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Claims

1. A safety device (1) for a pre-filled syringe (2), comprising
- a hollow support body (1.2)
- a release collar (1.4) non-rotatably arranged within and movable relative to the support body (1.2),

wherein
- a guide track (1.2.4) is formed into at least one substantially planar side wall (1.2.1) of the support body (1.2),
- the release collar (1.4) comprises at least one flexible arm (1.4.5) with a guide pin (1.4.6) extending from the flexible arm (1.4.5) and protruding through the guide track (1.2.4),
- the guide pin (1.4.6) is movable within and along the guide track (1.2.4) in a plane defined by the substantially planar side wall (1.2.1),

characterized in that the hollow support body (1.2) has a releasable mounting means (1.2.6) adapted to clamp to a barrel collar (2.2.2) of a pre-filled syringe (2) for mounting the pre-filled syringe (2) within the support body (1.2), wherein the safety device (1) further comprises:
- a hollow outer body (1.3) slidably arranged with respect to the support body (1.2) and adapted to receive the support body (1.2), wherein the release collar (1.4)is adapted to release the mounting means (1.2.6),
- a guide rail (1.3.5) formed into at least one substantially planar inner surface of the outer body (1.3), wherein
- the guide rail (1.3.5) is adapted to abut against the guide pin (1.4.6) to guide the movement of the guide pin (1.4.6) along the guide track (1.2.4) when the outer body (1.3) is slid relative to the support body (1.2).

2. A safety device (1) according to claim 1,
characterized in that the flexible arm (1.4.5) is deflectable, whereby the deflected flexible arm (1.4.5) biases the guide pin (1.4.6) in a lateral direction perpendicular

to a central axis (A) towards one lateral side of the safety device (1).

3. A safety device (1) according to claim 2, characterized in that the guide rail (1.3.5) comprises a step profile with a plurality of sections that extend substantially parallel to the lateral direction and/or extend substantially parallel to the central axis (A) and/or are oriented with respect to the central axis (A) at an acute angle.

4. A safety device (1) according to one of the previous claims, characterized in that the flexible arm (1.4.5) extends essentially parallel to the central axis (A) or is oriented relative to the central axis (A) at an acute angle.

5. A safety device (1) according to one of the previous claims, characterized in that the flexible arm (1.4.5) has an arc-shaped and undulated profile.

6. A safety device (1) according to one of the previous claims, characterized in that the flexible arm (1.4.5) is connected to the release collar (1.4) via a hinge and the release collar (1.4) further comprises a bearing surface (1.4.8) that limits a pivoting movement of the flexible arm (1.4.5) in the lateral direction.

7. A safety device according to one of the previous claims, characterized in that the flexible arm (1.4.5) is connected to or integrally formed to a distal and/or a proximal end of the release collar (1.4).

8. A safety device (1) according to one of the claims 1 to 6, characterized in that the guide pin (1.4.6) is located approximately halfway between a distal end of the flexible arm (1.4.5) and the proximal end of the flexible arm (1.4.5).

9. A safety device (1) according to one of the previous claims, characterized in that the guide track (1.2.4) comprises a substantially straight first path (1.2.4.1) that is oriented relative to the central axis (A) at an acute angle and

a double angled second path (1.2.4.2) with at least three sections, wherein adjacent sections are oriented at an angle with respect each other.

10. A safety device (1) according to one of the previous claims, characterized in that the guide pin (1.4.6) is movable within the guide track (1.2.4) from a start position (PS) to an intermediate position (PI) and further to a lockout position (PL), wherein the flexible arm (1.4.5) is deflected and stressed when the guide pin (1.4.6) is in the lockout position (PL) and the guide pin (1.4.6) is moved from the lockout position (PL) to the end position (PE) by the action of the relaxing deflected flexible arm (1.4.5).

11. A safety device (1) according to any of the previous claims, characterized in that a needle shield (1.1) is retained within and slidable relative to the support body (1.2), wherein a compression spring (1.5) is arranged within the support body (1.2) that bears against the needle shield (1.1) in the distal direction and the release collar (1.4) in the proximal direction.

12. A safety device (1) according to claim 11, characterized in that the needle shield (1.1) comprises an opening part (1.1.5) of resilient plastics material concentrically arranged around a central opening (1.1.2) of the needle shield (1.1).

