

[54] **HOLDER FOR RADIOACTIVE MATERIAL**
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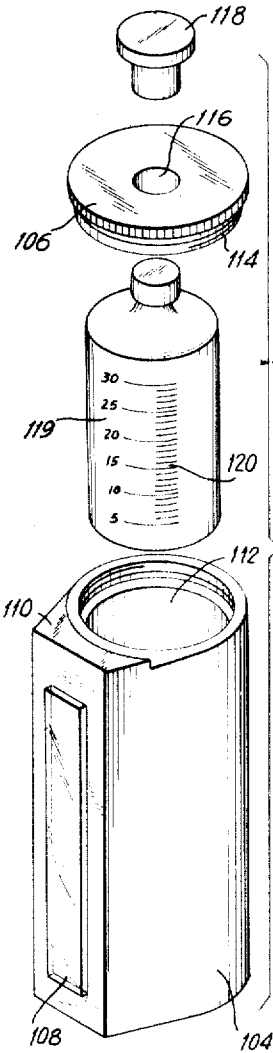
Related U.S. Application Data

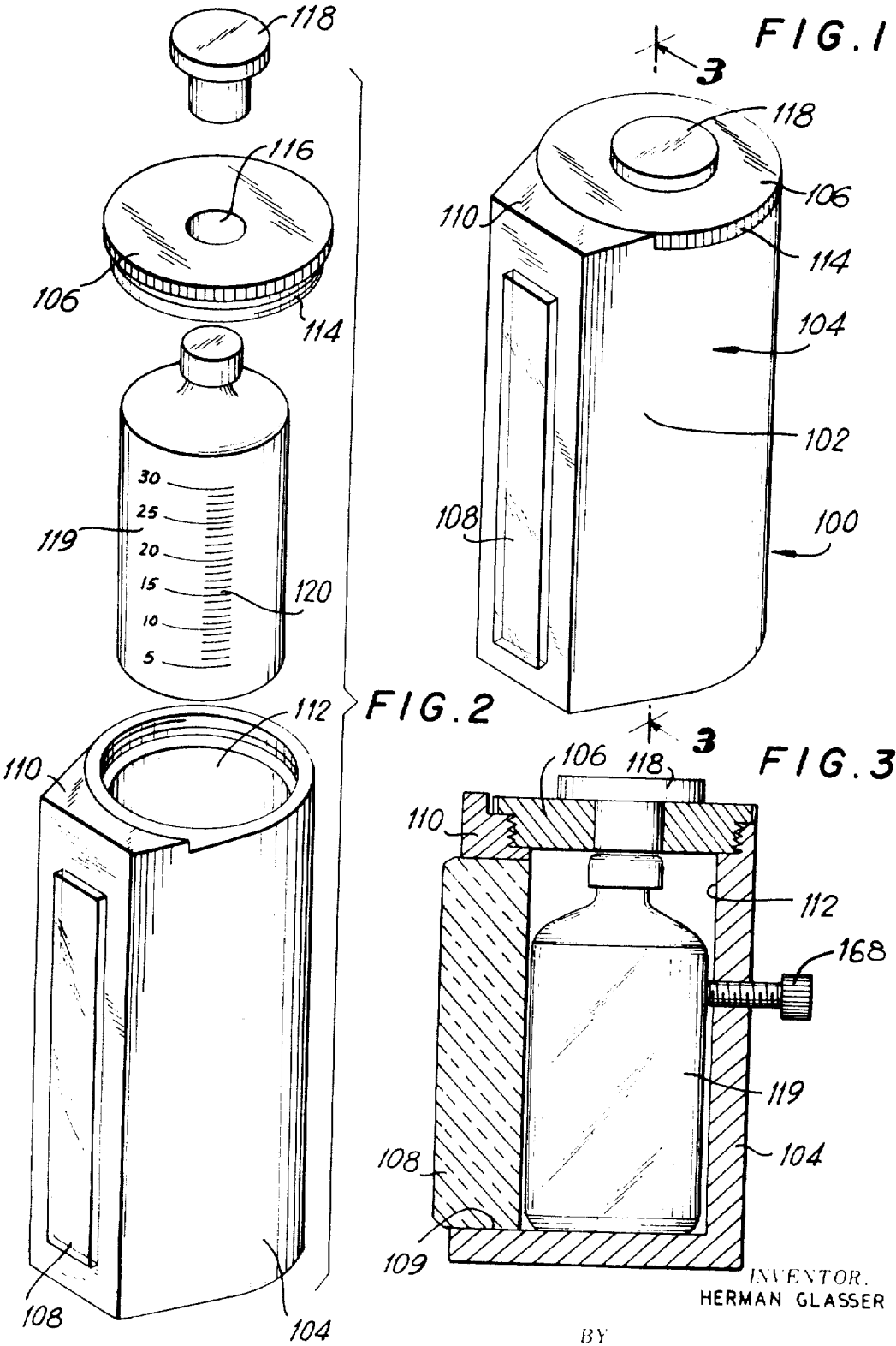
[63] Continuation-in-part of Ser. No. 782,311, Dec. 9, 1968.
[52] U.S. Cl. **250/108 R, 250/106 R**
[51] Int. Cl. **G21f 7/02**
[58] Field of Search..... **250/106 R, 106 S, 108 R**

