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(54) A device for breaking-off and storing used pieces of a snap-off blade.

(57) A device (10) for dispensing snap-off blades has a compartment (118) for used blade pieces (13) and a slot (46) for use in breaking-off the used pieces (13). The slot (46) leads directly into the compartment (118). In order to prevent the used pieces (13) from falling dangerously out of the slot (46) to the outside, an integral tongue (78) of the device (10) covers the entrance (120) to the slot (46) and has to be pushed resiliently out of the way to insert the used end-piece (13a) to be broken-off. As soon as the end-piece (13a) breaks-off, the tongue (78) springs back to cover the slot entrance (120). The angle (α) of the slot entrance (120) matches the angle (α) of the score-lines (15) on the blade (11), to assist correct location.

EP 0 378 334 A2

A device for breaking-off and storing used pieces of a snap-off blade

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to a device for breaking-off (that is, "snapping-off") and storing used pieces of a snap-off blade.

A snap-off blade is an elongate blade, which has two parallel Longitudinal edges, one of the edges being sharpened for cutting, and which has a series of parallel score-lines, extending from one to the other longitudinal edge, whereat the blade is predisposed to break if subjected to bending stress thereat, for the breakage of used end-pieces off the blade after becoming blunt or damaged through usage.

Description of the prior art

It is known to provide a device having a slot into which one end of a snap-off blade can be inserted, to break-off an end-piece of the blade along a score-line, by applying bending stress between the device and a holder or handle in which the snap-off blade is mounted. This known device has a compartment communicating with the slot for storage of broken-off blade pieces. However, there is a possibility that the blade pieces may fall out of the slot to the outside, instead of into the compartment, which is dangerous since such blade pieces are still often too sharp for safe manual handling. There is also a possibility that they may, even after entering the compartment safely, fall out again through the slot.

SUMMARY OF THE INVENTION

The invention provides a device as claimed in each of claims 1 to 7, to which reference is directed.

The invention will be described by way of example with reference to the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a device embodying the invention and part of a snap-off blade in a handle;

FIG. 2 is a section on A-A in Fig. 1 of the device alone;

FIG. 3 is a plan view of a base of the device of Fig. 1;

FIG. 4 is a section on B-B (which is "stepped" at B1) of Fig, 3;

FIG. 5 is a view in the direction of arrow C in Fig. 3;

FIG. 6 is a view in the direction of arrow D in FIG. 3;

FIG. 7 is a plan view of a cover of the device of FIG. 1;

FIG. 8 is an underneath plan view of the cover of FIG. 7;

FIG. 9 is a section on E-E of FIG. 7;

FIG. 10 is a view in the direction of arrow F in FIG. 7;

FIG. 11 is a section on G-G in FIG. 8;

FIG. 12 is a plan view of a shutter of the device of FIG. 1;

FIG. 13 is a view in the direction of arrow H in FIG. 12;

FIG. 14 is a section on I-I in FIG. 12;

FIG. 15 is an enlarged sectional view of part of the device of FIG. 1, showing an end of a snap-off blade about to be inserted in a slot;

FIG. 16 corresponds to FIG. 15, showing the end piece of the blade about to be broken-off; and

FIG. 17 corresponds to Figs. 15 and 16, showing the end piece of the blade broken off and the rest of the blade removed.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a metal snap-off blade 11 held in a handle 17. The blade 11 has parallel score-lines 15 at an angle α to the transverse direction of the blade 11 between successive pieces 13a, 13b etc.

The illustrated device 10 (Figs. 1 and 2) is a device for dispensing metal snap-off blades 11 and for breaking-off or snapping-off pieces 13 of the blade 11 along the parallel score-lines 15 and storing the broken-off pieces 13. The device 10 comprises a base 12 (Figs. 3 to 6) of opaque plastics material, a cover 14 (Figs. 7 to 11) of transparent plastics material and a shutter 16 (Figs. 12 to 14) of opaque plastics material.

