Dec. 14, 1937. L. ROSEMAN 2,102,223

MULTIPLE FASTENER

Filed Sept. 18, 1936 3 Sheets-Sheet 1

Fig. 1

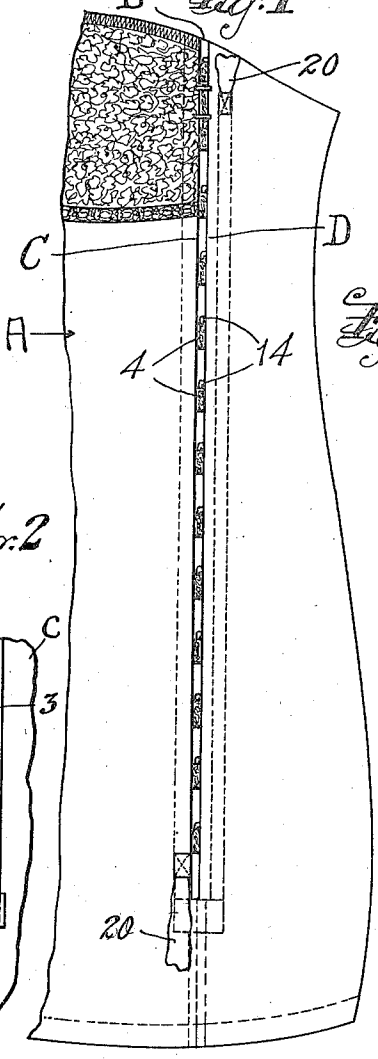


Fig. 2

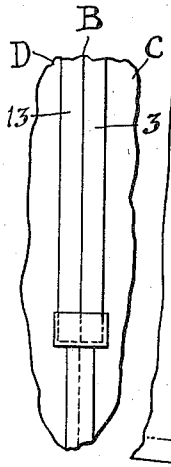


Fig. 3

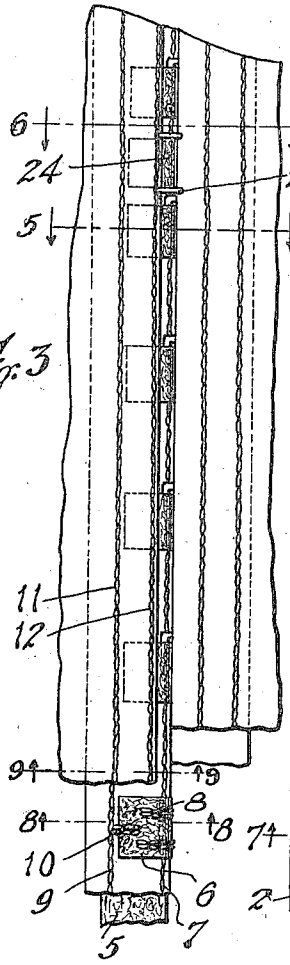


Fig. 4

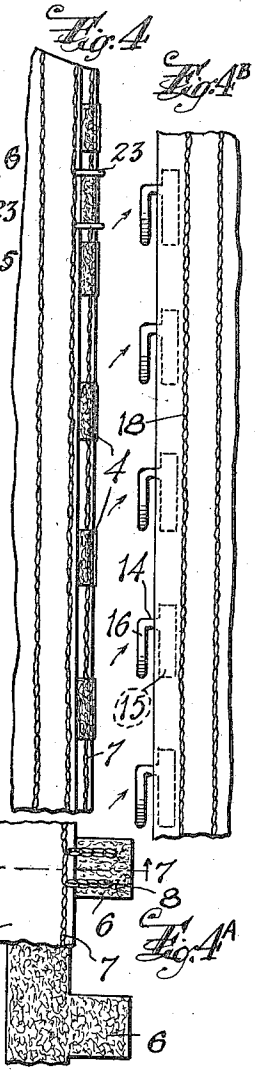


Fig. 4B

Fig. 4A

Fig. 6

