This invention is an improved end stop for zippers of the type employing continuous plastic filaments attached to a pair of tapes.

Considerable difficulty has been experienced heretofore in providing satisfactory end stops for zipper fasteners which utilize coiled plastic filaments and the invention is applicable as well to those types of plastic zippers where the filament is not strictly in the form of a coil, but a zigzag or meandering shape. The use of metal staples or clips as stops has obvious objections. In addition to their unsightly appearance, they do not anchor the ends of the coil. Other proposals to mold a bottom stop in place have been unsatisfactory because of the expense and difficulty in controlling the material.

The object of my invention is to avoid the difficulties and disadvantages of prior end stops and to provide a stop for zippers of the type described, which is exceedingly strong and above all, one which will not interrupt the continuity of the filament where it merges into the stop.

According to the invention, the nested coils themselves are utilized for the stop by welding them together at their interfaces or at the places where the interengaged loops cross each other in abutting relationship. This is preferably accomplished by an ultrasonic device so that the fusion takes place only where desired without substantially interrupting those portions of the coil by which it is secured to its tape.

Other objects and advantages of the invention will more fully appear.

In the accompanying drawing, I have shown for purposes of illustration, one embodiment which the invention may assume in practice. In the drawing:

FIG. 1 is a small scale view of a complete zipper with my improved end stop;

FIG. 2 is an enlarged view of one end portion of the zipper;

FIG. 3 is a cross-section on line 3—3 of FIG. 2;

FIG. 4 is a vertical detailed section on line 4—4 of FIG. 3; and

FIG. 5 is a detailed longitudinal section on line 5—5 of FIG. 3.

The zipper which I have illustrated has the usual fabric tapes 7 and 8 and the thermoplastic coils 9 and 10 secured thereto by suitable stitching 11. As illustrated, there are also cords 12 and 13 which extend through the convolutions of the coils and the stitches 11 may penetrate these cords to secure the outer or heel portions of the coils firmly to their respective tapes. The inner or head portions of the coils are designated 14 and they are brought into nesting and interlocking relation by means of the slider 15 in a well-known manner.

Each loop formed by the forward part of a coil convolution engages between and in abutting relationship with a pair of corresponding loops of the opposite coil. These provide contacting areas where the loops cross, and in FIG. 3 these areas are designated 16 and 17.

To form the bottom stop, no additional material of any kind other than the loops themselves, is used. Instead, by means of ultrasonic devices above-mentioned, the portions of the coil are sealed together at their interfaces or in those abutting areas 16 and 17 as shown by heavy lines in FIG. 2 and by x's in FIGS. 4 and 5. As noted in FIG. 2 and the various sectional views, this forms an effective integral union of a plurality of the coil convolutions on one side with those of the other, and this is all accomplished without interfering substantially with the continuity of the plastic filament. There is also avoided any problem of the coiled filament slipping away from the bottom stop. Also, it will be observed that those portions of the coil by which it is secured to the tape are not substantially interrupted or damaged in the region of the end stop.

What I claim is:

1. In a zipper employing a pair of tapes and fastening means in the form of a continuous thermoplastic filament secured to each of said tapes, each of said filaments being shaped to provide closely spaced loops adapted to nest between and interlock with the loops of the other of said filaments, portions of each loop being in abutting relationship with portions of the adjacent loops of the mating filament; means forming an end stop comprising a plurality of the aforesaid loops which are welded together where they are in abutting relationship.

2. In a zipper, a pair of strings each consisting of a tape and a thermoplastic coil secured thereto, the convolutions of one coil being adapted to be brought into nesting and abutting relationship with the convolutions of the other coil and means forming an end stop comprising a plurality of such nested convolutions welded together where they are normally in contact, leaving the remaining portions of the coil substantially uninterrupted.

References Cited by the Examiner

UNITED STATES PATENTS
2,832,119 4/1958 Neitlich ———— 24—205.11

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