This invention relates to attaching devices with particular reference to elastic filaments and penetrating securing tabs therefor.

One object of the invention is to provide a device of the character described which shall have improved means to prevent an end of the elastic from projecting and thus obstructing the insertion of the tab into a fabric.

In these devices, an end portion of the elastic element is manually placed in a channeled tab, and the latter deformed into generally tubular form to grip the elastic. Due to the difficulty of reliably holding or feeding such tabs in quantity, no machines have been devised to automatically perform the assembling operation. In placing the end portion of the elastic in a channeled tab, the operator relies upon his eye, and generally the end portion of the elastic projects at the tab point to form an obstruction when the tab is caused to forcibly pierce through a fabric.

It is an object of the invention to avoid this defect and also to provide a tab which the operator can assemble with the elastic at a greatly increased rate of speed.

When an elastic filament is compressed, it becomes elongated, so that an end thereof tends to form a projecting obstruction at the tab point. This also renders gaging by eye more difficult in placing the elastic in the channeled tab.

It is therefore another object of the invention to avoid this difficulty by providing positive limiting or positioning means for the elastic and which shall serve to confine the elastic to prevent it from being squeezed out near the tab point.

Since the tab is necessarily very small in size, the attainment of absolutely perfect results as a constant factor in manual manufacturing operations on a rapid production basis may still leave something to be desired. Hence improved means has been devised that will cause the elastic to elongate rearward, away from the tab point, as the elastic is being clampingly compressed in the tab.

Therefore another object of the invention is to provide improved means which shall cause the elastic to be first clamped near the tab point and, preferably, progressively to the rear of the tab point as the die is exerting pressure on the tab as a whole.

It is desirable to avoid the necessity for clamping the tab so tightly as to cause cutting of the rubber and consequent loosening of the elastic in the tab. Hence serrations are employed for affording multipoint engagement with the fabric covering of the elastic. The serrations desirably afford staggered points for offset pressure areas.

Since the points of the serrations may sometimes catch on a fabric through which the tab is being inserted, it may be desirable in certain cases to afford a straight edge portion protectively overlying the serration points and holding them in engaging position.

It is therefore a further object of the invention to furnish a device of the nature set forth which shall avoid the difficulties and realize the advantages mentioned and which shall have few and simple parts, and be adapted for inexpensive manufacture and assembling and be durable, thin, compact, reliable and efficient to a high degree in use.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists in the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated in the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

In the drawing:

Figure 1 is a sectional view of a hat showing a typical application of my invention.

Fig. 2 is a fragmentary plan view of the device.

Fig. 3 is an enlarged sectional view taken on line 3—3 of Fig. 2.

Fig. 3a is an enlarged cross section on the line 3a—3a of Fig. 2.

Fig. 4 is a plan view of the blank from which the tab thereof is formed.

Fig. 5 is a fragmentary plan view of a device showing a further improvement according to the invention.

Fig. 6 is a longitudinal sectional view thereof.

Fig. 7 is a top plan view thereof.

Fig. 8 shows the same in course of being assembled.

Fig. 9 is a plan view showing a modified form of the invention.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in one and the same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to which the invention pertains, that the same may be incorporated in several different constructions. The accompanying drawing, there-
and the tabs 14 caused to pierce and pass through the fabric 13 to thus anchor the elastic 15 in place.

Fig. 2 shows the tab 14 as comprising a generally tubular clamping section 16, a point 17 at one end and a channeled guide 18 at the opposite end. The section 16 is split and is formed with serrations 19 at one or both edges of the split to bite into the woven textile fabric covering 20 of the rubber filament 21, whereby the elastic element 15 is reliably secured without causing excessive clamping pressure as may serve to cut or granulate the rubber 21. It will be noted that the covering 20 is stretchable, but the serrations 19 afford multi point pressure contact therewith so as to bite into the fabric and avoid cutting the rubber by excessive pressure at any one point.

