

ORIGINAL
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SELF-INJECTION DEVICE

ABSTRACT

A drug delivery device (100), including a body (104, 116) having a reservoir (164, 176) disposed therein for containing a medicament and an injection needle (152) for penetrating the skin of a patient, the needle (152) providing a path for the medicament between the reservoir (164, 176) and the patient. The device (100) also includes a needle cover (114) for selectively covering the injection needle (152), an adhesive (264) for selectively adhering the device to the patient, a release liner (500) for selectively covering a patient side of the adhesive (264), and a connecting means (112, 520, 512, 508, 524) for connecting the needle cover (114) and the release liner (500) such that removal of one of the needle cover (114) and the release liner (500) from the device (100) removes the other one of the needle cover (114) and the release liner (500).

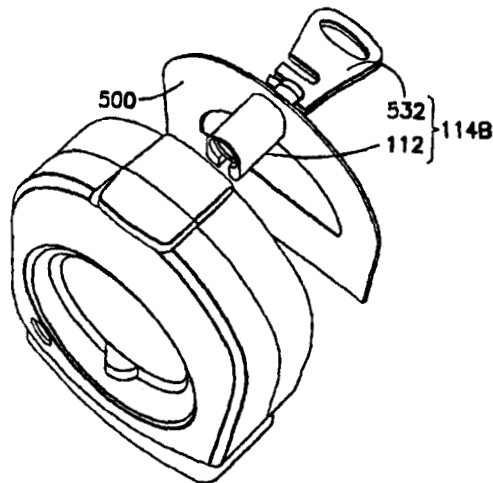


FIG.20C

We claim:

1. A drug delivery device, comprising:
 - a body having a reservoir disposed therein for containing a medicament;
 - an injection needle for penetrating the skin of a patient, the needle providing a path for the medicament between the reservoir and the patient;
 - a needle cover for selectively covering the injection needle;
 - an adhesive for selectively adhering the device to the patient;
 - a release liner for selectively covering a patient side of the adhesive; and
 - a connecting means for connecting the needle cover and the release liner such that removal of one of the needle cover and the release liner from the device removes the other one of the needle cover and the release liner from the device, the connecting means securing the needle cover and the release liner after removal of the one of the needle cover and the release liner from the device.

2. The device according to claim 1, wherein removing the needle cover from the device removes the release liner from the device.

3. The device according to claim 2, wherein the connecting means comprises:
 - first through third portions of the needle cover; and
 - an opening in the release liner corresponding to the needle cover that is larger than the first portion of the needle cover;
 - wherein the second and third portions of the needle cover are disposed on opposing sides of the first portion, and are larger than the release liner opening, for retaining the release liner thereon.

4. The device according to claim 3, wherein the needle cover comprises:
 - a needle-covering portion; and
 - a pull tab portion.

5. The device according to claim 4, wherein the needle-covering portion and the pull tab portion are integrally formed as a unitary structure.
6. The device according to claim 5, wherein:
 - the second portion of the needle cover is disposed on the pull tab portion and comprises at least one hook;
 - at least one of the hook and the release liner is sufficiently deformable that the hook is insertable through the opening in the release liner in a first direction; and
 - the hook is shaped for retaining the release liner with respect to a second direction opposite to the first direction.
7. The device according to claim 5, wherein:
 - the second portion of the needle cover is disposed on the pull tab portion and comprises at least one cantilevered wing; and
 - the wing is elastically deformable between a first wing position and a second wing position such that the wing is insertable through the opening in the release liner in the second wing position, and the wing retains the release liner on the needle cover in the first wing position.
8. The device according to claim 5, wherein a main axis of the pull tab portion forms an approximately 90° angle with respect to a main axis of the needle-covering portion.
9. The device according to claim 5, wherein, the needle-covering portion and the pull tab portion are connected by a living hinge.
10. The device according to claim 9, wherein the pull tab portion is rotatable between a first position substantially aligned with the needle-covering portion and a second position approximately 90° from the first position.
11. The device according to claim 10, wherein:

the needle-covering portion comprises a post extending therefrom, the post having a hook;

the pull tab portion has a slot therein through which the post passes during rotation between the first and second positions; and

upon rotation of the pull tab portion to the second position, the hook engages the pull tab portion to maintain the pull tab portion in the second position.

12. The device according to claim 10, wherein the living hinge is incorporated in a bi-stable hinge, such that upon the pull tab portion being positioned between the first and second positions, the bi-stable hinge biases the pull tab portion toward one of the first and second positions.

13. The device according to claim 4, wherein:

the needle-covering portion includes an eyelet, the first portion of the needle cover including the eyelet, the eyelet being insertable through the release liner opening;

the pull tab portion comprises an arm insertable into the eyelet; and

the second portion of the needle cover is disposed on the pull tab portion, such that subsequent to the insertion of the eyelet through the release liner opening, insertion of the arm into the eyelet retains the release liner on the needle cover.

