Dec. 2, 1941. A. A. HUMPHREY 2,264,313

ARTICLE OF MANUFACTURE

Filed June 2, 1938

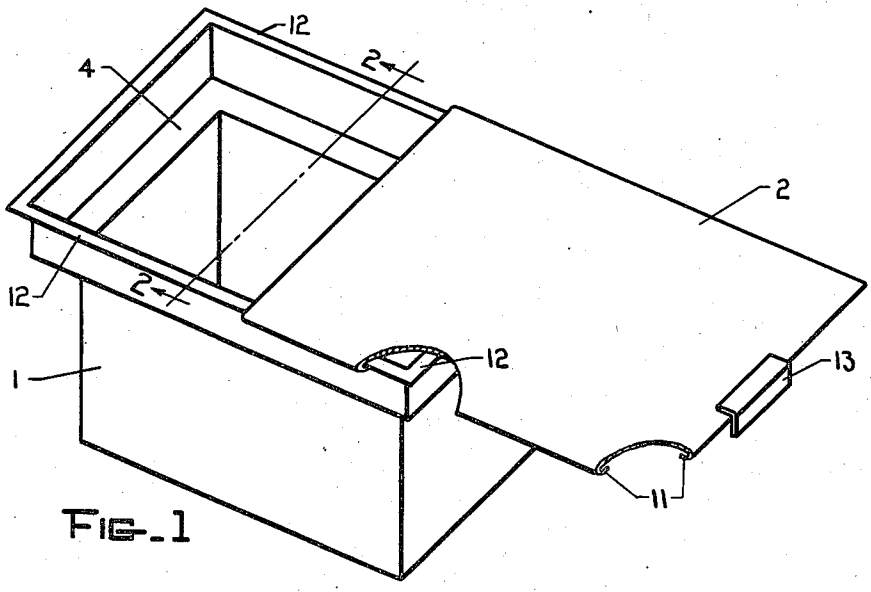


FIG-1

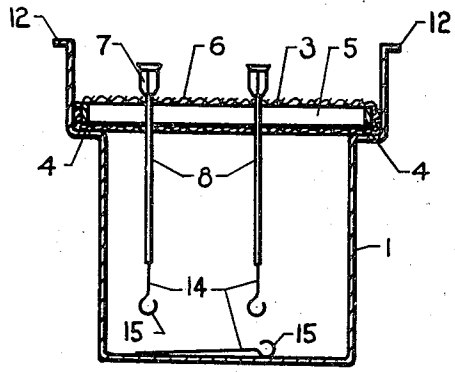


FIG-2

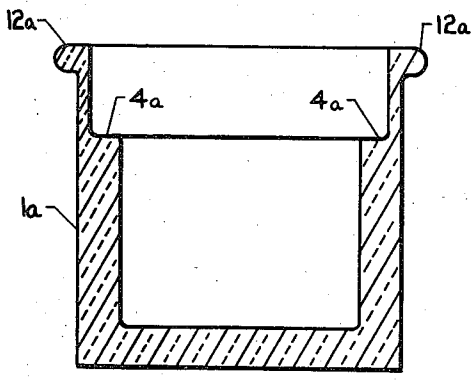


FIG-3

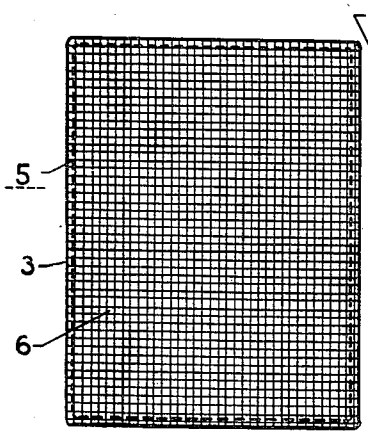


FIG-4

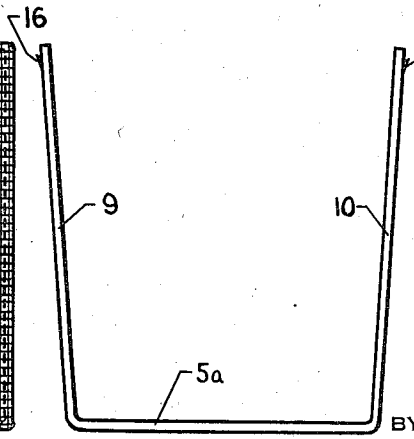


FIG-5

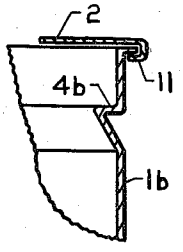


FIG-6

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Patented Dec. 2, 1941 2,264,313

UNITED STATES PATENT OFFICE

2,264,313

ARTICLE OF MANUFACTURE

Arthur A. Humphrey, Battle Creek, Mich.

