March 19, 1940. J. M. GROSS 2,193,870

SLIDE FASTENER ELEMENT

Filed Nov. 2, 1938

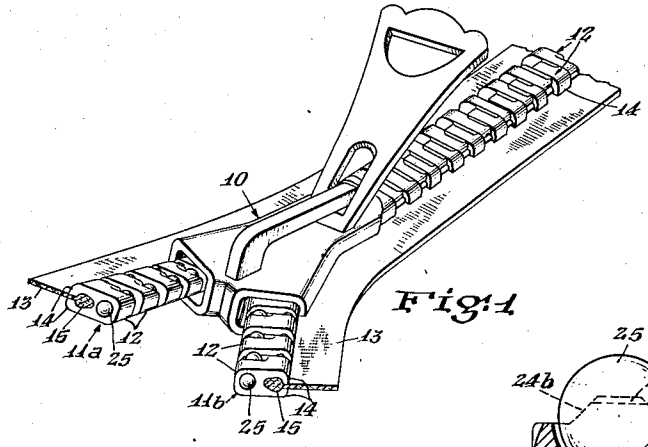


Fig. 1

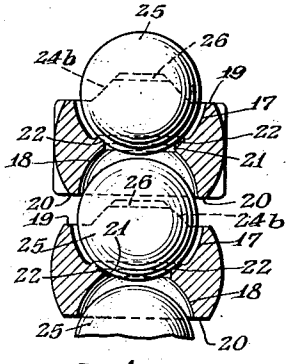


Fig. 4

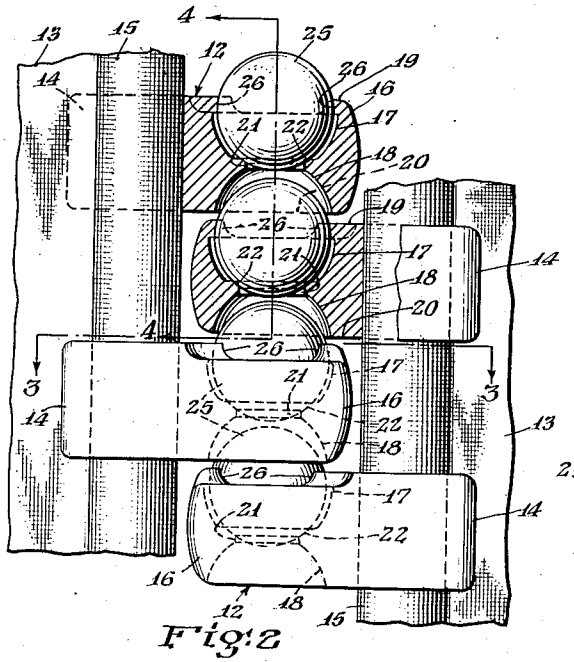


Fig. 2

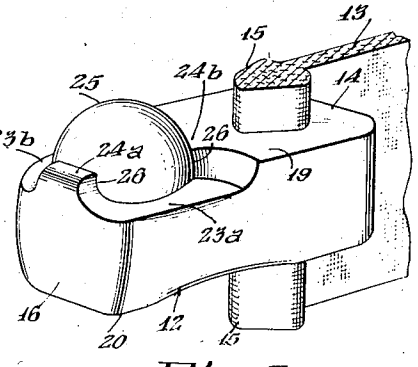


Fig. 5

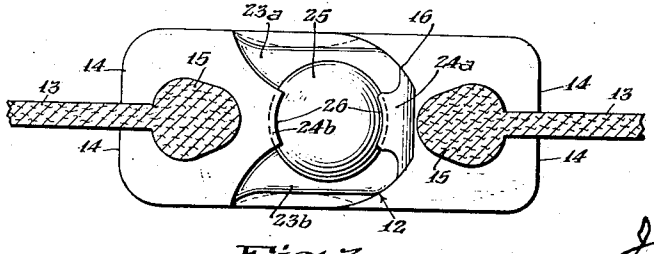


Fig. 3

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SLIDE FASTENER ELEMENT

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Application November 2, 1938, Serial No. 238,333

13 Claims. (Cl. 24—205)

This invention relates to improvements in slide fasteners, being particularly directed to the formation of the interlocking members or scoops thereof.

Broadly, it is an object of this invention to provide for scoops applied in slide fastener assemblies, wherein the male meshing portion thereof consists of a projecting freely rotatable member.

Specifically, it is an object of this invention to provide for a scoop formation in a slide fastener assembly, wherein the head of each scoop has on one side a recess and on the other a freely rotatable ball element, the ball element of one scoop being cooperative with the recess of an adjacent opposing scoop for interlocking.

These and other advantages, capabilities and features of the invention will appear from the subjoined detailed description of one specific embodiment thereof illustrated in the accompanying drawing, in which

Figure 1 is a perspective view of a slide fastener assembly incorporating the slide fastener element.

Figure 2 is an enlarged plan view partly in section showing the construction of the individual elements and their assembly on stringers.

Figure 3 is a front elevation in section taken along lines 3—3 of Figure 2 showing a plurality of cooperating fastener elements.

Figure 4 is an end elevation in section taken along lines 4—4 of Figure 2.

Figure 5 is a plan view in perspective showing the construction of an individual fastener element.

