

No. 642,392.

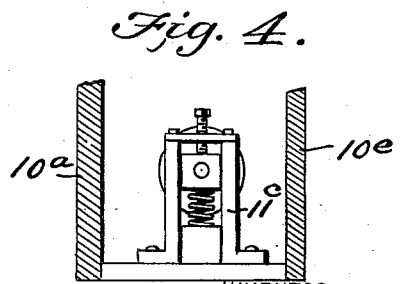
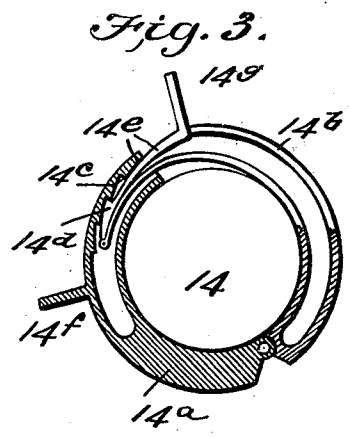
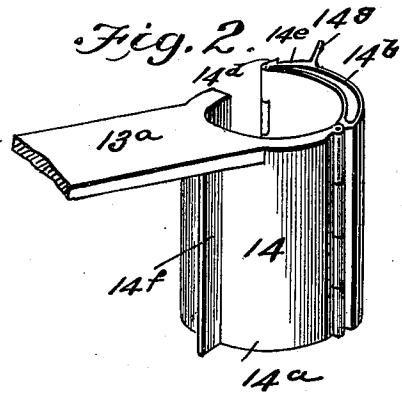
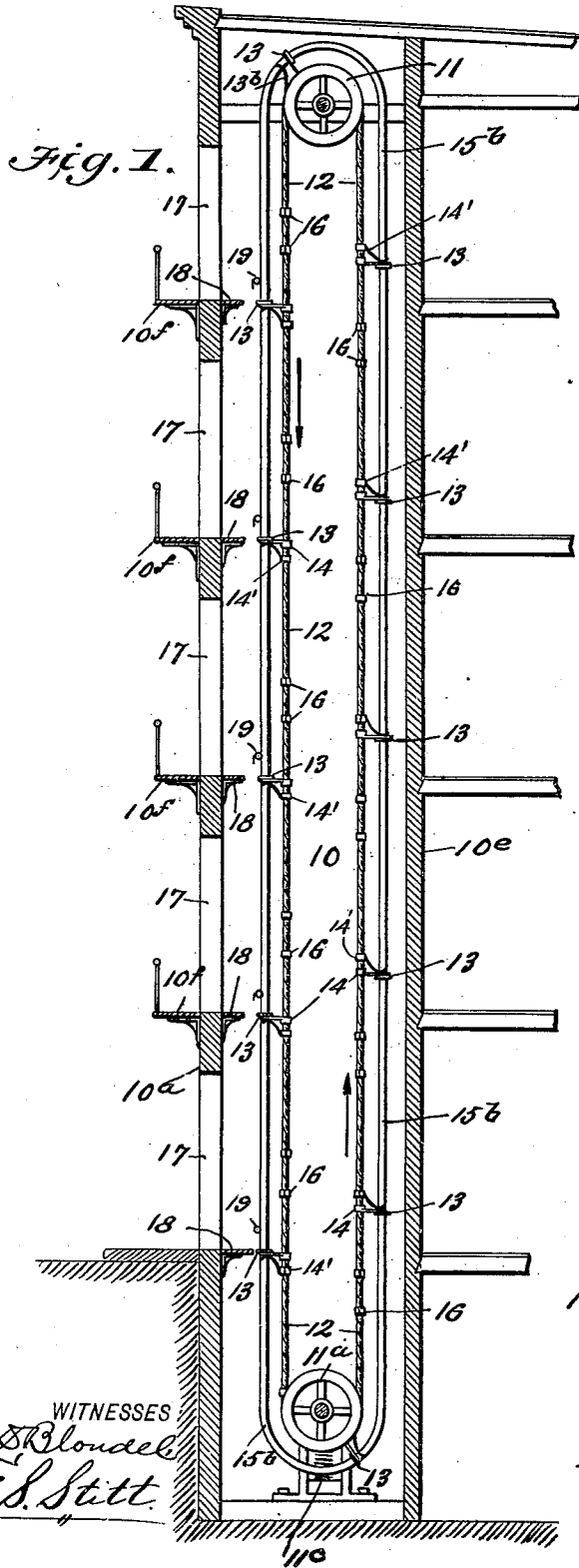
Patented Jan. 30, 1900.

