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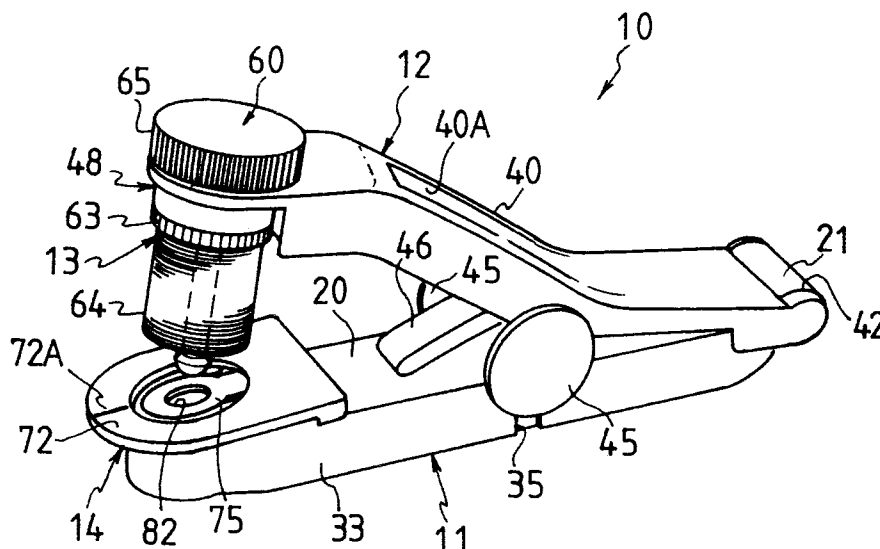
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(54) Patch applying apparatus

(57) A patch applying apparatus 10 for adhering a patch 64 to the periphery around a punched hole formed in a document P comprises a lower main body 11 for pivotally supporting a platen 14 and an upper main body 12 which is hinged to one end of the lower main body 11. A stack of the patches 64 is held at the free end of the upper main body 12 in such a manner that the adhesive layers of the patches face toward the platen 14.

When a patch urging force is imparted to the patch while the document P is positioned in a given position on the platen 14, the platen 14 is pivoted to a substantially parallel position with respect to the face of the patch 64 for bringing the patch 64 into a face-to-face contact with the document P. When the urging force is released, the platen 14 is returned to an inclined position for separating the adhered patch 64 from the next patch 64.

FIG. 1

Description

The present invention relates to a patch applying apparatus and in particular to a patch applying apparatus which is capable of adhesively applying a patch around a punched hole in an object such as a document in the same manner as stapler.

Related Art

In order to make a file of a plurality of documents, the documents are punched in at least two positions along one side edge of the document with a punching device and binding rings are inserted through the punched holes to make a file. Since the punched holes may be often easily torn due to frequent turning operation of documents, the patches which can be adhesively applied to the document around the punched hole for reinforcing the hole are commercially available. Commercially available patches include a releasable patch from which the patches are separable one by one and are then adhesively applied on the document around the punched hole. This applying operation is inefficient and a finger will inevitably be in contact with the pressure-sensitive adhesive sticky surface of the patch. This provides a disadvantage in that the adhesion ability of the patch will be decreased.

As is disclosed in, for example, Japanese Examined Utility Model Publication No. Sho 61-34251, a patch applying apparatus having a stack of patches located in position, which is capable of applying the patches one by one on the periphery of a hole has been known. The patch applying apparatus comprises a pin projecting on the upper side of a bottom plate, having a stack of patches loaded on the outer periphery thereof, a separating frame which is pivotally supported on the bottom plate at one end thereof for separating an uppermost patch from the next upper patch, a handle lever which is pivotally supported on the bottom plate at the other end thereof and an urging plate for using an object such as document following the pivotal movement of the handle lever.

However, the patch applying apparatus which is disclosed in above-mentioned Japanese Utility Model Publication No. Sho 61-34251 includes the separating frame and urging plate, etc. as essential components, which increase the number of parts. This apparatus positions the hole of the document in the position of the pin and does not enable the patch to be applied thereon. This patch applying apparatus has a disadvantage that it will become more hard to apply the patch when the number of the patches in the stack decreases since the applying position of the patch will be gradually lowered as the patches in the stack are consumed. Since the patches are not applied at a constant level, the accuracy of the patch application can not be maintained at a constant value and the amount of the stack can not be increased.

The present invention was made in view of these

disadvantages. An object of the present invention is to provide a patch applying apparatus which is capable of applying a patch on an object such as document with a punched hole in a predetermined position in the same manner as stapler, so-called in one touch operation at a constant accuracy.

In order to accomplish the above-mentioned object, the present invention provides a patch applying apparatus which holds a stack of patches each having a hole corresponding to a punched hole of an object on which the patch is applied, which is capable of applying the patch around the hole one by one, characterized in that said patch applying apparatus comprises a lower main body which extends in a longitudinal direction; an upper main body which is hinged to one end of the lower main body at its one end and having the other end which is a free end so that the upper main body can be pivotally moved; a patch holder which is removably provided on the free end of the upper main body for holding a stack of patches with the adhesive layer facing the lower main body; and a platen disposed on the lower main body below the patch holder; whereby the platen is provided so that it is displaced to a substantially horizontal position when a patch urging force is applied and is journalled so that it is in an inclined position when the patch urging force is released. In such an arrangement, by depressing the free end of the upper main body to lower the patch toward the platen, the patch can be applied on the document which is set on the platen in such a manner that the patch surrounds the punched hole. Since the platen is displaced under a depressing force to assume a substantially horizontal position at this time, face-to-face bonding can be conducted without causing any unqualified bonding. Since the platen can assume an inclined position when the depressing force is released, the patch which has been adhered on the document will be gradually separated from the edge of the adhesive layer of the next patch, so that separation between the adhered patch and the next patch can be positively conducted without separation of the next patch.

