

**May 23, 1961**

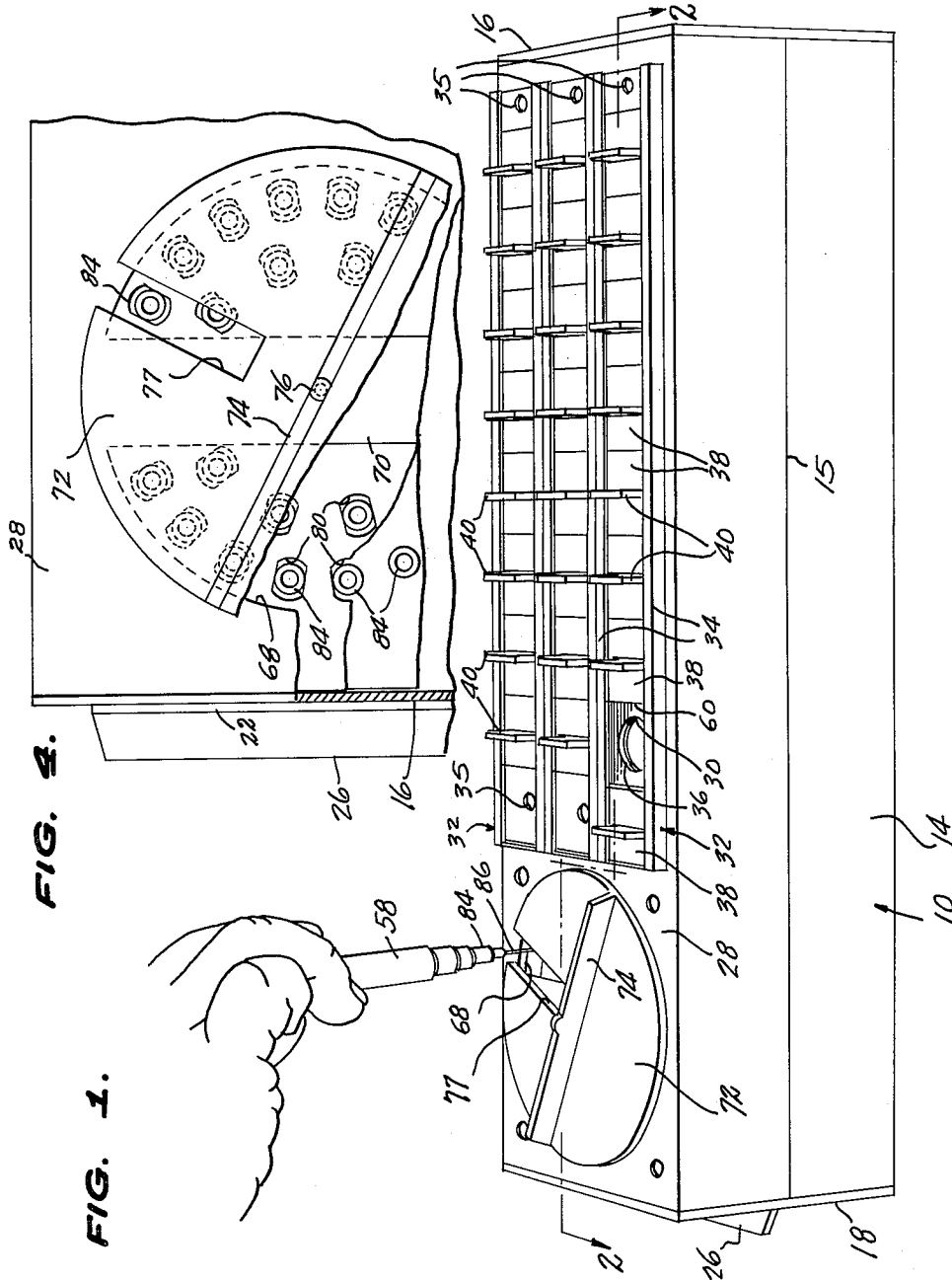
D. E. RIDDLE

**2,985,285**

## CONTAINER FOR SYRINGES AND HYPODERMIC NEEDLES

Filed March 28, 1958

2 Sheets-Sheet 1



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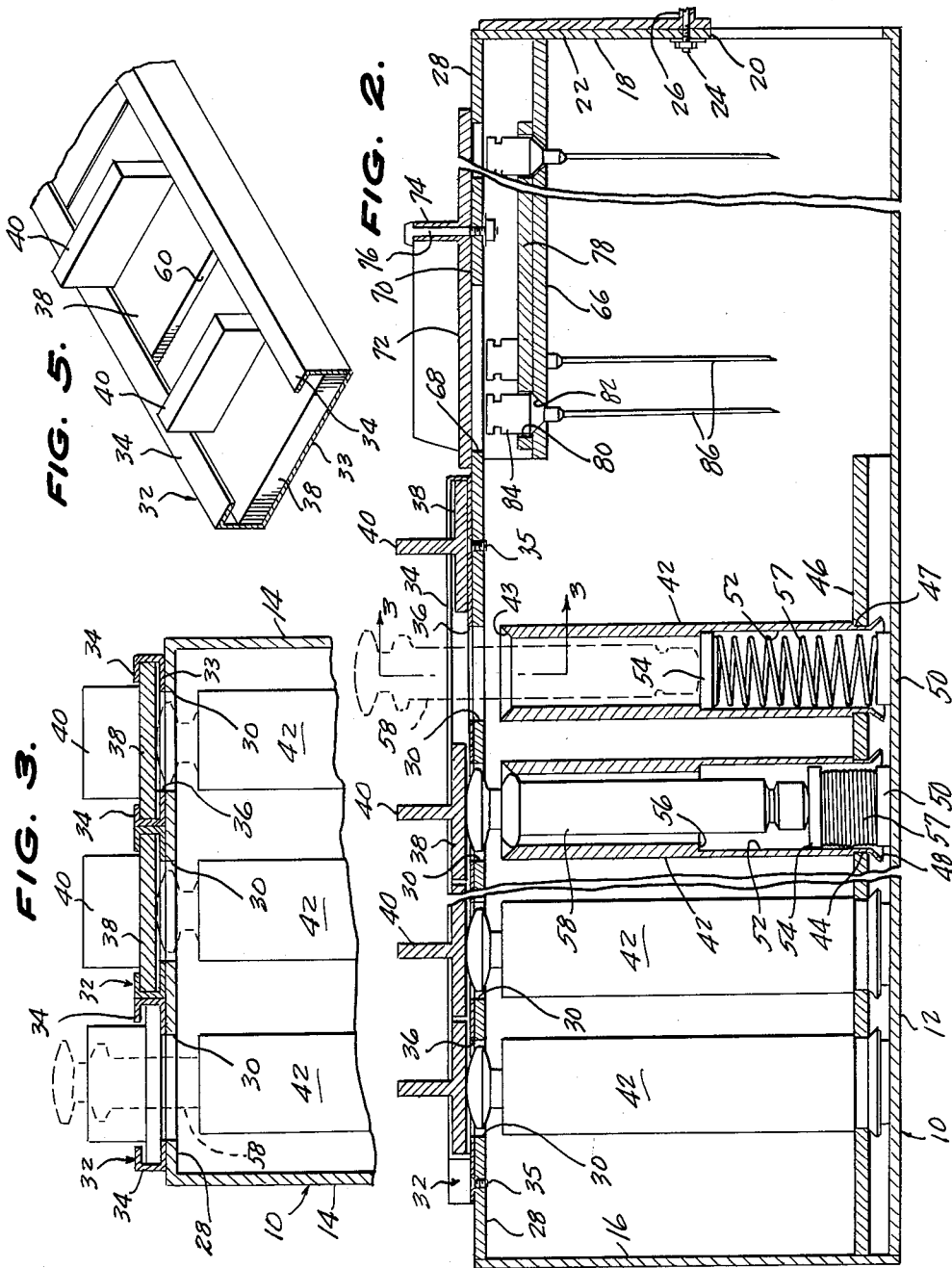
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## CONTAINER FOR SYRINGES AND HYPODERMIC NEEDLES

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2 Sheets-Sheet 2



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2,985,285

## CONTAINER FOR SYRINGES AND HYPODERMIC NEEDLES

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3 Claims. (Cl. 206—17.5)

This invention relates to holders for medical instruments, and more particularly has reference to a holder or container for syringes and their associated needles.

