Claims

[Claim 1] Intravenous catheter apparatus, comprising:
a needle having a needle shaft, a needle tip at the distal end of the needle shaft and a needle hub mounted to the proximal end of the needle shaft,
an intravenous catheter tube mounted to a cathether hub and
a needle guard movable on the needle shaft,
wherein the needle guard comprises:
a base portion having a needle passage extending in an axial direction from a proximal side of the base portion through the base portion to a distal side of the base portion,
first and second arms extending substantially in the axial direction from the distal side of the base portion and
a distal wall which is transversely arranged at a distal region of the first arm,
wherein a recess provided in the needle guard receives a stopping element for stopping movement of the needle shaft relative to the needle guard.

[Claim 2] Intravenous catheter apparatus according to claim 1, wherein the needle guard is made of a first material and wherein the stopping element is made of a second material different from the first material.

[Claim 3] Intravenous catheter apparatus according to claim 2, wherein the second material is of greater hardness and/or stiffness than the first material.

[Claim 4] Intravenous catheter apparatus according to one of claims 1 to 3, wherein the base portion has a through-bore with a profile which is adapted to the principal outer profile of the needle shaft.

[Claim 5] Intravenous catheter apparatus according to claim 4, wherein the diameter of the through-bore is slightly larger than the principal outer diameter of the needle.

[Claim 6] Intravenous catheter apparatus according to one of the preceding claims, wherein the stopping element is formed by a washer, a cylindrical tube body or a body having a polygonal cross-sectional shape.

[Claim 7] Intravenous catheter apparatus according to one of the preceding claims, wherein the stopping element is preferably arranged such that its through-bore is in substantial alignment with the needle passage of

the needle guard.

[Claim 8] Intravenous catheter apparatus according to one of the preceding claims, wherein the stopping element is arranged loosely on the needle between the two arms of the needle guard and floating in the recess of the needle guard on the needle shaft.

[Claim 9] Intravenous catheter apparatus according to one of the preceding claims, wherein the stopping element is can be held by holding means relative to the needle guard.

[Claim 10] Intravenous catheter apparatus according to one of the preceding claims, wherein the needle has an enlargement provided between the distal section and the proximal section of the needle shaft.

[Claim 11] Intravenous catheter apparatus according to claim 10, wherein the enlargement has an outer profile in one dimension of which is larger than a maximum dimension of the profile of the through-bore of the stopping element.

[Claim 12] Intravenous catheter apparatus according to claim 10 or 11, wherein the enlargement is made by a crimping of the needle shaft.

[Claim 13] Intravenous catheter apparatus according to one of the preceding claims, wherein the needle is formed with an opening close to the needle tip, wherein the opening is located within the catheter tube, when the needle intravenous catheter apparatus is in a ready position.

[Claim 14] Intravenous catheter apparatus according to claim 13 and one of claims 10 to 12, wherein the slit is arranged distally or proximally from the enlargement.

[Claim 15] Intravenous catheter apparatus according to claim 14, wherein the slit extends in axial direction for a distance of 0.3 to 1mm.

[Claim 16] Intravenous catheter apparatus according to one of the preceding claims, further including a tension element applying a tensioning force to the first and second arms of the needle guard.

[Claim 17] Intravenous catheter apparatus according to claim 16, wherein the tension element at least partially surrounds the first and second arms of the needle guard.

[Claim 18] Intravenous catheter apparatus according to claim 16 or 17, wherein the tension element helps encloses a space between the first and second arms.

[Claim 19] Intravenous catheter apparatus according to one of the preceding claims, wherein the needle guard provides a guide groove in a side of the distal wall, the groove extending substantially in the axial direction

of the needle shaft.

[Claim 20] Intravenous catheter apparatus according to one of the preceding claims, wherein the catheter hub includes holding means for holding the needle guard against retracting forces.

[Claim 21] Intravenous catheter apparatus according to claim 20, wherein the holding means include a recess or a bump formed on the inner circumferential surface of the catheter hub adapted to engage a projection or recess formed on the first arm of the needle guard.

[Claim 22] Intravenous catheter apparatus according to claim 20 or 21, wherein the holding means include at least one outer arm formed on the base portion and adapted to engage the catheter hub on its outer circumferential surface.

[Claim 23] Intravenous catheter apparatus according to claim 22, wherein the holding means include two outer arms formed on substantially diametrical locations of the base portion and adapted to engage the catheter hub on its outer circumferential surface.

[Claim 24] Intravenous catheter apparatus according to one of the preceding claims, wherein the catheter hub provides an opening in order to provide additional space for the deflected first arm in the ready position.

[Claim 25] Intravenous catheter apparatus according to claim 24, wherein the opening is formed as a through-hole through the circumferential wall of the catheter hub.

[Claim 26] Intravenous catheter apparatus according to claim 24 or 25, wherein the opening provides a holding edge acting as the holding means for holding the needle guard within the catheter hub.

