United States Patent [19]

Gilbert et al.

[11] **3,727,724**

[45] **Apr. 17, 1973**

[54] **FIRE ESCAPE LADDER**

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[22] Filed: **Nov. 1, 1971**

[21] Appl. No.: **194,115**

[52] **U.S. Cl.**.....**182/198,** 182/206

[51] **Int. Cl.**.....**E06c 1/56**

[58] **Field of Search**.....182/196, 197, 198, 182/199, 206, 70, 72; 287/53 TK; 108/149; 24/116; 248/327

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[57] **ABSTRACT**

An improved fire escape ladder of a type adapted to be engaged with a window sill by straddling a lower edge thereof. The straddling means includes provision for adjustment in relation to the thickness of the wall mounting the window sill. The stiles of the ladder consist of conventional wire chain links, and the rungs are of hollow metallic tubing. Means is provided for connecting the rungs to the stiles whereby assembly may be accomplished with a minimum of hand labor using components which are of relatively low cost of manufacture.

2 Claims, 7 Drawing Figures

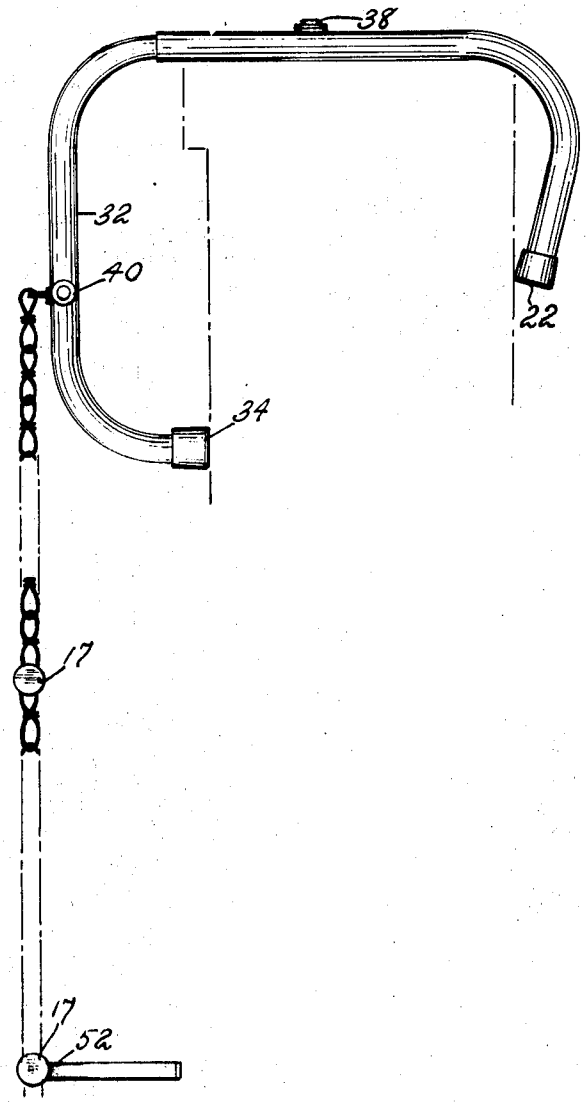


Fig.1

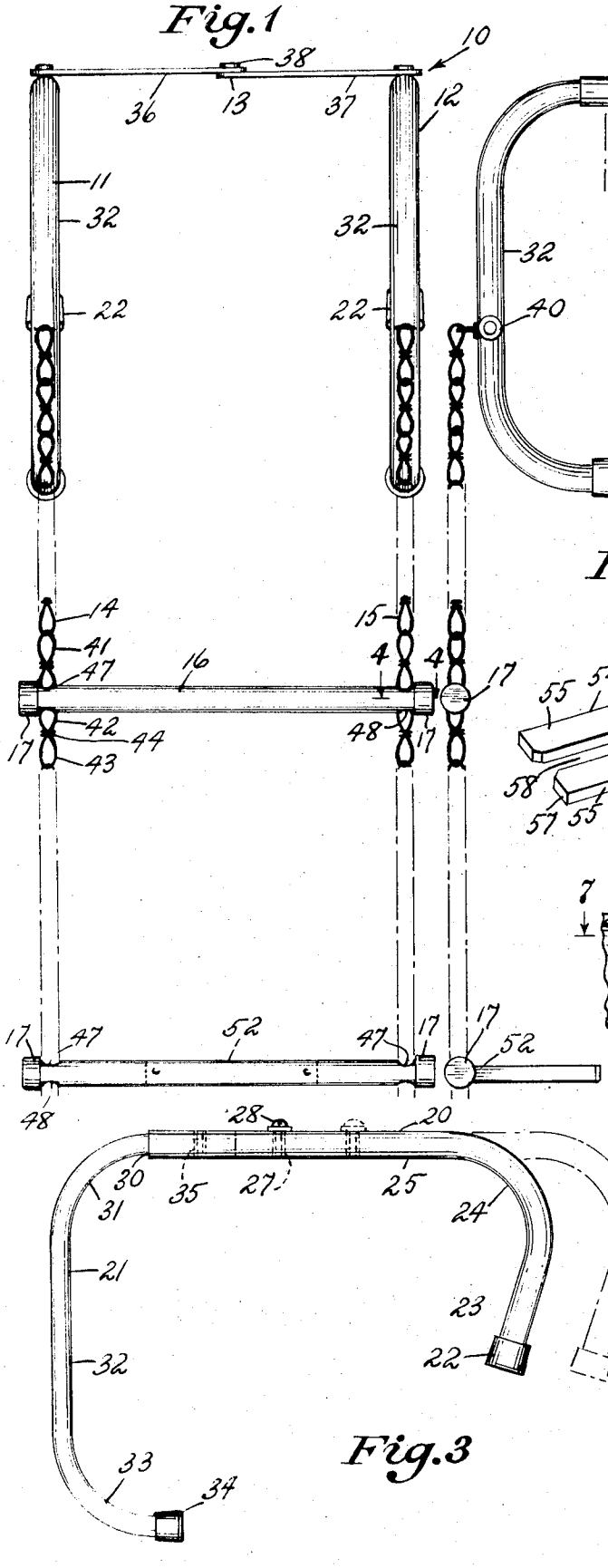


Fig.2

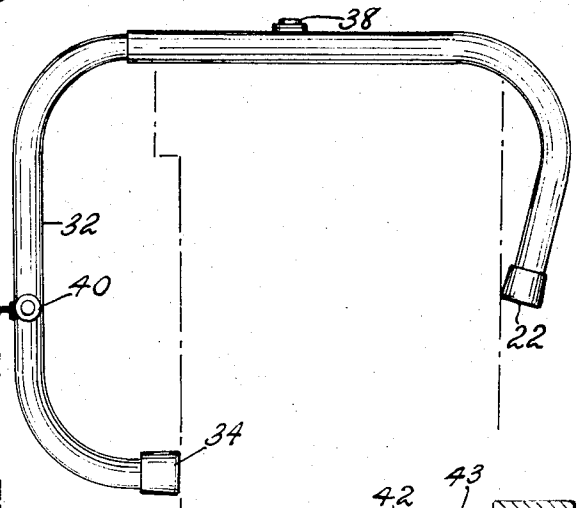
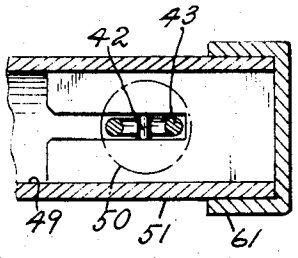


