Needle Closure Structure for Injection Syringe

Field of the Invention

The present invention relates to a needle closure structure for injection syringe, especially to a needle closure which can be extended or retracted by means of rotating a holding portion, to expose or cover an injection needle.

Prior Art

A conventional injection syringe 1' (as shown in Fig. 1) should be rejected once used, with a needle closure 4' is provided on the injection syringe 1' besides an injection needle 3'. Said needle closure 4' is originally overlapped on a conical needle seat 2', to cover the injection needle 3'. The needle closure 4' is pulled out when it is desired to use the syringe, and should be found out and cover back onto the conical needle seat 2' after using to cover the injection needle 3', in order to avoid piercing others and causing infection. However, since the design of the needle closure 4' is imperfect, when the needle closure 4' is pulled out and used by a medical or nursing person, it is completely separated from the main body. Then as the injection is completed, it is possible that the needle closure 4' can not be found out and cover the injection needle 3', so that the syringe is directly rejected and may cause risk. Further, since the overlapping aperture of the needle closure 4' is small, when the medical or nursing person takes the needle closure to cover the injection syringe 1' with his finger H', the finger H' is likely be pierced by the injected needle 3' occasionally (as shown in Fig. 2). Thus, it has the risk of being infected, so as to bring pressure and fear on the medical or nursing person.

Summary of the Invention

Accordingly, it is a principal object of the present invention to provide a combined sleeve structure, in which a retractable cap for needle closure may cover or expose a needle by the relative rotation of the threaded structure between the sleeves, to avoid the risk of the user being pierced by the needle.

A secondary object of the present invention is to provide a design of assembling structure, by which the needle may be exposed or covered without pulling out the needle closure at all, so as to avoid the embarrassment of can not find out the needle closure when it is desired to cover back.

The present invention will be described in details by way of embodiments shown in the accompanying drawings.

Brief Description of the Drawings

Fig. 1 is a combined view of an injection syringe and a needle closure of the prior art;

Fig. 2 is an embodiment of Fig. 1;

Fig. 3 is an exploded view of an injection syringe of the present invention;

Fig. 4 is a perspective view of an injection syringe of the present invention;

Fig. 5A is a schematic view of a retractable cap for needle closure of the present invention in its retracted position;

Fig. 5B is a cutaway view of the retractable cap for needle closure in Fig. 5A in its extended position; and

Fig. 6A and Fig. 6B are embodiments of the present invention.

Description of the symbols used in the drawings:

In the prior art:

1'	injection syringe
2'	conical needle seat
3'	injection needle

4' needle closure

H' finger

In the present invention:

1 sleeve portion
- 11 short cylinder
- 12 flange
- 13 internal aperture
- 14 elongated slit

2 retractable cap for needle closure
- 21 tapered cup
- 22 small hole
- 23 pin

3 holding portion
- 31 short cylinder
- 32 internal aperture
- 33 threaded recess

4 injection syringe

5 conical needle seat

6 needle

H finger

Description of the Preferred Embodiment

The present invention will now be described in details with reference to the embodiments in the accompanying drawings.

The present invention is an improved needle closure structure for injection syringe (as shown in Fig. 3 and 4). The structure is composed of a sleeve portion 1, a retractable cap for needle closure 2, and a holding portion 3.

The sleeve portion 1 comprises a hollow short cylinder 11, the internal aperture 13 of which may just overlap onto a conical needle seat 5 of an injection syringe 4 tightly. A flange 12 is provided at the top and bottom of the cylinder respectively, and an elongated slit 14 is opened into each of the opposite sides of the cylinder.

The retractable cap for needle closure 2 comprises a long tapered cup 21. A small hole 22 opens into the tip portion of the tapered cup 21, to allow a needle 6 of the injection syringe 4 to extend there through. A pin 23 is provided on each of the opposite sides at the bottom of the tapered cup 21.

The holding portion 3 comprises a hollow short cylinder 31 which is wider than the sleeve portion 1. The internal aperture 32 of

the short cylinder 31 may just overlap onto the sleeve portion 1. On the wall edge of the internal aperture 32 of the holding portion 3, there provides a pair of threaded recess 33 spaced form each other by a appropriate thread pitch of 180 degrees (the number of the thread turns is preferably one).

