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METHOD FOR MANUFACTURING A CLUB HEAD

(57) A method (3) is adapted to manufacture a club head (4) with a bending portion (45), a hosel (44), and a head face (43). The method (3) includes preparing a metal blank (a) having an engagement segment (a3), a head segment (a2), and a neck segment (a1). The method (3) includes a bending and pressing step (32) for pressing the head segment (a2) and the engagement segment (a3), thereby forming a bending contour serving as the bending portion (45) and forming a face region (43') and a waste unit (c) protruding therefrom. The method (3) includes a punching step (33) for punching the neck segment (a1), thereby forming a peripheral wall (44b) with a trough (44a) which serves as the hosel (44). The method (3) includes a trimming step (34) for flattening the face region (43') and removing the waste unit (c), thereby achieving the head face (43). The punching step (33) is conducted before or after the bending and pressing step (32). The method (3) is executed in a simplified manner and reduces production costs and defective products.

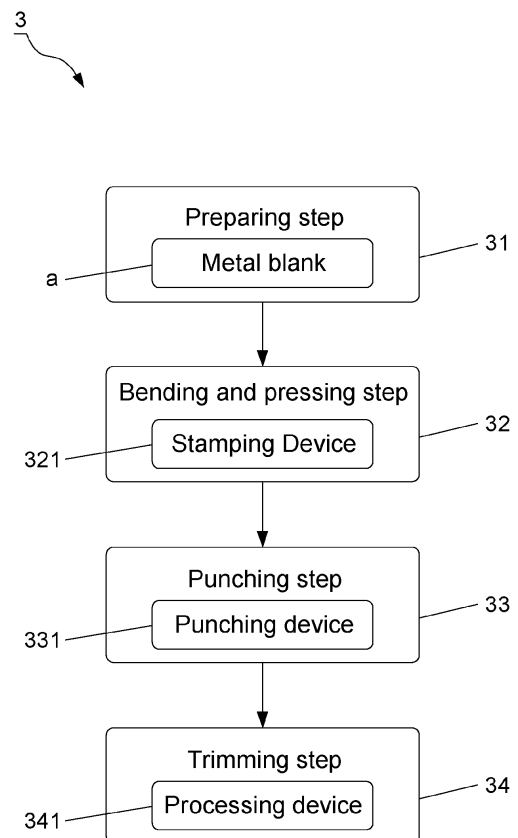


FIG. 2

Description

BACKGROUND OF THIS INVENTION

1. Field of this invention

[0001] This invention relates to a manufacturing method and relates particularly to a method for manufacturing a club head.

2. Description of the Related Art

[0002] Owing to the increasing progress of society and the improved standard of living, various recreational activities are available. In the type of recreational ball games, golf both provides interests and requires skills, thereby being popular and enjoyed widely by people of all ages. Golf can be played alone for a purpose of skills practice or played with a group of people for a purpose of competition in a golf course. During golfing, different terrains of the golf course can provide physical challenge. Different landscapes of the golf course allow people to be immersed in the natural environment, thereby relieving physical and mental stress. Hence, golf becomes popular among people of all ages and further captures the public's attention to facilities for playing golf, particularly golf clubs. The golf clubs are sorted according to different types of club heads, such as drivers, fairway woods, hybrids, irons, wedges, and putters.

[0003] Generally, a club head is manufactured by a casting method or a forging method. Referring to Fig. 1, Taiwan patent no. 1270421 discloses a method for forging a club head under a constant temperature. The method comprises steps of feeding blanks, forging with a constant temperature, processing an outer contour of the club head, and processing an outer surface of the club head. In the method, a metal blank and a forming die are heated to have the same temperature while executing a forging operation, thereby obtaining the club head. The club head is then processed by trimming the outer contour and the outer surface. However, in the disclosed method, the metal blank and the forming die should be maintained in a high and constant temperature in order to execute the forging operation. Thus, energy consumption is increased. In order that the metal blank can spread and fill the forming die fully, the metal blank with a larger portion is usually applied so that the metal blank extends according to the shape of the forming die to form the club head properly. However, a surplus material of the metal blank is left because of the forging action and flows outside the forming die to form an extensive waste unit disposed around an outer periphery of the club head. Accordingly, the costs for removing the extensive waste unit are increased. Further, an extensive line-shaped mark will be formed along the outer periphery of the club head after the waste unit is removed, and that requires to be improved.

SUMMARY OF THIS INVENTION

[0004] The object of this invention is to provide a method for manufacturing a club head capable of reducing a consumption of metal blank to attain a sufficient use, prevents an improper overflow of surplus material, and reducing production costs and defective products.

[0005] The method for manufacturing a club head of this invention is disclosed. The club head includes a hosel extending toward one direction, a head face extending toward another direction and adapted to hit a golf ball, and a bending portion formed between the hosel and the head face. The method includes a preparing step, a bending and pressing step, a punching step, and a trimming step. In the preparing step, a metal blank is prepared. The metal blank has a cylindrical neck segment, a cylindrical head segment opposite to the neck segment, and an engagement segment extending between and tapered from the head segment toward the neck segment so that the engagement segment is formed in a frustum shape. A maximum outer diameter of the head segment is larger than a maximum outer diameter of the neck segment. In the bending and pressing step, a stamping device having a stamping die and a stamping unit movably installed relative the stamping die is adapted to execute a stamping operation. The stamping die has a first cavity enclosed by a first wall, a second cavity enclosed by a second wall, and a receiving opening formed in the first cavity. The first cavity has a first contour outlining a hitting appearance. The second cavity has a second contour outlining a transition appearance. The stamping operation is executed by pressing the head segment and the engagement segment with the stamping unit concurrently after the engagement segment is situated in the second cavity and the head segment is situated in the first cavity so that a junction of the engagement segment and the head segment is bended caused by the pressing action of the stamping unit to form a first surface joined to the neck segment and a second surface connected to the first surface and extended by a length, with an included angle defined by a junction of the first surface and the second surface so that the first surface and the second surface are joined together to provide a bending contour corresponding to the transition appearance, which thereby serves as the bending portion of the club head. Meanwhile, the pressing action of the stamping unit allows the head segment to spread and fill the first cavity to form a face region joined to the second surface. The face region has a head-shaped contour corresponding to the hitting appearance. During the stamping operation, a surplus material of the metal blank is left and introduced into the receiving opening to form a waste unit protruding from the face region after the metal blank is separated from the stamping die. In the punching step, a punching device having a punching die and a punching unit movably installed relative the punching die is adapted to execute a punching operation. The punching operation is executed by exerting punching