One important object of the present invention is to provide a container as described which will be so designed as to be bodily insertable, together with a full complement of syringes and needles, in an autoclave or related sterilizing device, with the holder being designed to be opened while positioned within the autoclave, for the purpose of sterilizing all the syringes and needles simultaneously.

Another object is to so design the container that when removed from the autoclave, it can be closed at one end, so as to maintain the contents of the holder in a completely sterile condition.

A further object is to so design the container that on the use of any syringe, an individual tab will be movable for the purpose of exposing, for removal, only the particular syringe that is to be used, in an arrangement such that on use of any syringe or needle, such use will be immediately indicated and will remain indicated until the holder is emptied of sterilized syringes and needles.

A further object is to permit the removal, both of the syringes and the needles, to be accomplished without any of the objects coming in contact with human hands.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawing, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a perspective view showing the device in use during the extraction of a needle;

Figure 2 is an enlarged longitudinal sectional view substantially on line 2—2 of Figure 1, portions being broken away;

Figure 3 is an enlarged transverse sectional view substantially on line 3—3 of Figure 2;

Figure 4 is a fragmentary top plan view in which portions have been sectioned away; and

Figure 5 is a still further enlarged, fragmentary perspective view of the slidable closures for the syringe tubes.

Referring to the drawings in detail, designated generally at 10 is an elongated, rectangular housing, the size of which is such as to permit the same to be insertable bodily in a conventional autoclave. The housing 10 is, as will be understood, formed entirely of a noncorrosive metal material, and is provided with a rectangular, flat bottom wall 12. Rigid with and extending upwardly from the opposite longitudinal edges of the bottom wall 12 are side walls 14 which, to facilitate manufacture, may if desired be formed with a longitudinal seam 15, although this is not of course essential to successful practicing of the invention.

Closing the opposite ends of the device are end walls 16, 18 respectively. End wall 16 is completely impermeate, but wall 18 (see Figure 2) has an approximately semi-circular opening 20, adapted to be normally closed by a correspondingly semi-circular closure plate 22, which is rotatably mounted upon end wall 18 through the medium of a pin 24, the plate 22 having a diametrically

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extending rib 26 providing a handle. The plate 22 when in its Figure 2 position uncovers opening 20, but the plate can be rotated through 180° to cover the opening 20 whenever desired. It will be understood, in this regard, that when the holder, together with the supported syringes and needles, is to be sterilized, the plate 22 is shifted to its open, Figure 2 position and the device is then placed in the autoclave. As a result, steam will move freely into the holder, to sterilize the needles and syringes. Thereafter, when the sterilizing action has been completed, the plate 22 is moved to a closed position before the device is taken out of the autoclave. Plate 22 is then left in its closed position, during the normal use of the holder, and is not again opened until such time as the device has been recharged with syringes and needles and is to be sterilized together with its contents once again.

The housing 10 is provided with a top wall 28, and over a substantial part of the length of the housing, for approximately two-thirds of said length, in fact, in the illustrated embodiment, the top wall 28 is formed with openings 30. Openings 30 are of circular formation, and are arranged in three straight rows one extending longitudinally and centrally of the wall 28 and the others extending in parallel relation to the first row adjacent the respective sides of the housing.

A guide assembly generally designated 32, for a plurality of individual closures of the openings 30, is fixedly mounted upon the top wall 28. This, as shown in Figure 3 to particular advantage, includes three longitudinally contacting, identical tracks 33 each of which is formed along its opposite longitudinal edges with upwardly, inwardly projecting guides or flanges 34. The flanges 34 extend in confronting relation, over the full length of the tracks, and in the web portions of the respective tracks, there are formed circular openings 36 registering with the openings 30 (Figures 2 and 3).

In each track a plurality of identical, comparatively small, flat, rectangular closures 38 (Figure 5) each having intermediate its ends a transversely disposed, upwardly projecting handle 40, is provided. The closures 38 are freely slidable within their associated tracks, and in addition, have limited up-and-down movement within the tracks, due to the fact that the distance between the webs of the tracks and the top portions of the flanges 34 is greater than the thickness of any closure 38. In other words, and referring to Figure 5, a closure may be at times disposed in direct, face-to-face contact with the web portion 33 of each track, as shown in the closure position at the left of Figure 5. The closure shown at the right in Figure 5, however, is shifted upwardly so as to bear against the underside of the guide flange 34. The purpose of this arrangement will be presently made apparent. In any event, the closures are freely slidable within their associated tracks as previously brought out herein, and are adapted to be respectively disposed in position to close the openings 30.