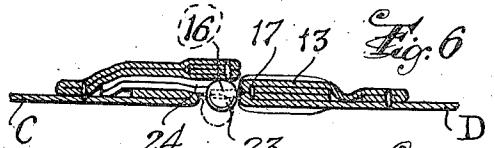


Fig. 5

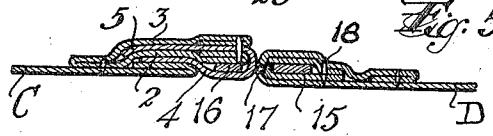


Fig. 7

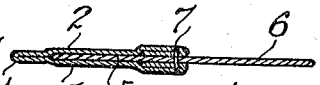


Fig. 8



Fig. 9



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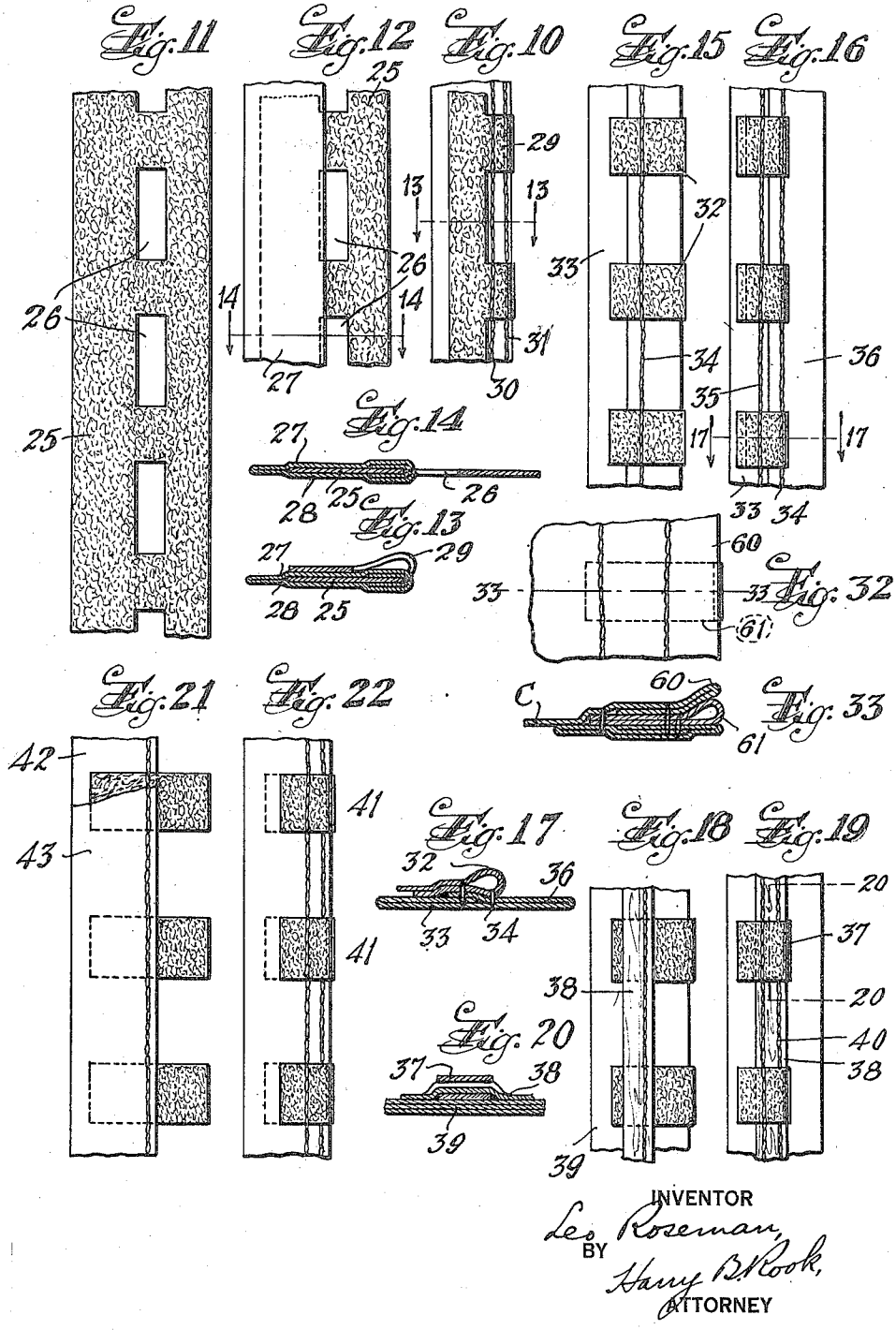
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Dec. 14, 1937. L. ROSEMAN 2,102,223

