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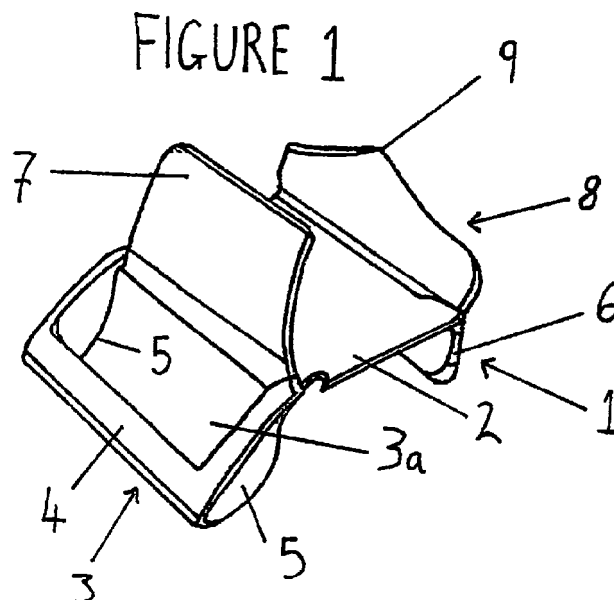
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The application is published incomplete as filed (Rule 68(1) EPC).

(54) **Tape dispenser**

(57) A tape dispenser (1) comprises a body supporting a blade (8) having a cutting edge and a plate (7) lo-

cated in close proximity to one another and each extending laterally with respect to the longitudinal axis of the body and to the same side of the body.



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Description

Field of the Invention

[0001] The present invention relates to a tape dispenser, which may be of the type that attaches to a roll of tape, or of the type in which a roll of tape is situated.

Background of the Invention

[0002] Tape dispensers are long since known, and are generally available in two different types, one being the type where a roll of tape is mounted on a drum, and that drum is placed in a carriage, which mounts a cutting blade, and the other being of the type that is mounted on the roll of tape, and is moveable from roll to roll as a user may require.

[0003] The dispensing of tape presents a number of problems. The tape tends to adhere to itself, which can make lifting the free end of the tape from the roll difficult. Also, known tape dispensers often use blade having a plurality of upstanding serrations which require the tape to be pulled downwards and sideways to tear a piece of tape from the roll. The result of so attempting to tear off a piece of tape is a tear line extending longitudinally along the tape rather than laterally across.

[0004] Another problem associated with known tape dispensers is that in order to pull more tape off the roll it is necessary to lift the tape at a point between the blade of the dispenser, upon which the free end of the tape is situated, and the point at which the tape is released from adherence with the roll. Lifting the tape in this manner can lead to the tape becoming crumpled.

[0005] Proposals have been made to solve some of these problems.

[0006] US3556367 (Akira Ikeda) describes a device that is held onto a roll of adhesive tape with a resilient bearing member such as a spring, and which provides a guide and slot through which the tape is drawn and cut by a blade.

[0007] WO2005/108258 (Pretorius) describes an accessory that is attached to a roll of adhesive tape and held in place on the roll by a spring. A slot is formed in the accessory through which the tape is drawn and pulled to a cutting blade on one side of the slot. After cutting, the adhesive side of the tape rests on a support surface at the other side of the slot. The cutting blade presents a point. The tape is brought down on the point and then tears from the centre outwardly to either side of the point.

[0008] It is known from US6681830 and WO02055410 to provide an irregular surface in a tape dispenser in order to reduce adhesion. Both these documents refer to a dimpled surface.

[0009] However, none of the devices described provide a dispenser that is satisfactory, and it would therefore be desirable to provide an improved tape dispenser.

Summary of the Invention

[0010] According to the invention there is provided a tape dispenser comprising a body supporting a blade and a plate located in close proximity to one another and each extending laterally with respect to the longitudinal axis of the body and to the same side of the body, wherein the blade presents a cutting edge.

[0011] The blade and the plate may lie substantially parallel one another.

[0012] Advantageously, the blade is non-planar and preferably it includes a point.

[0013] Preferably, the point of the blade is located towards the centre of the blade.

[0014] In one embodiment of the invention the blade and the plate extend substantially perpendicularly from the body. Advantageously, a first part of the plate and the blade each extend in a direction substantially perpendicular to the body. Preferably, a second part of the plate extends at an angle forward of the axis of the first part of the plate and towards the blade. Preferably, the second part of the plate is curved or planar.

[0015] In another embodiment the plate is inclined with respect to the longitudinal axis of the body.

[0016] Preferably, the plate or the second part thereof extends at an angle in the range of 45 to 90 degrees to the longitudinal axis of the body. More preferably, the plate or the second part thereof extends at an angle in the range of 55 to 80 degrees to the longitudinal axis of the body. Still more preferably, the plate or the second part thereof extends at an angle in the range of 60 to 75 degrees to the longitudinal axis of the body. Yet more preferably, the plate or the second part thereof extends at an angle in the range of 63 to 72 degrees to the longitudinal axis of the body. Most preferably, the plate or the second part thereof extends at an angle of 67 degrees to the longitudinal axis of the body.

[0017] Advantageously, the plate includes removed portions, which may extend inwardly from the outer edges of the plate.

[0018] The plate is advantageously a spring plate. This provides the advantage that the tape is pulled away from the blade when a piece of tape has been successfully separated from the reel.

