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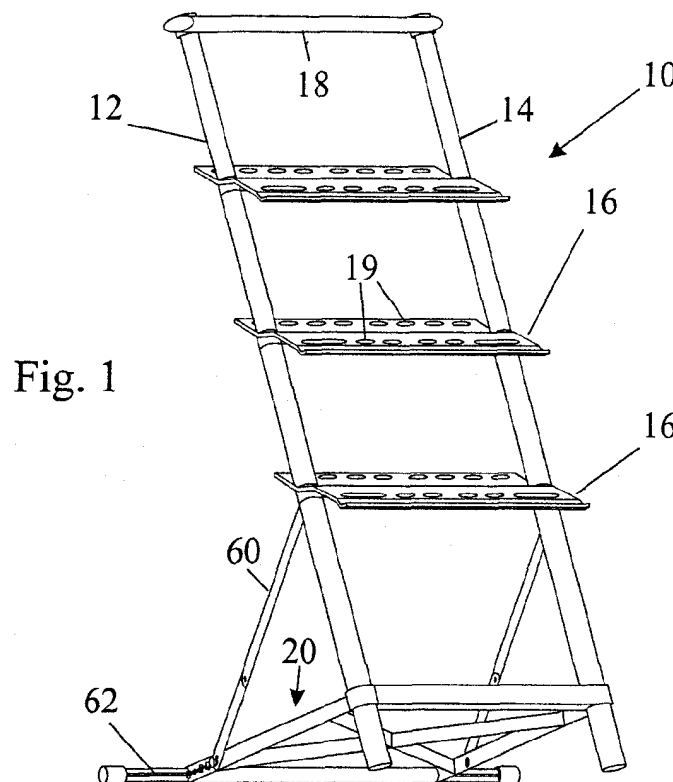
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(54) **Ladder Accessory**

(57) An accessory 10 for a ladder comprises a pair of telescopically collapsible extension stiles 12, 14 to be connected as extensions of the stiles of the ladder. A stand-off frame 20 is secured to the lower end of the

extension stiles 12, 14 for distancing the top of the ladder from a wall against which the ladder is leaned and at least one rail 18 is provided to extend between the extension stiles.



Description

[0001] The present invention relates to an accessory for a ladder and is particularly though not exclusively applicable to a telescopically collapsible ladder.

[0002] There is known from EP 0 527 766 a telescopically collapsible ladder which will herein be referred to as the Telesteps ladder. This collapsible ladder comprises two stiles formed of telescopically collapsible sections, the lower end of each section fitting within the next lower section. Rungs are mounted each between two sections of the respective stiles, and latch mechanisms located in the rungs automatically lock the sections of the stiles relative to one another when the sections are extended. The latch mechanisms in each rung are arranged to release the sections of the stiles connected to the next higher rung when the rung is collapsed against the next lower rung. Because of this construction, when the lowermost rung is collapsed, it causes the entire ladder to collapse one section at a time.

[0003] It is of course desirable for the ladder to be as long as possible but because the diameter of the sections gets progressively smaller there is a practical limit to the height that such a ladder can reach.

[0004] The closest prior art to the present invention is believed to be US Patent No. 2,881,028 which discloses an attachment that is secured to the top of a ladder to provide a scaffold-like support platform on which a workman can stand.

[0005] The present invention seeks to provide an accessory to enable a person standing on one of the rungs of the ladder to reach higher without impairing the safety of the ladder.

[0006] According to the present invention, there is provided an accessory for a ladder which comprises a pair of telescopically collapsible extension stiles to be connected as extensions of the stiles of the ladder, a stand-off frame secured to the lower end of the extension stiles for distancing the top of the ladder from a wall against which the ladder is leaned and at least one rail extending between the extension stiles.

[0007] The stand-off frame is preferably pivotable relative to the extension stiles so that it may be folded to lie parallel to the plane of the extension stiles for convenient storage.

