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(54) **Ladder with a locking mechanism**

Leiter mit einer Sperreinrichtung

Échelle avec un dispositif de blocage

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EP-A- 0 527 766 US-A- 5 743 355
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Description

AREA OF INVENTION

[0001] The present invention relates to a telescopic or collapsible ladder or stepladder of the type comprising U-shaped ladder sections being telescopically inserted in each other, with a locking mechanism

BACKGROUND OF INVENTION

[0002] Ladders having collapsible and expandable ladder sections are used in order to make the ladder smaller for storage and transport purposes.

[0003] In the European patent EP-B1-0 527 766 a collapsible ladder is described comprising ladder bars divided into sections interconnected by rungs. In each ladder section retaining or locking mechanisms are provided, designed to automatically release the upper ladder sections, when one rung reaches a lower rung. This means, that subsequent to the release of the lowermost ladder section, the following ladder sections are automatically released, whereby the ladder collapses.

[0004] One drawback with the ladders described in EP-B1-0 527 766 is that if a user partially collapses the ladder, normally the upper part of the telescopic ladder, the ladder will not be safe to use if the user stands on top of the uppermost ladder section. This due to the fact that to collapse the upper part of a ladder, a locking mechanism of an upper positioned ladder section is released. The released ladder section collapses against a below positioned ladder section and a chamfered surface of a damper on the bottom end of the released ladder section partially retracts a locking pin of the locking mechanism holding the below positioned ladder section in its position. Thereby the below positioned ladder section is held by a substantially shorter part of the locking pin. Accordingly the released ladder section and any other released ladder thereabove only is held in position by the portion of the locking pin extending through the below positioned ladder section and distance between the ladder sections, the ladder sections roughly having a thickness of material of 1,3 mm and the distance between the ladder sections being in the size of 0,1-0,2 mm. Since many users may climb on top of the ladder and stand on the released ladder sections and load the ladder with all their respective weight, the short portion of the locking pin may not be enough to withstand the exposed load. The below positioned ladder section may be released and cause the entire ladder to collapse and expose the user to a dangerous situation.

[0005] Another problem in the art is that some manufacturers of telescopic ladders cover the tip portion of the locking pin with plastic to reduce the wear on the inside of the ladder bars. Such a plastic covered tip of the locking pin is even further exposed since the plastic tip will withstand the load even worse than a homogeneous locking pin made of a metal material. There are also collapsible

ladders provided with locking pins having a rounded end, where the rounded end serves as a soft surface as the locking pins slide against the inner surface of the bars by means of the spring. The rounded tip solutions encounter the same problem as ladders with the plastic covered locking pins, i.e. they provide a very small portion of the locking that should withstand the load of a user of the telescopic ladder.

[0006] A collapsible ladder according to the preamble of claim 1 is described in US-A-5 743 355.

[0007] There is a wish to provide a collapsible ladder or stepladder with a locking mechanism that ensures that the ladder can be used even though the ladder has not been completely extended or if upper positioned ladder sections have been released and collapsed.

SUMMARY OF INVENTION

[0008] An object of the present invention is to provide telescopically collapsible ladders and stepladders with a locking mechanism, which enables the user to comfortably and safely use the ladder even though the ladder is partially released and collapsed.

[0009] This object is attained according to the invention described in the characterizing part of claim 1.

[0010] In a further embodiment of the invention, the locking mechanism includes further safety means.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] In the following, the invention will be explained with reference to the accompanying drawings, where:

Fig. 1 is a front view of a maximally collapsed ladder according to the invention;

Fig. 2 is a front view of an extended ladder according to the invention;

Figs. 3-7 show different views of the locking mechanism according to a first aspect of the invention; and Figs. 8-9 show different views of the locking mechanism according to a second aspect of the invention.

DETAILED DESCRIPTION OF EMBODIMENTS

[0012] In Fig. 1 a collapsible ladder 1 is shown comprising ladder bars 2, 3 and rungs 6-14, respectively. The rungs are arranged between the ladder bars 2, 3 and interconnect them. The ladder bars 2, 3 are divided into sections 5 (see Fig. 2), which telescope into each other. The bar sections 5 to the right and to the left form U-shaped ladder sections together with the rungs 6-14 connected at the top of the bar sections.

[0013] The lowermost ladder section 15 comprises a rung 7 and is also suitably provided at the bottom with a stationary rung 6, designed to provide an extra foot support and a more stable lowermost ladder section. The rungs 6-14 are suitably made of an extruded aluminum profile.

[0014] Each rung 7-13 houses at each end a locking or retaining mechanism 41 (see Figs. 4-6), comprising a shell 21. The shell 21 is inserted in the profile of the rung, e.g. by means of a press fit. The rung 14 of the uppermost ladder section and the stationary rung 6 may lack a retaining mechanism 41.

