

Description

The present invention relates to a method of producing a succession of self-adhesive labels on a length of release material.

GB-A-2199010 discloses a method of and an apparatus for producing labels in which a succession of individual labels are applied to a layer of a pressure-sensitive adhesive which itself has been applied to a surface of a length of a release material and wherein the labels and the layer of pressure-sensitive adhesive are cut to form the required self-adhesive labels and waste portions of the applied labels and of the pressure-sensitive adhesive are removed from the release material. Whilst the method and apparatus disclosed in that earlier specification provide an advantage over earlier methods in that it is not required to adhere individual labels to an intermediary self-adhesive support web, the method and apparatus disclosed do suffer from an additional disadvantage in that it is required to remove excess adhesive and waste portions of the applied label.

The present invention provides a method of producing a succession of self-adhesive labels on a length of release material; the method comprising the steps of:-

- (a) applying a succession of patches of pressure-sensitive adhesive to a surface of a length of release material; and
- (b) applying a succession of individual labels to the patches of pressure-sensitive adhesive whereby each applied label is adhered to the release material by a respective patch of adhesive; and

wherein the shape and dimensions of the patches and of the applied labels are such that substantially the entire rearwardly-directed surface of the applied label is coated with the pressure-sensitive adhesive and the edge of each patch is enclosed within the periphery of the respective applied label.

Preferably, the patches of pressure-sensitive adhesive are applied by means of an extruder which is adapted to extrude a series of parallel adhesive beads of predetermined length.

Alternatively, the patches of pressure-sensitive adhesive are applied by means of a dot-matrix applicator which is adapted to apply an array of dots of adhesive of predetermined shape and dimensions.

Alternatively, the patches of pressure-sensitive adhesive are applied by printing.

The individual labels may be lithographically printed sheets or folded sheets. Optionally, each applied label comprises a multiple label and the method further comprises the steps of cutting a plurality of self-adhesive labels from each applied multiple label and removing waste label portions.

Embodiments of the present invention will now be described by way of example only with reference to the accompanying drawings, in which:-

Figure 1 is a diagrammatic elevation of an apparatus for producing self-adhesive labels in accordance with the method of a first embodiment of the present invention;

Figure 2 is a plan view of part of the arrangement of Figure 1;

Figure 3 is a diagrammatic elevation of a label made in accordance with a second embodiment of the present invention;

Figure 4 is a plan view, similar to Figure 2, of an arrangement for use in a method in accordance with a third embodiment of the present invention; and

Figure 5 is a plan view, similar to Figure 2, of an arrangement for use in a method in accordance with a fourth embodiment of the present invention.

Referring to Figures 1 and 2, a web of siliconised release material (2), being either paper or plastics, is fed out from a reel (not shown) thereof underneath an adhesive coating head (4). The upper surface (5) of the release material (2) is siliconised. The coating head (4) applies to the upper surface of the release material (2) a succession of patches (6) of pressure-sensitive adhesive. The pressure-sensitive adhesive may be either a water based pressure sensitive adhesive, a hot-melt pressure-sensitive adhesive or a solvent-based pressure-sensitive adhesive. Hot-melt pressure-sensitive adhesives are "cured" i.e. allowed to thicken and solidify, by cooling and solvent-based pressure-sensitive adhesives are "cured" by evaporation of the solvent therefrom.

In the embodiment illustrated in Figures 1 and 2, the coating head (4) comprises an adhesive extruder which in combination with a switchable pump (not shown) for the adhesive, is adapted to extrude a series of parallel beads (8) of adhesive of predetermined length onto the upper surface (5) of the release material (2). In this way, each patch (6) of adhesive is of predetermined shape and dimensions. The head (4) may be adapted to be raised and lowered intermittently in synchronism with the switching off and on of the pump. This gives greater dimensional control over the deposition of the adhesive.

Subsequently, a succession of labels (10) is fed onto the patches (6) of pressure-sensitive adhesive so that a row of the labels (10) is adhered by the pressure-sensitive adhesive to the release material (2). The labels (10) are fed by a label feed device, which includes a conveyor (12), which is known per se, such as that which is described in European Patent Specification No. 0098092 or in British Patent Specification No. 2164915. In one

preferred arrangement, the labels (10) are sheets which have been lithographically printed on their upper surface. The applied labels (10) are deposited in such a manner, in spaced relation to each other, that each applied label (10) covers, and is adhered to the release material (2), by a respective patch (6) of adhesive. The shape and dimensions of the patches (6) and of the applied labels (10) are selected whereby substantially the entire rearwardly-directed surface (12) of each applied label (10) is coated with the pressure-sensitive adhesive and the edge (14) of each patch (6) is within the periphery (16) of the respective applied label (10).