[0008] It is possible to form the accessory in the same manner as a ladder with rails instead of rungs connected between respect pairs of sections of the collapsible stiles. The rails need not and preferably should not be strong enough to support the weight of a person as they should not be stood upon. However, the rails may be formed as shelves to support tools.

[0009] Advantageously, the rails have holes for receiving and locating tools. If aligned holes are formed in several rails, then they can be used to hold tools even when the accessory is not fully extended.

[0010] To improve the stability of the ladder, the stand-off frame may be provided with retractable lateral exten-

sions to contact the wall at locations further apart than the width of the ladder. Such lateral extensions may suitably be resiliently biased apart into their extended positions and held in their retracted position by means of pins that are automatically released when the stand off frame is pivoted to its horizontal position.

[0011] The invention will now be described further, by way of example, with reference to the accompanying drawings, in which :-

Figure 1 is a perspective view of an accessory of the invention shown in its extended condition,

Figure 2 is a side view of the accessory in its fully collapsed condition,

Figure 3 shows the accessory of Figures 1 and 2 being fitted to a Telesteps ladder,

Figure 4 shows the accessory of Figures 1 and 2 being fitted to a conventional ladder using a pair of adapters,

Figures 5, 6 and 7 are side views of the accessory at different stages during its deployment,

Figure 8 is a perspective view of a known Telesteps telescopically collapsible ladder showing the bolt mechanism used to lock the sections of the stiles to one another and to release them automatically as the ladder is collapsed,

Figure 9 is an exploded perspective view of a retractable lateral extension, and

Figure 10 shows to an enlarged scale a detail of the retractable lateral extension that is encircled by a dashed line in Figure 9.

[0012] A ladder accessory 10 comprises two telescopically collapsible stiles 12 and 14. Rails extend between the sections of the stiles, the top rail 18 being designed as a handrail and the remaining rails 16 being formed as shelves that are not strong enough to support the weight of a person. The lower rails 16 are instead contoured to enable tools to be placed on them without risk of sliding off. The lower rails are also provided with holes 19 for receiving tools such as screwdrivers and the holes 19 in the different rails are in alignment so that they can be used to hold tools even when the accessory 10 is not fully extended, as shown in Figure 2.

[0013] A stand-off platform 20 is secured to the two lowermost sections of the stiles 12 and 14. The platform 20 is pivotable relative to the stiles about a pivot 22 between a storage position, shown in Figure 2, and an operating position, shown in Figure 1.

[0014] The manner in which the accessory 10 is used is best shown in Figures 3 and 4. The stiles 12 and 14 are intended to act as extensions of the stiles of the ladder. Figure 3 shows that the accessory can be fitted to a Telesteps ladder 30 that is itself telescopically collapsible by plugging the lower ends of the stiles 12 and 14 directly into the top sections of the stiles of the ladder 30. A Telesteps ladder, as shown in Figure 8, has retractable pins 40 in its rungs 42 that are biased by

springs 44 in a direction to lock the sections of the stiles to one another in their extended position. When the ladder is collapsed, the pins of the lowermost rung are manually retracted and thereafter as each rung comes to rest on the rung below it, two levers 46 are pushed up into the rung and retract its locking pins to release the next sections of the stiles. The ladder therefore collapses automatically under its own weight.

[0015] The fact that the stile sections have to fit inside one another places a limit on the maximum extended length of a telescopically collapsible ladder. However, even though it is required that all the rungs should have sufficient strength to support the weight of a person, the upper rungs cannot be used because the person would be too close to the wall on which the ladder is leaning and because there would be no handrail to grip for safety. The preferred embodiment of the invention enables the higher rungs of the ladder to be used because its stand-off frame distances the top of the ladder from the wall and because it provides both a handrail and secure support surfaces for tools. The accessory does not however act as an extension of the ladder as its rails or shelves are not designed to support the weight of a person.

[0016] While the accessory is designed for use with a Telesteps ladder 30, it can be used with a conventional ladder as shown at 50 in Figure 4. To couple the lower end of the stiles to the stiles of the ladder 50, adapters 52 may be used, which are dimensioned to fit over the ends of the stiles of the ladder 50 and fit into (or to receive) the lower end of the stiles of the accessory 10.