[0015] A completely extended telescopic ladder 1 according to the invention is shown in Fig. 2 having actuators 40 on each of the rungs 7-13. The actuators 40 arranged on the rung 7 may initiate the folding of the entire collapsible ladder, or the actuators 40 on each of the rungs 8-13 may be used to collapse or fold the ladder sections positioned above the respective rung 8-13.

[0016] Now the retaining or locking mechanism 41 used in the telescopic ladder 1 will be described in detail. In Fig. 3 only three bar sections 5a, 5b, 5c are shown with a retaining mechanism only provided on the bar section 5a, whereas the rest of the ladder and the sections have been removed for clarity reasons. The bar section 5c, having the smaller diameter, telescopes into the bar section 5b, and the bar section 5b telescopes into the bar section 5a having the greater diameter.

[0017] Figs. 4-6 show a partial cross section of the bar sections 5a-5c along the line A-A. Every bar section 5, except the lowermost bar section, is provided with a damper 22 at its lower end. In Fig. 3 all ladder or bar sections 5 have been provided with dampers 22, but only the damper of bar section 5a is indicated. If the bar section 5a should be the lowermost bar it would not be provided with the damper 22. The damper 22 serves to reduce the folding speed of the ladder as the bar section is lowered or collapsed by gravity. The damper 22 is provided with an inclined surface 23.

[0018] The retaining mechanism 41 comprises a locking pin 24, which is received in a shell 21, where the shell 21 is press-fitted into a rung 7a, which corresponds to any of the rungs 7-13. The locking pin 24 is displaceably mounted in the shell 21 and is in one end biased by a spring 25. The locking pin 24 is provided with a waist or recess portion 26 in the mid portion of the locking pin 24 and a slot or slit 27 in the fore portion of the locking pin 24. The waist or recess 26 serves to receive an actuator 40.

[0019] The actuator 40 is a rotary button and is pivotably mounted with a spindle 45 on the shell 21 and has a connecting part (fork-shaped) of the button 40 that clasps or jams about the waist or recess 26 of the locking pin 24. The rotary button 40, which is roughly L-shaped, extends through a recess 43 of the bottom of the shell 21 projecting out of a recess on the underside face of the rung 7a. In a locking position (see Figs. 4 or 6), one of the legs of the rotary button projects obliquely out from the recess, whereas the other leg, e.g. having a fork-shaped and rounded end, grasps the recess portion 26 of the locking pin 24.

[0020] The locking pin 24 is furthermore provided with an end portion 33 opposite to the end portion biased by the spring 25. The locking pin 24 interacts with a locking

hole 34 of the bar section 5b to keep the extended position of the bar section 5b relative to the bar section 5a of the ladder.

[0021] The bar section 5b is provided with a second locking hole 34b located below the locking hole 34. The second locking hole 34b serves to lock the bar section 5b in relation to another bar section after the bar section 5b has been collapsed. This will be described in detail below.

[0022] In Fig. 6 it is shown how the locking pin 24 interacts with a second locking hole 34b of the bar section 5c to keep the collapsed bar section 5c in a fixed relation to the bar section 5a and 5b, respectively. It is also shown that the bar section 5c is provided with a locking hole 34, which is not used as the bar section 5c has been released and collapsed, and the locking pin 24 instead interacts with the below located second locking hole 34b of the bar section 5c.

[0023] In Fig. 7 the upper part of the bar sections 5b and 5c are shown, where the rung 7c of the collapsed bar section 5c is located adjacently above the rung 7b of the bar section 5b. The distance between the first locking hole 34 and the second locking hole 34b of each bar section corresponds to a height of a rung 7a-c, i.e. the distance between the upper side of the rung 7a-c and the under side of the rung 7a-c. The ladder 1 can be provided with further ladder or bar sections located above the bar sections 5a-5c, and in Fig. 7 another upper bar section 5d is shown as an example of that.

[0024] Now the functionality of the telescopic ladder will be described in detail.

[0025] The user inactivates the retaining mechanism 41 of a bar section by withdrawing the locking pin 24 from the locking hole 34 by means of the actuator or rotary button 40 positioned on the underside of the rung 7 associated with the bar section. The bar section associated with the rung 7 positioned above the inactivated retaining mechanism 41 of the released bar section and kept in position by the retaining mechanism 41 of the bar section and its associated rung 7, is collapsed or lowered in relation to the below located bar section by gravity.

