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STERILE HYPODERMIC NEEDLE HOLDER

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Fig. 1.

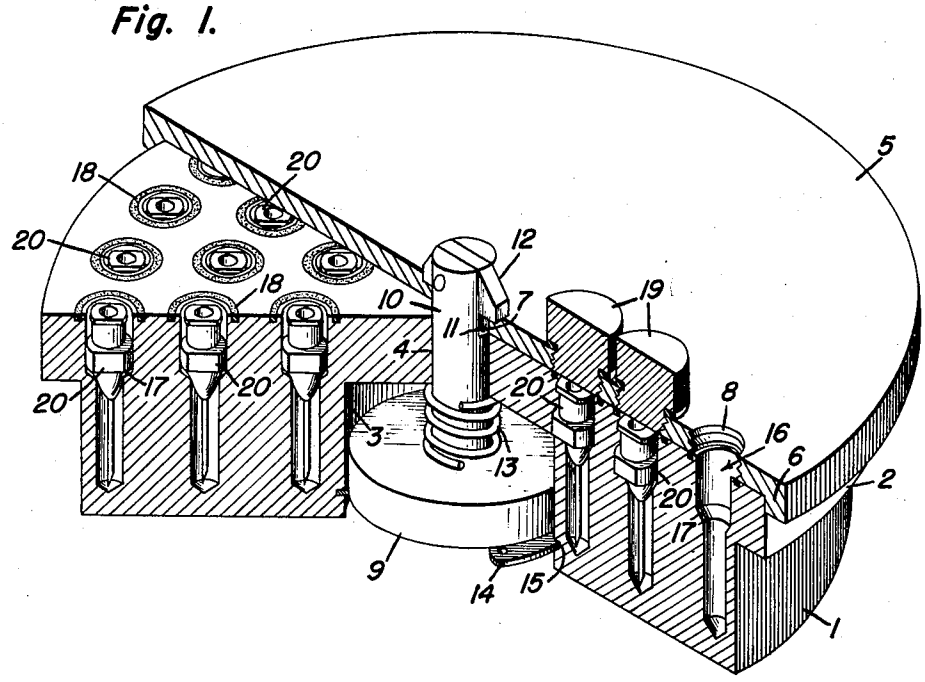
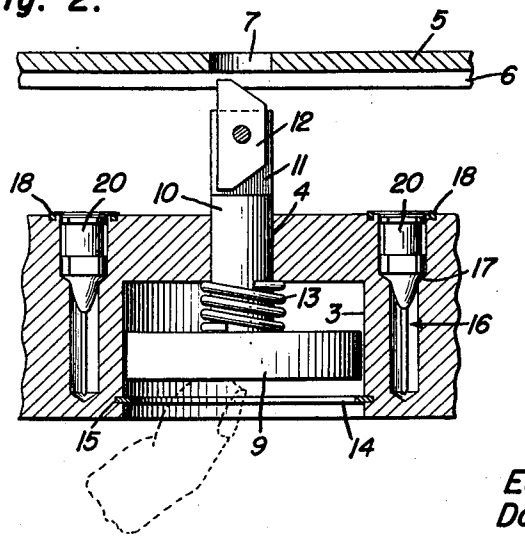


Fig. 2.



INVENTORS
Earl F. Oden
Douglas Crockett
BY George Rinehart
ATTORNEY

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STERILE HYPODERMIC NEEDLE HOLDER

Earl F. Oden, Frederick, and Douglas Crockett, Monrovia, Md.

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6 Claims. (Cl. 206—17.5)

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The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment to us of any royalty thereon.

This invention relates to a holder for hypodermic needles. An object of this invention is to provide a holder for hypodermic needles in which a large number of hypodermic needles can be sterilized at one time and from which the sterilized needles can be removed one by one while maintaining the remaining needles in their sterile condition.

A further object of this invention is to provide a needle holder of the characteristics set out in the preceding paragraph which is sturdy, compact, and easily operated, which when set upon a table is stable, and which is of fixed dimensions during operation.

In the drawing, Figure 1 is a perspective view, partially in section, showing the device in its normal closed condition. Figure 2 is a fragmentary sectional view showing the manner in which the cover is removed.

It is frequently necessary to use large numbers of hypodermic needles during the course of a relatively short period of time. In such situations, the usual methods of handling are laborious and time consuming. While various devices have been patented for sterilizing and handling large numbers of needles in a group, none of which we are aware has found widespread acceptance. In general, such devices either fail to permit the removal of needles one by one or they are of such form as to be inconvenient to use.

