Feb. 8, 1955 L. M. DORMAN 2,701,401

END STOP FOR SLIDE FASTENERS

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Fig. 1.

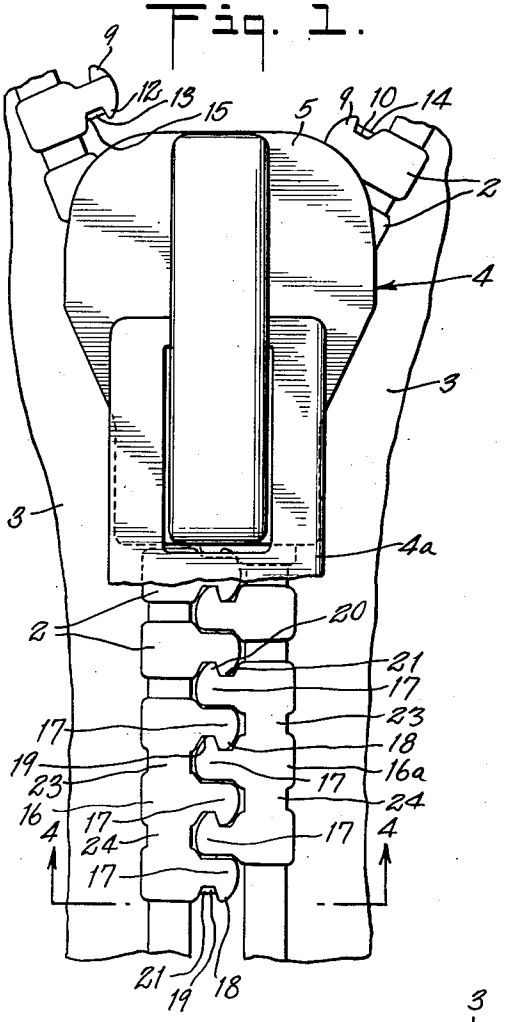
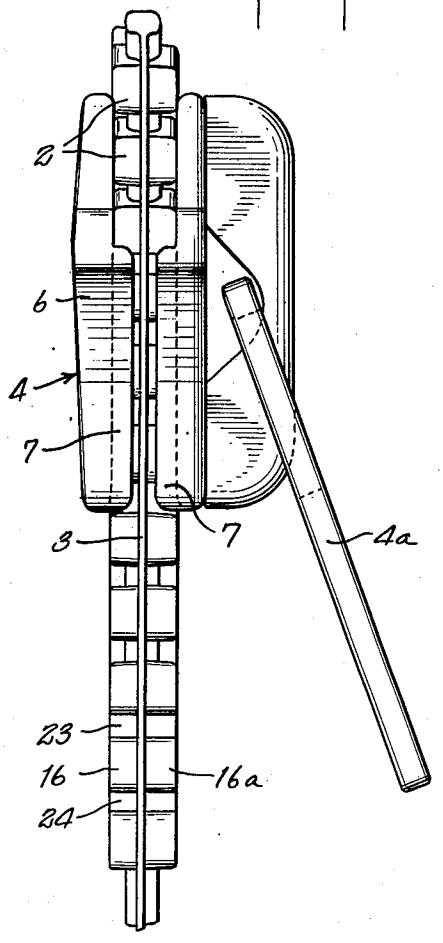


Fig. 2.



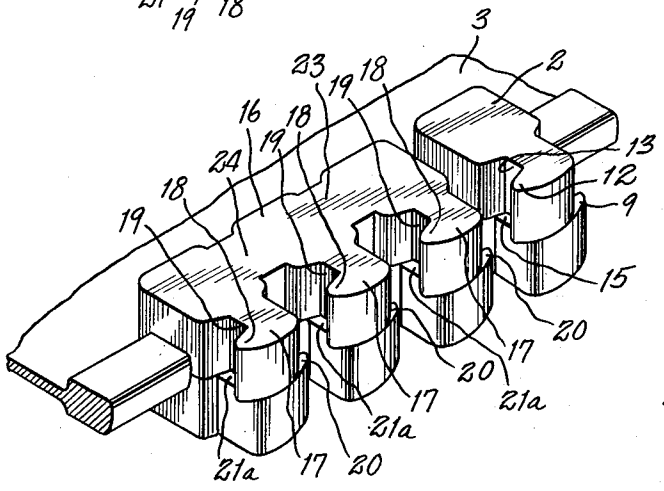


Fig. 3.

INVENTOR.
LEONARD M. DORMAN
BY R. E. Mecch
ATTORNEY

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Fig. 4.

