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(54) **METHOD FOR MANUFACTURING A ZIPPER**

(76) Inventor: **Chih-Wen Ru**, No. 12, Lane 524, Sec 3rd Sha Tien Rd., Ta Tu Hsiang, Taichung Hsien (TW)

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(51) **Int. Cl.**[7] **B29D 5/00**
(52) **U.S. Cl.** **29/408**; 29/766; 29/33.2
(58) **Field of Search** 29/408, 766, 33.2

(56) **References Cited**

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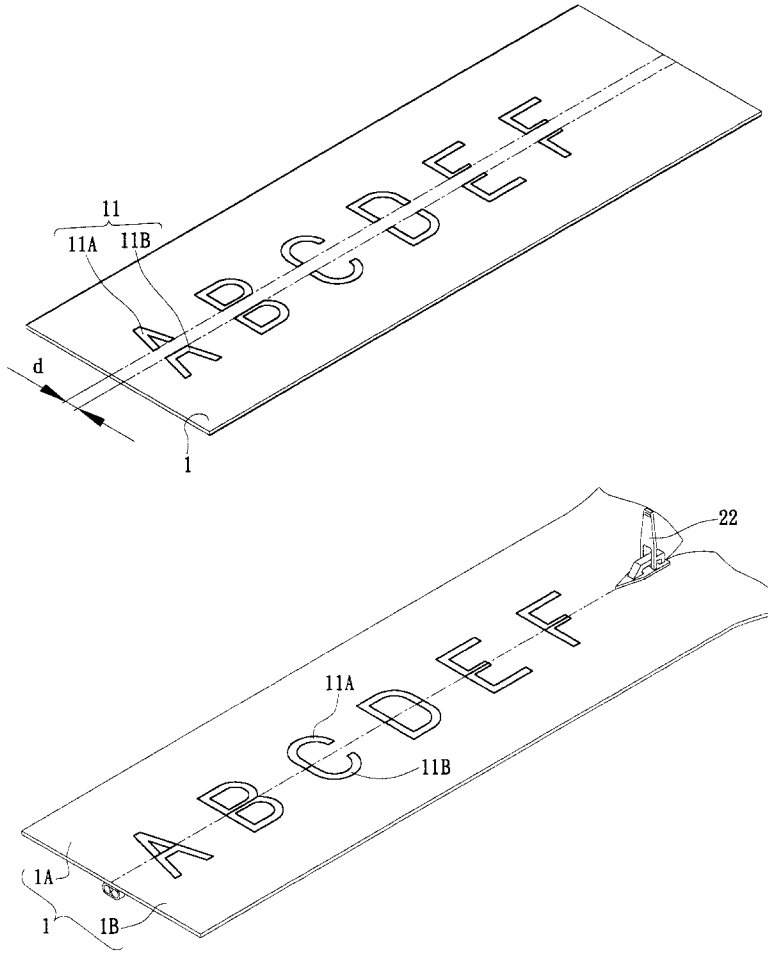
Primary Examiner—P. W. Echols
(74) *Attorney, Agent, or Firm*—Rosenberg, Klein & Lee

(57) **ABSTRACT**

A method for manufacturing a zipper includes the step of dividing a label into two halves. The two halves are disposed on a cloth strip. Two banks of continuous chain teeth are pressed against one another and then are sewn to the cloth strip. The width between the sewing portion of two banks is equal to the distance between the two halves of the label. A wedge block expands the two banks of chain teeth outwards, so that a space is formed. The cloth strip is melted and cut, so that the cloth strip is cut adjacent to the two chain teeth. A strip separation wheel feeds out the left and right portions of the cloth strip, sewn with the chain teeth, at the same time. Fittings, such as a chain clip, are attached to the chain teeth to finish the zipper.

