

[54] ZIPPER TOOTH

[72] Inventor: **Herbert Alberts**, Rua Capitao Luis Ramos,
312 Sao Paulo, Brazil

[22] Filed: **Apr. 14, 1970**

[21] Appl. No.: **28,410**

[52] U.S. Cl.24/205.13

[51] Int. Cl.A44b 19/04

[58] Field of Search.....24/205.13

[56] **References Cited**

UNITED STATES PATENTS

2,720,015	10/1955	Morin	24/205.13
2,748,440	6/1956	Ulrich	24/205.13
2,305,623	12/1942	Kuna	24/205.13
2,355,996	8/1944	Morin	24/205.13

FOREIGN PATENTS OR APPLICATIONS

561,218 8/1958 Canada.....24/205.13

Primary Examiner—Bernard A. Gelak

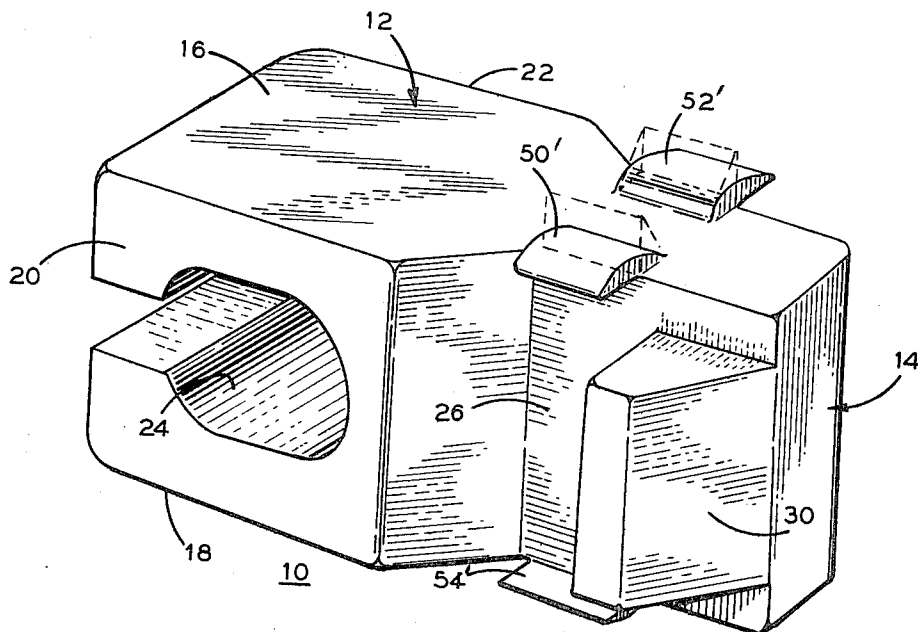
Attorney—Hane, Baxley & Spieccens

[57]

ABSTRACT

A zipper tooth has a body portion with an opening at one end for connection to a tape to form a zipper stringer of a slide fastener. At the other end of the body portion is an engaging head. Just behind the engaging head are a pair of grooves, one on each side of the body portion. The grooves are contoured to accommodate portions of the engaging heads of other similar zipper teeth. At each end of each of the grooves are outwardly extending tapered projections. The projections are rolled over to provide endwalls for the grooves so that a cavity is formed for locking accepting portions of engaging heads of other zipper teeth.