F. VAUGHAN.
FIRE ESCAPE.

(Application filed Nov. 11, 1899.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES
M. S. Blondel
J. S. Stitt

INVENTOR
Frank Vaughan.
 BY *Mumt Co.*
 ATTORNEYS

No. 642,392.

Patented Jan. 30, 1900.

F. VAUGHAN.
FIRE ESCAPE.

Application filed Nov. 11, 1899.

(No Model.)

3 Sheets—Sheet 2.

Fig. 5.

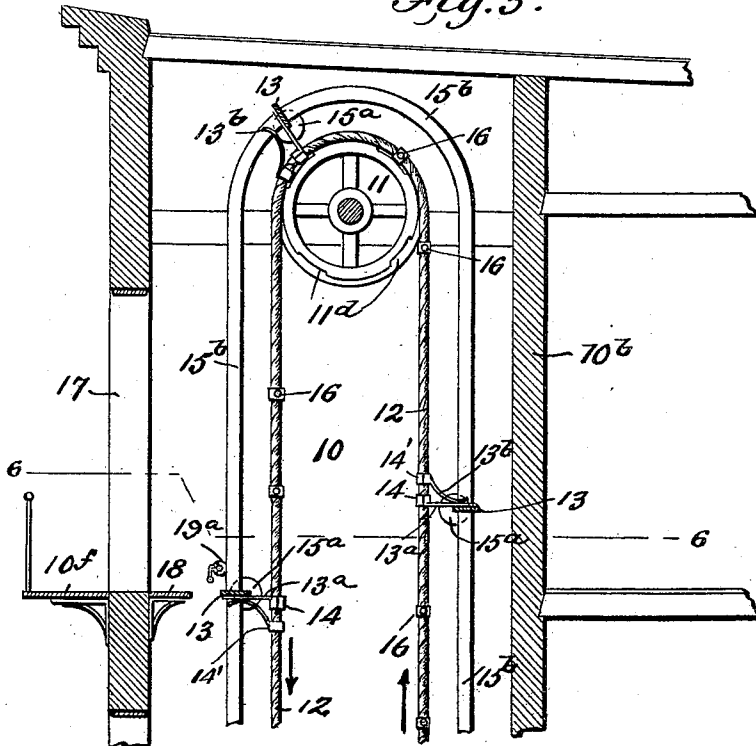
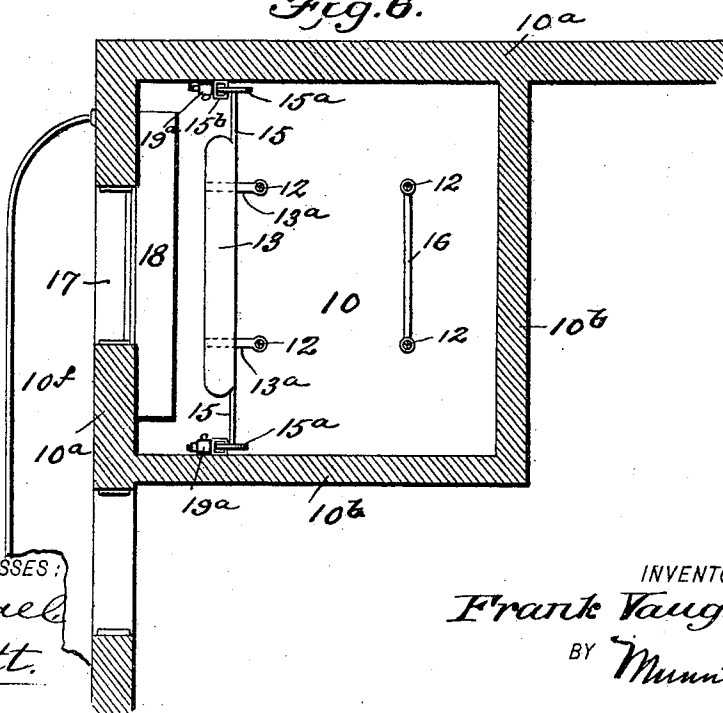


Fig. 6.