2 Claims, 8 Drawing Sheets



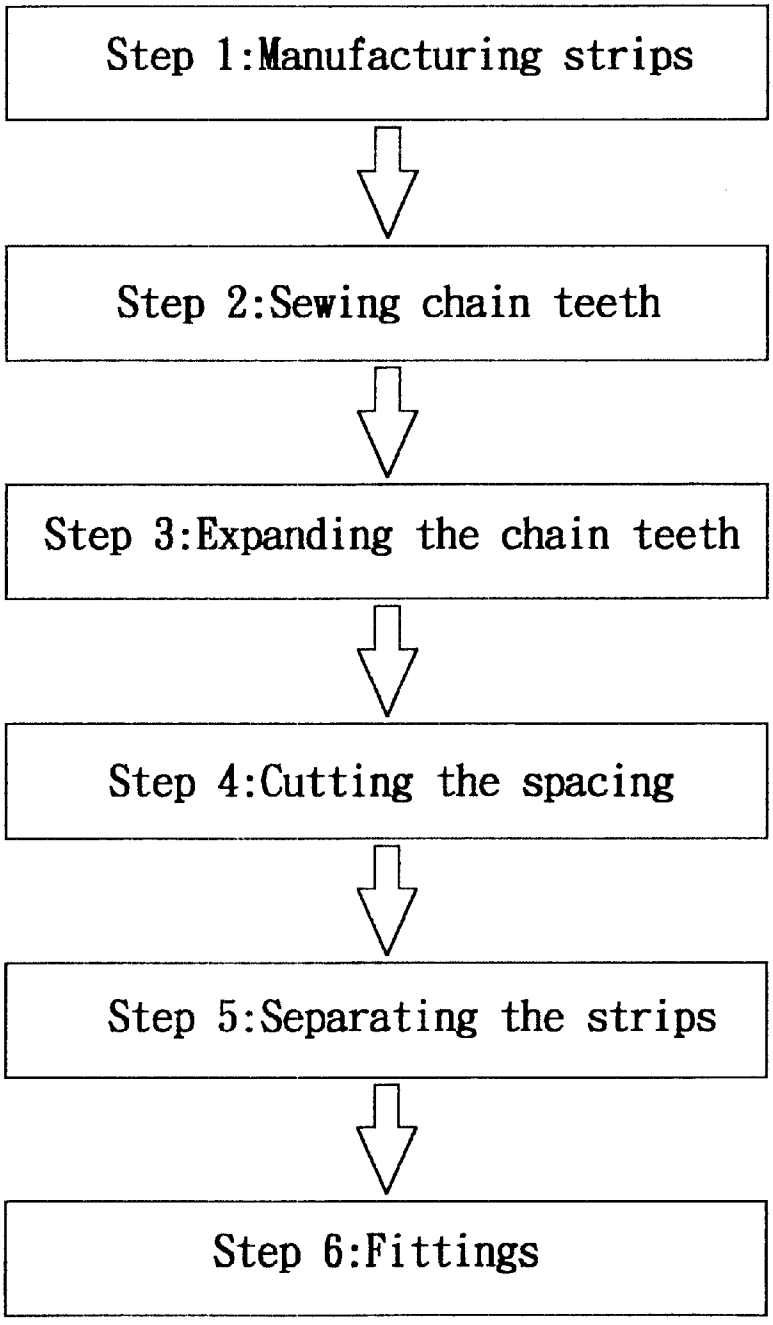

Step 1:Manufacturing strips
Step 2:Sewing chain teeth
Step 3:Expanding the chain teeth
Step 4:Cutting the spacing
Step 5:Separating the strips
Step 6:Fittings