[0019] The tape dispenser preferably includes a spacer adapted to, in use, engage with the tape of a reel of tape on which the dispenser is mounted.

[0020] The tape dispenser may include a guide means. The guide means preferably includes side members adapted, in use, to engage with the reel of tape and to limit lateral movement of the dispenser with respect to the reel of tape.

[0021] The guide means may include at least one cross-member, extending in a lateral direction with respect to the reel of tape, and preferably across the reel of tape. The at least one cross-member, with other parts of the guide means, defines an opening through which, in use, the free end of the reel of tape is drawn. The user

draws a piece of tape of sufficient length through the opening to provide a separated piece of tape of the desired length.

[0022] In the case where the dispenser is mounted on a reel of tape, pulling the tape off the reel has the effect of causing the dispenser to slide on the reel of tape and rotate about the centre of the reel. This due to the tape engaging with the cross-member and exerting a force thereon sufficient to move the dispenser.

[0023] The tape dispenser preferably includes a base which mounts the blade and the plate. The spacer may be mounted on the base. The guide means may also be mounted on the base. Any or all of the aforesaid may be fabricated as a plastics moulding, preferably as a one-piece plastics moulding, for a plastic such as polypropylene.

[0024] Advantageously, the dispenser includes a stretchable flexible element, for example a length of elasticated thread, which in use attaches to the body of the tape dispenser and extends around the reel of tape. The element may include at least one enlarged portion so shaped and dimensioned as to co-operate with and not pass through an opening in the said body of the dispenser. The body may include a slot in which the element is received.

[0025] The tape dispenser of the invention, whether in a form that sits upon a reel of tape or the form comprising a carriage in which the reel of tape sits, provides distinct advantages over the prior art. Providing a pointed blade assists in ensuring that at the point where a piece of tape is separated from the remainder of the tape on the reel, the cut or tear is neat and does not run along the length of the tape, as often happens with tape dispensers of the art. The provision of a plate in conjunction with the blade, and in particular where the plate is a spring plate, the blade is able to separate the desired piece of tape from the tape on the reel more easily. This is because the plate allows a force to be exerted on the tape where the tape engages the blade that is much greater downward component than is the case with typical tape dispensers. Where the plate is sprung, immediately the tape is cut that part of the tape that is still connected to the tape on the reel but lies immediately behind the blade is lifted therefrom, thereby making it easy for a user to grasp the free end of the tape on the reel to separate further desired pieces of tape.

Brief Description of the Drawings

[0026] In the Drawings, which illustrate preferred embodiments of a tape dispenser according to the invention, and are by way of example:

Figure 1 is a schematic representation of the tape dispenser;

Figure 2 is a rear end view of the tape dispenser illustrated in Figure 1;

Figure 3 is a cross-sectional elevation on the axis B-B of the tape dispenser shown in Figure 2;

Figure 4 is a side view of the tape dispenser illustrated in Figure 1;

Figure 5 is a front end view of the tape dispenser illustrated in Figure 1;

Figure 6 is a bottom plan view of the tape dispenser illustrated in Figure 1;

Figure 7 is a perspective view of the tape dispenser illustrated in Figure 1 from above;

Figure 8 is a schematic representation of the tape dispenser illustrated in Figure 1, attached to a roll of tape;

Figure 9 is a schematic representation of an alternative embodiment of a tape dispenser according to the invention;

Figure 10 is a schematic representation of an alternative embodiment of the invention;

Figure 11 is a plan view of the embodiment of the invention illustrated in Figure 10;

Figure 12 is a schematic representation of the embodiment of the invention illustrated in Figure 10, viewed from the underside;

Figure 13 is side view of the embodiment of the invention illustrated in Figure 10;

Figure 14 is a schematic representation of an alternative embodiment of the invention;

Figure 15 is a schematic representation of an alternative embodiment of the invention;

Figure 16 is a schematic representation of an alternative embodiment of the invention;

Figure 17 illustrates an alternative embodiment of the invention;

Figure 17a is a cross-sectional side view of an alternative embodiment of a point of the tape dispenser illustrated in Figure 17; and

Figure 17b is front view of the point illustrated in Figure 17a.

Detailed Description of the Preferred Embodiments

[0027] Referring now to Figure 1, there is shown a tape

dispenser 1 of the type that is suitable for attachment to a reel of adhesive tape. The tape dispenser 1 is formed of moulded plastics material, and comprises a base plate 2, one end of which mounts an upwardly extending blade member 8 having a point 9, and a downwardly extending spacer member 6, which in use rests on the surface of the reel of tape.

[0028] The other end of the base plate 2 mounts a spring plate 7 and guide 3, which comprises a cross-member 4 and side members 5, 5'. The guide 3 limits sideways movement of the dispenser 1 on the reel of tape.

[0029] The cross-member 4, the side members 5, 5' and the rear edge of the base plate 2 form an opening through which the free end of the tape is passed.

[0030] In the illustrated example, the spring plate 7 is provided with a non-uniform surface comprising a plurality of ribs extending across the said surface. The non-uniform surface may be provided by other elements, such as dimples for example. By providing the spring plate with a non-uniform surface an adhesive tape will still adhere thereto, but not as strongly as if the surface were smooth, and hence releasing an adhesive tape from the surface of the spring plate 7 is easier where the surface is non-uniform than when it is uniformly smooth. However, adhesion of the tape to the spring plate 7 also depends on the properties of the material from which the plate is formed. For some materials a smooth surface may function satisfactorily.