[0017] In its operating position, the stand-off platform 20 is designed to extend at right angles to the stiles and it is held in that position by a pair of articulated arms 60. Because the platform 20 is perpendicular to the stiles 12 and 14, the arms 60 are in tension while the ladder is in use and there is no tendency for the arms to fold into their storage position.

[0018] The lateral ends of the stand-off platform 20 are provided with retractable extensions 62. The extensions 62 are urged into their extended position by springs 84 (see Figures 9 and 10) so that in use they project sideways to span a width greater than the width of the ladder. In this way, the extensions 62 act to steady the ladder and avoid any tendency for it to twist about its own longitudinal axis when it is in use.

[0019] As shown in Figures 5, 6 and 7, pins 64 are provided to hold the retractable extensions 62 in their retracted position when the accessory is folded for storage. The pins 64 are urged by means of springs 66 in a direction to engage holes 86 (see Figure 9) in the extensions 62 to lock the extensions in their retracted positions. The pins 64 are attached to cords 68 which are wrapped around the pivots 70 that connect the articulated arms 60 to the stand-off platform 20. When the platform reaches its position shown in Figure 7, the pins 64 are disengaged by the cords 68 from the holes in the extensions 62 so that the extensions are automatically

deployed when the stand-off platform 20 is pivoted into its position perpendicular to the stiles of the ladder. After the platform has been rotated into its storage position shown in Figure 5, the extensions can be retracted manually and will be retained in this position by the pins 64.

The manner in which the retractable extension 62 is retained in the platform 20 will now be described by reference to Figures 9 and 10.

[0020] The lateral extension 62 is formed of a tube having a longitudinally extending recess 72 in its surface and three holes 74, 76 and 86 all lying on the same line as the recess 72. The hole 86, as earlier described, receives the pin 64 that holds the extension 62 in its retracted position. The other two holes 74 and 76 serve to locate a bar 78, the axial end of which abuts the pin 64 when the extension 62 is in its extended position to prevent the extension 62 from coming away entirely. The bar 78 has two projecting prongs 80 and 82 that are received in the holes 76 and 74, respectively, to prevent the bar 78 from sliding along the recess 72. The prong 80 is as long as the diameter of the extension 62 so that it may also act as an abutment for the spring 84 that biases the extension 62 into its extended position.

[0021] When the ladder is erected, it is possible for the hand rail 18 to be spaced from the wall but it is preferred that it should rest against the wall without taking the weight of the ladder. To this end, as the ladder is being erected, the hand rail may be positioned to rest on the wall with the stand-off platform 20 slightly spaced from the wall. When a person then stands on the ladder, the platform 20 comes into contact with the wall as the stiles of the ladder bend under the weight of the person. Thereafter the weight of the person is supported by the stand-off platform 20 but because contact is made with the wall at several places, the stability of the ladder is significantly improved. In the unlikely event of the platform 20 giving way for any reason, the ladder will not collapse or move significantly, permitting the person standing on it to descend safely.

[0022] The sections of the ladder accessory are preferably prevented from collapsing when in use by means of locking mechanisms constructed in the same manner as the locking mechanisms of the Telesteps ladder described above. This is desirable from the point of view of reducing manufacturing cost and ease of use. However, because the accessory is itself relatively small and has few sections, it is not essential for it to collapse from the bottom upwards nor for its locking mechanism to be arranged on the underside of its rails to cause automatic release of the locking mechanisms as the rails come into contact with each other.

Claims

1. An accessory for a ladder, **characterised by** a pair of telescopically collapsible extension stiles (12,14) to be connected as extensions of the stiles of the

ladder (30;50), a stand-off frame (20) secured to the lower end of the extension stiles (12,14) for distancing the top of the ladder from a wall against which the ladder is leaned and at least one rail (18) extending between the extension stiles.