Referring to the reference characters in the drawing, numeral 10 represents a conventional slider operatively assembled with respect to stringers 11*a* and 11*b*, consisting of scoops 12 spacedly mounted on beaded tapes 13, through the clamping of the jaws 14 of the scoops onto the beads 15 of the tapes.

Referring particularly to Figures 2 to 5 of the drawing, the scoops 12, which may be formed by die casting or stamping, are shaped in the preferred embodiment shown, to provide spaced jaws 14 and a head 16.

The head is shaped to provide a plurality of hemispherical cavities 17 and 18 extending inwardly from the opposing faces 19 and 20 of the scoop, cavities 17 and 18 being hereinafter described as the male and female cavities respectively, such cavities being merged into an open neck substantially centrally of the depth of the scoop.

In the preferred embodiment here shown, the interior of the head is shaped to provide a substantially circular inwardly extending ridge 21 at the open neck carrying a sloping circular shoulder 22 in the male cavity 17.

The face 19 of the scoop adjoining the male cavity 17 is shaped to provide cut out segments 23*a* and 23*b* along its sides, and upstanding ears 24*a* and 24*b* at opposite ends of the head.

The male meshing element 25 of the scoop consists of a spherical member, as, for example, a ball bearing which is inserted into the male cavity 17 so that it rests on the shoulder 22 thereof. To maintain the ball within the male cavity 17, the ears 24*a* and 24*b* are swaged inwardly and arcuately towards the center of the cavity and above the center line of the ball, until the inner faces 26 thereof are spaced only infinitesimally distant from the surface of the ball 25.

The ball 25 in such mounting in cavity 17 may be freely rotatable about any axis, and has a projecting portion of sufficient stock to rest within and substantially fill the female cavity 18 of a next adjacent scoop carried on an opposing stringer.

As indicated in Figures 2 and 4 of the drawing, the scoops of cooperating opposing stringers are spaced through the clamping of the jaws of the same upon the tapes, so as to provide a meshing and interlocking and unmeshing and separation of alternate scoops, by the passage of such scoops within the channels of the slider as the latter reciprocates.

Although in the embodiment herein shown and described the ball 25 is inserted into a defined male cavity and set in operative position by swaging the ears at the male face, it is within the province of the invention to initially form the male and female cavities as a continuous tubular cavity, with the ears 24*a* and 24*b* in position extending over the male cavity 17 as heretofore; thereafter, dropping the ball 25 into the bead through the female face 20, and the female cavity portion, and then swaging the interior of the cavity from the female face of the scoop to form the ridge 21 and shoulder 22, for supporting the ball 25, thereby defining by such swaging, substantially spherical male and female cavities 17 and 18.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. In a slide fastener, an interlocking member having on one of its axes a recess on one side and a relatively movable element projecting from the opposing side.

2. In a slide fastener, an interlocking member having on one of its axes a recess on one side and a relatively rotatable element projecting from the opposing side.

3. In a slide fastener, an interlocking member having on one of its axes recesses on opposing sides, and a relatively movable element mounted in and projecting from one of the recesses.

4. In a slide fastener, an interlocking member having on one of its axes recesses on opposing sides, and a relatively rotatable element mounted in and projecting from one of the recesses.

5. In a slide fastener, a series of similar interlocking members, each member having on one of its axes a recess on one side and a relatively rotatable element projecting from the opposing side, the projecting rotatable element of one member being accommodated for cooperation with the recess of another member.

6. In a slide fastener, an interlocking member having on one of its axes a recess extending therethrough from side to side, a shoulder formed intermediate of the recess, and a rotatable element carried in the recess and projecting from one side of the interlocking member.

7. In a slide fastener, an interlocking member having a recess extending therethrough from side to side on one of its axes, a shoulder formed intermediate of the recess, and a rotatable element carried in the recess and projecting from one side of the interlocking member, and a stop on the last named side of said interlocking member for maintaining the rotatable element within the recess.

8. In a slide fastener, an interlocking member having a recess extending therethrough from side to side on one of its axes, a rotatable element carried in said recess and projecting from one side of said interlocking member, and means intermediate of said recess and at the side of the interlocking member from which the rotatable element projects for supporting the element for rotation within said recess.

9. In a slide fastener, an interlocking member having on one of its axes hemi-spherical recesses on each side, and a rotatable element mounted within one of the recesses and projecting beyond the side on which such recess is formed.

10. In a slide fastener, an interlocking member having on one of its axes hemi-spherical recesses on each side, and a relatively movable spherical element mounted within one of the recesses and projecting beyond the side on which such recess is formed.

11. In a slide fastener, an interlocking member having clamping jaws and a head, the head having on opposing faces thereof, respectively a recess and a relatively movable projecting element.

12. In a slide fastener, an interlocking member having clamping jaws and a head, male and female elements on opposing faces of said head, the female element comprising a recess and the male element comprising a relatively movable projecting element.

13. In a slide fastener assembly, a plurality of opposing interlocking members adapted to be controlled by a slider, each member having head and jaw portions, opposing tapes extending within the jaws of opposing interlocking members for mounting the same, there being provided on opposing sides with respect to one of the axes of said head, respectively, a recess on one side and a relatively movable projecting element on the other, the movable projecting element of one member being adapted to cooperate with a recess of the next adjacent and opposing interlocking member.

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