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[54] **CAM-LOCK SLIDER**

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** ..... **24/205.14 A**

[51] **Int. Cl.** **A44b 19/30**

[58] **Field of Search** ..... 24/205.14 A, 205.14 R

[56] **References Cited**

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Primary Examiner—Bernard A. Gelak

[57] **ABSTRACT**

A cam-lock type of slider for slide fasteners is disclosed which includes a pull tab provided with a pair of laterally spaced cams for urging the fastener elements into locking engagement with a recess in the rear wing of the slider. The cams are formed by press into a rigid structure wherein the cams are bridged together and reinforced throughout their entire length against forces tending to distort or deform the same.

1 Claim, 4 Drawing Figures

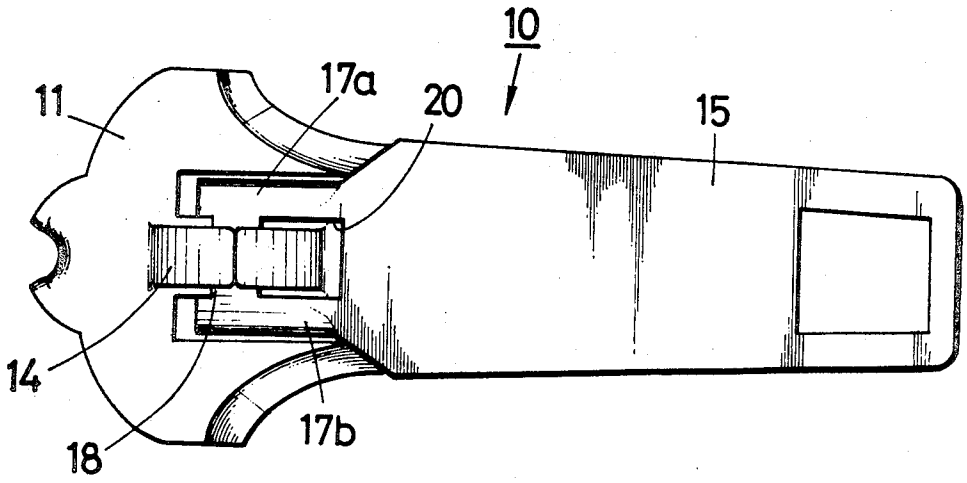


FIG. 1

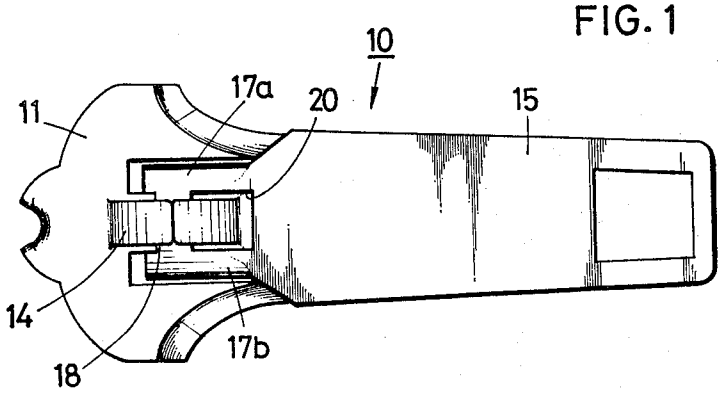


FIG. 2

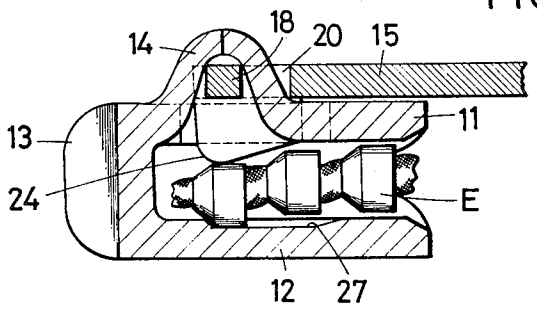


FIG. 3

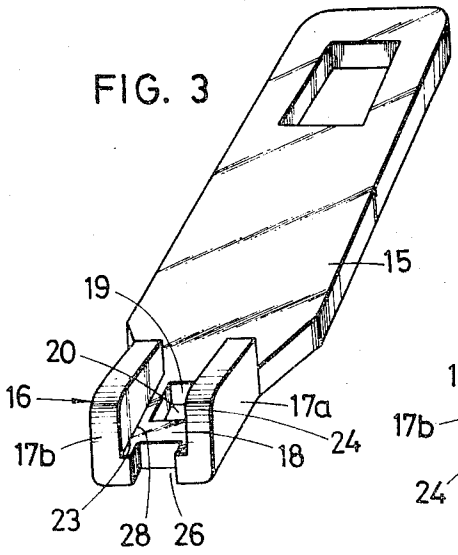
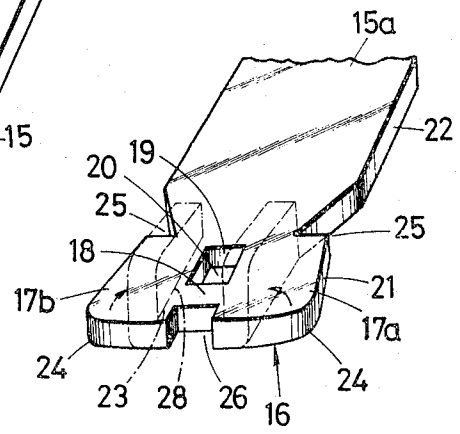

19
20
16
17b
23
28
26
15
17a
18
24

FIG. 4


15a
22
19
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17b
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17a
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CAM-LOCK SLIDER

This invention relates to improvements in and relating to fastener sliders, and more particularly to an improved cam-lock slider of the type which includes a cam or cams on the pull tab adapted to press the fastener elements into locking engagement with a holding recess in the rear wing portion of the slider.

As is well known in the art of slide fasteners, the pull tab for cam-lock sliders is typically formed by press or by die-casting. Those die-cast pull tabs have the advantage that the cam to be formed thereon can be freely adjusted in size and shape, but they have disadvantages in that the materials of metal are limited as such adaptable to casting and are relatively weak and susceptible particularly at the cam portion to frictional wear. The slider pull tab fabricated by press-forming therefore finds greater application in the fasteners that are attached to garments such as trousers and field jackets where the slider is subjected to rough handling and extreme pressure. Press-formed pull tabs of the known type are provided with relatively narrow tongues extending from an end of the pull tab body, which tongues are curled into a cam-functioning