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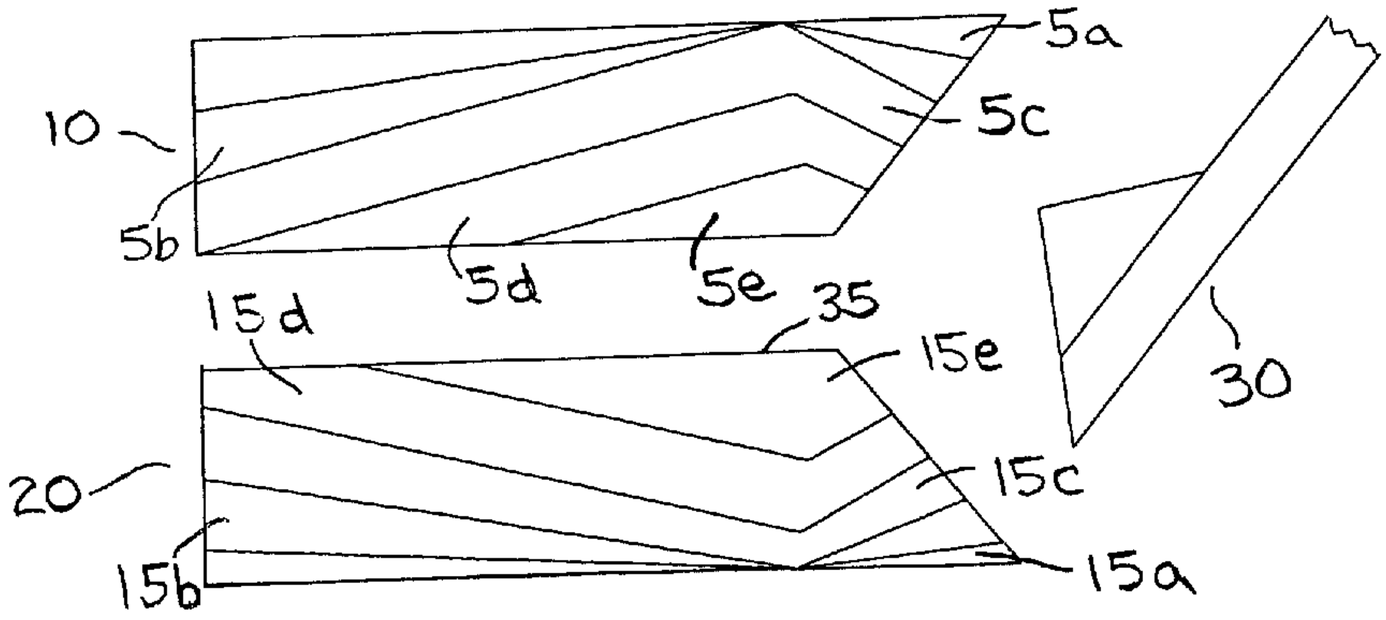
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(54) Titre : LAME DE BATON DE HOCKEY MOULEE ET METHODE DE FABRICATION
(54) Title: MOLDED HOCKEY STICK BLADE AND METHOD OF MAKING SAME



(57) Abrégé/Abstract:
A method of making a hockey stick blade comprising a molded laminate of wood sheets, and the blade produced thereby, whereby the dimensions and weight of the blade is controlled and predetermined by the selection of the layered veneer pieces used to form the top and bottom sections of the blade. Top and bottom blade section assemblies are formed, each blade section comprising a plurality of overlaid wood sheet components of differing sizes and shapes and having a glue sheet component interposed between each adjacent pair of wood sheet components. The size and shape of each wood sheet component is determined by the desired thickness of the blade at different sections thereof. An extension member is positioned between the top and bottom blade sections. The top and bottom blade sections and extension member are molded together to form a laminate having a predetermined shape.

