Claims

1. A safety device (1) for a pre-filled syringe (2) comprising
- a hollow support body (1.2) for mounting the pre-filled syringe (2) therein,
- a hollow needle shield (1.1) that is slidable relative to the support body (1.2),
- and guiding means for guiding the movement of the needle shield (1.1) relative to the support body (1.2), wherein the guiding means comprise
  - a flexible arm (1.1.4) with a guide pin (1.1.3) extending from the flexible arm (1.1.4) in a radial direction,
  - a guide track (1.2.5), wherein the guide pin (1.1.3) protrudes into the guide track (1.2.5) and
  - a separating wall (1.2.6) that extends into the guide track (1.2.5) in a direction parallel to a central axis (A) of the safety device (1) and

wherein, when the needle shield (1.1) is slid relative to the support body (1.2), the guide pin (1.1.3) moves along the guide track (1.2.5) to deflect the flexible arm (1.1.4) in a lateral direction (L) perpendicular to the central axis (A) and the movement of the guide pin (1.1.3) along the guide track (1.2.5) is guided by the interplay of the flexible arm (1.1.4) and the separating wall (1.2.6), and wherein the safety device (1) comprises means (1.2.1, 1.2.2) for preventing relative rotation between the support body (1.2) the needle shield (1.1).

2. A safety device (1) according to claim 1,
characterized in that the flexible arm (1.1.4) is connected to one of the needle shield (1.1) or the support body (1.2) and the guide track (1.2.5) is formed into the other of the needle shield (1.1) or the support body (1.2).

3. A safety device (1) according to claim 1 or 2,
characterized in that the separating wall (1.2.6) extends into a widened section (1.2.5.2) of the guide track (1.2.5) that extends parallel to the central

axis (A) of the safety device (1).

4. A safety device (1) according to one of the previous claims, characterized in that the separating wall (1.2.6) has an axial dimension extending parallel to the central axis (A) that defines substantially a minimal axial distance that the needle shield (1.1) has to be moved with respect to the support body (1.2) until the safety device (1) is prevented from re-usage.

5. A safety device (1) according to one of the previous claims, characterized in that an audible feedback is generated when the needle shield (1.1) is retracted with respect to the support body (1.2) by a distance that matches or exceeds the minimal axial distance.

6. A safety device (1) according to one of the previous claims, characterized in that the separating wall (1.2.6) prevents the guide pin (1.1.3) to access an end position (PIII) within the guide track (1.2.5) from one of the distal direction or the proximal direction, whereas guide pin (1.1.3) is allowed to enter the end position (PIII) from the other of the distal direction or the proximal direction.

7. A safety device (1) according to one of the previous claims, characterized in that the guide track (1.2.5) is formed into a surface of the support body (1.2) or into a surface of the needle shield (1.1) as a recess.

8. A safety device (1) according to one of the previous claims 1 to 6, characterized in that the guide track (1.2.5) forms an aperture in one of the needle shield (1.1) or the support body (1.2).

9. A safety device (1) according to one of the claim 8, characterized in that the separating wall (1.2.6) is flexible and the guide pin (1.1.3) moves along the guide track (1.2.5) to deflect the separating wall (1.2.6), whereby the deflection of the flexible separating wall (1.2.6)

depends on the deflection of the flexible arm (1.1.4).

10. A safety device (1) according to claim 8 or 9, characterized in that an elasticity of the separating wall (1.2.6) is adapted to an elasticity of the flexible arm (1.1.4), so that the separating wall (1.2.6) is deflectable by the deflected flexible arm (1.1.4).

11. A safety device (1) according to one of the previous claims, characterized in that the guide pin (1.1.3) is biased in the lateral direction (L) by the deflected flexible arm (1.1.4).

12. A safety device (1) according to one of the previous claims, characterized in that the flexible arm (1.1.4) in a rest position extends essentially parallel to the central axis (A).

13. A safety device (1) according to one of the previous claims, characterized in that the guide track (1.2.5) comprises an inclined section (1.2.5.1) oriented at an angle with respect to the central axis (A).

14. A safety device (1) according to one of the previous claims, characterized in that the needle shield (1.1) is retained in an initial position (I) by the guide pin (1.1.3) being retained in a start position (PI) within the inclined section (1.2.5.1) of the guide track (1.2.5), whereas the needle shield (1.1) in the initial position (I) protrudes the support body (1.2) in a distal direction.

15. A safety device (1) according to claim 10, characterized in that the safety device (1) comprises a compression spring (1.4) arranged in a non-energized state when the needle shield (1.1) is in the initial position (I).