Referring to Figs. 3 to 6, the base 12 is of ABS plastics material and comprises a baseplate 18. Upstanding from baseplate 18 are three mutually parallel walls 20, 22, 24 extending in the longitudinal direction of base 12, the wall 22 being between walls 20 and 24. Near a "top" end 26 of base 12 is a transverse wall 28, upstanding from baseplate 18, perpendicular to walls 20 and 22 and adjoining walls 20 and 22. At a "bottom" end 30 of base 12 is a transverse wall 36, upstanding from baseplate

18, perpendicular to walls 22 and 24 and interconnecting walls 22 and 24. Also at the bottom end 30 are two mutually parallel oblique walls 32, 34, upstanding from baseplate 18, obliquely angled to walls 20 and 22 at the same angle α (relative to the transverse wall 36) as score-lines 15 in blade 11 and adjoining walls 20 and 22. There is no transverse wall adjoining walls 22 and 24 near the top end 26.

Four webs 38, 40, 42 and 44 each extend between the oblique walls 32 and 34 to define a slot 46. Webs 38, 40 are mutually coplanar, inner and outer, upper webs, whilst webs 42, 44 are mutually coplanar, inner and outer, lower webs. Hence slot 46 is formed by the gap between facing webs 38, 42 and the gap between facing webs 40, 44. A through-aperture 48 is formed between webs 38 and 40 and between webs 42 and 44 to facilitate the molding of the slot 46 in the base 12. A short wall 50 extends longitudinally - upwardly as seen in FIG. 3 -from approximately the middle of wall 36. The upper or inner end 52 of wall 50 is kinked towards wall 24 and has a small overhang portion 52a (FIG. 6). Adjacent the end 52 of wall 50 is a small hole 54 in the baseplate 18, to facilitate the molding of the overhang portion 52a. Between walls 24 and 50 is a small peg 56 upstanding from baseplate 18, to act as a resilient cushion for a pack of metal blades 11. The longitudinal walls 20, 24 have a stepped profile in cross-section, for mating with corresponding longitudinal walls (see below) of cover 14. Wall 22 is profiled to support the under-surface of shutter 16.

In approximate transverse alignment with wall 28, there is a slot 58 in baseplate 18 between walls 22, 24, for co-operating with the shutter 16 (see below).

Near the top end 26, the baseplate 18 has a "keyhole" slot 60, for hanging the device 10 on a display stand in a shop.

External to, and about mid-way along, wall 20 is a "leader" 62, associated with the injection-molding of base 12.

External to wall 24 is a tapered edge portion 18a of baseplate 18, with a series of decorative ridges 18b along it. This may form a ruling edge.

A small depression 63 in baseplate 18 is provided to receive the end of a peg 103 of the cover 14, see below.

Referring also to Figs. 7 to 11, the cover 14 is of a transparent acrylic plastics material of a kind that can be ultrasonically welded to base 12. The cover 14 comprises a flat "roof" 64 which, upon assembly, is parallel to and spaced above the baseplate 18 of base 12. Cover 14 also comprises longitudinal walls 66, 68, 70; perpendicularly transverse walls 72, 73 and an obliquely transverse wall 74 which respectively mate with walls 20, 22, 24, 36, 28 and 34, although wall 74 is slightly higher than wall 34 as seen in Figs. 15 to 17. A cantilever tongue 76 extends longitudinally -downwardly as seen in Figs, 7 to 9 - from wall 74 and has a thick lip or flange 78 which, on assembly, normally just covers the slot 46 in the base 12. Two longitudinal slots 80, 82 separate tongue 76 and flange 78 from walls 66, 68 so that tongue 76 is resiliently flexible. Adjoining the "top" ends of walls 66, 68, 70 are respective triangular pieces 84, 85, 86, between which there extends a transverse ledge 88 which, on assembly, rests on baseplate 18 of base 12. A lip 90 slopes from the roof 64 towards the ledge 88, between the walls 68, 70. An aperture 92 is defined between the triangular pieces 85, 86, the ledge 88 and the lip 90. In use, aperture 92 can be opened and closed by shutter 16.