forces on a portion of the neck segment with the punching unit after the neck segment of the metal blank is positioned in the punching die to allow an outer periphery of the neck segment to be clamped by the punching die in position. The neck segment is extended caused by the punching action of the punching device to form a peripheral wall and a trough enclosed by the peripheral wall, which thereby serves as the hosel of the club head. In the trimming step, a processing device having a cutting unit is adapted to execute a cutting operation. The cutting operation is executed by cutting a surface of the face region obtained in the bending and pressing step with the cutting unit to flatten the surface of the face region and remove the waste unit from the face region while flattening the surface of the face region. The face region thereby serves as the head face of the club head for hitting the golf ball after being treated in the cutting operation. The club head is then formed after the cutting operation is completed. After the preparing step is executed, the punching step or the bending and pressing step is executed according to needs, and the trimming step is the final step. Because the surplus material of the metal blank is accommodated at the receiving opening of the stamping die, it prevents the surplus material from flowing outside the stamping die. The removal of the waste unit is easy and will not leave an extensive mark. The method is executed in a simplified and accelerated manner, reduces the consumption of the metal blank to achieve a sufficient use, increases the strength of the club head, and reduces the production costs and the defective products effectively.

[0006] Preferably, the bending and pressing step is conducted after the preparing step. The punching step is conducted after the bending and pressing step. The trimming step is conducted after the punching step.

[0007] Preferably, the punching step is conducted after the preparing step. The bending and pressing step is conducted after the punching step. The trimming step is conducted after the bending and pressing step.

[0008] Preferably, the punching die of the punching device has two opposite die units installed relative to each other. The die units are engaged together to assume a close state so that the outer periphery of the neck segment is clamped by the die units to prevent the maximum outer diameter of the neck segment from being changed improperly.

[0009] Preferably, one end of the head segment opposite to the engagement segment has an arched shape.

[0010] Preferably, the club head is an iron type club head.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

Fig. 1 is a block diagram showing steps of a conventional method for forging a club head under a constant temperature disclosed by Taiwan patent no. I270421;

Fig. 2 is a block diagram showing steps of a first preferred embodiment of this invention in sequential order;

Fig. 3 is a schematic view showing the bending and pressing step of the first preferred embodiment of this invention;

Fig. 4 is a schematic view showing the punching step of the first preferred embodiment of this invention;

Fig. 5 is a schematic view showing the trimming step of the first preferred embodiment of this invention;

Fig. 6 is a schematic view showing another variation of the metal blank in the bending and pressing step of the first preferred embodiment of this invention; and

Fig. 7 is a block diagram showing steps of a second preferred embodiment of this invention in sequential order.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] Referring to Figs. 2 and 3, a method 3 for manufacturing a club head 4 of a first preferred embodiment of this invention is disclosed. The club head 4 includes a hosel 44 extending toward one direction, a head face 43 extending toward another direction for hitting a golf ball (not shown), and a bending portion 45 formed between the hosel 44 and the head face 43. The club head 4 in this preferred embodiment is an iron type club head. The method 3 includes a preparing step 31, a bending and pressing step 32, a punching step 33, and a trimming step 34. The preparing step 31 is performed by preparing a metal blank a. The metal blank a has a cylindrical neck segment a1, a cylindrical head segment a2 opposite to the neck segment a1, and an engagement segment a3 connected between the neck segment a1 and the head segment a2. A maximum outer diameter d2 of the head segment a2 is larger than a maximum outer diameter d1 of the neck segment a1. The engagement segment a3 is tapered from the head segment a2 toward the neck segment a1 so that the engagement segment a3 is in the form of a frustum. One end a2' of the head segment a2 opposite to the engagement segment a3 has an arched shape as shown in Fig. 6 or a flattened shape as shown in Fig. 3 whereby the method 3 is conducted in a quick manner according to different processing requirements. Here takes an example that the one end a2' of the head segment a2 has a flattened shape.

[0013] The bending and pressing step 32 is performed by subjecting the metal blank a to a stamping operation by using a stamping device 321. The stamping device 321 is shown in a simplified drawing in this preferred embodiment. The stamping device 321 has a stamping die 321a and a stamping unit 321b movably disposed relative to the stamping die 321a. The stamping die 321a

has a first cavity **b2** enclosed by a first wall **b1**, a second cavity **b4** enclosed by a second wall **b3**, and a receiving opening **b5** formed in the first cavity **b2**. The first cavity **b2** has a first contour drawing a hitting appearance. The second cavity **b4** has a second contour drawing a transition appearance. The receiving opening **b5** is adapted to receive a surplus material of the metal blank **a**. In the stamping operation, the metal blank **a** is positioned in the stamping die **321a** to allow the head segment **a2** to be situated in the first cavity **b2** and adjacent to the first wall **b1** of the first cavity **b2** and to allow the engagement segment **a3** to be situated in the second cavity **b4**. The stamping unit **321b** is then adapted to press the head segment **a2** and the engagement segment **a3** concurrently so that the head segment **a2** and the engagement segment **a3** extend according to the shape of the stamping die **321a**. Namely, the pressing action of the stamping unit **321b** bends a junction of the engagement segment **a3** and the head segment **a2** to form a first surface **41** connected to the neck segment **a1** and a second surface **42** connected to the first surface **41** and extended by a length. An included angle α is defined by a junction of the first surface **41** and the second surface **42** whereby the first surface **41** and the second surface **42** are connected together to provide a bending contour corresponding to the transition appearance, which thereby serves as the bending portion **45** of the club head **4**. The head segment **a2** is also pressed by the stamping unit **321b** whereby the head segment **a2** extends and fills the first cavity **b2** to form a face region **43'** joined to the second surface **42**. The face region **43'** has a head-shaped contour corresponding to the hitting appearance. Owing to the pressing action of the stamping unit **321b**, the surplus material of the metal blank **a** is remained and accumulated at the receiving opening **b5** whereby a waste unit **c** protruding from the face region **43'** is formed after the metal blank **a** is separated from the stamping die **321a**.