The patch applying apparatus of the present invention preferably has such an arrangement that the lower main body is provided below the lower side of the platen with a leaf spring which is cantilevered on the lower main body and the leaf spring is inclined under a depressing force from a downward projection which is formed on the lower side of the platen for allowing the platen to displace to the above-mentioned horizontal position and the leaf spring is elastically returned for allowing the platen to return to an inclined position when the depressing force is released. This eliminates the necessity of a special spring. The shape of the lower main body only need be slightly changed. Simplification in structure can be achieved through reduction in the number of parts.

The patch holder preferably comprises a support shaft extending through holes of the patches of the stack and a disc member mounted around the support shaft. The disc member is movable along the support shaft in

an axial direction thereof. The support shaft includes an inverted mushroom-shaped bulged portion at its lower end thereof for imparting a resisting force to separate the lowermost patch and the next patch when the lowermost patch is adhered.

In such an arrangement, the position of the disc member can be lowered depending upon the number of consumed patches. The patches can not be lifted upwardly along the support shaft due to a reaction force which is generated on application of the patch so that a constant applying force can be always applied to the patch. Since the bulged portion serves to provide a slight engagement for the hole of the patch, a plurality of patches can be prevented from being separated and applied together.

The platen may be preferably provided with marking, with which the center position of the punched hole of the object to which the patch is applied. This enables the optimal position of the patch surrounding the punched hole to be visually determined without using any special positioning member. This also enables to simplify the structure of the applying apparatus.

In the accompanying drawings:-

Fig. 1 is a schematic perspective view showing a patch applying apparatus according to one embodiment of the present invention;

Fig. 2 is an elevational view, partly in section, showing a lower main body;

Fig. 3 is a plan view showing the lower main body;

Fig. 4 is a an enlarged perspective view showing a platen receive side of the lower main body;

Fig. 5 is a sectional view showing an upper main body;

Fig. 6 is a plan view showing the upper main body;

Fig. 7 is an enlarged sectional view showing the patch applying apparatus;

Fig. 8 is a sectional view showing a fastening cap for securing a support shaft for a patch holder;

Fig. 9 is a sectional view showing a disc member which is mounted on and around the support shaft;

Fig. 10 is a front view showing the support shaft;

Fig. 11 is a plan view showing a platen;

Fig. 12 is a sectional view as viewed in an arrow line A-A in Fig. 11;

Fig. 13 is a sectional view as viewed in an arrow line B-B in Fig. 11; and,

Fig. 14 is a plan view showing the manner of positioning of a patch when it is applied.

Now, an embodiment of the patch applying apparatus of the present invention will be described with reference to the drawings. Fig. 1 shows the schematic perspective view of the embodiment of patch applying apparatus. In the drawing, the patch applying apparatus 10 comprises a lower main body 11 as a first main body which extends in a longitudinal direction, an upper main body as a second main body which is hinged to one end

of the lower main body 11 (on the right hand in Fig. 1), a patch holder 13 which is removably provided on the upper main body 12 and a platen 14 disposed on the lower main body 11 below the patch holder 13.

As shown in Figs. 2 to 4, the lower main body 11 comprises a plain portion 20 which extends in a substantially horizontal direction, a semi-arcuate hook engaging portion 21 which is provided at one end of the plain portion 20 integrally therewith, a platen receiving hole 22 formed at the other end of the plain portion 20, and a leaf spring 24 which extends in substantially parallel with the plain portion 20 in the platen receiving hole 22. The leaf spring 24 is connected to a depending wall 25, which is in turn connected to the plain portion 20. Thus, the leaf spring 24 is supported in a cantilever manner so that it provides a constant spring force. The plain portion 20 is formed with a U-shaped slit 27, so that an inner portion which is surrounded by the U-shaped slit 27 constitutes a leaf spring 29 having a projection 28. A tapered hole 30 and a tapered projection 31 are formed between the U-shaped slit 27 and the hook engaging portion 21. The plain portion 20 is provided on the both longitudinal sides thereof with a pair of peripheral walls 33 which extends in a longitudinal direction longer than the plain portion 20, so that the peripheral walls 33 define the platen receiving hole 22. The peripheral walls 33 are formed with guide grooves 35, the height of which is slightly less than that of the peripheral walls 33 in symmetric positions.

The inner opposing faces of the peripheral walls 33 which define the platen receiving hole 22 are formed with opposing arcuate faces 37 having a smaller curvature. Each of the arcuate faces 37 is provided with a pin 38 for pivotally scale supporting a platen 14 as is shown in an enlarged scale in Fig. 4. The pins 38 project from the respective inner faces 27.

