A. DE W. WILSON.

FIRE ESCAPE.

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1,014,685.

Patented Jan. 16, 1912.

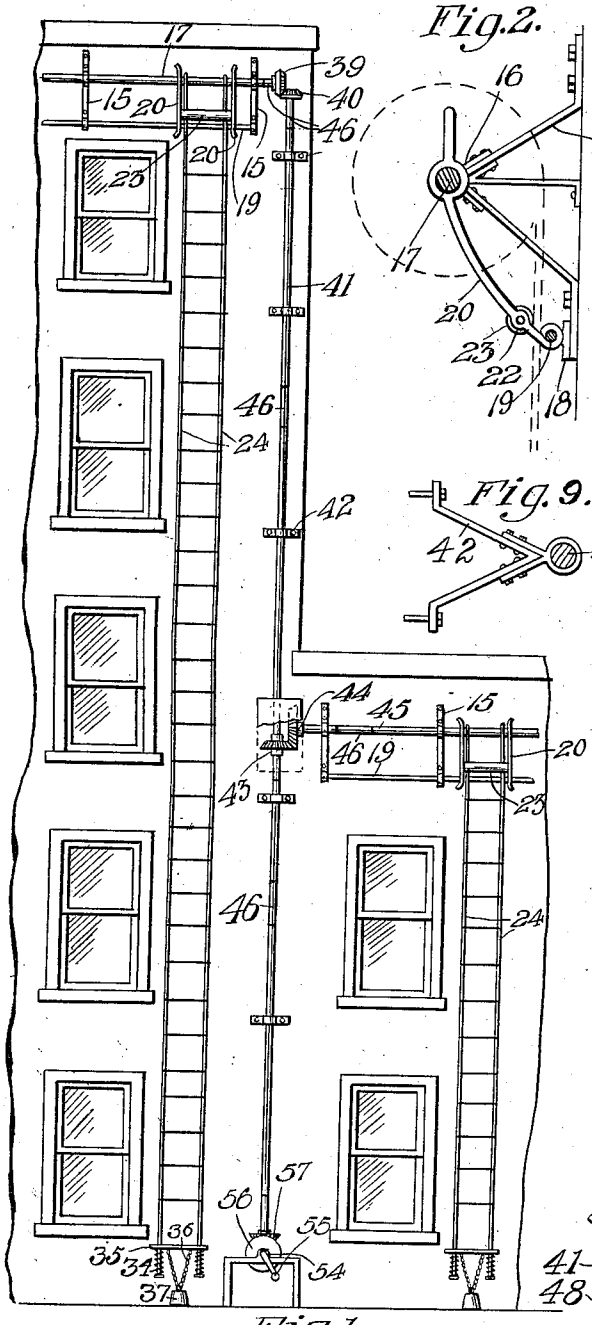

Fig. 1.

Fig. 2.

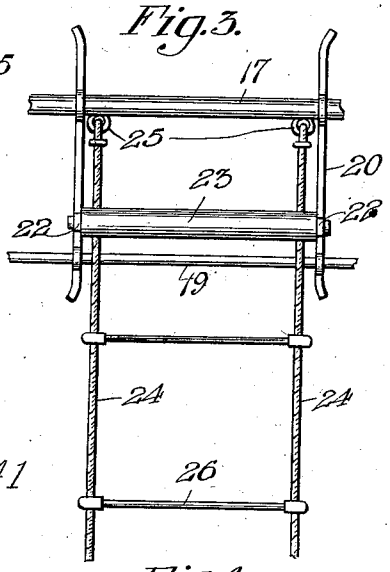

Fig. 3.

Fig. 9.

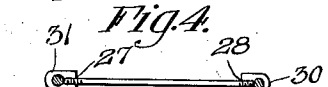

Fig. 4.

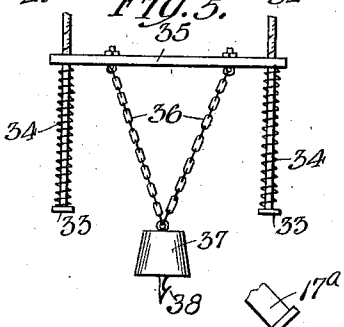

Fig. 5.