A further aperture 94 is formed in the roof 64 for manipulation of shutter 16. At point of sale and prior to use, aperture 94 is blocked by an integral piece 96, joined to the roof 64 by two narrow bridges 98, 98 which are easily broken when it is desired to remove piece 96. Prior to removal, piece 96 keeps shutter 16 in its closure position, closing aperture 92. Piece 96 also has a small peg 100 which engages sufficiently tightly in an aperture (see below) in shutter 16 to hold cover 14 and shutter 16 together during the process of assembly. Projecting from roof 64 is an obliquely angled overhung projection 102 which on assembly interlocks with end part 52 of wall 50 of base 12 to assist in holding base 12 and cover 14 together prior to their being ultrasonically welded together. Projection 102 also acts as a resilient cushion, like peg 56.

The above-mentioned peg 103, which is received in depression 63 in baseplate 18 of base 12, projects from the roof 64 in a "corner" formed between walls 68 and 74, being provided to facilitate stacking of covers 14 prior to assembly.

Referring to Figs. 12 to 14, the shutter 16 is of flexible polypropylene plastics material. Member 16 has a flat top portion 104 which seats between walls 68, 70 against the surface of roof 64 (of cover 14) facing baseplate 18 (of base 12). Integral with flat top portion 104 is a knob 106 of generally rectangular cross-section which protrudes into, and is accessible through, aperture 94 in roof 64 for manipulating the shutter 16. Extending integrally from the upper end of flat top portion 104 is a flexible "roll" portion 108, rendered flexible by transverse ribs 110 alternating with transverse grooves 112, for closing and opening the aperture 92 in cover 14. The above-mentioned hole engaged by peg 100 of piece 96 is a hole 114 in flat top portion 104.

A security detent 115 is formed as a small ridge on the upper surface of the shutter 16. In

normal use, it lightly retains shutter 16 in its closed position by engaging the lower edge of aperture 94. It relies for its effectiveness on the transverse resiliency of shutter 16. Prior to removal of piece 96 from cover 14, detent 115 occupies the same position, which is between the lower extremities of aperture 94 and piece 96.

The process of assembling base 12, cover 14 and shutter 16 together may be carried out automatically by machine, not shown.

Firstly, a stack of snap-off blades 11, which may be somewhat oily, are placed upon base 12 between walls 22, 24, to be dispensed eventually through aperture 92 in cover 14.

Meanwhile, shutter 16 is assembled to cover 14 with peg 100 fitting in hole 114.

Then cover 14 is fitted over base 12 and interlocked at wall end 52 and projection 102.

Then base 12 and cover 14 are ultrasonically welded together at as many points as necessary. They form a labyrinth joint with each other, due to the stepped cross-sections of the inter-engaging walls. The above-mentioned snap-off blades (not shown) occupy a compartment 116 (FIG. 1) defined by baseplate 18 and walls 22, 24, 36 of base 12 and by roof 64 and walls 68, 70, 72 of cover 14. They are visible through the transparent cover 14.

A second compartment 118 is defined by baseplate 18 and walls 20, 22, 28 and 34 of base 12 and by roof 64 and walls 66, 68, 73 and 74 of cover 14. The slot 46 leads into this second compartment 118.

In order to dispense a snap-off blade 11 from the first compartment 116 - after piece 96 has been broken off - the knob 106 is manipulated so as to move shutter 16 and hence open aperture 92, the blade is tipped out, any surplus blade(s) is/are replaced and member 16 is moved back to close aperture 92 again. The transparency of the cover allows the user to see the spare blade or blades in the compartment 116.

Referring to Figs. 15 to 17, in order to safely break-off, or snap-off, and safely store a used end-piece 13a of a snap-off blade 11, after the end-piece 13a has become blunt or damaged through usage, the blade 11 is extended out of the handle until the next adjacent piece 13b appears. Then the end-piece 13a of the blade 11 is applied from below - see FIG. 15 - to the entrance 120 to the slot 46, guided theretowards by a sloping surface 78a of the flange 78. The fact that the angle α of the entrance 120 matches the angle α of the score-lines 15 on the snap-off blade 11 and the fact of the transparency of cover 14 both assist correct positioning of the end-piece 13a.