[0014] Referring to Fig. 4, the punching step **33** is performed by subjecting the metal blank **a** to a punching operation by using a punching device **331**. The punching device **331** has a punching die **331a** and a punching unit **331b** movably disposed relative to the punching die **331a**. In this preferred embodiment, the punching die **331a** includes two die units **331a'** opposite to each other. A punching space **331c** is defined when the two die units **331a'** are engaged with each other to assume a close state. The punching unit **331b** has an inserted end **331b'** capable of being inserted into the punching space **331c**. An outer diameter **d4** of the inserted end **331b'** of the punching unit **331b** is smaller than an inner diameter **d3** of the punching space **331c**. In the punching operation, the die units **331a'** are engaged together to assume a close state after the neck segment **a1** is positioned between the die units **331a'** whereby the neck segment **a1** is situated in the punching space **331c** and an outer periphery of the neck segment **a1** is clamped by the die units **331a'**. After that, the inserted end **331b'** of the punching unit **331b** is moved and inserted into the punch-

ing space **331c** to exert punching forces on a portion of the neck segment **a1** and force the neck segment **a1** to extend so that the neck segment **a1** is extended to form a peripheral wall **44b** and a trough **44a** enclosed by the peripheral wall **44b**, which thereby serves as the hosel **44** of the club head **4**. Meanwhile, the maximum outer diameter **d1** of the neck segment **a1** is restricted by the punching space **331c** enclosed by the die units **331a'** to thereby prevent an improper change in the maximum outer diameter **d1** of the neck segment **a1**.

[0015] Referring to Fig. 5, the trimming step **34** is performed by subjecting the metal blank **a** to a cutting operation by using a processing device **341**. The processing device **341** has a cutting unit **341a**. In this cutting operation, a surface of the face region **43'** attained by the bending and pressing step **32** is trimmed with the cutting unit **341a** to flatten the surface of the face region **43'** and remove the waste unit **c** from the face region **43'** while flattening the surface of the face region **43'**. The face region **43'** which is subjected to the cutting operation thereby serving as the head face **43** of the club head **4** for hitting the golf ball. The club head **4** is formed after the cutting operation.

[0016] Referring to Figs. 2 to 6, after the metal blank **a** is prepared in the preparing step **31**, the metal blank **a** is subjected to the stamping operation conducted by the stamping device **321** in the bending and pressing step **32**. The metal blank **a** is situated in the stamping die **321a** so that the engagement segment **a3** is positioned in the second cavity **b4** and the head segment **a2** is positioned in the first cavity **b2**. The head segment **a2** is adjacent to the first wall **b1** of the first cavity **b2** after the head segment **a2** is positioned properly. The neck segment **a1** is preferably situated outside the stamping die **321a** so that the neck segment **a1** will not be pressed by the stamping unit **321b**. After that, the head segment **a2** and the engagement segment **a3** are stamped by the stamping unit **321b** concurrently whereby the junction of the engagement segment **a3** and the head segment **a2** is bended and turned into the first surface **41** connected to the neck segment **a1** and the second surface **42** connected to the first surface **41** and extended by a length. The included angle α is defined by the junction of the first surface **41** and the second surface **42** whereby the first surface **41** and the second surface **42** are joined to each other to provide the bending contour corresponding to the transition appearance, and thus the bending portion **45** of the club head **4** is achieved. Meanwhile, the head segment **a2** is also stamped by the stamping unit **321b** whereby the first cavity **b2** is stuffed with the head segment **a2** to thereby form the face region **43'** having the head-shaped contour corresponding to the hitting appearance. During the stamping operation, the surplus material of the metal blank **a** is introduced and accommodated at the receiving opening **b5** whereby the waste unit **c** is formed on the face region **43'** after the metal blank **a** is removed from the stamping die **321a**. Thus, the face region **43'** and the bending portion **45** are formed

evenly and properly without being too thick or too thin because the surplus material is received within the receiving opening **b5** duly, thereby reducing the consumption of the metal blank **a** to attain a sufficient use of the metal blank **a** and reducing the defective products. Further, the waste unit **c** only occupies a small area on the face region **43'**.

[0017] After that, the metal blank **a** is subjected to the punching operation conducted by the punching device **331** in the punching step **33**. After the neck segment **a1** is situated between the die units **331a'**, the die units **331a'** are engaged to each other to assume a close state and allow the neck segment **a1** to be positioned within the punching space **331c** and clamped by the die units **331a'** of the punching die **311a**. The inserted end **331b'** of the punching unit **331b** is then activated to exert punching forces on a portion of the neck segment **a1**. Because the outer diameter **d4** of the inserted end **331b'** is smaller than the inner diameter **d3** of the punching space **331c**, the neck segment **a1** is forced to extend and form the peripheral wall **44b** and the trough **44a** enclosed by the peripheral wall **44b**, and thus the hosel **44** of the club head **4** is achieved. Meanwhile, the maximum outer diameter **d1** of the neck segment **a1** is restricted by the punching space **331c** while the neck segment **a1** is punched by the inserted end **331b'**. Both the stamping operation of the stamping device **321** and the punching operation of the punching device **331** help increase the strength of the face region **43'**, the bending portion **45**, and the hosel **44**. Finally, the face region **43'** is subjected to the cutting operation conducted by the processing device **341** in the trimming step **34**. The surface of the face region **43'** is cut and flattened by the cutting unit **341a** of the processing device **341**, thereby separating the waste unit **c** from the face region **43'** while cutting the surface of the face region **43'**. Thus, the head face **43** of the club head **4** for hitting the golf ball is achieved after the face region **43'** passes through the cutting operation. The club head **4** is therefore achieved after the cutting operation is completed. Hence, the waste unit **c** only occupies a small area on the face region **43'**, and that reduces the costs and simplifies the operation for removing the waste unit **c**. The removal of the waste unit **c** will not leave an extensive mark. The head face **43** of the club head **4** remains flat and meets the standards. The method **3** facilitates a quick and simple operation for manufacturing the club head **4**, reduces the consumption of the metal blank **a** to attain a sufficient use, increases the strength of the club head **4**, reduces the defective products, and reduces the production costs.