As shown in Figs. 5 and 6, the upper main body 12 comprises an inclined portion 40 which extends gradually far from the lower main body 11 toward the free end thereof while the inclined portion 40 is connected to the lower main body 11, a rectangular notch 42 which is formed in the inclined portion 40 at the right end thereof as shown in Fig. 6, a rotary shaft 42 provided in the notch 42, which is pivotally engaged with the hook engaging portion 21 of the lower main body 11, a pair of discs 45 which are disposed on the opposite longitudinal sides of the inclined portion 40, a curved leaf spring 46 which extends through a cutout 40 formed in the inclined portion 40 in a longitudinal direction so that the front end thereof is in a slightly downward position, and a holder mount 48 which is provided at the front end of the inclined portion 40, that is the free end of the upper main body 12.

The upper main body 12 is formed on the lower side thereof in the left of the notch 42 with a tapered projection 50 and a tapered hole 51, which can mate with the tapered hole 30 and the tapered projection 31, respectively. This arrangement and engagement of the rotary

shaft 43 with the hook engaging portion 21 enables the upper main body 12 to be linked to the lower main body 11 without causing misalignment. The depth of the tapered holes 30 and 51 is preset larger than the projecting height of the tapered projections 31 and 50, so that flexing or turning of the base side is allowed when the free end of the upper main body 12 is depressed.

The discs 45 which are disposed on the opposite sides of the inclined portion 40 are provided with projections 45A (refer to Fig. 5) on the opposite sides of the lower portions of the discs 45. The projections 45A are positioned in guide grooves 35 of the lower main body 11 in such manner that they are displaced downward or upward.

The holder mount 48 comprises an annular bottomed concave 53 which opens upward, and a holding cylinder 57 disposed in the substantial center of the concave 53, the holding cylinder 57 having a hole 54 in the center thereof and split grooves 56 which are provided in 180 spaced angular positions so that the cylinder 57 is bifurcated. The holding cylinder 57 is tapered in an upward direction. The concave 53 is formed on the inner surface thereof with internal threads 59.

As shown in Figs. 7 through 10, the patch holder 13 comprises a fastening cap 60 which is received in the concave 53 of the holder mount 48, a support shaft 62 which is inserted into the holding cylinder 57 and is supported therein and a disc member 63 which is mounted in the upper position of the uppermost patch of a patch stack which is supported by the support shaft 62. As shown in Fig. 1 and 7, the fastening cap 60 comprises a knob 65 which is knurled on the outer peripheral thereof and a threaded cylinder 66 having an outer diameter which is smaller than that of the knob 65. The threaded cylinder 66 is formed on its outer periphery thereof with external threads 67 which are threadably engaged with the internal threads 59 of the concave 53. The threaded cylinder 66 has such a tapered inner surface that the inner diameter of the lower end is larger than that of the upper end thereof. When the threaded cylinder 66 is screwed into the concave 53, it can fasten the holding cylinder 57 in an inner radial direction.

As shown in Figs. 7 and 10, the support shaft 62 comprises a base shaft 62A which is supported in the holding cylinder 67 and a threaded shaft 62B which is axially elongated to the base shaft 62A. The disc member 63 is threadably engaged with the threaded shaft 62B on the outer periphery thereof so that the disc member 63 is movable along the threaded shaft 62B. The base shaft 62A is formed with projecting ribs 62C in 180 spaced angular positions on the outer periphery thereof. The projecting ribs 62C are positioned in the split grooves 56 of the holding cylinder 57 for preventing the support shaft 62 from unwanted rotating. The threaded shaft 62 is formed at the lower end thereof with an inverted mushroom-shaped bulged portion 70 which is tapered toward its front end. The bulged portion 70 has a diameter which is substantially equal to that of the di-

ameter of the central hole, not shown, of the patch 64 so that the bulged portion 70 provides a given resistance for next patch 64 to prevent it from being separated together with adhered patch when the lowermost patch 64 is adhesively applied on the periphery of the punched hole and is separated from the support shaft 62. A stack of patch 64 which is located around the threaded shaft 62B is loaded in such a manner that the adhesive layers of the patches face downward.

As shown in Fig. 7, 11 through 13, the platen 14 which is retained by the lower main body 11 comprises a tongue-like upper piece 72 having a receiving hole 71 for receiving the lower patches 66 of the stack, a paper receiving face 75 which is provided so that a space C into which an object such as document P (refer to Fig. 7) is inserted is formed between the paper receiving face 75 and the bottom surface of the upper piece 72, a pair of bearing faces 76 which are depended from the paper receiving face 75 on the opposite sides thereof in Fig. 13, a depending face 78 which is depended from the paper receiving face 75 at the front end thereof, that is, the left end as viewed in Fig. 12, and projections 80 which project downward from the substantial midposition of the bottom surface of the paper receiving face 75. The upper piece 72 is formed in its central position at its front end with a linear marking 72A extending along a center axis passing through the substantial center of the receiving hole 71 by a suitable method such as engraving, printing or bossing.

The paper receiving face 75 is formed with a hole 82, which is in the shape of oval having an diameter in a lateral direction in Fig. 11 which is slightly larger than that in a vertical direction. This allows the gradual arcuate movement of the bulged portion in the hole 82, which is caused by the movement of the support shaft 62 in a vertical direction. The bearing faces 76 are formed with bearing holes 84 respectively so that the pins 38 which are formed in the lower main body 11 can be adapted into these bearing holes 84.

