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TITLE: IMPROVEMENT IN THE STRUCTURE OF A SAFETY SYRINGE

BACKGROUND OF THE INVENTION

As illustrated in Figs. 6 and 7, the prior art safety syringe is made up of a tubular container 1, an injection rod 2, a needle 3 and a needle cover (not shown). The tubular container 1 has a needle mount 10 for the retaining of the needle 3 at one end and has an oval shaped stop flange 11 at the other end. A limiting plate 12 having a retaining recess 13 at its edge extends from one side of the stop flange 11. The injection rod 2 having a cross-shaped section is slidably housed in the tubular container 1. At the front end of the injection rod 2 is disposed a piston end 20 having a mushroom-shaped retaining piece 21 at one end and at the other end of the injection rod 2 is disposed a circular disk 22. On two opposite points of the periphery of the circular disk 22 are disposed a retaining piece 23 respectively which is engaged with the retaining recess 13 of the limiting plate 12 of the tubular container 1.

The needle 3 has a slantly cut puncturing end 30 and the other end of the needle 3 has an outerly threaded tube 31 having a pair of opposite openings on the wall thereof. There are two slant retaining claws 32a, 32b housed in the threaded tube 31 and extending from the edge of the openings respectively, as shown in FIG. 1, so as to permit the mushroom shaped retaining piece 21 to be

locked in place by the retaining claws 32a 32b. The slant angles of the retaining claws 32a, 32b are not identical. However, the needle is easily subject to contamination after it is taken out from its germ-free packing by hospital personnel wearing no gloves and exposed to the air.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view of the present invention;

FIG. 2 is a perspective view of the present invention;

FIGS. 3A, 3B, 3C, 4A and 4B illustrates how used needle is withdrawal into the container of the safety syringe according to the present invention;

FIGS. 5A and 5B illustrates different ways to close the tubular container after use;

FIG. 6 is an exploded view of a prior art syringe; and

FIG. 7 is a sectional view illustrating the operation mode of the prior art syringe.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the drawings and in particular to FIGS. 1 and 2 thereof, the safety syringe according to the present invention generally comprises a tubular container 5, an injection rod 6, a needle 7 and a needle receiving tube 8.

As shown in FIG. 1, the tubular container 5 is formed with a protruded needle mounting neck 50 at the upper end and a holding flange 52 at the lower end. The protruded needle mounting neck 50 has a lid 51 attached to the edge of the needle mounting neck 50 and a threaded inner wall for the securing of the needle 7. A plurality of axially extended anti-slip linear protrusions 53 are formed on the outer surface of the tubular container 5 for enabling the tubular container 5 to be held firmly without slip when the injection rod 6 is pulled outwardly.

The injection rod 6 has a cross-shaped figure and is provided at the lower end with a round disc 60 for easy operation of the injection rod 6. The upper end of the injection rod 6 is formed with a dovetailed groove 61 engageable with a dovetailed projection 64 provided at the bottom of a piston head 62. The top of the piston head 62 is formed with a mushroom projection 63 having a slot at the upper end. A sleeve 65 having an inner protruded wall 66 and threads 67 above the wall 66 is engaged with the projection 63 for

receiving the needle 7. A packing ring 68 is fitted between the sleeve 65 and the needle 7 for strengthening the engagement therebetween.

The needle 7 has a slantly cut injection hole 70 at one end and another externally threaded cylindrical mounting end 71 which is engaged with the needle mounting neck 50 of the tubular container in assembly. The top of the cylindrical mounting end 71 is provided with a protruded block having a cross-shaped figure made up of four vertical planes 72 orthogonal to each other. Each of the vertical planes 72 has a lug 73 extending from the upper end thereof.

The needle receiving tube 8 has an opened bottom end and a closed top end which is provided with a continuous spiral rib 82 for engagement with the needle mounting neck 50. The outer surface of the needle receiving tube 8 is provided with a plurality of longitudinal protrusions 81 for enabling the needle receiving tube 8 to be held firmly without slip. The inner side of the needle receiving tube 8 is provided with protuberances (not shown) for engaging with the lugs 73 of the needle 7 thereby enabling the needle 7 to be fixed in place in the needle receiving tube 8 without moving or shaking randomly.

When in assembly, the sleeve 65 is first fitted in the tubular container 5 and then pushed into the neck 50. Then, the needle 7 is inserted in the tubular container 5, with the externally threaded cylindrical mounting end 71

engaged with the threads 67 thereby providing a safety syringe for use.

Referring to FIGS. 3A, 3B, 3C, 4A, 4B, 5A and 5B, when the person engaging in the shot is going to dispose the safety syringe after use, he or she will hold the tubular container 5 with the left hand and continues pushing the injection rod 6 with the right hand by way of the round disc 60 so as to engage the mushroom projection 63 of the piston head 62 with the inner protruded wall 66 of the sleeve 65. Thereafter, the injection rod 6 is pulled outwardly to withdraw the needle 7 into the tubular container 5 for disposal. Then, the lid 51 is engaged with the needle mounting neck 50 to close the tubular container 5 to prevent the needle 7 from accidentally sticking out of the need mounting neck 50.

I CLAIM:

1. A safety syringe comprising:

a tubular container having an end formed with a protruded needle mounting neck and another end formed with a holding flange, said tubular container having an outer surface formed with axially extended anti-slip protrusions, said protruded needle mounting neck having a lid attached to an edge thereof and a threaded inner wall;

an injection rod having an end provided with a round disc, another end of said injection rod having a dovetailed groove;

a piston head having a bottom formed with a dovetailed projection engageable with said dovetailed groove and a top provided with a mushroom head;

a needle having an end formed with a slantly cut injection hole and another externally threaded cylindrical mounting end engaged with said needle mounting neck, said needle mounting neck having a protruded block above said cylindrical mounting end, said protruded block having a plurality of vertical planes, each of said planes having a lug extending from an upper end thereof;

a sleeve having an inner protruded wall and threads above said wall, said sleeve being fitted in said needle mounting neck and threadedly engaged

with said externally threaded cylindrical mounting end of said needle; and

a needle receiving tube engageable with said needle mounting neck.