[0026] In Fig. 4 the bar section 5c has been released by inactivating the retaining mechanism 41 (not shown) of the bar section 5b and has been lowered or collapsed a distance from its extended mode by gravity. As the bar section 5c collapses further and reaches the locking pin 24 of the bar section 5a, the inclined or chamfered surface 23 of the damper 22, arranged at the bottom end of the bar section 5c, will interact with locking pin 24 of the bar section 5a so that the locking pin 24 will be pushed into shell 21. This enables the lower end of the bar section 5c to pass the locking pin 24 (see Fig. 5). If the bar sections had not been provided with dampers, the bar section 5c would have been stopped by the locking pin 24 of the bar section 5a, and a safety distance would have been created between the rung 7c of the bar section 5c and the rung 7b of the bar section 5b. Now the bar section 5c will collapse further until the second or additional lock-

ing hole 34b of the bar section 5c reaches the locking pin 24 of the bar section 5a, whereby the locking pin 24 enters the second locking hole 34b and locks the bar section 5c in relation to both the bar section 5a and the bar section 5b, see Fig. 6.

[0027] The retaining mechanisms 41 and the rung 7c of the bar section 5c lie adjacently above the retaining mechanism 41 and the rung 7b of the bar section 5b, see Fig. 7. As the rotary button 40 of the retaining mechanism 41 of the bar section 5c reaches the upper surface of rung 7b of the bar section 5b, the locking pin 24 will be withdrawn from the locking hole 34 of the bar section 5d by means of the rotary button 40, and the bar section 5d associated with the rung 7d positioned above the inactivated or released the bar section 5c and kept in position by the retaining mechanism 41 of bar section 5c and its associated rung 7c, is lowered/ collapsed by gravity.

[0028] Simultaneously thereto the folding of the bar sections associated with the rung 7 positioned above the initially released bar section will be initiated. The initiation of the folding of the bar sections associated with the rung 7 above the initially released bar section is due to the functionality of the retaining mechanism 41. As the rung 7 of a released bar section reaches a lower rung 7 of an immediately below positioned bar section, the retaining mechanism 41 of the upper positioned bar section is released when the rotary button 40 is pushed into the recess of the upper rung 7 by the lower rung 7, and thereby releases the retaining mechanism 41. This will be repeated until every bar section positioned above the actuator has been folded.

[0029] The telescopic ladder can also be provided with a third locking hole 34c on each bar section, see Figs. 3, 8 and 9, so that two collapsed bar sections 5c and 5d are locked in relation to two below located non-collapsed bar sections 5b and 5a by the retaining mechanism 41 of the bar section 5a. The third locking hole 34c is positioned adjacently below the second locking hole 34b. The function of the third locking hole 34c corresponds to the function of the second locking hole 34b.

[0030] Even though it has not been shown by the detailed embodiment or the drawings it is evident that the claimed locking mechanism can be used on a stepladder. A collapsible stepladder comprises a first and a second ladder leg. The legs are hingedly connected to each other in one end, and each of the ladder legs can be seen as an individual collapsible ladder as the ladders shown in Figs. 1-2.

[0031] The invention is not limited to the embodiments described above and shown on the drawings, but can be supplemented and modified in any manner within the scope of the invention as defined by the enclosed claims.

Claims

1. Collapsible ladder (1) comprising a locking mechanism and several ladder sections (5, 5a-5c), each

ladder section comprising two ladder bars (2, 3) arranged parallelly to each other and interconnected at one end by a rung (7-14) to form a U-shaped ladder section, and where each ladder section (5) is telescopically inserted into a lower ladder section (5) to form a collapsible ladder (1), and where dampers (22) are provided at the lower end of the ladder bars (2,3), and where the locking mechanism comprises retaining mechanisms (41) provided on each ladder bar (2, 3), adjacent the upper end of the ladder bar (2, 3) and a first locking hole (34) adjacent the lower end of the ladder bar (2, 3), and where each retaining mechanism (41) comprises a locking pin (24) being spring biased towards an extended position in order to engage the first locking hole (34) provided in the ladder bar (2, 3) of a ladder section positioned thereabove, **characterized in that** each ladder bar (2, 3) is provided with a second locking hole (34b) adjacent the lower end of the ladder bar (2, 3), below the first locking hole (34).

2. Collapsible ladder (1) according to claim 1, wherein each of the dampers (22) of the ladder sections (5, 5a-5c) are provided with a chamfered surface (23), the chamfered surface (23) of the dampers (22) being arranged to cooperate with the locking pin (24) of the ladder section (5, 5a-5c) to retract the locking pin (24) of the ladder section (5, 5a) from the extended and locked position to an intermediate position, when an above-positioned ladder section (5, 5c) is released and lowered, and where the locking pin (24) again is extended and enters the second locking hole (34b) and locks the released ladder section (5, 5c) in relation to the ladder section (5, 5b) positioned below the released above-positioned ladder section (5, 5c) as the released ladder section (5, 5c) is lowered further.
3. Collapsible ladder (1) according to claim 1 or 2, wherein each ladder bar (2, 3) is provided with a third locking hole (34c) adjacent the lower end of the ladder bar (2, 3), below the first and the second locking holes (34, 34b).
4. Collapsible ladder (1) according to any of claims 1-3, wherein the distance between the first and the second locking holes (34, 34b) corresponds to the thickness of the rungs (7-14).
5. Collapsible ladder (1) according to any of claims 1-4, wherein the distance between the second and the third locking holes (34b, 34c) corresponds to the thickness of the rungs (7-14).
6. Collapsible ladder (1) according to claim 5, wherein the retaining mechanism (41) further comprises a lever (40) which cooperates with the locking pin (24) and projects through a recess (43) on the underside

of the rung (6-13), and which is arranged to release the retaining mechanism (41), when the rung of the ladder section is collapsed against the rung positioned below and the lever (40) is pushed into the rung and retracts the locking pin (24) from its extended position.

