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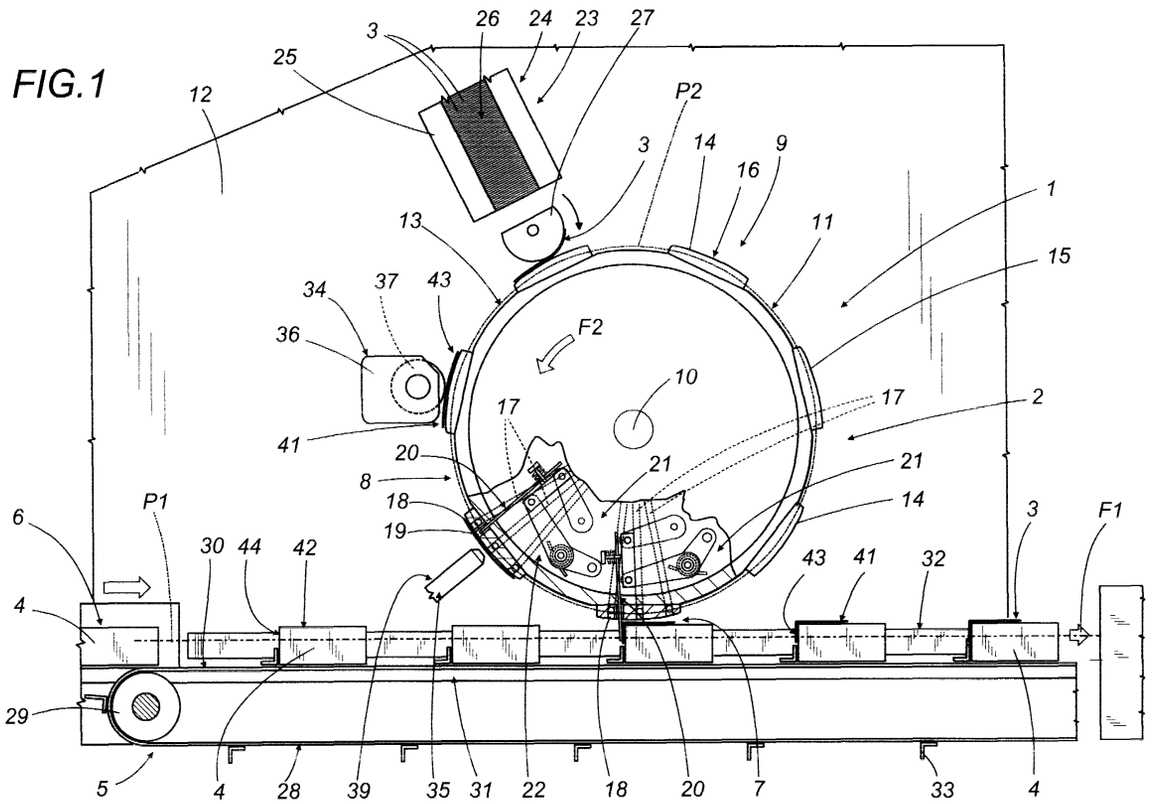
(54) A method and a device for applying labels to packets of cigarettes

(57) To ensure that a revenue stamp (3) will stick quickly and securely when applied to a packet (4) of cigarettes straddling one corner edge (45), the middle of the stamp is tacked initially to a point on or near the edge (45) with a spot (40) of hot melt adhesive, whilst the ends (41, 43) are gummed with two dabs (38) of cold setting adhesive and affixed to the two adjoining faces (42, 44) on either side of the edge (45).

FIG.1



EP 1 145 962 A1

Description

[0001] The present invention relates to a method and a device for the application of labels to packets of cigarettes.

[0002] Reference is made in particular to a packet of cigarettes presenting a label affixed in such a way as to straddle one corner edge of the packet. More exactly, the label in question is attached in part to one larger face of the packet and in part to one flank face.

[0003] One drawback encountered frequently when affixing labels to packets in the manner outlined briefly above consists in the fact that the labels, owing to the inherent elasticity of the material from which they are fashioned, tend to become detached immediately following the step of application and reassume their original flat configuration before the adhesive substance utilized is able to bond.