The handle 17, in which blade 11 is mounted, is then raised to the upper position of Fig. 16 and blade 11 is inserted into the slot 46 until the scoreline 15, separating end-piece 13a from the next adjacent piece 13b, is positioned at the slot entrance 120, the handle 17 engaging surface 78a and pushing flange 78 out of the way, against the resilience of the tongue 76. Then handle 17 is forced downwardly, in the direction of arrow 132, snapping end piece 13a off from the next adjacent piece 13b, and hence off the blade 11, at the score-line 15. At the same time, due to resilience of tongue 76, the flange 78 moves back to cover the slot entrance 120, so that there is virtually no possibility of the broken-off or snapped-off end piece 13a falling out of slot 46 to the outside. Instead, piece 13a has to go into compartment 118, being its only possible exit from slot 46.

The base 12 and cover 14, given the transparency of the latter, provide generous surface areas for the display of information, warnings etc.

Claims

1. A device for breaking-off and storing used pieces (13) of a snap-off blade (11), comprising a housing having a compartment (118) for the broken-off pieces (13), means defining a slot (46) for receiving a used end-piece (13) to be broken off from a snap-off blade (11), the slot (46) leading directly into the compartment (118), and a spring-biased member (76, 78) normally externally covering an entrance to the slot (46), the spring-biased member (76, 78) being displaceable against the spring-bias for insertion of the end-piece (13) to be broken off.

2. A device as claimed in claim 1 wherein the compartment (118) is one of two compartments in the housing, the second compartment (116) being a compartment for spare snap-off blades.

3. A device as claimed in claim 2, wherein the second compartment (116) is alongside the first compartment (118), both compartments (116, 118) being generally elongate.

4 A device as claimed in claim 2 or 3, wherein the housing is provided with an outlet aperture (92) from the second compartment (116) and a closure device (16) for opening and closing the outlet aperture (92).

5. A device as claimed in any preceding claim, wherein the spring-biased member (76, 78) is an inherently springy member which is integral with the housing.

6. A device as claimed in any preceding claim, wherein the housing is made of an opaque base (12) and transparent cover (14) assembled together.

7. A device as claimed in claim 6, wherein the base (12) and cover (14) are both interlocked together and welded together.

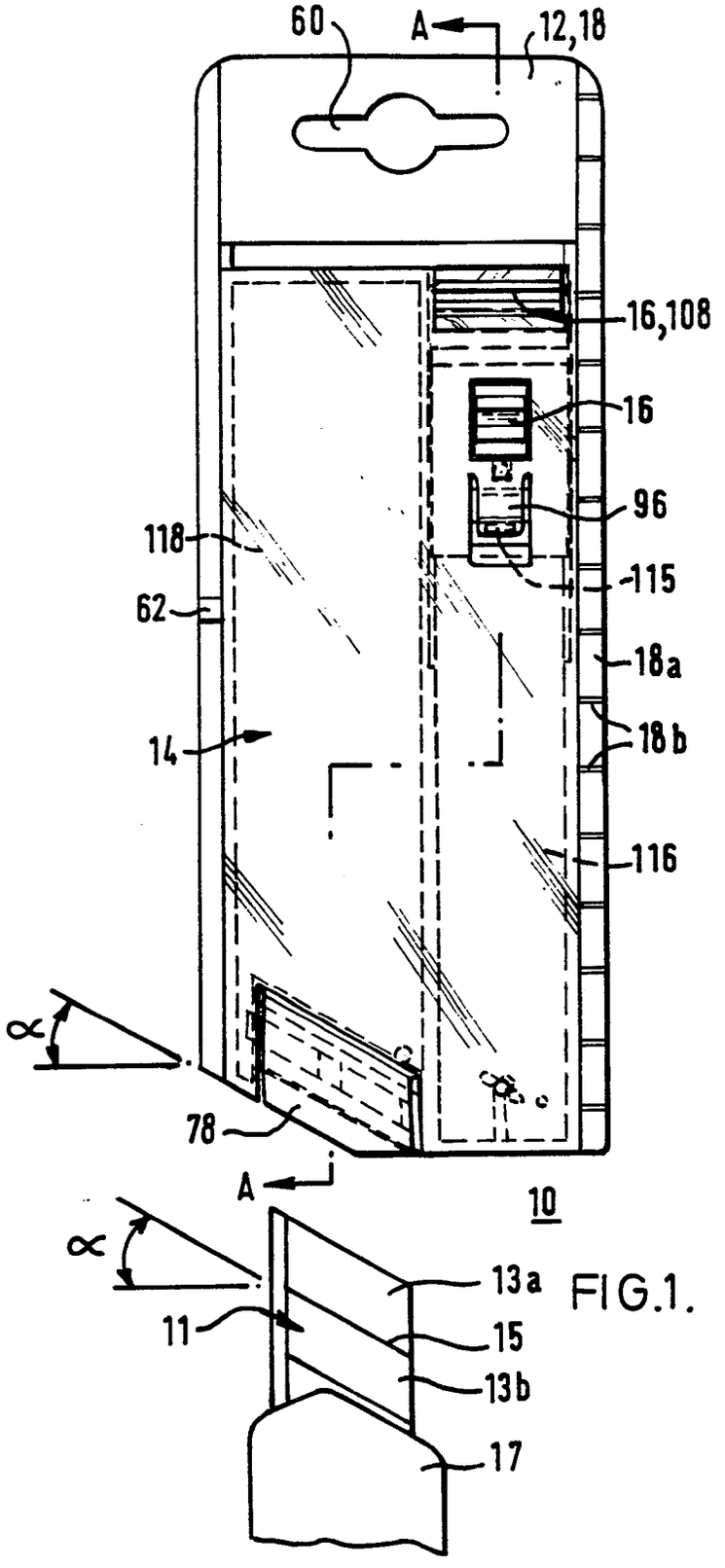
60
A
12,18
16,108
16
96
115
118
62
18a
18b
14
116
α
78
A
10
α
13a
11
15
13b
17