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[57] **ABSTRACT**
Holder for radioactive material fabricated of high density material to reduce transmission of energy, either by radiation or particle bombardment, either inwardly or outwardly thereof while yet enabling observation of material within an inner container or vial.

7 Claims, 6 Drawing Figures





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FIG. 5

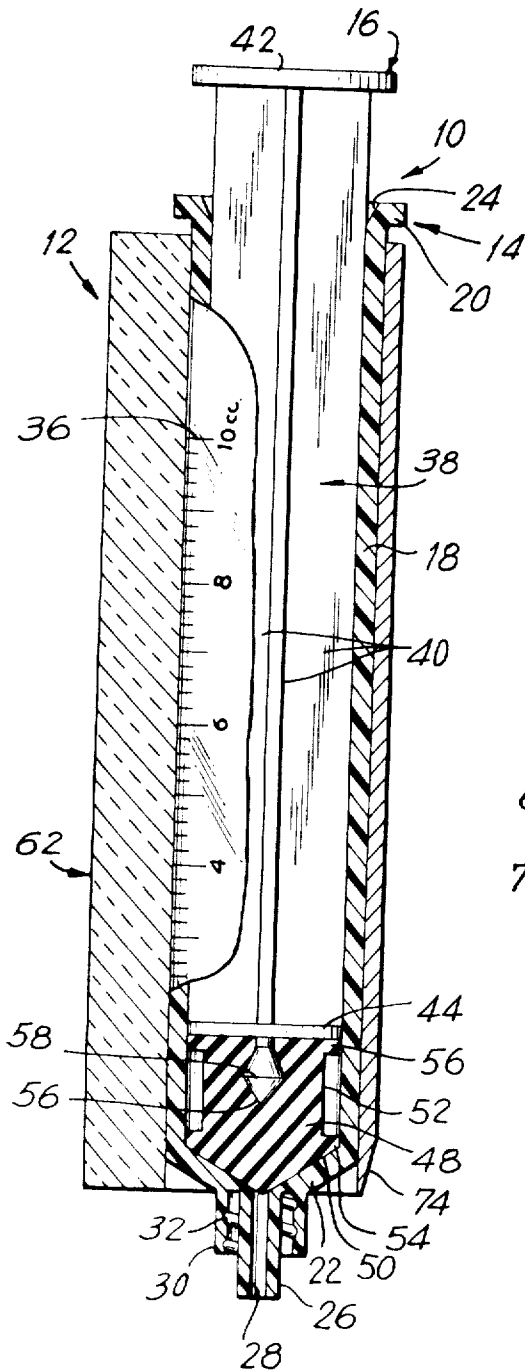


FIG. 4

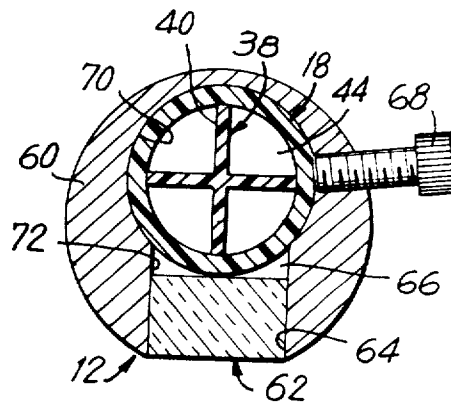
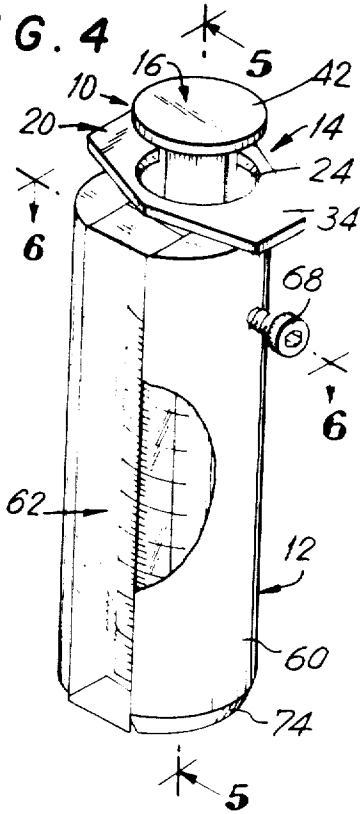


FIG. 6

HERMAN GLASSER

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HOLDER FOR RADIOACTIVE MATERIAL

This application is a continuation-in-part of an application entitled SYRINGE, having Ser. No. 782,311 filed Dec. 9, 1968.

This invention relates, generally, to a holder and, more particularly, to a holder for radioactive materials.

A primary object of the present invention is the provision of a holder fabricated of high density material to reduce energy transfer through either radiation or particle bombardment outwardly thereof.

Another primary object of the present invention is the provision of a syringe holder therefor fabricated of high density material to reduce energy transfer through either radiation or particle bombardment outwardly thereof.

Yet another primary object of the present invention, in addition to the foregoing object, is the provision of a vial and shielded holder which enables visual observation of the contents of a vial, syringe or the like held therein.

Still another primary object of the present invention, in addition to the foregoing object, is the provision of such syringe and shielded holder which enables visual observation of the contents of the syringe.

Yet still further, another primary object of the present invention, in addition to each of the foregoing objects, is the provision of such syringe holder therefor which may be readily assembled or disassembled for cleaning.

Another and yet still further primary object of the present invention, in addition to each of the foregoing objects, is the provision of such a syringe holder which may be readily assembled with a syringe and fixedly secured relative thereto.