[0031] The spacer member 6 serves to provide a second point of engagement of the dispenser with the reel of tape. By providing the spacer member 6 the dispenser is held in a stable position on the reel of tape. In the case where no spacer member 6 is provided the dispenser 1 may pivot about the reel when the user applies a force to the tape on the reel to separate a piece therefrom.

[0032] As mentioned above, the blade 8 has a point 9 which, in the illustrated example, is located substantially centrally. The advantage of locating the point 9 of the blade substantially centrally is that the user need pull the tape in only one direction (downward) in order to separate a piece of the tape from the tape on the reel, whereas with a blade that is flat and perhaps provided with teeth, the tape must be pulled downward and sideways, which often results in the tape tearing longitudinally rather than laterally. This presents two problems. First, the piece of tape separated from the reel is not of the desired shape. Second, the free end of the tape on the reel is not square. This often leads to the free end of the tape becoming detached from the plate supporting the blade, and hence re-attaching itself to the reel.

[0033] As can be seen from the Figures, the blade 8 is curved. It has been found that when using a curved blade, rather than a straight blade, the resulting tear is straighter and hence more desirable.

[0034] The base plate 2 of the dispenser includes parts 2a and 2b of a fastening system which comprises an element of elastic thread having a stopper at each end

thereof. A user fastens the dispenser to a reel of tape by first placing the device 1 onto the reel with the side members 5, 5' to either side of the reel. The user then secures one end of the elastic thread in the part 2a with one stopper engaging with the part 2a from the underside. The thread is then passed over the top of the reel of tape with the thread locating in the part 2b, which is in the form of a slot, down the side and underneath the reel of tape and back to the part 2a, where the other stopper engages with the part 2a from the upper side.

[0035] Once secured on the reel of tape, the free end thereof is passed through the opening 3a. The tape is pulled backwards against the cross-member 4, pulling tape off the reel and causing the device 1 to move around the circumference of the reel until the user ceases to pull backwards on the tape. The user then pulls the tape towards the blade 8, and in so doing pulls the tape towards the spring plate 7. With the tape engaged with the spring plate 7, the piece of tape is held away from the reel so that it may easily be detached by the user pulling the tape downward on the blade 8. The point 9 pierces the tape which then tears from the position of the point 9 to the outer edges of the tape. The spring plate 7 exerts a force on the tape which keeps it taught as the user pulls downward on the tape against the blade. The combination of the spring plate 7 and the close proximity of the blade 8 assist in ensuring a neat separation of the piece of tape from the reel, as does the substantially centrally located point of the blade. The result is a separated piece of tape that is neatly cut. Also, the free end of the tape is presented in such a way that another piece thereof may be separated easily from the reel. This is because the tape is held in place on the spring plate 7, and a short length of tape extends beyond the end of the spring plate 7.

[0036] To remove tape from the reel subsequently the user grasps the short length of tape extending between the spring plate 7 and the blade 8 and lifts the tape upward. The user may then pull the tape off the reel in the manner described above, and repeat the process.

[0037] The tape dispenser 8 also includes a slot 10 which may be adapted for cutting.

[0038] Referring now to Figure 8, the tape dispenser 1 is illustrated mounted on a reel of tape 11. As can be seen, the dispenser 1 is attached to the reel of tape 11 by means of a length of elasticated thread 12, which include enlarged portions 13a, 13b for engagement in the opening 2a.

[0039] Figure 9 illustrates a tape dispenser of the type including a carriage 14 in which sits a drum 15 on which a reel of tape 16 is mounted. The carriage 14 also mounts a spring plate 17 and a blade 18 having a point 19. As will be appreciated from the drawing, the guide means 5 is not necessary in this embodiment, nor is any flexible element needed as the reel of tape sits in the tape dispenser, rather than the tape dispenser sitting on the reel of tape.

[0040] Referring now to Figures 10 to 13, there is shown an alternative embodiment of the invention. The

embodiment illustrated in Figure 10 to 13 functions in a substantially similar manner to that illustrated in Figures 1 to 7. However, the base plate 2 includes walls 20, 21, 22 and 23 (and 20' to 23') extending downwardly therefrom to each side of the base plate in pairs. The distance between the walls of respective pairs 20, 20' to 22, 22' correspond substantially to the widths of commonly available rolls of tape. Also, the distance below the base plate 2 at which the walls 20, 20' to 22, 22' terminate are selected to match the respective diameters of commonly available rolls of tape, and are determined such that the tape dispenser 1 sits on the roll of tape substantially as shown in Figure 8 in the way that spacer 6 does in the embodiment illustrated in Figures 1 to 7. It will be noted that the walls 23, 23' share a common axis with side members 5, 5', and serve to maintain the dispenser 1 in the desired position on the roll of tape.

[0041] The tape dispenser 1 illustrated in Figures 10 to 13 also includes slots 24, 24' and 25, 25' to receive the thread 12. It will be noted that this tape dispenser includes additional parts 2a' and 2b' arranged to receive the thread 12. The tape dispenser 1 may therefore be attached to a roll of tape in the manner illustrated in Figure 8, or the thread may be wrap around the tape dispense twice, lying in all four slots 2a, 2a', 2b and 2b'.