FIG. 1

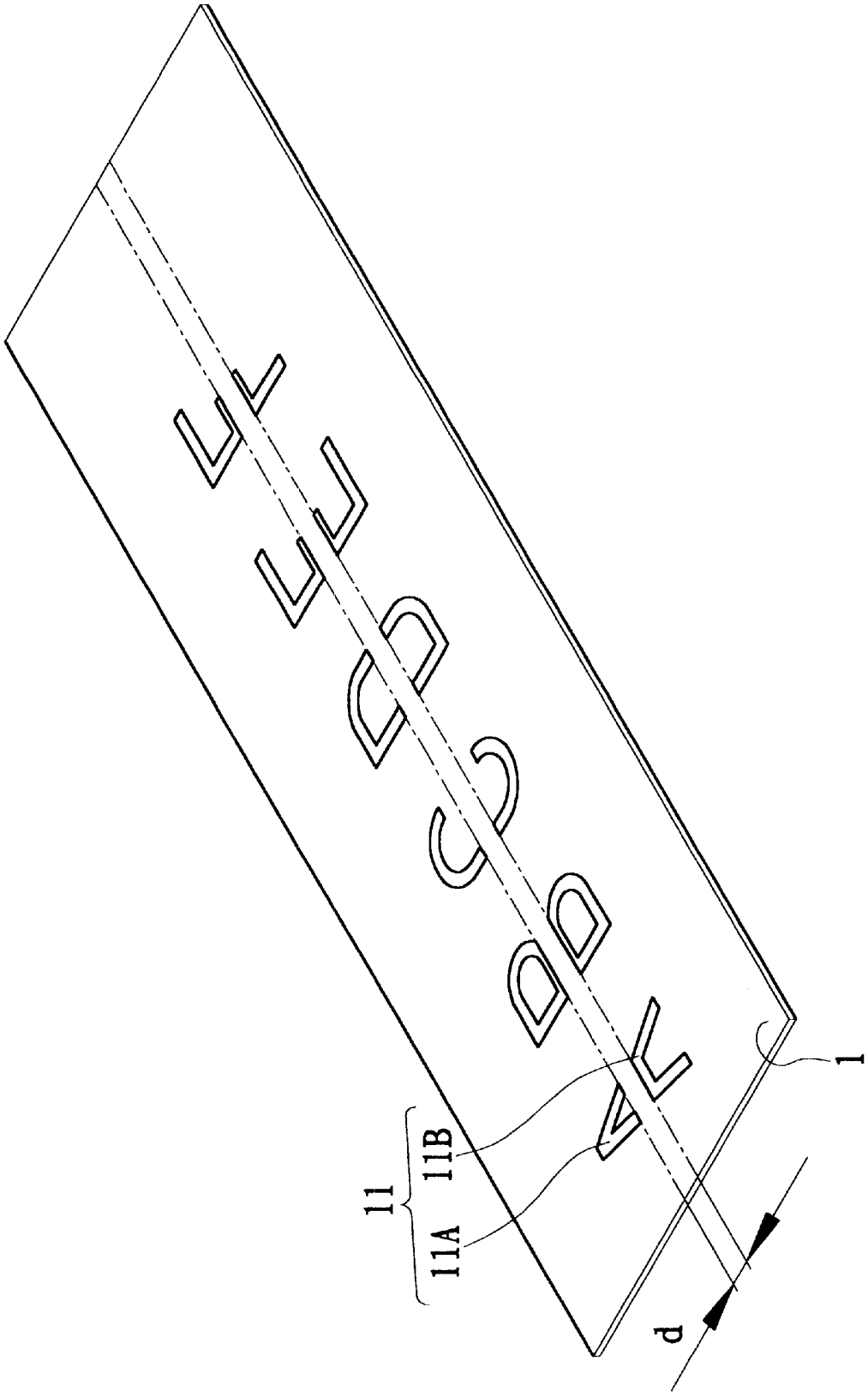


FIG. 2

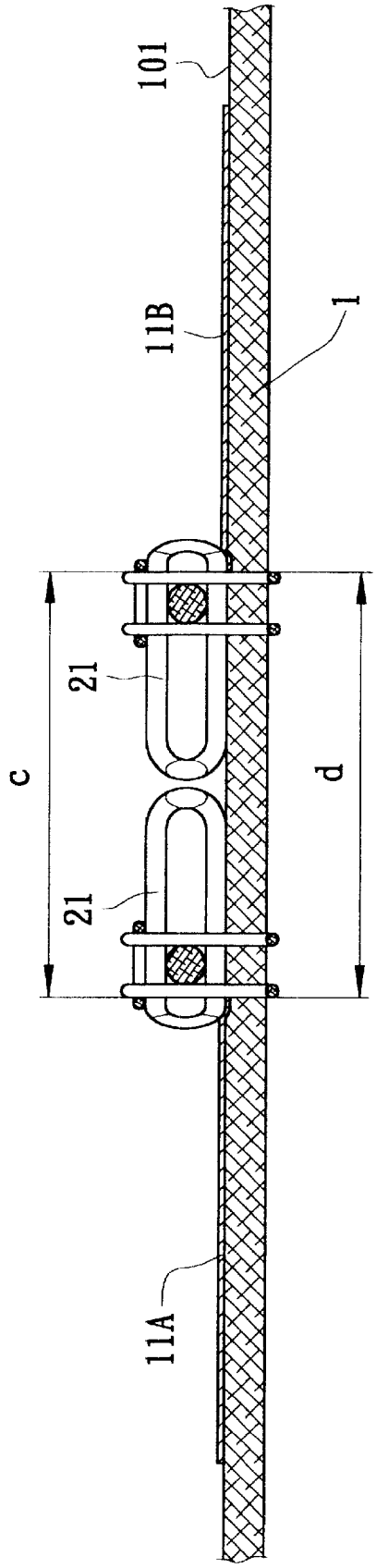


FIG. 3

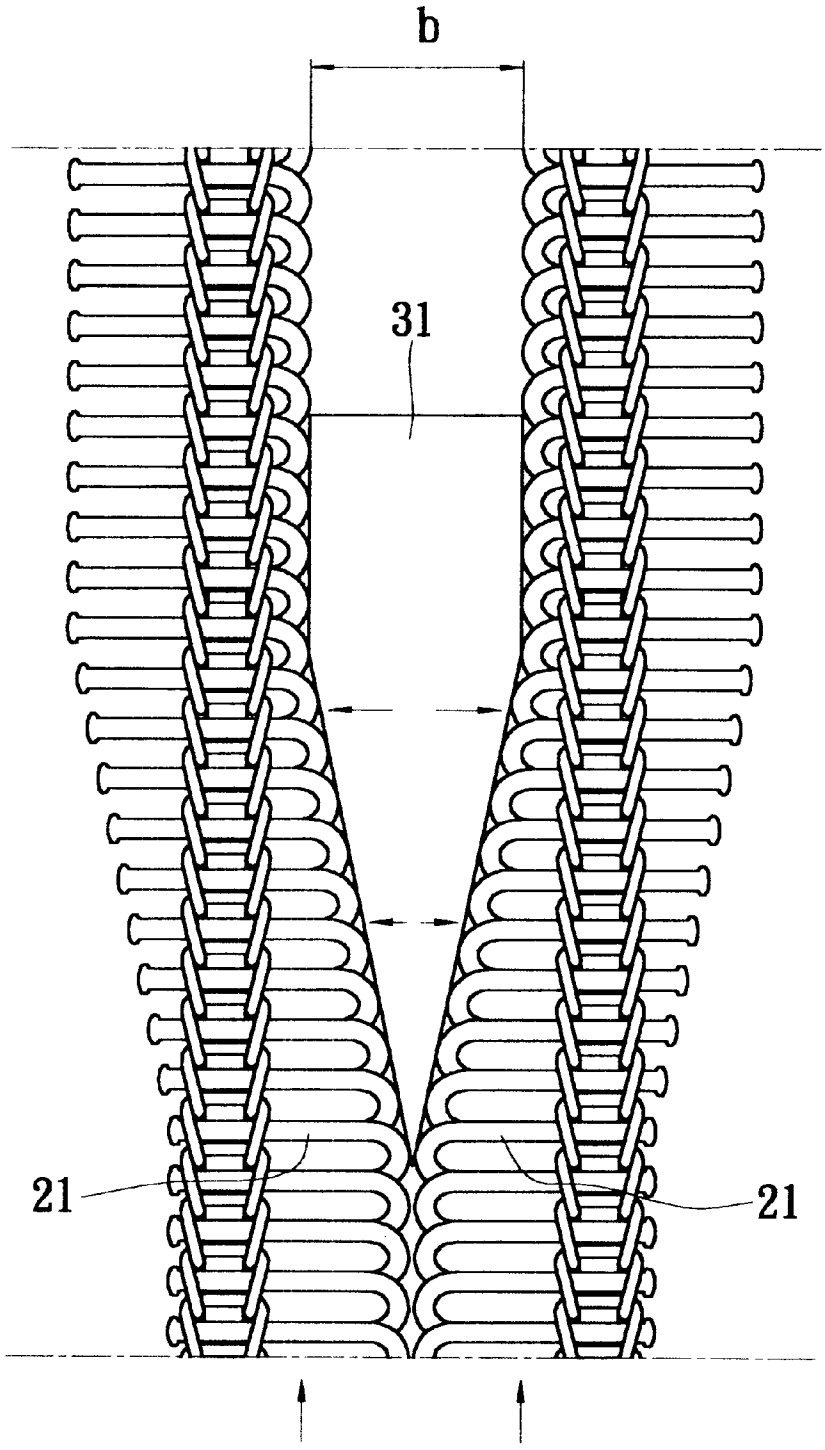


FIG. 4

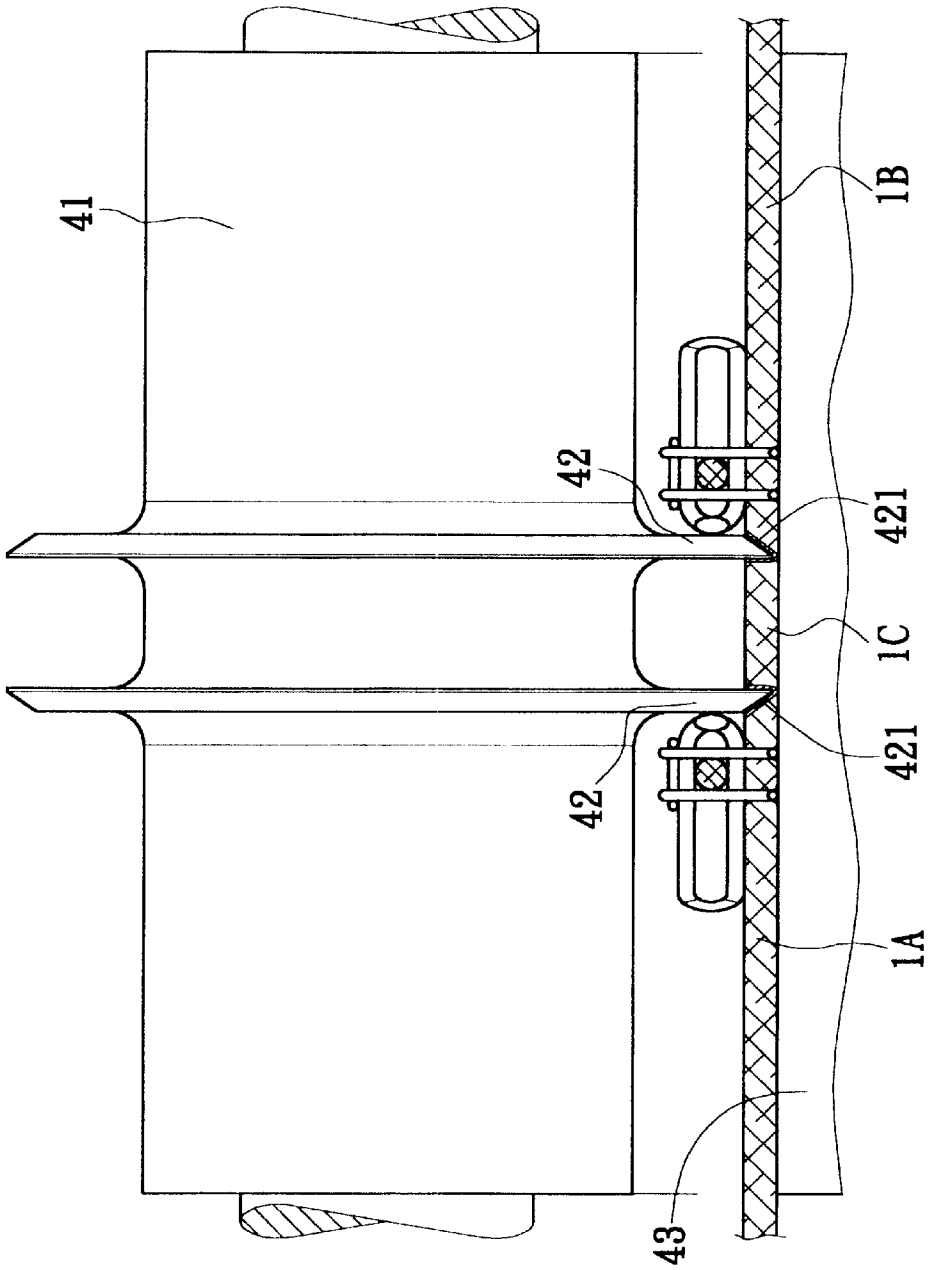


FIG. 5

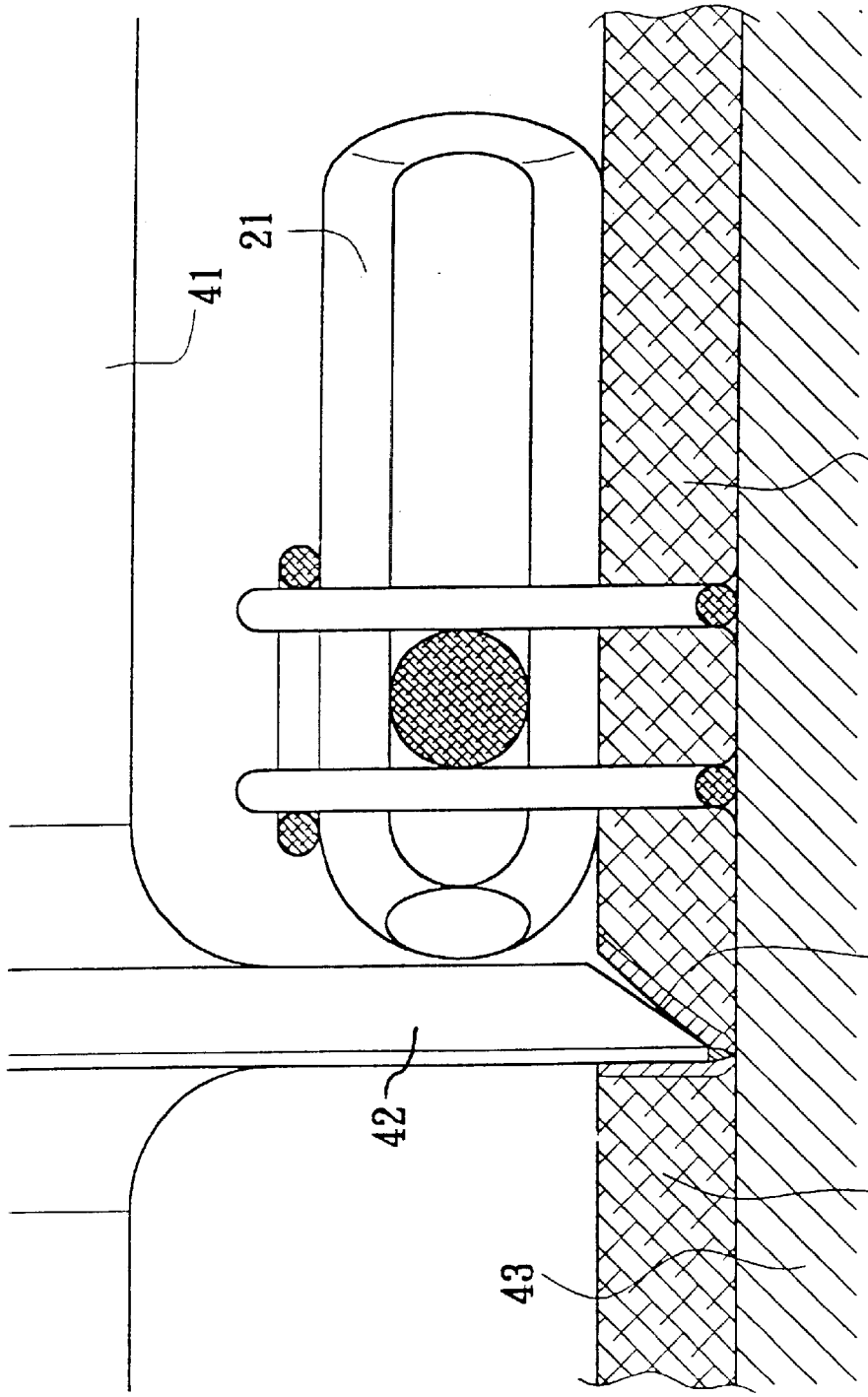


FIG. 6

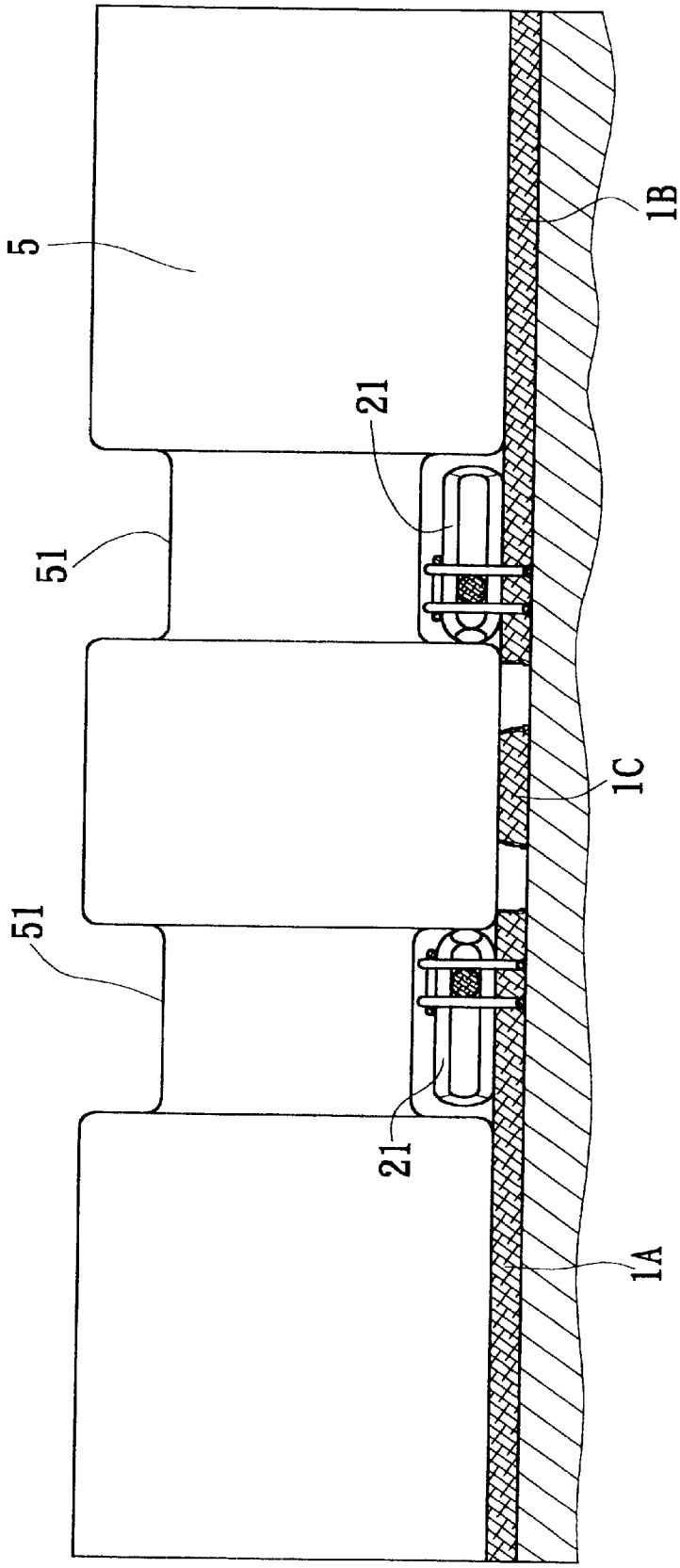


FIG. 7

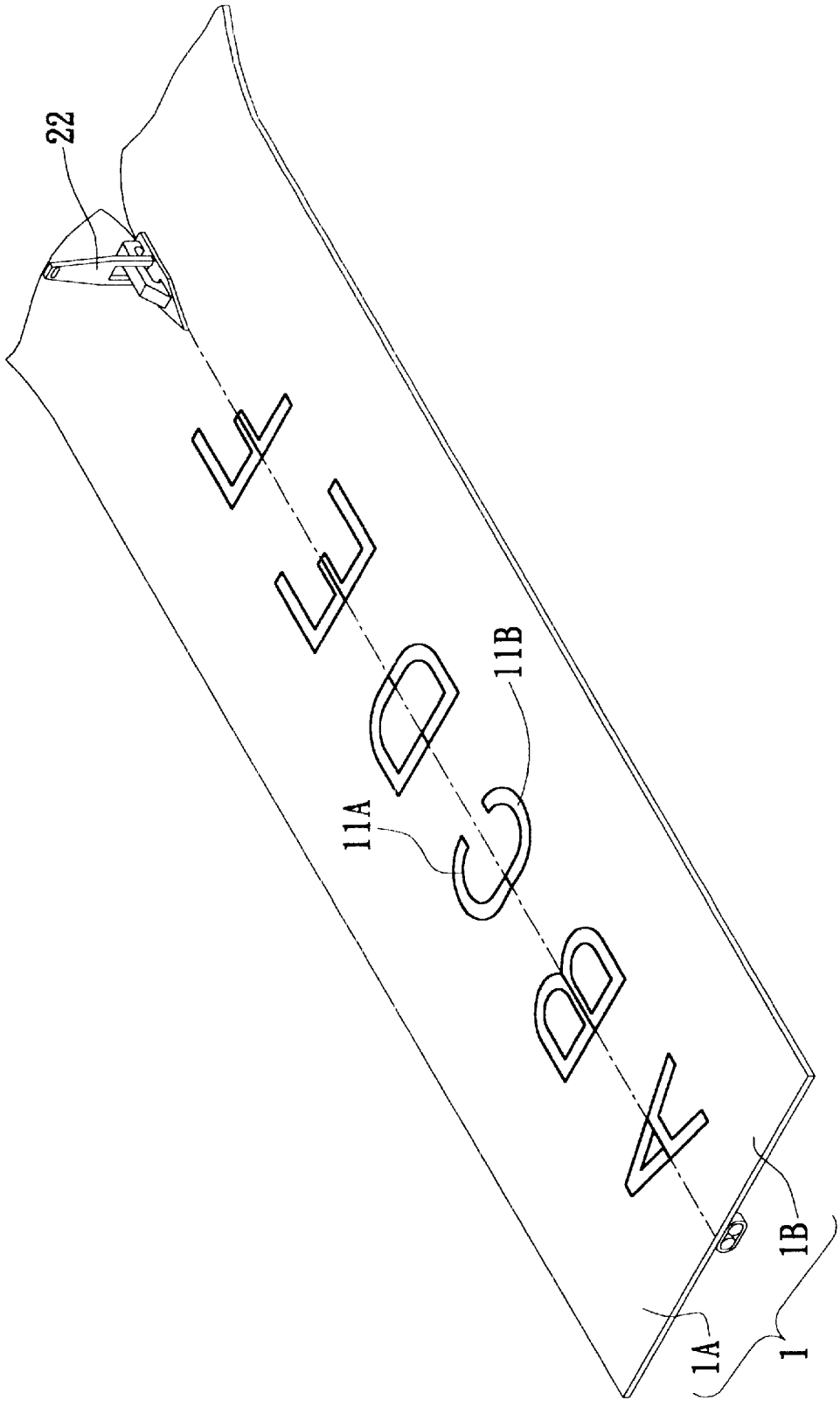


FIG. 8

METHOD FOR MANUFACTURING A ZIPPER

FIELD OF THE INVENTION

The present invention relates to a method for manufacturing a zipper, wherein a pattern for character label is divided into two portions which are conformable and distanced with a gap, and the two portions are manufactured on a cloth strip. After sewing two banks of chain teeth to the cloth strip, the two halves of the label closely press against one another to form a hidden type zipper.

BACKGROUND OF THE INVENTION

In general, in the method for manufacturing a hidden type zipper with patterns, two labels are arranged on two continuous cloth strips, and the patterns oil the two labels are matched with one another. The