Abstract

A method of making a hockey stick blade comprising a molded laminate of wood sheets, and the blade produced thereby, whereby the dimensions and weight of the blade is controlled and predetermined by the selection of the layered veneer pieces used to form the top and bottom sections of the blade. Top and bottom blade section assemblies are formed, each blade section comprising a plurality of overlaid wood sheet components of differing sizes and shapes and having a glue sheet component interposed between each adjacent pair of wood sheet components. The size and shape of each wood sheet component is determined by the desired thickness of the blade at different sections thereof. An extension member is positioned between the top and bottom blade sections. The top and bottom blade sections and extension member are molded together to form a laminate having a predetermined shape.

MOLDED HOCKEY STICK BLADE AND METHOD OF MAKING SAME

Field of the Invention

The invention is in the field of sports equipment and, in particular, to a molded hockey stick blade.

Background

Hockey sticks are comprised of an elongate body portion of rectangular cross-section and a narrower curved blade portion which is attached thereto and contacts the puck. To withstand the very high contact pressures to which the blade is subjected the blade must be strong over its entire length and must be able to retain its curved shape over its expected life span. For blades made of wood these requirements are difficult to satisfy on a uniform basis and this is particularly the case in the context of an industrial production process for the manufacture of wood blades due to the random flaws and non-uniformity of the wood pieces which are typically used for such manufacture.

Furthermore, the curved nature of the blade previously limited the manner of construction of the blade because the processes used to shape the blade and produce its curvature were applied after the components of the blade were put together. Therefore, use of a wood laminate construction was previously believed to be unsuitable because the inherent stiffness and strength associated with a laminate renders it

unsuitable for such processes.

Therefore, there is a need in the industry for a hockey stick blade which can be produced economically on a volume production basis and provide a uniform quality blade product.

Summary of the Invention

In accordance with the invention there is provided a method of making a hockey stick blade comprising a molded laminate of wood sheets. First and second blade section assemblies are formed with each blade section comprising a plurality of overlaid wood sheet components of differing sizes and shapes and having a glue sheet component interposed between each adjacent pair of wood sheet components. The size and shape of each wood sheet component is determined by the desired thickness of the blade at different sections thereof. An extension member is positioned between the top and bottom blade sections. The top and bottom blade sections and extension member are molded together to form a laminate having a predetermined shape.

Glue sheet components are also preferably interposed between the extension member and each of the blade sections. The wood sheet components are preferably formed from wood veneer sheets.

Also in accordance with the invention there is provided a hockey stick blade comprising a molded laminate of wood sheets defining top and bottom blade sections and an extension

member between the top and bottom blade sections. Each of the blade sections comprises a plurality of overlaid wood sheet components of differing sizes and shapes and a glue sheet component interposed between each adjacent pair of wood sheet components wherein the sizes and shapes of the wood sheet components determines the thickness of the blade at different sections thereof.

Brief Description of the Drawings

The invention is described in detail in the following with reference to the following drawings which illustrate a preferred embodiment of the invention. Like reference numerals refer throughout the drawings to like elements of the illustrated embodiment.

Figures 1, 2 and 3 are schematic drawings illustrating a progression of the assembly of a hockey stick blade in accordance with the invention, with the overlaid wood sheet components being shown but not the glue sheet components which are interposed between each adjacent pair of wood sheet components;

Figure 1 shows, separately, the top and bottom blade sections and the extension section which is fitted and molded therebetween;

Figure 2 shows the extension section positioned over the top blade section;

Figure 3 shows the bottom blade section positioned over

the assembly of the top blade section and extension section of Figure 2;

Figure 4 shows plan views ((a)-(e)) of the individual wood sheet components which are overlaid, with glue sheets between adjacent pairs thereof, to assemble the top blade section shown in Figure 1; and,

Figure 5 shows plan views ((a)-(e)) of the individual wood sheet components which are overlaid, with glue sheets between adjacent pairs thereof, to assemble the bottom blade section shown in Figure 1.

Detailed Description of a Preferred Embodiment

Referring to Figures 1, 2 and 3 a preferred embodiment of the invention is illustrated schematically to show the construction of a hockey stick blade according to the invention. Figure 1 shows the three main sections which make up the blade, prior to molding the same, but to better illustrate the assembly of the wood sheet components 5a-e and 15a-e the drawings do not show the glue sheets (films) which are interposed between adjacent pairs of the woods sheet components. For purposes only of illustrating the assembly of the main sections of the blade, a first blade section 10 is shown assembled for positioning in the extension member 30 thereover (as shown in Figure 2) and a second blade section 20 is also shown assembled and positioned for rotating upwardly around its edge 35 to a position aligned with and

above the first blade section 10 (as shown by Figure 3).