[Claim 27] Needle guard in particular adapted to be used for an intravenous catheter apparatus according to one of the preceding claims, wherein the needle guard includes:

a base portion having a needle passage extending in an axial direction from a proximal side of the base portion through the base portion to a distal side of the base portion,

first and second arms extending substantially in the axial direction from the distal side of the base portion and

a distal wall which is transversely arranged at a distal region of the first arm,

wherein a recess provided in the needle guard receives a stopping element for stopping movement of the needle shaft relative to the

needle guard.

CLAIMS

1. Intravenous catheter apparatus, comprising:

a needle having a needle shaft, a needle tip at the distal end of the needle shaft and a needle hub mounted to the proximal end of the needle shaft,

an intravenous catheter tube mounted to a catheter hub and

a needle guard movable on the needle shaft,

in which the needle guard comprises:

a base portion having a needle passage extending in an axial direction from a proximal side of the base portion through the base portion to a distal side of the base portion,

first and second arms extending substantially in the axial direction from the distal side of the base portion and

a distal wall which is transversely arranged at a distal region of the first arm,

in which a stopping element for stopping movement of the needle shaft relative to the needle guard is received in a recess provided in the needle guard,

in which the stopping element is arranged loosely on the needle between the two arms of the needle guard and floating in the recess of the needle guard on the needle shaft.

2. Intravenous catheter apparatus according to Claim 1, in which the needle guard is made of a first material and in which the stopping element is made of a second material different from the first material, in which, preferably, the second material is of greater hardness and/or stiffness than the first material.

3. Intravenous catheter apparatus according to Claim 1 or 2, in which the stopping element has a through-bore with a profile which is adapted to the principal outer profile of the needle shaft, in which, preferably, the diameter of the through-bore is slightly larger than the principal outer diameter of the needle.

4. Intravenous catheter apparatus according to Claim 1, 2 or 3, in which the stopping element is formed by a washer, a cylindrical tube body or a body having a polygonal cross-sectional shape, and/or in which the stopping element is preferably arranged such that its through-bore is in substantial alignment with the needle passage of the needle guard.

5. Intravenous catheter apparatus according to any preceding claim, in which the stopping element is held by holding means relative to the needle guard.

6. Intravenous catheter apparatus according to any preceding claim, in which the needle has an enlargement provided between the distal section and the proximal section of the needle shaft, in which, in particular, the enlargement has an outer profile in one dimension of which is larger than a maximum dimension of the profile of the through-bore of the stopping element, and/or in which the enlargement is made by a crimping of the needle shaft.

7. Intravenous catheter apparatus according to any preceding claim, in which the needle is formed with an opening close to the needle tip, in which the opening is located within the catheter tube, when the needle of the intravenous catheter apparatus is in a ready position.

8. Intravenous catheter apparatus according to Claim 7 or Claim 6, in which the first opening is arranged distally or proximally from the enlargement, in which, preferably, the first opening extends in axial direction for a distance of 0.3 mm to 1 mm.

9. Intravenous catheter apparatus according to any preceding claim, further including a tension element applying a tensioning force to the first and second arms of the needle guard, in which, in particular, the tension element at least partially surrounds the first and second arms of the needle guard, and/or in which, preferably, the tension element helps encloses a space between the first and second arms.

10. Intravenous catheter apparatus according to any preceding claim, in which the needle guard provides a guide groove in a side of the distal wall, the groove extending substantially in the axial direction of the needle shaft.

11. Intravenous catheter apparatus according to any preceding claim, in which the catheter hub includes holding means for holding the needle guard against retracting forces, in which, preferably, the holding means include a recess or a bump formed on the inner circumferential surface of the catheter hub adapted to engage a projection or recess formed on the first arm of the needle guard.

12. Intravenous catheter apparatus according to Claim 11, in which the holding means include at least one outer arm formed on the base portion and adapted to engage the catheter hub on its outer circumferential surface, in which, in particular, the holding means include two

outer arms formed on substantially diametrical locations of the base portion and adapted to engage the catheter hub on its outer circumferential surface.

13. Intravenous catheter apparatus according to any preceding claim, in which the catheter hub provides an opening in order to provide additional space for the deflected first arm in the ready position, in which, preferably, the second opening is formed as a through-hole through the circumferential wall of the catheter hub, and/or in which, preferably, the second opening provides a holding edge acting as the holding means for holding the needle guard within the catheter hub.

14. Needle guard in particular adapted to be used for an intravenous catheter apparatus according to one of the preceding claims, in which the needle guard includes:

a base portion having a needle passage extending in an axial direction from a proximal side of the base portion through the base portion to a distal side of the base portion,

first and second arms extending substantially in the axial direction from the distal side of the base portion and

a distal wall which is transversely arranged at a distal region of the first arm,

in which a stopping element for stopping movement of the needle shaft relative to the needle guard is received in a recess provided in the needle guard,

in which the stopping element is arranged loosely on the needle between two arms of the needle guard and floating in the recess of the needle guard on the needle shaft.