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2. An accessory as claimed in claim 1, wherein the stand-off frame (20) is pivotable relative to the extension stiles (12,14) so as to lie parallel or perpendicular to the plane of the extension stiles (12,14). 10
3. An accessory as claimed in claim 1 or 2, comprising a plurality of rails (16,18) to extend parallel to the rungs of the ladder (30;50) and each connected between a respect pair of sections of the collapsible stiles (12,14). 15
4. An accessory as claimed in claim 3, wherein the rails (16) are formed as shelves to support tools. 20
5. An accessory as claimed in claim 3 or 4, wherein the rails (16) have holes (19) for receiving and locating tools.
6. An accessory as claimed in claim 5, wherein holes (19) are formed in several rails (16), the holes (19) in the different rails (16) being aligned. 25
7. An accessory as claimed in any preceding claim, wherein the standoff frame (20) is provided with retractable lateral extensions (62) to contact the wall at locations further apart than the width of the ladder. 30
8. An accessory as claimed in claim 7, wherein the lateral extensions (62) are resiliently biased apart into their extended positions and are held in their retracted position by means of pins (64) that are automatically released when the stand off frame (20) is pivoted to its horizontal position. 35
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9. An accessory as claimed in any preceding claim, wherein locking mechanism are provided in the rails of the extension to lock the sections of the stiles to one another in their extended position. 45
10. An accessory as claimed in claim 9, wherein the locking mechanism are designed such that as each rail is collapsed down onto the next lower rail, the locking mechanisms for the stile sections connected to the next higher rail are automatically released. 50

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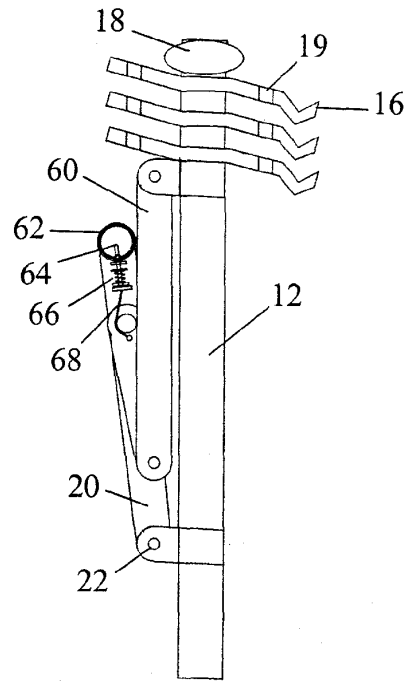
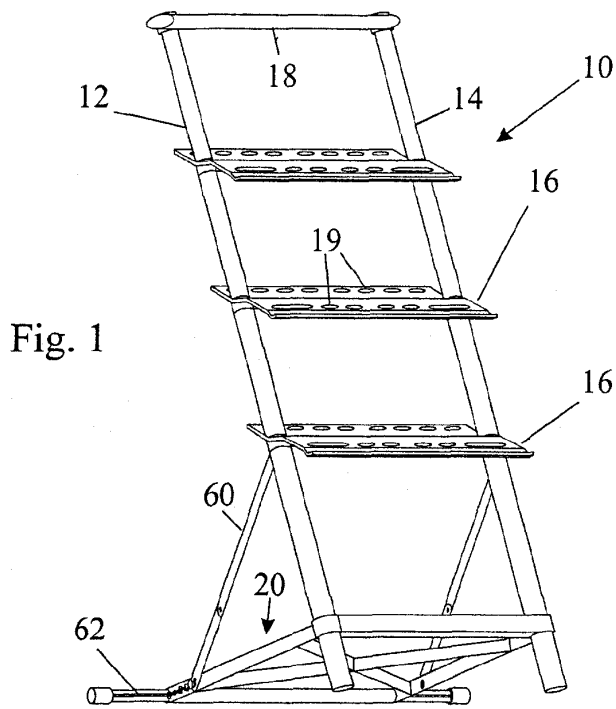