7. A collapsible ladder (1) according to any one of the claims 1 to 6, **characterized in that** the collapsible ladder (1) comprises at least three ladder sections (5).
8. A collapsible stepladder comprising a first and a second ladder leg, where the legs are hingedly connected to each other in one end, and where each of the ladder legs comprises several ladder sections (5), each section (5) comprising two ladder bars (2, 3) arranged parallelly to each other and interconnected at one end by a rung to form a U-shaped ladder section (5); each ladder section (5) being telescopically inserted into a lower ladder section (5) to form a collapsible stepladder comprising at least three ladder sections (5), **characterized in that** at least one of the legs is a collapsible ladder according to any one of the claims 1 to 7.

Patentansprüche

1. Zusammenlegbare Leiter (1), die einen Verriegelungsmechanismus und mehrere Leiterabschnitte (5, 5a-5c) aufweist, wobei jeder Leiterabschnitt zwei Leiterstangen (2, 3) aufweist, die parallel zueinander angeordnet sind und an einem Ende durch eine Sprosse (7-14) verbunden sind, um einen U-förmigen Leiterabschnitt zu bilden, und wobei jeder Leiterabschnitt (5) teleskopartig in einen unteren Leiterabschnitt (5) eingefügt ist, um eine zusammenlegbare Leiter (1) zu bilden, und wobei Dämpfer (22) am unteren Ende der Leiterstangen (2, 3) vorgesehen sind, und wobei der Verriegelungsmechanismus Haltemechanismen (41), die an jeder Leiterstange (2, 3), dem oberen Ende der Leiterstange (2, 3) benachbart, vorgesehen sind, und ein erstes Verriegelungsloch (34) aufweist, das dem unteren Ende der Leiterstange (2, 3) benachbart ist, und wobei jeder Haltemechanismus (41) einen Verriegelungsstift (24) aufweist, der federvorbelastet in Richtung zu einer ausgefahrenen Stellung ist, um am ersten Verriegelungsloch (34) anzugreifen, das in der Leiterstange (2, 3) des darüber angeordneten Leiterabschnitts vorgesehen ist, **dadurch gekennzeichnet, dass** jede Leiterstange (2, 3) mit einem zweiten Verriegelungsloch (34b), dem unteren Ende der Leiterstange (2, 3) benachbart, unterhalb des ersten Verriegelungslochs (34) versehen ist.
2. Zusammenlegbare Leiter (1) nach Anspruch 1, bei

der jeder der Dämpfer (22) der Leiterabschnitte (5, 5a-5c) mit einer abgeschrägten Oberfläche (23) versehen ist, wobei die abgeschrägte Oberfläche (23) der Dämpfer (22) so angeordnet ist, dass sie mit dem Verriegelungsstift (24) des Leiterabschnitts (5, 5a-5c) zusammenwirkt, um den Verriegelungsstift (24) des Leiterabschnitts (5, 5a) von der ausgefahrenen und verriegelten Stellung in eine Zwischenstellung zurückzuziehen, wenn ein darüber angeordneter Leiterabschnitt (5, 5c) gelöst und abgesenkt wird, und wobei der Verriegelungsstift (24) wieder ausgefahren wird und in das zweite Verriegelungsloch (34b) eindringt und den gelösten Leiterabschnitt (5, 5c) relativ zum Leiterabschnitt (5, 5b) verriegelt, der unterhalb des gelösten darüber angeordneten Leiterabschnitts (5, 5c) angeordnet ist, wenn der gelöste Leiterabschnitt (5, 5c) weiter abgesenkt wird.