Fig.4



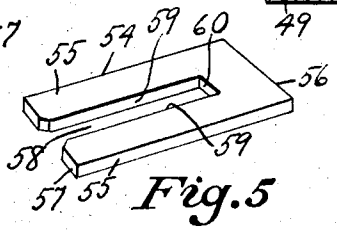


Fig.5

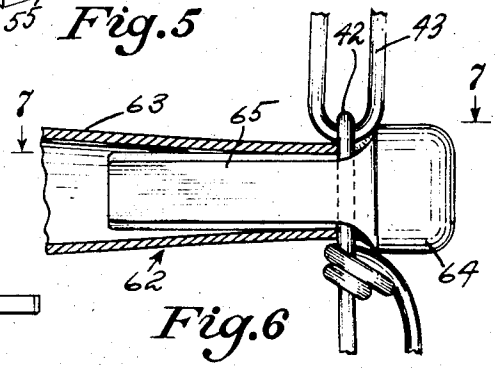


Fig.6

Fig.3

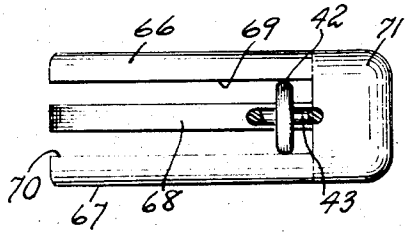


Fig.7

FIRE ESCAPE LADDER

This invention relates generally to the field of portable fire escape ladders of a type suitable for domestic use, and more particularly to improvements in the manufacture thereof tending to reduce the cost of fabrication. Devices of this general type are known in the art, and the invention lies in specific constructional details more fully set forth hereinbelow.

While relatively expensive constructions of this type are usually formed using stiles made of stamped pieces interconnected for convenient articulation, where cost is a major factor, it is conventional to fabricate the stiles using conventional wire link chain. Where the links must be secured to rungs of the ladder using threaded means, the cost of assembly is correspondingly high and time-consuming, so that subsequent use of the ladder is inherently dangerous.

Another difficulty encountered with prior art constructions which are sold for use with window sills of varying depth is the inability of the straddling means to accommodate such varying widths. If the straddling means is made sufficiently wide to accommodate a sill of maximum possible depth, it will normally engage sills of substantially less depth in a precarious manner, and, correspondingly, if it is made for accommodating sills of relatively less depth, it cannot be used at all with sills of greater depth.

It is therefore among the principal objects of the present invention to provide an improved construction in which the above mentioned disadvantages have been substantially eliminated.

Another object of the invention lies in the provision of an improved fire escape ladder construction which may be conveniently fabricated using many standardized subcomponents, by those possessed of relatively little skills.

Yet another object of the invention lies in the provision of an improved fire escape ladder construction, in which the cost of fabrication may be of a relatively low order, thereby permitting consequent wide sale, distribution and use.

These objects, as well as other incidental ends and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claims.

In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIG. 1 is a fragmentary view in elevation of an embodiment of the invention.

FIG. 2 is a fragmentary view in elevation as seen from the righthand portion of FIG. 1.

FIG. 3 is a view in elevation of a sill-engaging element corresponding to the upper portion of FIG. 2, and showing means for adjusting the effective width thereof.

FIG. 4 is an enlarged transverse sectional view as seen from the plane 4—4 in FIG. 1.

FIG. 5 is a view in perspective showing a chain link engaging clip in detached condition.

FIG. 6 is a fragmentary sectional view corresponding to that seen in FIG. 4, but showing an alternate form of the embodiment.

FIG. 7 is a view in elevation as seen from the plane 7—7 in FIG. 6.

In accordance with the invention, the device, generally indicated by reference character **10**, comprises broadly: first and second window sill engaging elements **11** and **12**, respectively; foldable linking means **13**, first and second stiles **14** and **15**, respectively, a plurality of rungs **16**, and a plurality of means **17** for interconnecting the rungs **16** at either end thereof with portions of the stiles **14** and **15**.

The window sill engaging elements **12–13** are substantially similar, each including first and second telescoping members **20** and **21**. The first member **20** includes a cap **22**, a first leg **23**, a curved portion **24**, and a second leg **25** of rectilinear configuration defining a free end **26**. Openings **27** extend transversely of the principal axis of the leg **25**.