[0042] The angle between the guide 3 and the longitudinal axis of the body 2 may be approximately 140 degrees.

[0043] It can also be seen from Figures 10 to 13 that the spring plate may be planar rather than curved and arranged at an angle of approximately 67 degrees to the longitudinal axis of the body 2 or the dispenser 1. The angle of 67 degrees may be adjusted, for example, according to the height to the blade.

[0044] Referring now to Figure 14, the tape dispenser 1 is moulded from a relatively hard plastics material. This is advantageous in that the point 9 of the blade 8 does not wear as quickly as where the tape dispenser 1 is moulded from a softer plastics material. However, it has been found that increasing the hardness of the plastic material increases the springiness of the spring plate 7 causing the free end of the tape to rebound on to itself post cutting. Since the object of the invention is to provide for more convenient cutting of tape such a result is undesirable. The springiness of the spring plate 7 may therefore be reduced by forming the spring plate of a softer plastics material than the blade part of the tape dispenser. However, it has also been found that the springiness of the spring plate 7 may be reduced where the spring plate is formed of the same harder plastics material as the blade 8, and in fact the whole dispenser 1. The result may be achieved by forming slots 7' or otherwise cutting away material at the base of the spring plate 7.

[0045] Referring now to Figure 15, the tape dispenser includes a metallic element 9' having a shape corresponding to the shape of the blade 8 and the point 9. The function of the metallic element is to provide improved

cutting, as the metallic element can be made sharp and further they remain sharp for longer than plastics materials. The metallic element may be attached to one surface of the blade 8 or may be formed within the blade 8.

[0046] Polypropylene has been found to be a particularly suitable material from which to manufacture the tape dispenser. Using this material the spring plate provides the required amount of springiness, without the need to form slots in, or otherwise cut away material from the spring plate 7, whilst also providing a good service life.

[0047] Experiments show that with the tape dispenser formed of polypropylene, the spring plate 7 illustrated in Figures 10 to 13, having a thickness of 0.5mm and extending to a vertical height of 13mm at an angle of 67 degrees, deflects by 2mm towards the blade 8 and 2mm towards the base plate 2, when the tape is pulled downwards to engage the blade 8, and that the force required to bring the tape into engagement with the blade 8 is between 115 to 200 grams. The experiments were performed on a number of different samples, the variation in required force being accounted for by manufacturing tolerances. The force exerted on the spring plate 7 is stored within the spring and released when the tape is cut. The stored force is sufficient to pull the tape away from the blade and hold it in a position above the blade 8, yet is not sufficient to cause the tape to flick back onto itself.

[0048] Figure 16 illustrates an alternative embodiment of the tape dispenser where the metallic element 9" is a rod embedded into the blade 8 as illustrated in Figure 16.

[0049] Referring now to Figure 17, an embodiment having a point 9 of modified shape is illustrated. In this embodiment rather than the blade 8 coming to a point 9 through a gradual and continuous reduction in thickness of the material from which the blade is formed, the point 9 includes a part of reduced thickness forming a spike 9a. The wall 9b of the spike 9a proximate the plate 7 in the illustrated example lies on the same plane as the wall 8a of the blade 8 that is proximate the plate 7, whereas the wall 9c of the spike 9a distal from the plate 7 lies closer to the plate 7 than the wall 8b of the blade 8.

[0050] In the illustrated example of Figure 17, the spike 9a does not come to a sharp point, but has a substantially flat surface 9d. The area of the flat substantially flat surface 9d is sufficiently small that the spike may still function to pierce tape, in particular in conjunction with the other elements of the dispenser.

[0051] The effect of the spike is to create a hole in the tape as the tape is pulled downward. The tape then tears sideways from the so formed hole. It has been found that by forming the point 9 of the blade as a spike a better separation of tape is accomplished. Further, it has been found that by forming the point 9 into a spike, the tip of the point can be somewhat thicker than the tip of the point in Figure 4 for example. This forms a stiffer point 9. Still further, again looking at Figure 4, in use, as the tape to be separated from the reel is pulled downward over the point 9 of the blade the tape engages with the curved

part of the front of the blade 8. The force exerted by the user is therefore reacted by bending of the blade towards the plate 7. By forming the point 9 into a spike, the initial piercing of the tape occurs more rapidly and with less force applied. Once the tape has been pierced, it is easier to tear.

[0052] Figure 17a illustrates in detail the cross-section of an alternative shape of point 9a. The point 9a is formed by reducing the thickness of blade 8 at the apex thereof, as with the other embodiment illustrated in Figure 17. However, instead of the reduction in thickness being a gradual and continuous one, the reduction is made in two steps. The first, reduction in thickness of the blade is provided in the blade below the base of the point 9a, generating a slanting surface 9e. The point 9a is formed by a wall 9f extending upward and the wall 8a of the blade 8. The point 9a includes a slanting surface 9g, and terminates in an end face 9d'. The end face 9' is smaller in surface area than the surface 9d in the other Figure 17 embodiments, i.e. it is more pointed. Instead of the wall 9e being a planar surface lying on an angle, the wall 9e could be curved.