14. The device according to claim 13, wherein the pull tab portion is rotatable between a first position substantially aligned with the needle-covering portion and a second position approximately 90° from the first position.

15. The device according to claim 1, wherein:

the release liner includes a pull tab; and

removing the release liner from the device removes the needle cover from the device.

16. The device according to claim 15, wherein the connecting means comprises:

first through third portions of the needle cover; and

an opening in the release liner corresponding to the needle cover that is larger than the first portion of the needle cover;

wherein the second and third portions of the needle cover are disposed on opposing sides of the first portion, and are larger than the release liner opening, for retaining the release liner thereon.

17. The device according to claim 16, wherein the needle cover comprises:

a needle-covering portion; and

a snap clip portion;

wherein the needle-covering portion includes an eyelet, the first portion of the needle cover including the eyelet, the eyelet being insertable through the release liner opening;

wherein the snap clip portion comprises an arm portion insertable into the eyelet; and

the second portion of the needle cover is disposed on the snap clip portion, such that subsequent to the insertion of the eyelet through the release liner opening, insertion of the arm into the eyelet retains the release liner on the needle cover.

18. The device according to claim 17, wherein:

the arm portion comprises at least one cantilevered wing; and

the wing is elastically deformable between a first position and a second position such that the wing is insertable through the eyelet in the second position, and the wing retains the needle-covering portion on the snap clip portion in the first position.

19. The device according to claim 1, wherein subsequent to the removal of the needle cover and the release liner, the needle cover and the release liner remain connected, providing for simultaneous disposal thereof.

20. A drug delivery device, comprising:
an injection needle for penetrating the skin of a patient;
an adhesive for selectively adhering the device to the patient;
a release liner for selectively covering a patient side of the adhesive, the
release liner having an opening therein; and
a needle cover for selectively covering the injection needle, the needle
cover comprising:
a needle-covering portion with a flange larger than the release liner
opening;
a middle portion positioned adjacent to the flange and being smaller than
the release liner opening; and
a retaining portion positioned adjacent to the middle portion and having a
portion thereof larger than the release liner opening, for retaining the release liner on the
middle portion subsequent to uncovering the injection needle.

21. The device according to claim 20, wherein the needle cover is integrally
formed as a unitary structure.

22. The device according to claim 21, wherein:
the retaining portion comprises at least one hook;
at least one of the hook and the release liner is sufficiently elastically
deformable that the hook is insertable through the opening in the release liner in a first
direction; and
the hook is shaped for retaining the release lining with respect to a second
direction opposite to the first direction.

23. The device according to claim 21, wherein:
the retaining portion comprises at least one cantilevered wing; and

the wing is elastically deformable between a first wing position and a second wing position such that the wing is insertable through the opening in the release liner in the second wing position, and the wing retains the release liner on the needle cover in the first wing position.

24. The device according to claim 21, wherein a main axis of the retaining portion forms an approximately 90° angle with respect to a main axis of the needle-covering portion.

25. The device according to claim 21, wherein, the needle-covering portion and the pull tab portion are connected by a living hinge.

26. The device according to claim 25, wherein the retaining portion is rotatable between a first position substantially aligned with the needle-covering portion and a second position approximately 90° from the first position.

27. The device according to claim 26, wherein:
the needle-covering portion comprises a post extending therefrom, the post having a hook;
the retaining portion has a slot therein through which the post passes during rotation between the first and second positions; and
upon rotation of the retaining portion to the second position, the hook engages the pull tab portion to maintain the retaining portion and the second position.

28. The device according to claim 26, wherein the living hinge is incorporated in a bi-stable hinge, such that upon the retaining portion being positioned between the first and second positions, the bi-stable hinge biases the retaining portion toward one of the first and second positions.

29. The device according to claim 20, wherein:

the middle portion includes an eyelet extending from the needle-covering portion, the eyelet being insertable through the release liner opening; and

the retaining portion comprises an arm insertable into the eyelet, such that subsequent to the insertion of the eyelet through the release liner opening, insertion of the arm into the eyelet retains the release liner on the needle cover.

30. The device according to claim 29, wherein the retaining portion is rotatable between a first position substantially aligned with the needle-covering portion and a second position approximately 90° from the first position.

31 The device according to claim 29, wherein:

the arm comprises at least one cantilevered wing; and

the wing is elastically deformable between a first position and a second position such that the wing is insertable through the eyelet in the second position, and the wing retains the retaining portion on the eyelet in the first position.

32. The device according to claim 20, wherein subsequent to the removal of the needle cover and the release liner, the needle cover and the release liner remain connected, providing for simultaneous disposal thereof.

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Becton, Dickinson and Company



(Varun Sharma)

of Amarchand & Mangaldas &

Suresh A. Shroff & Co.

Attorneys for the Applicant