Nov. 6, 1945. E. T. JOHN 2,388,415

LADDER HOOK

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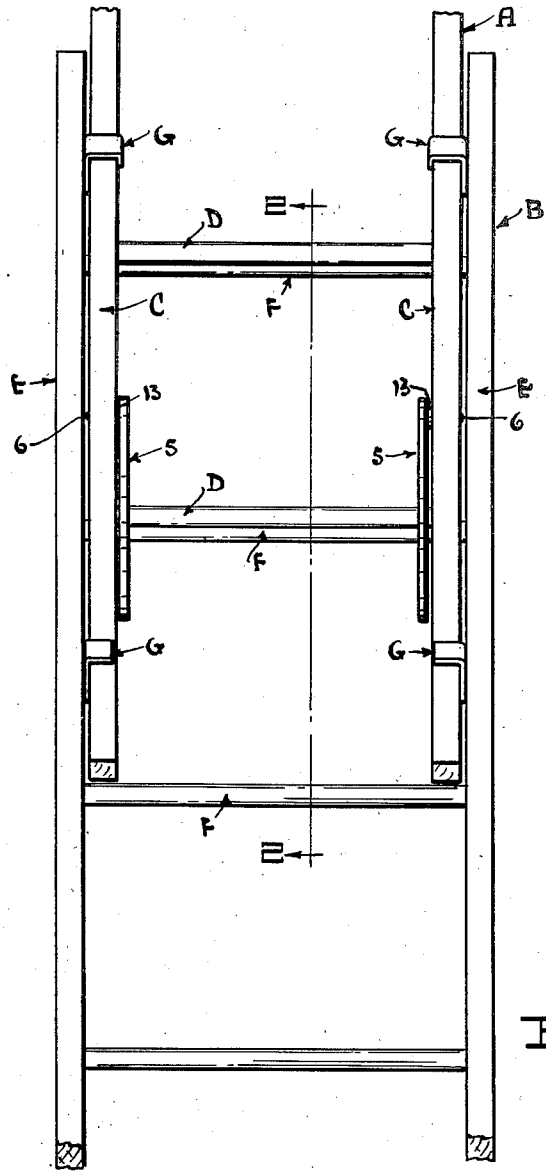


FIG. 1

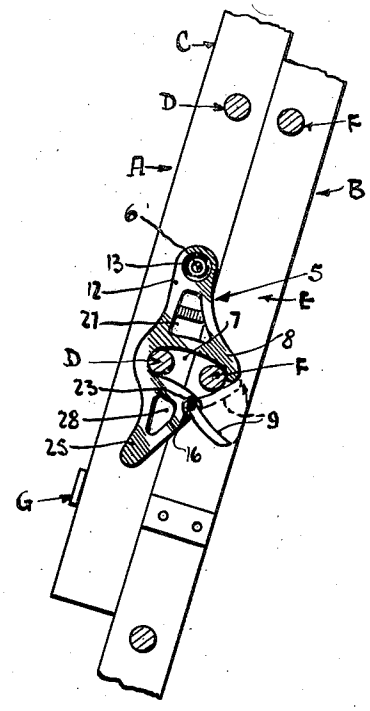


FIG. 2

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LADDER HOOK

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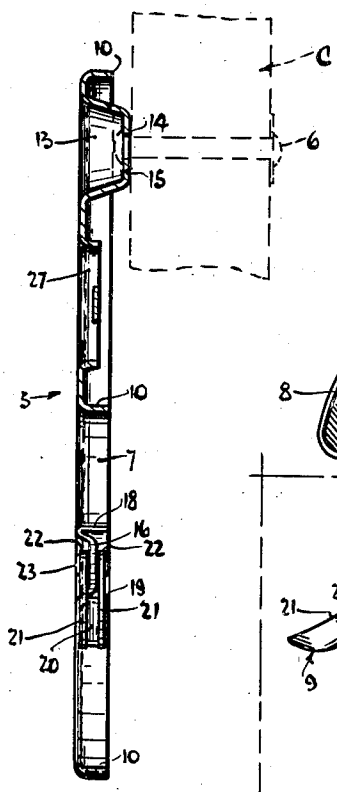