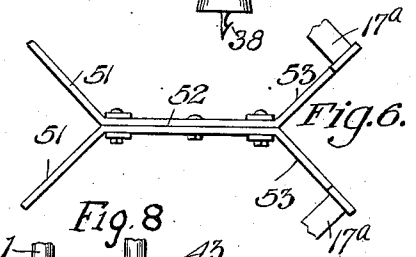

Fig. 6.

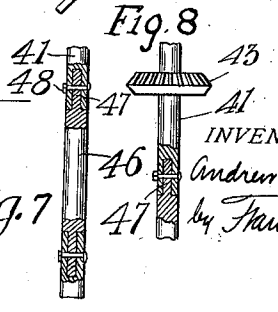

Fig. 7.

Fig. 8.

WITNESSES

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FIRE-ESCAPE.

1,014,685. Specification of Letters Patent. Patented Jan. 16, 1912.

Application filed March 24, 1911. Serial No. 616,620.

To all whom it may concern:

Be it known that I, ANDREW DE WITT WILSON, a citizen of the United States of America, and resident of Riverside, in the county of Okanogan and State of Washington, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to fire escapes and ladders and particularly to a fire escape having a flexible ladder and novel means for mounting the ladder on a building together with means for operating the ladder for the purpose of raising or lowering it.

A still further object of this invention is to provide a novel ladder having means associated therewith for holding the rungs at different positions of adjustment and means furthermore for holding the ladder in its lowered position so that there will be a yielding action of the said securing means.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this specification wherein like characters denote corresponding parts in the several views, and in which—

Figure 1 illustrates a view in elevation of a fragment of a building with the invention applied thereto; Fig. 2 illustrates an enlarged detail view of the ladder supporting bracket and parts associated therewith; Fig. 3 illustrates an enlarged detail view of the front of said ladder showing its connection to a shaft for winding the same. Fig. 4 illustrates a detail view showing the connection between the rung and the sides of the ladder; Fig. 5 illustrates a detail view of the yielding connection between the ladder and the anchoring means; Fig. 6 illustrates a plan view of a corner bracket for the shaft ends; Figs. 7 and 8 illustrate detail views of the shaft couplings several parts of the corner bracket and the connections associated therewith; and Fig. 9 is a plan view of the bracket 42, showing the shaft 41 in section.

In these drawings 15, denotes one of a series of brackets which is designed to be anchored to a building, said bracket having bearings 16 for the shaft 17. Each bracket is also provided with a bearing 18 having a bar 19 which bar acts as a guide for the ladder to be presently explained for the purpose of holding it away from the side of the building. Guide bars 20 are mounted on the shaft 17 and bar 19, each of said guide bars being separated a distance greater than the said ladder in order that the said guide bars may serve to cause the ladder to wind on the shaft 17 in proper layers. Each guide bar has a bearing 22 in which a roller 23 is journaled, the said roller being engaged by the ladder to confine it with respect to the guide bar 19.

The shaft 17 has the sides 24 of the ladder connected to it through the medium of the eyes 25 which are attached to the shaft and to which the sides 24 are connected. It is preferable that the sides 24 be of steel cable or like durable and strong material sufficiently flexible as to be wound on the shaft 17 when it is rotated. The rungs 26 of the ladder have their ends oppositely screw threaded as shown at 27 and 28 and the said screw threaded ends engage threads in the couplings 29 and 30, respectively, which couplings have apertures to receive the sides 24 of the ladder. In assembling the sides, couplings and rungs, the said couplings having apertures 31 and 32 respectively which receive the sides, the rungs are threaded in the couplings and are caused to bear against the said sides to frictionally retain the rungs in different positions of adjustment. The lower ends of the sides 24 have shoulders 33 which may be formed thereon in any appropriate way, the said shoulders forming abutments for the springs 34 which encircle the sides. The ends of the springs opposite the shoulders are engaged by a slidable member 35 which has apertures to receive the sides 24 of the ladder and the said slidable bar extends beyond the sides of the ladder to such an extent as to contact the lower inner surface of the guide bars when the ladder has been drawn upwardly to the full extent desired and thereby prevent swaying of the lower end of the ladder when blown by the wind. The cross bar 35 has chains 36 connected to it which chains converge at their lower ends and are connected to a weight 37 which weight causes the descent of the ladder when the mechanism for raising the said ladder, to be presently explained is released. The weight 37 is further provided with a hooked stop 38

for the purpose of anchoring the said weight in the lowermost position to prevent wabbling of the ladder after it has been lowered and to coact with the springs 34, bar 35 and chains 36, for exerting a tension on the sides 24.

