APPARATUS FOR DESTROYING HYPODERMIC NEEDLES, NEEDLE-EQUIPPED AMPULES, HYPODERMIC SYRINGES AND THE LIKE

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Field of Search ................... 83/199, 200, 580

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ABSTRACT

An apparatus for destroying hypodermic needles and like objects, which comprises a rotatable, cylindrical inner cutting body, provided with a bore passing diametrically therethrough, at least one stationary outer cutting body which cooperates with said bore, the outer cutting body being so positioned that two of its sharp cutting surfaces are located at diametrically opposed positions with respect to the inner cutting body and arranged to cooperate with the cylindrical surface thereof and relatively move across the ends of said bore upon rotation of the cylindrical cutting body.

8 Claims, 5 Drawing Figures
APPARATUS FOR DESTROYING HYPODERMIC NEEDLES, NEEDLE-EQUIPPED AMPULES, HYPODERMIC SYRINGES AND THE LIKE

The increasing use of disposable hypodermic injection instruments has made desirable the existence of an apparatus by which cannulae, hypodermic syringes, needle-equipped ampules and like objects can be destroyed so as to prevent their re-use by unauthorized persons, such as drug addicts, and to reduce the risk of spreading disease.

By means of the apparatus according to the invention it is possible to destroy objects of the aforementioned type in a few simple manual operations, so as to render re-use of the objects impossible.

The apparatus according to the invention is characterized by (a) a rotatable cylindrical inner cutting body provided with a radial through passing bore and (b) at least one stationary cutting body cooperating with said first body and provided with sharp cutting surfaces, the stationary cutting body being positioned so that two sharp cutting surfaces are located at diametrically opposed positions with respect to the cylindrical cutting body and are positioned to cooperate with its cylindrical surface and pass across the bore when the cylindrical cutting body is rotated.

The invention will now be described in more detail with reference to the accompanying drawings, in which:

FIG. 1 is a side view of an embodiment of the apparatus of the invention,

FIG. 2 is an end view of the apparatus illustrated in FIG. 1,

FIG. 3 is a section through an outer and an inner cutting body in the apparatus illustrated in FIGS. 1 and 2,

FIG. 4 is a side view, partly cut away, of another embodiment of the apparatus according to the invention, and

FIG. 5 is a top plan view of the apparatus illustrated in FIG. 4.

The embodiment illustrated in FIGS. 1 and 2 comprises a base plate 1 and an upper plate 2 having an opening 5, the base plate 1 and the upper plate 2 being connected together by means of two rods 3, 4, to form a frame structure in which a stationary cutting body 6 provided with sharp cutting surfaces is mounted via two fixed blocks 7, 8 which are attached to the upper plate 2 as by screws (not shown). As will be seen more clearly from FIG. 3, the stationary cutting body 6 is provided with a horizontal, circular through passing bore and two recesses 9 and 19 which open out into the top and lower portion of the bore so as to form sharp edges at the points of intersection between the recesses and the bore. Located in the bore is a rotatable, cylindrical cutter 11, which is provided with a radially through passing bore 10. As will also be seen from FIG. 3, the pairs of sharp edges presented by the stationary cutting body 6 are located at diametrically opposed positions with respect to the cylindrical cutter 11 and cooperate with its cylindrical surface, the sharp edges passing over the through bore 10 when the cylindrical cutter 11 is rotated.

Referring now to FIG. 1, the rotatable cylindrical cutter 11 is mounted in the fixed blocks 8 and 7 by means of two pins 12 and 13, respectively. The pin 13 is extended outside the block 7 and is provided on the outwardly extending end with a lever 14, by means of which the cylindrical cutter 11 can be rotated around its symmetry axis. The lever 14 is suitably biased by means of a spring 15, which endeavors to return the cylindrical cutter 11 to a position in which a through-passing opening is formed by the recesses 9 and 19 and the radially extending bore 10.