FIG.1.

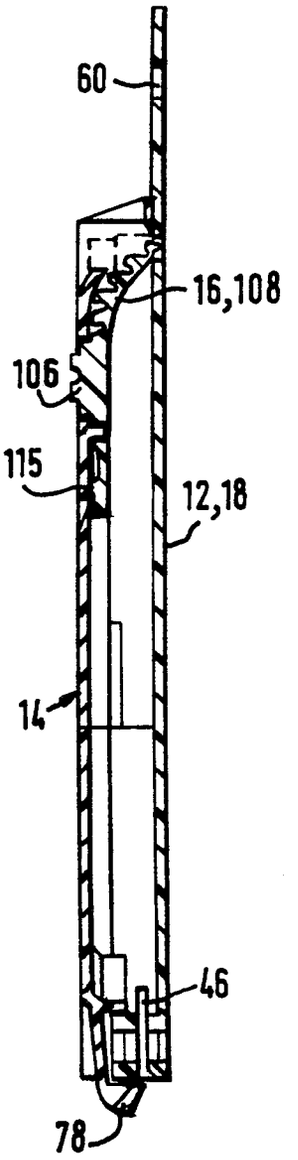
60
16,108
106
115
12,18
14
46
78

FIG.2.

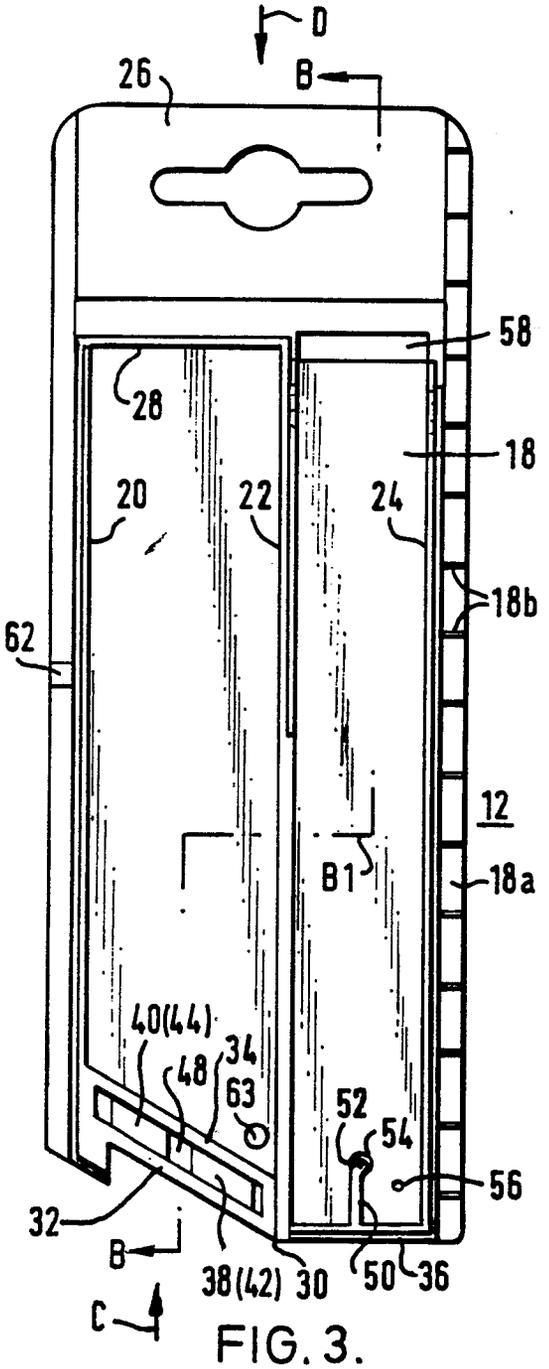

FIG. 3.

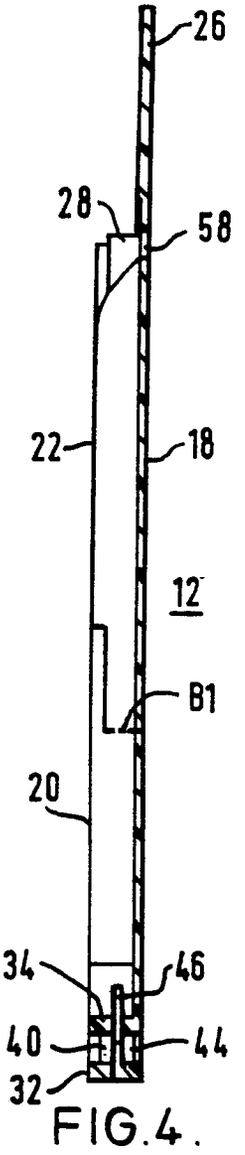