3. Zusammenlegbare Leiter (1) nach Anspruch 1 oder 2, bei der jede Leiterstange (2, 3) mit einem dritten Verriegelungsloch (34c), dem unteren Ende der Leiterstange (2, 3) benachbart, unterhalb der ersten und zweiten Verriegelungslöcher (34, 34b) versehen ist.
4. Zusammenlegbare Leiter (1) nach einem der Ansprüche 1 bis 3, bei der der Abstand zwischen den ersten und zweiten Verriegelungslöchern (34, 34b) der Dicke der Sprossen (7 bis 14) entspricht.
5. Zusammenlegbare Leiter (1) nach einem der Ansprüche 1 bis 4, bei der der Abstand zwischen den zweiten und dritten Verriegelungslochern (34b, 34c) der Dicke der Sprossen (7 bis 14) entspricht.
6. Zusammenlegbare Leiter (1) nach Anspruch 5, bei der der Haltemechanismus (41) weiter einen Hebel (40) aufweist, der mit dem Verriegelungsstift (24) zusammenwirkt und durch eine Ausnehmung (43) auf der Unterseite der Sprosse (6-13) vorsteht und der dazu ausgebildet ist, den Haltemechanismus (41) zu lösen, wenn die Sprosse des Leiterabschnitts gegen die Sprosse zusammengelegt wird, die unterhalb angeordnet ist und der Hebel (40) in die Sprosse hineingedrückt wird und den Verriegelungsstift (24) von seiner ausgefahrenen Stellung zurückzieht.
7. Zusammenlegbare Leiter (1) nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die zusammenlegbare Leiter (1) wenigstens drei Leiterabschnitte (5) aufweist.
8. Zusammenlegbare Stufenleiter, die ein erstes und ein zweites Leiterbein hat, wobei die Beine an einem Ende scharnierartig miteinander verbunden sind und wobei jedes der Leiterbeine mehrere Leiterabschnitte (5) aufweist, wobei jeder Abschnitt (5) zwei Leiterstangen (2, 3) aufweist, die parallel zueinander angeordnet sind und an einem Ende durch eine

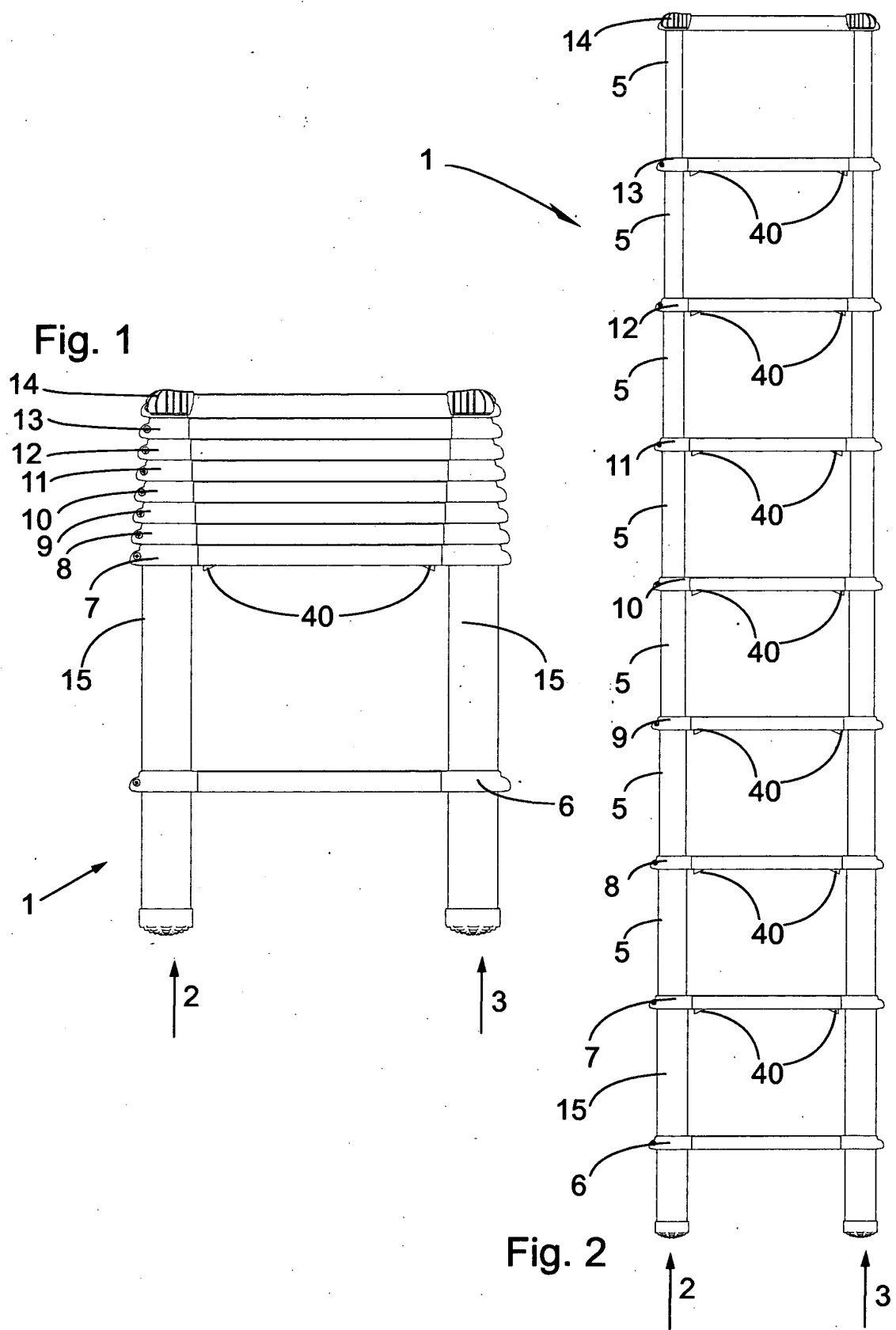
Sprosse miteinander verbunden sind, um einen U-förmigen Leiterabschnitt (5) zu bilden; wobei jeder Leiterabschnitt (5) teleskopartig in einen unteren Leiterabschnitt (5) eingefügt ist, um eine zusammenlegbare Stufenleiter zu bilden, die wenigstens drei Leiterabschnitte (5) aufweist, **dadurch gekennzeichnet, dass** wenigstens eines der Beine eine zusammenlegbare Leiter nach einem der Ansprüche 1 bis 7 ist.

