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METHOD OF MAKING GARTER TABS

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Fig. 3.

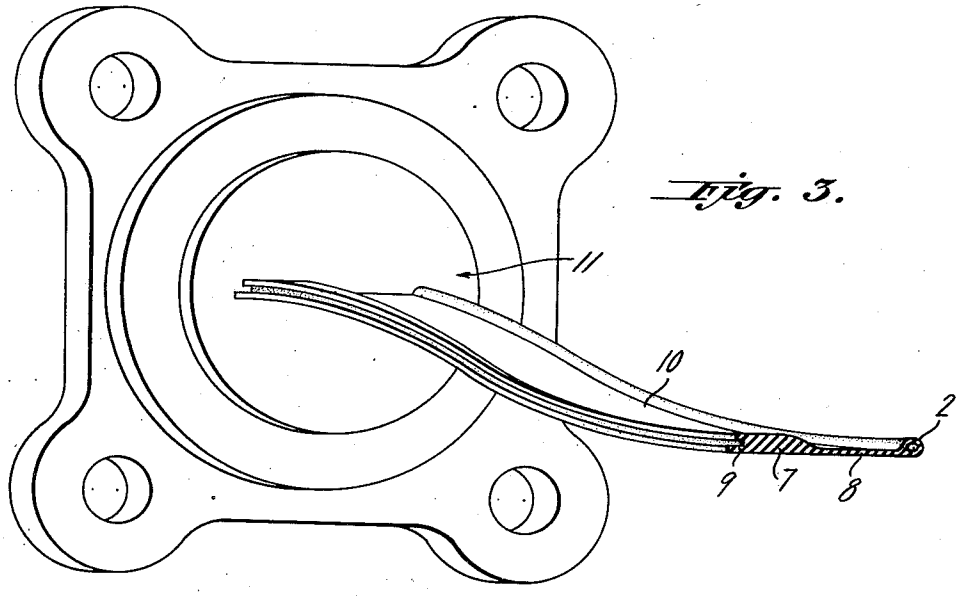


Fig. 1.

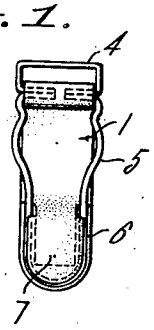
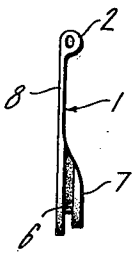


Fig. 2.



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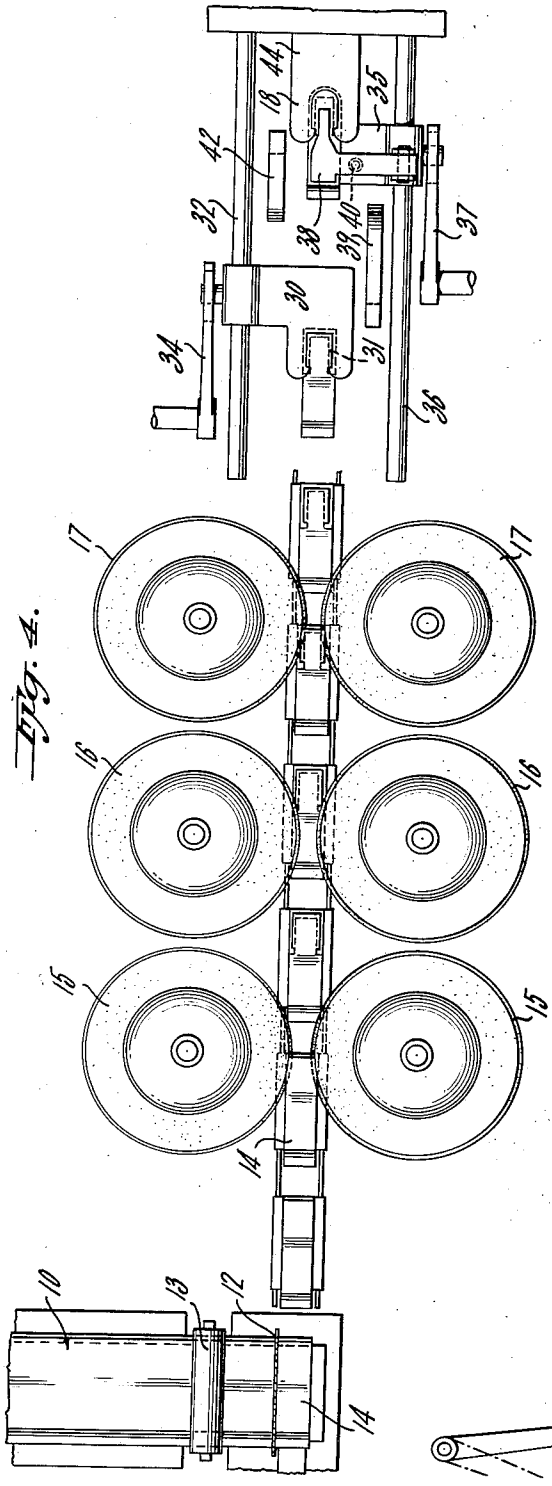


Fig. 4.