Fig. 2

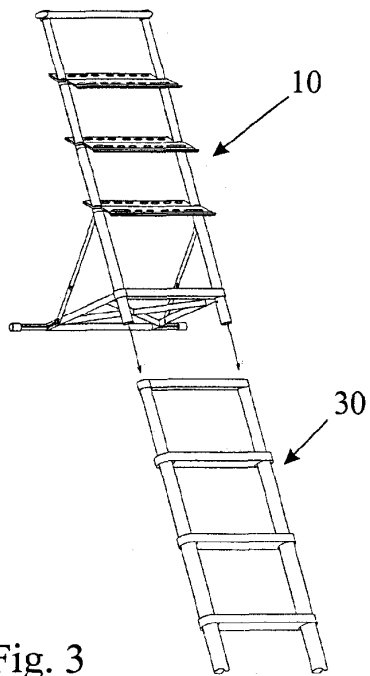


Fig. 3

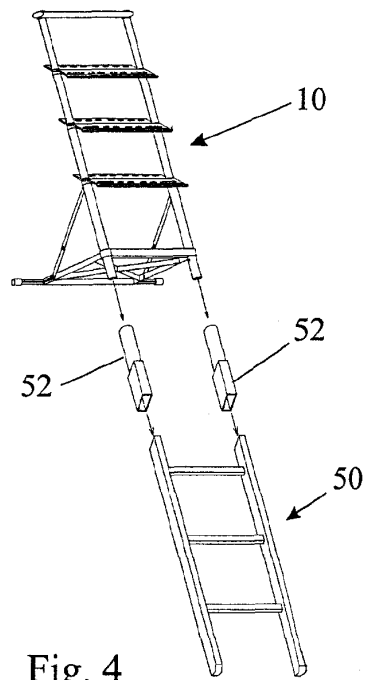


Fig. 4

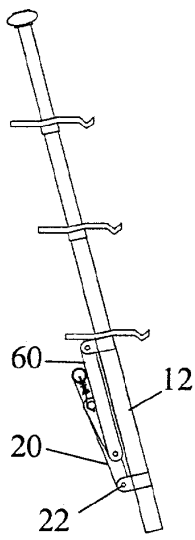


Fig. 5

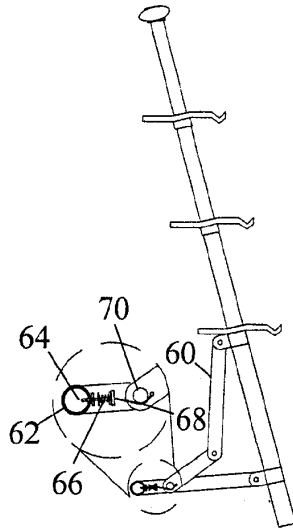