Revendications

1. Echelle escamotable (1) comprenant un mécanisme de blocage et plusieurs sections d'échelle (5, 5a-5c), chaque section d'échelle comprenant deux barres d'échelle (2, 3) agencées parallèlement l'une par rapport à l'autre et interconnectées au niveau d'une extrémité par un échelon (7-14) pour former une section d'échelle en forme de U, et dans laquelle chaque section d'échelle (5) est insérée de manière télescopique dans une section d'échelle inférieure (5) pour former une échelle escamotable (1), et dans laquelle on prévoit des amortisseurs (22) au niveau de l'extrémité inférieure des barres d'échelle (2, 3) et dans laquelle le mécanisme de blocage comprend des mécanismes de retenue (41) prévus sur chaque barre d'échelle (2, 3), adjacents à l'extrémité supérieure de la barre d'échelle (2, 3) et un premier trou de blocage (34) adjacent à l'extrémité inférieure de la barre d'échelle (2, 3) et dans laquelle chaque mécanisme de retenue (41) comprend une goupille de blocage (24) qui est sollicitée par ressort vers une position étendue afin de mettre en prise le premier trou de blocage (34) prévu dans la barre d'échelle (2, 3) d'une section d'échelle positionnée au-dessus de celle-ci, **caractérisée en ce que** chaque barre d'échelle (2, 3) est prévue avec un deuxième trou de blocage (34b) adjacent à l'extrémité inférieure de la barre d'échelle (2, 3), au-dessous du premier trou de blocage (34).
2. Echelle escamotable (1) selon la revendication 1, dans laquelle chacun des amortisseurs (22) des sections d'échelle (5, 5a-5c) sont dotés d'une surface chanfreinée (23), la surface chanfreinée (23) des amortisseurs (22) étant agencée pour coopérer avec la goupille de blocage (24) de la section d'échelle (5, 5a-5c) pour rétracter la goupille de blocage (24) de la section d'échelle (5, 5a) de la position étendue et bloquée à une position intermédiaire, lorsqu'une section d'échelle (5, 5c) positionnée au-dessus est libérée et abaissée, et dans laquelle la goupille de blocage (24) est à nouveau étendue et pénètre dans le deuxième trou de blocage (34b) et bloque la section d'échelle (5, 5c) libérée par rapport à la section d'échelle (5, 5b) positionnée au-dessous de la section d'échelle (5, 5c) positionnée au-dessus et libé-

rée lorsque l'on continue à abaisser la section d'échelle (5, 5c) libérée.

3. Echelle escamotable (1) selon la revendication 1 ou 2, dans laquelle chaque barre d'échelle (2, 3) est dotée d'un troisième trou de blocage (34c) adjacent à l'extrémité inférieure de la barre d'échelle (2, 3), au-dessous des premier et deuxième trous de blocage (34, 34b).
4. Echelle escamotable (1) selon l'une quelconque des revendications 1 à 3, dans laquelle la distance entre le premier et le deuxième trou de blocage (34, 34b) correspond à l'épaisseur des échelons (7-14).
5. Echelle escamotable (1) selon l'une quelconque des revendications 1 à 4, dans laquelle la distance entre le deuxième et le troisième trou de blocage (34b, 34c) correspond à l'épaisseur des échelons (7-14).
6. Echelle escamotable (1) selon la revendication 5, dans laquelle le mécanisme de retenue (41) comprend en outre un levier (40) qui coopère avec la goupille de blocage (24) et fait saillie à travers un évidement (43) sur la face inférieure de l'échelon (6-13), et qui est agencé pour libérer le mécanisme de retenue (41), lorsque l'échelon de la section d'échelle est escamoté contre l'échelon positionné au-dessous et le levier (40) est poussé dans l'échelon et rétracte la goupille de blocage (24) de sa position étendue.
7. Echelle escamotable (1) selon l'une quelconque des revendications 1 à 6, **caractérisée en ce que** l'échelle escamotable (1) comprend au moins trois sections d'échelle (5).
8. Escabeau escamotable comprenant un premier et un second pied d'échelle, dans lequel les pieds sont raccordés de manière articulée entre eux au niveau d'une extrémité, et dans lequel chacun des pieds d'échelle comprend plusieurs sections d'échelle (5), chaque section (5) comprenant deux barres d'échelle (2, 3) agencées parallèlement l'une par rapport à l'autre et interconnectées au niveau d'une extrémité par un échelon pour former une section d'échelle en forme de U (5); chaque section d'échelle (5) étant insérée de manière télescopique dans une section d'échelle inférieure (5) pour former un escabeau escamotable comprenant au moins trois sections d'échelle (5), **caractérisé en ce qu'**au moins l'un des pieds est une échelle escamotable selon l'une quelconque des revendications 1 à 7.



