CLAIMS

1. A catheter assembly comprising:
a catheter;
a needle having a sharp distal tip;
a catheter hub having the catheter;
a needle shield connected to the catheter hub when the needle is in a first position; and
a clip disposed in the needle shield that cooperates with the needle; wherein
the clip engages the catheter hub in the first position of the needle;
the clip disengages the catheter hub when the needle is retracted to a second position to cover at least a portion of the needle;
the clip includes a spade that attaches the clip to the needle shield; and
an outer surface of the spade is exposed to an outside of the catheter assembly.

2. The catheter assembly of claim 1, wherein:
the catheter hub includes a collar having a notch; and
the notch is disposed on the collar.

3. The catheter assembly of claim 2, wherein a portion of the collar has an outer diameter greater than a portion of an outer diameter of the catheter hub adjacent to the collar.

4. The catheter assembly of claim 2, wherein the notch of the collar has an outer diameter substantially equal to or greater than a portion of an outer diameter of the catheter hub adjacent to the collar.

5. The catheter assembly of claim 2, wherein the collar includes external Luer threads.

6. The catheter assembly of claim 1, wherein the first position of the needle biases the clip into an open position during needle use.

7. The catheter assembly of claim 1, wherein the second position of the needle allows the clip to move to a closed position to block the distal tip of the needle when the needle is retracted after needle use.

8. The catheter assembly of claim 7, wherein the clip includes one or more flags that block the distal tip of the needle in the second position.

9. The catheter assembly of claim 1, further comprising:
a washer disposed in the needle shield that cooperates with the needle; wherein
the needle further includes a deformation; and
the washer prevents the distal tip of the needle and the deformation from exiting the needle shield when the needle is in the second position.

10. The catheter assembly of claim 9, wherein:
the clip and the washer enclose the distal tip of the needle when the needle is in the second position.

11. The catheter assembly of claim 1, wherein:
the spade includes one or more barbs; and
the one or more barbs engage an inner surface of the needle shield.

12. The catheter assembly of claim 2, wherein:
the collar is disposed on a proximal end of the catheter hub; and
the clip includes a latch that is configured to engage and disengage the collar and the needle shield.

13. The catheter assembly of claim 12, wherein:
the clip includes two legs; and
the latch is disposed between the two legs.

14. The catheter assembly of claim 12, wherein the latch is offset from the notch to engage the collar when the needle is in the first position.

15. The catheter assembly of claim 12, wherein the latch is aligned with the notch to disengage the collar when the needle is in the second position.

16. The catheter assembly of claim 12, wherein the latch moves laterally to disengage the collar.

17. The catheter assembly of claim 12, wherein the latch is off-center with respect to the needle at each of the engaged and disengaged position.

18. The catheter assembly of claim 1, wherein the outer wall further includes a rib to stiffen and strengthen the clip.

19. The catheter assembly of claim 1, wherein the spade includes an inner wall that is secured to the needle shield.

20. The catheter assembly of claim 1, wherein:
the spade includes an opening;
the needle shield includes a barb; and
the barb engages the opening in the spade to secure the clip to the needle shield.

21. The catheter assembly of claim 1, wherein:
the spade includes one or more barbs; and
the one or more barbs engage at least one of an inner surface and an outer surface of the needle shield.

22. The catheter assembly of claim 1, wherein:
the clip includes two legs; and
the spade is disposed between the two legs.

23. The catheter assembly of claim 1, wherein:
the clip includes two legs; and
the spade is disposed in an area outside the two legs.

24. The catheter assembly of claim 1, wherein:
the clip includes two legs; and
the spade is disposed at a top surface of one of the two legs.

25. The catheter assembly of claim 1, wherein:
the clip includes three legs; and
the spade is disposed at a bottom surface of one of the three legs.

26. The catheter assembly of claim 1, wherein:
the clip includes a rear wall, the rear wall being substantially perpendicular to a longitudinal axis of the catheter assembly; and
the rear wall includes one or more barbs that secure the clip to the needle shield.

27. The catheter assembly of claim 1, wherein the clip includes one or more flags that block the distal tip of the needle in the second position.

28. The catheter assembly of claim 1, wherein:
the clip includes a mounting cavity;
the needle shield includes a mounting protrusion; and
the mounting cavity engages the mounting protrusion to secure the clip to the needle shield.