Now a method of assembling the patch applying apparatus of the present embodiment and its use will be described.

In assembly of the patch applying apparatus, the platen 14 is firstly mounted on the lower main body 11. This mounting is conducted by forced-fitting the platen 14 into the lower main body 11 in such a manner that the pin 38 of the lower main body 11 is located in the bearing hole 84 formed in the bearing face 76. After completion of the force-fitting, the platen 14 is rendered pivotal around the axis of the pin 38 and is set in an initial position in which the left side of the upper piece 72 is slightly lower than its right side as shown in Fig. 7.

Subsequently, the rotary shaft 43 of the upper main body 12 is received in the hook engaging portion 21 of the lower main body 11. Assembly is conducted in such a manner that the projection 45A is located in the guide grooves 35 of the lower main body 11 by depressing the free end of the upper main body and simultaneously ap-

plying such a force that the discs 45 disposed in a symmetric arrangement are moved far. At this time, the tapered hole 30 and the tapered projection 31 which are formed in the hook engaging portion of the lower main body 11 are adapted to the tapered projection 50 and the tapered hole 51 formed in corresponding positions in the upper main body 12 so that the assembled position is stably maintained.

After completion of such assembly, the patch holder 13 is set on the holder mount 48 which is provided at the free end of the upper main body 12. At this time, a stack of a multiplicity of patches 64 is preliminarily mounted on the threaded shaft 62B which forms the support shaft 62 of the patch holder 13 and then the base shaft 62A having the stack as an integral unit is inserted into the holding cylinder 57. Then, the external threads 67 of the fastening cap 60 is screwed into the internal threads 59 of the concave 53 for fastening. This fastening causes the holding cylinder 57 to reduce its diameter to more fasten the base shaft 62A. The support shaft 62 is prevented from being rotated since the projecting ribs 62C formed on the base shaft 62A are engaged with the split grooves 56. Prior to mounting the support shaft 62, the disc member 63 is preliminarily mounted on the shaft 62B in such a manner that it is located on the uppermost patch 64.

In the thus assembled patch applying apparatus 10, the patch stack 64 may be encased in a bottomed cylindrical protective cap (not shown) if necessary.

As shown in Fig. 14, when the patch 64 is applied by using the patch applying apparatus 10, the center of the punched hole 85 formed in the document P is visually aligned with the phantom center line C with reference to the marking 72A formed on the upper piece 72 of the platen 14 and the document is moved in a direction represented by an arrow in the drawing so that it is inserted into the space C between the upper piece 72 and the paper receiving face 75. The center of the punched hole 85 is only required to be visually aligned with the phantom center line C in the inserted position, that is, the position of the document P represented by a solid line in Fig. 14.

After setting of the document has been completed, the free end of the upper main body 12 is depressed from an upper position. This causes the whole of the patch holder 13 to be lowered toward the platen 14, so that the front end of lower portion of the support shaft 62, that is, the bulged portion 70 will enter into the hole 82 of the paper receiving face 75 and simultaneously the lowermost patch 64 is adhesively applied on the periphery of the punched hole 85 of the document P. At this time, the platen 14 is pivoted around the axis of the pin 38 by the depressing force in such a manner that its right side portion is lowered from a position shown in Fig. 7. Correspondingly, the projection 80 on the bottom surface of the paper receiving face 75 urges the leaf spring 24 so that the leaf spring 24 is slightly bent downward and the platen 14 is displaced to a substantially

horizontal position to bring the document P into face-to-face with the patch 64 so that the pressure-sensitive layer of the patch 64 is completely bonded to the periphery around the punched hole 85.

Then, when the depressing force is released, the free end of the upper main body 12 is lifted by the elastic recovery power of the bent leaf spring 46 which is provided on the upper main body 12. Simultaneously with this, the platen will be returned to the inclined position as shown in Fig. 7 by the elastic recovery power of the leaf spring 24. At this time, the patch 64 which has been adhered to the document P changes its angle with respect to next patch 64 so that the adhered patch 64 is gradually separated from next patch 64 from the edge thereof. Separation of the bonded patch from the next patch is also facilitated by the bulged portion 70 of the support shaft 62. There is no likelihood that a plurality of patches are separated together as a mass from the stack of the patch 64.

If the number of patches 64 in the stack is decreased as the patches 64 are consumed, the disc member 63 need only set to a lowered position by turning the disc member 63. If all the patches 64 have been consumed, it suffices to remove the support shaft 62 and the disc member 63 and to replace by a new stack of the patches, which is integral with another disc member. Of course, only new stack of patches may be loaded without removing the support shaft 62 and the disc member 63.

In accordance with the present embodiment, there is provided a patch applying apparatus which is capable of adhesively applying a patch in the same manner as that of binding of document with a stapler and in which ease of use is improved.

It is to be understood that the patch applying apparatus of the present invention is limited to the foregoing embodiment and that its appearance and shape of the lower and upper main bodies 11 and 12 may be appropriately changed so far as they perform the same function as that of the foregoing embodiment. Although the disc member 63 is movable in an axial direction of the support shaft 62 through a screw arrangement, the same operation and effect can be also achieved by using an appropriate stopper structure which can be movable along the support shaft in an axial direction and can be stopped in a desired position. It is to be noted that the present invention may include a modification in which the patch holder 13 is provided on the lower main body and the platen 14 is provided on the upper main body 12.