two strips are sent to a sewing machine for chain teeth. Then, optic sensors are used to check whether the two labels are aligned. If not, transfer rollers are used to guide the labels to be aligned and matched to one another,

However, in the aforesaid method, the two labels arc separately arranged on two continuous cloth strips. Therefore, it is very possible that an error in alignment occurs, so that the two patterns on the labels cannot be matched.

SUMMARY OF THE INVENTION

Accordingly, the primary object of the present invention is to provide a, method for manufacturing a zipper, wherein a pattern or character label is divided into two halves The two halves are disposed on the cloth strip. The width at the sewing, portion of two banks of chain teeth is equal to the distance between the two halves of the label. The cloth strip is melted and cut so that the cloth strip is cut adjacent to the two banks of chain teeth. A strip separation wheel feeds out two portions sewn with chain teeth of the cloth strip at the same time. Then a fitting, such as a chain clip, is attached thereto. As a result, the zipper is finished.

Another object of the present invention is to provide a method for manufacturing a zipper, wherein two cutting portions press into the cloth strip to pass to a supersonic vibrating table. Thereby, the cloth strip can be melted and cut by supersonic waves. As the cloth strip is melted and cut by supersonic waves, the inclined portions of the cutting portion press against the cloth strip. Thereby, the edges of the left and right portions of the cut cloth strip **1** are well scaled.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a flow diagram of the present invention.

FIG. **2** is a schematic view showing two portions of the label of the present invention arranged separately.

FIG. **3** is a schematic view showing that the cloth strip of the present invention is sewn with two banks of chain wheels.

FIG. **4** is a schematic view showing the wedge block of the press wheel of the present invention being expanded.