Each of the blade sections 10, 20 is comprised of wood sheet components 5a-e,15a-e which are overlaid and of differing sizes and shapes determined by the desired thickness of the blade at different sections of the blade. In the illustrated embodiment Figures 4(a) through 4(e) show the individual wood sheet components 5a through 5e used to construct the first blade section 10 and Figures 5(a) through 5(e) show the individual wood sheet components 15a through 15e used to construct the second blade section 20, where blade sections are also referred to herein as the top and bottom blade respectively. White Birch wood veneer sheets are used for the wood sheet components of the preferred embodiment because this is a relatively inexpensive, widely available type of wood veneer at the present time; however, many other types of wood veneer could instead be used if desired.

The wood sheets 5e and 15e are the smallest of the wood sheet components used for the blade sections and are positioned at the bottom of the location of the heel 40 of the blade to produce the greatest thickness at this area of the blade where five layers of the overlaid wood sheets are present (in other areas, where the sheets 5a-5e do not extend, the thickness is less because there are less than five layers of the wood sheets). By contrast, the thinnest area of the blade is that which comprises the fewest number of overlaid wood sheets, namely, the top end corner 45 of the blade. The size and

shape of each wood sheet component is selected according to the blade which is to be produced i.e. so as to produce a blade having the desired thicknesses over the area of the blade.

Not shown in the drawings are the glue sheets which are interposed between the wood sheets. That is, a glue sheet is placed between each pair of adjacent wood sheets, 5a and 5b, 5b and 5c, 5c and 5d and 5d and 5e and 15a and 15b, 15b and 15c, 15c and 15d and 15d and 15e, and these cause the wood sheets to be laminated into position upon molding the complete assembly of blade sections and extension member. The size of the glue sheets to be used is not critical but should be selected such that each glue sheet completely covers both of the wood sheets which are adjacent to that glue sheet. In the preferred embodiment it was found to be most effective to use glue sheets of about the same size as the largest wood sheet i.e. about the size of sheets 5a and 15a. Most of the commercially available laminating glue sheets are suitable for this. The product used for the preferred embodiment is referred to as a non-woven film and is sold under Product No. TGP 1233 by Casco Impregnated Papers Inc. of Cobourg, Ontario (Canada).

Figure 3 shows the several components of the blade fitted together as required prior to the molding of the assembly. The blade sections 10, 20 are positioned in aligned and adjacent relationship with the extension member 30

therebetween, as shown. This assembly is molded so as to cause the wood sheets to become laminated and formed into a blade having the predetermined curvature defined by the mold used. Conventional molding methods and equipment are used, the temperature and pressure applied being determined by the specifications for the selected glue sheet. In the preferred embodiment a temperature of 150°C is used (a temperature in the range of 140°C to 160°C being satisfactory) and a pressure of 300 psi (the pressure range of 250 psi to 350 psi being satisfactory).

In the result a uniformly strong, high quality blade is produced. The use of multiple glue and wood sheets in a lamination provides superior strength to the blade and, contrary to the prior art, this avoids any dependence on the quality of a few number of wood components. For example, some of the wood sheet components used for the blade could be flawed but this would not produce any significant negative effect on the resulting blade because the relative contribution of the glue sheets and other wood sheets in combination, to the overall resulting blade quality, is far greater than that of a small number of flawed wood sheets alone. Moreover, the dimensions and weight of the resulting blade may be controlled, as desired, and the method is relatively simple and clean as compared to present methods of manufacturing hockey stick blades which involve numerous steps and use liquid glue mixtures which are associated with

potentially harmful fumes.