FIG. 4.

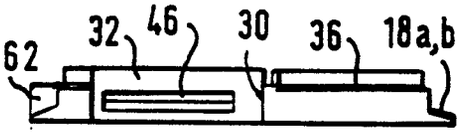

FIG. 5. 12

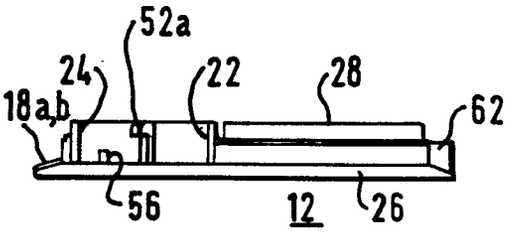

FIG. 6.

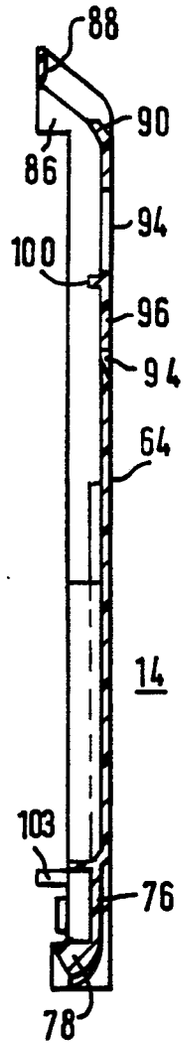

FIG.9.