The assembly of the succession of labels (10) adhered by the patches (6) of pressure-sensitive adhesive to the release material (2) is then wound into a reel (not shown).

Figure 3 shows a second embodiment of the present invention in which the applied label (20) is a folded sheet which has been lithographically printed. The folded sheet (20) comprises a rear panel (22) which is adhered by the patch (24) of pressure-sensitive adhesive to the release material (26), an upper panel (28) which is disposed over the rear panel (22) and an intermediate panel (30) which is disposed between the upper panel (28) and the rear panel (22). All of the panels are printed, e.g. lithographically. The intermediate panel (30) has an edge region (32) which is coated with a band (34) of material which renders the label hydrophobic. The band (34) contacts a corresponding band (36) of pressure-sensitive adhesive which is disposed along an edge region of the patch (24) of adhesive. The composite label (38) can be removed from the release material (26) and adhered by the patch (24) of pressure-sensitive adhesive to a container (not shown) to be labelled. When it is desired to open the label (38) the band (34) of hydrophobic material is pulled away from the container thereby pulling away the band (36) adhesive therewith. When it is desired to reseal the label the band (36) of adhesive can be readhered to the container.

Figure 4 shows a further embodiment of the present invention wherein the adhesive coating head (40) comprises a dot-matrix applicator which is adapted to apply a succession of patches of arrays (42) of dots of adhesive, each array (42) having predetermined shape and dimensions, to the upper surface (43) of the release material (44). In the illustrated embodiment, the patches (46) of adhesive comprising the arrays (42) are circular and subsequently a succession of circular labels (48) is applied to the patches (46) of adhesive. This embodiment provides the advantage that the dot-matrix applicator (40) can be employed to enable a label of any desired shape and dimensions to be adhered to the release material (44). As in the first

embodiment, the coating head (4) may be adapted to be raised and lowered intermittently in synchronism with a pump for the coating head.

Figure 5 illustrates a further embodiment of the present invention wherein the patches (50) of pressure-sensitive adhesive are applied to the upper surface (51) of the release material (52) by means of a printing device (54), for example a flexographic printing cylinder. In this embodiment, a plurality of patches (50) of pressure-sensitive adhesive are applied across the width of the release material (52) as well as along the length of the release material (52). The applied label (56) comprises a multiple label which is adhered to a plurality of patches (50) of adhesive across the width of the release material (52). A die-cutter (58) is provided which cuts from each applied multiple label (56) a plurality of self-adhesive labels (60) across the width of the release material (52). Each self-adhesive label (60) is adhered to the release material (52) by a respective patch (50) of adhesive. The waste label portions (not shown) between adjacent self-adhesive labels (60) are removed, for example by suction or by a blast of air.

In each of the disclosed embodiments the deposition of the pressure-sensitive adhesive onto the release material is carefully controlled by selective substantially instantaneous actuation of the coating head so that the applied patch of adhesive is only marginally smaller than the label applied thereto such that substantially the whole surface of the applied label is coated with adhesive but the adhesive does not extend beyond the periphery of the applied label, which could lead to adjacent layers of the reel being adhered together.

The present invention provides a real advantage over the prior art as exemplified by GB-A-2199010 in that it enables individual labels to be releasably adhered to a release web, for subsequent application to containers to be labelled, without any removal of excess adhesive or label portions being required. The present invention also obviates the need for a self-adhesive support web which is generally required in the prior art. The present invention can provide complete flexibility in the shape and dimensions of the resultant self-adhesive labels - it is merely necessary to control the adhesive applicator to apply an adhesive patch of predetermined shape and dimensions to the release material which correspond to those of the applied label.

Claims

1. A method of producing a succession of self-adhesive labels (10) on a length of release material (2); the method comprising the steps of:-

preferred arrangement, the labels (10) are sheets which have been lithographically printed on their upper surface. The applied labels (10) are deposited in such a manner, in spaced relation to each other, that each applied label (10) covers, and is adhered to the release material (2), by a respective patch (6) of adhesive. The shape and dimensions of the patches (6) and of the applied labels (10) are selected whereby substantially the entire rearwardly-directed surface (12) of each applied label (10) is coated with the pressure-sensitive adhesive and the edge (14) of each patch (6) is within the periphery (16) of the respective applied label (10).

The assembly of the succession of labels (10) adhered by the patches (6) of pressure-sensitive adhesive to the release material (2) is then wound into a reel (not shown).