[0053] In Figure 17, the sides 8c of the blade 8 are straight. However, they may equally be curved as in the other figures in this specification.

Claims

1. A tape dispenser comprising a body supporting a blade having a cutting edge and a plate located in close proximity to one another and each extending laterally with respect to the longitudinal axis of the body and to the same side of the body, wherein the blade includes a point, and the point is in the form of a spike, the spike being thinner in cross-section than the blade.
2. A tape dispenser according to Claim 1, wherein the blade, the point and the spike are formed in a unitary component such as a plastics moulding, and one face of the spike is concave providing a tape engaging surface at a free end thereof;
or
wherein the blade, the point and the spike are formed in a unitary component such as a plastics moulding, and one face of the spike is concave providing a tape engaging surface at a free end thereof and slanting surface extends from an edge of the tape engaging surface to a wall defining the concave part of the spike.
3. A tape dispenser according to Claim 2, wherein the concave part of the spike is defined by one or more curved walls, or by a plurality of planar walls.
4. A tape dispenser according to any of Claims 1 to 3, wherein: the walls of the blade and the spike to one side of the plate lie in the same plane and the walls of the blade and the spike to the other side of the plate lie on different planes;
or
the walls of the blade and the spike proximate the plate lie in the same plane and the walls of the blade and the spike distal from the plate lie on different planes.
5. A tape dispenser according to any preceding claim, wherein the point of the blade is located towards the centre of the blade.
6. A tape dispenser according to any preceding claim, wherein: the cutting edge is planar or non-planar; or wherein the cutting edge is non-planar and is curved.
7. A tape dispenser according to any preceding claim, wherein: the spike includes a part of the cutting edge of the blade; and/or wherein the blade includes a metallic element in the region of the point.
8. A tape dispenser according to any of preceding claim, wherein: the blade and/or the plate extend from the same side of body; or the blade and/or the plate extend from the same side of body and the blade extends in a direction substantially perpendicular to the body.
9. A tape dispenser according to Claim 8, wherein at least a part of the plate lies at an angle inclined towards the blade.
10. A tape dispenser according to any preceding claim, wherein the plate is a spring plate.
11. A tape dispenser according to Claim 9, wherein the part of the plate inclined towards the blade extends at an angle in one of the ranges: of 45 to 90 degrees; 55 to 80 degrees; 60 to 75 degrees; 63 to 72 degrees; or 67 degrees to the longitudinal axis of the body.
12. A tape dispenser according to any preceding claim, wherein: the plate includes removed portions; or the plate includes removed portions which comprise slots extending inwardly from the outer edges of the plate.
13. A tape dispenser according to any preceding claim, further including a spacer adapted to, in use, engage with the tape of a reel of tape on which the dispenser is mounted.
14. A tape dispenser according to any preceding claim:
further including a guide means;
or
further including a guide means, wherein the

guide means includes side members adapted, in use, to engage with the reel of tape and to limit lateral movement of the dispenser with respect to the reel of tape.

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15. A tape dispenser according to any preceding claim, wherein: the dispenser includes a stretchable flexible element, which in use attaches to the body of the tape dispenser and extends around the reel of tape; or the dispenser includes a stretchable flexible element, which in use attaches to the body of the tape dispenser and extends around the reel of tape and the stretchable flexible element includes at least one enlarged portion so shaped and dimensioned as to co-operate with and not pass through an opening in the said body of the dispenser.

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FIGURE 3

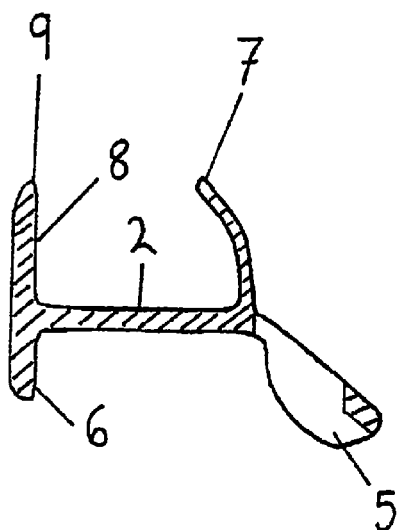


FIGURE 1

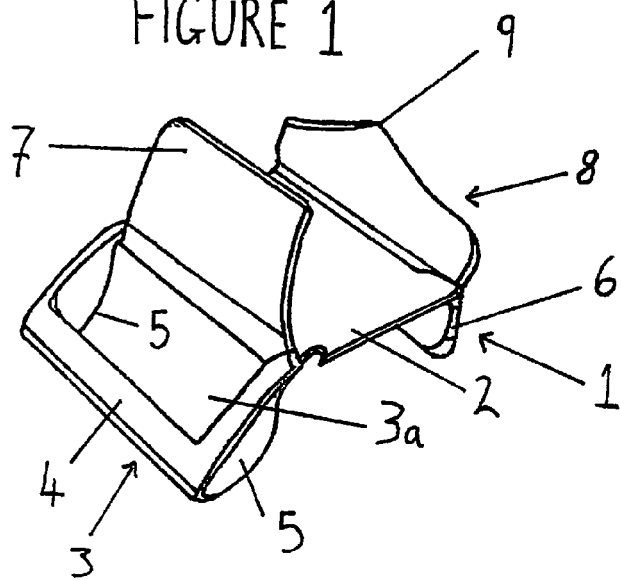
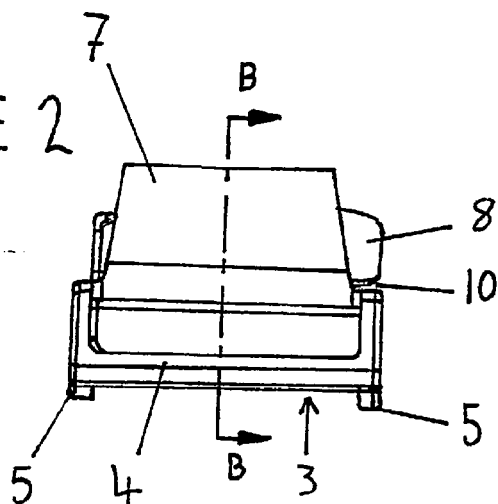