MULTIPLE FASTENER

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Fig. 25

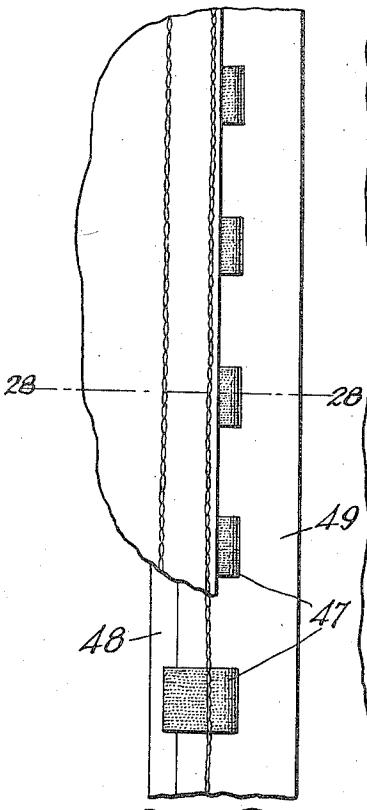


Fig. 26

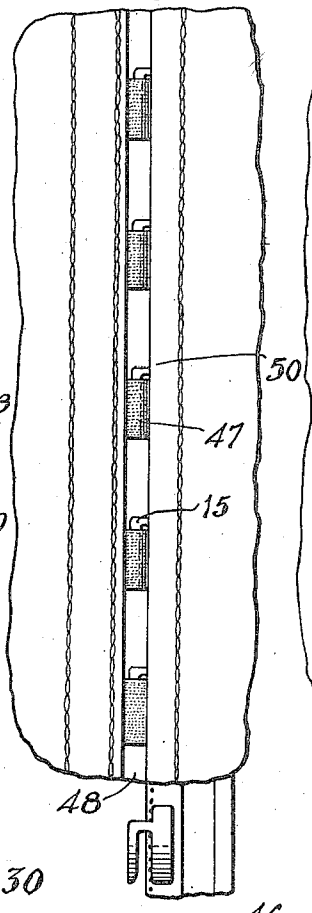


Fig. 27

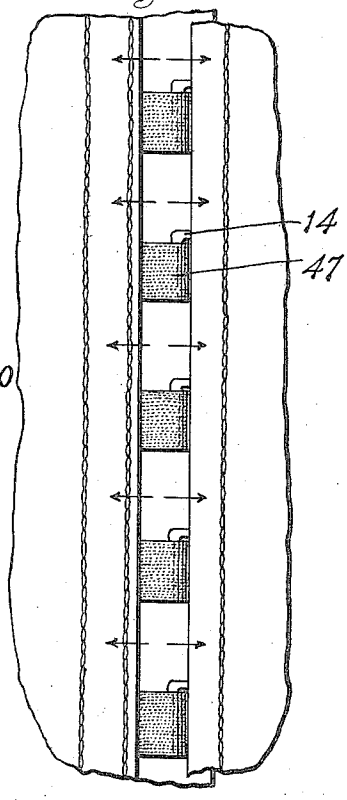


Fig. 29

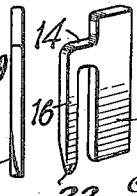


Fig. 30

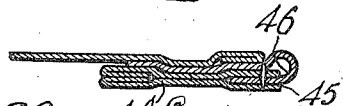


Fig. 23

Fig. 31

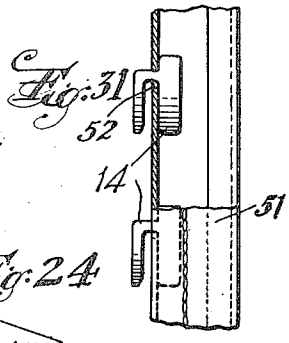


Fig. 28

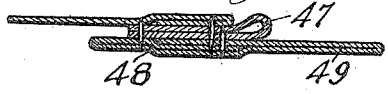


Fig. 24

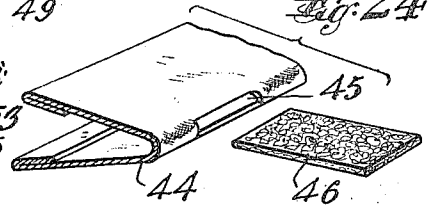


Fig. 34

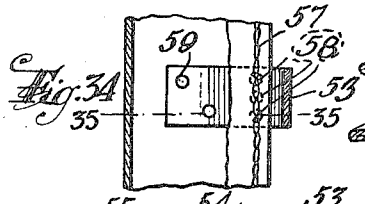
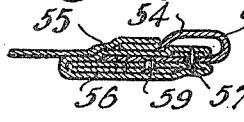


Fig. 35



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2,102,223

UNITED STATES PATENT OFFICE

2,102,223

MULTIPLE FASTENER

Leo Roseman, Newark, N. J.