Application June 2, 1938, Serial No. 211,379

3 Claims. (Cl. 21—85)

The present invention relates broadly to a mechanism for use in connection with various articles, and in its specific phases, it relates more particularly to a mechanism for sterilizing, storing, and handling hypodermic and intravenous needles.

In the past the standard practice in connection with the sterilizing and storing of hypodermic and intravenous needles has been to pack them separately in test tubes and then sterilize same by placing the needle containing test tubes for a prescribed period in an autoclave operated at sterilizing temperature. Where the needles, after sterilizing, are left in such test tubes until used, the storage space occupied per needle is excessive, and, moreover, there is danger of unsterilizing the needle during removal of same from the test tube. To prevent the needle passageway from becoming plugged under sterilizing conditions, it is standard practice to insert a stylet into the needle passageway from the point end thereof. After a needle has been sterilized, it is necessary to remove this stylet before the needle can be used, and with the present standard practice removal by hand is required with danger of contacting the needle shaft and unsterilizing same. The present invention has been devised in view of the shortcomings of such prior practice and with an object to overcome, or at least substantially mitigate, the shortcomings thereof.

Accordingly, among the objects of the present invention is the provision of an apparatus usable for the sterilization, storage, and carrying of articles such as hypodermic and intravenous needles.

Another object is to provide a mechanism which maintains the sterility of the needle shaft, which is the most important part thereof to keep sterile.

Another object is to provide a fibrous member adapted to hold needles during sterilization and aid in keeping same sterile after the sterilization step is completed.

Another object is to provide a container having a shoulder cooperating with said fibrous member in keeping dust out of the compartment into which the needle shafts are inserted.

A further object is to provide a mechanism which is easy to pack with a plurality of needles, and which may be accomplished in a small fraction of the time required according to present-day standard practice.

A further object is to provide a mechanism which is compact, and is also easy to clean.

A further object is to provide a mechanism of substantially dust-tight construction.

Still further objects and advantages of the invention will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain means of carrying out the invention, such disclosed means illustrating, however, but several of various ways in which the principle of the invention may be used.

In said annexed drawing:

Figure 1 is a perspective view of one form of the invention with certain parts omitted and others broken away for clarity of understanding.

Figure 2 is a sectional view of the mechanism shown in Figure 1 as taken along a vertical plane including the line 2—2 looking in the direction of the arrows, and with the needle supporting member in place.

Figure 3 is a modified form of the mechanism shown in Figure 2, but with the needle supporting member omitted.

Figure 4 is a plan view of a preferred form of the needle supporting member utilizing a rectangular frame.

Figure 5 shows a U-shaped frame for a needle supporting member adapted to be used in the present mechanism.

Figure 6 shows a modified form of the shoulder construction for the housing of the present invention.

Referring more particularly to the drawing, in preferred combination the mechanism of the present invention consists of a housing 1 having a cover 2 and a supporting member 3. The housing 1 is provided with a shoulder 4 which preferably extends completely around same and is spaced a suitable distance from the top thereof. This shoulder may be made in the form of an offset in the housing as shown in Figures 1 and 2. The invention, however, is not limited to such construction, since the shoulder 4 may be formed in various other ways—for instance, by rib-like member 4b as shown in Figure 6, or a recessed portion 4a as shown in Figure 3.

Where the mechanism of the present invention is to be used for the sterilizing and storage of needles of the hypodermic or intravenous type, it is preferable to utilize a suitable needle supporting member as a part thereof. As illustrated in Figure 2, a preferred construction for the supporting member consists of a frame member 5

over which a suitable fibrous member 6 is placed.

In constructing the supporting member 3, a suitable frame 5, preferably of rectangular shape as shown in Figure 4, may be used. In preferred construction, the frame 5 is of a sufficient height such that when the fibrous member 6 is placed thereover to form upper and lower courses, or panels, as shown in Figure 2, the spacing of said courses will be sufficient to hold a needle 8 in substantially fixed position after it has been passed therethrough until the head 7 rests on the top of the upper course. This is of a definite advantage in that the point and shaft of each of the needles will be held against jarring into contact with each other or the sides of the housing 1 when the mechanism has been properly packed with needles. The fibrous material may be in various forms such as rubber, gauze, cheesecloth, or the like. A preferred form of the fibrous material consists of a cheesecloth backed piece of fabric having a flannel-like face. This kind of a facing acts as an exceptionally good dust catcher and forms a gasket-like seal on the shoulder 4 of the housing 1, thus keeping the point and needle shaft of each of the needles protected from contamination after sterilization, even though the needles are stored for a considerable period of time. The use of a cheesecloth backing has the advantage of providing a relatively rigid open weave construction where the fibrous material is initially placed on the frame in relatively tight form. The fibrous material may be placed on the frame 5 in various ways, and one convenient way of doing this is to wrap same therearound and then sew it in place. Another convenient construction consists of forming the material into a tubular member which is cut off to the desired length, slipped over the frame 5, sock fashion, and the ends overcast on the outside of the frame to form a drum-like construction. If desired, the fibrous member may be made in the form of a suitable size and length tube having one end closed in conventional manner. This fibrous member may be slipped over frame 5 to the position shown in Figure 4, and, if desired, the open end overcast or otherwise closed at the outer edge of the frame. However, to simplify the construction of the supporting member, this fibrous member with one open end may be slipped over a frame 5a (Figure 5) which has its sides 9 and 10 slightly flared to grip the fibrous member and hold it tightly in place without the necessity of closing the open end thereof. If desired, the sides 9 and 10 may be provided with a barb 16 to prevent the fibrous member from slipping out of place. The use of the frame 5a will result in final assembly in a product having the same general appearance as shown in Figure 4, but without the upper cross member.