As mentioned above, since the platen changes its position to a position which is in substantially parallel with the patch by the patch urging force, the patch can be in a face-to-face with the object on which the patch is adhered so that strong patch adhesion is possible without causing unqualified bonding. Since the platen can be displaced to the inclined position when the urging force on the patch is released, separation between the

patch which has been adhered on the object such as document and next patch can be stably performed and patches can be applied one by one in an easy and quick manner.

Since the position of the platen can be changed with aid of the leaf spring on the lower main body and the downward projection on the lower side of the platen, necessity of a spring including additional components which are specifically provided is obviated. Slight change in the shape of the lower main body is only required and reduction in the number of parts results in a simplified structure. Complicated assembly working of springs and the like can be eliminated.

Since the patch holder has the disc member which is movable along the support shaft, the disc can be lowered in response to the number of the consumed patches and the patches can not be moved upwardly, by the reaction force on application of the patch so that a constant applying force can be always imparted to the patch. A suitable resisting force can be applied for separation between the lowermost patch and the next patch by the existence of the bulged portion which is formed at the lower end of the support shaft. This achieves positive adhesion of patches one by one in association with an arrangement in which the platen 14 is inclined.

Since the platen is provided with marking which is used for centering of the punched hole of the document on application of the patch, and the patches can be applied on the document while the optimal position of the patch encircling the punched hole of the document can be visually determined without using a special positioning member.

Claims

1. A patch applying apparatus which holds a stack of a patches each having a hole corresponding to a punched hole of an object on which the patch is applied, which is capable of applying the patch around the hole one by one,

characterized in that said patch applying apparatus comprises

a first and second main bodies (11) and (12), which are hinged at one end thereof and are free at the other end thereof;

a patch holder (13) which is removably provided at the free end of one of said main bodies (11) and (12) for holding a stack of patches (64); and

a platen (14) which is disposed on the free end of the other main body,

whereby said platen (14) is provided so that it is displaced to a substantially horizontal position when a patch urging force is applied and is supported so that it is in an inclined position when the patch urging force is released.

2. A patch applying apparatus which holds a stack of a patches each having a hole corresponding to a punched hole of an object on which the patch is applied, which is capable of applying the patch around the hole one by one,

characterized in that said patch applying apparatus comprises

a lower main body (11) which extends in a longitudinal direction;

an upper main body (12) which is hinged to one end of the lower main body (12) at its one end and having the other end which is a free end so that the upper main body (12) can be pivotally moved;

a patch holder (13) which is removably provided on the free end of said upper main body (12) for holding a stack of patches (64) with the adhesive layer facing the lower main body (11); and a platen (14) disposed on the lower main body (11) below the patch holder (13);

whereby said platen (14) is provided so that it is displaced to a substantially horizontal position when a patch urging force is applied and is journaled so that it is in an inclined position when the patch urging force is released.

3. A patch applying apparatus as defined in Claim 2, characterized in that the lower main body (11) is provided with a leaf spring (24) which is supported on the lower main body (11) below the bottom side of the platen (14) in a cantilever manner, said leaf spring (24) being inclined under the depressing force from a downward projection (80) on the lower side of the platen (14) to allow the platen to be displaced to a substantially horizontal position and being elastically returned for allowing the platen (14) to return an inclined position when said depressing force is eliminated.

4. A patch applying apparatus which holds a stack of a patches each having a hole corresponding to a punched hole of an object on which the patch is applied, which is capable of applying the patch around the hole one by one,

characterized in that said patch applying apparatus comprises

a first and second main bodies (11) and (12), which are hinged at one end thereof and are free at the other end thereof;

a patch holder (13) which is removably provided at the free end of one of said main bodies (11) and (12) for holding a stack of patches (64); and

a platen (14) which is disposed on the free end of the other main body, said patch holder (13) comprising a support

shaft (62) extending through holes of the patches of the stack and a disc member (63) mounted around the support shaft (62), said disc member being movable along said support shaft (62) in an axial direction thereof.

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5. A patch applying apparatus which holds a stack of patches each having a hole corresponding to a punched hole of an object on which the patch is applied, which is capable of adhering the patch around the hole one by one,
- characterized in that said patch applying apparatus comprises

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a lower main body (11) which extends in a longitudinal direction;

an upper main body (12) which is hinged to one end of the lower main body (12) at its one end and having the other end which is a free end so that the upper main body (12) can be pivotally moved;

a patch holder (13) which is removably provided on the free end of said upper main body (12) for holding a stack of patches (64) with the adhesive layer facing the lower main body (11);

and a platen (14) disposed on the lower main body (11) below the patch holder (13);

said patch holder (13) comprising a support shaft (62) extending through the holes of the patches of the stack and a disc member (63) disposed above the uppermost patch (64), mounted around the support shaft (62), said disc member being movable along said support shaft (62) in an axial direction thereof.

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6. A patch adhering apparatus as defined in Claim 5, characterized in that said support shaft includes an inverted mushroom-shaped bulged portion at its lower end thereof for imparting a resisting force to separate the lowermost patch and the next patch when the lowermost patch is adhered.
7. A patch adhering apparatus as defined in any one of Claims 1 through 6, characterized in that said platen (14) is formed thereon with marking (72A) for visually indicating the center position of a punched hole of said object to which the patch is adhered.