FIG. **5** is a schematic view showing two cutting portions of the press wheel of the present invention pressing into the cloth strip.

FIG. **6** is a schematic view showing one of the cutting portions of the press wheel of the present invention pressing into the cloth strip for melting and cutting it.

FIG. **7** is a schematic view showing the strip separation wheel of the present invention pressing on the cloth strip.

FIG. **8** shows a complete zipper.

DETAILED DESCRIPTION OF THE INVENTION

In order that those skilled in the art can further understand the present invention, a detailed description will be provided in the following paragraphs. However these descriptions and the appended drawings are only used to cause those skilled in the art to understand the objects, features, and characteristics of the present invention, but not to be used to confine the scope and spirit of the present invention defined in the appended claims.

With reference to FIGS. **1** to **8**, the method for manufacturing a zipper of the present invention is illustrated. The method comprises the following steps.

Step 1: Manufacturing strips

In a cloth strip **1**, the pattern or character label **11** is divided into two halves **11**A and **11**B. The two halves **11**A and **11**B are spaced with a distance d so as to be formed on the cloth strip **1**, as shown in FIG. **2**.

Step 2: Sewing chain teeth

The finished cloth strip **1** is sent to a strip sewing machine. Two banks of continuous chain teeth **21** press against one another and then are sewn to the front surface **101** of the cloth strip **1**. The width c at the sewing portion of two banks of chain teeth **21** is equal to the distance d between the two halves **11**A and **11**B of the label **11**, as shown in FIG. **3**.

Step 3: Expanding the chain teeth.

The cloth strips **1** sewn with chain teeth **21** are sent to a wedge. A wedge block **31** in the wedge expands the two banks of the chain teeth **21** outwards, so that a space b is formed between the two banks of chain teeth **21**, as shown in FIG. **4**.