Figure 3 shows a second embodiment of the present invention in which the applied label (20) is a folded sheet which has been lithographically printed. The folded sheet (20) comprises a rear panel (22) which is adhered by the patch (24) of pressure-sensitive adhesive to the release material (26), an upper panel (28) which is disposed over the rear panel (22) and an intermediate panel (30) which is disposed between the upper panel (28) and the rear panel (22). All of the panels are printed, e.g. lithographically. The intermediate panel (30) has an edge region (32) which is coated with a band (34) of material which renders the label hydrophobic. The band (34) contacts a corresponding band (36) of pressure-sensitive adhesive which is disposed along an edge region of the patch (24) of adhesive. The composite label (38) can be removed from the release material (26) and adhered by the patch (24) of pressure-sensitive adhesive to a container (not shown) to be labelled. When it is desired to open the label (38) the band (34) of hydrophobic material is pulled away from the container thereby pulling away the band (36) adhesive therewith. When it is desired to reseal the label the band (36) of adhesive can be readhered to the container.

Figure 4 shows a further embodiment of the present invention wherein the adhesive coating head (40) comprises a dot-matrix applicator which is adapted to apply a succession of patches of arrays (42) of dots of adhesive, each array (42) having predetermined shape and dimensions, to the upper surface (43) of the release material (44). In the illustrated embodiment, the patches (46) of adhesive comprising the arrays (42) are circular and subsequently a succession of circular labels (48) is applied to the patches (46) of adhesive. This embodiment provides the advantage that the dot-matrix applicator (40) can be employed to enable a label of any desired shape and dimensions to be adhered to the release material (44). As in the first

embodiment, the coating head (4) may be adapted to be raised and lowered intermittently in synchronism with a pump for the coating head.

Figure 5 illustrates a further embodiment of the present invention wherein the patches (50) of pressure-sensitive adhesive are applied to the upper surface (51) of the release material (52) by means of a printing device (54), for example a flexographic printing cylinder. In this embodiment, a plurality of patches (50) of pressure-sensitive adhesive are applied across the width of the release material (52) as well as along the length of the release material (52). The applied label (56) comprises a multiple label which is adhered to a plurality of patches (50) of adhesive across the width of the release material (52). A die-cutter (58) is provided which cuts from each applied multiple label (56) a plurality of self-adhesive labels (60) across the width of the release material (52). Each self-adhesive label (60) is adhered to the release material (52) by a respective patch (50) of adhesive. The waste label portions (not shown) between adjacent self-adhesive labels (60) are removed, for example by suction or by a blast of air.

In each of the disclosed embodiments the deposition of the pressure-sensitive adhesive onto the release material is carefully controlled by selective substantially instantaneous actuation of the coating head so that the applied patch of adhesive is only marginally smaller than the label applied thereto such that substantially the whole surface of the applied label is coated with adhesive but the adhesive does not extend beyond the periphery of the applied label, which could lead to adjacent layers of the reel being adhered together.

The present invention provides a real advantage over the prior art as exemplified by GB-A-2199010 in that it enables individual labels to be releasably adhered to a release web, for subsequent application to containers to be labelled, without any removal of excess adhesive or label portions being required. The present invention also obviates the need for a self-adhesive support web which is generally required in the prior art. The present invention can provide complete flexibility in the shape and dimensions of the resultant self-adhesive labels - it is merely necessary to control the adhesive applicator to apply an adhesive patch of predetermined shape and dimensions to the release material which correspond to those of the applied label.

Claims

1. A method of producing a succession of self-adhesive labels (10) on a length of release material (2); the method comprising the steps of:-



(a) applying a succession of patches (6) of pressure-sensitive adhesive to a surface of a length of release material (2); and

(b) applying a succession of individual labels to the patches of pressure-sensitive adhesive whereby each applied label is adhered to the release material by a respective patch of adhesive;

and wherein the shape and dimensions of the patches and of the applied labels are such that substantially the entire rearwardly-directed surface of each applied label is coated with the pressure-sensitive adhesive and the edge of each patch is within the periphery of the respective applied label.

2. A method according to Claim 1 wherein the patches of pressure-sensitive adhesive are applied by means of an extruder which is adapted to extrude a series of parallel adhesive beads of predetermined length.

3. A method according to Claim 1 wherein the patches of pressure-sensitive adhesive are applied by means of a dot-matrix applicator which is adapted to apply an array of dots of adhesive, the array having predetermined shape and dimensions.

4. A method according to Claim 1 wherein the patches of pressure-sensitive adhesive are applied by printing.

5. A method according to any foregoing claim wherein the individual labels are lithographically printed sheets.

6. A method according to any one of Claims 1 to 4 wherein the individual labels are folded sheets.

7. A method according to any foregoing Claim wherein each applied label comprises a multiple label and further comprising steps of cutting a plurality of self-adhesive labels from each applied multiple label and removing waste label portions.

