

**EUROPEAN PATENT APPLICATION**

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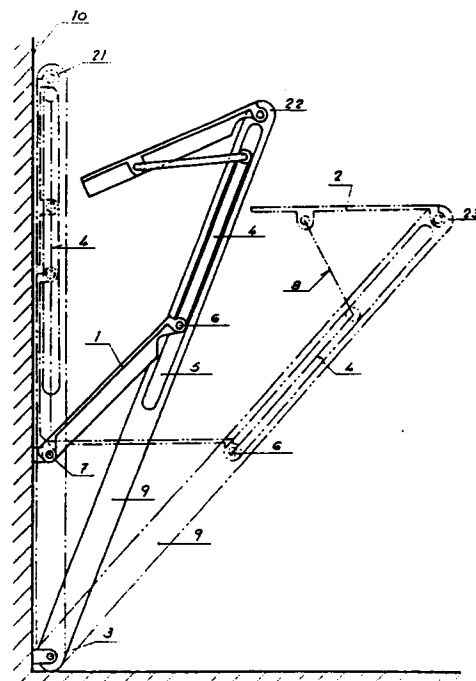
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**A ladder for climbing onto the upper bed in railway vehicles cabins.**

**A ladder for climbing onto the upper bed in railway vehicles cabins comprising two parallel supports (9) linked at their lower ends with one of the partition walls (10) of the cabin and two steps (1, 2), articulated on said supports presenting advantages as to comfort and safety.**



## DESCRIPTION

A ladder for climbing onto the upper bed in railway vehicles cabins.

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The object of the present invention is a ladder of the type which is used in two-bed cabins to climb onto the upper bed. This ladder presents undoubtable advantages over the known ones as regards comfort and safety, appearance and functionality.

It is fundamentally employed in railway vehicles for night trips having cabins provided with two or more beds, at least one of which is placed in an elevated position.

The ladders that have been in use until now for this purpose are portable ladders, as they have to be translated from the idle position to the use position. They comprise two straight legs linked by rungs, which are exceedingly narrow, thus being uncomfortable and unsafe.

Their clamping system too is unsafe, especially when they are used by elderly people, and in the idle position they can generate troublesome noises. Its appearance, always on sight, is frequently little aesthetical. In the utilisation position it can turn out to be a hindrance to getting up for the person who occupies the lower bed.

with the ladder that is herein claimed, all above-mentioned drawbacks are eliminated, and moreover additional advantages are achieved, that will be clear from the following description and according to the following Figures:

Figure 1, which represents in profile a ladder as it is placed relative to the beds.

Figure 2, which is a schematic draw representing the same ladder, also seen in profile, in three different positions, namely: folded, in use position, and in an intermediate position.

Figure 3 is a perspective view of the ladder in use position.

The ladder of the present invention comprises essentially two straight and parallel supports or legs 2 which are linked at their lower end with one of the partition walls 10 of the cabin, generally the wall opposite to the beds, and two steps 1 and 2 that are articulated on said supports.

It can be recognised that in position 21 of Figure 2, when it is not necessary to use it, the ladder stands against the partition wall 10 of the cabin, thus being completely concealed, To put it in its use position, it is enough to take off the upper part of the ladder from said partition wall 10. It will pivot around the lower link 3, which is placed near the cabin floor. In the same time, bar 4 slides downward compelled by step 1, which is linked with the bar at one of its extremities 6 and with the partition wall 10 at its other extremity



7. On the inner side of the supports 9 there is provided a groove 5 that leads the bar in its sliding. As the ladder's upper part comes off the partition wall 10, the steps 1 and 2 pass from the vertical position to the horizontal one. For a better understanding of the resulting motion, the ladder is also shown in the intermediate position 22 of Fig. 2.

The dimensions of the articulated levers are calculated so that when the link 6 leans against the lower end of groove 5 the step 1 remains in horizontal position, while the connecting rod 8 puts the step 2 in horizontal position as well.

In this position it has been represented in position 23 of said Figure 2 and in Figures 1 and 3.

From the upper step 2, the traveler can comfortably seat down in the upper bed 12, which allows to easily lay down on it.

If the traveler occupying the lower bed 11 has to get down of it, he only needs to push the ladder towards the partition wall 10 for the hindrance it might cause to disappear. If, when the ladder is leaning against the partition wall, the passenger occupying the upper bed needs to use it, he perfectly reaches it from its bed and can unfold it and put it in the use position.

The ladder can be provided with banisters 14 that ease its unfolding into the use position from the upper bed

and offer a better safety in its use.