The shaft 17 is provided with a gear wheel 39 which meshes with the gear wheel 40 on the vertical shaft 41 which vertical shaft is journaled in brackets 42 secured to the structure. At a point intermediate the length of the shaft 41 a gear wheel 43 may be provided which meshes with a gear wheel 44 on a shaft 45. The last mentioned shaft is mounted in bearings of brackets 15 similar to the brackets which have been described heretofore. The purpose of the gearing intermediate the length of the vertically disposed shaft is for the purpose of rotating a shaft which may be applied to a building of less height than the one first described so that it is possible by utilizing the mechanism just described to provide fire escapes on tall or short buildings or both simultaneously. It is observed that the gear wheels 43 and 44 are different in size and this difference in size is intended to cause the short ladder to be lowered at a relatively slower speed than the longer ladder. It is the purpose of the inventor to have the gear wheels 43 and 44 in such relation that the shaft 45 will be turned a number of revolutions sufficient to cause the short ladder to reach the bottom at the same time that the long ladder assumes a similar position. By this means, provision is made for operating the long and short ladders simultaneously and effectively as the short ladder is of the same construction as the long ladder which will not be here described in detail.

The shafts 17 and 41 are provided with couplings 46, interposed between the proximal ends of the shaft sections. These couplings consist of comparatively short shaft sections of various lengths, to meet the various requirements of the different buildings on which they are applied. The couplings have reduced end portions 47, and the ends of the shafts 17 and 41 are apertured to receive the reduced ends, as shown in Figs. 7 and 8. A secure connection of the couplings with the shafts is obtained by means of cross keys or bolts 48, which extend through apertures in the shafts and couplings. A similar connection is provided near the ends of the shafts containing the gear wheels 39 and 40, so that these wheels may easily be removed and renewed or replaced.

In Fig. 6 I have shown a bracket which is designed for use at the corners of buildings where the shafts are intended to extend along two sides of the building. In this form, the diverging arms 51 are secured to the sides of the building and the parallel sections 52 of the brackets are secured together to form an arm, the said parallel sections diverging to form the brackets 53 in which are journaled the shafts 17^a, which are similar to the shafts 17 described in connection with Fig. 2. The brackets 53 may be provided with apertured bearings similar to the bearings 18 of Fig. 2 for the guide bar. By means of this double bracket, the ends of the shafts at the corners of a building may be supported whereas the intermediate portions of the shaft will be mounted in the brackets 15.

The shaft 41 may be rotated in any desired manner but I have illustrated a shaft 54 with a crank handle 55. A gear wheel 56 is mounted on the shaft 54 which meshes with a gear wheel 57 on the shaft 41. The rotation of the crank handle, therefore, communicates motion to the shaft 41 and operates the mechanism which has been described.

I claim—

1. In a fire escape, a shaft mounted in horizontal position longitudinally of a building, a flexible ladder connected thereto and wound thereon, vertical guide bars for guiding the ladder on the shaft, a cross bar at the lower end of the ladder, resilient means on the ladder supporting the cross bar, and a weight depending from the cross bar.

2. In a fire escape, a shaft mounted in horizontal position longitudinally of a building, a flexible ladder connected thereto and wound thereon, vertical guide bars for guiding the ladder on the shaft, a cross bar vertically slidable on the lower end portion of the ladder, resilient means on the ladder supporting the cross bar, a weight, means on the cross bar for supporting the weight, and an anchoring hook extending downward from the weight.

3. In a fire escape, a shaft, brackets for rotatably mounting the shaft in horizontal position, means for rotating the shaft, a ladder connected to the shaft and adapted to be wound thereon, guide bars supported by the brackets on opposite sides of the ladder, a cross bar slidable on the ladder, a yielding support for the cross bar, the said cross bar extending beyond the sides of the ladder and contacting the guide bars, and means for anchoring the ladder.

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

ANDREW DE WITT WILSON.

Witnesses:
J. O. Woods,
Ray A. Woods.