Sept. 3, 1957 J. G. SOAVE 2,804,669

SLIDE FASTENERS

Original Filed Sept. 22, 1953 2 Sheets-Sheet 1

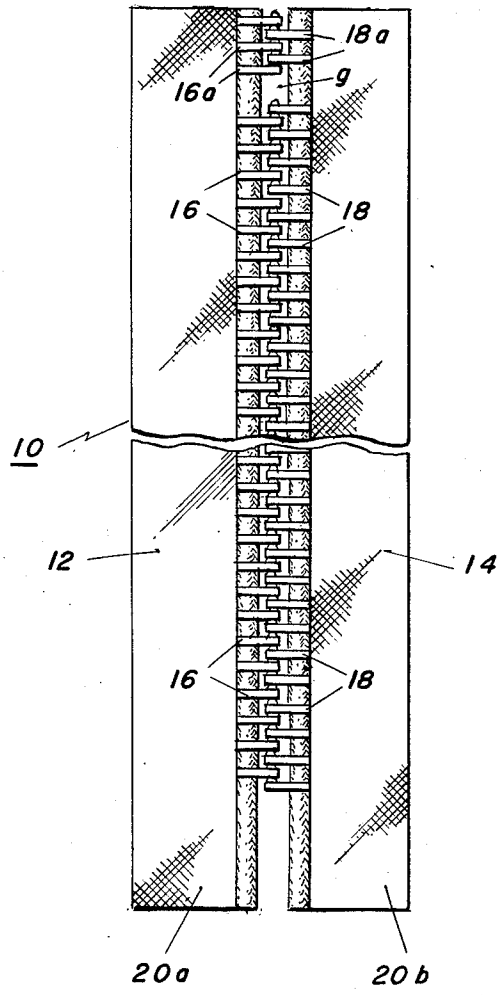


Fig. 1

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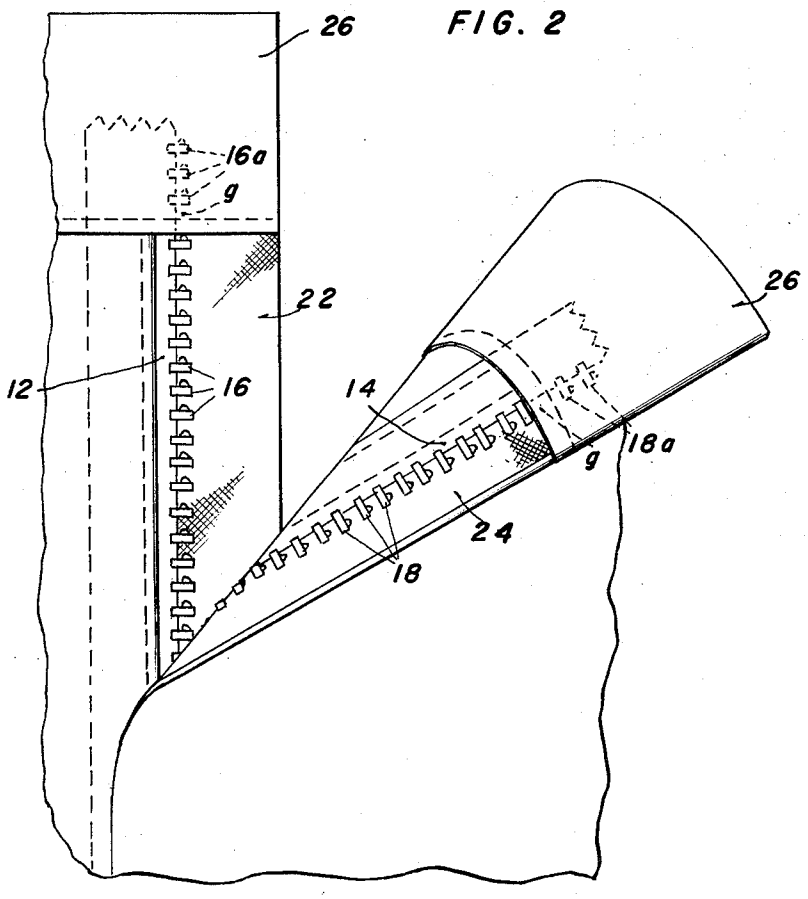
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FIG. 2



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SLIDE FASTENERS

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Original application September 22, 1953, Serial No. 381,553, now Patent No. 2,708,968, dated May 24, 1955. Divided and this application May 18, 1955, Serial No. 509,213

2 Claims. (Cl. 24—205.16)

This invention relates to improvements in slide fasteners, and more particularly but without limitation to improved fastener chain for slide fasteners intended for use as trouser-fly closures and which are accordingly required to be sewn at their top ends into the trousers waistband.

