Dec. 2, 1941. L. H. MORIN 2,264,325

METHOD OF MAKING SEPARABLE FASTENERS

Filed Aug. 11, 1938

Fig. 1.

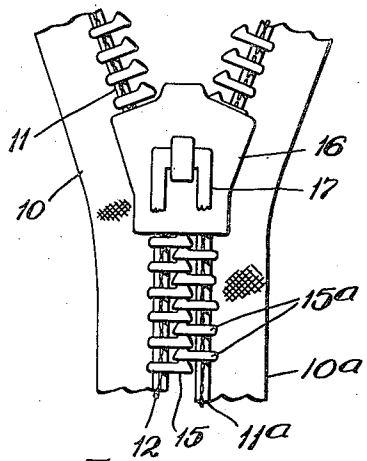



Fig. 2.

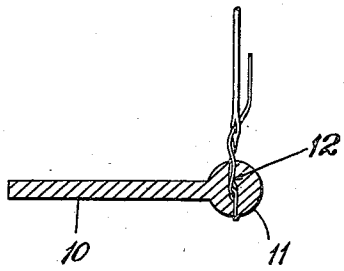



Fig. 3.

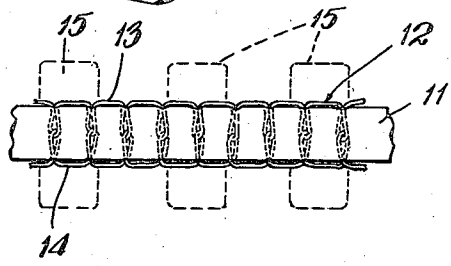



Fig. 5.

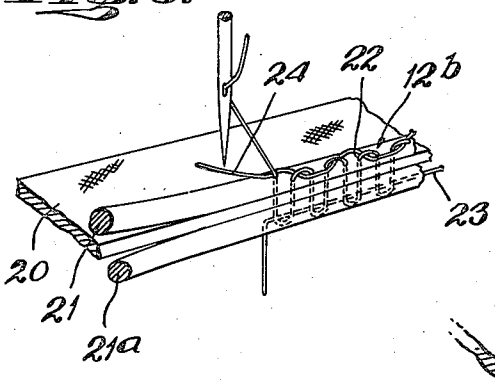



Fig. 4.

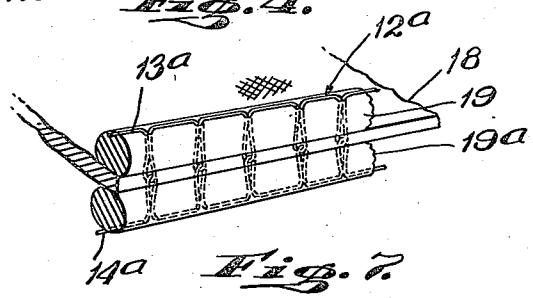



Fig. 6.

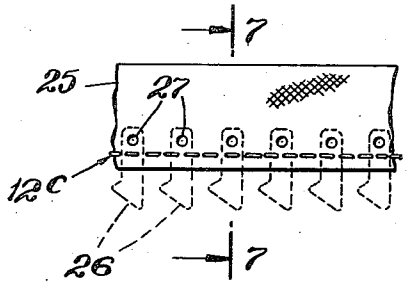
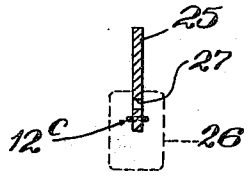



Fig. 7.




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# UNITED STATES PATENT OFFICE

2,264,325

## METHOD OF MAKING SEPARABLE FASTENERS

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Application August 11, 1938, Serial No. 224,269

4 Claims. (Cl. 204—23)

This invention relates to separable fasteners and particularly to the construction of various types and kinds of fastener stringers employing metallic links. More particularly, the invention relates to the stitching of the enlarged or beaded edge portion of a stringer tape in such manner as to arrange an electric conductor strand longitudinally of said beaded edge for exposure to the several links attached to the beaded edge of the stringer tape to establish an electric circuit to all of the links on the stringer to facilitate the electroplating of each and all of the links thereon, as well as in the method of constructing fastener stringers as herein set forth. The novel features of the invention will be best understood from the following description and annexed drawing in which certain embodiments of the invention are disclosed and in which the separate parts are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a plan view of a part of two stringers of a separable fastener made according to the invention and showing a slider arranged thereon.

Fig. 2 is a sectional detail view illustrating one method of stitching the beaded edge of a stringer tape to arrange a conductor longitudinally of said edge.

Fig. 3 is a side edge view of the structure shown in Fig. 1 diagrammatically showing the arrangement of stitchings on the tape.

Fig. 4 is a perspective view showing a modification of the structure shown in Figs. 1 to 3 inclusive.

Fig. 5 is a perspective view illustrating another method of stitching and forming the beaded edge portion of the stringer tape and the arrangement of a conductor thereon.

Fig. 6 is a plan view of a part of a stringer tape showing the method of arranging a conductor stitching on a plain tape apertured for the anchorage of the links in connection therewith; and,

Fig. 7 is a section on the line 7—7 of Fig. 6.