[0004] In effect, the typical setting times of adhesive substances employed currently for the purpose in question are not so short as to guarantee a stable bond quickly enough to avoid the drawback mentioned above, and whilst the relative packaging machines are equipped with mechanical components serving to pin the ends of the label for as long as possible against the two corresponding faces of the packet, these tend to be relatively complex and in practice are not able to restrain the label long enough for the adhesive substance to cure completely.

[0005] The object of the invention is to overcome the aforementioned drawback.

[0006] The stated object is realized according to the present invention in a method of applying labels to packets of cigarettes that involves the application of one such label to each packet, straddling one corner edge, characterized in that it comprises at least the steps of tacking the label to the corner edge with a hot melt adhesive, and affixing the ends of the label to the two faces of the packet contiguous to the corner edge.

[0007] The present invention relates also to a device for applying labels to packets of cigarettes.

[0008] The aforementioned object is realized in a device according to the present invention for applying labels to packets of cigarettes, wherein one label is applied to each packet, straddling one corner edge, the label and the packet defining a first area of mutual contact located on the corner edge and second areas of mutual contact located on the two faces of the packet contiguous to the corner edge, typically a device comprising first conveying means by which the packets are advanced singly and in succession along a first predetermined path toward an affixing station, and second conveying means by which the labels are advanced singly and in succession along a second predetermined path toward the affixing station, characterized in that it comprises a second gumming device operating in conjunction with at least one of the first and second conveying means and serving to apply a hot melt adhesive to at least one portion of the first area of mutual contact in order to tack the label to the packet at the corner edge, also a first gumming device operating in conjunction with at least one of the first and second conveying means, by which the second areas of mutual contact are coated with adhesive in such a way that the ends of the label can be affixed to the two respective faces of the packet contiguous to the corner edge.

[0009] The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

- figure 1 illustrates a portion of a packaging machine viewed schematically in a side elevation with certain parts in section and others omitted for clarity, equipped with a device for applying labels to packets of cigarettes according to the present invention shown in a first embodiment;
- figure 2 illustrates a detail of the device in figure 1, shown in a second embodiment, viewed schematically in a side elevation and with certain parts omitted for clarity;
- figure 3 illustrates a detail of the device in figure 1, viewed schematically and in perspective and with certain parts omitted for clarity;
- figure 4 shows a packet of cigarettes, viewed schematically and in perspective, to which a label is applied straddling one corner edge;
- figures 5, 6 and 7 show a detail of figure 2, illustrated schematically and in three different configurations;
- figures 8, 9 and 10 show a detail of figure 3, illustrated schematically and in three different configurations.

[0010] With reference to figure 1 of the accompanying drawings, 1 denotes a portion of a packaging machine and 2 denotes a device, in its entirety, for the application of labels 3 to packets 4 of cigarettes.

[0011] The portion 1 of the packaging machine comprises first conveying means, denoted 5 in their entirety, by which the packets 4 are taken up singly at an infeed section 6 and advanced in succession along a first predetermined feed path P1 in a first feed direction F1 toward an affixing station 7 where a label 3, consisting for example in a manufacturing levy or revenue stamp, is applied to each packet 4.

[0012] As illustrated in figures 1 and 2, the device 2 comprises applicator means located at the affixing station 7 and denoted 8 in their entirety, of which the function is to attach one label 3 to each of the advancing packets 4.

[0013] In the example of figure 1, in particular, such applicator means 8 comprise a transfer unit 9 by which the labels 3 are supplied and affixed one to each packet 4; the unit 9 in question comprises a second conveyor centred on a corresponding axis 10 and appearing as a drum 11 rotatable anticlockwise in the direction denoted F2 in figure 1, so as to advance the labels 3 along a

second predetermined path P2 and toward the affixing station 7, at which point the first path P1 and the second path P2 run substantially tangential.

[0014] The drum 11 operates cantilevered from a fixed vertical bulkhead 12 presented by the portion 1 of the packaging machine, disposed with its axis 10 of rotation extending transversely to the first and second feed paths P1 and P2 and delimited radially by a substantially cylindrical wall 13 presenting a plurality of angularly equispaced means 14 by which to retain one relative label 3, each consisting in a boss 15 integral with the wall 13 and delimited radially by a surface 16 presenting a cylindrical profile concentric with the wall 13 of the drum 11. The drum 11 incorporates radial ducts, denoted 17 and indicated by phantom lines in figures 1 and 2, passing through each boss 15 and the relative part of the cylindrical wall 13 and terminating at the end remote from the axis 10 in respective suction holes 18 positioned to attract the labels 3.