Patentansprüche

1. Verfahren zur Herstellung von einer Abfolge von selbstklebenden Etiketten (10) auf einer Strecke eines Trägermaterials (2); wobei das Verfahren die Schritte umfaßt:

a) Aufbringen einer Abfolge von Flecken von druckempfindlichem Klebemittel auf eine Oberfläche einer Strecke des Trägermaterials (2); und

b) Aufbringen einer Abfolge von einzelnen Etiketten auf die Flecken von druckempfindlichem Klebemittel, wobei jedes aufgebrachte Etikett mit dem Trägermaterial durch einen entsprechenden Fleck Klebemittel verheftet wird;

und worin die Gestalt und die Abmessungen der Flecke und der aufgebrachten Etiketten so geartet sind, daß im wesentlichen die gesamte rückwärtig gerichtete Oberfläche eines jeden aufgebrachten Etiketts mit dem druckempfindlichen Klebemittel beschichtet wird und der Rand jedes Flecks innerhalb des Umfangs des entsprechenden aufgebrachten Etiketts liegt.

2. Verfahren nach Anspruch 1, worin die Flecken von druckempfindlichem Klebemittel mittels eines Extruders aufgebracht werden, welcher zum Extrudieren einer Serie von parallelen Klebemittelraupen vorgegebener Länge angepaßt ist.

3. Verfahren nach Anspruch 1, worin die Flecken des druckempfindlichen Klebemittels mittels eines Auftraggeräts für Punktmatrizen aufgebracht werden, welches so angepaßt ist, daß ein Flächenbereich mit Klebemittelpunkten aufgebracht werden kann, wobei der Flächenbereich eine vorgegebene Gestalt und Abmessungen aufweist.

4. Verfahren nach Anspruch 1, worin die Flecken an druckempfindlichem Klebemittel durch einen Druckvorgang aufgebracht werden.

5. Verfahren nach einem der voranstehenden Ansprüche, worin die einzelnen Etiketten lithographisch bedruckte Blätter sind.

6. Verfahren nach einem der Ansprüche 1 bis 4, worin die einzelnen Etiketten gefaltete Blätter sind.

7. Verfahren nach einem der voranstehenden Ansprüche, worin jedes der aufgebrachten Etiketten ein Mehrfachetikett umfaßt und wobei das Verfahren ferner die Schritte Schneiden einer Mehrheit an selbstklebenden Etiketten aus jedem der aufgebrachten Mehrfachetiketten und Entfernen der abfallenden Etikettenteile umfaßt.

Revendications

1. Procédé de production d'une suite d'étiquettes auto-adhésives (10) sur une longueur de matière antiadhérente (2) ; le procédé comprenant les étapes qui consistent ;



- (a) à appliquer une suite de plots (6)
d'adhésif sensible à la pression sur une
surface d'une longueur de matière anti-
adhérente (2) ; et
(b) à appliquer une suite d'étiquettes indivi- 5
duelles sur les plots d'adhésif sensible à la
pression de manière que chaque étiquette
appliquée adhère à la matière anti-adhéren-
te par l'intermédiaire d'un plot respectif
d'adhésif ; 10
et dans lequel la forme et les dimensions des
plots et des étiquettes appliquées sont telles
que pratiquement toute la surface tournée vers
l'arrière de chaque étiquette appliquée est re- 15
vêtue de l'adhésif sensible à la pression et que
le bord de chaque plot se trouve à l'intérieur
de la périphérie de l'adhésif appliqué respectif.
2. Procédé selon la revendication 1, dans lequel
les plots d'adhésif sensible à la pression sont 20
appliqués au moyen d'une extrudeuse qui est
destinée à extruder une série de bourrelets
parallèles d'adhésif d'une longueur prédétermi-
née. 25
3. Procédé selon la revendication 1, dans lequel
les plots d'adhésif sensible à la pression sont
appliqués au moyen d'un applicateur à matrice
de points qui est destiné à appliquer un réseau
de plots d'adhésif, le réseau ayant une forme 30
et des dimensions prédéterminées.
4. Procédé selon la revendication 1, dans lequel
les plots d'adhésif sensible à la pression sont
appliqués par impression. 35
5. Procédé selon l'une quelconque des revendications
précédentes, dans lequel les étiquettes
individuelles sont des feuilles imprimées par
lithographie. 40
6. Procédé selon l'une quelconque des revendications
1 à 4, dans lequel les étiquettes indivi-
duelles sont des feuilles pliées. 45
7. Procédé selon l'une quelconque des revendications
précédentes, dans lequel chaque étiquette
appliquée comprend une étiquette mul-
tiple, et comportant en outre les étapes qui
consistent à couper plusieurs étiquettes autoa- 50
dhésives à partir de chaque étiquette multiple
appliquée et à éliminer les parties d'étiquettes
résiduelles.

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