Application September 18, 1936, Serial No. 101,383

20 Claims. (Cl. 2—38)

This invention relates in general to fasteners and especially to fasteners for leggings, draperies, garment bags and garments such as corsets, brassières, shirts and the like.

There are three common forms of garment fasteners on tape. One type is the hook and eye wherein the common plane of the shank and the bill of the hook as well as the axis of the eye are perpendicular to the general plane of the garment edges. Another is the head and socket fastener wherein the axes of the head and socket are perpendicular to the general plane of the garment edges and said edges must be overlapped to connect the heads and sockets. A third type is the so-called slide-operated or "Zipper" type.

The hook and eye type and head and socket type have among others the disadvantage of bulkiness and forming of protuberances uncomfortable to the wearer, and moreover it is frequently difficult to connect and disconnect the complemental fasteners, and in so doing it is necessary to manipulate the garment edges out of their own planes which when the garment is applied is sometimes inconvenient. Furthermore, the operation is slow and tedious. The "Zipper" type causes puckering of the garment, is frequently stiff due to the closely arranged metal fasteners, and, especially in tight fitting garments, the slide is frequently difficult if not impossible to operate. Moreover, the actuating slide causes a protuberance which is visible beneath thin outer garments.

Therefore, a prime object of my invention is to provide a fastener embodying novel and improved features of construction which shall overcome the above-mentioned difficulties and disadvantages, and shall be thin or have minimum bulk, shall have the complemental fastener elements connectible and disconnectible in the general plane of the garment edge, shall be flexible and easy to operate and permit disconnection of all the complemental fastener elements quickly at one time and in one simple relative movement of the two complemental sides of the fastener in the general plane and longitudinally of the garment edges to which the fastener is attached, and shall be simple and inexpensive in construction.

Further objects of the invention are to provide novel and improved fastener tape which shall embody two strips of fabric one having flat hooks preferably formed of sheet metal and secured to one strip with the plane of the hooks in substantially the plane of the strip, the other strip having a plurality of approximately flat loop or socket members to cooperate with said hooks and preferably formed of pliable material such as fabric and lying in substantially a common plane with the respective strip, whereby there shall be a minimum of protuberances produced by the fastener elements, and the hooks shall be held against accidental separation from the loops by frictional contact of the fabric loop with the hooks; to provide novel and improved fastener elements of the general character described and novel and improved means for securing them on supporting strips or garments.

Another object is to provide such a fastener which shall include novel and improved means for guiding the bills of the hooks into the loops or sockets so as to prevent snagging or catching of the hook bills on the edges of the loops and so as to enable the fastener to be easily closed even when the fastener is located in an invisible position for example at the back of a garment.

Further objects are to provide a novel and improved strong and durable fabric loop for such fasteners, and novel and improved means for securing the loops on fabric strips, tapes or garments, whereby the fastener shall be inexpensive in structure and manufacture, and the strip or garment edge shall be smooth so as to be invisible beneath a thin garment; and to provide a plurality of the loops in a novel one-piece structure which shall be strong, durable and easy to apply to a fabric strip or garment.

Other objects are to provide such a fastener wherein no metal is exposed for contact with body or other garments when the fastener is closed; to provide such a fastener whereby the opposite sides of the garment opening or article carrying the fastener shall be in abutting edge to edge relation instead of overlapping when the fastener is closed to form a smooth, thin, flexible closure; to provide a fastener of this character wherein the loops and hooks can be secured on a fabric strip or a garment by continuous lines of stitching; to provide a novel and improved hook formed of flat sheet metal and having a specially shaped bill to facilitate insertion into a fabric loop, and to obtain other advantages and results as will be brought out by the following description.

Referring to the accompanying drawings in which corresponding and like parts are designated throughout the several views by the same reference characters.

Figure 1 is a front elevational view of a corset having a fastener embodying my invention applied thereto.

Figure 2 is a fragmentary rear elevational view of the corset showing the fastener.

Figure 3 is a fragmentary front elevational view on an enlarged scale with portions broken away for clearness of illustration.