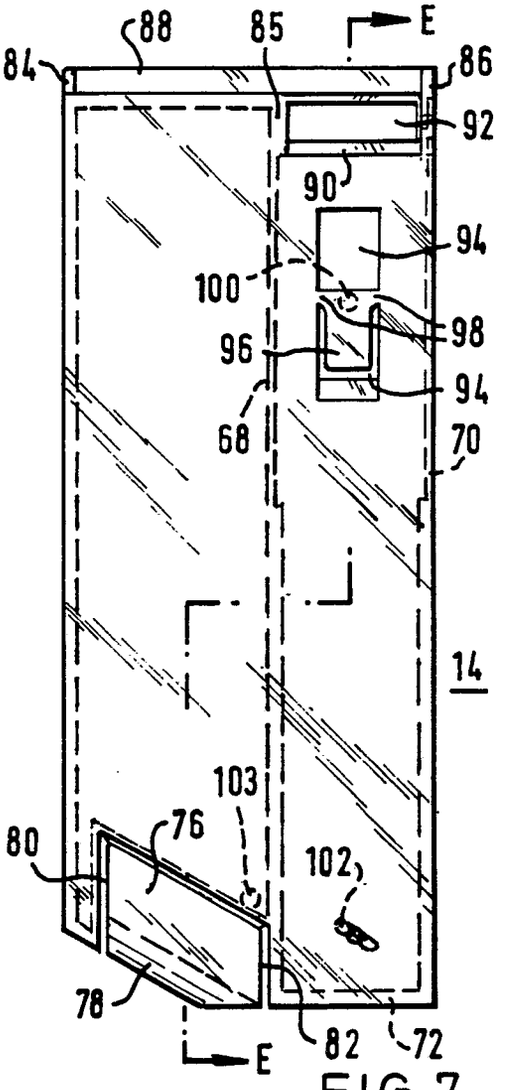

FIG.7.

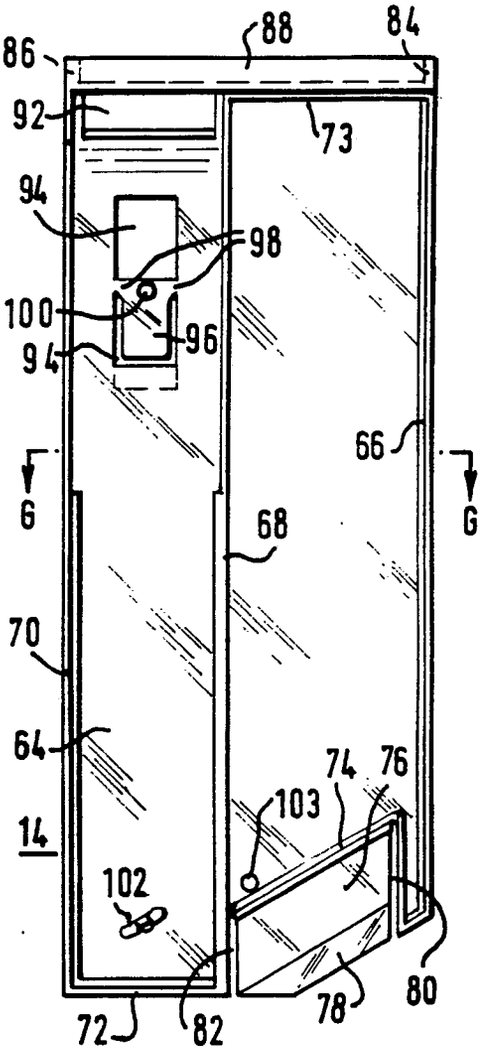

FIG.8.

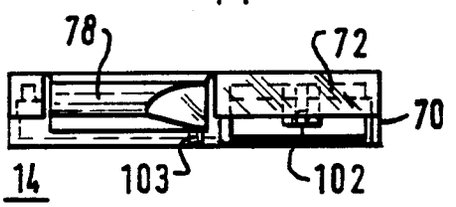

FIG.10.

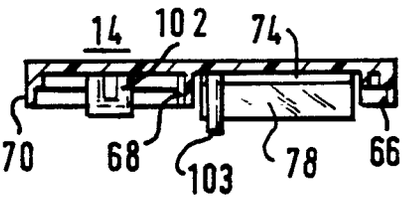

FIG.11.