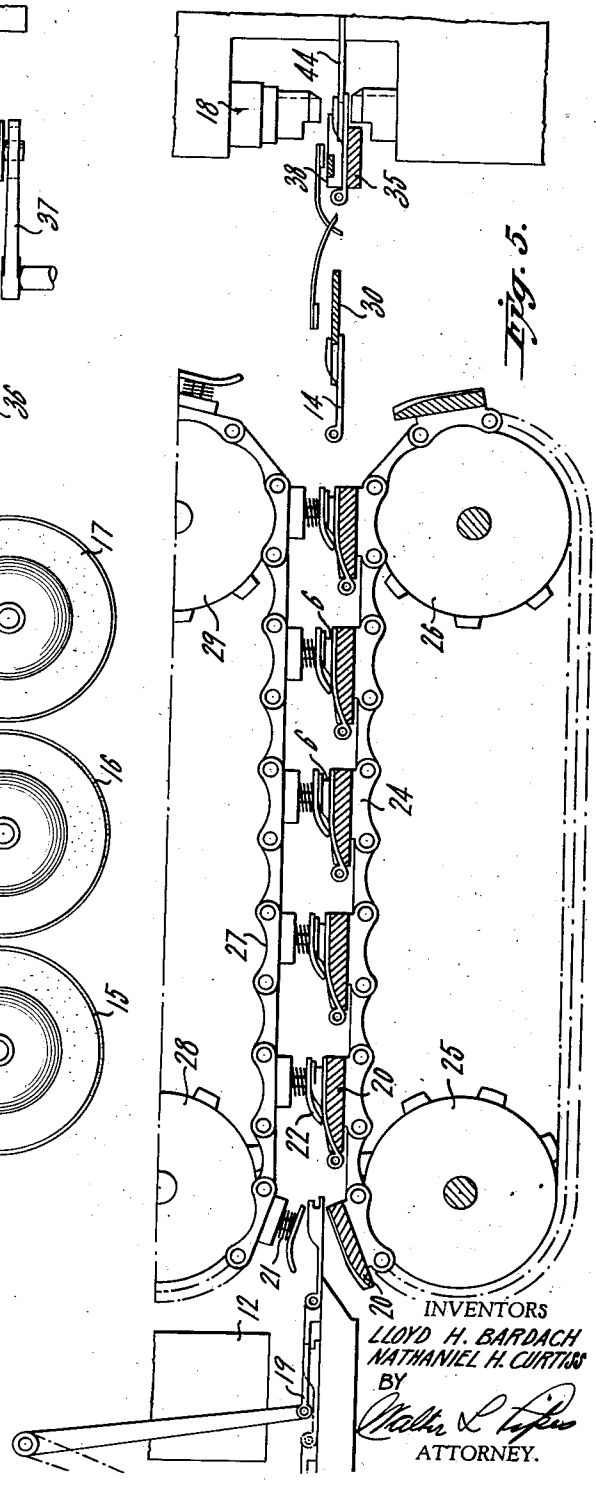


Fig. 5.

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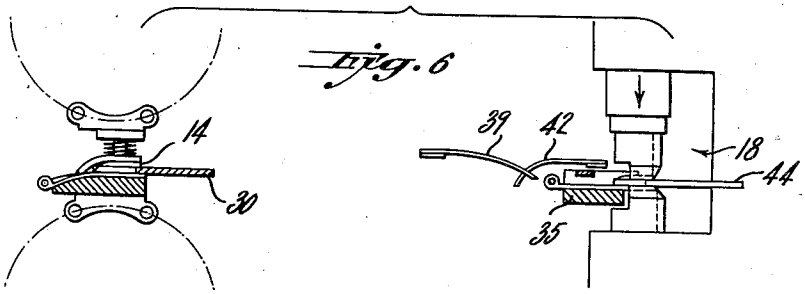


Fig. 6.

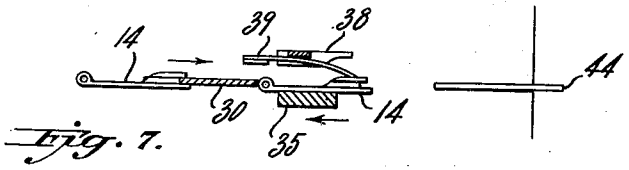


Fig. 7.