4 Claims, 5 Drawing Figures



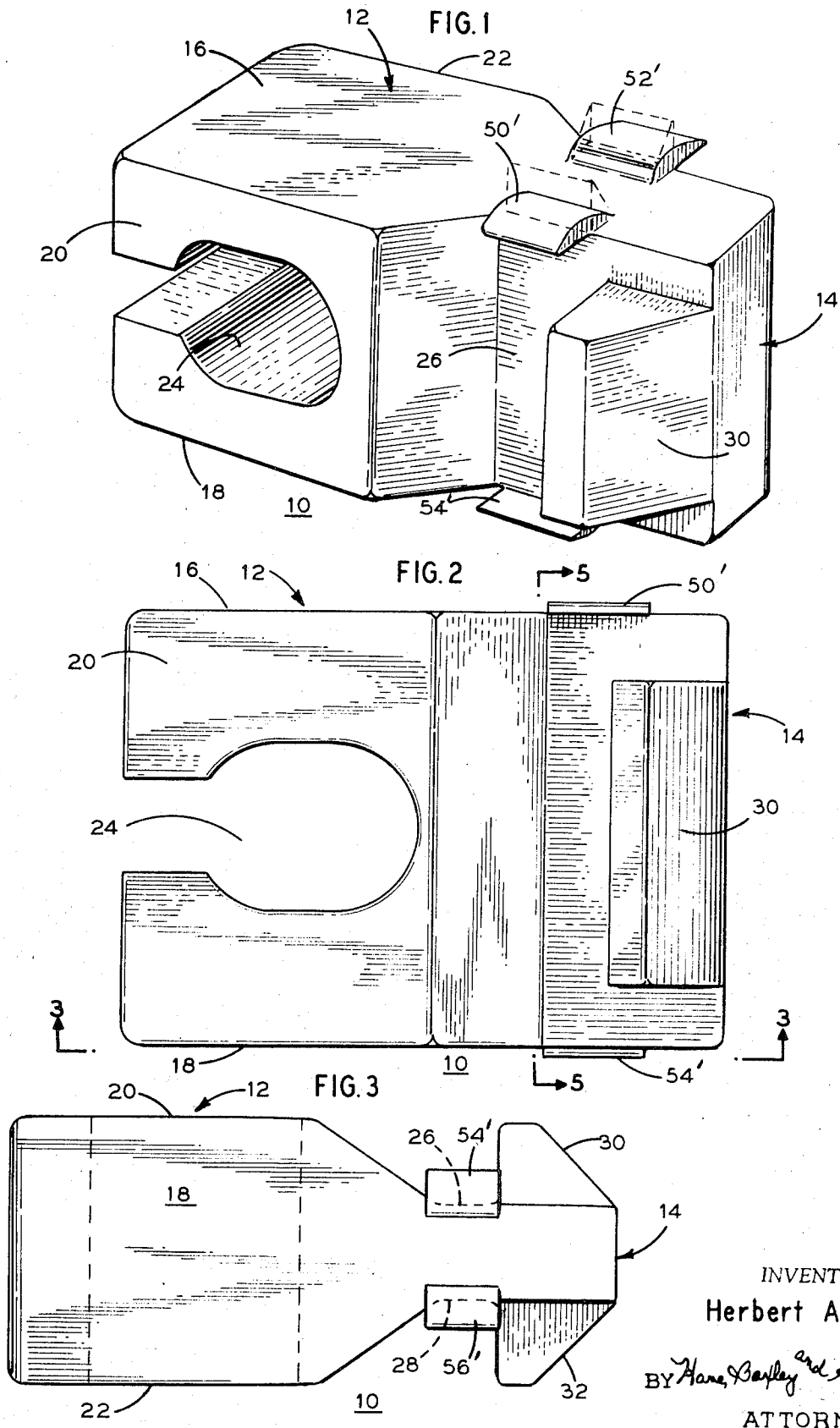


FIG. 4

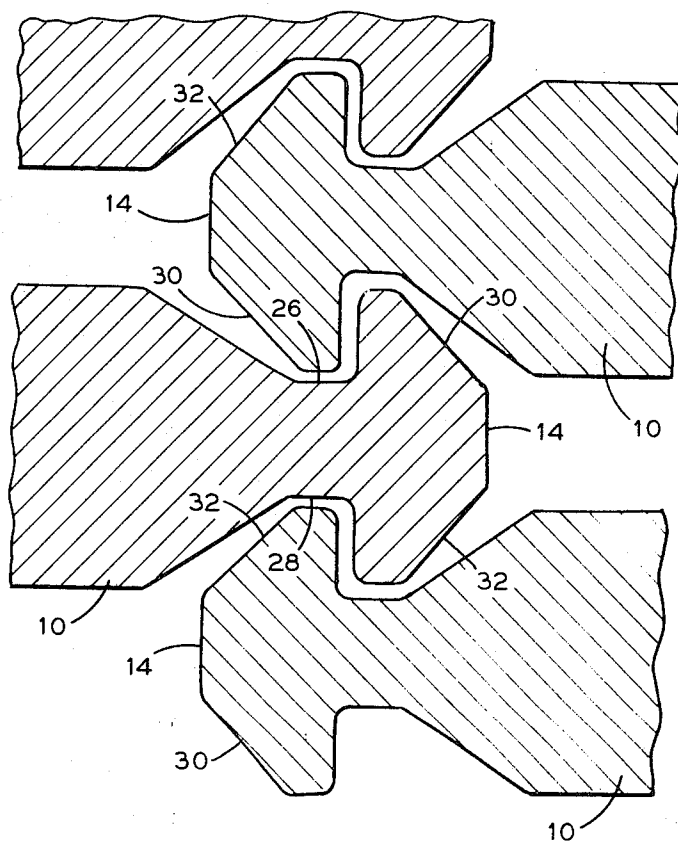
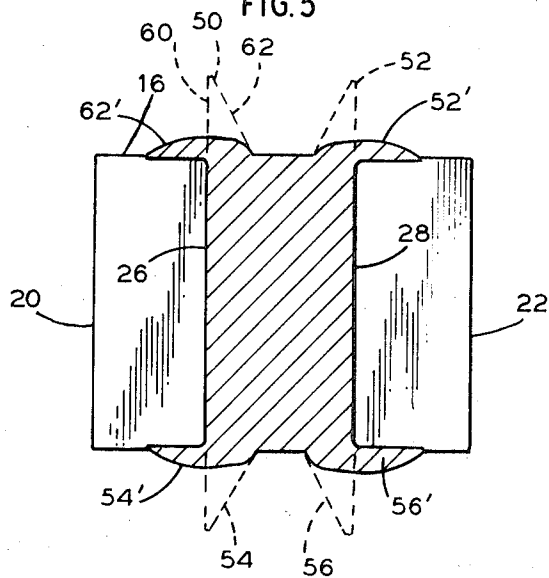


FIG. 5



1

ZIPPER TOOTH

This invention pertains to slide fasteners or zippers and, more particularly, to zipper teeth for connection to tapes or the like to form the stringers of slide fasteners.

In recent years, there has been a trend in the slide fastener industry to make zippers from plastic. In many cases, the zippers are made by the injection molding of thermoplastic materials. In the teeth of such zippers there must be provided asymmetrical-shaped members or the teeth require further operations, such as slitting, after the molding to provide positive locking of the teeth after closure of the zippers. In other words, the positive locking prevents lateral displacements between adjacently meshed zipper teeth. Heretofore, such zipper teeth, because of their construction, had points of weakness which subjected the teeth to easy breakage.

Furthermore, the molds for such zipper teeth often required cam-operated mold parts that are reciprocatingly driven. If such molds were not used then the resulting molded product required further mechanical deformations, such as cutting, punching or stamping. In any event, all of these possible solutions required complicated equipment which is extremely costly. Even neglecting the cost of the equipment, the production rates of such pieces is relatively slow. These two factors greatly increase the cost of the final product.

It is, accordingly, an object of the invention to provide improved zipper teeth which while being simple to manufacture provide the positive intertooth locking heretofore obtained by complex molding and forming operations.

It is another object of the invention to provide improved zipper teeth which are molded from simple two-part molds and which require no further punching or cutting to provide recesses for locking the meshed teeth against lateral movements.

Briefly, the invention contemplates a zipper tooth for part of a zipper stringer wherein the zipper tooth is connected to a zipper tape. The zipper tooth comprises a body portion having means at one end for engaging the tape of the zipper stringer. At the other end of the body portion is an engaging head. Behind the engaging head there is at least one groove which is contoured to receive a portion of the engaging head of another zipper tooth. At least one tapered projection extends outward from the body portion in the region of a portion of the periphery of one end of the groove.

The zipper tooth is molded in this manner and, thereafter, the tapered projection is rolled over to provide an endwall for the groove so that an engaging head received by the groove is stopped from moving in the direction of the rolled-over tapered projection, out of the groove.