Figure 4 is a front elevational view of the loop fastener as illustrated in Figure 3.

Figure 4A is a fragmentary plan view of the loop fastener tape partially completed.

Figure 4B is a fragmentary front elevational view of the hook fastener shown in Figure 3.

Figures 5 and 6 are greatly enlarged transverse sectional views on the lines 5—5 and 6—6 respectively of Figure 3.

Figure 7 is a transverse sectional view on the line 7—7 of Figure 4A.

Figures 8 and 9 are transverse sectional views on the lines 8—8 and 9—9 respectively of Figure 3.

Figure 10 is a fragmentary plan view of a modified form of the loop fastener.

Figure 11 is a plan view of the blank from which the loop fasteners are formed.

Figure 12 is a fragmentary plan view showing the assembly of the loop fastener blank in the fabric strip.

Figure 13 is a transverse sectional view on the line 13—13 of Figure 10.

Figure 14 is a similar view on the line 14—14 of Figure 12.

Figure 15 is a fragmentary plan view of another modified form of the tape partially completed.

Figure 16 is a similar view of the tape shown in Figure 15, completed.

Figure 17 is a transverse sectional view on the line 17—17 of Figure 16.

Figure 18 is a view similar to Figure 15 showing another form of the tape incomplete.

Figure 19 is a like view of the completed tape shown in Figure 18.

Figure 20 is a longitudinal sectional view on the line 20—20 of Figure 19.

Figure 21 is a fragmentary plan view of another form of tape incomplete.

Figure 22 is a similar view of the completed tape shown in Figure 21.

Figure 23 is a transverse sectional view through another form of the tape applied to a garment.

Figure 24 is a composite perspective view showing the manner of assembling the loop strips and tape in the form shown in Figure 23.

Figure 25 is a fragmentary plan view of a form of the invention including elastic loops.

Figure 26 is a plan view of the loop fastener shown in Figure 25 connected to a hook tape in normal position.

Figure 27 is a view similar to Figure 26 showing the loops stretched.

Figure 28 is a transverse sectional view on the line 28—28 of Figure 25.

Figure 29 is an edge elevation of one of the hook elements.

Figure 30 is a perspective view of one of the hooks.

Figure 31 is a composite plan and sectional view of a modified manner of attaching the hooks to the fabric strip.

Figure 32 is a fragmentary plan view of another form of the invention.

Figure 33 is a transverse sectional view of the line 33—33 of Figure 32.

Figure 34 is a fragmentary plan view of another modification of the invention including a metal loop, with portions broken away and shown in section and

Figure 35 is a transverse sectional view on the line 35—35 of Figure 34.

For the purpose of illustrating the principles of the invention I have shown my fastener in connection with a garment A which has a longitudinal opening B extending inwardly from the upper end of the corset to facilitate donning of the garment, and in accordance with the invention the edges C and D of this opening have attached thereto complemental loop fasteners and hook fasteners embodying my invention for closing the opening.

According to one form of the invention the fastener includes two tapes upon which are secured the loop fasteners and hook fasteners respectively. The loop fastener tape is shown as comprising a strip of suitable material such as fabric folded upon itself as at 1 to form two superposed plies 2 and 3, or the plies 2 and 3 may be separate pieces of material secured together. Between the plies 2 and 3 and spaced longitudinally of the strip, preferably equidistantly, is a plurality of loop fasteners 4 which are preferably formed of pliable material such as fabric, and particularly rubberized fabric or the like which will provide substantial frictional engagement with a hook bill. The loops are shown as straight elongate tubular loops having their axes approximately in or parallel to the edge of the strip. These loops are secured to the strip in any suitable manner, and each loop has one side overlying and secured to at least one ply of the strip to prevent the loop from lateral movement and reduce the possibility of a hook bill being inserted between the loop and the fabric strip.