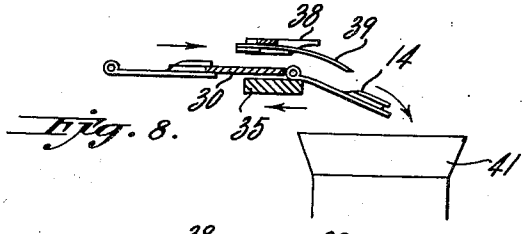


Fig. 8.

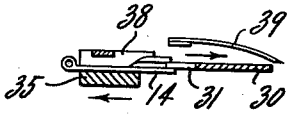


Fig. 9.

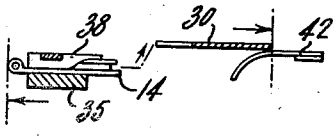


Fig. 10.

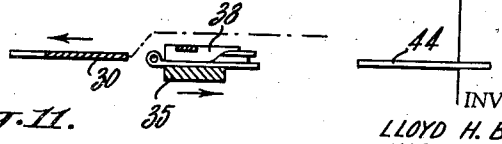


Fig. 11.

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Patented Dec. 8, 1936 2,063,019

UNITED STATES PATENT OFFICE

2,063,019

METHOD OF MAKING GARTER TABS

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Application July 23, 1935, Serial No. 32,688

2 Claims. (Cl. 18—47.5)

Our invention relates to methods of making garter tabs.

In the past garter tabs had been made in many ways, but most of the prior constructions have been characterized by the use of fabric of one kind or another and/or by the use of metal posts or buttons forming the retaining element for the stockings being supported. Such constructions necessarily require a considerable amount of labor in assembling, and particularly where fabric had to be attached to rubber or other metallic elements. The presence of metal in the button has required that the face of the button be covered with fabric in order to prevent the metal engaging the skin of the wearer and discoloring it, particularly in hot weather.

By the present invention we provide an all rubber garter tab in which fabric and metal buttons are eliminated. In the final assembly the usual metal clamping and securing bails may be added to the tab by a simple clamping operation but these metal parts are separable from the tab and normally do not engage the skin of the wearer.

In the manufacture of this garter tab, a continuous strip of rubber is formed, preferably by an extruding process, and cured. The strip in cross section has the general longitudinal cross section of the finished tab. By dividing the formed strip transversely at desired intervals, blanks having the general outline of the garter tab are formed. The blanks are then passed between grinding or cutting devices which form recesses or grooves along the sides of the blanks for the ultimate reception of the clamping bail or hook. The blanks are subjected to a final trimming operation. All of the foregoing may be performed automatically by machinery.

The accompanying drawings illustrate a present preferred embodiment of the garter tab and the method of making the same, in which:—

Fig. 1 is a plan view of a complete garter tab unit;

Fig. 2 is a side view of the garter tab;

Fig. 3 is a perspective view illustrating the formation of the strip on which the tab blanks are formed;

Fig. 4 is a side view illustrating the separation of the tabs from the main strips and the subsequent shaping operations;

Fig. 5 is a sectional view taken along the section line V—V of Fig. 4;

Fig. 6 is a diagrammatic view, partly in section, illustrating two of the steps in the method; and

Figs. 7, 8, 9, 10, and 11 are similar views illustrating further steps in the method of making garter tabs.

Referring particularly to Figs. 1, 2, and 3, an all rubber garter tab 1 is provided with a boss 2 for the loose reception of the ends of a retaining bail 4 and a clamping bail or hook 5, whereby the latter is self-aligning. The bail 5 fits into a groove 6 fashioned in the sides of a rubber button 7 on the tab. Between the boss 2 and the button 7 the tab comprises a thin strip 8.

As is shown in Fig. 3, the boss 2, the thin portion 8, the button 7, and the fore-part 9 of the groove 6 of each tab are roughly formed in a strip 10 of rubber as it leaves the extruding die 11. It is to be understood that the strip 10 may be formed by other apparatus, if desired. After leaving the die 11, the strip is cured or vulcanized by apparatus, not shown.

Referring particularly to Figs. 4 and 5, the vulcanized strip 10 is advanced by pinch rolls 13 to a knife 12 where it is divided into blanks 14. The knife 12 may be operated by suitable means, not shown, synchronized with the movement of the rest of the apparatus.

Each blank 13 is provided with straight lateral edges and it is necessary to complete the groove 6 and also to remove some of the upper surface of the button 7 so that the button at its upper surface shall be slightly narrower than at its base. The lateral extension of the tab beneath the groove 6 prevents the bail 5 from engaging the skin of the wearer. The width of the groove 6 is about one-half or a third of over-all height of the button 7.