WHAT IS CLAIMED IS:

1. A method of making a molded hockey stick blade having a pre-determined shape and differing thicknesses at different sections over the area of said blade, without need for removing material from the blade after molding to produce said shape and thicknesses, said method comprising the following steps:

(a) providing first and second sets of wood sheets each said set comprising a plurality of pre-cut wood sheets having a pre-selected size and shape;

(b) forming a first blade section from said first set of wood sheets by overlaying said wood sheets of said first set according to a first pre-determined pattern and according to a first pre-determined pattern and interposing a glue sheet between each adjacent pair of said wood sheets of said first set;

(c) forming a second blade section from said second set of wood sheets by overlaying said wood sheets of said second set according to a second pre-determined pattern and interposing a glue sheet between each adjacent pair of said wood sheets;

(d) positioning an extension member between said first and second blade sections; and,

(e) molding together said first and second blade sections and extension member to form said blade having said pre-determined shape and thicknesses;

whereby the number of said wood sheets selected for each said set and the shape and size of each said wood sheet are preselected to produce said pre-determined shape and thicknesses of said blade.

2. A method according to claim 1 including interposing a glue sheet between said extension member and each of said blade sections.

3. A method according to claim 2 whereby said wood sheets are formed from wood veneer sheets.

4. A method according to claim 3 wherein said blade sections and extension member are molded together under a temperature in the range of 140°C to 160°C and pressure in the range of 250 psi to 350 psi.

5. A method according to claim 4 whereby each said blade section comprises five wood sheets and said wood is white birch.

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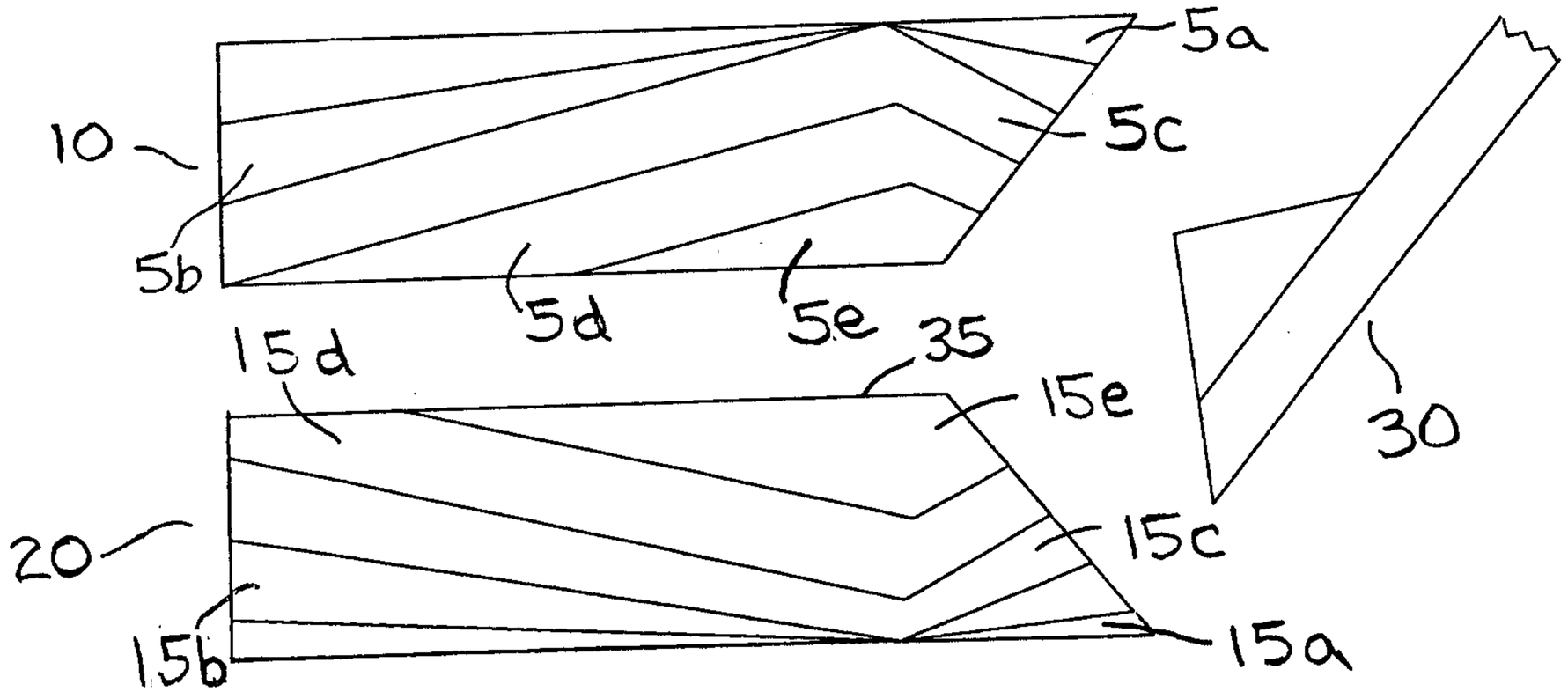


