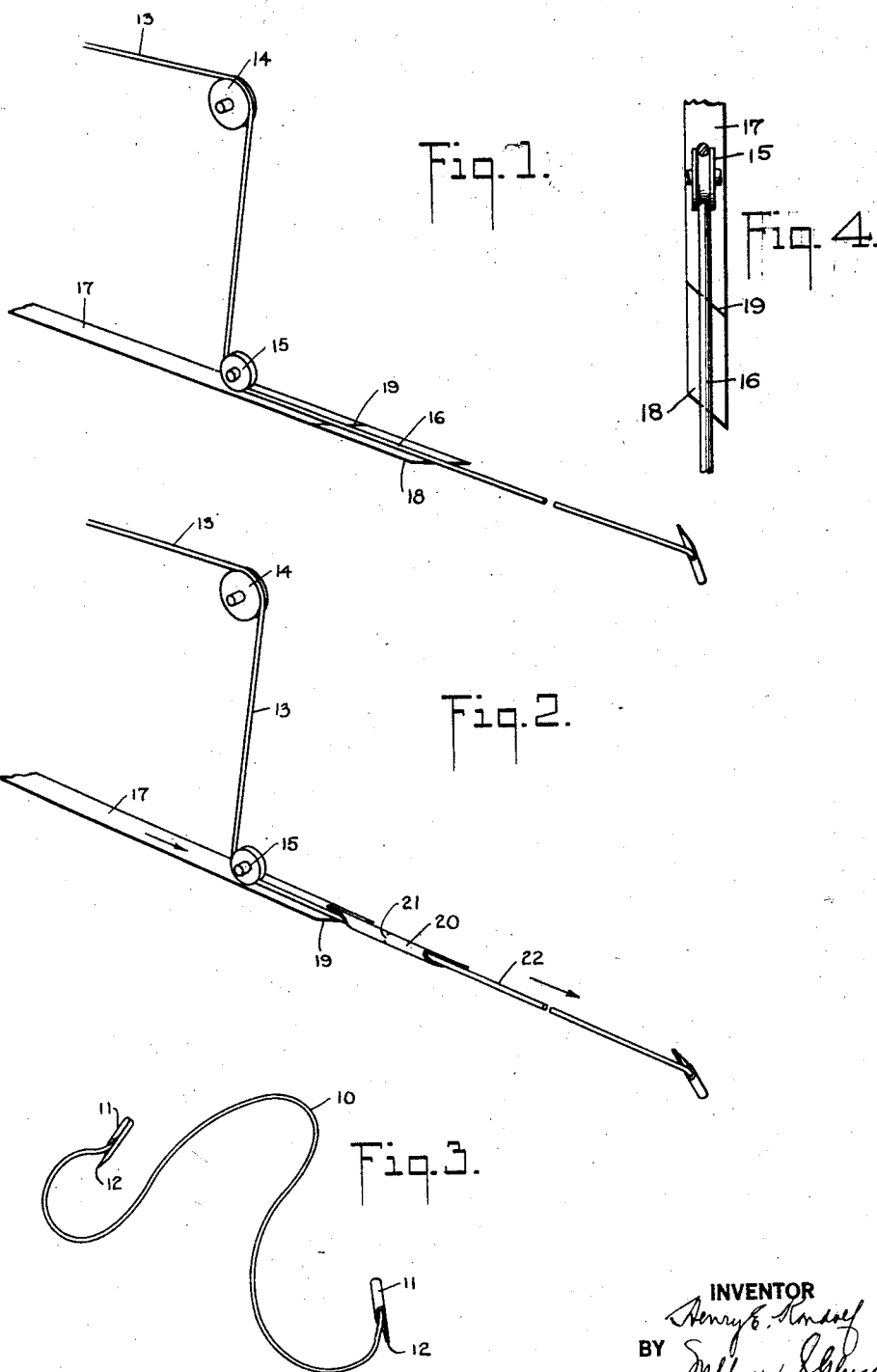


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METHOD OF MAKING TIE ELEMENTS
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METHOD OF MAKING TIE ELEMENTS.

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My present invention relates to tie elements, and has particular reference to a method of manufacturing tie elements whose ends are provided with tips or sheaths.

Before proceeding to describe my invention in detail, I will premise that tags for irremovable association with garments or merchandise may be desirably provided with tie elements whose ends are provided with tips so constructed as to facilitate the threading of the ties and the subsequent irremovable association of the tie ends with an element such as the tag itself.

My invention contemplates the production of tie elements of this general character, and more particularly, of tie elements which are designed for use with tags having inaccessible pockets for the irremovable reception of the ends of the tie elements. For the purpose of effecting this irremovable association, the ends of the tie are advantageously provided with tips or sheaths whose normal positions are transverse with respect to the tie, whereby the tips may be aligned with the tie during the insertion thereof through a constricted opening, and whereby the subsequent normal re-positioning of the tips will prevent withdrawal thereof through said opening.