Desirably the serrations are staggered as shown to provide offset pressure areas at successive points along or on opposite sides of the axial line of the elastic 15 for thus distributing the strain on the covering 20. The fabric of the latter consists of yarn or strands as of silk of sufficient strength so that if one point is inserted into one wall of the weave, a substantial pull can be exerted on the elastic 15 without tearing or ripping the fabric 20. The covering is so tight around the rubber filament 21 as to constantly closely hug the same. When the elastic 15 is compressed it elongates, and hence a portion thereof generally projects from the tubular section 16 toward the point 17. Such projection being uncompressed, forms a substantial obstruction in passing the tab 14 through a fabric. When the point 17 is inserted in piercing a fabric, the tab stops and markedly increased pressure must be exerted to force the tab through the fabric. This frequently causes an enlarged hole or rip in the fabric such as 13. To overcome this, the elastic 15 is preferably first clamped at its front end and then rearward thereof to cause elongation of the elastic to proceed in a direction away from the point 17. Hence the serrations may be of progressively increased size or arranged according to an angle as shown. Thus the serrations 22 may be substantially greater in length than those at 23. In clamping, these serrations especially at 22 are caused to inwardly curve as shown in Fig. 3 to thus clamp the forward end of the elastic 15 before the rear end is clamped to prevent the elastic 15 from elongating toward the point 17 and projecting beyond the tubular part 16 of the tab. The tab may be further understood according to Fig. 4 which shows a plane blank 24 having a point 17a, body section 18a, extension 18a and serrations 19a, corresponding respectively to the parts 17, 16, 18 and 19. This blank may be bent into a channel form as suggested in Fig. 8 and the elastic laid therein for the clamping assembling operation.

Preferably the tab may be modified as shown at 25 in Figs. 5 to 8 to provide a stop 26 that may be struck out of the material of the tab, to thus position the elastic. It will be appreciated that these devices are manually assembled, the operator positioned the elastic in the channelled blank by eye. Hence, the elastic is somewhat unduly close to the tab point, causing an obstructing projection of elastic outside of the tubular holding section of the tab. With the present invention, the operator lays the elastic 15 into the channelled blank 25a, with its free end against the positioning stop 25. Then, the blank is clamped on the elastic in the usual manner. Thus greater speed and reliability in production is obtained. It will be understood that the stop 26 may be formed in any suitable part of the tab. Since the stop 26 is of flexible material it may bend to suit when the tab is clamped on the elastic. Because the stop is positioned away from the tab point, the strength of the latter is preserved especially as it is of somewhat tubular form, and hence the tab point cannot be broken. Moreover, the stop prevents the tab body from being pinched flat, and aids in preserving its cylindrical shape.

The best results are attained by combining the positioning stop 26 with the variable height serrations 22, 23 of Fig. 2. The reason is that the manual quantity production of a small relatively cheap object such as a tab, accuracy in a high degree is difficult to attain. Hence the serrations alone or the stop alone may sometimes be insufficient to attain the intended results. For instance, the elastic 15 may run outwardly, particularly when the stop 26, a result that may be avoided by combining the said serrations with the positioning stop. Preferably the latter is placed outside of and just forward of the tubular section of the tab.

For use on delicate fabrics such as 13, serration points may sometimes catch on the fabric, especially if insufficiently closed. Hence a tab 27 may be provided according to Fig. 9 wherein the tubular section may have one straight edge portion 27 along the split thereof, adapted to engage the points of the serrations including 22, 23 at the other side of the split to clamp down therein and afford a smooth surface thereover to aid in inserting the tab into a delicate fabric without catching and ripping the same.

It will be understood that the various tabs disclosed are all alike and made in a like manner except as may be otherwise stated herein.

It will now be seen that a device has been provided which fulfills the objects of the invention and is well adapted for practical use.

I claim:

1. A device including a one piece sheet metal tab adapted to be clamped on an end of an elastic fabric covered strand, including a tubular body, a single wall projecting point portion at one end of said body integral therewith, said tubular body being longitudinally split to provide confronting edges, at least one side of said tab being tapered at said split so as to provide a tab body of maximum peripheral extent adjacent to the point portion, whereby the tapered edge portion is bent into the said strand in advance of the other edge portions to avoid elongation of the elastic strand toward the point portion.

2. A device including a one piece sheet metal tab adapted to be clamped on an end of an elastic fabric covered strand, including a tubular body, a single wall projecting point portion at one end of the tubular body integral therewith, said fi-
bular body being longitudinally split to provide confronting edges, at least one side of said tab being tapered at said split so as to provide a tab body of maximum peripheral extent adjacent to the point portion, said body having a struck out tongue spaced from the sides thereof and projecting toward the longitudinal split to position the strand in the body and limit movement thereof toward the point portion.

3. A device including a one piece sheet metal tab adapted to be clamped on an end of an elastic fabric covered strand, including a tubular body, a single wall projecting point portion at one end of the tubular body integral therewith, said tubular body being longitudinally split to provide confronting edges adapted to clamp the elastic strand, and said tubular body having an inwardly struck tongue spaced from the sides thereof and from the point and projecting toward the longitudinal split to position the elastic strand and prevent elongation thereof toward the point portion upon being clamped in the body portion.

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