To aid in keeping dust and other foreign matter from getting into the housing portion of the present invention while same is used for storing sterilized needles or the like, a tight fitting cover is preferably used. This cover may be of various constructions. However, one which is simple and highly efficacious consists of a sliding cover 2 which has two side edges and one end edge provided with a groove 11 adapted to engage projecting edges 12 at the top of housing 1. To facilitate the sliding of the cover 2 it may be provided with conventional handle means of various types. Where the mechanism of the present invention is to be carried from place to place, for instance in the doctor's kit, it is desirable to avoid large projecting handles which would be in the way and which might easily be the cause of accidental sliding of the cover 2 to open position, thus permitting ready ingress of dust or other foreign matter into the interior of the housing. To overcome this, the cover 2 may be provided, for instance, with a handle 13 in the form of a downwardly-turned angle member.

Where it is desired to have the housing substantially non-breakable, it may be formed of sheet metal, as is shown for instance in Figures 1, 2, and 6. The invention, however, is not limited to the use of a metal housing, since such housing may be made of ceramic material, glass, "Pyrex", or the like. A conventional construction of this type is shown in Figure 3 wherein same is provided with a shoulder 4a, and projecting edges 12a adapted to engage a conventional sliding cover, or the like.

Where the mechanism is to be used for sterilizing hypodermic or intravenous needles, they are passed downward through the fibrous member 6, as shown in Figure 2. After the needles are in place, the supporting member 3 with such needles is removed from the housing 1 and a stylet 14 with head 15 is placed in the passageway of each needle from the point end thereof and left in that position until the needle is to be used after sterilization. The needles are then sterilized by placing the whole mechanism in a heated autoclave for a prescribed sterilizing period. If an autoclave is not available, then a small amount of water may be placed in the bottom of housing 1 and the mechanism placed on a hot plate, the heat from which will boil the water and effect direct sterilization of the needles. When the needles are to be used after sterilization, it is only necessary to grip the head 7 of the needle 8 with a pair of sterile forceps, or the like, and lift same upward. The withdrawal of a needle 8 will bring head 15 of stylet 14 into contact with the bottom of fibrous member 6 and cause same to be automatically withdrawn from the needle without danger of unsterilizing same during the stylet removal step. The stylet will then normally drop to the bottom of housing 1 where it will be available for use when the next group of needles are to be sterilized.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the means herein disclosed, provided those stated by any of the following claims or their equivalent be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A sterilizer and container for hypodermic and intravenous needles, which comprises a housing of substantially rectangular shape, a cover therefor, a shoulder within said housing, and a supporting member mounted on said shoulder and having a fibrous panel separating the portion of said housing below said shoulder from the portion above said shoulder, the space above and below said fibrous panel when the supporting member is mounted on said shoulder being sufficient to permit the perpendicular mounting of said needles on said panel with ample clearance at both ends of each needle.

2. A sterilizer and container for hypodermic and intravenous needles, which comprises a housing of substantially rectangular shape, a cover therefor, means for making said cover substantially dust tight, a shoulder within said housing, and a supporting member mounted on said shoul-

der and having a fibrous panel separating the portion of said housing below said shoulder from the portion above said shoulder, the space above and below said fibrous panel when the supporting member is mounted on said shoulder being sufficient to permit the perpendicular mounting of said needles on said panel with ample clearance at both ends of each needle.

3. A sterilizer and container for hypodermic and intravenous needles, which consists of a housing of substantially rectangular shape, a cover therefor, means for making said cover substantially dust tight, a shoulder within said housing, and a supporting member mounted on said shoulder, said supporting member consisting of a frame over which a fibrous material has been placed to form upper and lower spaced apart panels, said supporting member acting to separate the portion of said housing below said shoulder from the portion above said supporting member, the space above and below said supporting member, when same is mounted on said shoulder, being sufficient to permit the perpendicular mounting of said needles on said supporting member with ample clearance at both ends of each needle.

ARTHUR A. HUMPHREY.