WITNESSES:

M. R. Donald
J. S. Stitt

INVENTOR

Frank Vaughan

BY

Munn & Co.

ATTORNEYS

No. 642,392.

Patented Jan. 30, 1900.

F. VAUGHAN.
FIRE ESCAPE.

Application filed Nov. 11, 1899.

(No Model.)

3 Sheets—Sheet 3.

Fig. 7.

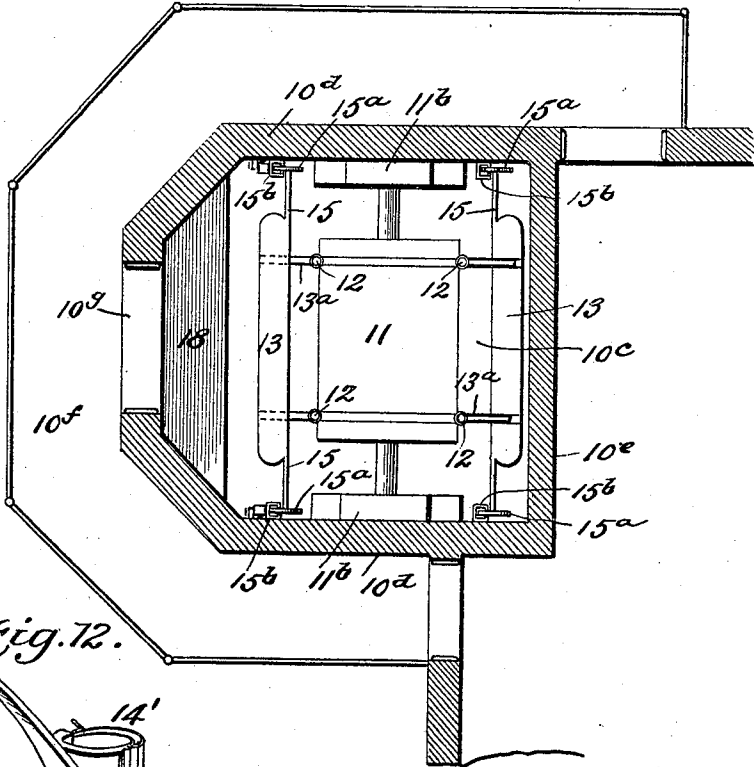


Fig. 12.

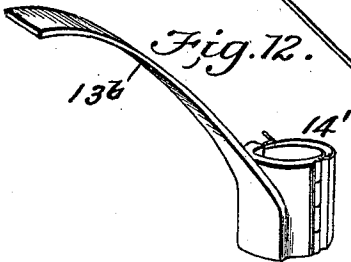


Fig. 8.

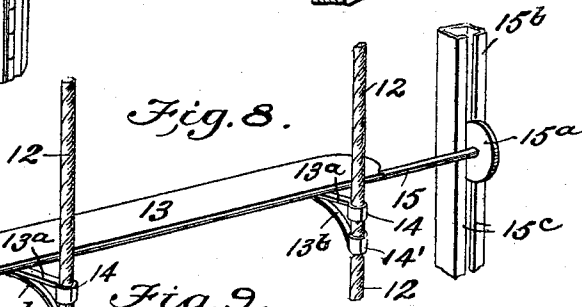


Fig. 9.

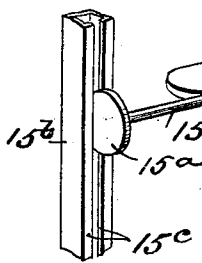


Fig. 10.