16. A safety device (1) according to one of the previous claims, characterized in that the needle shield (1.1) is movable from the initial position (I) to a retracted position (II) and further to an advanced position (III), whereas the needle shield (1.1) protrudes the support body (1.2) in the initial position (I) and in the advanced position (III).

17. A safety device (1) according to one of the previous claims, characterized in that the means for preventing relative rotation between the support body (1.2) and the needle shield (1.1) comprise a first longitudinal (1.2.1) and a first longitudinal tongue (1.1.2).

18. An injection device (1) comprising a safety device (1) according to one of the previous claims and a pre-filled syringe (2) with a hypodermic needle (2.1) attached to a distal end of the pre-filled syringe (2), wherein the safety device (1) comprises
- a hollow support body (1.2) for mounting the pre-filled syringe (2) therein,
- a hollow needle shield (1.1) that is slidable relative to the support body (1.2),
- and guiding means for guiding the movement of the needle shield (1.1) relative to the support body (1.2), wherein the guiding means comprise
  - a flexible arm (1.1.4) with a guide pin (1.1.3) extending from the flexible arm (1.14) in a radial direction,
  - a guide track (1.2.5), wherein the guide pin (1.1.3) protrudes into the guide track (1.2.5) and
  - a separating wall (1.2.6) that extends into the guide track (1.2.5) in a direction parallel to a central axis (A) of the safety device (1)

and wherein, when the needle shield (1.1) is slid relative to the support body (1.2), the guide pin (1.1.3) moves along the guide track (1.2.5) to deflect the flexible arm (1.1.4) in a lateral direction (L) perpendicular to the central axis (A) and the movement of the guide pin (1.1.3) along the guide track (1.2.5) is guided by the interplay of the flexible arm (1.1.4) and the separating wall (1.2.6) and wherein the pre-filled syringe (2) is retained

within the support body (1.2) of the safety device (1), so that the hypodermic needle (2.1) protrudes the distal end of the support body (1.2), whereas the hypodermic needle (2.1) is surrounded by the needle shield (1.1) in the initial position (I) and in the advanced position (III) and exposed in the retracted position (II).

CLAIMS

1. A safety device (1) for a pre-filled syringe (2) comprising
- a hollow support body (1.2) for mounting the pre-filled syringe (2) therein,
- a hollow needle shield (1.1) that is slidable relative to the support body (1.2),
- and guiding means for guiding the movement of the needle shield (1.1) relative to the support body (1.2), wherein the guiding means comprise
- a flexible arm (1.1.4) with a guide pin (1.1.3) extending from the flexible arm (1.1.4) in a radial direction,
- a guide track (1.2.5), wherein the guide pin (1.1.3) protrudes into the guide track (1.2.5) and
- a separating wall (1.2.6) that extends into the guide track (1.2.5) in a direction parallel to a central axis (A) of the safety device (1) and
wherein, when the needle shield (1.1) is slid relative to the support body (1.2), the guide pin (1.1.3) moves along the guide track (1.2.5) and the movement of the guide pin (1.1.3) along the guide track (1.2.5) is guided by the interplay of the flexible arm (1.1.4) and the separating wall (1.2.6), **characterized in that**, when the needle shield (1.1) is slid relative to the support body (1.2), the guide pin (1.1.3) moves along the guide track (1.2.5) to deflect the flexible arm (1.1.4) in a lateral direction (L) perpendicular to the central axis (A) and that the safety device (1) comprises means (1.2.1, 1.2.2) for preventing relative rotation between the support body (1.2) and the needle shield (1.1).

2. A safety device (1) according to claim 1,
characterized in that the flexible arm (1.1.4) is connected to one of the needle shield (1.1) or the support body (1.2) and the guide track (1.2.5) is formed into the other of the needle shield (1.1) or the support body (1.2).

3. A safety device (1) according to claim 1 or 2,
characterized in that the separating wall (1.2.6) extends into a widened section (1.2.5.2) of the guide track (1.2.5) that extends parallel to the central axis (A) of the safety device (1).

4. A safety device (1) according to one of the previous claims,
characterized in that the separating wall (1.2.6) has an axial dimension extending parallel to the central axis (A) that defines substantially a minimal axial distance that the needle shield (1.1) has to be moved with respect to the support body (1.2) until the safety device (1) is prevented from re-usage.

5. A safety device (1) according to one of the previous claims,
characterized in that an audible feedback is generated when the needle shield (1.1) is retracted with respect to the support body (1.2) by a distance that matches or exceeds the minimal axial distance.