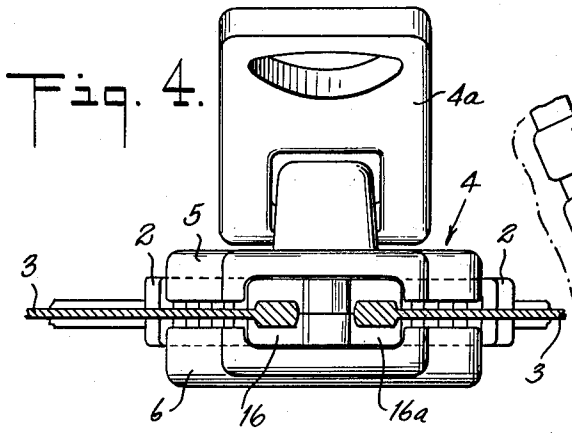


Fig. 6.

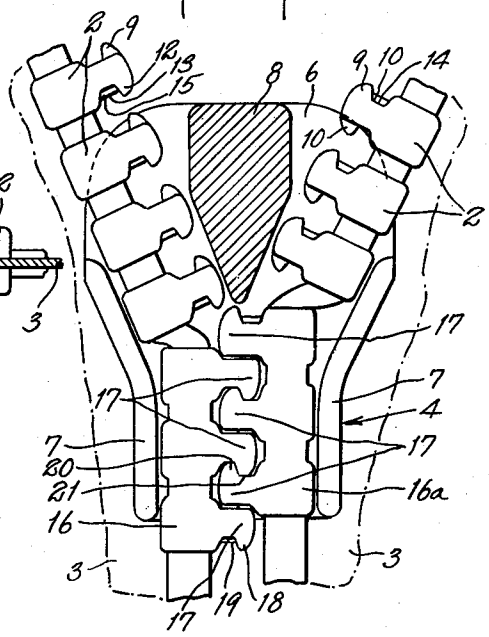


Fig. 7.

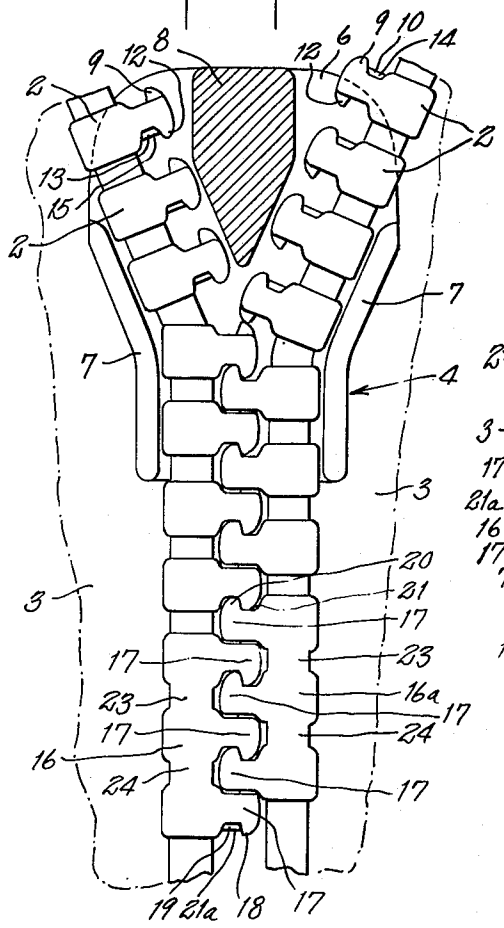
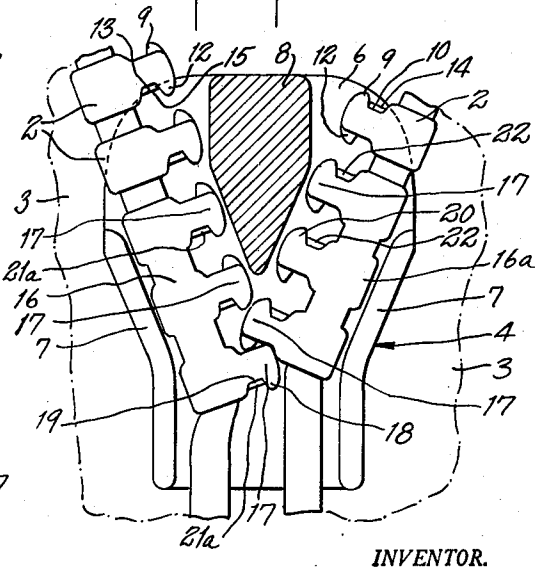


Fig. 5.



INVENTOR.
LEONARD M. DORMAN
BY R. E. Mecl
ATTORNEY

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END STOP FOR SLIDE FASTENERS

Leonard M. Dorman, Meadville, Pa., assignor to Talon, Inc., a corporation of Pennsylvania

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5 Claims. (Cl. 24—205.11)

This invention relates to slide fasteners, and particularly to an improved end stop therefor for permanently uniting the two fastener stringers at one end thereof.