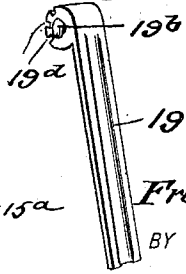
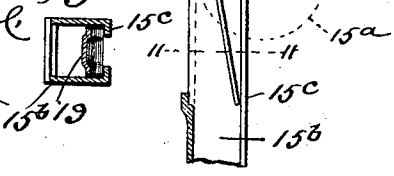


Fig. 11.



WITNESSES:

M. D. Blondel
J. S. Stitt

INVENTOR

Frank Vaughan.

BY *Wmmt Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK VAUGHAN, OF ELIZABETH CITY, NORTH CAROLINA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 642,392, dated January 30, 1900.

Application filed November 11, 1899. Serial No. 736,665. (No model.)

To all whom it may concern:

Be it known that I, FRANK VAUGHAN, of Elizabeth City, in the county of Pasquotank and State of North Carolina, have invented a new and useful Improvement in Fire-Escapes, of which the following is a specification.

My invention relates to fire-escapes, and has for its object an apparatus of this character which will be efficient in operation and practically automatic.

The invention consists in certain details of construction and arrangement of the parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which like characters of reference indicate corresponding parts in all the views in which they occur.

Figure 1 is a vertical section of a building in which my improved fire-escape is mounted. Fig. 2 is a detail perspective view of one of the brackets for the step, showing the clamp employed for securing the steps, step-supports, and handholds to the cable. Fig. 3 is a horizontal section of the same. Fig. 4 is a detail view illustrating the bearings for the lower drum. Fig. 5 is a vertical section similar to Fig. 1, but enlarged and showing only the upper portion of the apparatus. Fig. 6 is a horizontal section on the line 6 6 of Fig. 5. Fig. 7 is a horizontal section illustrating the well for the apparatus forming an ornamental tower or buttress on the outside of the building. Fig. 8 is a detail perspective view illustrating a step and guiding-wheels. Fig. 9 is a side elevation of one of the automatic brakes. Fig. 10 is a perspective view of one of the brakes detached. Fig. 11 is a section on the line 11 11 of Fig. 9, and Fig. 12 is a perspective view of a step-support.

I provide a well 10 for my improved fire-escape apparatus and in the construction of the well utilize one or more walls of the building—to wit, as shown in horizontal section in Fig. 6, the well 10 is at the corner of the building and on the inside of the main masonry walls thereof—and 10^a designates these walls, which form two sides of the well, while the other two walls of the well (designated by 10^b) are solidly united to the said main walls 10^a, or, as shown in Fig. 7, the well serves as an

ornamental tower or buttress 10^c, of which the main walls 10^d of the building form part of the walls of the well, while the other walls 10^e are solidly joined therewith, and a veranda 10^f is provided at each floor and opens at 10^g into the well. In either case the working or movable parts of the apparatus are the same and consist of upper and lower drums 11 and 11^a, of which the drum 11 is mounted to turn in suitable bearings 11^b (ball-bearings, if preferred) in the upper part of the well, and the lower drum 11^a is mounted in vertically-adjustable bearings 11^c at the bottom of the well, so that the cables 12, passed over the two drums, may be tightened when necessary.

Steps 13 are securely though detachably secured at such distances apart that a step will move approximately from one story to the next at every revolution of the drums. The steps are fixed on brackets 13^a, which are secured to the cables preferably by metal clips 14, consisting of hinged sections 14^a and 14^b, the section 14^a having teeth 14^c, which is arranged to engage a latch-head 14^d, formed on a spring-catch 14^e, pivoted to the other section 14^b. These clips encircle the cable and are pressed together into interlocking engagement by finger-holds 14^f and 14^g, and when it is desired to release the cable the finger-hold 14^g on the pivoted spring-catch is depressed to unlock it from the teeth of the other section.

Secured to the framework of each step is a spindle or axle 15, which carries rollers 15^a, fitted to run in vertical guideways 15^b, formed in the side walls of the well, so as to keep the cables and steps in their proper position.

