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STERILIZING SUPPORT FOR HYPODERMIC NEEDLE CONTAINERS

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2 Sheets-Sheet 1

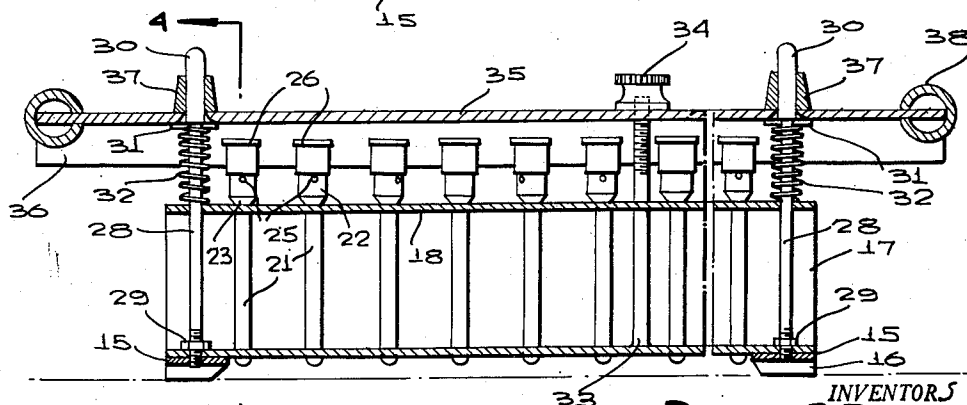
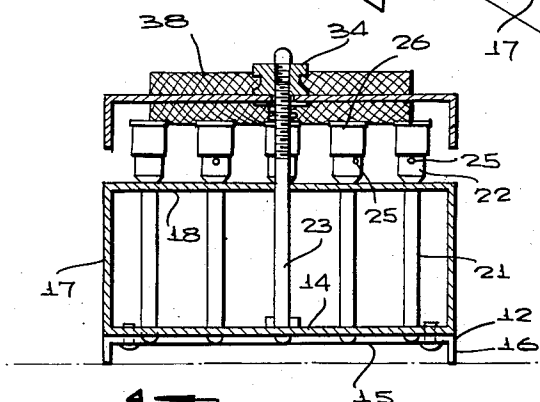
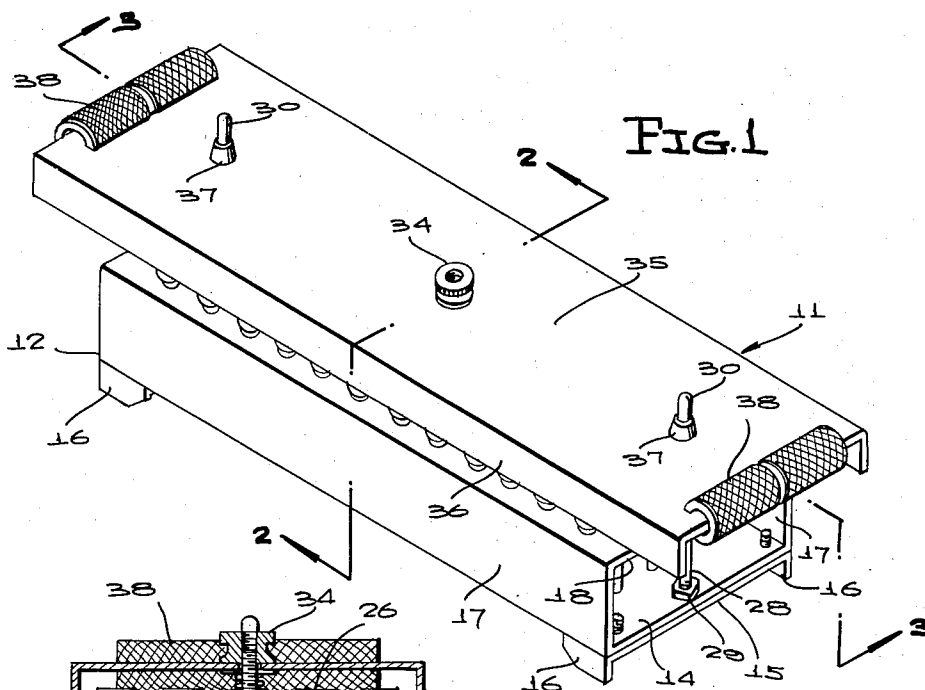