For accomplishing this purpose, the blanks are passed between sets of grinding wheels 15, 16, and 17. Due to the peculiar nature of rubber, it is preferable to form the groove 6 and shape the side walls of the button 7 in a series of operations rather than to attempt to remove all of the rubber by a single grinding operation. From the grinding wheels 17 the blanks are passed to a trimming press 18 which finishes the shaping operation.

For moving the blanks 14 from the knife 12, a pusher 19 advances the successive blanks so that they may be gripped between a block 20 and a spring pressed clamp 21. As shown in Fig. 5, each of the blocks 20 is shaped to hold a blank with the boss 2 in a depressed position below the plane of the cutting wheels used in shaping the grooves 6. A tail piece 22 on each of the clamps assists in holding the blanks against the blocks. The blocks 20 are mounted on a conveyor chain

24 which passes around pulleys 25 and 26. The clamps 22 are mounted on a conveyor chain 27 which is trained around pulleys 28 and 29. After the blanks have passed the grinding wheels 15, 16, and 17, the blocks 20 automatically separate from the clamps 21 as the conveyor chains 24 and 27 start to move around the pulleys 26 and 29, respectively.

Beginning with the parts in the relative positions shown in Fig. 6, a plate 30 having a recess 31 advances and successively seats each blank in the recess just prior to its release from the conveyors. As shown in Fig. 4, the plate 30 slides on a rod 32 by movement of a lever 34. For reasons hereinafter described, the plate 30 turns on the rod 32 by actuation of the lever 34. After the plate 30 grips a blank 14 it moves to the right, as shown in Fig. 7, pulling the blank with it. At the same time, a second plate 35 pivoted on a rod 36 is advanced to the left of Fig. 7 by a lever 37. The plate 35 cooperates with a clamping plate 38 for holding the blanks while in the trimming press 18. As the clamping plate 35 moves to the left, the clamping plate 38, which is hingedly mounted thereon, rides over a spring cam 39 which releases the blank being withdrawn from the press 18. At this time the advancing plate 30 engages the blank 14 on the plate 35 and discharges it into a suitable receptacle 41, as is shown in Fig. 8. This relative movement continues until the clamping plate 38 slides over the end of the spring clamp 39 and drops into place under the action of a spring 40 to secure the new blank 14 advanced by the plate 30 against the plate 35. Then, a continued movement of the plate 30 to the right, as is shown in Fig. 9, releases the blank from the recesses 31 while the plate 35 continues to move to the left until it reaches an ultimate position, as shown in Fig. 10. When in that position, the plate 35 has a period of dwell while the plate 30 continues to move to the right and rides up a spring cam 42 to a position above the top of the blank 14 and the clamping plate 38. Thereafter, the plates 30 and 35 reverse their relative direction of movement, as shown in Fig. 11, the plate 30 passing over the clamp 38 and dropping down behind it while the plate 35 moves to the right to advance the new blank to the trimming press 18.

It is to be understood that the lever 34 may be used to turn the plate 30 in addition to, or independently of, the cam 42, if desired.

The plate 35 continues to move to the right until the groove 6 in the blank 14 is seated in a plate 44 constituting a portion of the press 18. The press 18 is then operated to trim the end of the blank to give it a rounded outline, as distinguished from square outline resulting from the cutting of the blank from the strip 10. The blank is then withdrawn from the press 18 by the reverse movement of the plate 35 as it moves from the position shown in Fig. 6 to that shown in Fig. 7. The foregoing cycle of operations may be repeated indefinitely, it being understood that the movements of the knife 12, the press 18, the pusher 19, the chains 24 and 27, and the levers 34 and 37 may be synchronized by suitable apparatus, not shown.

After the blank has been shaped, the ends of the bail 5 are inserted in the boss 2 without any forming operation. If desired, the bail 4 for attaching the tab to garter may also be inserted in the boss 2, although the tab may otherwise be secured to the garter.

Accordingly, we have provided an all rubber garter tab to which the customary metal hook or bail is attached, but not as an integral part thereof. The garter tab is made by a continuous automatic method, thereby reducing the labor and material costs.

It is to be understood that the invention may be otherwise embodied and practiced within the spirit thereof and the scope of the appended claims.

Having thus described our invention what we desire to claim and protect by Letters Patent, is:—

1. In a method of making a garter tab, the steps comprising forming a strip of rubber whose shape in transverse cross section roughly corresponds to the shape of a finished tab in longitudinal cross section, removing a section from the end of the strip of approximately the width of the tab, and shaping a button on the tab.

2. In a method of making garter tabs, the steps comprising forming a strip of rubber whose shape in transverse cross section roughly corresponds to the shape of a finished tab in longitudinal cross section, curing the strip, cutting the strip into sections of approximately the width of a finished tab, removing portions of rubber from the sides of the sections to form clamp seats, and trimming the sections.

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