[0018] Referring to Fig. 7 shows a second preferred embodiment of the method **3** for manufacturing a club head **4** of this invention which still includes a preparing step **31**, a bending and pressing step **32**, a punching step **33**, and a trimming step **34**. The concatenation of correlated elements, operations and objectives of this preferred embodiment are the same as those of the first preferred embodiment. The second preferred embodi-

ment is characterized in that the punching step **33** is executed after the preparing step **31**. The bending and pressing step **32** is executed after the punching step **33**. The trimming step **34** is executed after the bending and pressing step **32**. In other words, after the metal blank **a** is prepared in the preparing step **31**, the neck segment **a1** of the metal blank **a** is subjected to the punching operation conducted by the punching device **331** to form the peripheral wall **44b** and the trough **44a** whereby the hosel **44** is attained as shown in the Fig. 4. After that, the head segment **a2** and the engagement segment **a3** of the metal blank **a** are subjected to the stamping operation conducted by the stamping device **321** to form the bending portion **45** and the face region **43'** accordingly as shown in Fig. 3. Meanwhile, the surplus material of the metal blank **a** is accommodated at the receiving opening **b5** of the stamping die **321a** to form the waste unit **c** on the face region **43'** after the metal blank **a** is separated from the stamping die **321a**. Finally, the face region **43'** is subjected to the cutting operation conducted by the processing device **341**, thereby flattening the face region **43'** and removing the waste unit **c**. Thus, the head face **43** is attained as shown in Fig. 5. The club head **4** is formed after the cutting operation is finished. Although the executing sequence of the bending and pressing step **32** and the punching step **33** are changed, the method **3** still can achieve the effects of facilitating a quick and simple operation for manufacturing the club head **4**, reducing the consumption of the metal blank **a** to attain a sufficient use, increasing the strength of the club head **4**, reducing the defective products, and reducing the production costs.

[0019] To sum up, the method of this invention includes a preparing step, a bending and pressing step, a punching step, and a trimming step. The metal blank having the engagement segment extended between the head segment and the neck segment is prepared in the preparing step. In the bending and pressing step, the metal blank is situated in the stamping die of the stamping device to allow the head segment and the engagement segment to be positioned in the first cavity and the second cavity respectively. The head segment and the engagement segment are pressed concurrently by the stamping unit whereby the junction of the engagement segment and the head segment is bended to form the first surface and the second surface, with the included angle defined by the junction of the first surface and the second surface. Thus, the first surface and the second surface are joined together to provide the bending contour, which thereby serves as the bending portion of the club head. Meanwhile, the head segment is also pressed and extended in the first cavity to form the face region having the head-shaped contour. The surplus material of the metal blank is remained and introduced into the receiving opening of the stamping die to form the waste unit protruding from the face region after the metal blank is removed from the stamping die. In the punching step, after the neck segment is clamped by the punching die of the punching device, punching forces are exerted to a portion of the

neck segment so that the neck segment is extended to form the peripheral wall and the trough, which thereby serves as the hosel of the club head. In the trimming step, the surface of the face region is trimmed by the cutting unit of the processing device so that the surface of the face region is flattened and the waste unit is removed, which thereby serves as the head face of the club head for hitting the golf ball. And, the club head is completed. Thus, the surplus material of the metal blank will not flow outside the stamping die. The waste unit formed by the surplus material only occupies a small area on the face region, and thus the removal of the waste unit will not leave an extensive mark. The costs for removing the waste unit is reduced. The method also is executed in a quick and simplified manner, reduces the consumption of the metal blank to achieve a sufficient use, increases the strength of the club head, reduces the production costs, and reduces the defective products.

[0020] While the embodiments of this invention are shown and described, it is understood that further variations and modifications may be made without departing from the scope of this invention.

Claims

1. A method (3) for manufacturing a club head (4), said club head (4) including a hosel (44) extending toward one direction, a head face (43) extending toward another direction for hitting a golf ball, and a bending portion (45) formed between said hosel (44) and said head face (43), said method (3) comprising:

a preparing step (31) which includes preparing a metal blank (a), said metal blank (a) including a cylindrical neck segment (a1), a cylindrical head segment (a2), and an engagement segment (a3) disposed between said neck segment (a1) and said head segment (a2), wherein a maximum outer diameter (d2) of said head segment (a2) is larger than a maximum outer diameter (d1) of said neck segment (a1), said engagement segment (a3) being in the form of a frustum;

a bending and pressing step (32) which includes subjecting said metal blank (a) to a stamping operation by using a stamping device (321), said stamping device (321) including a stamping die (321a) and a stamping unit (321b) movably disposed relative to said stamping die (321a), wherein said stamping die (321a) has a first cavity (b2) enclosed by a first wall (b1), a second cavity (b4) enclosed by a second wall (b3), and a receiving opening (b5) disposed in said first cavity (b2), said first cavity (b2) having a first contour outlining a hitting appearance, said second cavity (b4) having a second contour outlining a transition appearance, wherein said

stamping operation includes placing said metal blank (a) in said stamping die (321a) in position so that said engagement segment (a3) is situated in said second cavity (b4), and said head segment (a2) is situated in said first cavity (b2) and then pressing said head segment (a2) and said engagement segment (a3) with said stamping unit (321b) concurrently, the pressing action of said stamping unit (321b) bending a junction of said engagement segment (a3) and said head segment (a2) to form a first surface (41) joined to said neck segment (a1) and a second surface (42) connected to said first surface (41) and extended by a length, with an included angle (α) defined by a junction of said first surface (41) and said second surface (42) so that said first surface (41) and said second surface (42) are joined to each other to provide a bending contour corresponding to said transition appearance, which thereby serves as said bending portion (45) of said club head (4), the pressing action of said stamping unit (321b) also pressing said head segment (a2) so that said head segment (a2) spreads and fills said first cavity (b2) to form a face region (43') joined to said second surface (42), with said face region (43') having a head-shaped contour corresponding to said hitting appearance, a surplus material of said metal blank (a) being left because of the pressing action of said stamping unit (321b) and accumulated at said receiving opening (b5), said surplus material being deemed to be a waste unit (c) protruding from said face region (43') after said metal blank (a) is separated from said stamping die (321a);

a punching step (33) which includes subjecting said metal blank (a) to a punching operation by using a punching device (331), said punching device (331) including a punching die (331a) and a punching unit (331b) movably disposed relative to said punching die (331a), wherein said punching operation includes placing said neck segment (a1) of said metal blank (a) in said punching die (331a) so that an outer periphery of said neck segment (a1) is clamped by said punching die (331a) and then exerting punching forces on a portion of said neck segment (a1) with said punching unit (331b) to force said neck segment (a1) to extend, said neck segment (a1) being extended to form a peripheral wall (44b) and a trough (44a) enclosed by said peripheral wall (44b), which thereby serves as said hosel (44) of said club head (4); and

a trimming step (34) which including subjecting said metal blank (a) to a cutting operation by using a processing device (341), said processing device (341) including a cutting unit (341a), said cutting operation includes cutting a surface

of said face region (43') achieved by said bending and pressing step (32) with said cutting unit (341a) to flatten said surface of said face region (43') and remove said waste unit (c) from said face region (43') while flattening said surface of said face region (43'), said face region (43') which undergoes said cutting operation thereby serving as said head face (43) of said club head (4) for hitting said golf ball, said club head (4) being formed after said cutting operation.