Our device involves a circular body member, carrying the needles in pockets which are arranged in circular rows. A rotatable cover member is provided which has apertures so positioned that as the cover is rotated the pockets will be exposed one by one while the remainder of the pockets are closed at all times. Due to the rotatable nature of the cover, the dimensions of the device remain fixed at all times, which is advantageous under crowded conditions. Moreover, the device is compact and, in its preferred form, is extremely stable and therefore unlikely to be knocked over or damaged under the conditions of haste that may prevail, for example, during mass inoculations.

Moreover, our receptacle is made in such a manner that the cover can be readily removed to permit rapid insertion of the needles for sterilization. It can also be completely disassembled when desired.

A preferred embodiment of our invention is shown in the accompanying drawing. The holder comprises a cylindrical body 1, which in the form shown has a height substantially less than its diameter. In this embodiment, the cylinder rests upon one end. At the other or upper end is a rim 2. A central circular chamber 3 is provided in the other end. A bore 4 extends through the body from the chamber to the upper end. Mounted on the upper end of the body is a cover plate 5 which has a downwardly extending flange portion 6 making relative tight

contact with the rim. The cover is provided with a central opening 7 which coincides with bore 4 when the cover is in place. A series of threaded apertures 8 is also provided in the cover, each aperture being at a different distance from the axis of the cylinder.

Mounted within chamber 3 is a plunger 9 provided with a stem 10 which extends through bore 4 and the opening 7. This stem is provided with a slot 11 at its upper end in which is pivotally mounted latch member 12, which engages the upper surface of plate 5. A spring 13 surrounds the stem 10 and engages the upper wall of chamber 3 and the top of plunger 9, tending to bias the plunger and stem downwardly thus holding latch member 12 in engagement with the top of cover 5 and forcing the cover 5 downwardly on the body 1. A snap ring 14 engages annular groove 15 in the wall of chamber 3 for the purpose of holding it in position against the pressure of spring 13, as will be later explained.

In body 1 is a series of needle pockets 16 arranged in concentric circles about the central bore 4 as shown in the drawing. Each circle is located at the same distance from the axis as one of the apertures 8. The upper portion of each needle pocket is of larger diameter than the lower portion and a shoulder 17 is formed at the junction of the two portions. The needles 20 rest, as shown in the drawing, on this shoulder thereby preventing damage to the points. Around the top opening of each pocket is a sealing ring 18 formed of resilient heat resistant rubber. The plugs 19 close openings 8.

The manner of operation will now be described. Assuming the device to be in the normal closed condition shown in Figure 1 with the supply of needles exhausted, the operator pushes plunger 9 upwardly, as shown in Figure 2. Latch member 12 is then turned to the upright position also shown in Figure 2 and the cover 5 is removed. The snap ring 14 will then serve to retain plunger 9 within chamber 3. The hypodermic needles can then be placed in the pockets 16 in the positions shown. The cover 5 is replaced, latch 12 turned to the position shown in Figure 1 and the entire device placed in a suitable sterilizer. After the sterilization, the holder is removed and can then be set on a table or any other desired support.

A plug 19 is removed from one of the apertures 8 and the cover 5 is then turned until the aperture is aligned with one of the pockets 16. The syringe is then placed in the aperture in a vertical position and pushed down to place the needle on the syringe, which is then removed. The needle holder is left in this position until another needle is desired, and the cover is then turned to register the uncovered aperture with another pocket. This procedure is repeated until all the needles in one circular row have been used. That aperture may then be closed by an insertion of a plug 19 and the next aperture uncovered. The procedure is then repeated for the second row and so on until all of the needles have been removed.

While we have described in detail one preferred embodiment, it will be apparent that various modifications are possible. We therefore do not desire our invention to be limited except by the scope of the appended claims.