This application constitutes an improvement over the invention disclosed in my prior Patent #2,063,515, issued December 8, 1936, and teaches the principle of applying an electric conductor to the edge portion of a stringer tape in a stitching operation or associated with a stitching operation in such manner as to form a more or less continuous exposure of the conductor longitudinally of and throughout the length of said edge of the tape; and the stringer tape may be formed in accordance with the teachings in my application Serial No. 209,889, filed May 25, 1938.

It is one of the distinctive features of my invention to provide mounting or stringer tapes for separable fastener stringers of the character described having incorporated therein, or in the edge portion of the tape to which the metallic links are secured, a wire or metallic strand or what is commonly referred to as a tinsel; that is to say, a fabric strand or thread wrapped spirally with a fine wire so that each link attached to the tape contacts the metallic strand thereby completing an electric circuit to all of the links facilitating the electroplating of said links. This plating is not only for the purpose of applying the conventional nickel, chromium, silver, brass, copper, aluminum, and other platings, but also for the purpose of applying the various color platings to the links in accordance with more recent processes. In connection with the color plating, the same has been applied successfully on devices composed of aluminum; and in this connection it will be understood that the links of the stringers may be composed of aluminum, or if desired, may be aluminum-plated prior to the application of the color platings thereto.

The color plating of the links of separable fastener stringers is desirable in many uses of the fasteners to match or blend the links to the merchandise or products in connection with which the same are used. By constructing the stringer tapes in the manner herein described, a very simple and economical means is provided for performing the electroplating operations upon the links of the stringers, while at the same time producing thoroughly and completely plated links or scoops which will result in a neat and finished appearance.

My invention lends itself especially to the formation of stringer tapes where the links or scoops are made from die cast materials which may be die cast upon the tape directly in a successive series of casting operations or separately cast and attached to the stringer tapes. It will thus be seen that cast aluminum links may be employed or zinc castings or other metal castings may be provided and plated in the manner set forth.

In Figs. 1 to 3 inclusive I have shown one method of carrying the invention into effect which consists in providing a stringer tape 10 having a beaded edge 11 which as shown constitutes an integral part of the tape. To the beaded edge 11 is applied a line of stitching as at 12 which extends longitudinally of said beaded edge. For purposes of illustration, this stitching may be said to be composed of upper threads

13 and lower threads 14, both of which may be composed of wire or what is termed a tinsel which consists simply of a thread or strand upon which fine wire is spirally wound as is taught in the patent hereinbefore mentioned. On the other hand, it will be apparent that either the upper or the lower thread 13, 14, may be composed of metallic material to form a conductor and the other or opposed thread may be of cotton, silk, or other non-conducting material. These threads form on the upper and lower surfaces, or at least on one surface of the beaded edge 11, a substantially continuous electric conductor or a conductor which is sufficiently continuous to insure contact with each of the spaced coupling links or scoops 15 arranged thereon or secured thereto as indicated in dotted lines in Fig. 3 of the drawing and as shown in full lines in Fig. 1 of the drawing.

In Fig. 1 a part of two of the stringers of a complete fastener is shown; it being understood that the stringer 10*a* has a beaded edge 11*a* identical with the parts 10 and 11; and the links or scoops are shown at 15*a*. At 16 is shown a slider which is movable longitudinally of the two stringer tapes in coupling and uncoupling the links, and at 17 is shown part of a pull through the medium of which the slider may be manually operated.

In Fig. 4 of the drawing a slight modification of the construction shown in Figs. 1 to 3 inclusive is illustrated which consists in providing a plain elongated strip 18 for the stringer tape upon opposite surfaces of which are attached cords or strands 19, 19*a* at one edge of the stringer to form the equivalent of the edge 11. The stitching as at 12*a* is otherwise identical to the stitching 12 and consists of upper threads 13*a* and lower threads 14*a*, which as before stated may be both constructed to form conductors, or either one of which may be a conductor. In this connection it will be apparent that it is only essential to establish one electric conductor on the tape throughout the length thereof for completing the electric circuit to all of the links on the stringer for an electroplating operation.

In Fig. 5 of the drawing another modification of the structure shown in Fig. 4 is illustrated. In this instance, the tape 20 is again plain and has the cords 21, 21*a*, attached to the edge of the tape by a line of stitching as at 12*b* wherein the upper thread 22 is looped around a bottom thread 23 in securing a metallic conductor 24 longitudinally of one of the cords; the cord 21 in the construction shown being in a zigzag or wave-like fashion in accordance with the stitching of the machine disclosed in my application Serial No. 209,889, filed May 25, 1938, hereinbefore identified.

It will be understood that the principles of the structure shown in Fig. 5 of the drawing are also applicable to a tape such as disclosed in Fig. 2. While the threads or strands 22, 23, may be of cotton, silk, or similar material, it will also appear that either or both of these strands may also be metallic or similar to the strands 13, 14, as previously described. It will be understood that the zigzag lay of the conductor strand 24 will maintain the flexibility of the stringer tape and will further eliminate any question of breakage of the strand in the handling thereof prior to the electroplating operation. It will be understood that the links are applied to the tape as disclosed in Figs. 4 and 5, in the same manner as in the structure shown in Fig. 1.