2. The method (3) according to claim 1, wherein said bending and pressing step (32) is conducted after said preparing step (31), said punching step (33) is conducted after said bending and pressing step (32), and said trimming step (34) is conducted after said punching step (33).
3. The method (3) according to claim 1, wherein said punching step (33) is conducted after said preparing step (31), said bending and pressing step (32) is conducted after said punching step (33), and said trimming step (34) is conducted after said bending and pressing step (32).
4. The method (3) according to any one of claims 1 to 3, wherein said punching die (331a) of said punching device (331) includes two opposite die units (331a'), said two die units (331a') being engaged with each other to assume a close state so that said outer periphery of said neck segment (a1) is clamped by said two die units (331a') to prevent an improper change in said maximum outer diameter (d1) of said neck segment (a1).
5. The method (3) according to any one of claims 1 to 4, wherein one end (a2') of said head segment (a2) opposite to said engagement segment (a3) has an arched shape.
6. The method (3) according to any one of claims 1 to 5, wherein said club head (4) is an iron type club head.

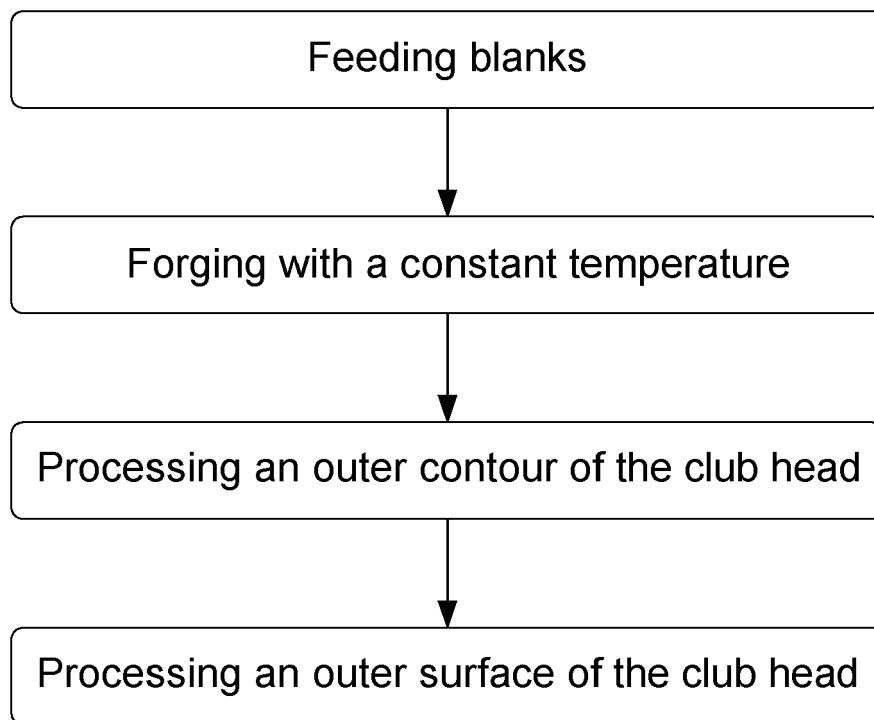


FIG. 1

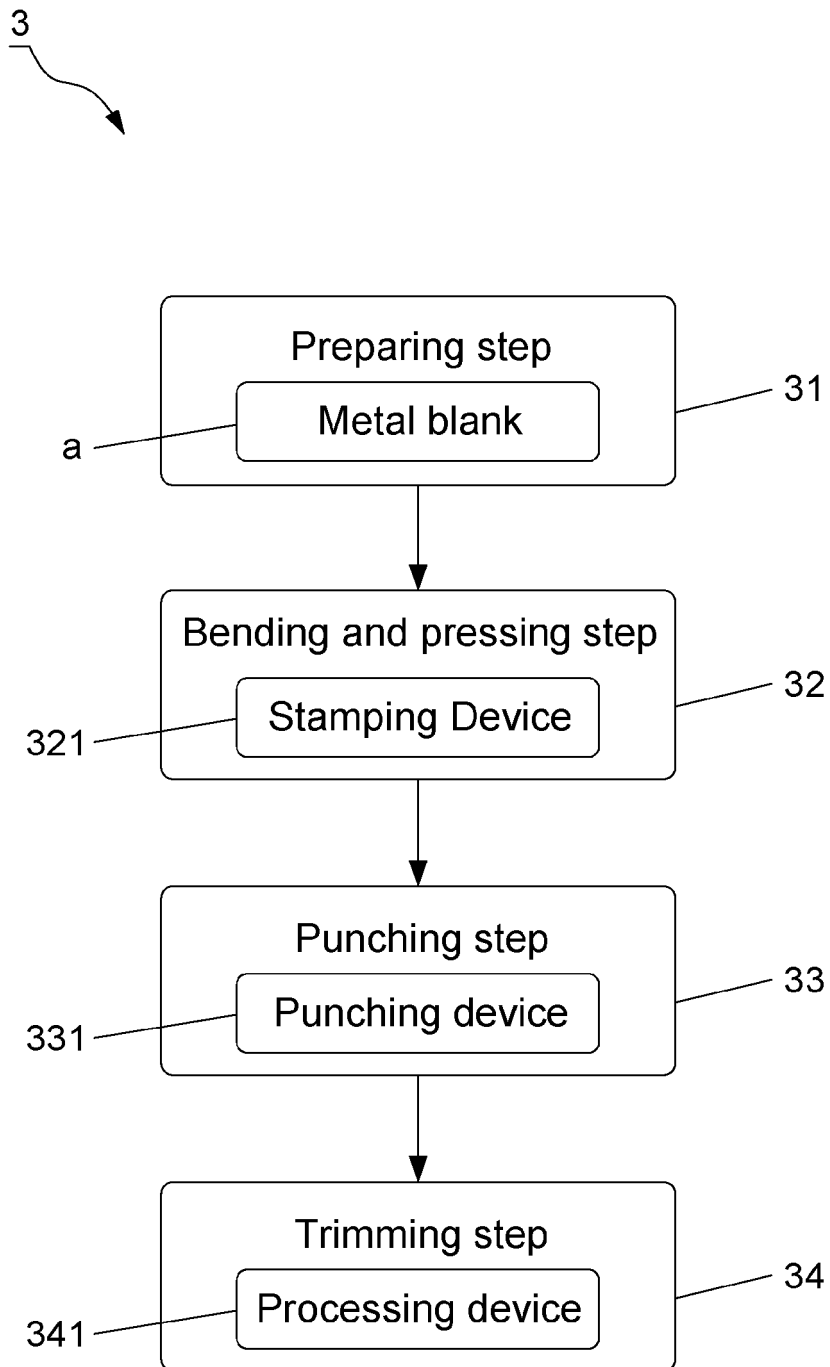


FIG. 2

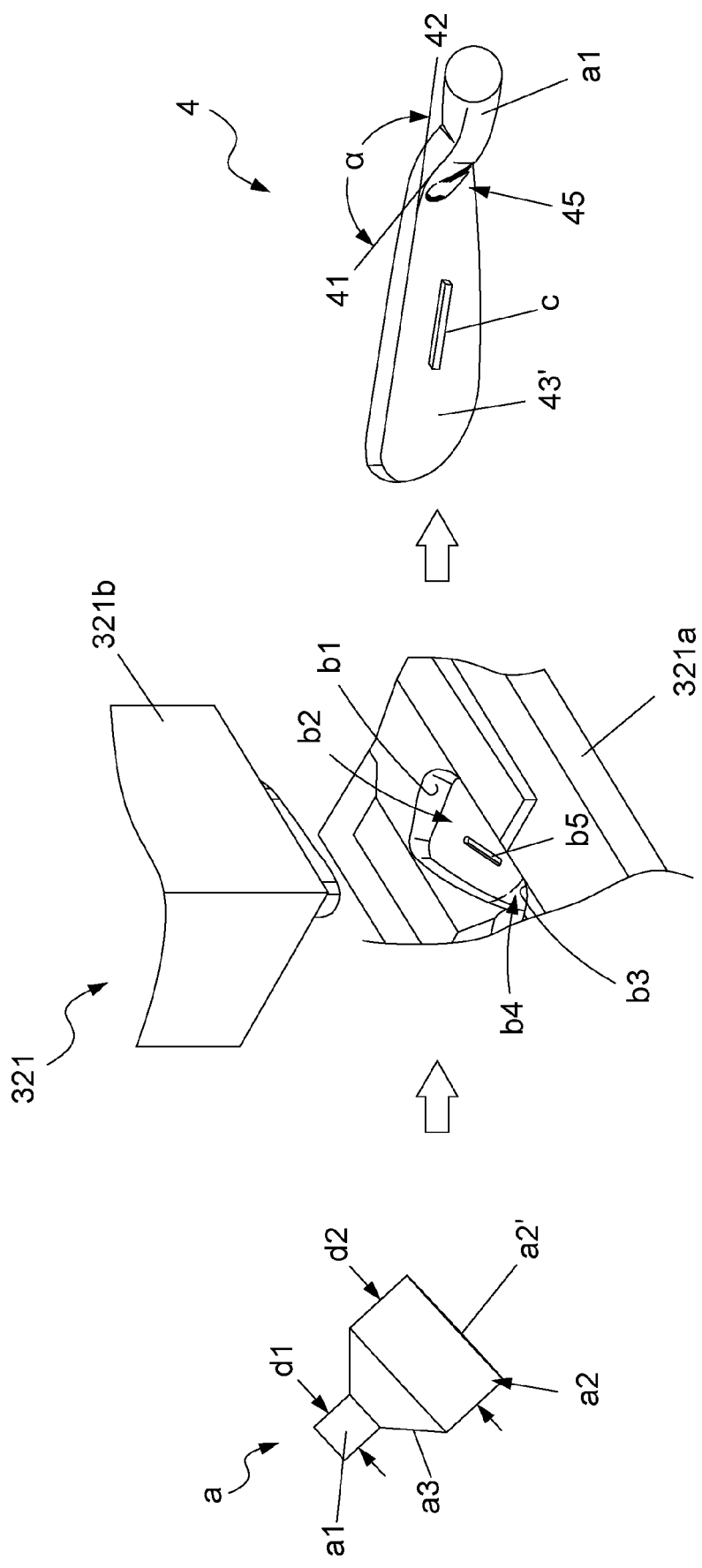


FIG. 3

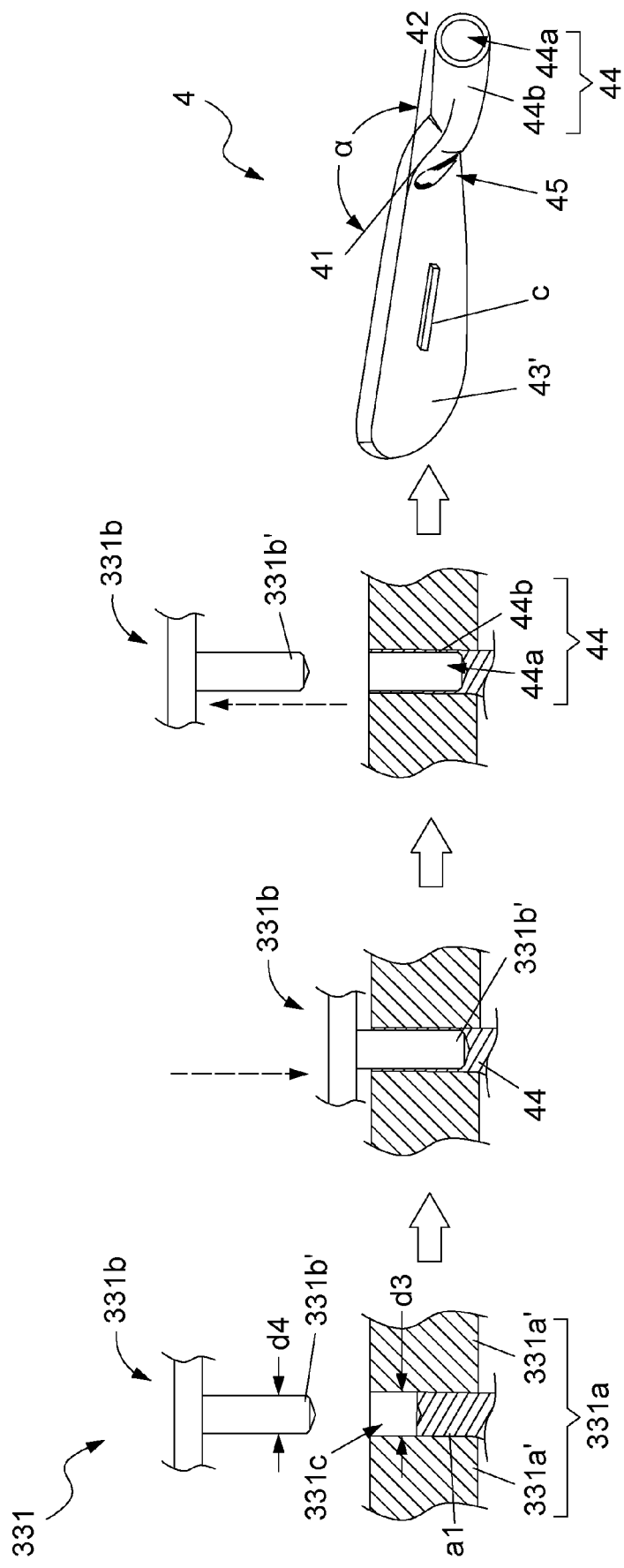