As set forth in my application Serial No. 381,553, filed September 22, 1953, now Patent No. 2,708,968, of which the present application is a division, it is now standard practice, in the mass production of slide fasteners, to fashion the fastener chain therefor by cutting the individual fastener-chain lengths from continuous chain, as the latter term is used in the art to designate a long length of two interconnected fastener stringers consisting of fastener tapes carrying rows of uniformly spaced, interengaging fastener elements along their adjacent (usually beaded) edges throughout the entire length of said tapes. To provide the element-free extensions at the ends of the individual lengths of fastener chain, as was heretofore considered necessary to enable the fasteners to be sewn at their ends to the garments for which they are intended without danger of breakage of the sewing needle, a small number of the fastener elements were removed from both the end portions of such lengths of fastener chain. However, the removal of the elements from the top end of a fastener chain so as to provide the element-free extension at such end gives rise to difficulties in handling the fastener chain and in applying the finished fastener to the garment waistband in proper position for the sewing operation. For example, the fastener chain having an element-free extension at its upper end is always open above the slider even in the fastener-closing end position of the latter, with the result that in handling of the fastener chain, one or both of the element-free tape ends can become disarranged or folded under the inter-engaged portion of the fastener chain, and when such occurs, the disarranged or folded-under tape ends must be straightened prior to their being sewn to the trousers waistband. Moreover, since the slider for opening and closing the fastener cannot fully close the top end of the fastener chain provided with an element-free extension at said top end, it is very difficult to insert and properly position the two tape ends devoid of fastener elements in or with respect to the trousers waistband, as compared to a fastener chain which can be fully closed at its upper end. Finally, since the accurate alignment of the fastener stringers making up the chain which is so necessary for smooth operation of the slider and hence of the fastener as a whole is best achieved by fastener elements running to the very ends of the stringers, it follows that a fastener chain whose top end is open, as through the provision of an element-free extension at said end, may give rise to stringer misalignment in use thereof.

Broadly stated, a main object of the invention is the provision of fastener chain for slide fasteners of the type adapted to be sewed at their upper end into a garment,

for example, a trousers waistband, characterized in that provision is made for the sewing needle to pass through the chain as necessary in the sewing operation but without danger of needle breakage, and at the same time for maintaining the top end of the chain fully closed thereby simplifying the handling of the fastener chains and facilitating its insertion in the trousers waistband preliminary to said sewing operation.

More particularly, the invention contemplates and provides fastener chain for slide fasteners of the type adapted to be sewn at their top end into the fold of a garment, such as a trousers waistband and the like, and which is characterized by an element-free needle gap located a predetermined distance from the top-end edge of the chain as results in the retention of a small number of the fastener elements intervening between said gap and said edge. Such a gap provides for safe passage of the sewing needle through the chain and also in the chain being effectively closed at its top end, the latter being a feature of advantage in that the fastener chain which is fully closed at its top may be more simply handled and inserted into a trousers waistband than a fastener chain whose upper end is open, i. e. devoid of fastener elements. The retention of a small number of elements above the gap is also of advantage, since the retained elements serve as a bridge top-stop for the slider which prevents it from being accidentally run off the chain prior to completion of the sewing operation. The retained fastener elements extending between gap and top-end edge of the fastener chain also insure against stringer misalignment having its source in the element-free extension as heretofore provided at the top end of the fastener chain.

The above and other objects and features of advantage of fastener chain according to the invention will appear from the following detailed description thereof, in which reference is had to the accompanying drawings forming a part thereof, wherein:

Fig. 1 is a broken-away plan view of a length of fastener chain made according to the invention; and

Fig. 2 is a broken-away plan view of a fly closure incorporating a fastener chain as shown in Fig. 1 employed as the closure of a waistband opening of a garment such as a pair of trousers.