roll. This type of pull tab proved inadequate in mechanical strength because there exists a hollow space in the roll cam. Certain improved pull tabs are known which are provided with a curled roll cam laterally swaged to blind the space in the roll. These are also not satisfactory because during the swaging operation a part of the material of the tongues tends to move off the periphery of the cam portion and thereby render this portion thinner and hence liable to deformation.

Therefore, the above prior-art pull tabs are often liable to become distorted or broken at their cams when severe forces are exerted thereto. More specifically, due to the tongues being curled, these are connected to the body of the pull tab by a small strip of a thickness no greater than that of the tongues with the results that the cam is prone to become distorted or displaced about the pivot of the connecting strip. This would often take place even during the formation of the cams.

Whereas, it is the primary object of the present invention to provide an improved cam-lock slider for slide fasteners which will substantially eliminate the difficulties encountered with the prior-art sliders.

A more specific object of the invention is to provide a cam-lock slider having pivotally connected thereto an improved pull tab of such construction and arrangement which will give reinforcement and stability in respect of form and shape to the cams integrally formed thereon against the stresses exerted when the slider is handled roughly and recklessly.

Another specific object of the invention is to provide a cam-lock slider incorporating an improved cam locking means which provides for a more positive and reliable locking action than is possible with the prior known constructions.

These and other objects and features of the invention will be apparent from the following description taken in conjunction with the accompanying drawings in which like reference numerals refer to like parts throughout the several views, and in which:

FIG. 1 is a plan view of the slider for slide fasteners embodying the invention;

FIG. 2 is a longitudinal cross-sectional view through the slider of FIG. 1, showing the same as in locking position;

FIG. 3 is a perspective view of a pull tab according to the novel concepts of the invention; and

FIG. 4 is a perspective view of an important part of the pull tab of FIG. 3, showing the manner in which the cams are formed on the end of the pull tab.