[0015] As discernible also from figure 3, the holes 18 are arranged on the surface 16 of each boss 15 in rows and connected by way of the aforementioned radial ducts 17 to a pneumatic circuit not shown in the drawings, being conventional in embodiment.

[0016] Also presented by each boss 15 and by the wall 13 underneath is a radial slot 19 affording passage to a respective fold-down blade 20 capable of movement along a substantially radial trajectory relative to the drum 11 brought about by an actuating mechanism denoted 21 in its entirety, between a retracted position assumed upstream of the affixing station 7 in relation to the direction of rotation F2 of the drum 11, in which the blade 20 is located inside drum 11 as in figure 1, and an extended position assumed at the affixing station 7 in which the blade 20 projects in part from the surface 16 of the respective boss 15.

[0017] The actuating mechanism 21 is associated with a parallelogram linkage 22 of which the function and the mechanical structure are disclosed in US Patent n° 5,111,633, to which reference may be made for a full description of the structure and operation of the components which drive the drum 11, also of the pneumatic circuit and of the actuating mechanism 21 operating the parallelogram linkage 22.

[0018] As illustrated in figure 1, labels 3 are released to the transfer unit 9 from a feed unit 23 mounted to the bulkhead 12 and incorporating a storage and feed line 24 along which the labels 3 advance. The line 24 is equipped with a magazine 25 containing a stack 26 of the labels 3, which are taken up by suction from the bottom of the selfsame stack 26 in conventional manner by a circular sector 27, and passed cyclically to the single bosses 15 of the drum 11.

[0019] As discernible from figure 1, the first conveying means 5 comprise a substantially horizontal belt conveyor 28 looped around pulleys 29 (one only of which is visible in figure 1), by which packets 4 of cigarettes are caused to advance in succession along the first path P1 in the first direction F1, each lying flat and disposed with its predominating longitudinal axis extending transversely to the path P1, in contact with a horizontal surface 30 afforded by a pair of rails 31 (one only of which is visible in figure 1) each presenting a profile substantially of L shape when seen in section; the two rails 31 are spaced apart one from the other, extending parallel to the vertical bulkhead 12 and perpendicularly to the axis 10 of the drum 11.

[0020] During their progress along the first path P1, the packets 4 are maintained in alignment by two lateral conveyors 32 (one only of which is visible in figure 1) disposed on either side of the belt conveyor 28, at a height above a top branch of the selfsame conveyor 28, which is furnished also with a plurality of outwardly projecting and uniformly distributed pushing appendages 33 occupying the space between the two rails 31 in such a way as to engage the packets 4 and direct them toward the affixing station 7.

[0021] Observing figure 1, the device 2 will be seen to comprise a first gumming device 34, stationed along the second path P2 beyond the magazine 25 in the direction of rotation F2 described by the drum 11, and a second gumming device 35 stationed further along the path P2.

[0022] Still referring to figure 1, the first gumming device 34 comprises a reservoir 36 and a pair of coaxial rollers 37 (one only of which is visible in figure 1), disposed tangentially to the surface 16 of each boss 15 and in such a way, as discernible clearly from figure 3 in particular, as to deposit two substantially parallel dabs 38 of cold setting adhesive on the face 3a of each label 3 destined to enter into contact with the relative packet 4.

[0023] The second gumming device 35 is a jet type and comprises a nozzle 39 designed, as discernible from figure 3, to deposit a spot 40 of hot melt adhesive between the two dabs 38 of cold setting adhesive deposited previously.

[0024] In operation, as illustrated in figures 1 and 3, the labels 3 are transferred to the periphery of the drum 11 from above by the circular sector 27, released cyclically onto the surfaces 16 of the bosses 15 and retained on each surface through the agency of the suction holes 18.

[0025] Each label 3 is then transferred without pause, as the drum rotates continuously in the conveying direction F2, toward the stations occupied by the gumming devices 34 and 35.

[0026] At the gumming station occupied by the first gumming device 34, two elongated dabs 38 of cold setting adhesive material are applied to the outward facing surface 3a of the label 3, whereas at the gumming station occupied by the second gumming device 35, a spot 40 of hot melt adhesive is applied to this same surface 3a of the label 3 by the nozzle 39.

