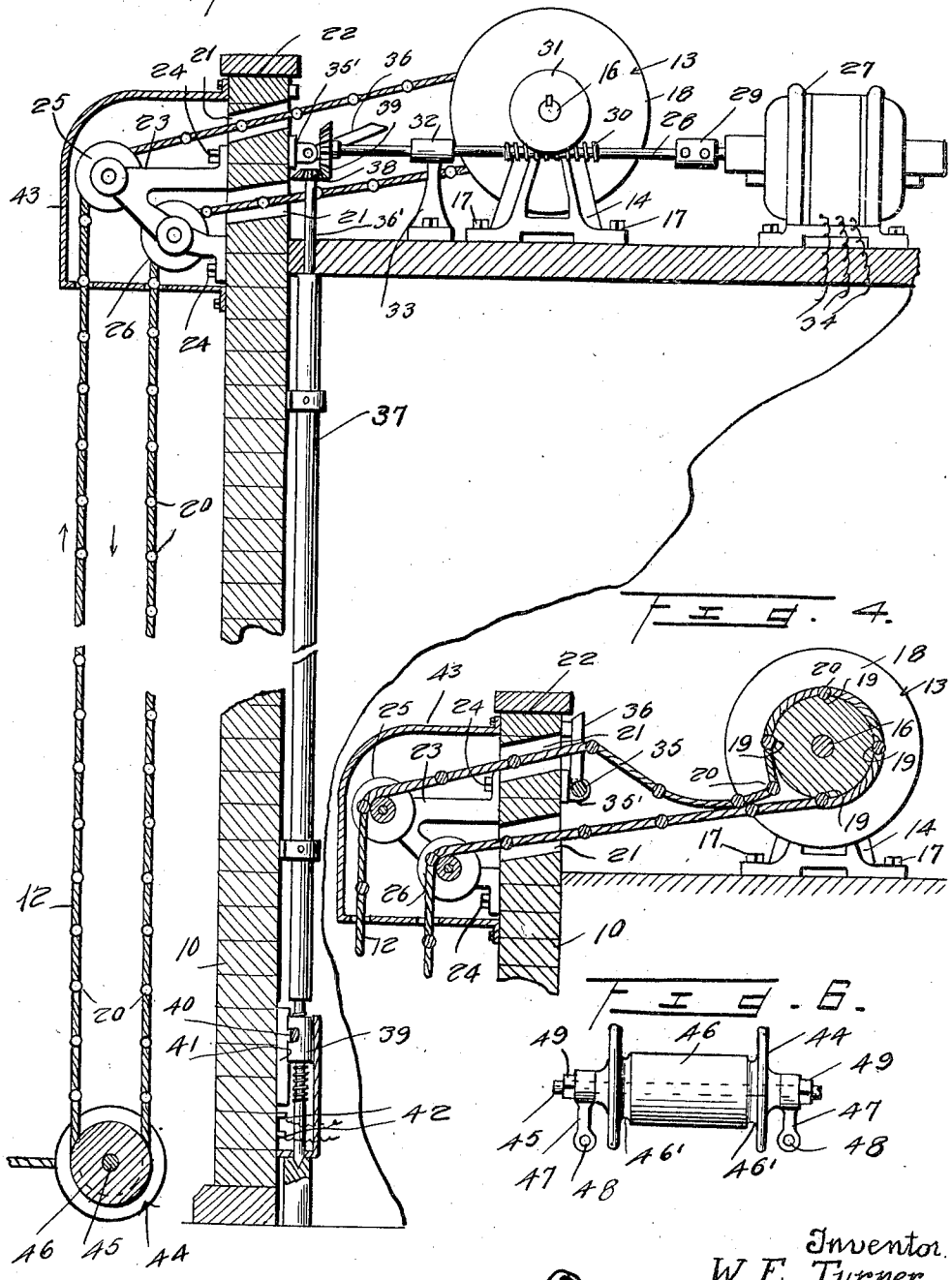


FIG. 4.

FIG. 6.

Inventor.
W E Turner.

By W. Randolph Jr.
Attorney

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM E. TURNER, OF ROCHESTER, NEW YORK.

FIRE-ESCAPE.

1,316,604. Specification of Letters Patent. Patented Sept. 23, 1919.

Application filed January 15, 1919. Serial No. 271,273.

To all whom it may concern:

Be it known that I, WILLIAM E. TURNER, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in fire escapes and more particularly to those of the flexible ladder type.

An important object of this invention is to provide means for quickly and reliably raising and lowering a continuous flexible ladder in proximity to fire exits in a building.

A further object of the invention is to provide novel means for operating a continuous flexible ladder adapted for use as a fire escape in combination with automatic means for warning the occupants of the building upon the lowering of the ladder.

A further object of the invention is to provide an apparatus of the character described, which is reliable, neat in appearance, of highly simplified construction, and easy to install in buildings.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a fragmentary front elevation of a building showing my improved flexible ladder fire escape applied thereto.