13. A safety device (1) according to claim 11 or 12, characterized in that the needle shield (1.1), the support body (1.2) and/or the outer body (1.3) comprise a square or a rectangular cross-section.

14. A safety device (1) according to any of the previous claims, characterized in that the release collar (1.4) is movable in a proximal direction by the action of the relaxing compression spring (1.5), whereby the release collar releases the mounting means (1.2.6) of the support body (1.2).

15. An injection device (D) comprising a safety device (1) according to one of the previous claims and a pre-filled syringe (2).

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A safety device for a pre-filled syringe, comprising:

a hollow support body

a release collar non-rotatably arranged within and movable relative to the support body,

wherein

a guide track is formed into at least one substantially planar side wall of the support body,

the release collar comprises at least one flexible arm with a guide pin extending from the flexible arm and protruding through the guide track,

the guide pin is movable within and along the guide track in a plane defined by the substantially planar side wall,

characterized in that the hollow support body has a releasable mounting means adapted to clamp to a barrel collar of a pre-filled syringe for mounting the pre-filled syringe within the support body, wherein the safety device further comprises:

a hollow outer body slidably arranged with respect to the support body and adapted to receive the support body, wherein the release collar is adapted to release the mounting means,

a guide rail formed into at least one substantially planar inner surface of the outer body, wherein

the guide rail is adapted to abut against the guide pin to guide the movement of the guide pin along the guide track when the outer body is slid relative to the support body.

2. A safety device according to claim 1, characterized in that the flexible arm is deflectable, whereby the deflected flexible arm biases the guide pin in a lateral direction perpendicular to a central axis towards one lateral side of the safety device.

3. A safety device according to claim 2, characterized in that the guide rail comprises a step profile with a plurality of sections that extend substantially

parallel to the lateral direction and/or extend substantially parallel to the central axis and/or are oriented with respect to the central axis at an acute angle.

4. A safety device according to one of the previous claims, characterized in that the flexible arm extends essentially parallel to the central axis or is oriented relative to the central axis at an acute angle.

5. A safety device according to one of the previous claims, characterized in that the flexible arm has an arc-shaped and undulated profile.

6. A safety device according to one of the previous claims, characterized in that the flexible arm is connected to the release collar via a hinge and the release collar further comprises a bearing surface that limits a pivoting movement of the flexible arm in the lateral direction.

7. A safety device according to one of the previous claims, characterized in that the flexible arm is connected to or integrally formed to a distal and/or a proximal end of the release collar.

8. A safety device according to one of the claims 1 to 6, characterized in that the guide pin is located approximately halfway between a distal end of the flexible arm and the proximal end of the flexible arm.

9. A safety device according to one of the previous claims, characterized in that the guide track comprises a substantially straight first path that is oriented relative to the central axis at an acute angle and a double angled second path with at least three sections, wherein adjacent sections are oriented at an angle with respect each other.

10. A safety device according to one of the previous claims, characterized in that the guide pin is movable within the guide track from a start position to an intermediate position and further to a lockout position, wherein the flexible arm is deflected and stressed when the guide pin is in the lockout position and the guide

pin is moved from the lockout position to the end position by the action of the relaxing deflected flexible arm.

11. A safety device according to any of the previous claims, characterized in that a needle shield is retained within and slidable relative to the support body, wherein a compression spring is arranged within the support body that bears against the needle shield in the distal direction and the release collar in the proximal direction.

12. A safety device according to claim 11, characterized in that the needle shield comprises an opening part of resilient plastics material concentrically arranged around a central opening of the needle shield.

13. A safety device according to claim 11 or 12, characterized in that the needle shield, the support body and/or the outer body comprise a square or a rectangular cross-section.

14. A safety device according to any one of claims 11 to 13, characterized in that the release collar is movable in a proximal direction by the action of the relaxing compression spring, whereby the release collar releases the mounting means of the support body.

15. A safety device as claimed in any one of the previous claims, wherein the releasable mounting means includes a resilient mounting means positioned at the proximal end of the support body configured to clamp to the barrel collar of the pre-filled syringe causing the pre-filled syringe to be releasably retained within the support body.

16. An injection device comprising a safety device according to one of the previous claims and a pre-filled syringe.