Attached to the cable underneath each step 13 is a spring step-support 13^b, which extends into engagement with the step from a clip 14^f and supports it in a horizontal position, as shown.

16 designates handholds secured to the cable, preferably by clips similar to those for the steps and step-supports and of which there are two handholds above each step, so that a person or persons on the step may be kept from falling.

In practical operation the persons desiring to descend pass through a spring-closed fire-proof door 17 at each floor into the well and stand upon a platform 18 therein, from

whence they step off onto one of the steps 13. The friction caused by the weight of the movable parts is such that the weight of one average-sized person will cause the step to descend very slowly, while in a building of a large number of stories if persons stood on the steps at several or at each floor the steps would descend too rapidly unless checked in some manner. For such purpose I provide means whereby the speed of the cable will automatically become very slow at each floor, while not completely stopping, so that the persons can safely pass to and from the steps. This means comprises a strong steel spring brake-arm 19, carried by a hub 19^a and normally extending with its lower free end within the guideway 15^b, being held therein by the inturred edges 15^a of the latter. One of these brake-arms is located at both laps of the cable at each floor, and when a step reaches a floor the rollers 15^a will be engaged by and ride on the free ends of the brake-arms whereby the cables will slacken their speed until the said brake-arms are passed. The arms may be grooved for the roller, if desired, as shown in Fig. 10. It is of course necessary to arrange these brake-arms so that some or all of them may be thrown out of use, depending upon the number of persons descending and ascending on the cable, and to this end any of the hubs 19^a may be turned by its knob 19^b so as to bring the free end of the brake-arm away from the rollers to the position shown in dotted lines in Fig. 9, the hub being held in position by a pawl 19^c, engaging a ratchet-tooth 19^d on the hub. When it is desired to release the arm, the pawl is retracted by turning its knob 19^b and locked in position. (Shown in full lines.)

The drums 11 and 11^a are formed with recesses or concavities 11^d, in which are received the protuberances formed by the clips which attach the handholds, steps, and step-supports to the cable, whereby the cable is prevented from slipping on the drums.

It will be seen that I have provided a fire-escape apparatus located in a fireproof well forming a part of the masonry of the building and with which are arranged automatically-operated brakes, so as to cause the steps to move slowly past a floor, the brakes being so constructed that they may be thrown out of use when desired.

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

1. In a fire-escape apparatus, a well part of

whose sides are formed by the main masonry walls of a building and its remaining sides are masonry walls solidly joined to the said main walls of the building, upper and lower drums mounted in said well, cables traveling around said drums, steps attached to said cables and having guide-rollers fitted in vertical guideways in the well, spring-arms in said guideways at each floor of the building and pressed back by the rollers of the steps when the steps approach a floor whereby to slacken the speed of the apparatus at the floors, and means for throwing any of said spring-arms into or out of the path of the guide-rollers, as set forth.

2. In a fire-escape apparatus, a well, vertically-movable cables in said well, and steps having brackets formed at their outer ends with clamps formed in hinged sections adapted to interlock whereby to detachably connect the steps to the cables, as set forth.

3. In a fire-escape apparatus, a well having vertical guideways in its sides, vertically-movable cables in said well, steps attached to said cables and having guide-rollers in said guideways, spring-arms extending into the guideways, and means for holding the spring-arms in or out of the path of the rollers, as and for the purpose set forth.

4. In a fire-escape apparatus, a well, vertically-movable cables in said well, steps attached to said cables, and spring step-supports attached to the cables below the steps and extending out from the cables to contact with the under side of the steps, as set forth.

5. In a fire-escape apparatus, a well, vertically-movable cables in said well, steps, handholds, and step-supports, and hinged clamps secured to the steps, handholds, and step-supports and arranged for interlocking engagement around the cables, as and for the purpose set forth.

6. In a fire-escape apparatus, a well, vertically-movable cables in said well, steps on the cables and carrying rollers moving in vertical guideways in the sides of the well, and devices at each floor of the building arranged for frictional engagement with said rollers, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK VAUGHAN.

Witnesses:

M. B. CULPEPPER,
U. G. GRACELY.