It is an object of the present invention to provide a method for manufacturing tie elements of this character, and it is a particular object to provide a method wherein such tie elements may be produced in a rapid, yet inexpensive, and simple manner from a continuous length of tie material.

More particularly, it is an object of the present invention to provide a method for manufacturing such tie elements by the employment of a properly guided continuous tie and a properly guided continuous strip of material such as metal. A feature of the invention lies in so directing and moving the continuous tie and strip, and so treating these elements during their movements, that a large number of completed tie elements may be produced successively in a most efficient and simple manner.

It is another object of the invention to provide such a method for the manufacture of tie elements whose tips are provided with attenuated ends; tie elements of this character being advantageously utilized with tags

of the character described because of the increased threading facility which is produced by the pointed tips.

A feature of the invention lies in so treating the continuous strip of tip material, such as metal, that the provision of pointed tie element tips is rendered entirely automatic.

Briefly, my invention contemplates the successive positioning of spaced portions of a continuous tie in close adjacency with the end of a continuous strip, severing this end from the remainder of the strip, associating the end with the tie portion to provide a sheath, and subsequently severing the sheath so as to position a portion thereof on one tie element and another portion thereof on another tie element. In a preferred method of carrying out the invention, the continuous tie is moved in a step by step manner so as to position the spaced portions thereof during the periods of rest at a predetermined point; and the strip is given a similar step by step movement so as to position the newly formed end thereof in close proximity with said point.

For the attainment of the foregoing objects and such other objects as may hereinafter appear or be pointed out, I have illustrated one form of my invention in the accompanying drawings in which

Fig. 1 is a perspective view of a continuous tie and a continuous strip in relative positions during one phase of the manufacturing process;

Fig. 2 is a similar view during a second phase;

Fig. 3 is a view of a completed tie element of the character which may be produced by my invention; and

Fig. 4 is a fragmentary plan view of Fig. 1 showing one method of constructing the sheath blank.

Referring for the moment to Fig. 3, it will be observed that the tie element which my invention seeks to produce comprises a main or body portion 10, which may be made of suitable flexible material, such as string, and end portions provided with tips 11 whose normal positions are non-longitudinal with respect to the axis of the tie. In the embodiment shown, each tip consists of a blank of sheet material rolled about the end of the tie 10 so as to provide a sheath, and each tip 11 is shown as provided with a pointed end 12.

By twisting the tip 11 so as to align it with the tie 10, the point 12 will be found to facilitate the passage of the tie elements through unperforated material; after the tip
5 has passed through the material, it will assume its natural position, substantially as shown in Fig. 3, and the point 12 will thereupon increase the security with which the tip is held.

10 For the manufacture of tie elements of the character illustrated in Fig. 3, I have provided a method which is illustratively exemplified in various stages in Figs. 1, 2 and 4. It will be observed that I have shown a
15 continuous tie 13 leading from a source of supply (not shown) and suitably guided, as by rollers 14 and 15, so as to cause each portion of the tie eventually to pass a predetermined point which I have denoted by the
20 reference numeral 16. It will also be observed that I have shown a continuous strip 17, leading from a source of supply (not shown), and guided and moved by any suitable means (not shown) so as to cause every
25 portion thereof eventually to pass the same point 16. The strip 17 may be made of metal or other suitable material whose properties are such that it may be severed and manipulated in accordance with the requirements of
30 my method.

In order to describe the operation of my method, I will preface by stating that the tie 13 and the strip 17 are moved in a step
35 by step manner, the steps of movement of the tie 13 being greater than those of the strip 17, and the movements being so timed that the periods of rest occur at the same time. Fig. 1 may be considered to represent the relative positions of the parts during a
40 period of rest. It will be noted that a mid-portion of the tie 13 is positioned in mutual adjacency to the end portion 18 of the strip 17. In accordance with my invention this end portion is now severed from the balance
45 of the strip 17 along a line 19. Thereupon, the severed end is associated with the adjacent tie portion, as by rolling, so as to provide a sheath 20 as shown in Fig. 2. After this sheath has been formed, the tie and the
50 strip are advanced, and inasmuch as the magnitude of advance of the tie is greater than that of the strip, the next period of rest will present a spaced portion of the tie in similar mutual proximity to the newly formed end
55 portion of the strip. For example, the relative movements may be such that the portion of the tie overlying the roller 14 in Fig. 1 may occupy the position 16 at the next period of rest, while the newly formed end
60 of the strip, defined by the line 19, will be brought into the position occupied by the forward end of the strip in Fig. 1. After this period of rest has been arrived at, the sheath 20 is severed, medially thereof, as indicated by the dotted line 21 in Fig. 2, where-

upon an independent and complete tie element 22 will have been produced. It will be noted that the rear end of the tie element 22 will carry a portion of the initial sheath 20, whereas the balance of the sheath 20 will be
70 carried by the end of the tie 13, and will eventually be positioned upon the forward end of the tie element subsequently to be produced. It will also be observed that the step of severance along the line 21 may be made
75 to take place before the advance movement, i. e., immediately after the sheath 20 has been formed. And it will also be observed that the steps may be repeated in a manner which will produce completed tie elements,
80 one after another in rapid succession, each thereof carrying a portion of one sheath at its forward end, and carrying a portion of a succeeding sheath at its rear end. The line of severance 21 is preferably made in a
85 perpendicularly transverse direction.