It is the general object of the present invention to provide a simple and effective end stop for permanently uniting the lower ends of the stringers without the use of any tools or other special equipment.

It is another object of this invention to provide an improved form of end stop which can be easily and conveniently manufactured from a plastic material, such as pyroxylin, cellulose acetate, and nylon, in which no expensive equipment is required for making or applying the end stop members.

It is a further object of the invention to provide an end stop construction in which the coupling members of the stop and the interlocking fastener elements on the edges of the stringers can be simultaneously molded thereto.

It is also another object of this invention to provide an end stop member consisting of a pair of complementary symmetrical coupling members adapted to be assembled in permanent interengagement by means of the slider and having interlocking means incorporated therewith for preventing disengagement after so assembled.

It is a more specific object of the present invention to provide an end stop consisting of a pair of complementary symmetrical coupling members having interlocking projections and recesses identical in construction to those of the interlocking fastener elements on the stringer whereby they may be easily interengaged by the slider when pulled therethrough.

Various other objects and advantages of this invention will be more apparent in the course of the following specification, and will be particularly pointed out in the appended claims.

In the accompanying drawings, there is shown for the purpose of illustration, an embodiment which my invention may assume in practice.

In these drawings:

Fig. 1 is a fragmentary plan view of a slide fastener having the improved end stop of my invention incorporated therewith;

Fig. 2 is a side view of the fastener, as shown in Fig. 1;

Fig. 3 is a perspective view of the lower end of a stringer showing one part of the end stop attached thereto;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1;

Fig. 5 is a fragmentary view of the lower end of the fastener with the top wing of the slider removed, showing the initial registering of the end stop members when the fastener stringers are being pulled up or closed;

Fig. 6 is a similar view showing the end stop members fully engaged and passing out of the slider; and

Fig. 7 is another view similar to Fig. 5, showing the end stop members fully engaged with the slider positioned a short distance above the end stop.

The fastener illustrated comprises a series of spaced-apart interlocking fastener elements **2** attached to the opposed beaded edges of a pair of stringer tapes **3**. There is arranged on the fastener elements, a conventional slider **4** for longitudinal movement therealong for opening and closing the fastener in a well-known manner having a pull member **4a** for manipulating the same. Such a slider consists generally of spaced-apart upper and lower wings **5** and **6**, respectively, having inwardly extending guide flange portions **7** along their marginal edges and connected at one end by a neck portion **8** so as to provide a substantially Y-shaped channel between

the wings into and through which the fastener elements pass when the slider is moved therealong for opening and closing the fastener.

While the fastener elements **2** may be of any suitable construction and attached to the tapes in any convenient manner, the fastener elements illustrated are preferably molded or die cast upon the edges of the stringers. The fastener elements shown comprise an attaching portion and a coupling head which are provided on opposite sides with projection and socket or recess portions. The coupling head of each of the elements **2** is provided on one side with a projection **9** and a recess **10** and on the opposite side with a projection **12** and a recess **13**. The projections **9** and **12** extend from one side of the element to surfaces **14** and **15**, respectively, each of these surfaces being positioned substantially one half of the width of the elements and substantially parallel with the plane of tapes **3**. The recesses **10** and **13** extend substantially through the same width as the projections **9** and **12** from one side face of the element to the surfaces **14** and **15**, respectively.

According to the present invention, there is arranged on the lower ends of each of the stringer tapes **3**, coupling members **16**, **16a** which together when assembled constitute the end stop of the present invention. These coupling members **16** and **16a** are identical in construction and each of them consists preferably of at least three coupling head portions **17** which have cooperating projections and recesses. In the present illustration, these coupling head portions are identical in construction with the head portions of the interlocking fastener elements **2**. That is to say, each of these head portions has a projection **18** and a recess **19** arranged on one side of the head and a corresponding projection **20** and recess **21** arranged on the opposite side of the head. The projections **18** and **20** extend from one side of the head to surfaces **21a** and **22**, respectively, each of these surfaces being positioned substantially one half the width of the heads and substantially parallel with the plane of the tape **3**. The recesses **19** and **21** likewise extend substantially through the width of the projections **18** and **20** from one side surface of the head to the surfaces **21a** and **22**, respectively. In other words, the three head portions of the coupling members are the equivalent to three coupling head portions of the fastener elements **2**, and preferably conform in shape therewith and the attaching portions of these coupling members are integrally connected together by portions **23** and **24** so as to provide an integral coupling unit.