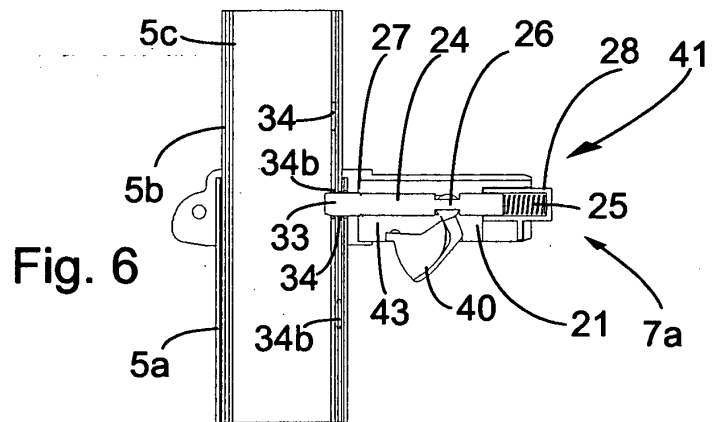
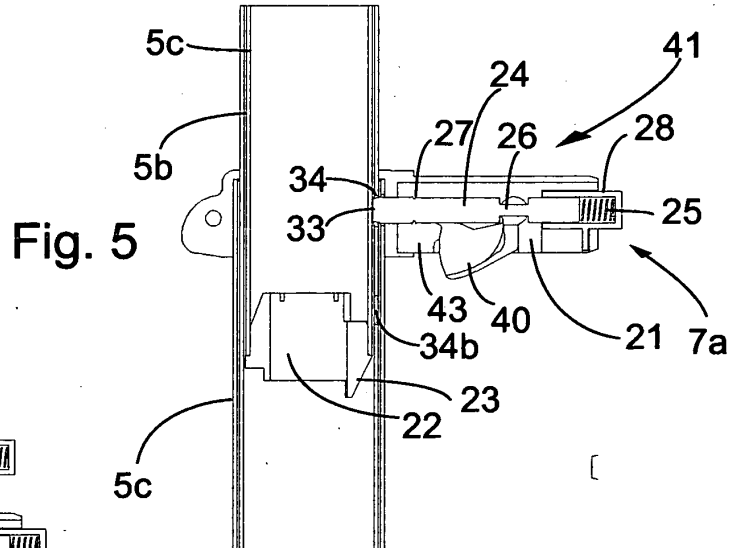
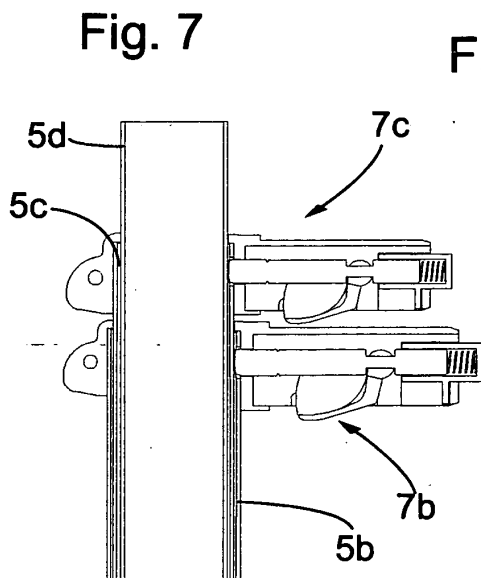
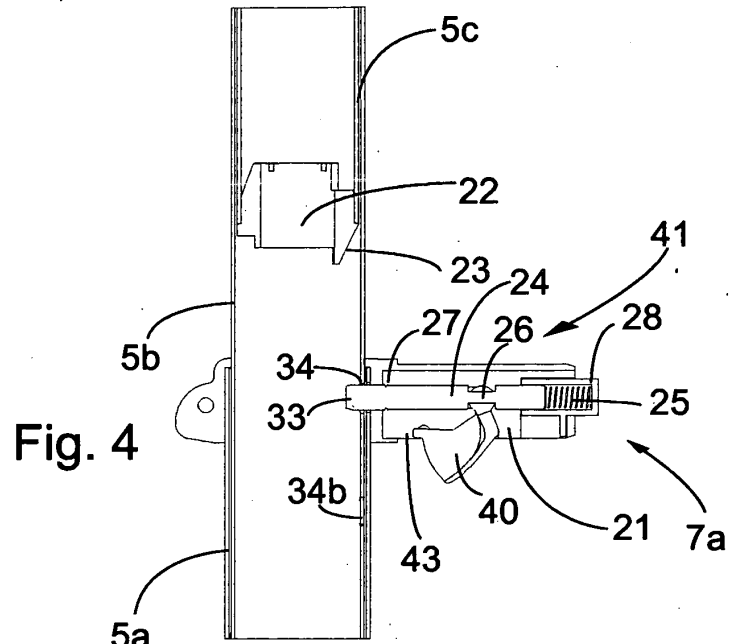
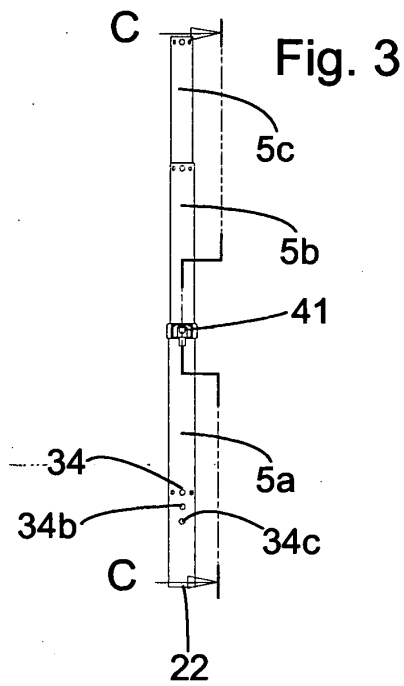