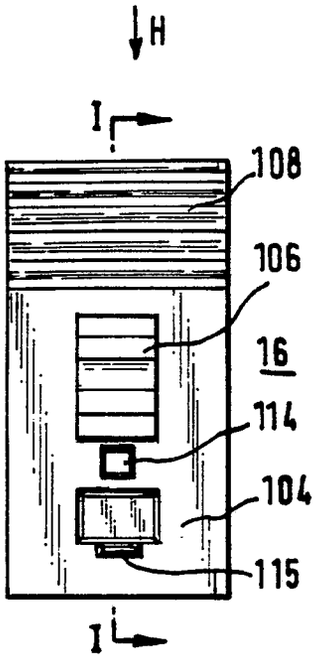

FIG.12.

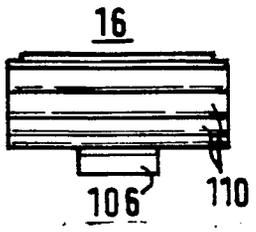

FIG.13.

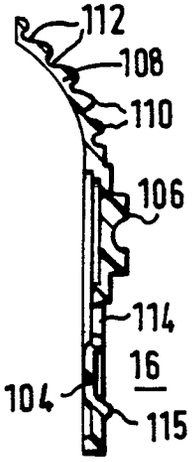

FIG.14.

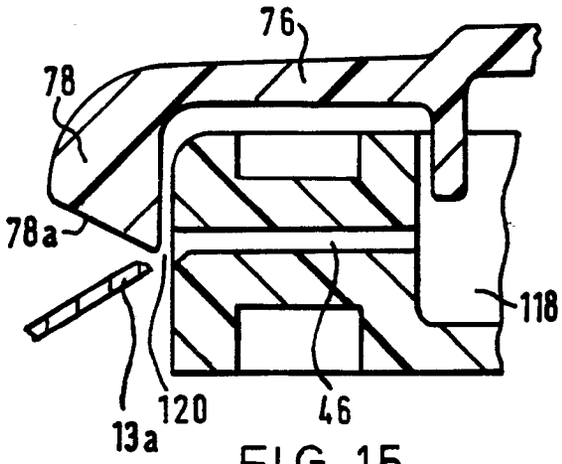

FIG.15.

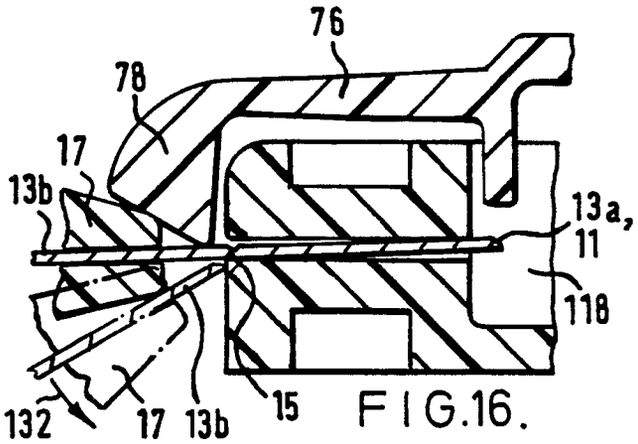

FIG.16.

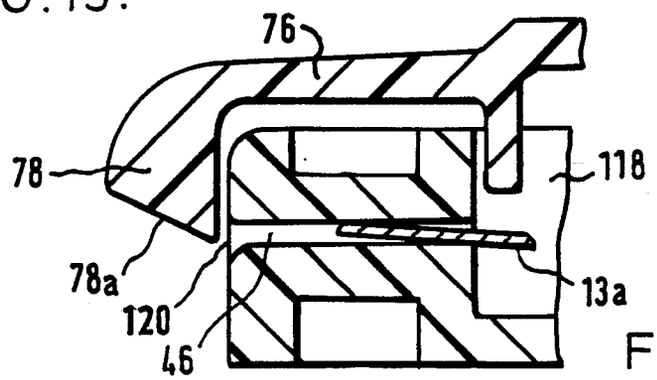

FIG.17.