For the purpose of providing the tips with points 12, and for the purpose of providing the tips in a manner which positions them normally as shown in Fig. 3, the cuts corresponding to the cut 19 are made along lines
90 which are not perpendicularly transverse. The line of severance 19 is made along the line which forms an acute angle with the longitudinal axis of the strip 17 as shown
95 most clearly in Figure 4. Although successive lines 19 may be made parallel to each other, so that the severed ends will constitute rhomboids, nevertheless it will be observed that this is not essential. For example, the line 19 may be directed in a manner
100 which will cause the severed ends to constitute a trapezoid. By the term "trapezoid" as used herein and in the appended claims, I refer to a quadrilateral with one pair of
105 opposite sides parallel and the other two sides forming non-rectilinear angles with said parallel sides. In general, reference to Fig. 2 will show that the blank of sheet material must be so rolled with respect to the
110 axis of the tie 13, that the end edges of the sheath 20 are disposed along lines forming acute angles with this axis. If the end edges of each sheath are so positioned, whether a sharpened point 12 result or not, the tips 12
115 will eventually position themselves substantially as in Fig. 3, i. e., non-longitudinally.

It will thus be observed that I have provided a method which is both efficient and inexpensive, and which may be utilized along
120 the lines illustratively exemplified herein for the rapid quantity production of tie elements of the character described. It will be observed that no material is wasted, and it will also be observed that the length of tie elements and the nature of tips may be varied
125 with great ease to meet varying requirements. It will also be obvious that many changes in the details herein described and illustrated for the purpose of explaining the nature of
130

my invention may be made by those skilled in the art without departing from the spirit and scope of the invention as expressed in the appended claims. It is therefore intended that these details be interpreted as illustrative, and not in a limiting sense.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is—

1. In a method of making tie elements of the character described, the steps which comprise guiding a midportion of a continuous tie into adjacent position with respect to the end of a continuous strip, severing said end along a line forming an acute angle with the longitudinal axis of the strip and associating it with said midportion to form a sheath for the latter, and then advancing both the tie and the strip to bring another midportion of the tie into similar adjacency with respect to the newly produced end of the strip.

2. In a method of making tie elements of the character described, the steps which comprise guiding a midportion of a continuous tie into adjacent position with respect to the end of a continuous strip, severing said end along an oblique line to render said end trapezoidal and associating it with said midportion to form a sheath for the latter, and then advancing both the tie and the strip to bring another midportion of the tie into similar adjacency with respect to the newly produced end of the strip.

3. The method of making tie elements of the character described which comprises the steps of guiding a midportion of a continuous tie into adjacent position with respect to the end of a continuous strip, severing said end along a line forming an acute angle with the longitudinal axis of the strip and associating it with said midportion to form a sheath for the latter, advancing both the tie and the strip to bring another midportion of the tie into similar adjacency with respect to the newly produced end of the strip, and severing said sheath along a line perpendicular to the longitudinal axis to position one portion thereof at the rear end of one tie ele-

ment and another portion thereof at the forward end of the tie element subsequently to be produced.

4. The method of making tie elements of the character described, which comprises the steps of providing sheaths upon spaced portions of a tie, each sheath having end edges disposed at an acute angle to the axis of the tie, and severing the sheaths to provide independent tie elements, whereby each of the latter will carry a portion of an initial sheath at each end, and whereby the angular edges of the sheaths will permit the tie element to position itself substantially transversely with respect to said sheath portions.

5. The method of making tie elements of the character described, which comprises rolling trapezoidal blanks of sheet material successively about spaced portions of a tie with the axis of the tie parallel to the parallel sides of the blanks to provide sheaths with attenuated ends for said portions, and cutting through said sheaths to provide several lengths of the tie whereof each carries a portion of a sheath at each end.

6. In a method of making tie elements of the character described, the step or steps of rolling a blank of sheet material about a tie in a manner which disposes the end edges of the sheath produced thereby along lines forming acute angles with the axis of the tie and severing the sheath medially thereof along a line substantially transverse to the axis of the tie.

7. The method of making tie elements of the character described which comprises moving a continuous tie and a continuous strip longitudinally of each thereof in a step by step manner, the steps of the tie being larger than those of the strip, severing an end of the strip to form a trapezoidal blank, and rolling said blank about a portion of the tie with the axis of the tie parallel to the parallel sides of the blank to form a sheath during each period of rest, and then severing the sheath and tie.

In witness whereof, I have signed this specification.

HENRY E. KONDOLF.