FIG. 4

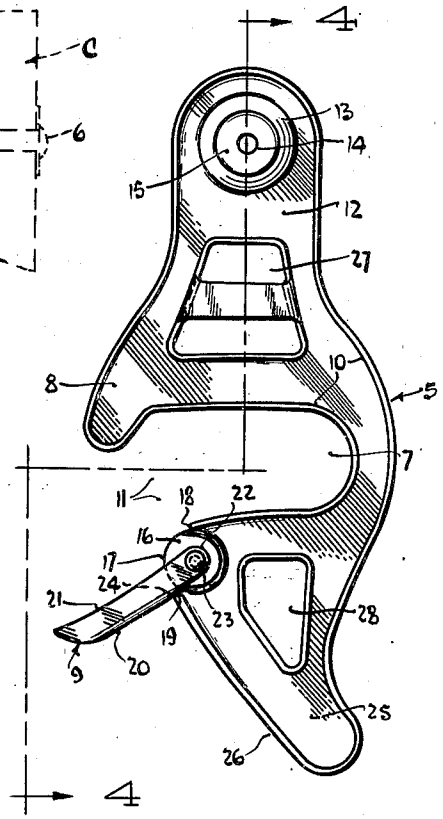


FIG. 3

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2,388,415

LADDER HOOK

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Application November 6, 1944, Serial No. 562,093

6 Claims. (Cl. 228—66)

This invention relates to improvements in the hooks used for holding the sections of extension ladders in adjusted positions.

The hooks now used for this purpose are, to my knowledge, all cast or forged and are necessarily heavy and require considerable metal in their fabrication. It is the primary object of my invention to provide a hook which may be stamped from comparatively light sheet metal so that it will be light in weight, inexpensive to manufacture and ornamental in shape and appearance.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawings, in which—

Fig. 1 is an elevational view of parts of two sections of an extension ladder showing ladder hooks of my invention applied thereto.

Fig. 2 is a sectional view along the line 2—2 in Fig. 1.

Fig. 3 is an enlarged outside elevation of the ladder hook of Fig. 2.

Fig. 4 is a sectional, elevational view along the line 4—4 in Fig. 3, a section of the ladder stile and the mounting means for the hook being shown here in dotted lines.

Referring now more particularly and by reference characters to the drawings, A and B designate generally two sections of a common extension ladder, the inner section A of which comprises stiles C and rungs D and outer section B of which comprises similar stiles E and rungs F. The two sections are held in slidable overlapping relation by conventional guides G and are arranged to be adjusted relatively lengthwise in usual fashion to vary the overall length of the ladder. Such adjustments are made in steps corresponding roughly to the distance between the rungs so that a rung of each section A and B will stand in closely spaced relationship while the ladder is in use. For then securing the ladder sections in adjusted positions hooks designated generally at 5 are employed, such hooks being pivoted at upper ends by rivets or similar fasteners 6 to the stiles C of inner section A and having notches 7 which receive the aligned rungs D and F to lock the ladder sections against collapsing movement when once adjusted, as will be evident in Fig. 2.

The hooks 5 are of the automatic type, so called for the reason that they are shaped to slip past the rungs as the ladder is adjusted, said hooks for this purpose having nose portions 8 which guide the hooks past the rungs F as the ladder is extended, and swingably supported guide fingers 9 which guide the hooks past the rungs as the ladder is collapsed or reduced in length. Of course, in such action the hooks as a whole swing about their pivots 6 and they are so supported that they normally tend to swing toward the rungs F as they pass, so that when desired the hooks may engage a pair of the rungs (Fig. 2) to lock the ladder sections. In operation of the fingers 9 they are swung upwardly as viewed, and as shown in dotted lines, in Fig. 2 to close the notches 7 to cam the hooks past the rungs.

As thus far described the hooks are conventional in mounting and operation but ordinarily the hooks are made of comparatively heavy, rough castings and are not only fairly expensive to manufacture but require considerable material for their fabrication.

In accordance with my invention I form each hook 5 from a sheet metal stamping which not only reduces the unit weight but is a process which is cheaper and requires less material in the fabrication. The stamping is shaped to provide the notch 7 and noses 8 aforesaid and around substantially the entire margin of the hook is provided an integral flange 10 which provides more than adequate strength and stiffness while permitting the use of comparatively thin or light material to facilitate stamping and reduce cost. Above the notch 7, which opens at 11 through one side of the hooks below the nose 8, the hook has a narrow upper end portion 12 by which it is supported from the ladder and for this purpose there is pressed in this upper end a deep boss 13, extending in the same direction as the flange 10. As most clearly shown in Fig. 4, the boss 13, which is apertured at 14 to receive the mounting rivet 6, is deeper than the flange 10, or projects substantially beyond the same, so that a bearing surface 15 is provided for engaging the ladder stile C. This bearing surface 15 thus spaces the hook as a whole from the ladder stile so that the hook may swing freely and without marring or wearing the stile itself. This is also apparent in Fig. 1, it being further evident therein that the hooks will be made in pairs, right and left hand, for application to the ladder and to present the bearing surfaces 15 in oppositely outwardly extending relation whereby to fit against the respective inner sides of the right and left hand stiles C of the ladder.