With this design a very rigid ladder can be obtained, comfortable and stable as well, having such a shape that it can be utilized with the highest safety and comfort by elderly people. It can also be used, with the cabin in the "day" position (i.e. with the beds leaning against the wall and the seats, which can disappear under the lower bed, in the use position), as an auxiliary table, as it is in front of the seats.

If nobody wants to use the ladder, this can be leant against the partition wall 10, the steps and mechanisms being hid by the cover 13, which is assembled so as to connect the two supports 9 and is decorated in accord with the whole cabin. In this way all the possible noise generated by a hanging ladder is eliminated, it is not necessary to take it on to change from the use position to the idle position, and the appearance of the cabin is improved.

The ladder is so designed that the steps 1 and 2 are wide and exactly equal parts. They can be lined with wood, moquette, and so on, so that they can be used barefooted with no coldness or unsafety feeling due to small dimensions or to being slippery.

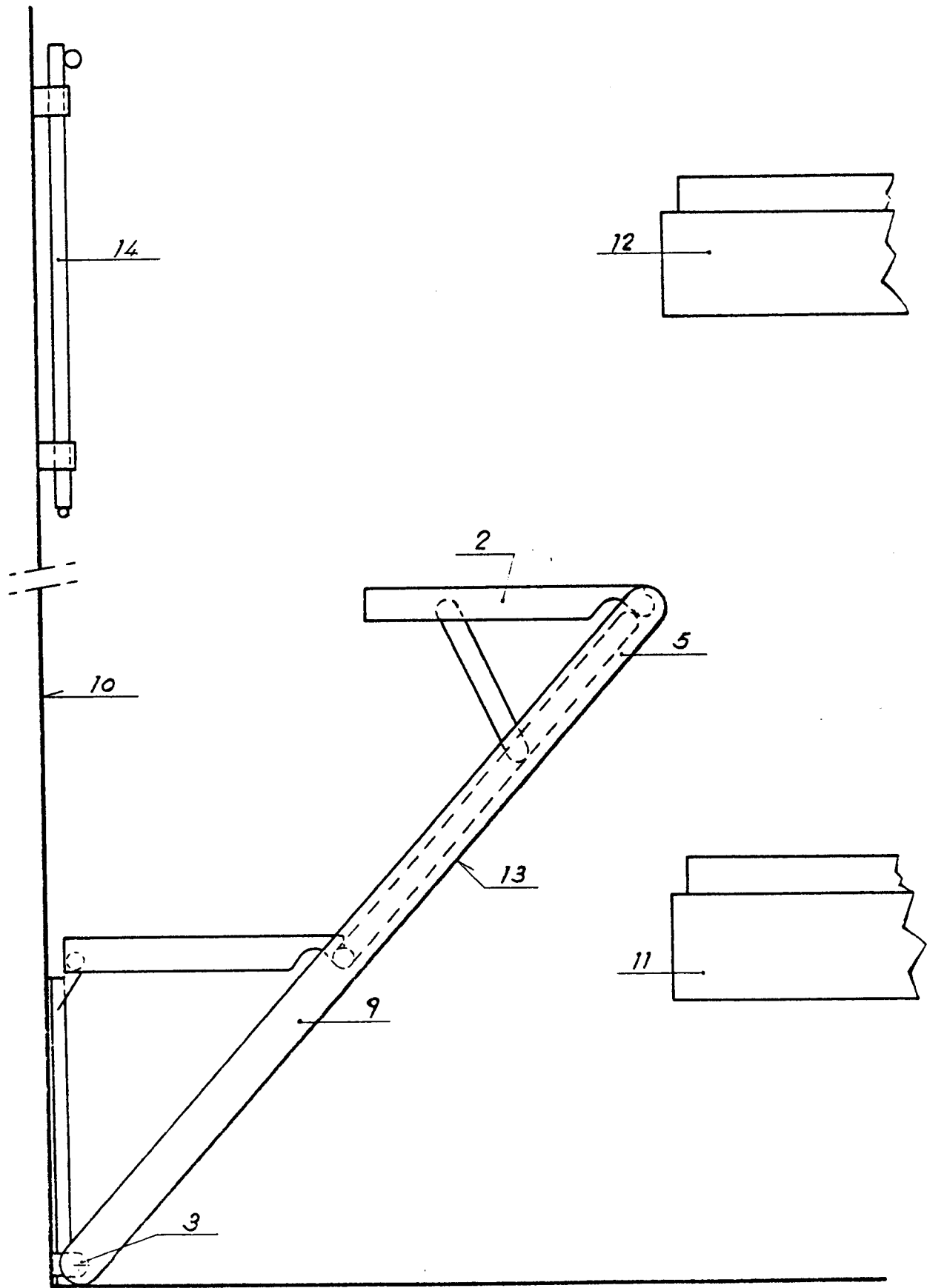
## CLAIMS

1. A ladder for climbing onto the upper bed in railway vehicles cabins characterised in that it comprises: two parallel supports which are linked at their lower ends with one of the partition walls of the cabin in the proximity of the floor; a lower step, which is linked at one of its sides with the same partition wall of the cabin and at the opposite side with the lower end of bars that slide on rails which are provided in said supports; an upper step, which is linked at one of its sides with the upper end of said supports and is moreover supported by connecting rods that are articulated at the upper ends of said sliding bars.