When using the apparatus illustrated in FIGS. 1-3, there is placed on the bottom plate 1 a collecting vessel 16, made for example of a plastics material, having a tightly sealing lid and partially filled with a disinfecting liquid. The collecting vessel 16 is held firmly in position by means of a holder 17 which engages around a raised opening 18 in the lid and which is biased by a spring to urge the collecting vessel 16 against the base plate 1 in a manner whereby the opening 18 is located beneath the recess 19. The needle end of a hypodermic syringe to be destroyed is inserted down into the opening formed by the recesses 9 and 19 and the radially through passing bore 10, as shown in lines in FIG. 2, whereafter the cylindrical cutter 11 is rotated, for example clockwise, by means of the lever 14, whereupon the needle is sheared at two positions, as shown in FIG. 3. The sheared portions of the needle fall through the opening 18 down into the collecting liquid in the collecting vessel 16. By giving the opening 5 in the upper plate 2 an appropriate width and by constructing the stationary cutting body in the form of a tube enclosing the rotatable, cylindrical cutter 11, and by reducing the thickness of the material around the recess 9 an apparatus is obtained in which the upper shearing position is situated very close to the point where the hypodermic needle is connected with the syringe body so that the outwardly projecting stud on which the needle is screwed to the syringe body is also sheared and thus neither the needle nor the syringe body can be reused for injection purposes.

The embodiment of the inventive apparatus illustrated in FIGS. 4 and 5 comprises a base plate 20 and a vertical post 21, forming a frame structure in which a cutting body 22 is secured. The cutting body 22 is provided with a horizontal circular through passing bore and two recesses 23 and 24 which open out into the upper and lower portion of the bore. Mounted for rotation in the bore is a rotatable cylindrical cutter 26 which is provided with a radially through passing bore 25. The cylindrical cutter 26 can be rotated about its symmetry axis by means of a lever 27. The lever 27 is biased by means of a spring 28, which attempts to return the cutter 26 to a position in which a through passing opening is formed by the recesses 23 and 24 and the radial bore 25. Arranged in the recesses 23 and 24 are removable, stationary blades 29 and 30 which present cutting edges. As will be seen from FIG. 4, the cutting edges of the blades 29 and 30 have diametrically opposed positions with respect to the cylindrical cutter 26 and cooperate with the cylindrical surface thereof so as to pass over the bore 25 when the cylindrical cutter 26 is rotated (FIGS. 4 and 5).

What I claim is:

1. An apparatus for destroying hypodermic needles, needle-equipped ampules, hypodermic syringes and like objects, which comprises
   a. a rotatable, cylindrical inner cutting body, provided with a bore passing diametrically therethrough,
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b. at least one stationary outer cutting body which cooperates with the bore set forth in (a) and which is provided with sharp cutting surfaces,

c. the outer cutting body being so positioned that two of its sharp cutting surfaces are located at diametrically opposed positions with respect to the inner cutting body and arranged to cooperate with the cylindrical surface thereof and relatively move across the ends of said bore upon rotation of the cylindrical cutting body.

2. An apparatus according to claim 1, wherein the stationary outer cutting body is provided with a circular-shaped cavity and two recesses which open into the upper and lower portions of said cavity so as to thereby form sharp cutting edges at the point where the recesses intersect the cavity and the cylindrical cutting body is located in said cavity.

3. An apparatus according to claim 2, wherein the stationary cutting body is in the form of a tube enclosing the rotatably cylindrical cutting body, and in that the thickness of the material of said tube is reduced around the upper recess.

4. An apparatus according to claim 1, wherein the stationary cutting body is secured in a frame structure.

5. An apparatus according to claim 1 which also includes:
   a. a collecting vessel,
   b. a tightly sealing lid for said collecting vessel, said lid containing a raised opening,
   c. a spring-loaded holder which is adapted to press the outer cutting body toward said raised opening whereby needles cut off by said outer cutting body will fall through said raised opening into said collecting vessel.

6. An apparatus according to claim 1 wherein said rotatable, cylindrical inner cutting body is mounted in a large circular cross-section bore that extends horizontally through said stationary outer cutting body, said large bore being provided with two recesses which are in contact with the upper and lower portion of the bore that extends diametrically through the inner cutting body and removable, stationary blades having cutting surfaces mounted adjacent each of said recesses.

7. An apparatus according to claim 1 which includes a lever attached to said inner cutting body whereby the rotatable cylindrical cutting body can be rotated about its axis by means of a lever.

8. An apparatus according to claim 7, wherein said lever is biased by means of a spring which is arranged to return the rotatable cylindrical cutting body to a position in which a through-passing opening is formed by the recesses in the outer cutting body and the bore passing through the inner cutting body.
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,683,733 Dated August 15, 1972

Inventor(s) BENGT OLOF JOHAN STELLAN MORNER

It is certified that error appears in the above-identified patent
and that said Letters Patent are hereby corrected as shown below:

Immediately below the title in column 1 the
designation of inventorship should read

"Inventor: Bengt Olof Johan Stellan Morner
of Houvas, Sweden"

Signed and sealed this 26th day of December 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTCHAULK
Commissioner of Patents