FIGURE 2



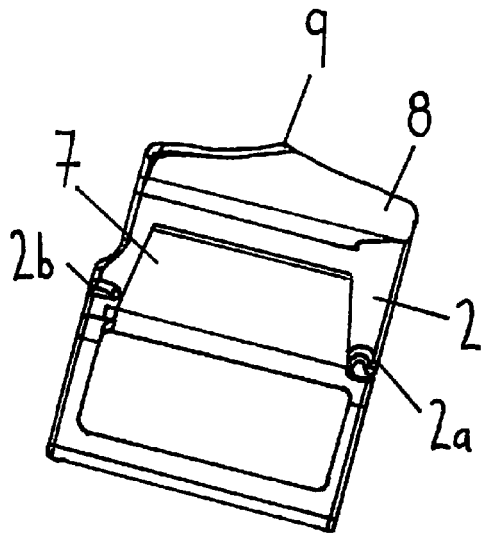


FIGURE 7

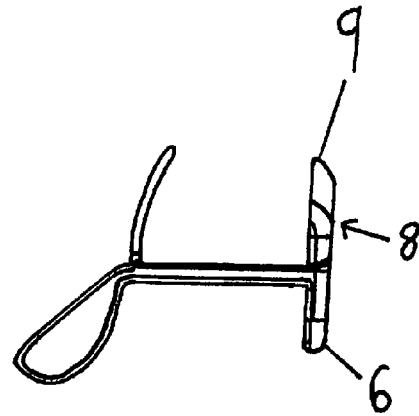


FIGURE 4

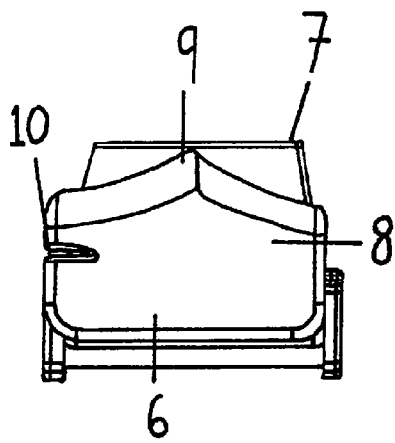


FIGURE 5

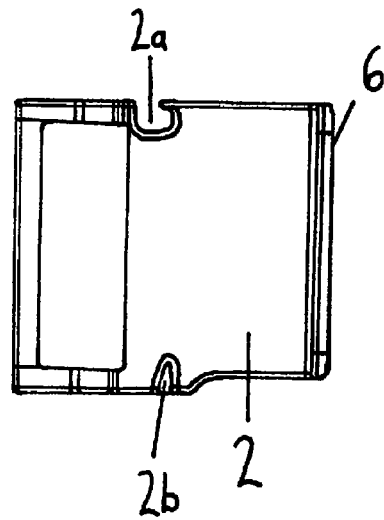


FIGURE 6

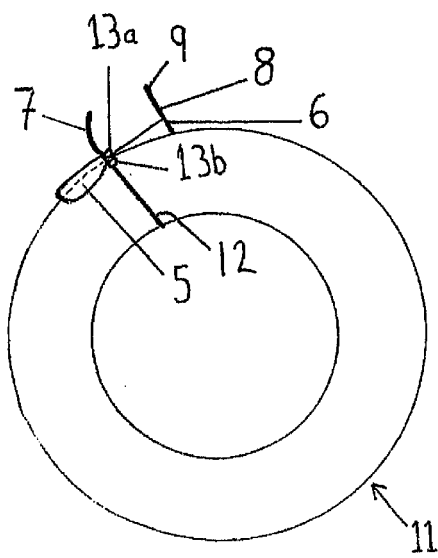


FIGURE 8