Referring to said drawings, reference numeral **10** (Fig. 1) generally designates a measured length of slide fastener chain comprising two laterally spaced stringer tapes **12, 14** carrying along their adjacent longitudinal edges, which are usually beaded, rows of oppositely disposed and uniformly spaced fastener elements **16, 18** whose coupling heads are interengaged so as to secure the tapes together throughout the entire length thereof occupied by said rows of elements. Illustratively, the fastener chain **10** is provided at one end, i. e. its bottom end, with an element-free extension resulting from the bottom-end tape portions **20***a*, **20***b* being devoid of the fastener elements **16, 18**. Accordingly, the chain may be secured at its lower end to a garment as by sewing through said bottom-end element-free extension, without danger of breakage of the sewing needle caused by the needle hitting on one of the fastener elements **16** or **18**. The aforesaid tape portions **20***a*, **20***b* forming the element-free extension may also be readily folded on themselves, if such is desired as an incident to the securing operation.

According to the invention, the other or top end of the fastener chain, rather than being provided with an element-free extension corresponding to the aforesaid element-free extension at the bottom end, is effectively closed, while at the same time provision is made for safe passage of the needle through the chain in sewing the top end of the fastener to the garment or garment part. More particularly, it is a feature of the invention that but a few

(two or three) of the fastener elements **16, 18** are removed from the chain at a location along the length thereof corresponding to the point at which the sewing needle passes through the chain tapes in the sewing operation, which point is usually spaced the small distance occupied by two or three fastener elements downwardly from the top-end edge of the fastener chain, and that the fastener elements intervening between said point and said top-end edge are retained in their interengaged relation. As shown in the drawing, such results in the provision of a needle gap designated *g* of length corresponding to that occupied by two or three of the fastener elements **16, 18** and which is spaced from the top-end edge of the fastener chain **10** a distance also corresponding to that occupied by two or three of the fastener elements such as the elements designated **16***a*, **18***a*.

The advantages of fastener chain characterized by a gap *g* located as aforesaid are numerous, will be in part seen from a consideration of Fig. 2, wherein a fastener chain **10** of the invention and a companion pair of fly strips **22, 24** to which the chain tapes **12, 14** are secured in the usual manner as by sewing, combine to form a fly closure for the waistband opening of a garment such as a pair of trousers. In addition to the fastener rows **16, 18** each having a space or needle gap *g* free of fastener elements which is accurately located at the point of fastener chain length through which passes the sewing needle employed to sew the top end of the fastener chain into the garment fold or waistband **26**, the retained elements **16***a*, **18***a* serve during the operation of sewing the fastener tapes **12, 14** to the fly-strip portions **22, 24** of the closure unit to maintain the top end of the fastener chain closed above the gap, thereby to simplify its normal handling and also to facilitate its insertion into the garment fold or waistband. Moreover, the retained elements **16***a*, **18***a* have good effect in properly relating the stringer tapes at all times and in assuring top-end alignment of the stringers. Equally important is the fact that said retained elements serve, upon assembly of the slider therewith, as a top-stop for the slider, thus preventing the slider from running off the fastener chain prior to the securement of its upper end to the garment.

While measured lengths of fastener chain according to the present invention may be and preferably are produced in quantity by the practice of the method disclosed and claimed in my aforesaid Patent No. 2,708,968, it is possible to produce fastener chain to desired slide-fastener lengths as herein proposed and claimed by other methods as well. Accordingly, I do not wish to limit myself as respects the manner or mode of producing fastener chain of the present invention. Moreover, as many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. For use in a slide fastener fly-closure adapted to be sewn at its top end into the waistband of a pair of trousers and like garments, a measured length of fastener chain whose length corresponds substantially to that of the fly closure comprising companion stringers carrying rows of oppositely disposed uniformly spaced fastener elements along their adjacent longitudinal edges and which are adapted to be engaged and disengaged by a slider, the chain containing within its measured length an element-free gap for passage of the sewing needle disposed adjacent its top end, said gap being spaced from the top end edge of the chain a fixed distance equaling the space occupied by a small number of the fastener elements of the rows thereof, said small number of elements being normally interengaged thereby to maintain alignment of the stringers both when the said stringers are being sewn to their corresponding fly-piece portions of the fly closure and when the fly closure is being sewn in the trousers waistband and also providing a temporary bridge top stop for the slider during application of the latter to the measured length of fastener chain.

2. A fastener chain for a fly-closure characterized as in claim 1, wherein the chain is adapted to be sewn at its lower end to the crotch of the trousers and has an element-free extension at its said lower end which enables said end to be folded and provides for passage of the sewing needle.

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