Fig. 1

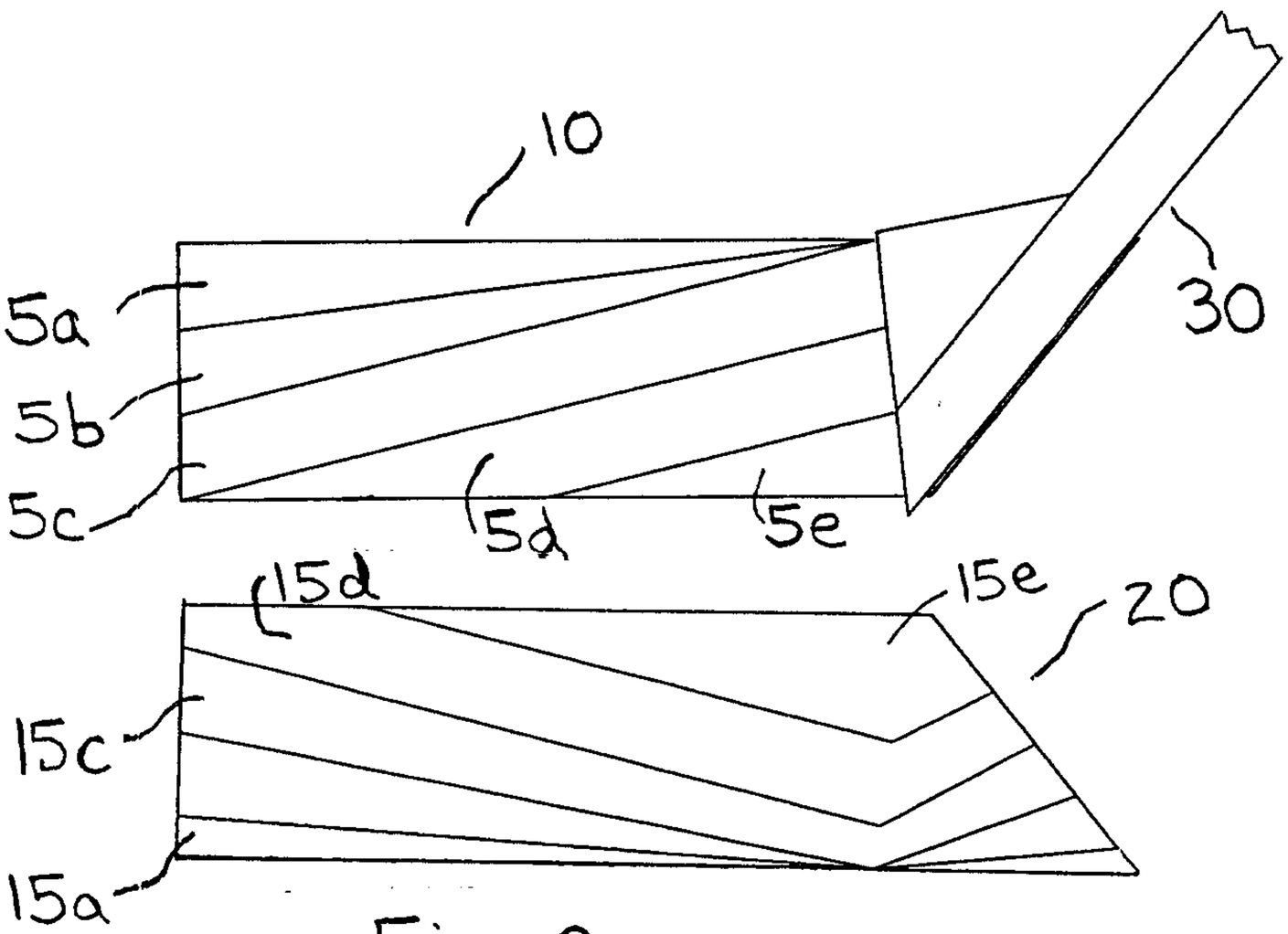


Fig. 2

Fig. 3