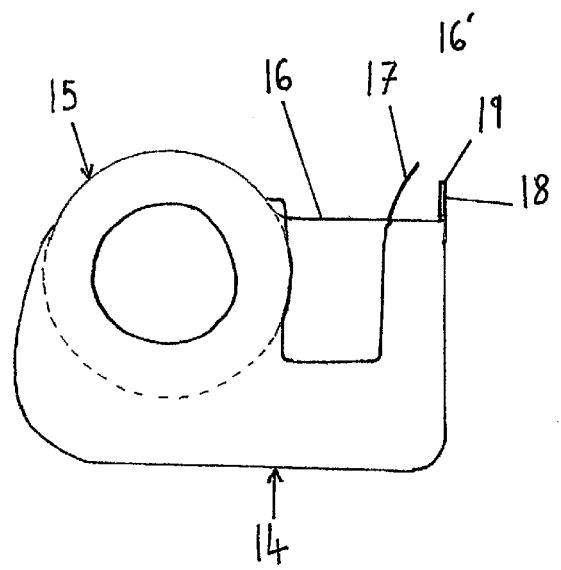
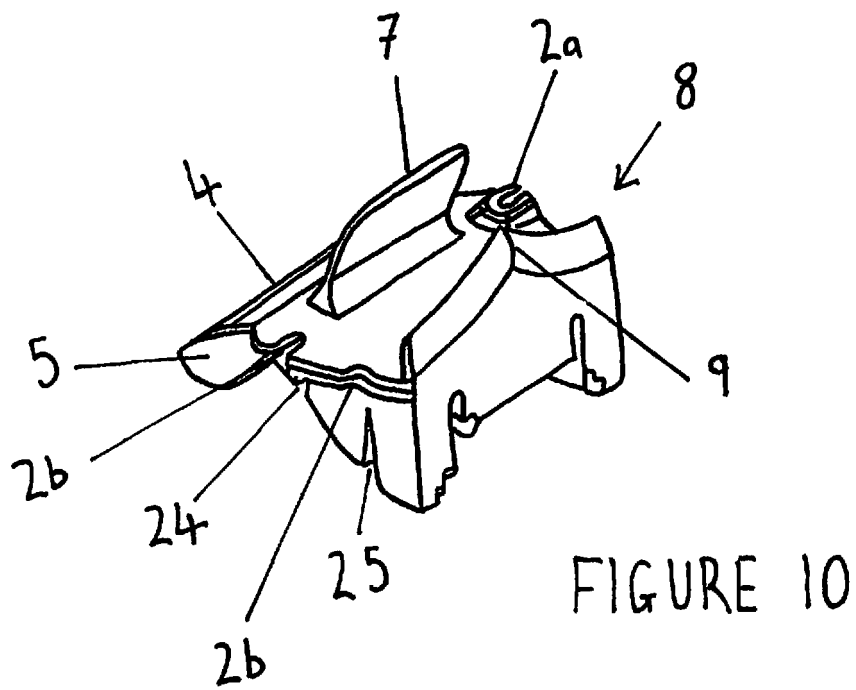


FIGURE 9



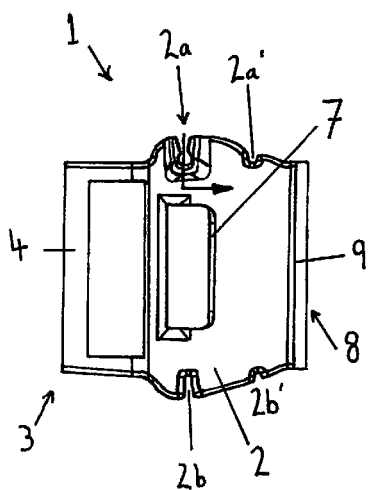


FIGURE 11

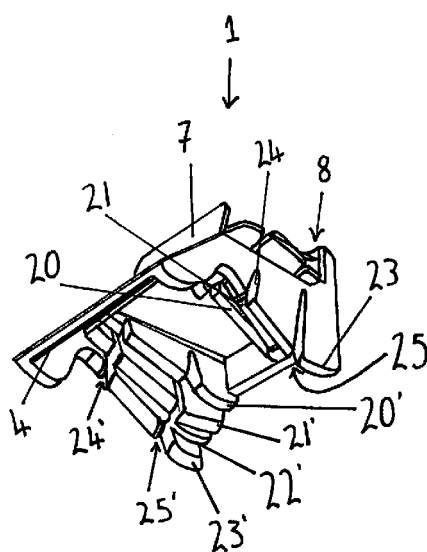


FIGURE 12

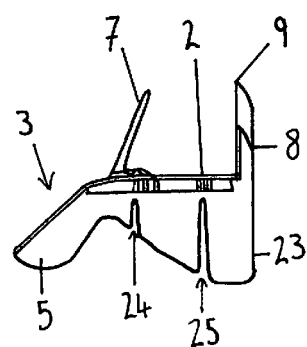
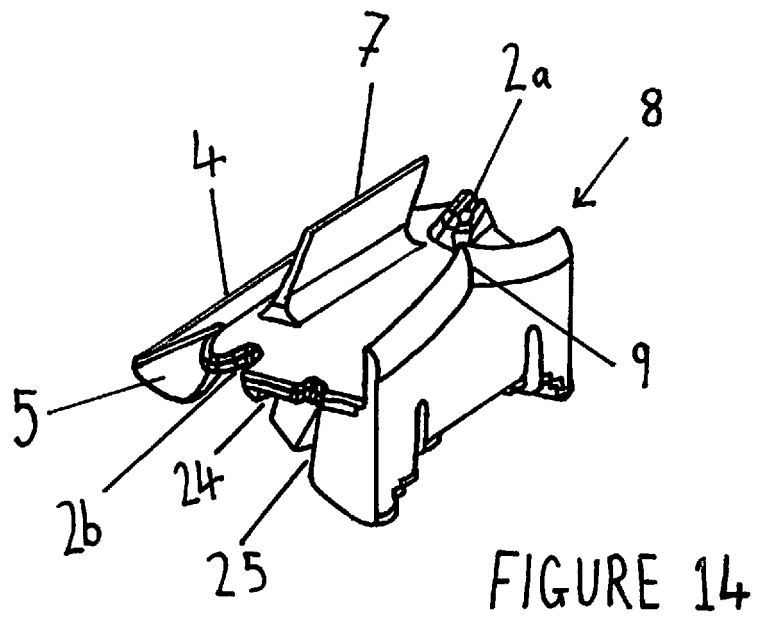