The several tracks are fixedly secured in place, upon the top wall 28, by means of screws 35.

Below and in registration with each opening 30, there is mounted, in upstanding position, a syringe support tube 42 (Figure 2). Each tube 42 opens upwardly, and is preferably beveled as at 43 at its upper end for facilitating the insertion of the syringes.

Each tube 42, at its lower end, has a reduced extension 44, engaging in an opening of a raised support plate 46 that is fixedly mounted upon the bottom wall 12. The provision of the reduced extension 44 defines a downwardly facing shoulder 47 at the lower end of each tube 42, bearing against the edge portion of the support plate 46.

Below the plate 46, tube 42 has a downwardly flaring end portion 48 extending about a shallow bottom cup

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washer 50. The flaring of the tubes 42 is effected following insertion of the tubes through the openings of the plate 46. The tubes are press-fitted in openings of plate 46, and then swaged as at 48 so as to be permanently engaged in the plate 46 in positions extending upwardly from the plate.

Within each tube 42 there is, over approximately the lower half of the length of the tube, a counterbore 52, defining an internal shoulder at the upper end of the counterbore peripherally engaged by a downwardly opening upper cup washer 54, the provision of the counterbore defining a shoulder 56 to provide an abutment which will engage the cup 54. A compression, coil spring 57 is engaged at its opposite ends in the respective cups 50, 54.

Seated in the tube 42 is a conventional syringe 58, the lower end of which bears against the upper cup washer 54 and the upper end of which normally, in the closed position of closure 38, bears against the underside of its associated closure plate 38 as shown in full lines in Figure 2.

It will thus become apparent that normally, when a closure plate 38 is in position closing its associated opening 30, the syringe 58 immediately therebelow will be forced into a fully seated position within its associated support tube 42, causing spring 57 to be fully compressed with the upper end of the syringe bearing firmly against the underside of plate 38. This causes the plate 38, in these circumstances to be shifted upwardly, into binding, frictional engagement with the undersides of the inwardly directed flanges 34.

If, however, the plate 38 is shifted longitudinally of and within its associated track, in position to uncover its opening 30, the syringe 58 will now be free to move upwardly, to the dotted line position of Figure 2. The upper end of the syringe is now disposed in position projecting above the top wall of the housing, where it can be conveniently grasped by a suitable holding tool, not shown, for full removal from the housing. In effect, the syringes "pop up" when their closure plates are moved off the upper ends of the syringes.

When a closure plate is so moved, it will of course no longer be in engagement with any syringe, and will be in the position shown for the closure plate furthest to the right in Figure 2, or to the left in Figure 5. The closure plate will thus be free to gravitate into contact with the web of its associated track, and after its associated syringe has been removed, will remain in its lower position even when moved back to again cover the opening 30 through which the syringe 58 has been removed.

In these circumstances, the plate 38, when returned to position covering the opening 30 with syringe 58 having been removed through said opening, will no longer be forced upwardly and though in contact with the next adjacent plate 38 will be in a plane lower than said next adjacent plate 38. This is clearly shown in Figure 5, and the result is that an edge portion 60 of the next adjacent plate 38, that is, the one still forced upwardly by a syringe disposed therebelow, will be partially exposed. Said edge portion 60 is preferably painted a distinctive color, as for example red, so that a red, transverse stripe will appear in the trackway, at the location at which the next available syringe is disposed.

Thus, in use, in removing a syringe one travels down a full row. Initially, all the closure plates will be in the positions shown for the two top rows in Figure 1. Then, assuming that the first syringe is to be removed, it may possibly be removed from the bottom row, viewing the same as in Figure 1, so that its plate 38 is shifted to the left in Figure 1 off its opening 30. The syringe is then removed, after which the plate 38 which was so shifted will be returned to its previous position. However, the edge portion 60 of the next adjacent plate 38 will now be partially exposed to show the red stripe and this

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red stripe will in effect be moved progressively down the entire row, as succeeding syringes are removed, so that there will always be a single red stripe showing, denoting the next closure plate that is to be moved.