FIG. 3

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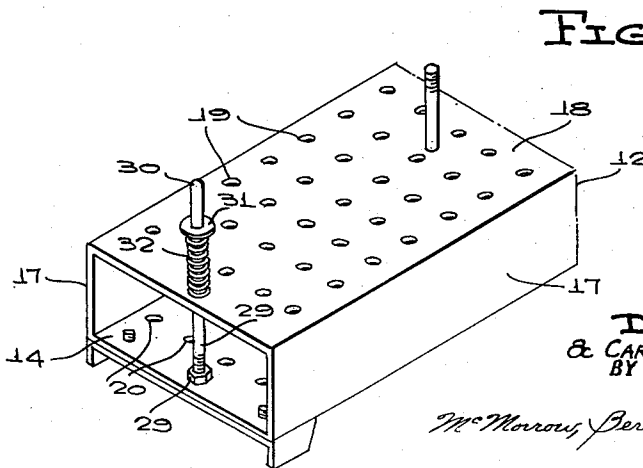
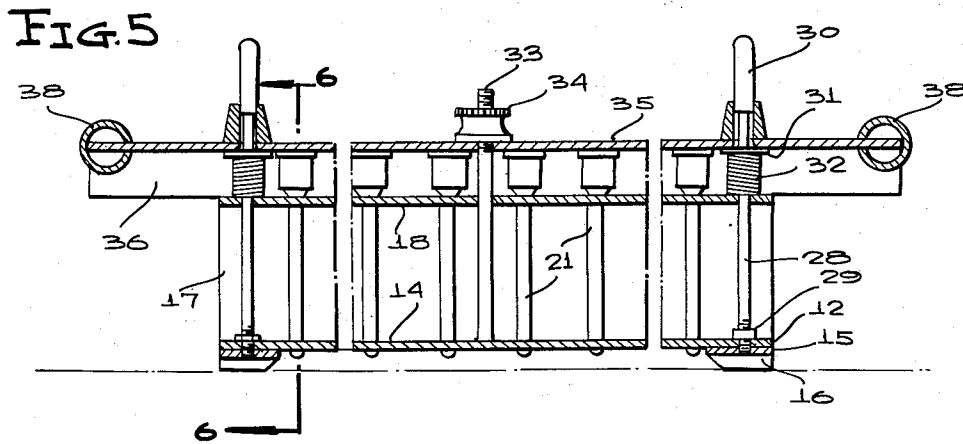
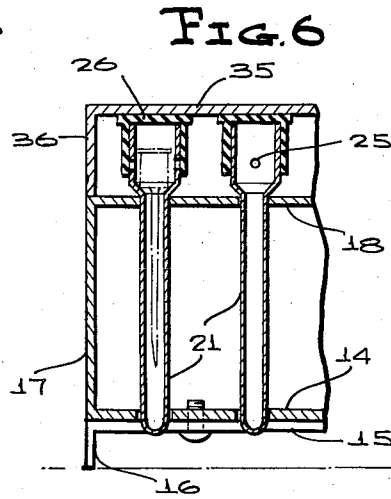
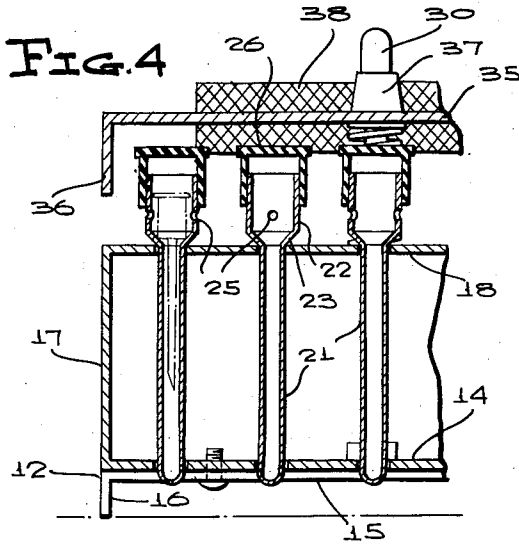
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STERILIZING SUPPORT FOR HYPODERMIC NEEDLE CONTAINERS

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2 Sheets-Sheet 2



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STERILIZING SUPPORT FOR HYPODERMIC NEEDLE CONTAINERS

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3 Claims. (Cl. 21—83)

This invention relates to support devices, and more particularly to a support device adapted to hold hypodermic needle containers while they are being sterilized.