FIGURE 13



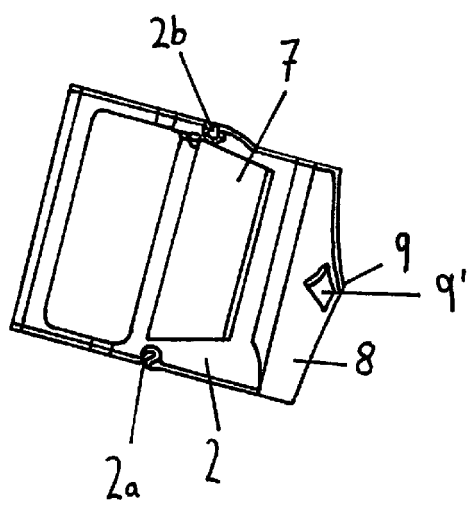


FIGURE 15

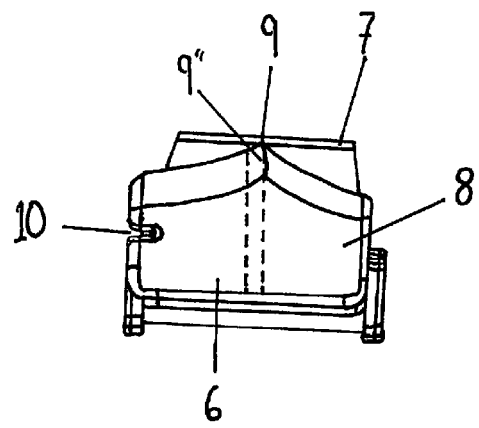


FIGURE 16

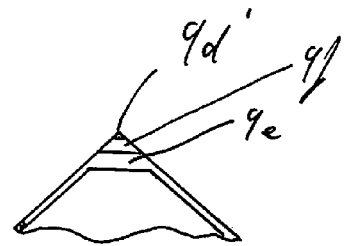
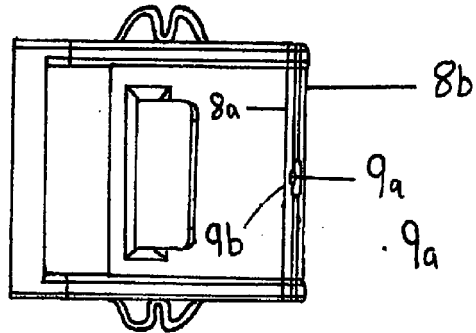


Figure 17b

FIGURE 17

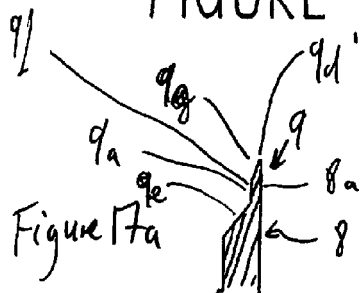
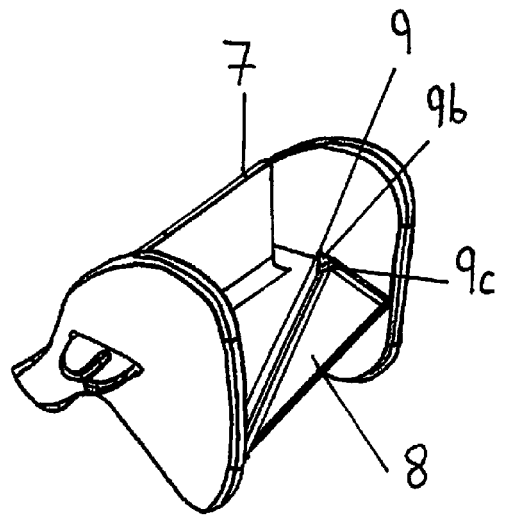
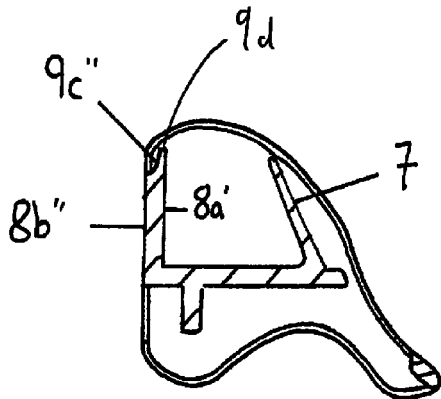
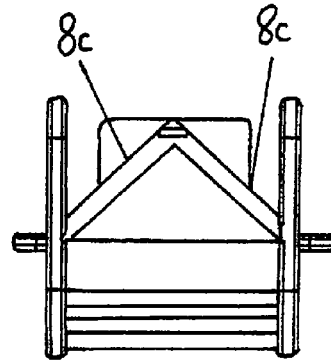


Figure 17a





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