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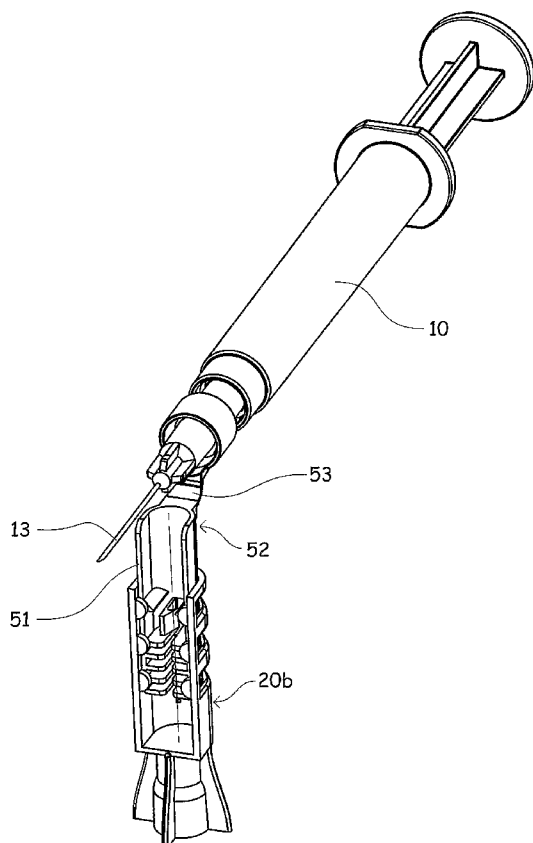
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[Continued on next page]

(54) Title: ARTERIAL SYRINGE SAFETY VENT



(57) Abstract: An arterial syringe safety vent that is dually optimized for needle safety and arterial blood degassing efficiency is presented. In an exemplary embodiment, the device of the present invention is self-supporting on a horizontal surface so that a degassing procedure can be performed single-handedly. The arterial syringe safety vent can include a housing adapted to receive a hypodermic needle; a needle lock to capture and retain the hypodermic needle; a venting portion; and a penetrable membrane adapted to allow the needle sealed access to the venting portion so that a blood sample can be safely purged. The arterial syringe safety vent can be adapted to receive a needle capture device in a manner that allows movement in relation to the needle capture device so that a needle secured within the needle capture device can penetrate the penetrable membrane and the arterial syringe safety vent can engage the needle capture device.



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**AMENDED CLAIMS**

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I claim:

1. An arterial syringe apparatus, comprising:  
a housing having first and second opposing open ends;  
a needle lock adapted to unreleasably capture a hypodermic needle;  
a penetrable membrane; and  
a venting portion comprising a filter fixed between said second end and said penetrable membrane, said filter capable of preventing liquid from flowing from said second end;  
wherein, said needle lock is adapted to allow said needle's tip to pierce said membrane, after which said needle's tip is locked between said membrane and said venting portion.
2. The arterial syringe apparatus of claim 1, wherein said needle lock comprises at least one capture flute adapted to provide an interference fit with at least one needle hub flute of an arterial syringe.
3. The arterial syringe apparatus of claim 1, wherein said needle lock comprises a clamshell needle lock.
4. The arterial syringe apparatus of claim 3, further comprising:  
at least one leaf spring; and  
a catch.
6. The arterial syringe apparatus of claim 1, wherein said penetrable membrane is provided between said needle lock and said second end.
7. The arterial syringe apparatus of claim 1, wherein said venting portion is provided between said penetrable membrane and said second end.
8. The arterial syringe apparatus of claim 1, wherein said housing is adapted to be self-supporting on a horizontal surface so that said first end is adapted to receive a downwardly oriented hypodermic needle of an arterial syringe.
9. The arterial syringe apparatus of claim 8, wherein said housing comprises at least one leg.
10. The arterial syringe apparatus of claim 1, wherein said housing is adapted to receive a needle capture device and allow movement of said housing along said received needle capture device.

11. The arterial syringe apparatus of claim 10, wherein said housing is adapted to engage and unreleasably capture said needle capture device.
12. The arterial syringe apparatus of claim 1, wherein said first and second opposing ends are open.
13. An arterial syringe apparatus, comprising:  
a housing;  
a penetrable membrane; and  
a venting portion,  
wherein said housing is adapted to couple with a needle capture device to permit movement of said housing in relation to said needle capture device to allow a needle unreleasably captured within said needle capture device to penetrate said penetrable membrane, so that after piercing the membrane, said needle's tip is locked between said membrane and said venting portion.
14. The arterial syringe apparatus of claim 13, wherein said housing is adapted to engage and unreleasably capture said needle capture device.
15. The arterial syringe apparatus of claim 13, wherein said housing comprises first and second opposing ends.
16. The arterial syringe apparatus of claim 16, wherein said venting portion is provided between said penetrable membrane and said second opposing end.
17. The arterial syringe apparatus of claim 15, wherein said venting portion comprises a filter capable of preventing the flow of liquid through said second end.
18. An arterial syringe degassing device, comprising:  
a needle capture means adapted to unreleasably capture a hypodermic needle of an arterial syringe;  
a housing;  
a penetrable membrane; and  
a venting portion,  
wherein said housing is adapted to couple with said needle capture means in a manner that allows movement in relation to said needle capture means so that a needle secured within said needle capture means can penetrate said penetrable membrane, so that after said penetration said needle's tip is locked between said

membrane and said venting portion.

19. The arterial syringe degassing device of claim 18, wherein said housing is adapted to engage and unreleasably capture said needle capture means.

20. The arterial syringe degassing device of claim 18, wherein said housing comprises first and second opposing ends.

21. The arterial syringe degassing device of claim 20, wherein said venting portion comprises a filter which prevents the flow of fluid through said second end.

22. A method for purging gases from an arterial blood gas sample, comprising:  
providing a syringe with plunger and needle containing an arterial blood gas sample;  
providing an arterial syringe apparatus comprising,

a housing with first and second opposing ends,

a penetrable membrane, and

a venting means, consisting of a filter fixed between said penetrable membrane and said second end;

inserting a needle of said syringe into the housing sufficiently deep to pierce said penetrable membrane;

unreleasably capturing the needle of said syringe;

locking said needle's tip between said penetrable membrane and said venting means;

advancing the plunger within said syringe to expel entrapped gas from said arterial blood gas sample through the needle end of said syringe until the collected blood makes contact with said filter; and

containing expelled blood between said penetrable membrane and said second end.

23. A method of providing an arterial syringe apparatus, comprising:

providing a housing having first and second opposing ends;

providing a needle lock adapted to unreleasably capture a hypodermic needle;

providing a penetrable membrane; and

providing a venting portion,

wherein said needle lock is adapted to lock said needle's tip between said penetrable membrane and said venting portion.

24. The method of claim 23, wherein said providing a needle lock comprises

providing at least one capture flute,

25. The method of claim 23, wherein said providing a needle lock comprises providing a clamshell lock.

26. The method of claim 23, wherein said providing a venting portion comprises providing a filter which prevents the flow of fluid through said second end.

27. A method of providing an arterial syringe degassing device, comprising:

providing a housing;

providing a penetrable membrane; and

providing a venting portion,

wherein said providing a housing comprises providing a housing adapted to couple with a needle capture device to permit movement of said housing in relation to said needle capture device to allow a needle captured by said needle capture device to penetrate said penetrable membrane, so that said needle's tip is locked between said membrane and said venting portion.

28. The method of claim 27, further comprising providing a needle capture device.

29. The method of claim 22, further comprising providing a needle capture means adapted to unreleasably capture said needle.