A main object of the invention is to provide a novel and improved sterilizing support device for holding containers with hypodermic needles therein during the sterilization of the needles and for facilitating the sealing of the containers after such sterilization, the device being simple in construction, being easy to manipulate, and serving to prevent handling of the containers until they are completely sealed subsequent to the sterilization process.

A further object of the invention is to provide an improved sterilizing support for hypodermic needle containers, said support being inexpensive to fabricate, being durable in construction, being compact in size, and being arranged so that the risk of contamination of hypodermic needles after sterilization is substantially eliminated.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a perspective view of a hypodermic needle sterilizer support device according to the present invention, shown set up for use.

Figure 2 is a transverse vertical cross sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a longitudinal vertical cross sectional view taken on the line 3—3 of Figure 1.

Figure 4 is an enlarged fragmentary vertical cross sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a longitudinal vertical cross sectional view, similar to Figure 3, but showing the apparatus after the cover plate thereof has been depressed to seal the sterilized hypodermic needle containers.

Figure 6 is a fragmentary enlarged cross sectional view taken on the line 6—6 of Figure 5.

Figure 7 is a perspective view of the frame portion of the apparatus of Figure 1, with the top cover plate removed.

Referring to the drawings, the improved sterilizing support apparatus is designated generally at 11 and comprises a main bottom frame 12 and a removable cover plate 35 which is engageable over the bottom frame 12, as will be presently described. The bottom frame 12 comprises a horizontal bottom plate 14 secured at its end portions to transversely extending supporting brackets 15, 15 having the downturned end legs 16, whereby an end leg 16 is provided at each corner of the bottom plate 14. Formed integrally with the bottom plate 14 are the longitudinal vertical front and rear walls 17, 17, and integrally formed with the top ends of said longitudinal walls is the horizontal top plate 18.

The top plate 18 and the bottom plate 14 are formed with a plurality of pairs of vertically aligned apertures 19 and 20 adapted to receive respective vertically positioned hypodermic needle containers 21 in vertical positions, with

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the containers supported by their enlarged cylindrical top portions 22, said top portions being connected to the main body portions of the containers 21 by conical neck members 23. Said conical neck members 23 are engageable with the top plate 18 to support the containers 21 in vertical positions in the manner illustrated in Figures 3, 4 and 6.

The enlarged top portions 22 of the hypodermic needle containers are formed with vent openings 25, and engaged on said enlarged top portions 22 are caps 26 of suitable sealing material, such as rubber or other resilient deformable material, the caps 26 being slidable on the cylindrical top portions 22 of the containers 21. Thus, the cap member 26 may be arranged in elevated positions on the portions 22 of the containers to expose the apertures 25 when the containers, with the hypodermic needles disposed therein, are placed in the apparatus preliminary to sterilization.

Designated at 28, 28 are respective vertical studs which are threadedly secured in the opposite end portions of the frame 12, for example, being engaged through and threadedly secured in the opposite end portions of bottom plate 14 and the subjacent transverse bracket member 15, and being locked thereto by lock nuts 29, as shown in Figure 3. The studs 28 extend through the top plate 18 and project a substantial distance thereabove. The top ends of the studs 28 are provided with enlarged portions 30, 30 having rounded top ends. Respective washers 31, 31 are engaged on the stud members 28 and are urged against the bottom ends of the enlarged members 30, 30 by respective coiled springs 32, 32 mounted on the top portions of the stud members 28 and bearing between the washers 31 and the top plate 18.

Rigidly secured to the intermediate portion of the bottom plate 14 and extending through top plate 18 for a substantial distance is a stud member 33 having a threaded top portion on which a thumb nut 34 is engaged.

Designated at 35 is a top cover plate which is of channel shape construction, as shown, having the depending longitudinal flanges 36, 36. The cover plate 35 is substantially the same in width as the frame 12 but projects a substantial distance longitudinally past the respective ends of said frame 12. The cover plate 35 is provided with respective apertures and guide sleeves 37 at said apertures adapted to receive the enlarged upper portions 30, 30 of the studs 28, 28, and to guide the cover plate 35 for vertical movement relative to the frame 12. The cover plate 35 is apertured to receive the upper end portion of the stud 33, in the manner shown in Figure 5, and to allow the thumb nut 34 to be engaged on the threaded upper portion of the stud 33 to secure the cover plate 35 in a depressed position, as will be presently described.