We claim:

1. A hypodermic needle holder comprising a cylindrical body member having a height substantially less than its diameter and having substantially planar ends, said body member being provided with a smooth rim member adjacent one end; a plurality of needle pockets in said body member, each pocket having an axis substantially parallel to the axis of said cylindrical body member, each pocket having its outer end terminating in an opening in said one end of said body member, each pocket comprising an outer portion of relatively large

diameter, an inner portion of relatively small diameter, and a shoulder at the junction of said two portions; a projecting ring of flexible, resilient, heat resistant material encircling the outer end of each pocket; said pockets being arranged in a plurality of circles concentric with the axis of said body member; a central circular chamber formed in the other end of said body member, a plunger in said chamber, an axial bore extending from said chamber through said one end of said body member, a stem on said plunger extending through said bore, a spring in said chamber biasing said plunger and stem toward said other end of said body member; a cover on said first end of said body member, said cover comprising a circular disk having an edge portion forming a relatively tight fit with said rim portion of said body member, the inner face of said cover slidably and sealingly engaging each of said rings encircling the outer ends of said pockets, said cover member having a central opening embracing said stem; a latch member pivotally mounted on said stem and so constructed that in one position it will engage the outer surface of said cover and prevent axial movement of said cover away from said body member, and when in another position will permit removal of said cover from said stem; a plurality of apertures in said cover, one of said apertures being at the same radial distance from said axis as each of said circles, each of said apertures being of such a size that it will cover one and only one needle pocket opening; and removable plugs for said apertures.

2. A holder for hypodermic needles including in combination a body having an upper face formed with a row of openings, mounting means below said openings to engage the hub parts of the hypodermic needles inserted therein and to support the points of the latter out of contact with said body, a cover movable over the upper body face to simultaneously close and seal all of said openings, said cover being formed with an opening—which under movement of said cover—sequentially aligns with the individual openings of said body and shiftable closure means carried by said cover to provide a fluid-tight seal for said opening.

3. A holder for hypodermic needles including in combination a body having an upper face formed with a number of rows of openings, mounting means below said openings to engage the hub parts of the hypodermic needles inserted therein and to support the points of the same out of contact with said body, a cover movable over the upper body face to simultaneously close and seal all of said openings, said cover being formed with openings corresponding in number to the number of rows of openings in said body, said cover openings—under movement of said cover—individually aligning in sequence with the openings of the different rows, a number of shiftable closure means carried by said cover to cooperate one with each of said cover openings and provide fluid-tight seals therefor.

4. A holder for hypodermic needles including in combination a body having an upper face formed with a row of openings, mounting means below said openings to engage the hub parts of the hypodermic needles inserted therein and to support the points of the latter out of contact with said body, a cover movable over the upper body face to simultaneously close and seal all of said openings, said cover being formed with an opening which—under movement of said cover-sequentially aligns with the individual openings of said body, shiftable closure means carried by said cover to provide a fluid-tight seal for its opening and the openings of said body being continued in the form of pockets isolated from each other and terminating short of the lower face of said body.

5. A holder for hypodermic needles comprising a body member, a plurality of needle pockets in said body member, flexible resilient sealing means about the opening of each needle pocket, said pockets being arranged in at least one circular row, a cover closing the ends of said pockets, said cover being rotatable about an axis concentric with said circular row, an aperture in said cover in such position that upon rotation of the cover it registers successively with the openings of the needle pockets in a circular row, said aperture being of a size sufficient to uncover one and only one needle pocket, means for closing said aperture and toggle releasable means for securing said cover to the body member.

6. A hypodermic needle holder comprising a cylindrical body member, a plurality of isolated needle pockets mounted in said cylindrical body member, said pockets being closed at their inner ends and having openings at their outer ends in one end of said cylindrical body member, said pockets being so arranged that said outer end openings lie in a plurality of circular rows concentric with the axis of said cylindrical body, a cover plate secured to and covering said one end of said cylindrical body, a plurality of apertures in said cover plate, one aperture being located at the same distance from said axis as each of said circular rows, each of said apertures being of such size as to uncover one and only one pocket, a plurality of plugs mounted by said cover and extending one into each of said apertures, a portion of each plug extending above said cover and constituting a manipulating part such that said plug may be lifted out of said aperture and expose an underlying pocket and needle and means for supporting said cover for rotation about said axis comprising a central stem extending through said body and said cover and quickly releasable means for securing said cover against detachment from said body member, including a cross member pivotally mounted between its ends on said stem, said cross member serving to engage said cover at a point above the latter when the cross member is positioned at right angles to said stem.

References Cited in the file of this patent

UNITED STATES PATENTS

169,029	Nauen	Oct. 19, 1875
2,205,298	Lindner	June 18, 1940
2,351,815	Jensen	June 20, 1944
2,557,222	Goode	June 19, 1951
2,559,254	Lundstrom	July 3, 1951

FOREIGN PATENTS

472,409	Great Britain	Sept. 23, 1937