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FIG. 1

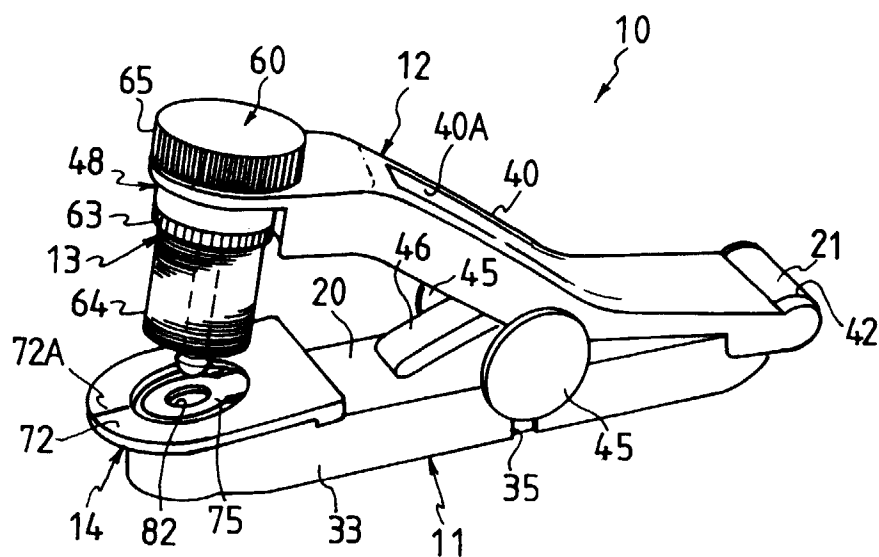


FIG. 2

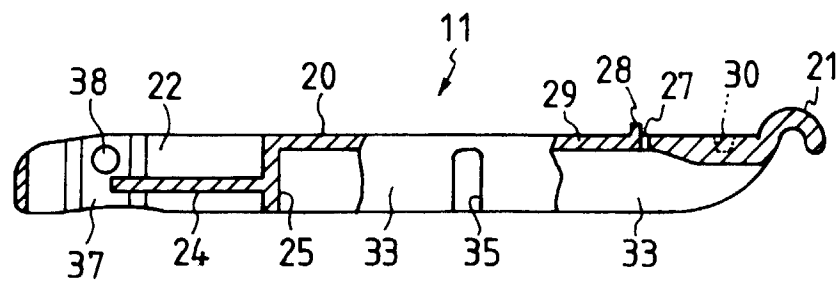


FIG. 3

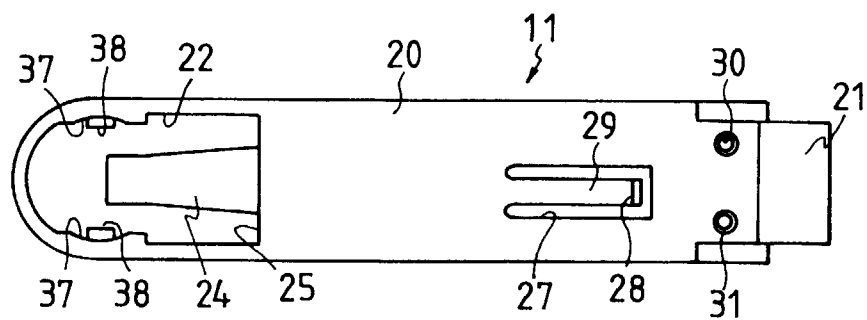


FIG. 4

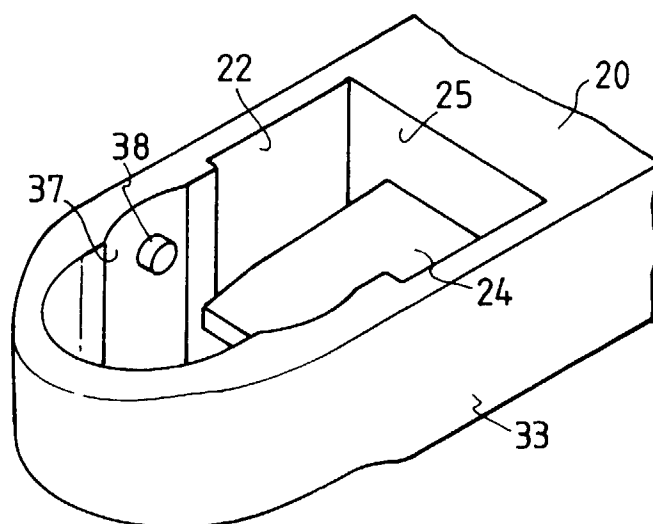


FIG. 5

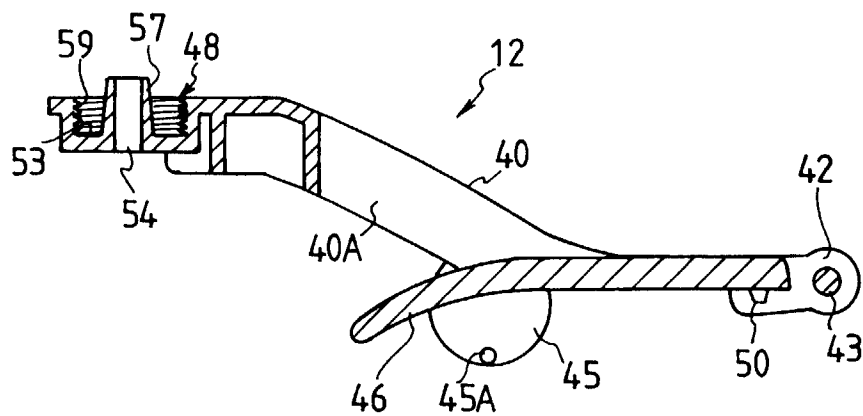


FIG. 6

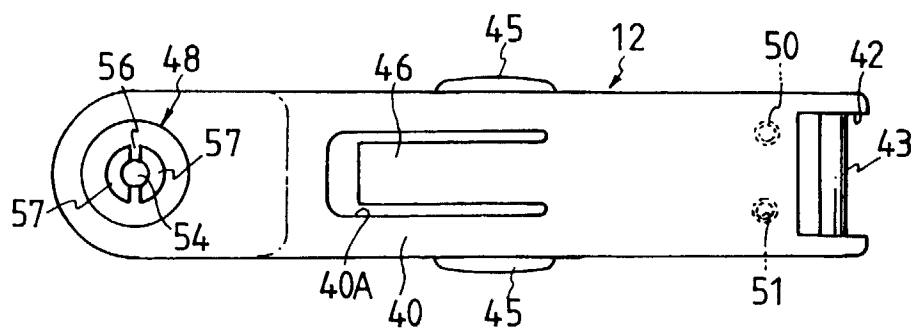


FIG. 7

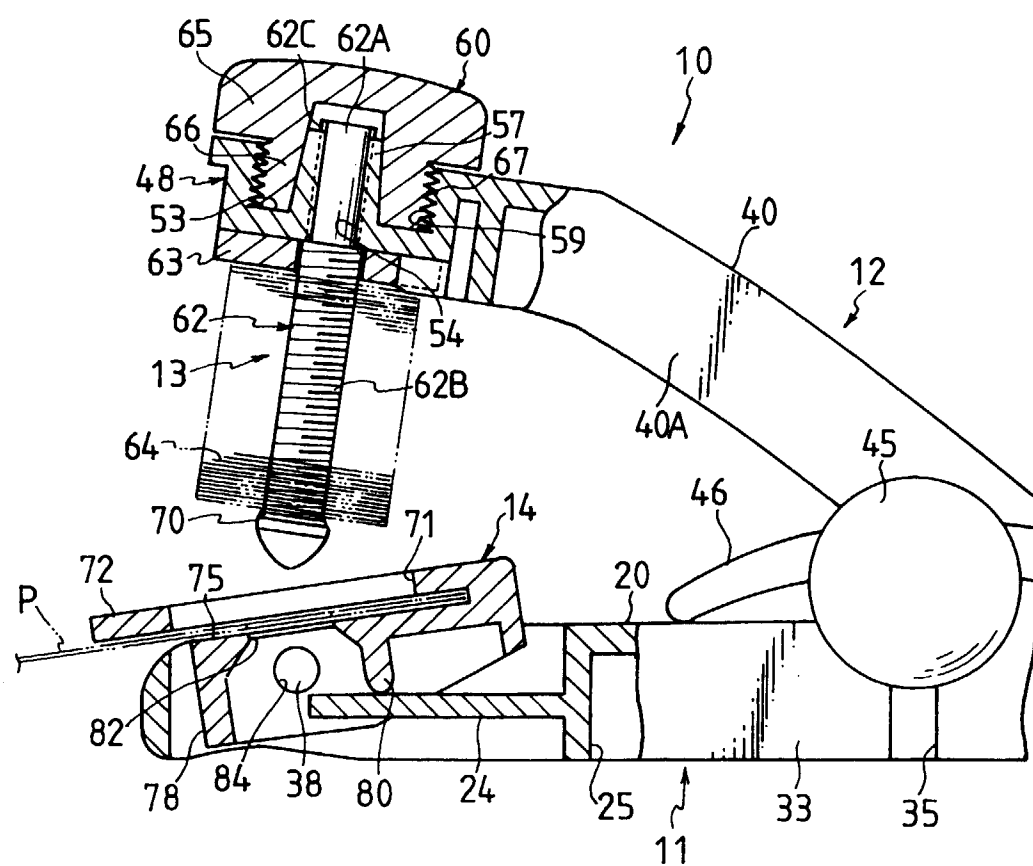