The slider generally designated **10** is of conventional construction having a front wing **11** and a rear wing **12** connected together at one end by an integral neck **13** defining a Y-shaped channel for the passage of the oppositely disposed rows of fastener elements E. Projecting upwardly from the front wing **11** is a supporting lug or bail **14** in which the pull tab **15** is pivotally connected.

Referring to FIGS. **3** and **4**, there is shown the particular form and construction of a cam means, provided on the pull tab **15** and generally designated **16**, which forms the subject-matter of the invention.

In the manufacture of the pull tab **15**, a blank sheet of metal **15***a* is stamped out as shown in FIG. **4** wherein at one end of the blank **15***a* is formed a cam means **16** which comprises a pair of elongated solid cam members **17***a* and **17***b* laterally spaced and connected by a trunnion or pivotting bridge **18** so that they are located on opposite sides of the supporting bail **14** when the pull tab **15** is assembled to the slider body. The cam members **17***a*, **17***b* define with the pivotting bridge **18** and a transverse edge **19** of the pull tab end a rectangular opening **20** through which the pull tab **15** is mounted on the supporting bail **14** for pivotal movement about the pivotting bridge **18**.

Each of the cam members **17***a*, **17***b* has an outer longitudinal edge **21** diverging relative to the longitudinal axis of the pull tab **15** and partly protruding beyond the longitudinal edge **22** as seen in FIG. **4**, so that when the cam member is bent upwardly in the direction of the arrow at right angles to the plane of the pull tab **15** along the fold **23**, which is in line with the longitudinal axis of the pull tab, there is provided an apex **24** higher than the remaining portion of the erected cam member for engagement with the fastener elements E as shown in FIG. **2**.

The pull tab **15** is provided sidewise with cut-out recesses **25** to permit the cam members **17***a*, **17***b* to bend upright relative to the pull tab body into cam-functioning position indicated by the dash-dot line in FIG. **4**. There is a recess **26** formed by the outer edge of the pivotting bridge **18** and the inner edges of the parallel cam members **17***a*, **17***b*, the provision of this recess being such that the apex **24** of each cam member is situated slightly forwardly of the pivotal axis of the pull tab **15**, when the fastener elements E are pressed by the apex **24** into locking engagement with an internal holding recess or pocket **27** in the rear wing **12**, so as to stabilize this locking position as shown in FIG. **2**. In this position, the pull tab **15** lies flat against the outer surface of the front wing **11** of the slider.

According to the invention, the blank **15***a* can be advantageously stamped out into the ideal form of cam-lock structure wherein the cam is provided with a sufficient operative area to effectively press an element or elements E into locking engagement with the recess **27** in the rear wing **12** of the slider; the cam is configured to suitably ride on the element E and not to intrude into the spacing between adjacent elements E; and the apex **24** of the cam is positioned forwardly of the pivotal axis of the pull tab **15**.

Another important aspect of the invention resides in the reinforced construction of the pull tab **15,** particularly the cam means **16** thereon, wherein the cam means **16** is provided with increased stability in respect of its normal shape against deformation under the influence on extreme pressure exerted in repeated cam-lock operation. This reinforcement is achieved by providing each cam member with a sole **28** extending the full length thereof and integrally with the pull tab body, as seen in FIGS. **3** and **4,** and with integral pivotting bridge **18** transversely connecting between the two parallel cam members **17***a*, **17***b* at the forward end adjacent the apex **24,** the whole being united together in a rigid form to provide greater resistance against forces tending to distort or deform the cam means **16.**

What is claimed is:

1. A cam-lock slider for slide fasteners comprising front and rear wings, a pull tab pivotally connected to the front wing of the slider, a cam means formed integrally with said pull tab, said cam means comprising a pair of laterally spaced elongated solid cam members extending longitudinally of the pull tab and folded at right angles to the plane of the pull tab body, and a pivotting bridge functioning as a pivotal connection to a bail on the front wing of the slider and transversely connecting between said cam members, said bridge defining with said cam members an opening for mounting the pull tab on the bail of the slider, each of said cam members having a sole extending the full length thereof and integrally with the body of the pull tab.

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