6. A safety device (1) according to one of the previous claims,
characterized in that the separating wall (1.2.6) prevents the guide pin (1.1.3) to access an end position (PIII) within the guide track (1.2.5) from one of the distal direction or the proximal direction, whereas guide pin (1.1.3) is allowed to enter the end position (PIII) from the other of the distal direction or the proximal direction.

7. A safety device (1) according to one of the previous claims,
characterized in that the guide track (1.2.5) is formed into a surface of the support body (1.2) or into a surface of the needle shield (1.1) as a recess.

8. A safety device (1) according to one of the previous claims 1 to 6,
characterized in that the guide track (1.2.5) forms an aperture in one of the needle shield (1.1) or the support body (1.2).

9. A safety device (1) according to one of the claim 8,
characterized in that the separating wall (1.2.6) is flexible and the guide pin (1.1.3) moves along the guide track (1.2.5) to deflect the separating wall (1.2.6), whereby the deflection of the flexible separating wall (1.2.6) depends on the deflection of the flexible arm (1.1.4).

10. A safety device (1) according to claim 8 or 9,
characterized in that an elasticity of the separating wall (1.2.6) is adapted to an elasticity of the flexible arm (1.1.4), so that the separating wall (1.2.6) is deflectable by the deflected flexible arm (1.1.4).

11. A safety device (1) according to one of the previous claims,
characterized in that the guide pin (1.1.3) is biased in the lateral direction (L) by the deflected flexible arm (1.1.4).

12. A safety device (1) according to one of the previous claims,
characterized in that the flexible arm (1.1.4) in a rest position extends essentially parallel to the central axis (A).

13. A safety device (1) according to one of the previous claims,
characterized in that the guide track (1.2.5) comprises an inclined section (1.2.5.1) oriented at an angle with respect to the central axis (A).

14. A safety device (1) according to one of the previous claims,
characterized in that the needle shield (1.1) is retained in an initial position (I) by the guide pin (1.1.3) being retained in a start position (PI) within the inclined section (1.2.5.1) of the guide track (1.2.5), whereas the needle shield (1.1) in the initial position (I) protrudes the support body (1.2) in a distal direction.

15. A safety device (1) according to claim 10,
characterized in that the safety device (1) comprises a compression spring (1.4) arranged in a non-energized state when the needle shield (1.1) is in the initial position (I).

16. A safety device (1) according to one of the previous claims,
characterized in that the needle shield (1.1) is movable from the initial position (I) to a retracted position (II) and further to an advanced position (III), whereas the needle shield (1.1) protrudes the support body (1.2) in the initial position (I) and in the advanced position (III).

17. A safety device (1) according to one of the previous claims, **characterized in that** the means for preventing relative rotation between the support body. (1.2) and the needle shield (1.1) comprise a first longitudinal groove (1.2.1) and receiving a first longitudinal tongue (1.1.2).

18. An injection device (D) comprising a safety device (1) according to one of the previous claims and a pre-filled syringe (2) with a hypodermic needle (2.1) attached to a distal end of the pre-filled syringe (2), wherein the safety device (1) comprises
- a hollow support body (1.2) for mounting the pre-filled syringe (2) therein,
- a hollow needle shield (1.1) that is slidable relative to the support body (1.2),
- and guiding means for guiding the movement of the needle shield (1.1) relative to the support body (1.2), wherein the guiding means comprise
- a flexible arm (1.1.4) with a guide pin (1.1.3) extending from the flexible arm (1.14) in a radial direction,
- a guide track (1.2.5), wherein the guide pin (1.1.3) protrudes into the guide track (1.2.5) and

- a separating wall (1.2.6) that extends into the guide track (1.2.5) in a direction parallel to a central axis (A) of the safety device (1)
and wherein, when the needle shield (1.1) is slid relative to the support body (1.2), the guide pin (1.1.3) moves along the guide track (1.2.5) to deflect the flexible arm (1.1.4) in a lateral direction (L) perpendicular to the central axis (A) and the movement of the guide pin (1.1.3) along the guide track (1.2.5) is guided by the interplay of the flexible arm (1.1.4) and the separating wall (1.2.6) and wherein the pre-filled syringe (2) is retained within the support body (1.2) of the safety device (1), so that the hypodermic needle (2.1) protrudes the distal end of the support body (1.2), whereas the hypodermic needle (2.1) is surrounded by the needle shield (1.1) in the initial position (I) and in the advanced position (III) and exposed in the retracted position (II).