Means is incorporated in the device, also, for supporting a plurality of hypodermic needles. Said means is disposed beyond one end of the trackways, and supports the needles in a plurality of concentric, annular groups. The construction for supporting the needles is shown to particular advantage in Figures 1, 2 and 4. As will be noted, a horizontal needle support plate 66 is fixedly mounted within the housing, below and in closely spaced relation to top wall 28. Needle support plate 66 is disposed below a large, circular opening 68, and integral or otherwise made rigid with support plate 28, and extending diametrically of the opening 68, is a wide bar 70.

A circular closure plate 72 is positioned over the opening 68, and is formed with an upwardly projecting, integral, diametrically extending rib 74 constituting a handle. Formed in the plate 72 and in handle 74 is a vertical bore receiving a pivot bolt 76, so that the closure plate 72 may be rotated to selected positions about the axis of said bolt or pin 76.

Referring to Figure 1, formed in the plate 72, at one side of the handle 74, is a wide, radially extending opening 77. The opening 77 extends fully from the handle 74 to the periphery of the plate 72 as shown in Figure 1, and responsive to rotation of the plate 72 to selected positions, the opening 77 is disposed in position above selected areas of a plate member 78 fixedly secured to and overlying the plate 66. Formed in member 78 and plate 66 are registering openings 80, 82. Opening 82 flares downwardly, so as to complement the shape of the head portion 84 of a supported hypodermic needle 86. Opening 80, as shown in Figure 4, is oval in the illustrated example, to match the cross sectional shape of the needle, but this of course is not critical to successful operation of the invention and the shape of the openings would depend on the shape of the particular needles that are to be supported in the device.

In any event, the needles as shown in Figure 4 are supported in the illustrated example in two concentric, annular rows the continuity of which is interrupted by the cross bar 70. As will be apparent from Figures 1 and 4, on rotation of the plate 72 to a selected position, a particular needle 84 will be exposed. It is important to note, in this regard, that the needles in the concentric rows are in staggered relation, so that in each position of the plate 72, only a single needle 84 is fully exposed.

With needle 84 exposed in this manner, it can be removed without being touched by the hands, since one need merely first remove a syringe and then insert the syringe through the opening 77 of plate 72, the syringe then being engaged with the head of the needle to permit the needle to be removed, as clearly shown in Figure 1. Plate 72 is then returned to its normal position in which the opening 77 overlies the cross bar 72 so as to completely close the needle access opening 68 of the top wall of the housing.

It will be apparent that the invention is such as to support a large number of conventional hypodermic needles and syringes, in a manner whereby one will under no circumstances have difficulty in locating the next syringe that is to be used. One simply travels down each of the three rows to use all the syringes in succession, and in these circumstances, one always knows which is the next closure plate that should be shifted for the purpose of obtaining a syringe, since a red stripe will appear at the location of such plate due to the fact that all previously shifted plates 38 will be in a lowered position, while the next one that is to be moved for the purpose of obtaining a syringe will be biased upwardly by the syringe itself.

Further, following the removal of each syringe, the next hypodermic needle that is to be used is readily located,

by turning of the closure plate 72 in a specific direction, as for example clockwise in Figure 4, until one observes the next needle that is available. The removed syringe can then be used, being inserted directly through opening 77 in the manner previously described, to connect it-  
 5 self to the needle 84 and permit attraction of the needle with the syringe and needle now being properly connected, ready for use.