29. A catheter assembly comprising:
a catheter;
a needle having a sharp distal tip;
a catheter hub housing the catheter;

a needle shield connected to the catheter hub when the needle is in a first position; and

a clip disposed in the needle shield that cooperates with the needle, the clip including:

a latch that is configured to engage and disengage the collar and the needle shield; and

two legs; wherein

the latch is disposed between the two legs;

the clip engages the catheter hub in the first position of the needle;

the clip disengages the catheter hub when the needle is retracted to a second position to cover at least a portion of the needle;

the clip includes a spade that attaches the clip to the needle shield; and

an outer surface of the spade is exposed to an outside of the catheter assembly.

30. A catheter assembly comprising:

a catheter;

a needle having a sharp distal tip;

a catheter hub housing the catheter;

a needle shield connected to the catheter hub when the needle is in a first position; and

a clip disposed in the needle shield that cooperates with the needle;

the clip including:

a latch that is configured to engage and disengage the collar and the needle shield; and

two legs; wherein:

the latch is disposed outside an area between the two legs;

the clip engages the catheter hub in the first position of the needle;

the clip disengages the catheter hub when the needle is retracted to a second position to cover at least a portion of the needle;

the clip includes a spade that attaches the clip to the needle shield; and

an outer surface of the spade is exposed to an outside of the catheter assembly.

31. The catheter assembly of claim 29 or 30, wherein the latch further includes a rib to stiffen and strengthen the clip.

32. A method of operating a catheter assembly, comprising:
disposing a needle having a sharp distal tip in a catheter;
attaching a clip to the catheter assembly, the clip having a spade;
exposing an outer surface of the spade to an outside of the catheter assembly;
biasing the clip when the needle is in use in a first position;
removing the needle from a catheter hub;
releasing the clip when the needle is in a second position to enclose at least a portion of the needle; and
disengaging the clip from the catheter hub when the needle is in the second position.

33. The method of claim 32, further comprising engaging the clip and the catheter hub when the needle is in the first position.

34. The method of claim 32, further comprising:
connecting the catheter hub and a needle shield when the clip engages the catheter hub; and
disconnecting the catheter hub and the needle shield when the clip disengages the catheter hub;
wherein the clip is disposed in the needle shield.

CLAIMS

1. A catheter assembly comprising:
a catheter;
a needle having a sharp distal tip;
a catheter hub having the catheter;
a needle shield connected to the catheter hub when the needle is in a first position; and
a clip disposed in the needle shield that cooperates with the needle; wherein
the clip engages the catheter hub in the first position of the needle;
the clip disengages the catheter hub when the needle is retracted to a second position to cover at least a portion of the needle;
the clip includes a spade that attaches the clip to the needle shield; and
an outer surface of the spade is exposed to an outside of the catheter assembly.

2. The catheter assembly of claim 1, wherein:
the catheter hub includes a collar having a notch; and
the notch is disposed on the collar.

3. The catheter assembly of claim 2, wherein a portion of the collar has an outer diameter greater than a portion of an outer diameter of the catheter hub adjacent to the collar.

4. The catheter assembly of claim 2, wherein the notch of the collar has an outer diameter substantially equal to or greater than a portion of an outer diameter of the catheter hub adjacent to the collar.

5. The catheter assembly of claim 2, wherein the collar includes external Luer threads.

6. The catheter assembly of claim 1, wherein the first position of the needle biases the clip into an open position during needle use.

7. The catheter assembly of claim 1, wherein the second position of the needle allows the clip to move to a closed position to block the distal tip of the needle when the needle is retracted after needle use.

8. The catheter assembly of claim 7, wherein the clip includes one or more flags that block the distal tip of the needle in the second position.

9. The catheter assembly of claim 1, further comprising:
a washer disposed in the needle shield that cooperates with the needle; wherein
the needle further includes a deformation; and
the washer prevents the distal tip of the needle and the deformation from exiting the needle shield when the needle is in the second position.

10. The catheter assembly of claim 9, wherein:
the clip and the washer enclose the distal tip of the needle when the needle is in the second position.

11. The catheter assembly of claim 1, wherein:
the spade includes one or more barbs; and
the one or more barbs engage an inner surface of the needle shield.

12. The catheter assembly of claim 2, wherein:
the collar is disposed on a proximal end of the catheter hub; and
the clip includes a latch that is configured to engage and disengage the collar and the needle shield.