Other objects, the features and advantages of the invention will be apparent from the following detailed description of the invention when read with the accompanying drawings, wherein:

FIG. 1 shows a perspective view of a zipper tooth in accordance with the invention;

FIG. 2 shows a side view of the zipper tooth of FIG. 1 (the other side view, not shown, is identical);

FIG. 3 shows a bottom view of the zipper tooth taken along the line 3—3 of FIG. 2 (the top view, not shown, is identical);

FIG. 4 is a cross-sectional view of a plurality of meshed zipper teeth similar to the zipper tooth of FIG. 1; and

FIG. 5 is a cross-sectional view taken along the line 5—5 of FIG. 2.

The zipper tooth 10, according to the invention, comprises a body portion 12 and an engaging head 14 fixed to one end of and integral with the body portion 12. Body portion 12 has a top surface 16, a bottom surface 18 and side surfaces 20 and 22.

Passing through body portion 12 at the other end thereof is a generally elliptically cross-sectioned passageway 24 which opens to the rear end of body portion 12. In a finished zipper stringer the beaded tape (not shown) is tightly fitted in passageway 24.

2

Immediately behind engaging head 14 are a pair of identical parallel grooves 26 and 28. Groove 26 is in side surface 20 and groove 28 in side surface 22. Grooves 26 and 28 are so contoured to accept the ears 30 and 32 of the engaging heads of identical other zipper teeth. (See FIG. 4.)

If the zipper teeth 10 were merely fabricated as described up to this point it is apparent that any relative movement of the teeth in an out of the plane of FIG. 4 (hereinafter called lateral movement) would result in the separating of the meshed stringers.

In order to prevent this lateral movement and to positively lock the ears of the engaging heads in grooves, endwalls are formed at the ends of the grooves so that cavities are defined.

The endwalls are formed in the following manner. When the zipper tooth is molded, it is molded with tapered projections 52, 54, 56 and 58 shown in dotted lines in FIGS. 1 and 5. A typical tapered projection 50 (FIG. 5) extends outward (upward) from top surface 16 along a portion of the periphery of groove 26. Projection 50 has one surface 60 which is coplanar with groove 16 and perpendicular to top surface 16 and another inclined surface 62 making an acute angle with surface 60.

I have discovered that, with such a tapered shape, if a compressive force is applied to the heat softened projection, the projection will fold over in a direction away from the inclined surface. Such rolling over of the dotted line projection 50 is shown by solid projection 50' in FIG. 5 with surface 62 becoming surface 62'.

In FIGS. 1 to 3, the tapered projections 50', 52', 56' and 54' are shown in their rolled-over final position. As is apparent from these Figures, the rolled-over projections 50' and 54' provide endwalls for groove 26 to provide a cavity which lockingly accepts an ear of an engaging head. These endwalls prevent any relative lateral displacement of adjacently meshed zipper teeth.

While only one embodiment of the invention has been shown and described in detail, there will now be obvious to those skilled in the art, many modifications and variations satisfying many or all of the objects of the invention as defined by the appended claims.

What is claimed is:

1. A zipper tooth for inclusion in a zipper by connection to the tape thereof, said zipper tooth comprising a body portion having top, bottom and first and second side surfaces, means at one end of said body portion and positioned intermediate said top and bottom surfaces for engaging the tape of the zipper stringer, an engaging head at the other end of said body portion, said engaging head being symmetrical about a plane intermediate said side surfaces and parallel thereto, first and second grooves in said first and second side surfaces, each of said grooves being similarly contoured to receive the engaging head of other zipper teeth, and four tapered projections, each of said tapered projections extending outwardly from a different one of the peripheral edges of said grooves, to provide endwalls at the ends of said grooves whereby cavities are provided for lockingly accommodating portions of the engaging heads of other zipper teeth, each of said tapered projections having a first surface adjacent a groove, said first surface being substantially planar and parallel to said top and bottom surfaces, and having a second surface displaced from said groove, said second surface being slanted with respect to said top and bottom surfaces.

2. The zipper tooth of claim 1 wherein said engaging head includes two ears transversely extending in opposite directions.

3. The zipper tooth of claim 2 wherein each of said ears has a back surface which is perpendicular to said plane and defines one of the walls of one of said grooves, and a front surface in a plane oblique to said plane.

4. The zipper tooth of claim 2 wherein each of said ears has flat top and bottom surfaces for stopping against the first surfaces of said tapered projections.

* * * * *