As shown in Figures 2 to 9 inclusive, the loops comprise a single strip 5 of suitable material having lateral tabs 6, the strip being arranged between the plies 2, 3 of the tape with the tabs projecting beyond the edges of the plies. The strip 5 is secured to the tape by a continuous line of stitches 7 extending longitudinally of the tape and strip and penetrating the tape and the strip. Preferably the line of stitches includes at least one series of lateral or offset stitches 8 extending longitudinally of each tab for reenforcing the tab. Each tab is returned upon itself and overlies the outer surface of one of the plies 2, 3, being secured to the plies and the body of the strip 5 by a longitudinal line of stitches 9 having lateral offset stitches 10 penetrating the returned ends of the tabs, the plies 2, 3 and the strip 5. When the tabs are thus returned, they form the loops 4, and it will be observed that the ply 2 runs through each loop, overlies the inside thereof and is secured to the other ply by the stitches 7 so as to hold the loop against lateral movement and cover the end edges of the side of the loop that is secured to the plies 2, 3 so as to form a smooth guiding surface for the bill of a hook and prevent the bill from entering between the loop and the tape. The stitches 8 then circumferentially reenforce the loop to withstand tension placed thereon by a hook bill inserted into the loop.

In applying the fastener tape comprising the plies 2, 3 and the strip 5 to a garment or other article, the edge of the garment or article is laid over the tape at the side thereof from which projects the loops and is secured to the tape by means of stitches 11 and 12.

The hook fastener is shown as comprising a supporting strip of fabric 13 between which and the other edge of the garment or article is se-

cured a plurality of hook fastener elements 14. Each hook element includes substantially flat sheet metal base 15 and a bill 16 projecting from one edge of the base and disposed in the plane of the base parallel to said edge. The bill is preferably approximately straight and elongate and of a cross sectional size to snugly fit one of the loops 4. The supporting piece 13 of fabric and the edge D of the garment are secured together at their edges by a line of stitches 17 which is interrupted at intervals to provide gaps through which pass the bills of the respective hooks, whereby the hooks are held against longitudinal movement, and the line of stitches 18 closely adjacent the sides of the bases of the hooks opposite the bills, holds the hooks against lateral movement.

With the fastener elements applied to the opposite edge portions C and D of the garment as shown in Figures 1, 3, 5 and 6, it will be observed that the hook bills 16 may be slipped through the loops 4 of the complemental fasteners by relative longitudinal movement of the garment edges in substantially the planes thereof. The hook bills initially may be laid over the edge of the tape or garment carrying the loops in alinement with the respective loops, and then slid longitudinally into the respective loops. This sliding action is facilitated by the smooth guiding surface afforded by the ply 2 which prevents snagging of the ends of the hook bills on the end edges of the loops. The hook bills frictionally engage the pliable loops whereby they are restrained from accidental disconnection from the loops. The edges of the garment or article may therefore be connected in abutting edge to edge relation instead of overlapping, and will be positively held against lateral separation. However, it will be observed that the hook bills may all be simultaneously disconnected from the loops by relative longitudinal movement of the edge portions of the garment, that is, by pulling the two edge portions in opposite directions.

Where the garment opening terminates short of one end of the garment as in Figure 1, members such as pull cords or ribbons 20 may be secured, one adjacent the inner end of one edge portion and the other adjacent the outer end of the other edge portion, so that the wearer of the garment may grip the ribbons each with one hand and exert simultaneous pulls thereon in opposite directions. The connection and disconnection of the fastener elements can therefore be effected easily and quickly.

To facilitate slipping of the hook bills into the loops, the free extremities of the hook bills at the side thereof which slides over the ply 2 of the tape may be beveled as at 21 and the end of the bill may be rounded as at 22. Also, if desired, the pliable material in the hook receiving ends of the loops may be folded inwardly to provide round smooth edges on the loops.

The hook elements and loop elements are substantially flat and in a common plane with the edges of the garment opening and there is a minimum of bulk in the garment closure. Therefore, the fastener elements produce a minimum of protuberances and the adjoining edges of the garment opening are thin, flexible and smooth so as not to be felt by nor cause discomfort to the wearer and so as to provide a neat appearance even beneath a thin outer garment. Moreover, there is no danger of the bills of the hooks digging into the flesh of the wearer either during connection of the hooks with the loops or during wear of the garment.

If desired, a locking member 23 may be secured as by a flexible connecter 24 to the loop carrying edge of the garment so as to normally overlie one end of one hook member when the latter is connected to a loop and prevent accidental relative longitudinal movement of the hook bills and loops, the locking member being manually displaceable away from the end of the hook, as shown in Figure 6, to permit connection and disconnection of the hook with the complemental loop.