Yet still further, it is another primary object of the present invention, in addition to each of the foregoing objects, to provide such holders which enable visual observation of graduations on the vial held therein.

Still further, it is another primary object of the present invention, in addition to each of the foregoing objects, to provide such holders which enable visual observation of graduations on the syringe cylinder and the position of the plunger relative thereto.

Another yet still further primary object of the present invention, in addition to each of the foregoing objects, is the provision of such a holder which is economical to manufacture and durable in use.

Another yet still further primary object of the present invention, in addition to each of the foregoing objects, is the provision of such syringe holder which is economical to manufacture and durable in use.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective illustration of a holder constructed in accordance with the principles of the present invention;

FIG. 2 is an exploded perspective view illustration of a vial including a scale being inserted in the holder;

FIG. 3 is a cross sectional view taken along line 3—3 of FIG. 1;

FIG. 4 is a perspective illustration of a syringe and holder constructed in accordance with the principles of the present invention;

FIG. 5 is an elevational cross sectional view taken along line 5—5 of FIG. 4; and

FIG. 6 is a plan cross sectional view taken along line 6—6 of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the drawing, there is shown and illustrated therein a holder 100 constructed in accordance with the principles of the present invention. The shield or holder 100 may comprise a high density portion 102 fabricated of a high density material selected to provide maximum shielding with minimal thickness and may, for example, comprise a heavy metal such as lead. The holder includes a holder portion 104 with a threaded cover 106 therefor. The holder portion has a window 108 fabricated of a transparent material which

may, to provide maximum shielding, be of substantial thickness and may, for example, comprise a leaded glass. The window may be secured, as by means of adhesive, or the like, within a slot 109 provided in the front of holder portion 104.