Fig. 4

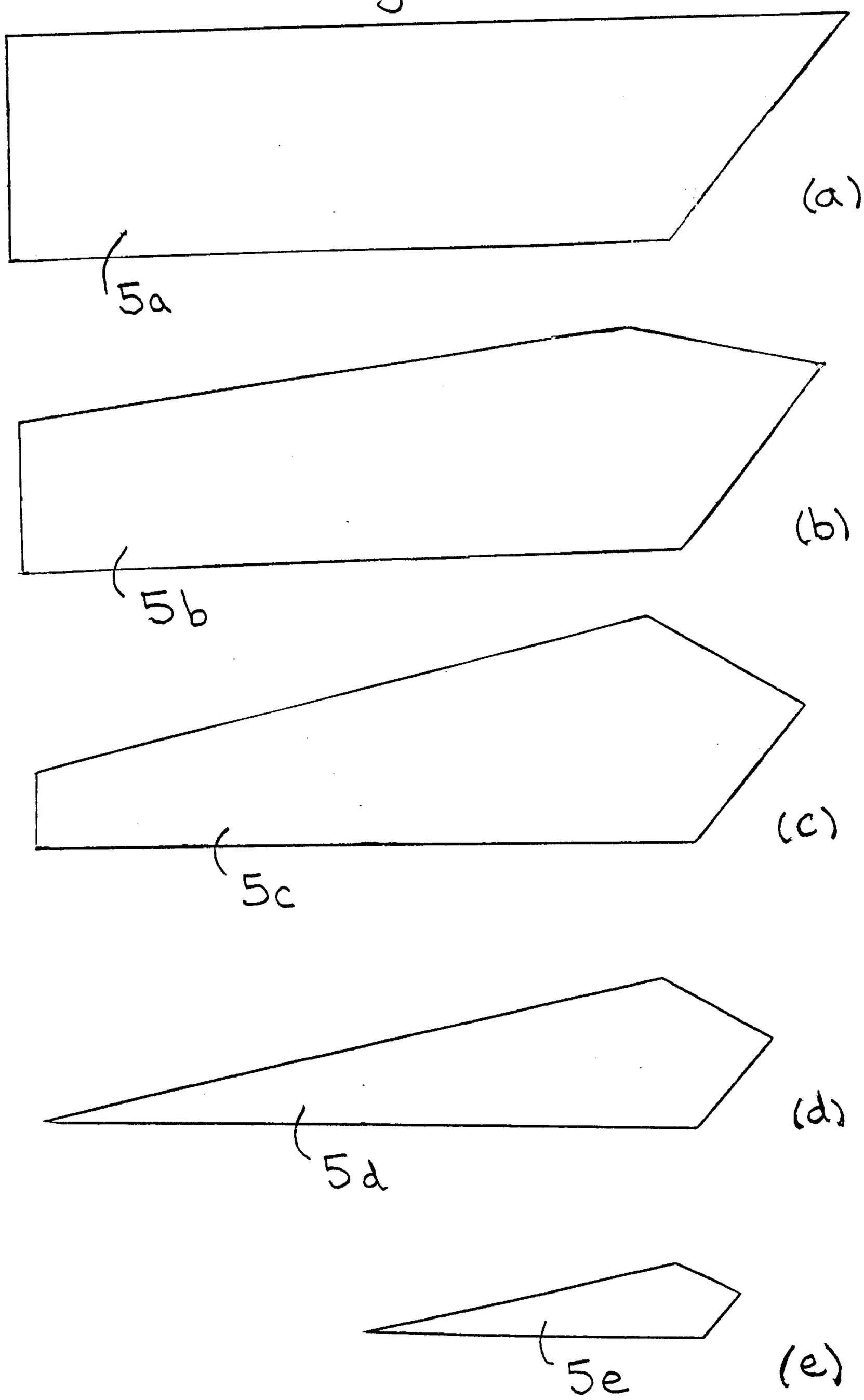