The second member **21** includes a leg **30** arranged to telescope within the leg **25**, a curved portion **31**, a rectilinear portion **32**, a second curved portion **33** and a cap **34**. As seen in FIG. **3**, the width of the opening defined by the interconnected first and second members **20-21** is variable by removing screws **28** and shifting the relative position until openings **27** are realigned with openings **35** in the member **21**, following which the means **28** are reengaged. In this manner, within reasonable limits, window sill depths of a relatively wide range may be conveniently accommodated.

The linking means **13** includes first and second members **36** and **37** interconnected by a rivet **38**, the free ends of which may be engaged by the means **28**, whereby when the device **10** is not in use, the sill engaging elements **11** and **12** may be placed in adjacent relation to facilitate storage.

The stiles **14** and **15** are similar, each including an upper mounting bracket **40** riveted to a respective rectilinear portion **32**, and a predetermined length of wire link chain **41** made up of individual links defining first and second loops **42–43** and a constricted central portion **44**. The length of the stiles will, of course, depend upon the desired length of ladder.

The rungs **16** are preferably formed by cutting from a continuous length of hollow metallic tubing, each rung having first and second ends **47–48** defining openings to a continuous hollow bore **49**. Positioned transversely to the bore **49** at the ends **47–48** are pairs of aligned openings **50** permitting the passage of the stiles therethrough. If desired, the outer surface **51** of the rungs may be striated or ribbed to provide additional traction for the user. Spacing members **52** are secured at medial points on said outer surface to maintain the ladder in spaced relation with respect to the wall of the building (not shown) in well known manner.

The means **17** includes a planar clip **54** bounded by outer longitudinal edges **55**, an outer end edge **56** and an inner end edge **57**. A slot **58** of width corresponding to the gauge of the wire forming the stiles **14** and **15** extends into the body of the clip from the inner end edge **57**, and is bounded by longitudinal edges **59** and an end edge **60**. As seen in FIG. **4**, the clip is inserted into the open end of a rung **16** to engage the inner surface of the bore **49**, and as the width of the clip as measured between the outer longitudinal edges **55** corresponds to the diameter of the bore, upon such engagement the engaged link of the stile is captivated within the rung. The clip **57** is prevented from disengagement with the stile by the fitting of a thermoplastic cap **61** which upon

cooling contracts to grip the outer surface of the rung, again as seen in FIG. 4.

In the alternate form of construction illustrated in FIGS. 6 and 7, the forming of the openings 50 is eliminated. This form, generally indicated by reference character 62 includes a rung 63 having no transverse openings. The clip 64 is of solid molded synthetic resinous material, and includes a trifurcated portion 65 including first and second outer members 66 and 67, respectively, and a medially disposed member 68, which form first and second interstices 69 and 70, respectively. An enlarged head 71 is of effective diameter greater than the bore 72 whereby the ingress of the clip 64 into the bore is limited as shown in FIG. 6.

The stile 73 is engaged as shown in FIG. 7, following which the trifurcated portion 65 is inserted into the bore as shown in FIG. 6, and the rung 63 is subjected to a deformation immediately adjacent the stile whereby the clip 64 is permanently anchored.

We wish it to be understood that we do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

We claim:

1. In a fire escape ladder of a type including a pair of window sill engaging elements, and first and second link chain stiles supporting along the length of each stile thereof a plurality of hollow parallel rungs defining longitudinal bores therein, improved means for interconnecting said rungs to said stiles comprising a clip defining at least one elongated slot therein and having an outer dimension as measured between a pair of longitudinal edges thereof corresponding to the diameter of said bore, said slot engaging a link in said chain, said outer dimension engaging said bore, whereby the relation of the engaged link to the end of a given rung may be fixed; said clip including a trifurcated member defining a pair of interstices engaging a link of a chain stile, and an enlarged head of diameter greater than that of said bore, said trifurcated member being captivated within said bore.

2. Structure in accordance with claim 1, including a cap engaging the outer surface of a rung at an end thereof to close said bore and captivate said clip against displacement.

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