The holder portion, preferably, is generally cylindrically shaped with a front protruding portion 110 in which slot 108 is disposed. The cylindrical shape and protruding portion provide a C- or U-shaped configuration with the protruding portion 110 being located within the legs thereof so as to define a bore 112 adapted to receive a vial or container holding a radioactive material. The top portion of the inner surface of holder portion 104 is provided with thread means.

The top or cover portion is disk shaped having a knurled outer edge 114 to facilitate its manipulation and a threaded stub portion to communicate with and connect to the holder portion 104 enclosing the shielded radioactive material. Cover portion 106 is provided with a concentrically located bore 116 adapted to receive a plug 118.

The holder, preferably, is adapted to contain a vial 119 holding radioactive material. The vial is provided with a longitudinally extending scale 120 which is visible through the leaded glass or window 108. The scale indicates the volume contained between individual markings, and may indicate volumetric measurement, as in cubic centimeters in accordance with conventional practice. When it is desired to extract the contents of the vial into a suitable syringe, the plug 118 is removed permitting a needle or the like to be inserted in the vial to draw the radioactive material into the syringe.

While the principles of the present invention may be advantageously utilized with a holder for a vial or the like, other embodiments thereof, and, in particular, a shielded syringe holder may be constructed.

With reference again to the drawing, and in particular FIGS. 4—6, there is shown and illustrated therein a syringe 10 disposed within a holder or shield constructed in accordance with the principles of the present invention and designated generally by the reference character 12.

The syringe 10 may be of substantially any desired construction and design and may, for example, comprise a cylinder portion 14 and a plunger portion 16 slidably disposed therewithin.

The syringe 10 may be of substantially any desired construction and design and may, for example, comprise telescopically interengaged cylinder and plunger portions 14 and 16, respectively.

By way of example only, the cylinder portion 14, may, for example, comprise a generally tubular medial portion 18 of generally uniform diameter and wall thickness; a radially outwardly extending handle portion 20 disposed at one end portion thereof; and a generally conical generally closed end portion 22 at the other end portion thereof. The open end portion adjacent the handle portion 20 may be provided with a generally outwardly extending tapered mouth 24 to enable easy insertion therein of the plunger 16 and the generally closed end portion 22 may be provided with a generally axially forwardly extending boss 26 provided with a bore 28 extending therethrough from the apex of the conical portion 22, the outer surface of the boss 26 being generally cylindrical or of slightly tapered configuration so that a conduit-like member, such as a hypodermic needle, catheter, stylet, tubing, or the like, may be readily and easily structurally associated therewith. Yet further, as a further aid in providing secure structural association between the syringe 10 and a mating conduit member, the forward end portion of the syringe 10 may be further provided with a generally annular boss 30 extending generally co-axially and radially spaced outwardly of the boss 26 and provided with internal screw threads 32 for engaging such conduit members as may be provided with mating screw threads.

The handle portion 20 may extend substantially entirely radially outwardly of the medial portion 18 or may, as shown, be of generally elongated configuration comprising a pair of generally opposed ear or flange portions 34. The medial por-

tion 18 of the cylinder 14 may, as shown, be provided with a generally longitudinally extending scale 36 for defining and indicating the volume contained between individual markings thereof and the forward end portion 22 or the volume contained therewithin between the piston portion 16 and the forward end portion 22 when a particular pre-determined portion of the piston is aligned with a particular scale graduation. The scale 36 may, for example, and as shown, be constructed and arranged to indicate volumetric measurement, as in cubic centimeters, in accordance with convention practice.