Fig. 6

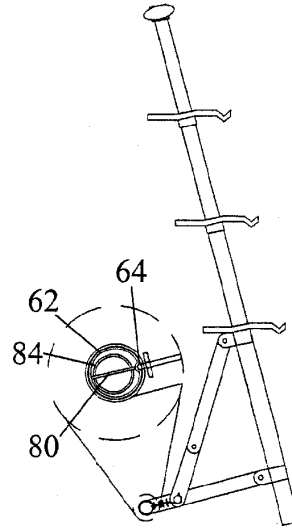


Fig. 7

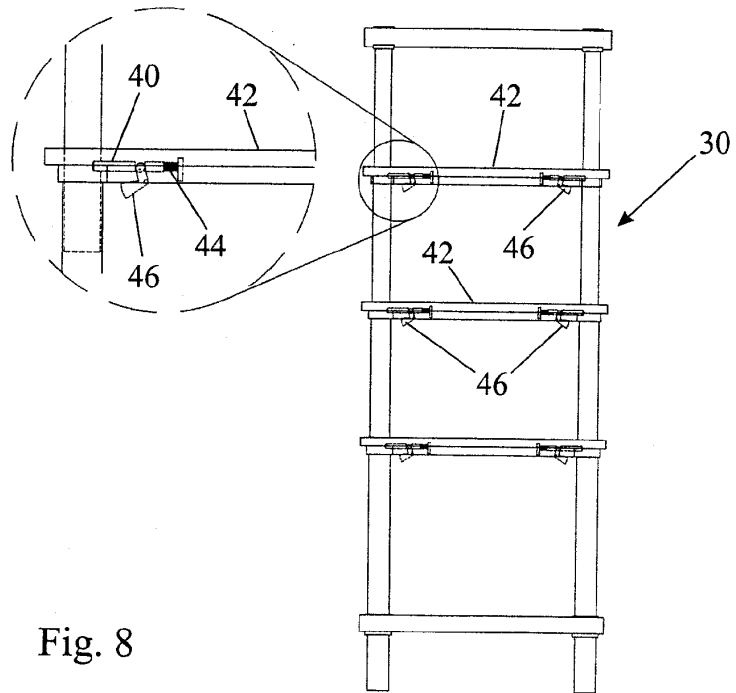


Fig. 8

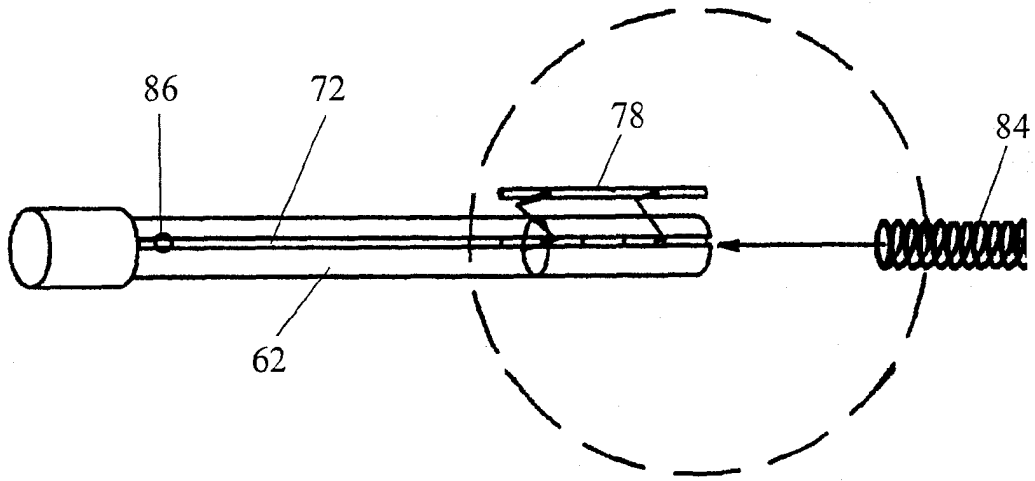


Fig. 9

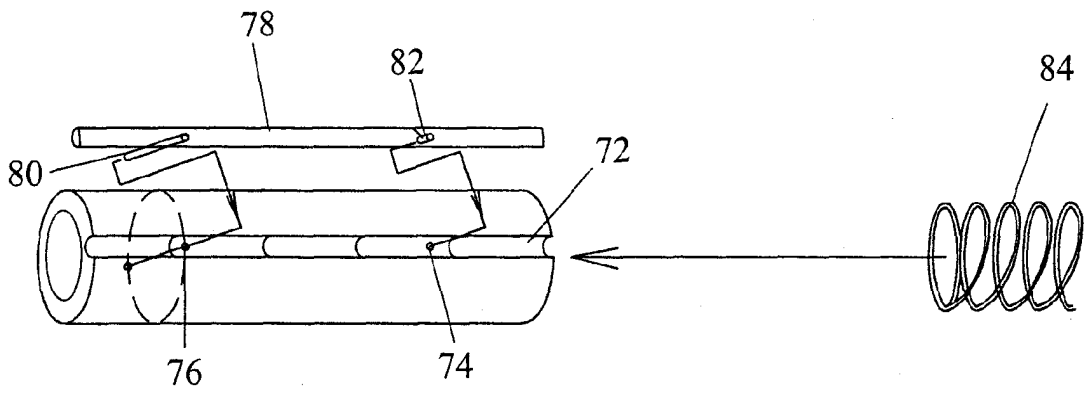


Fig. 10