[0027] Each gummed label 3 arrives thus at the affixing station 7 and is offered to a relative packet 4; more exactly, the end 41 of the label 3 positioned forwardmost

along the direction of rotation F2 of the drum 11 is offered to the top face 42 of the packet 4, whilst the remaining end 43 projecting freely from the top face 42 is bent immediately and flattened against the flank face 44 of the packet 4 adjoining the top face 42. In this situation the label 3 remains tacked to one corner edge 45 of the packet 4 by the action of the spot 40 of hot melt adhesive.

[0028] The operation of bending down and flattening the projecting end 43 of the label 3 is performed by the aforementioned blade 20, which when extended by the actuating mechanism 21 causes this same end 43 of the label 3 to adhere to the flank face 44 of the packet 4, thereby producing the configuration of figure 4.

[0029] In the example of figure 2, the second gumming device 35 is positioned along the first path P1 associated with the looped belt conveyor 28 rather than along the second path P2 associated with the drum 11, in such a way as to apply a spot 40 of hot melt adhesive to the corner edge 45 of the packet 4 at a given moment immediately before the packet enters the affixing station 7.

[0030] On the basis of the foregoing description and as illustrated in figures 3...10, the method disclosed envisages a first area of mutual contact denoted 46 which can be an area either of the label 3 or of the corner edge 45, to which a spot 40 of hot melt adhesive is applied, also second areas of mutual contact 47 which can be areas of the two ends 41 and 43 of the label 3 or areas of the two portions presented by the faces 42 and 44 of the packet 4 to which the two corresponding ends 41 and 43 of the label 3 are affixed by means of the dabs 38 of cold setting adhesive.

[0031] With reference to the example of figure 2, the second gumming device 35, when stationed along the first path P1 associated with the belt conveyor 28 in a position immediately upstream of the affixing station 7, can be made to place the spot 40 of hot melt adhesive exactly on the corner edge 45 as in figure 5, or alternatively on the top face 42 or the flank face 44 of the packet 4, in either case immediately adjacent to the corner edge 45 as in figures 6 and 7 respectively.

[0032] Stationed along the second path P2 associated with the drum 11, as in the example of figure 1, the second gumming device 35 can place the spot 40 of hot melt adhesive exactly on a line 45' destined to coincide with the corner edge 45 of the packet 4 as illustrated in figure 8, or on a point in close proximity to the line 45' as in figures 9 and 10.

[0033] It will be clear that when two types of adhesive are employed, the function of the spot 40 of hot melt adhesive applied to the first area of mutual contact 46 is to tack the gummed label 3 in effect instantaneously to the packet 4 and prevent it thus from springing back to the former flat condition, ensuring that the correct position, straddling the corner edge 45 of the packet 4, is maintained for a length of time sufficient for the dabs 38 of cold setting adhesive to cure completely.

Claims

1. A method of applying labels to packets of cigarettes, involving the application of one label (3) to each packet (4), straddling one corner edge (45),
characterized
in that it comprises at least the steps of tacking the label (3) to the corner edge (45) with hot melt adhesive, and affixing the ends (41, 43) of the label (3) to the two faces (42, 44) of the packet (4) contiguous to the corner edge (45).

2. A method as in claim 1, wherein the step of tacking the label (3) to the corner edge (45) includes the subsidiary step of interposing at least one spot (40) of hot melt adhesive between the label (3) and the corner edge (45).

3. A method as in claim 2, wherein the interposing step consists in placing the spot (40) of adhesive near to the corner edge (45) of the packet (4).

4. A method as in claim 2, wherein the interposing step involves placing the spot (40) of adhesive directly on the corner edge (45) of the packet (4).

5. A method as in claim 2, wherein the interposing step involves placing the spot (40) of adhesive on an area (46) of the label (3) destined to adhere to the packet (4) near the corner edge (45).

6. A method as in claim 2, wherein the interposing step consists in placing the spot (40) of adhesive on an area (45') of the label (3) destined to adhere to the packet (4) directly on the corner edge (45).

7. A method as in preceding claims, wherein the step of affixing the ends (41, 43) of the label (3) involves the use of a cold setting adhesive.

8. A wrapper as in claim 7, wherein the affixing step involves the application of at least one coating of cold setting adhesive to respective areas (47) of the two faces (42, 44) of the packet (4) contiguous to the corner edge (45), to which the ends (41, 43) of the label (3) are destined to adhere.

