United States Patent

[11] 3,557,906

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Continuation of application Ser. No. 746,484, July 22, 1968, now abandoned.

[54] **BED LADDER ARRANGEMENT**
2 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **182/206**
[51] **Int. Cl.** **E06c 1/36**
[50] **Field of Search** 182/206, 106; 248/215, 218

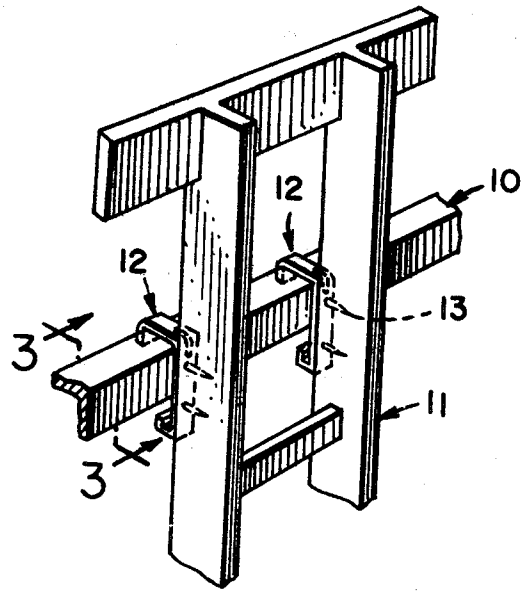
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ABSTRACT: A ladder arrangement for a bunk bed having an angle iron frame, the ladder having a stabilized hook of specified geometry so that disengagement of the ladder hook from the bed rail can only be achieved by rotating the ladder outwardly at least about 10°.



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FIG. 1

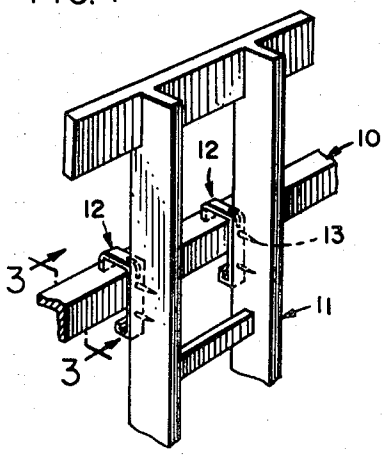


FIG. 2

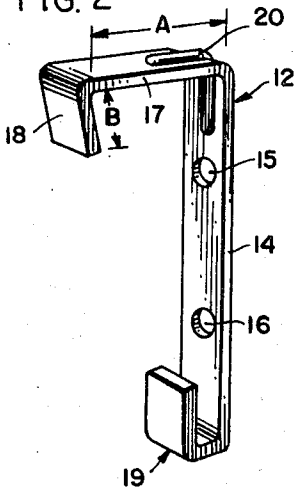
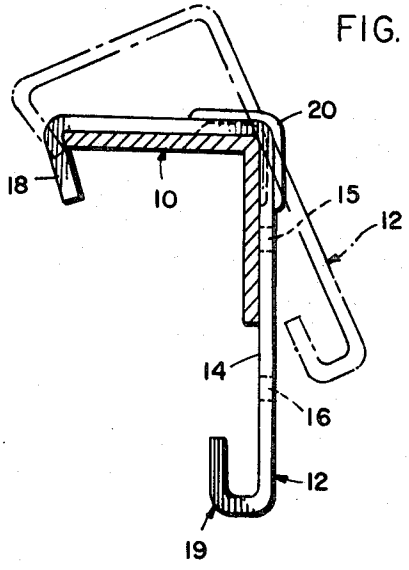


FIG. 3



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BED LADDER ARRANGEMENT

This application is a continuation-in-part of my copending application Ser. No. 746,489, filed Jul. 22, 1968 and now abandoned.

BACKGROUND AND SUMMARY OF INVENTION

The use of bunk beds has become widespread, particularly for children. Ordinarily it is advisable to have a ladder to permit access to the upper bunk. The ladder is releasably anchored or "hooked" to the side of the upper bunk, and one form of bed ladder hook can be seen in my prior U.S. Pat. No. 3,360,075.

This invention constitutes an improvement on my prior patent, particularly in overcoming the disadvantage of inadvertent upsetting or disengagement of the ladder hook from its support on the bed. Prior attempts have been made to use canted flange portions for hooks generally to avoid inadvertent dislodgement, but the problem of a bunk bed ladder has not been satisfactorily resolved. I do resolve that problem through the employment of a uniquely arranged hook, i.e., a stabilized hook having a specified geometry in the various parts so as to normally preclude any possibility of inadvertent dislodgement, but which facilitates disengagement of the ladder when it is necessary — as for making the lower bunk, moving, etc.