A modification of the invention is shown in Figures 10 to 14 inclusive wherein the loops are formed of a single piece of pliable material 25 which has openings 26 spaced longitudinally thereof, the pieces 25 having one edge portion disposed between plies 27 and 28 of a fabric supporting strip with the other edge portion and openings 26 disposed beyond one edge of the plies. The projecting edge portion of the piece is returned upon itself and the strip 27, 28 so that the portions between the openings 26 form loops 29 corresponding to the loops 4. The piece 25 and one side of each loop may be secured to the plies 27, 28 as by lines of stitches 30 and 31 respectively, corresponding to the stitches 7 and 9 of Figure 3.

Another form of the invention is shown in Figures 15 and 16, wherein the loops are formed of separate pieces of pliable material 32, each piece being secured to the supporting tape 33 by stitches 34 and being returned upon itself with the returned portion secured by stitches 35 so as to form a loop. Also, the loops may be arranged inwardly from the edge of the supporting tape 33 to form a flap 36 beyond the loops to underlie the hook carrying edge of the garment or article.

A further modification is shown in Figures 18 to 20 inclusive wherein the loops 37 may be formed as in Figures 15 and 16, and a separate strip 38 of suitable material runs through and lies over the edges of all of the loops and is secured to the loops and the carrying strip 39 by stitches 40 so as to serve like the ply 2 as a guide for directing the hook bills into the loops.

Figures 21 and 22 show another form of the invention in which the loops 41 are formed of separate pieces, as in Figures 15 and 16, but one end of each piece is inserted between two plies 42 and 43 of a carrying strip with the other end returned over one of the plies 43 in a manner similar to that in which the loops 4 are formed.

Instead of using separate strips 42 and 43, one strip 44 may be used and folded longitudinally and slitted at 45 to receive one end of the loop strip 46 as shown in Figures 23 and 24.

In some instances, it may be desirable to provide a fastener which is laterally yieldable, that is which will permit yielding relative movement of the two edge portions of a garment or article toward and from each other. Accordingly the loops may be formed of elastic material as shown at 47 in Figures 25 to 27 inclusive. The loops may be secured to the carrying strip 48 in any suitable manner as hereinbefore described but preferably the carrying strip will have a flap 49 projecting beyond the loops to underlie the side 50 of the garment or article carrying the hook fastener elements so as to prevent pinching or protrusion of the flesh between the edges of the garment opening.

Instead of securing the hooks between two separate plies of material as shown in Figures 4B and 5, the carrying strip 51 may be returned upon itself and formed with slots 52 in the fold through

which the bills of the hooks may project, as shown in Figure 31.

In some instances it will be desirable to form the loops of metal, as shown in Figures 34 and 35. Here each loop **53** comprises a strip of metal having one end returned upon itself and with the other end disposed between plies **55** and **56** of the fabric and riveted at **59** to said plies so that one of the plies **55** extends through all of the loops and overlies the end edges thereof. This ply **55** is secured snugly against the sides of the loops by a line of stitches **57** corresponding to the stitches **7** which pass through openings **58** in the metal loop. The operation of this form of the fastener is similar to that hereinbefore described, the ply **55** serving to guide the hook bills into the respective loops **53**.

If desired, the edge of the garment or article may be arranged to overlie the loops so as to cover the spaces between the various loops, as shown in Figures 32 and 33, where reference character **61** designates a loop and **60** represents the edge of the garment.

Other modifications and changes in the details of structure of the fastener will occur to those skilled in the art as within the scope of the invention.

Having thus described my invention what I claim is:

1. A fastener comprising two pieces of material disposed in edgewise approximately abutting relation, one having hook elements secured thereon and spaced longitudinally thereof with their bills extending longitudinally of the piece and approximately parallel to the edge thereof, the other piece having tubular loops of pliable material secured thereon with their axes approximately parallel to the edge of the piece each to frictionally receive the bill of one of said hook elements for connecting said pieces together.

2. The fastener set forth in claim 1 wherein the bills of the hooks and the pliable tubular loops are approximately straight and elongate.

3. The fastener set forth in claim 1 wherein the pliable tubular loops comprise strips of pliable material returned upon themselves with their overlying ends secured to the respective piece of material.

4. The fastener set forth in claim 1 wherein one side of each tubular loop overlies and is secured to the respective piece of material to hold the loop against lateral movement and prevent the bill of the hook from entering between said loop and said piece of material.

5. The fastener set forth in claim 1 wherein one side of each loop overlies the respective piece of material and with the addition of a guide overlying the end of said side of the loop to guide a complemental hook bill into the loop.