Respective knurled handle grip elements 38, 38 are provided on the opposite ends of the cover plate 35, said handles 38 comprising longitudinally slotted cylindrical members which may be slipped over the respective opposite transverse edges of the cover plate and may be frictionally or otherwise secured to said cover plate in the positions thereof shown in Figure 1.

In using the apparatus, the containers 21, having the hypodermic needles therein, are placed in the bottom frame 12, the cover plate 35 being removed. When thus inserted in the bottom frame, the containers 21 are arranged in the manner illustrated in Figure 3, with their sealing caps 26 elevated above the vent apertures 25 of the enlarged top portions 22 of the containers. The cover plate 35 is then placed over the bottom frame, being engaged on the enlarged top portions 30, 30 of the vertical studs 28, 28 and being supported on the washers 31. The thumb nut 34 is then engaged on the upper portions

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of the threads of the securing stud 33. The apparatus is then placed in the sterilizer, and the usual sterilization procedure is performed. After such sterilization procedure has been completed, the cover plate 35 is depressed, by exerting force on the opposite handles 38, the force being simultaneously applied to both opposite handles, whereby the top plate 35 is moved downwardly and moves the sealing caps 26 downwardly to cover the vent openings 25. The nut 34 is then tightened, providing the conditions illustrated in Figures 5 and 6. After the apparatus has cooled, the nut 34 may be loosened, allowing the cover plate 35 to be removed, and providing access to the containers 21, which may be thereafter handled without any risk of internal contamination, since they are sealed by their caps 26.

As will be readily apparent, by the use of the apparatus above described, the containers 21 may be thoroughly sterilized and may be thereafter sealed without requiring any handling thereof manually. The cover plate 35 remains over the sterilizing containers 21 until the last steps of the procedure have been completed, namely, until it is desired to remove the containers 21 from the rack 12.

As shown in Figures 5 and 6, the depending flanges 36 of the cover plate 35 are engageable with the opposite longitudinal side edges of the top plate 18 when the cover plate 35 is depressed, and may be thus fastened by the tightening of the nut 34 to secure the cover plate 35 in protective overlying relationship with respect to the sealing caps 26 of the container 21 so as to protect the top portions of the containers and the sealing caps 26 against any mechanical disturbance, whereby there is no possibility of the containers 21 becoming contaminated until the cover plate 35 is removed.

While a specific embodiment of an improved sterilizing support apparatus for hypodermic needle containers has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In a sterilizing support for hypodermic needle containers of the type having cover caps which may be moved downwardly to seal the containers comprising a frame including a horizontal top plate, a horizontal bottom plate and means rigidly connecting said plates in vertically spaced relation, said plates being formed with

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vertically aligned apertures to receive hypodermic needle containers, a plurality of vertical, upstanding guide rods on said frame, a cover plate slidably engaged over said guide rods, and spring means yieldingly supporting said cover plate above said top plate, said cover plate being movable downwardly at times sufficiently to engage the cover caps of the hypodermic needle containers.

2. In a sterilizing device for hypodermic needles, a frame including a horizontal top plate, a horizontal bottom plate and means rigidly connecting said plates in vertically spaced relation, said plates being formed with vertically aligned apertures, tubular hypodermic needle containers mounted in said vertically aligned apertures, said containers being formed with vent apertures at their upper ends, respective downwardly movable sealing caps on the upper ends of the containers, a plurality of vertical, upstanding guide rods on said frame, a cover plate slidably engaged over said guide rods, and spring means yieldably supporting said cover plate above said top plate, said cover plate being movable downwardly at times sufficiently to engage the sealing caps of the hypodermic needle containers and to move the sealing caps downwardly sufficiently to cover the vent apertures in the upper ends of the containers.

3. A sterilizing support for hypodermic needle containers of the type having cover caps which may be moved downwardly to seal the containers comprising a frame including a horizontal top plate, a horizontal bottom plate and means rigidly connecting said plates in vertically spaced relation, said plates being formed with vertically aligned apertures to receive hypodermic needle containers, a plurality of vertical, upstanding guide rods on said frame, a cover plate slidably engaged over said guide rods, spring means yieldably supporting said cover plate above said top plate, said cover plate being movable downwardly at times sufficiently to engage the cover caps of the hypodermic needle containers, an upstanding, threaded vertical fastening stud on said frame extending slidably through said cover plate, and a fastening nut on the top end of said fastening stud.

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