The invention is described in conjunction with an illustrative embodiment in the accompanying drawing, in which:

FIG. 1 is a fragmentary perspective view of a bunk bed (only the rail portion being shown), and the upper portion of an access ladder equipped with the inventive hook;

FIG. 2 is a perspective view, on an enlarged scale, of the hook of FIG. 1; and

FIG. 3 is a sectional view such as would be seen along the sight line 3–3 applied to FIG. 1 and with the hook additionally being shown in dotted line in the orientation it assumes for disengagement.

In the illustration given, and with reference first to FIG. 1, the numeral **10** designates generally a bed rail constituting the upper side portion of a bunk bed. In the illustration given, the angle iron rail is of a nominal width of 1 ½ inches, i.e., a 1 ½ inches angle iron. The ladder, which is also seen in fragmentary form, is designated generally by the numeral **11**, and is seen to be equipped with a pair of hooks generally designated **12**. The hooks **12** are secured to the confronting face of the ladder **11** by means of wood screws **13**.

Each hook **12** can take the form of that shown in FIG. 2. In the manufacture of the hooks **12**, I employ an essentially flat, straplike member which is successively formed or bent on itself to provide a first depending portion **14**. This is the portion which is secured by means of the screws **13** to the ladder **11**. For this purpose, I provide upper and lower screw openings **15** and **16** extending through the first depending portion **14**. At its upper end, the first depending portion **14** is integrally connected to a bight portion **17**, and the bight portion **17** at its other end is integrally connected with a second depending portion **18**. The bottom L-shaped configuration generally designated **19** may be provided or omitted, depending upon the particular usage. I find it advantageous to provide the bottom portion **19** in the event a different type of side rail construction is encountered in usage.

The hook **12** is further equipped with an integral rib **20** which extends upwardly from the first depending portion **14** and over into the bight portion **17**, i.e., around the generally right angled corner formed between the portions **14** and **17**.

It is believed that a specific example of the advantageous geometry employed will be helpful in the understanding and practice of the invention. In the illustration given, I provide the inner length of the bight portion **17** one thirty-second inch greater than the nominal width of the rail **10**. A conventional size of rail is of a nominal width of 1 ½ inches, and I find advantageous lengths A (see FIG. 2) of the order of the nominal width plus 0.01 inch to about 0.07 inch.

Another significant dimension is the length of the second depending portion **18**, i.e., the dimension designated B in FIG. **2**. In the illustration given, this length is 0.56 inch, and I find it advantageous to restrict the dimension B to the range of about 0.40 inch to about 0.70 inch. Further, the angularity of the second depending portion **18** is signification, this portion being downwardly convergent relative to the first depending portion **14**. In the illustration given, this angularity — i.e., a departure from parallelism — is of the order of 15°, with the invention being advantageously practiced with angularities in the range of about 7 ½°t o about 24°.

With a hook of the measurements described hereinbefore, it is necessary to rotate the ladder through an angular arc of at least about 10° — i.e., to the configuration designated **12'** in FIG. **3** — before disengagement is permitted by a simple vertical elevation of the ladder.

Through the provision of the rib **20**, I achieve an advantageous stabilization of the hook **12** in use. When the ladder **11** is lifted without rotation, unusual forces are brought into play which may result in rupture in the area of the corner between the portions **14** and **17**. This I avoid by the provision of the outwardly extending rib **20**.

I claim:

1. In combination, a bunk bed having an upper side-defining rail, said rail consisting essentially of an angle iron having a nominal width of 1 ½ inches, and a hook-equipped ladder extending generally vertically with the hook engaging said angle iron rail, said hook being a flat, straplike member formed into three discrete, serially interconnected integral portions: a first depending portion connected to said ladder, a generally horizontally extending bight portion overlying said rail and a second depending portion spaced from said first depending portion and cooperating therewith in preventing horizontal movement of said ladder when said hook is engaging said rail, the improvement consisting of the fact that:

said second depending portion is disposed to be downwardly convergent relative to said first depending portion at an angle in the range of about 7 ½° to about 24° from parallelism, the inner length of said bight portion between said first and second depending portions being in the range of about 0.01 inch to about 0.07 inch greater than the nominal width of the angle iron, the angular length of the second depending portion measured from the inner side of the bight portion being in the range of about 0.40 inch to about 0.70 inch whereby at least about 10° movement of the ladder arcuately away from the bed is required to permit vertical movement for disengaging the ladder hook from the rail, said member being equipped with an elongated rib extending over the first depending portion and the bight portion.

2. The structure of claim **1** in which the second depending portion converges at an angle of about 15°, the inner length of the bight portion is about one thirty-second inch greater than the nominal width of the angle iron, and the angular length of the second depending portion is about 0.56 inch.