9. A method as in claim 7, wherein the affixing step involves the application of at least one coating of cold setting adhesive to respective areas (47) of the ends (41, 43) of the label (3) destined to adhere to the two faces (42, 44) of the packet (4) contiguous to the corner edge (45).

10. A device for applying labels to packets of cigarettes, wherein one label (3) is applied to each packet (4), straddling one corner edge (45), the label (3) and the packet (4) defining a first area (46) of mutual

contact located on the corner edge (45) and second areas (47) of mutual contact located on the two faces (42, 44) of the packet (4) contiguous to the corner edge (45), typically a device (2) comprising first conveying means (5) by which the packets (4) are advanced singly and in succession along a first predetermined path (P1) toward an affixing station (7), and second conveying means (9, 11) by which the labels (3) are advanced singly and in succession along a second predetermined path (P2) toward the affixing station (7),

characterized

in that it comprises a second gumming device (35) operating in conjunction with at least one of the first and second conveying means (5; 9, 11) and serving to apply a hot melt adhesive to at least one portion of the first area (46) of mutual contact in order to tack the label (3) to the packet (4) at the corner edge (45), also a first gumming device (34) operating in conjunction with at least one of the first and second conveying means (5; 9, 11), by which the second areas (47) of mutual contact are coated with adhesive in such a way that the ends (41, 43) of the label (3) can be affixed to the two respective faces (42, 44) of the packet (4) contiguous to the corner edge.

11. A device as in claim 10, wherein the second gumming device (35) is stationed along the first predetermined path (P1) in such a way as to deposit a spot (40) of hot melt adhesive near the corner edge (45) of the packet (4).

12. A device as in claim 10, wherein the second gumming device (35) is stationed along the first predetermined path (P1) in such a way as to deposit a spot (40) of hot melt adhesive directly on the corner edge (45) of the packet (4).

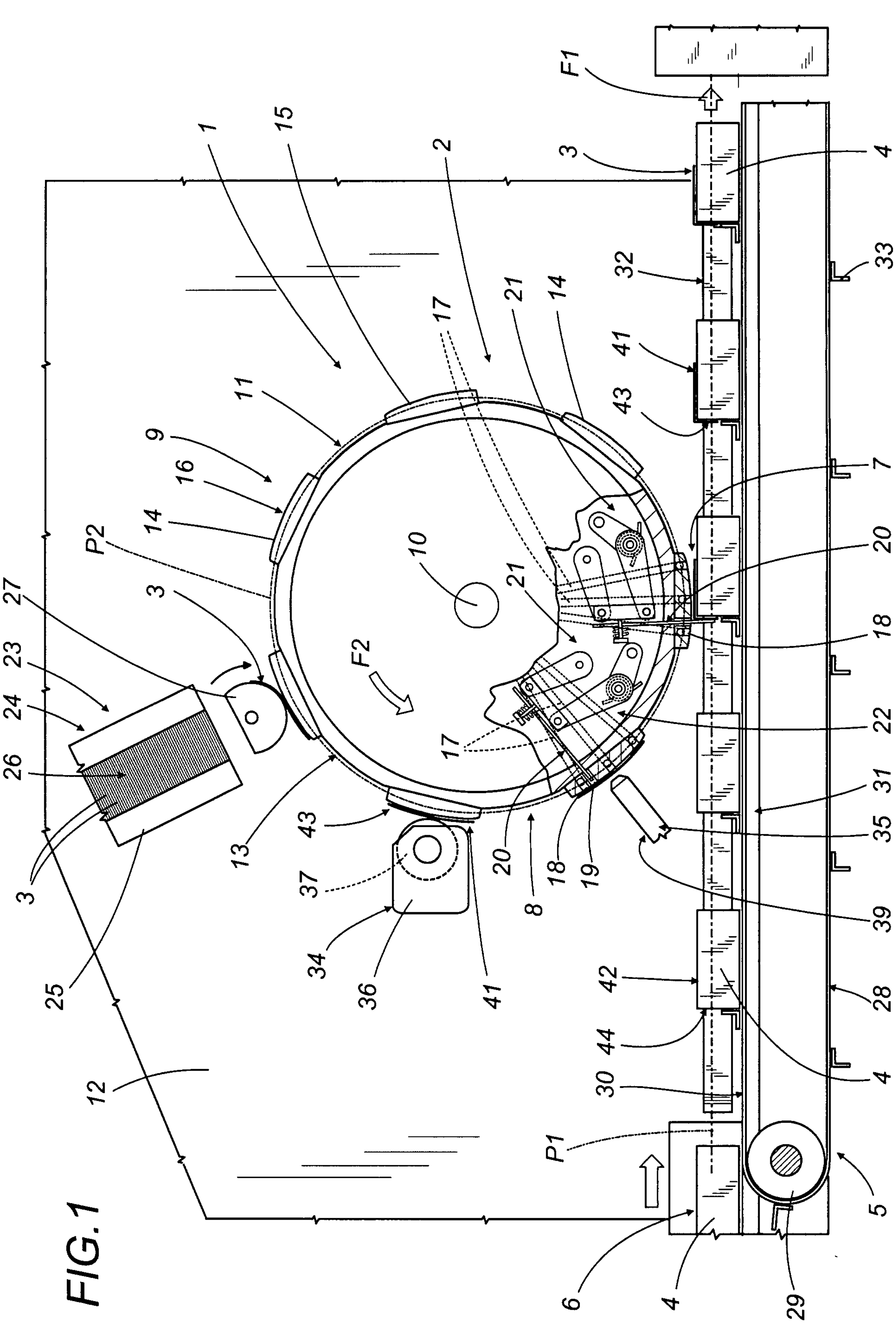
13. A device as in claim 10, wherein the second gumming device (35) is stationed along the second predetermined path (P2) in such a way as to deposit a spot (40) of hot melt adhesive on an area (46) of the label (3) destined to adhere to the packet (4) at a point near the corner edge (45).