Important characteristics of the invention may be noted at this point. The device is adapted for bodily insertion in an autoclave, to permit all the needles and syringes to be simultaneously sterilized, together with the holder itself. This is facilitated by the end opening, through which steam may circulate in the manner previously described. Subsequently, the device has the desirable characteristics that an orderly support of the several syringes and needles is provided, with valuable time being saved through the particular manner in which the several syringes are denoted, from a location exteriorly of the container, as to their availability. One immediately grasps the proper closure plate 38, that is to be moved for locating the next syringe, and in an equally swift period of time, one can locate the next available needle. This is important, particularly in case of emergency, and also in instances in which a large number of injections must be given in the shortest possible time. This is of course very often the situation, not only in the ordinary operation of hospitals, but also in mass inoculation programs, epidemic situations, etc.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. An injection syringe container comprising a housing having a bottom wall, side walls, first and second end walls, and a top wall, said top wall being formed with a longitudinal row of spaced openings, a pair of facing channel tracks secured upon and extending along said top wall and located at opposite sides of said longitudinal row of openings, upstanding tubes within the housing and fixedly mounted on said bottom wall, said tubes having open upper ends registered with said openings, ejecting springs mounted in the tubes and having upper ends spaced below the upper ends of the tubes, said springs being adapted to be compressed by engagement of syringe bodies forced downwardly through said openings into the upper ends of the tubes against the resistance of the springs, and closure plates having side edges engaged in related tracks for positioning over openings and for retaining engagement with the upper ends of syringe bodies engaged in the tubes, said tracks having spaced upper and lower flanges, the side edges of the closure plates being narrower than the spaces between the flanges, said closure plate edges resting upon the lower flanges of the tracks when not engaged with a syringe body, said edges being frictionally engaged with the upper flanges of the tracks when the plates are engaged with a syringe body by the action of the springs, so as to indicate the presence of a syringe body under an elevated closure plate.

2. An injection syringe container comprising a housing having a bottom wall, side walls, first and second end walls, and a top wall, said top wall being formed with a longitudinal row of spaced openings, a pair of facing channel tracks secured upon and extending along said top wall

and located at opposite sides of said longitudinal row of openings, upstanding tubes within the housing and fixedly mounted on said bottom wall, said tubes having open upper ends registered with said openings, ejecting springs mounted in the tubes and having upper ends spaced below the upper ends of the tubes, said springs being adapted to be compressed by engagement of syringe bodies forced downwardly through said openings into the upper ends of the tubes against the resistance of the springs, and closure plates having side edges engaged in related tracks for positioning over openings and for retaining engagement with the upper ends of syringe bodies engaged in the tubes, said tracks having spaced upper and lower flanges, the side edges of the closure plates being narrower than the spaces between the flanges, said closure plate edges resting upon the lower flanges of the tracks when not engaged with a syringe body, said edges being frictionally engaged with the upper flanges of the tracks when the plates are engaged with a syringe body by the action of the springs, so as to indicate the presence of a syringe body under an elevated closure plate, said tracks being spaced from said second end wall, and a syringe needle holder mounted in the space between the tracks and said second end wall, said housing top wall having opening means exposing said holder.

3. An injection syringe container comprising a housing having a bottom wall, side walls, first and second end walls, and a top wall, said top wall being formed with a longitudinal row of spaced openings, a pair of facing channel tracks secured upon and extending along said top wall and located at opposite sides of said longitudinal row of openings, upstanding tubes within the housing and fixedly mounted on said bottom wall, said tubes having open upper ends registered with said openings, ejecting springs mounted in the tubes and having upper ends spaced below the upper ends of the tubes, said springs being adapted to be compressed by engagement of syringe bodies forced downwardly through said openings into the upper ends of the tubes against the resistance of the springs, and closure plates having side edges engaged in related tracks for positioning over openings and for retaining engagement with the upper ends of syringe bodies engaged in the tubes, said tracks having spaced upper and lower flanges, the side edges of the closure plates being narrower than the spaces between the flanges, said closure plate edges resting upon the lower flanges of the tracks when not engaged with a syringe body, said edges being frictionally engaged with the upper flanges of the tracks when the plates are engaged with a syringe body by the action of the springs, so as to indicate the presence of a syringe body under an elevated closure plate, said tracks being spaced from said second end wall, and a syringe needle holder mounted in the space between the tracks and said second end wall, said housing top wall having opening means exposing said holder, said second end wall having an opening therein, a movable closure plate for said end wall opening, said bottom wall, said side wall, and said first end wall being imperforate, said housing being sealed when the closure plates are positioned over the openings in the top wall and said movable closure plate is positioned over the end wall opening.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

|           |            |                |
|-----------|------------|----------------|
| 2,523,877 | Pestolesi  | Sept. 26, 1950 |
| 2,557,420 | Elliott    | June 19, 1951  |
| 2,684,152 | Schweiger  | July 20, 1954  |
| 2,835,377 | May et al. | May 20, 1958   |
| 2,828,005 | Ricke      | Mar. 25, 1958  |

##### FOREIGN PATENTS

|         |         |               |
|---------|---------|---------------|
| 832,712 | Germany | Feb. 28, 1952 |
|---------|---------|---------------|