13. The catheter assembly of claim 12, wherein:
the clip includes two legs; and
the latch is disposed between the two legs.

14. The catheter assembly of claim 12, wherein the latch is offset from the notch to engage the collar when the needle is in the first position.

15. The catheter assembly of claim 12, wherein the latch is aligned with the notch to disengage the collar when the needle is in the second position.

16. The catheter assembly of claim 12, wherein the latch moves laterally to disengage the collar.

17. The catheter assembly of claim 12, wherein the latch is off-center with respect to the needle at each of the engaged and disengaged position.

18. The catheter assembly of claim 1, wherein the outer wall further includes a rib to stiffen and strengthen the clip.

19. The catheter assembly of claim 1, wherein the spade includes an inner wall that is secured to the needle shield.

20. The catheter assembly of claim 1, wherein:
the spade includes an opening;
the needle shield includes a barb; and
the barb engages the opening in the spade to secure the clip to the needle shield.

21. The catheter assembly of claim 1, wherein:
the spade includes one or more barbs; and
the one or more barbs engage at least one of an inner surface and an outer surface of the needle shield.

22. The catheter assembly of claim 1, wherein:
the clip includes two legs; and
the spade is disposed between the two legs.

23. The catheter assembly of claim 1, wherein:
the clip includes two legs; and
the spade is disposed in an area outside the two legs.

24. The catheter assembly of claim 1, wherein:
the clip includes two legs; and
the spade is disposed at a top surface of one of the two legs.

25. The catheter assembly of claim 1, wherein:
the clip includes three legs; and
the spade is disposed at a bottom surface of one of the three legs.

26. The catheter assembly of claim 1, wherein:
the clip includes a rear wall, the rear wall being substantially perpendicular to a longitudinal axis of the catheter assembly; and
the rear wall includes one or more barbs that secure the clip to the needle shield.

27. The catheter assembly of claim 1, wherein the clip includes one or more flags that block the distal tip of the needle in the second position.

28. The catheter assembly of claim 1, wherein:
the clip includes a mounting cavity;
the needle shield includes a mounting protrusion; and
the mounting cavity engages the mounting protrusion to secure the clip to the needle shield.

29. A catheter assembly comprising:
a catheter;
a needle having a sharp distal tip;
a catheter hub housing the catheter;

a needle shield connected to the catheter hub when the needle is in a first position; and

a clip disposed in the needle shield that cooperates with the needle, the clip including:

a latch that is configured to engage and disengage the collar and the needle shield; and

two legs; wherein

the latch is disposed between the two legs;

the clip engages the catheter hub in the first position of the needle;

the clip disengages the catheter hub when the needle is retracted to a second position to cover at least a portion of the needle;

the clip includes a spade that attaches the clip to the needle shield; and

an outer surface of the spade is exposed to an outside of the catheter assembly.

30. A catheter assembly comprising:

a catheter;

a needle having a sharp distal tip;

a catheter hub housing the catheter;

a needle shield connected to the catheter hub when the needle is in a first position; and

a clip disposed in the needle shield that cooperates with the needle;

the clip including:

a latch that is configured to engage and disengage the collar and the needle shield; and

two legs; wherein:

the latch is disposed outside an area between the two legs;

the clip engages the catheter hub in the first position of the needle;

the clip disengages the catheter hub when the needle is retracted to a second position to cover at least a portion of the needle;

the clip includes a spade that attaches the clip to the needle shield; and

an outer surface of the spade is exposed to an outside of the catheter assembly.

31. The catheter assembly of claim 29 or 30, wherein the latch further includes a rib to stiffen and strengthen the clip.

32. A method of operating a catheter assembly, comprising:
disposing a needle having a sharp distal tip in a catheter;
attaching a clip to the catheter assembly, the clip having a spade;
exposing an outer surface of the spade to an outside of the catheter assembly;
biasing the clip when the needle is in use in a first position;
removing the needle from a catheter hub;
releasing the clip when the needle is in a second position to enclose at least a portion of the needle; and
disengaging the clip from the catheter hub when the needle is in the second position.

33. The method of claim 32, further comprising engaging the clip and the catheter hub when the needle is in the first position.

34. The method of claim 32, further comprising:
connecting the catheter hub and a needle shield when the clip engages the catheter hub; and
disconnecting the catheter hub and the needle shield when the clip disengages the catheter hub;
wherein the clip is disposed in the needle shield.