FIG. 8

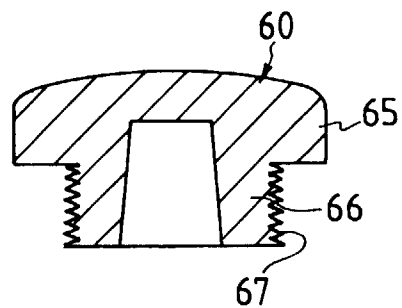


FIG. 9



FIG. 10

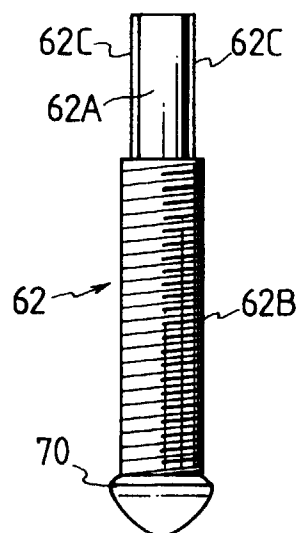


FIG. 11

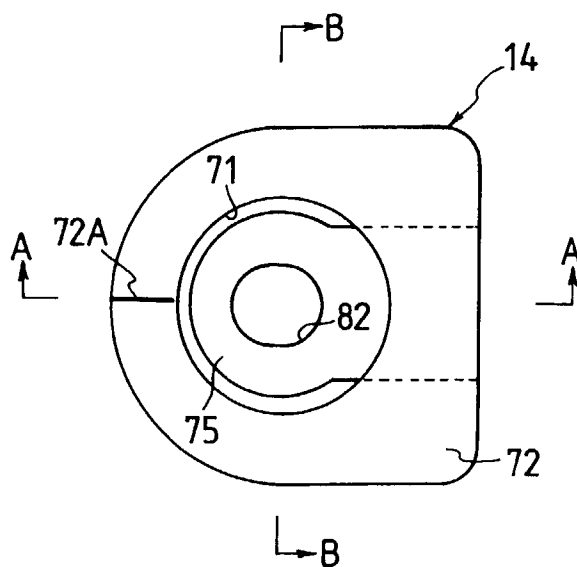


FIG. 12

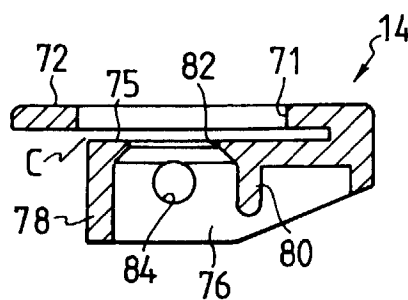


FIG. 13

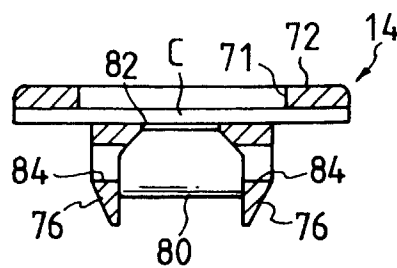
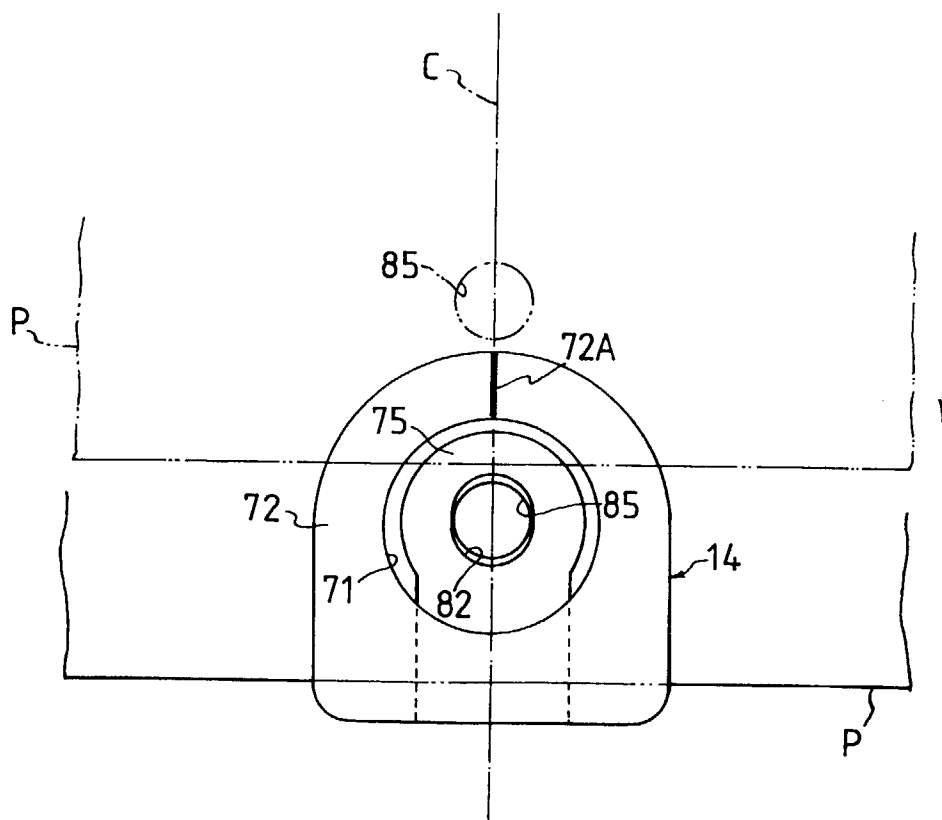


FIG. 14





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 30 4668

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	FR 2 631 277 A (ABJAD PRODUCTS) 17 November 1989 * the whole document *	1-6	B42F3/00
A	FR 1 331 619 A (PRIETO VILLALON) 16 December 1963 * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B42F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 September 1998	Examiner Evans, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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