14. A device as in claim 10, wherein the second gumming device (35) is stationed along the second predetermined path (P2) in such a way as to deposit a spot (40) of hot melt adhesive on an area (45') of the label (3) destined to adhere to the packet (4) at a point directly on the corner edge (45).

15. A device as in claim 10, wherein the first gumming device (34) operates in conjunction with the first conveying means (5) in such a way as to apply at least one coating (38) of cold setting adhesive to the two faces (42, 44) of the packet (4) contiguous to the corner edge (45), serving to affix the ends (41, 43) of the label (3).

16. A device as in claim 10, wherein the first gumming device (34) operates in conjunction with the second conveying means (9, 11) in such a way as to apply at least one coating (38) of cold setting adhesive to the ends (41, 43) of the label (3) destined to adhere to the two faces (42, 44) of the packet (4) contiguous to the corner edge (45), serving to affix the selfsame ends (41, 43) of the label (3).

17. A packet of cigarettes with a label applied straddling one corner edge, obtained by the method as in claims 1 to 9.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F2
P1
P2
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4
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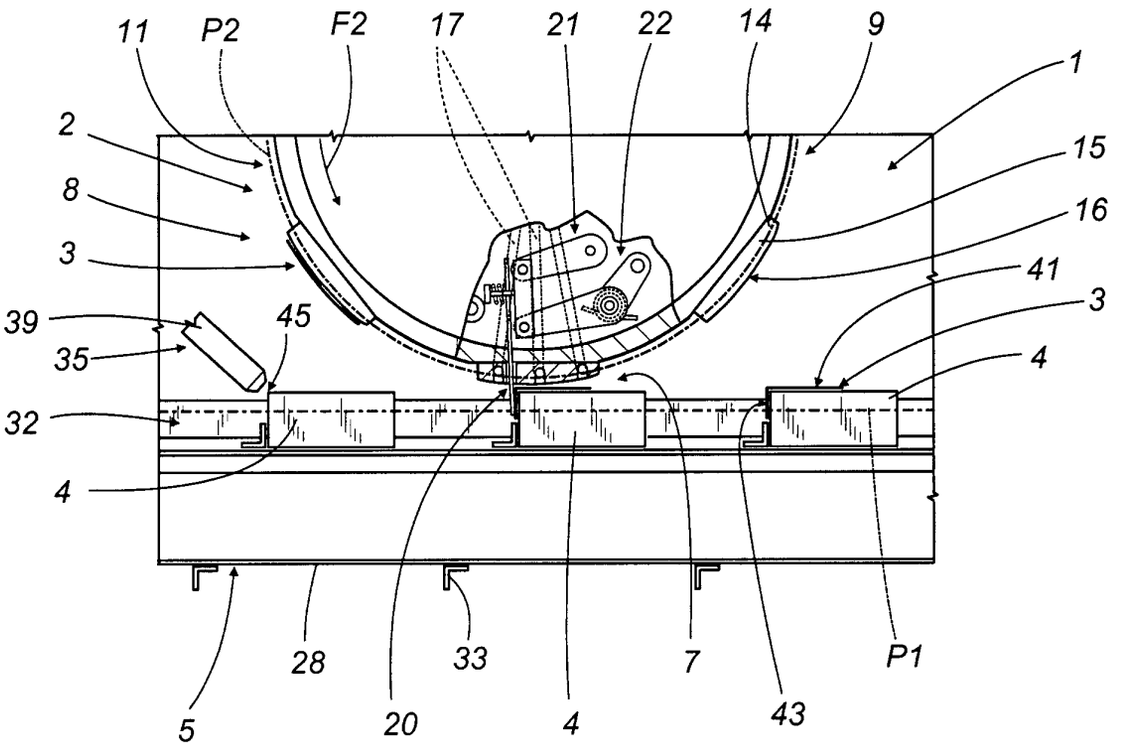
FIG.1