6. The fastener set forth in claim 1 wherein one side of each loop overlies the respective piece of material and with the addition of a strip of material running longitudinally through and beyond the ends of said loop over said piece of material and being secured to both the loop and said piece to guide the complemental hook bill into the loop.

7. The fastener set forth in claim 1 wherein the pliable tubular loops comprise strips of pliable material returned upon themselves with their overlying ends secured to the respective piece of material, and one side of each loop overlies said piece of material, and with the addition of a line of stitches running longitudinally of said piece of material and through all of said loops and penetrating said side of each loop and said piece to hold said loop against lateral movement and prevent a complemental hook bill from entering between said loop and said piece.

8. The fastener set forth in claim 1 wherein said loops comprise a strip of pliable material having lateral tabs each returned upon and secured to the strip and said piece of material to form a tubular loop.

9. The fastener set forth in claim 1 wherein said loops comprise a strip of pliable material having openings spaced longitudinally thereof with one edge portion returned upon the strip along said openings and secured to said strip and said piece so that the portions between said openings form tubular loops.

10. The fastener set forth in claim 1 wherein said piece of material carrying said loops is formed of two plies and said loops are secured between said plies.

11. The fastener set forth in claim 1 wherein said piece of material carrying said loops is formed of two plies and the loops comprise a strip of material between said plies having lateral tabs each returned upon and secured to the strip and to said piece of material.

12. The fastener set forth in claim 1 wherein said piece of material carrying said loops is formed of two plies and the loops comprise a strip of material between said plies having openings spaced longitudinally of the strip with one edge portion returned upon the strip along said openings and secured to said strip and said piece.

13. The fastener set forth in claim 1 wherein the pliable tubular loops comprise strips of pliable material returned upon themselves with their overlying ends secured to the respective piece of material, and one side of each loop overlies said piece of material, and with the addition of a line of stitches running longitudinally of said piece of material and through all of said loops and penetrating said side of each loop and said piece to hold said loop against lateral movement and prevent a complemental hook bill from entering between said loop and said piece, and a strip of material running longitudinally of said piece through each of said loops and secured to said piece and said loops by said line of stitches for guiding the bills of complemental hooks into said loops.

14. The fastener set forth in claim 1 wherein each loop is reenforced by at least one circumferential line of stitches.

15. The fastener set forth in claim 1 wherein the pliable tubular loops comprise strips of pliable material returned upon themselves with their overlying ends secured to the respective piece of material, and with the addition of at least one line of stitches extending longitudinally of each strip to circumferentially reenforce the corresponding loop.

16. The fastener set forth in claim 1 wherein said piece of material carrying said loops is formed of two plies, and the tubular loops comprise strips of material each having one end disposed between said plies and its other end returned upon the strip and one of said plies and the superposed ends of the strip secured to said piece.

17. The fastener set forth in claim 1 wherein one side of each tubular loop overlies and is secured to the respective piece of material to hold the loop against lateral movement and prevent the bill of the hook from entering between said loop and said piece of material and wherein each

hook bill has its extremity beveled at the side to engage the opposite piece of material to guide the bill over the end edge of the complemental loop.

18. The fastener set forth in claim 1 with a locking member on said piece carrying said loops normally to overlie one end of one hook when the latter is disposed in a loop to hold the hook against accidental displacement, said locking member being mounted so as to be movable away from the hook to permit removal of the hook from the loop.

19. A fastener comprising two pieces of material disposed in edgewise approximately abutting relation, one having hook elements secured thereon and spaced longitudinally thereof with their bills extending longitudinally of the piece and approximately parallel to the edge thereof, the other piece having tubular loops secured thereon with their axes approximately parallel to the edge of the piece each to frictionally receive the bill of one of said hook elements for connecting said pieces together, one side of each loop overlying the respective piece of material, and a guide overlying the end of said side of the loop to guide a hook bill into the loop.

20. A fastener comprising two pieces of material disposed in edgewise approximately abutting relation, one having hook elements secured thereon and spaced longitudinally thereof with their bills extending longitudinally of the piece and approximately parallel to the edge thereof, the other piece including at least two plies of material and having tubular loops secured thereon with their axes approximately parallel to the edge of the piece to frictionally receive the bill of one of said hook elements, each loop comprising a piece of material with one portion disposed between two adjacent plies and another portion returned upon the first portion and overlying the exposed side of one ply, whereby said ply serves to guide a complemental hook bill into the loop.

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