Fig. 8

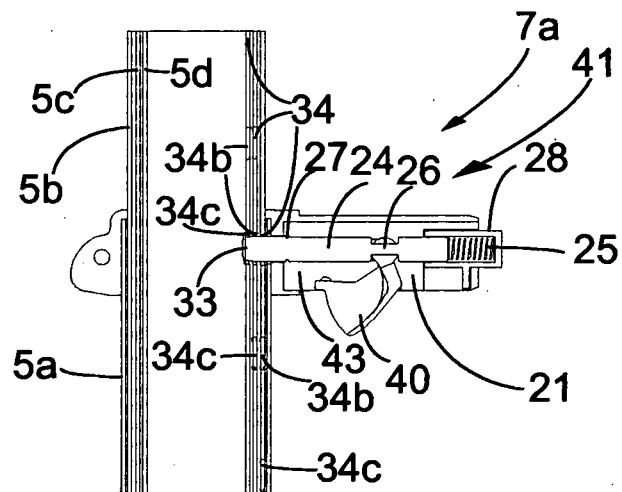
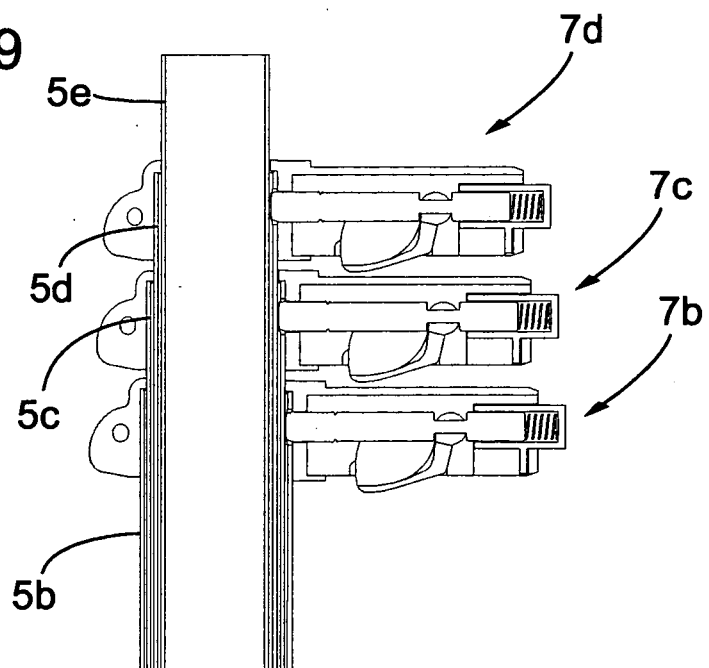


Fig. 9



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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