2. A ladder for climbing onto the upper bed in railway vehicles cabins as claimed in claim 1, characterised in that the dimensions of said rails, bars and connecting rods are so chosen that when said bars stop against the lower part of said rails the steps are in an horizontal position.

3. A ladder for climbing onto the upper bed in railway vehicles cabins as claimed in claim 1, characterised in that when it is not necessary to use it, it can be leant against said partition wall, said steps and mechanisms being hided by said supports and by the cover or frame that connects said two supports, being enough for that to push the ladder assembly towards the partition wall until it is sensibly parallel to the same.

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FIG. 1

2/3

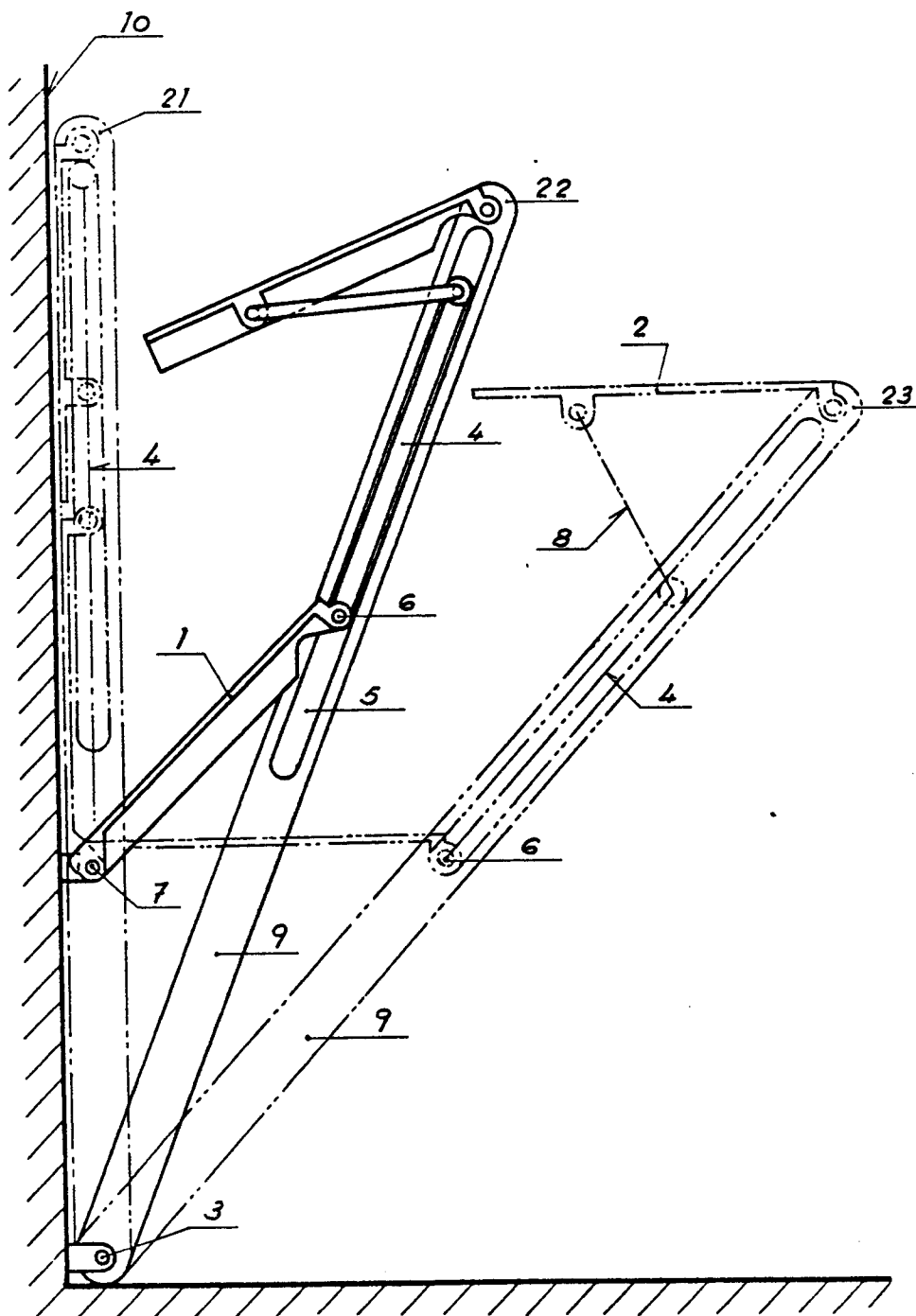
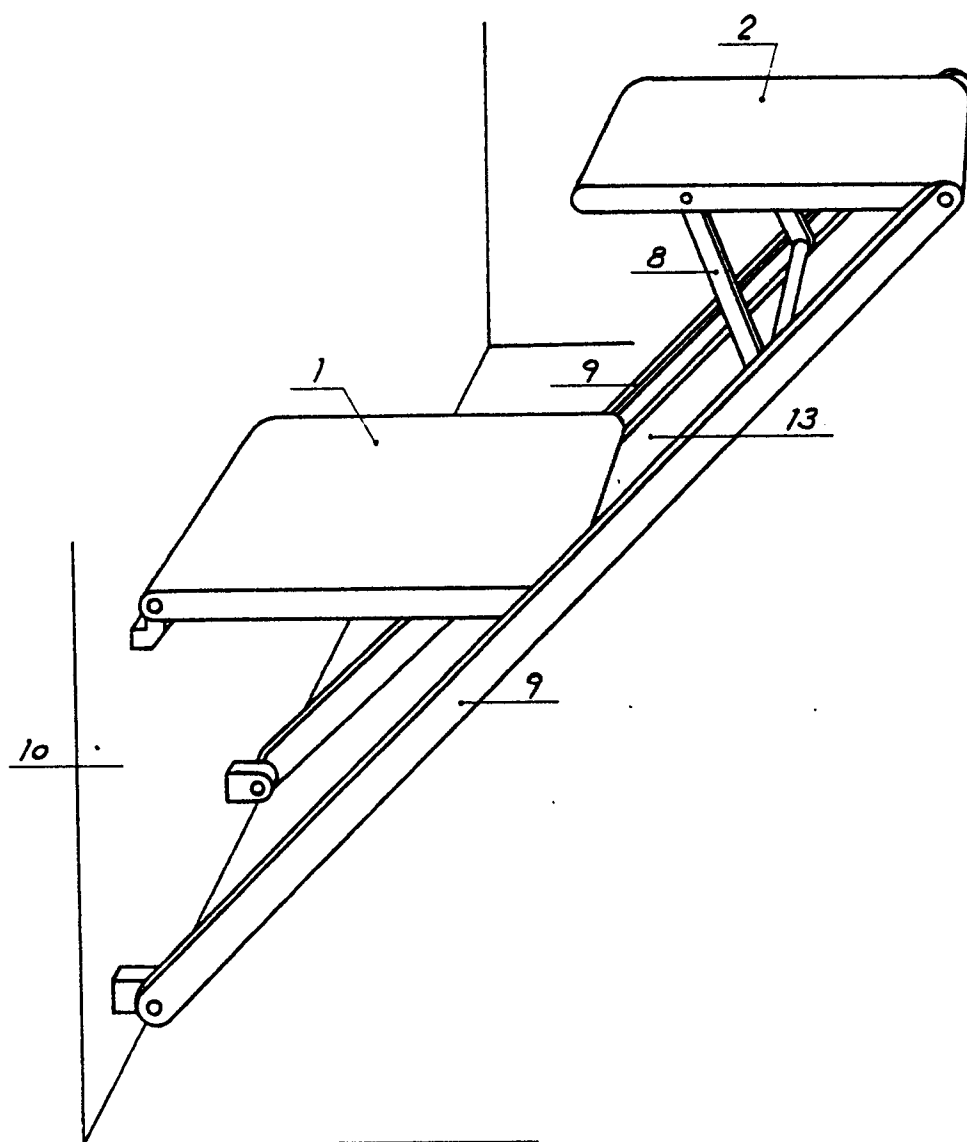


FIG. 2



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FIG. 3

0212492



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 86110977.5
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	US - A - 1 945 961 (HUTT) * Fig. 5 *	1-3	B 61 D 1/02
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A	GB - A - 254 313 (ROSSMAN) * Fig. 4-7 *	1	
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A	DE - C - 143 371 (HOSKINS) * Fig. 1,2 *	1	
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A	FR - A - 2 409 371 (QUINTANA) * Fig. 1 *	1	
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A	US - A - 3 266 593 (OKIE) * Totality *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.4)  B 60 R B 61 D B 63 B E 06 C
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The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 19-11-1986	Examiner KREHAN
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			