In order to assemble the present invention, the retractable cap for needle closure 2 is inserted into the internal aperture 13 of the sleeve portion 1 firstly, with the pins 23 extending outwards through the elongated slits 14 of the sleeve portion 1. Then the holding portion 3 is overlapped onto the sleeve portion 1, with the pins 23 which are extended through the sleeve portion 1 being nested in the threaded recess 33 of the internal aperture 32 of the holding portion 3. Next, the internal aperture 13 of the sleeve portion 1 is covered over the needle 6 which has extended through the injection syringe 4, and is pressed and overlapped tightly against the conical needle seat 5 on the front end of the injection syringe 4, to integrating the injection syringe 4, the conical needle seat 5, and the sleeve portion 1 which is overlapped tightly. The retractable cap for needle closure 2 is rotatable relative to the injection syringe 4, and said retractable cap for needle closure 2 is able to extended forwardly or retracted back, with the elongated slits 14 of the sleeve portion 1 served as tracks, and the motion being stopped by the threaded recess 33 (referring to Fig. 5A and 5B).

In the real using, the user may hold the holding portion 3 firmly by his fingers on the one hand and grasp the injection syringe 4 by his hand on the other hand, to cause the injection syringe 4 to rotate counterclockwise with the holding portion 3 as an axle. At this time, the conical needle seat 5, the needle 6, and the sleeve portion 1, which are integrally coupled to the injection syringe 4, are rotating counterclockwise simultaneously like a shaft, to cause the pins 23 of the retractable cap for needle closure 2 to

retract along the intersected trace line between the threaded recess 33 of the holding portion 3 and the elongated slits 14 of the sleeve portion 1. On the contrary, when the injection syringe 4 is rotated clockwise, the intersected trace line between the threaded recess 33 and the elongated slits 14 is outwardly directed, and the retractable cap for needle closure 2 is extended outwardly to cover the needle 6 (as shown in Fig. 5A and 5B).

Of course, the present invention may be operated in an opposite way to the previously described, i.e. the injection syringe 4 being grasped and the holding portion 3 being rotated by fingers, to still obtain said operation object.

According to the components described above, the present invention utilizes a needle closure structure assembled in an injection syringe, and changes the needle closure into an extendable and retractable type by using screw thread principle, to cover or expose a needle. During operation, the only matter need to do is rotating the injection syringe or the holding portion without arising any risk of being pierced by a used needle, to maintain the security of the users. The present invention provides indeed significant practicality and advancement compared to the injection syringes of the prior art.

Claims:

1. An improved needle closure structure for injection syringe, comprising structurally a sleeve portion, a retractable cap for needle closure, and a holding portion, wherein

the sleeve portion comprises a hollow short cylinder, the internal aperture of which may just overlap onto a conical needle seat of an injection syringe tightly; a flange is provided at the top and bottom of the cylinder respectively, and an elongated slits is opened into each of the opposite sides of the cylinder;

the retractable cap for needle closure comprises a long tapered cup, a small hole opening into the tip portion of the tapered cup, to allow a needle of the injection syringe to extend there through; a pin is provided on each of the opposite sides ate bottom of the tapered cup;

the holding portion comprises a hollow short cylinder which is wider than the sleeve portion, the internal aperture of the short cylinder being just overlap onto the sleeve portion; on the wall edge of the internal aperture of the holding portion, there provides a pair of threaded recess spaced form each other by a appropriate thread pitch of 180 degrees and the number of thread turns of which is preferably one;

when assembling, the retractable cap for needle closure is inserted into the internal aperture of the sleeve portion firstly, with the pins extending outwards through the elongated slits of the sleeve portion; then the holding portion is overlapped onto the sleeve portion, with the pins which are extended through the sleeve portion being nested in the threaded recess of the internal aperture of the holding portion; next, the internal aperture of the sleeve portion is covered over the needle which has extended through the injection syringe, and is pressed and overlapped tightly against the conical needle seat on the front end of the injection syringe, to integrating the injection syringe, the conical needle seat, and the

sleeve portion which is overlapped tightly; the retractable cap for needle closure is rotatable relative to the injection syringe, and said retractable cap for needle closure is able to extended forwardly or retracted back, with the elongated slits of the sleeve portion served as tracks, and the motion being stopped by the threaded recess .