Below the notch 7 adjacent its open end 11 the finger 9 is pivoted to a bearing surface or ear 16 which, as best seen in Fig. 4, is pressed outwardly in the same direction as the flange 10 and boss 13 but to a medial position with respect

to the thickness of the hook as a whole. The flange 10 terminates short of the exposed edge 17 of the ear 16 above the same, as designated at 18, while in similar fashion the upwardly extending flange beneath the ear terminates at 19. The edge of the ear thus is exposed to receive the finger 9 which is formed and pressed from sheet material folded medially at 20 to form spaced sides 21, the bifurcated ends 22 of which are set astraddle the ear 16. These ends 22 are apertured, as is ear 16, to receive a rivet 23 by which the finger is pivotally mounted on the hook. It will be noted that the medial fold 20 of the material forming the finger 9 is cut away from the point 24 to the extremities of the ends 22 so that these ends are free to slip over the ear 16. At the same time the engagement of the end of fold 20 with the edge 19 of the flange 10 will act as a stop to limit downward swinging movement of the finger 9 to the position shown. The upward movement is limited by the contact of the free end of the finger with the nose 8 of the hook. The offsetting to a medial plane of the hook supporting ear 16 positions the finger 9 in the same plane and within the confines laterally of the hook itself, so that no projections are formed such as might interfere with operation of the hooks or catch upon the hands or clothing of the user of the ladder.

Below the notch 7 the hook has a tapering lower end 25 having an angularly disposed edge 26 which cooperates in usual manner with the finger 9 to cam the hooks over the rungs as the ladder is collapsed.

To further reduce the unit weight of the hooks and to improve their appearance they are punched out above and below the notches 7 as indicated at 27 and 28, removing some material and forming openings which blend ornamentally with the surrounding margins and configuration of the hooks.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. A ladder hook of the character described, comprising a sheet metal stamping formed with a notch to receive the ladder rungs, the margins of the hook and the notch therein having an integral stiffening flange parted at a point below the notch, an ear formed at the point where the flange is parted and offset in the same direction as the flange is turned to a medial position with respect to the width of the flange and thickness of the hook as a whole, and a finger member pivotally mounted on said ear.

2. A ladder hook of the character described, comprising a sheet metal stamping formed with a notch to receive the ladder rungs, the margins of the hook and the notch therein having an integral stiffening flange parted at a point below the notch, an ear formed at the point where the flange is parted and offset in the same direction as the flange is turned to a medial position with respect to the width of the flange and thickness of the hook as a whole, and a finger member pivotally mounted on said ear, said finger member having a bifurcated end to straddle opposite sides of the said ear.

3. A ladder hook of the character described, comprising a sheet metal stamping formed with a notch to receive the ladder rungs, the margins of the hook and the notch therein having an integral stiffening flange parted at a point below the notch, an ear formed at the point where the flange is parted and offset in the same direction as the flange is turned to a medial position with respect to the width of the flange and thickness of the hook as a whole, and a finger member pivotally mounted on said ear, said finger member being made of sheet material medially folded and formed with spaced side portions adapted to fit over opposite sides of the said ear.

4. A ladder hook of the character described, comprising a sheet metal stamping having a marginal stiffening flange adapted in use to be turned toward the ladder stile, means for pivotally fastening the hook to said stile, and said means including a boss pressed from the stamping in the same direction as the flange and projecting therebeyond to engage the stile and support the hook as a whole in spaced relation to said stile.

5. A ladder hook for swinging support on the stile of an extension ladder, comprising a sheet metal stamping formed with a surrounding stiffening flange and adapted to be disposed on the stile with said flange turned theretoward, a boss pressed from the hook in the same direction as the said flange is turned and projecting beyond the edge of the flange forming a bearing surface adapted to bear on said stile to support the hook as a whole in spaced relation clear of the adjacent surface of the stile, and means for pivotally securing the said bearing surface against the stile.

6. A ladder hook of the character described, comprising a sheet metal stamping including a flat plate of proper shape having a notch to receive the ladder rungs, said plate having a marginal stiffening flange turned in one direction and said flange being parted at a point below the notch, an ear formed on the plate and offset from the plane thereof in the same direction as the flange is turned, and a finger member pivotally mounted on said ear.

EDWARD T. JOHN.