

Claims

1. A protective device (1) for the needle tube (2) of a syringe, comprising a housing (4) which can be pivoted on a support element (3) and which has an open housing side (5) in the pivot plane, so that the needle tube (2) can be pivoted into the housing (4) after being used for injection, ~~and wherein on the housing side, a retaining means (6) is provided for the needle tube (2) which has been pivoted inwards,~~
characterized in that
wherein in addition to the connection of a film hinge (8) in order to form a pivot axis, the support element (3) and the pivotable housing (4) are additionally connected together via a predetermined breaking point (9), and wherein after being used for injection, the housing (4) can be pivoted back over the destroyed predetermined breaking point (9)
characterized in that
on the housing side, a retaining means (6) is provided for the needle tube (2) which has been pivoted inwards, wherein after being used for injection, the housing (4) can be pivoted back over the destroyed predetermined breaking point (9) into a latched position, wherein the needle tube (2) can be brought into operational connection with a retaining means (6) provided in the housing (4).
2. The protective device as claimed in claim 1,
characterized in that
 the predetermined breaking point (9) consists of injection moulded flexible web elements (11).
3. The protective device as claimed in claim 1 and claim 2,
characterized in that

the web elements (11) are disposed on the edge regions (12 and 13) of the support element (3) and housing edge (4).

4. The protective device as claimed in claims 1 to 3,
characterized in that
the web elements (11) are distributed over the edge regions (12 and 13) of the support element (3) and housing (4).
- ~~5. The protective device as claimed in claims 1 to 4,
characterized in that
after being used for injection, the housing (4) can be pivoted back over the predetermined breaking point (9) into a latched position, wherein the needle tube (2) can be brought into operational connection with a retaining means (6) provided in the housing (4).~~
65. The protective device as claimed in claims 1 to 54,
characterized in that
the retaining means (6) consists of two tongues (14 and 15) formed in the housing (4) on the housing wall, which are orientated in the manner of a harpoon in the direction in which the needle tube (2) pivots inwards.
76. The protective device as claimed in claims 1 to 65,
characterized in that
a peg element (16) with a triangular configuration is provided between the tongues (14 and 15) which forces the needle tube (2) which has been pivoted inwards under one or the other tongue (14), (15).
87. The protective device as claimed in claims 1 to 46,
characterized in that

the retaining means (6) consists of a deformable sleeve (17) which is connected to the housing (4) via sawtooth-like predetermined breaking points (18).

98. The protective device as claimed in claim 87,
characterized in that
 the predetermined breaking points (18) are formed at the protruding web struts (19) on the housing front.

~~109~~. The protective device as claimed in claim 98,
characterized in that
 the web struts (19) are formed on the housing wall.

~~110~~. The protective device as claimed in one or more of claims 1 to ~~109~~,
characterized in that
 the protective device (1) is produced as a monobloc from an injection moulded part with the support element (3), needle housing (4), predetermined breaking point (9) as well as the retaining means (6).

~~1211~~. The protective device as claimed in claims 1 to ~~76~~,
characterized in that
 a protective sleeve (20) optionally cooperates with the housing (4) which is pivotably mounted on the support element (3) by means of which, after being used for injection, the open housing side (5) located in the pivot plane can be closed.

~~1312~~. The protective device as claimed in claim ~~1211~~,
characterized in that
 the protective sleeve (20) has an opening (21) disposed in the wall which is congruent with the open side (5) located on the housing.

~~14~~13. The protective device as claimed in claims ~~12-11~~ and ~~13~~12,

characterized in that

the protective sleeve (20) is rotatably mounted on the housing (4) so that after being used for injection, the protective sheath (20) can be turned from an open position into a position which closes the housing (4).

~~15~~14. The protective device as claimed in claims ~~12-11~~ to ~~14~~13,

characterized in that

the protective sleeve (20) is rotatably mounted with its lower housing edge (22) on the edge region (12) of the housing (4), and wherein a catch element (23) is formed on the edge region (12) of the housing (4) which, after twisting the protective sleeve (20) through 180° on the housing (4), comes into the latched position with an aperture (24) disposed in the wall of the protective sheath (20).

~~16~~15. The protective device as claimed in claims ~~12-11~~ to ~~15~~14,

characterized in that

the upper cover region of the protective sleeve (20) comprises a gripping element (25) on the underside (26) of which a ring element (27) is formed with a shaped 180° control cam (28) which cooperates with a wedge (30) formed on the cover region (29) of the housing (4) which prevents the protective sleeve (20) from turning backwards after the control cam (28) has interlocked with the wedge (30).

~~17~~16. The protective device as claimed in claims ~~12-11~~ to ~~15~~14,

characterized in that

the gripping element (25) can be fixed to the cover region (29) of the housing (4) by means of locking tongues (33) which reach through the ring element (27).