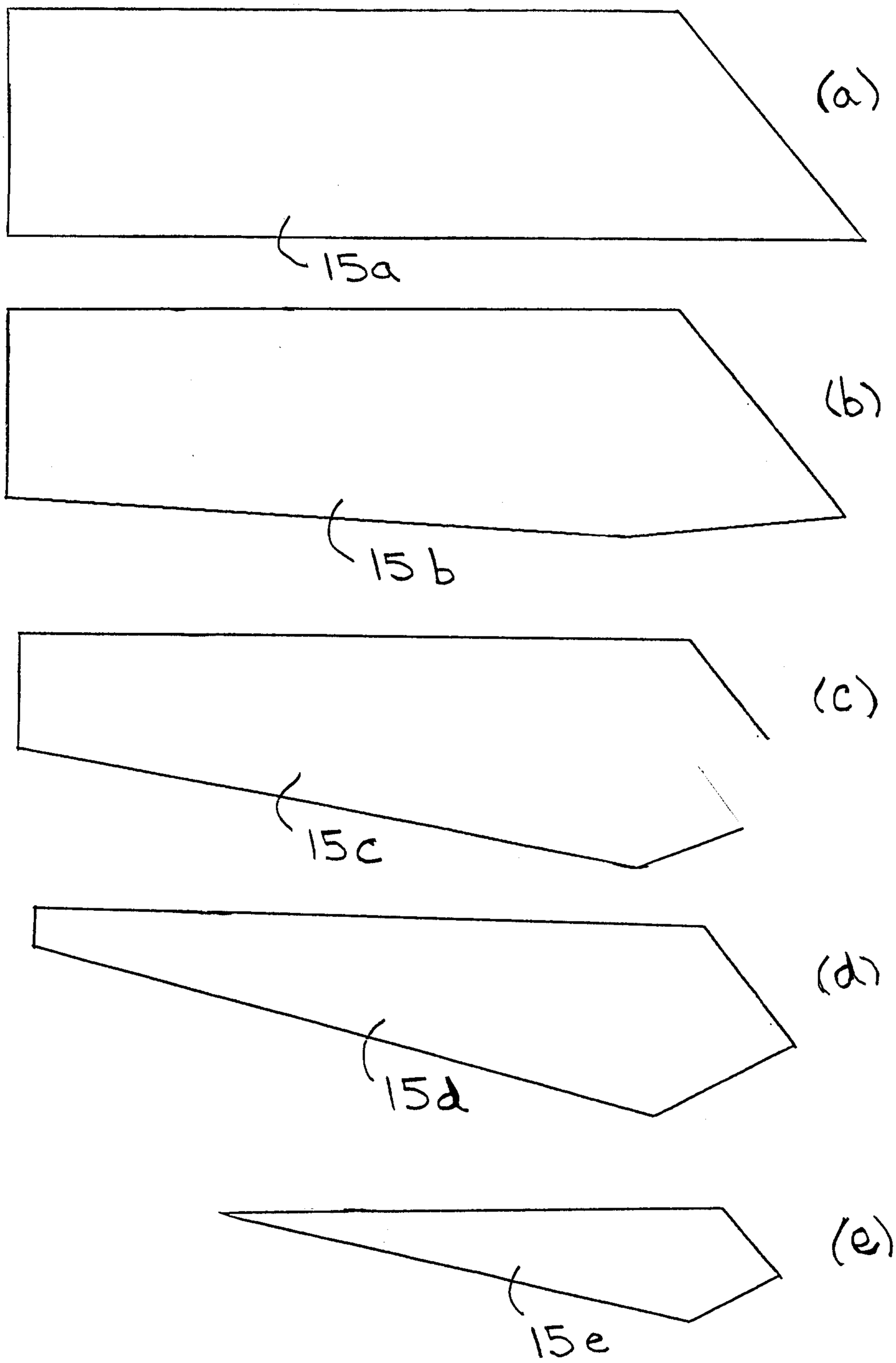
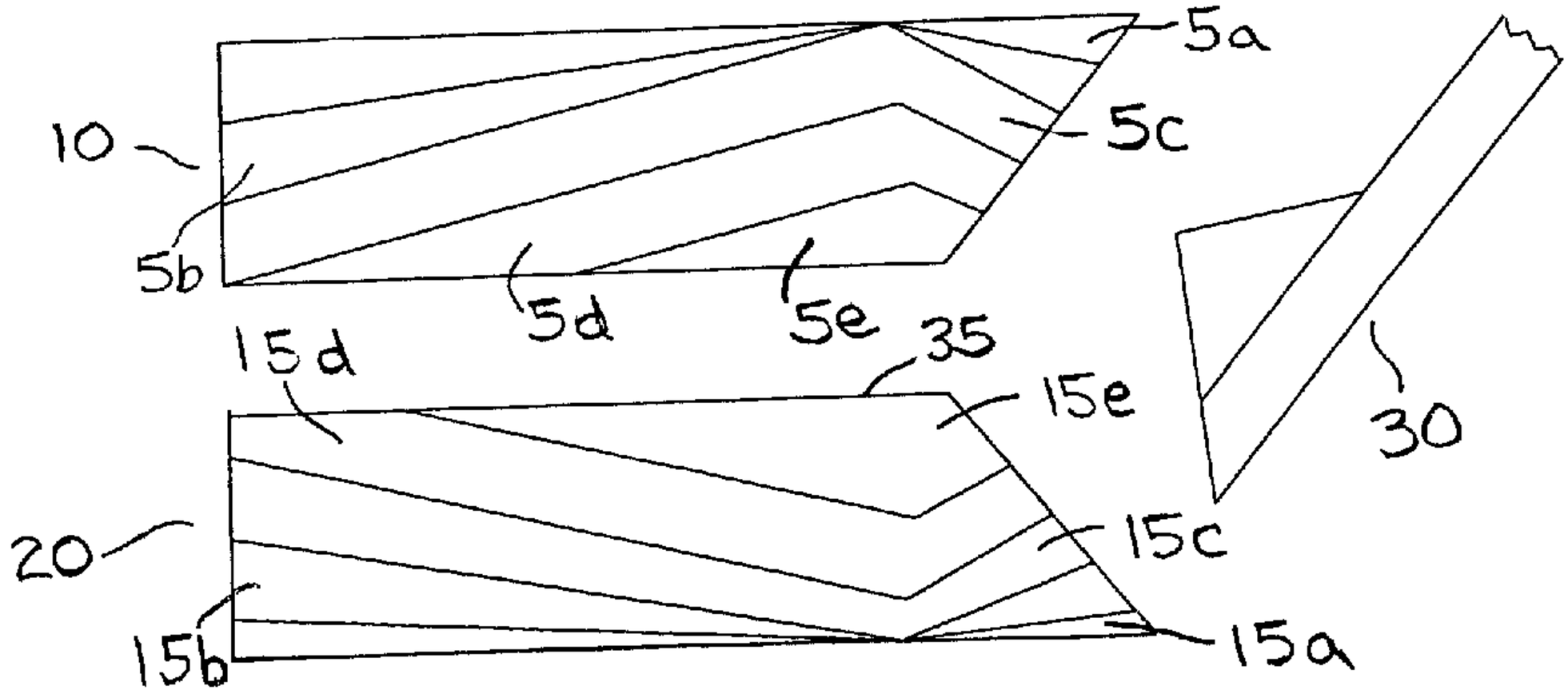


Fig. 5




10
5a
5c
5b
5d
5e
15d
35
15e
30
20
15c
15b
15a