Step 4: Cutting the spacing

After the chain teeth **21** are expanded, the cloth strip **1** is sent to a supersonic cutter. The press wheel **41** of the supersonic cutter has two cutting portions **42** positioned with respect to the spacing b of the two banks of chain teeth **21**. The outer sides of two cutting portions **42** have inclined surfaces **421**. The two cutting portions **42** press into the cloth strip **1** to pass to the supersonic vibrating table **43**, as shown in FIG. **5**. Thereby, the cloth strip **1** can be melted and cut by supersonic waves so that the cloth strip **1** is cut adjacent to the two banks of chain teeth **21** with a spacing b therebetween, so that a left and a right portion **1**A, **1**B and a middle residue portion **1**C are formed. As the cloth strip **1** is melted and cut by, supersonic waves, the inclined portion **421** presses against the cloth strip **1** as illustrated in FIG. **6**. Thereby, the edges of the left kind right portions **1**A and **1**B of the cut cloth strip **1** are well sealed.

Step 5: Separating the strips

The cut cloth strip **1** is sent to a strip separation wheel **5**. The strip separation wheel **5** has two receiving grooves **51** in correspondence with the two banks of chain teeth **21**, so that the strip separation wheel **5** will not press against the two banks of chain teeth **21**. Only the pressed cloth strip **1** is displaced by the strip separation wheel, as illustrated in FIG. **7**. The output side of the strip separation wheel **5** has a collector (not shown) that pulls out the residue cloth c at the middle portion of the cloth strip **1**. Thus, the strip separation wheel **5** will feed out the left and right portions **1**A and **1**B of the cloth strip **1** sewn with chain teeth **21** at the same time.

Step 6: Fittings

The chain teeth **21** on the left and right portions **1**A and **1**B of the cloth strip **1** fed out by the strip separation wheel **5** are turned over (chain teeth **21** facing down) so that the indicated two halves **11**A and **11**B press together. Then a fitting, such as a chain clip **22**, is attached thereto. As a result, a zipper is finished, as shown in FIG. **8**.

Since the pattern or character label **11** is divided into two parts which are spaced with a distance d and are made on the same cloth strip **1**, when sewing the chain teeth **21**, the work required for aligning and correction are unnecessary, and no error occurs in the registration of the two halves **11**A and **11**B. Furthermore, since the width c between the sewn portions of two banks of chain teeth **21** is equal to the distance d between the two halves **11**A and **11**B of the label **11**, then, when the left and right portions with the chain teeth **21** are turned over, the two halves **11**A and **11**B are closely registered, and no error in connection occurs. Moreover, the two cutting portions **42** of press wheel **41** of the supersonic cutter have an inclined surface **421** pressing into the left and right portions **1**A and **1**B. The edges of the left and right portions are sealed by high temperature melting and cutting.

In summary, in the zipper of the present invention, the two halves **11**A and **11**B of the label **11** can be closely combined without needing to be aligned. When the cloth strip is cut by supersonic waves, the edges are melted and sealed at the same time.

From the description of the present invention it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the present invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

What is claimed is:

1. A method for manufacturing a zipper comprising the steps of:

dividing a predetermined pattern or character label into two halves, the two halves being spaced by a first predetermined distance and formed on a front surface of a cloth strip;

sending the cloth strip to a strip sewing machine, two banks of continuous chain teeth being pressed against one another and then sewn to the front surface of the cloth strip, the sewn portions of the two banks of chain teeth having a second predetermined distance therebetween, the second predetermined distance being equal to the first predetermined distance;

sending the cloth strips sewn with chain teeth to a wedge, a wedge block in the wedge expanding the two banks of the chain teeth outwards to form a space between the two banks of chain teeth;

sending the cloth strip with spaced banks of chain teeth to a supersonic cutter, the supersonic cutter having a press wheel with two cutting portions at positions corresponding to the space between the two banks of chain teeth, the two cutting portions pressing against the cloth strip to pass to a supersonic vibrating table, wherein the cloth strip is melted and cut by supersonic waves so that the cloth strip is respectively cut adjacent to the two banks of chain teeth with a spacing therebetween to form a left portion, a right portion and a middle residue portion;

sending the cut cloth strip to a strip separation wheel, the strip separation wheel having two receiving grooves respectively disposed in correspondence with the two banks of chain teeth so that the strip separation wheel will not press against the two banks of chain teeth, the strip separation wheel pressing only the cloth strip to displace the cloth strip toward an output side thereof, the output side of the strip separation wheel having a collector (or pulling the middle residue cloth from the cloth strip and thereby feed the left and right portions respectively sewn with the banks of chain teeth at the same time; and

turning over the chain teeth and the left and right portions of the cloth strip to face the back surfaces thereof, pressing the two halves of the label against one another, and adding a fitting to the banks of chain teeth to complete the zipper.

2. The method for manufacturing a zipper as claimed in claim **1**, wherein the two cutting portions of the press wheel of the supersonic cutter each has an inclined surface respectively pressing against the left and right portions as the cloth strip that is melted and cut by supersonic waves, the cut edges being sealed by a high temperature.

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