FIG.2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P2
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17
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14
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2
8
3
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32
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33
7
P1
5
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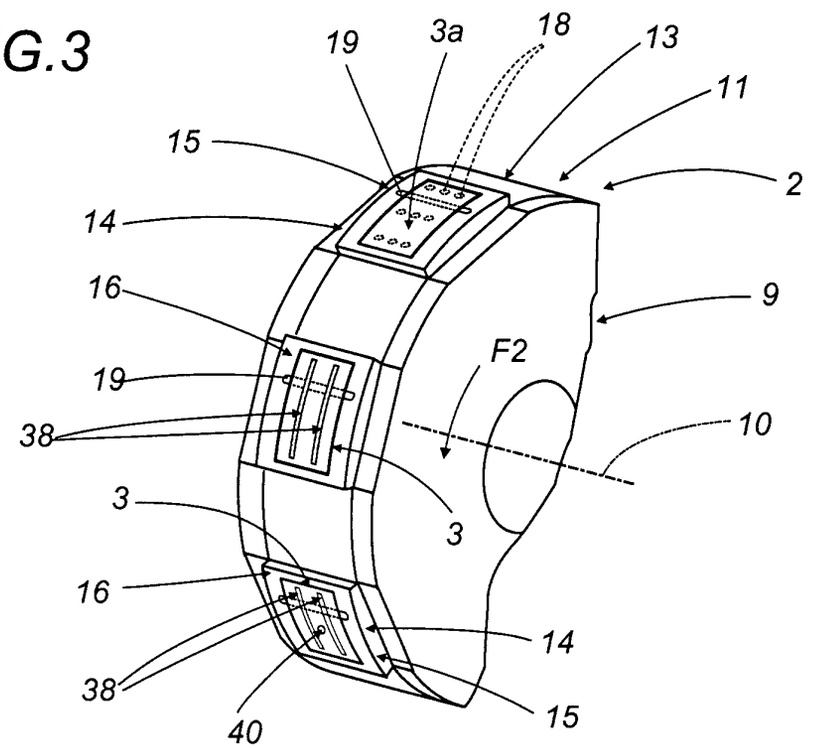
4
43

FIG.3


19
3a
18
13
11
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14
16
9
F2
19
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38
3
3
16
14
38
15
40