Fig. 2 is a transverse vertical section taken through Fig. 1, showing the building and fire escape in section,

Fig. 3 is a plan view of a flexible ladder winding drum and associated elements,

Fig. 4 is an enlarged detail sectional view through the upper portion of the building and fire escape, showing the flexible ladder being wound upon the drum,

Fig. 5 is a plan view of an operating arm engaging a portion of the continuous flexible ladder, and,

Fig. 6 is an elevation of a roller carried by the bottom of the flexible ladder.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 10 designates a building of any type and having exits 11. A flexible ladder 12 is adapted to be lowered in proximity to the exit 11 upon the breaking out of a fire. As illustrated in Figs. 2 and 4 the flexible ladder 12 is continuous and extends over a drum 13. The drum 13 is mounted upon standards 14 having alined bearings 15. A shaft 16 extending through the axis of the drum 13 has its end portions arranged in the bearings 16. The standards 14 are secured by bolts 17 to the roof or any convenient place in the upper portion of the building. As illustrated in Fig. 3, the drum 13 is provided with a pair of flanges 18 serving to retain the flexible ladder 12 in its proper position. The body portion of the drum 13 is provided with a plurality of longitudinal grooves 19 receiving the rungs 20 of the flexible ladder 12.

The continuous ladder 12 extends through openings 21 in the parapet 22 of the building 10. It is obvious, however, that should the drum be mounted in one of the lower floors, the ladders will extend to suitable openings in the side wall of the building. A bracket 23 is secured to the outer side of the parapet by bolts 24. The bracket 23 carries a pair of spaced rollers 25 and 26 respectively. The roller 25 is spaced upwardly and outwardly from the inner roller 26 and thereby disposes the outer portion of the flexible cable outwardly of the inner portion of the flexible cable.

With reference to Figs. 1 and 2, it will be apparent that exit from the building is provided for the occupants by descending with the inner portion of the flexible ladder 12. To provide means for causing the flexible ladder to partake of a continuous movement as indicated in the arrows, I have provided a relatively powerful electric motor 27. The electric motor has connection with a shaft 28 through a coupling 29. A worm 30 arranged on the shaft 28 engages a worm gear 31 keyed to the shaft 16 of the drum 13. The forward end of the shaft extends through a bearing 32 formed on the upper end of a standard 33. Control wires 34 are attached to the electric motor 27 and are adapted to direct the operation of the same either in a forward or reverse direction.

When it is desired to wind the flexible ladder 12 upon the drum, both portions of the ladder are wound upon the drum as in-

dicated in Fig. 4. A rod 35 rotatably secured to the side wall as at 35′ carries a pair of obstructing arms 36. The arms 36 are adapted to be swung upwardly to engage one of the rungs 20 of the portion of the ladder and thereby cause that portion of the ladder between the drum and the arms to fall upon the lower portion of the same.

With reference to Fig. 4, it will be apparent that both sections of the ladder now are wound upon the drum in the direction indicated by the arrows. Upon the contacting of the adjacent rung 20 with the inner side of the arm, the arm will again fall to a non-operative position.

A suitable electric alarm system may be connected with the operating means for the fire escape to advise the occupants of the building upon the outbreak of a fire.

For the purpose of illustrating one form of automatic alarm, I have shown in Fig. 2, a vertically disposed shaft 36′ journaled through a sleeve 37 secured to the inner wall 10 of the building. A bevel gear 38 is keyed to the upper end of the shaft 36′ and meshes with a bevel gear 39 keyed to the forward end of the shaft 28. It will be apparent that the rotation of the shaft 28 likewise causes the rotation of the vertically disposed shaft 36′. A collar 39 having internal screw threads is arranged on the lower end of the shaft 36 and is adapted to be released therefrom upon the rotation of the same. The collar 39 is provided with a vertical slot 40 receiving a lug 41 to prevent the same from rotating with the shaft 36′. Upon the removal of the collar 39 from the shaft the same engages a pair of contacts 42 and thus closes an electric circuit which operates a number of alarm bells in the building.

A suitable cover or hood 43 is arranged over the bracket 23 to protect the same from the elements and conceal the working elements of the invention. In cases where the motor and drum 19 are mounted upon the roof of a building, a suitable hood may be arranged over the same when not in use.

To provide means for drawing the flexible ladder away from the building in the event of the flames coming close to the ladder, I have provided a roller generally designated by the numeral 44. As shown in Fig. 2, the roller 44 consists of a shaft 45 receiving a spool 46. The spool 46 is provided with peripheral grooves 46′ for receiving the stiles of the flexible ladder. The spool 46 is rotatably mounted on the shaft 45 and is adapted to be rotated with the flexible ladder. Arms 47 are carried by the outer ends of the shaft 45 and are provided with eyelets 48 in their free end portions thereof. Ropes or other suitable connecting elements are adapted to be secured to the arms 47 for drawing the spool 46 away from the building and thereby spacing the flexible ladder 12 a safe distance from the flames. Bolts 49 have engagement with the outer ends of the shaft 45 and retain the spool and arms 47 thereon.

While I have shown and described the preferred embodiment of my invention, it is understood that I may make such minor changes in arrangement and construction of parts, as will remain within the spirit of the invention and the scope of the appended claims.

Having thus described my invention, what I claim is:—

1. A fire escape comprising, a continuous flexible ladder adapted to be extended for its greater length in proximity to the exit of a building; a drum arranged within the upper portion of the building and receiving said flexible ladder; means to operate said drum; a bracket carried by the outer side of said building; rollers carried by said bracket and adapted for spacing the upward and downward traveling portions of said flexible ladder; and arms carried by the inner side of the wall of the building and adapted for contact with the rungs of said ladder for causing the same to be wound upon the drum.

2. A fire escape including a continuous flexible ladder adapted to be arranged for the greater portion of its length adjacent the exit of a building, a drum receiving and supporting the flexible ladder, means to rotate said drum, and a rod having a pair of arms adapted to contact with the rungs of the ladder for winding the ladder on the drum.

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

WILLIAM E. TURNER.

Witnesses:
HENRY MEHSERLE,
HARRIET R. SITZENSTATTER.

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