In Fig. 6 of the drawing I have shown at 25 a plain conductor strip; that is to say, a strip which does not employ the beaded edge, and this strip includes a line of stitching at 12*c* adjacent one side edge thereof and extending longitudinally of the tape. The stitching at 12*c* may be in the form of either of the stitchings shown at 12, 12*a* and 12*b*; it being understood that at least one strand of the particular stitching employed will form the conductor strand to contact the links 26, indicated in dotted lines, to facilitate electroplating. With this construction it is preferred that the strip 25 have adjacent the stitchings 12*c* longitudinally spaced openings 27 formed in any desired manner for the anchorage of the links to the tape, and in forming the links of die cast metallic bodies, the attached or mounted ends thereof may be joined integrally through the apertures as will appear from a consideration of Fig. 7 of the drawing.

The structure shown in Figs. 6 and 7 is adapted for use in certain types of separable fasteners where the stringers are not subjected to excessive stress or strain and where it is desirable to produce an economical form of stringer. It will be understood that the strip or tape 25 may be constructed of any suitable inexpensive material and may in some instances consist of a strip of heavy paper or of a reinforced paper strip.

After the stringer tapes have been formed, the same may be passed through suitable machines for the attachment of the links or scoops 15, 15*a*, 26, thereon. These scoops may be formed and applied in any desired manner or be directly die cast on the beaded edges or to the stitched edges of the tapes. It will also be apparent that the links or scoops may be constructed of any suitable metals, and in the case of producing what I term color plated links in accordance with my process, I may use links composed entirely of aluminum or aluminum alloys, or links composed of metals or other alloys, in which latter event the same will be first suitably plated and then passed through the color plating process to produce the desired color on the resulting links in accordance with the anodic method or other processes.

In connection with the plating operation of the links of the stringers, it will be understood that these stringers may be plated as stringer units or a successive series of stringer sections may be plated in one operation in accordance with conventional practice in what is termed a continuous chain-like plating operation. After the plating operation, the separate stringer lengths are subdivided.

From the foregoing it will appear that my present invention consists in stitching one edge portion of a stringer tape prior to the application of the links thereto and to form of one of the threads used in the stitching or in a thread or strand associated therewith an electric conductor which extends throughout the full length of the stringer so as to contact all of the links attached thereto to provide accurate plating of all of the links of the stringer in a single plating operation or in the successive plating operations in the manner heretofore described.

In all instances, the stitching will reinforce the edge of the tape to which the links are attached and will also serve as a means for coupling cords or elements to the tape in forming the beaded edge thereon.

Having fully described my invention, what I

claim as new and desire to secure by Letters Patent, is:

1. The herein described method of manufacturing stringers of separable fasteners to permit electroplating of the separate links of the stringers, which consists in providing an elongated mounting tape of fibrous material, first forming a line of stitching longitudinally of the mounting tape at one edge thereof, with an electric conductor in said line of stitching so as to establish an electrical connection with all of the links attached to the tape to facilitate electroplating of the links, then applying the links to said edge of the tape to contact said conductor, and then electroplating said links.

2. The herein described method of manufacturing stringers of separable fasteners to permit electroplating of the separate links of the stringers, which consists in providing an elongated mounting tape of fibrous material, first forming a line of stitching longitudinally of the mounting tape at one edge thereof, with an electric conductor in said line of stitching so as to establish an electrical connection with all of the links attached to the tape to facilitate electroplating of the links, laying an electric conductor in zig-zag fashion along said line of stitching along one side surface of the tape, then applying the links to said edge of the tape to contact said conductors, and then electroplating the links on said tape.

3. The herein described method of manufacturing stringers of separable fasteners to permit electroplating of the separate links of the stringers, which consists in providing an elongated mounting tape of fibrous material, first forming a line of stitching longitudinally of the mounting tape at one edge thereof, with an electric conductor in said line of stitching so as to establish an electrical connection with all of the links attached to the tape to facilitate electroplating of the links, then applying the links to said edge of the tape to contact said conductor, treating the stringers thus formed to apply one plating to said links, then applying another color plating to said pre-plated links, and at least one of the platings being formed by electrodeposition.

4. The method of manufacturing stringers of separable fasteners to provide electroplating of links arranged on the stringers, which comprises first stitching cords to one edge portion of a mounting tape of fibrous material by a line of stitching extending longitudinally of the cord and said edge of the tape, incorporating an electric conductor in said line of stitching so as to establish electrical connection with all links attached to said tape edge and the cords thereon to facilitate electroplating of the links, then applying the coupling links to said edge of the tape at spaced intervals longitudinally thereof with each link contacting said conductor, then treating the resulting product to form a suitable plating on all of said links, then subjecting the resulting plated product to a further plating treatment for color plating the respective links in a predetermined color, and at least one of the platings being formed by electrodeposition.

LOUIS H. MORIN.