FIG.4

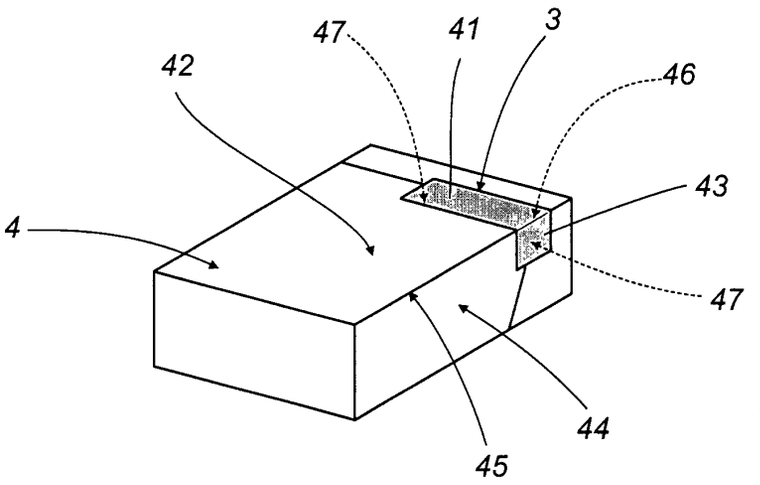


FIG.5

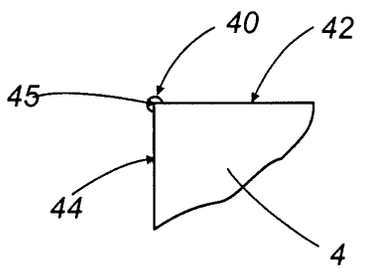


FIG.6

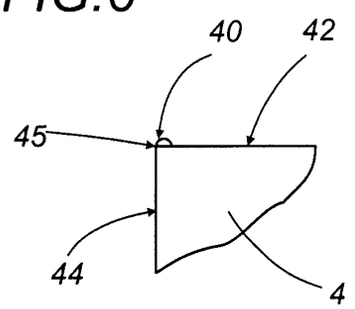


FIG.7

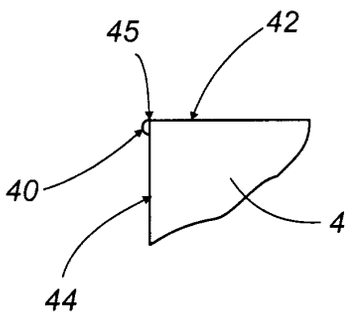


FIG.8

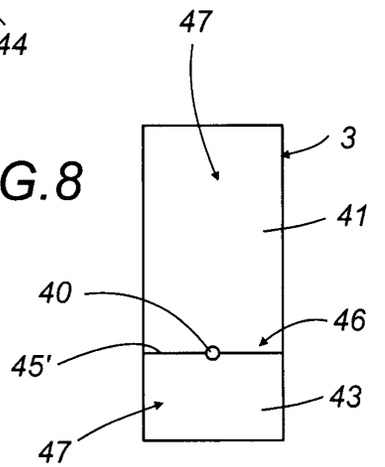


FIG.9

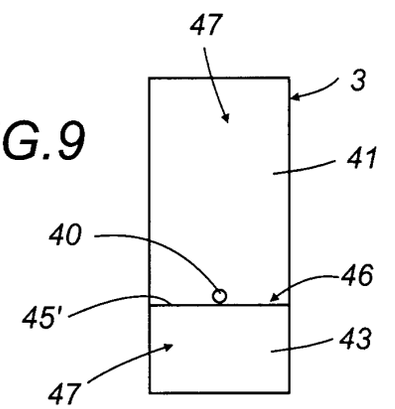
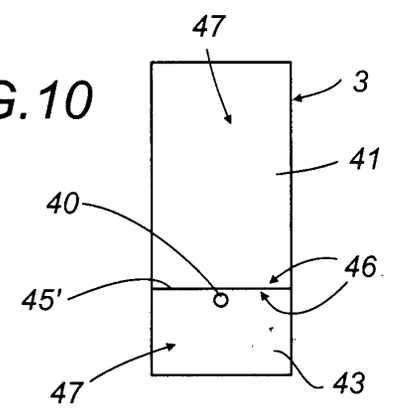


FIG.10



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EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0218

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.7)
A	US 4 312 699 A (ERDMANN OTTO ET AL) 26 January 1982 (1982-01-26) * column 3, line 59 - line 64 * * column 6, line 63 - column 7, line 16 * * figure 1 *	1,10,17	B65C1/04 B65C9/22
A	US 5 972 153 A (BRETTHAUER HANS-JUERGEN ET AL) 26 October 1999 (1999-10-26) * column 4, line 5 - line 26 * * figures 2,5 *	1,10,17	
D,A	US 5 111 633 A (DRAGHETTI FIORENZO) 12 May 1992 (1992-05-12)		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24 July 2001	Martínez Navarro, A.

CATEGORY OF CITED DOCUMENTS

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24-07-2001

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