FIG. 4

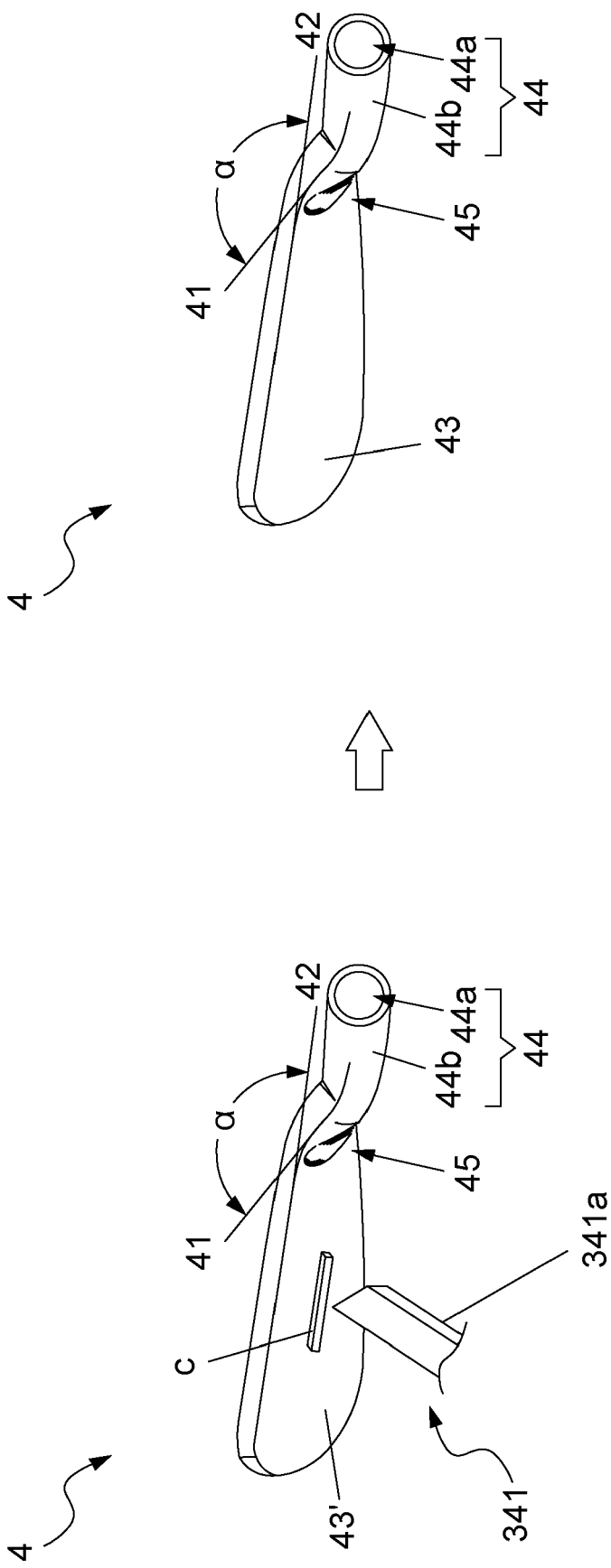


FIG. 5

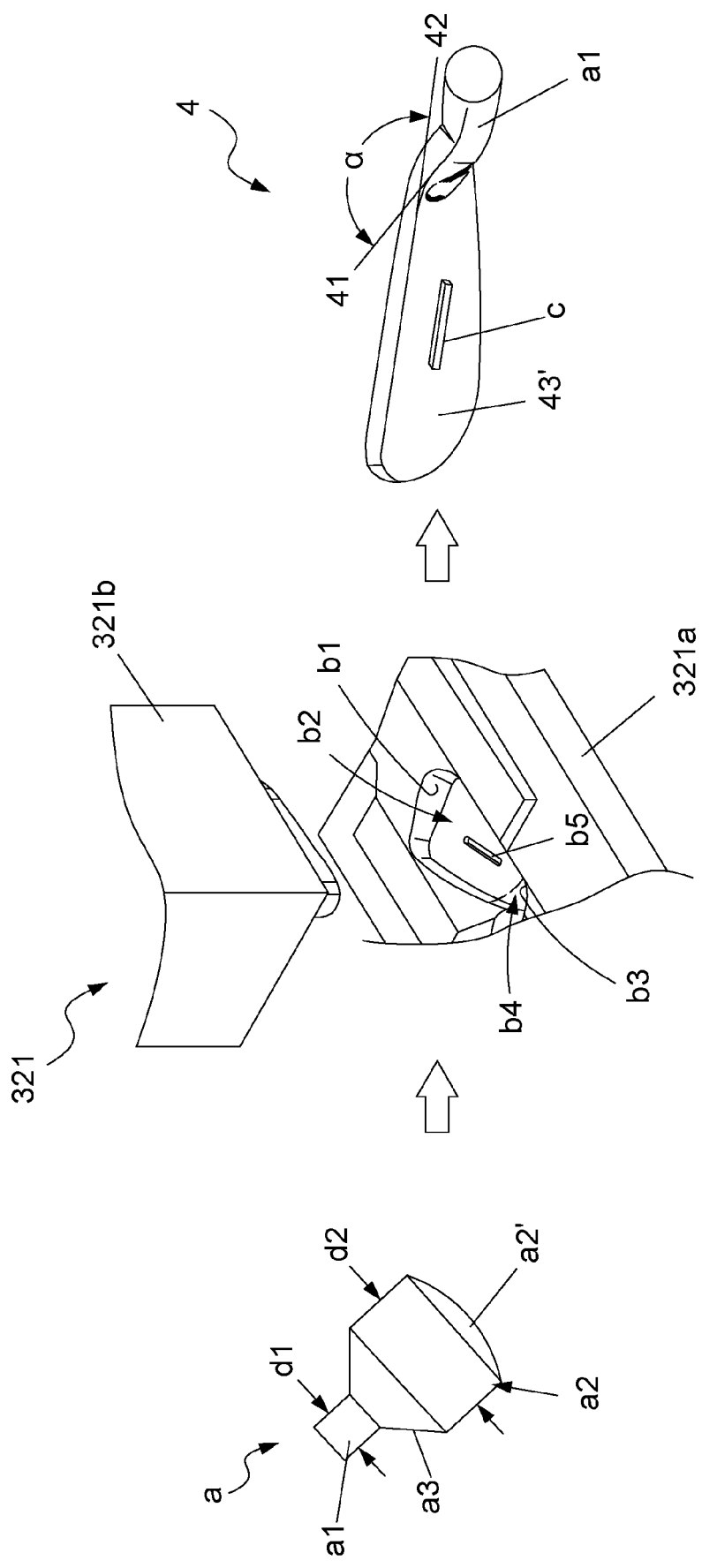


FIG. 6

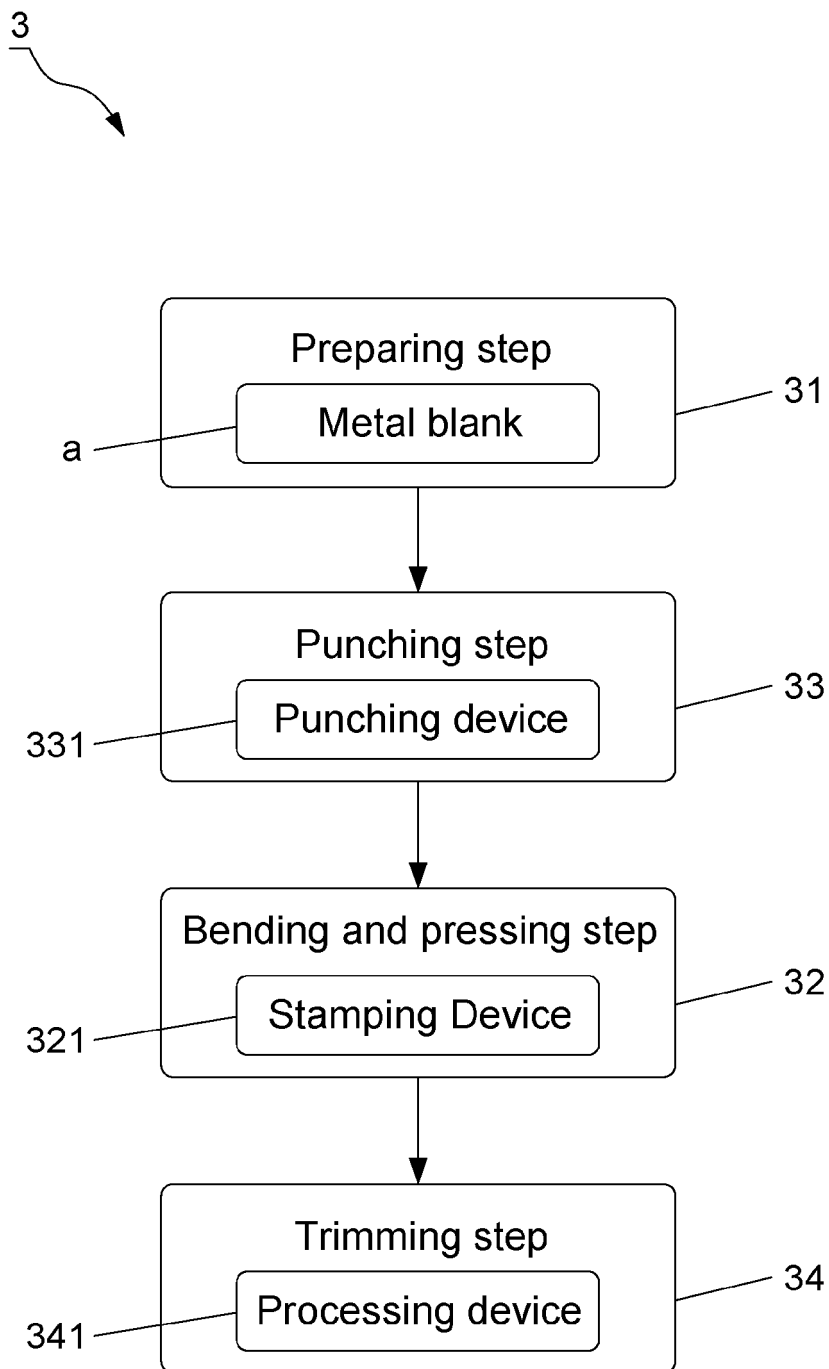


FIG. 7



EUROPEAN SEARCH REPORT

Application Number

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			B21K A63B
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Place of search		Date of completion of the search	Examiner
Munich		14 October 2024	Charvet, Pierre
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