The coupling members **16** and **16a** are engaged by passing them through the slider **4** or by a "pulling up" operation as it is known to those skilled in the art. As the coupling members **16** and **16a** pass through the slider, the respective coupling head portions **17** thereof are interengaged by the slider, as shown in Figs. 5 and 6 of the drawings. That is to say, the projections **18** and **20** of one head portion engage with the respective recesses **19** and **21** of the adjacent head portion. After these coupling members have been once engaged, it is impossible for them to become disengaged under normal operating conditions of the fastener. In other words, after the coupling members **16** and **16a** once are interengaged, as shown in Fig. 6, they will not become disengaged thereby providing a permanent uniting means for the ends of the stringers.

It is preferable that these end coupling members be molded from a plastic material such as nylon which has a certain degree of resiliency, so as to permit the interlocking head portions thereof to snap into engagement with one another. Thus, it will be seen that by providing coupling members of such materials and construction, it will be impossible for them to become disengaged after they are once interengaged. It will be seen also that after they are once interengaged, it is not necessary to provide any additional means for keeping the stringers together and united at the end of the fastener. Also, it will be seen the coupling members **16** and **16a** are provided with interengaging projections and recesses which are so constructed and arranged so as to prevent relative displacement of the two members in a longitudinal direction as well as a lateral direction.

It will be obvious that the coupling end members **16** and **16a** and the interlocking elements **2** can be simultaneously cast or molded upon the stringer tapes **3** which is one of the most important aspects of the present invention.

As a result of my invention, it will be seen that there is provided an end stop member consisting of a pair of complementary coupling members which can be easily and quickly assembled and permanently united, namely, by passing the coupling members through the slider as the stringers are assembled together.

While I have shown and described an embodiment which my invention may assume in practice, it will be understood that this embodiment is merely for the purpose of illustration and description, and that other forms may be devised within the scope of my invention as defined in the appended claims.

What I claim as my invention is:

1. In a slide fastener of the class described having a pair of stringers with a series of spaced-apart interlocking fastener elements arranged along the opposed edges thereof and a slider arranged on the fastener elements for longitudinal movement along said stringers, an end stop construction comprising an elongated coupling member fixedly secured to the edge of one stringer and a similar coupling member fixedly secured to the edge of the other stringer below the endmost fastener element of the respective stringers, each of said coupling members being of a resilient material and having a plurality of interengaging projections and recesses arranged along the opposed edges thereof which normally prevents relative movement of the stringers both laterally and longitudinally, the combined overall width of both of said coupling members being slightly less than the width of the channel in said slider so that both of said coupling members are adapted to pass into and through the slider whereby they are initially interengaged thereby, the interengaging projections and recesses being so constructed and arranged that once they pass through the slider and are interengaged they cannot normally become disengaged by movement of the slider thereover so as to provide a permanent stop for the slider.

2. In a slide fastener of the class described, as defined in claim 1, wherein each of the coupling members consists of an integral body member having at least three interengaging fastener element-like projections and recesses arranged along the opposed edges thereof.

3. In the manufacture of slide fasteners of the type having a pair of flexible stringers and cooperating series of spaced-apart interlocking fastener elements attached to the opposed edges of said stringers which are adapted to be engaged and disengaged by a slider, the method of making an end stop which comprises securing an elongated coupling member to the edge of one stringer below the endmost fastener element thereof and securing a similar coupling member to the edge of the other stringer below the endmost fastener element of that

stringer, each of said coupling members being of a resilient material and having a plurality of interengaging projections and recesses, passing the fastener elements together with the coupling members through the slider whereby the coupling members are forced together so that the projections and recesses of one of the coupling members are interengaged with those of the opposed coupling member so as to join together permanently the coupling members.

4. In the manufacture of slide fasteners of the type having a pair of flexible stringers and cooperating series of spaced-apart interlocking fastener elements attached to the opposed edges of said stringers which are adapted to be engaged and disengaged by a slider, the method of making an end stop which comprises molding from a resilient material an elongated coupling member to the edge of one stringer, molding a similar coupling member to the edge of the other stringer, each of said coupling members having a plurality of interengaging projections and recesses, passing the fastener elements together with the coupling members through the slider whereby the coupling members are forced together so that the projections and recesses of one of the coupling members are interengaged with those of the opposed coupling member so as to join together permanently the coupling members.

5. In the manufacture of slide fasteners of the type having a pair of flexible stringers and cooperating series of spaced-apart interlocking fastener elements attached to the opposed edges of said stringers which are adapted to be engaged and disengaged by a slider, the method of making an end stop which comprises molding from a resilient material an elongated coupling member to the edge of one of said stringers and molding a coupling member to the edge of the other stringer, each of said coupling members consisting of a plurality of fastener elements molded together so as to provide an integral unit, passing the fastener elements together with the coupling members through the slider whereby the coupling members are forced together so that the projections and recesses of one of the coupling members are interengaged with those of the opposed coupling member so as to join together permanently the coupling members.

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