It will be appreciated the syringe 10 is of conventional construction, but for purposes of illustration it is further described as comprising a plunger portion 16 which may have an elongated stem portion 38 comprising, for example, a plurality of webs 40 extending generally radially outwardly from generally axially of the cylinder portion 14 and of such dimension as to fit generally snugly or loosely, if desired, while being yet slidable within the cylinder portion 14. The plunger portion 16 may further comprise an enlarged cap or actuating portion 42 of, for example, generally circular or disc-shaped configuration disposed at one end portion thereof and an inner cap 44 of generally disc-shaped configuration disposed at the other end portion thereof having a diameter substantially equal to the inside diameter of the cylinder medial portion 18. An elastomeric sealing plug 48 having, for example, a generally conical forward end portion 50 adapted to congruently engage the conical cylinder portion 22 so as to enable substantially complete extrusion or dispensing of material from the syringe 10 outwardly through the bore 28. The plug 48 may, for example, be fabricated of an elastomeric material and may be provided with a generally circumferentially or annularly inwardly extending side groove 52 so as to define a forward and rearward generally circular sealing ring portions 54 and 56, respectively, disposed generally adjacent the conical forward end portion 50 and the forward end portion 44 of the plunger stem 38. The forward end portion of the plunger stem 38 may be provided with means, such as a point 56 having an outwardly bulged portion 58 for retaining the elastomeric plug 48 secured for movement therewith.

The operation of the syringe is believed to be readily apparent and no further explanation or description thereof is deemed necessary.

The shield or holder portion 12 may comprise a high density portion 60 fabricated of a high density material selected to provide a maximum shielding with minimal thickness and may, for example, comprise a heavy metal, such as lead. The shield 12 may further comprise a window 62 fabricated of a transparent material which may, to provide for a maximum shielding, be of substantial thickness and may, for example, comprise a leaded glass. The window 62 may be secured, as by means of adhesive, or the like, within a slot 64 provided in the portion 60 of the holder 12 and adapted to be positioned in general alignment with the graduations of the scale 36 so that the material within the syringe 10 and the scale 36 may be viewed or visually observed, enabling the quantity of material within the syringe to be readily ascertained at any desired time.

The portion 60 of the holder or shield 12 may be of generally U-shaped configuration with the window 62 being secured between the legs thereof so as to define therewith a bore 66 within which the cylinder 18 of the syringe 10 is particularly adapted to be disposed. Means, such as a screw 68 may be provided for clamping the cylinder 18 of the syringe 10 within the holder or shield 12 with the graduations of the scale 36 thereof being disposed in general alignment with the

window 62. Similar screw means 168 may be provided for clamping the vial 119, as best shown in FIG. 3.

The portion 60 may, for example, as shown, be of generally cylindrical configuration provided with a generally cylindrical bore portion 70 extending longitudinally therethrough generally eccentrically to the axis thereof and a generally rectangular slot 72 extending through the thickest portion of the high density portion 60 and communicating with the cylindrical bore 70 to define the bore 66 and with the window 62 being disposed within the slot 72. The lower end portion of the density portion 60 may, as shown, be provided with a bevelled portion 74, as shown.

It is to be understood that terminology such as "upper," "lower," "inner," "outer," "forward" and "rearward," as used in the preceding description and in the subjoined claims, along with other similar directional terminology, is to be construed and interpreted in its normal and accepted sense and with reference to the drawing herein. However, such terminology is not to be construed or interpreted in a limiting sense either in the preceding description or the subjoined claims, since the same is used merely to facilitate an understanding of, and to clearly set forth and particularly define the present invention.

While the invention has been described, disclosed, illustrated and shown in terms of an embodiment or modification which it has assumed in practice, the scope of the invention should not be deemed to be limited by the precise embodiments or modifications herein described, disclosed, illustrated or shown, such other embodiments or modifications as may be suggested to those having the benefit of the teachings herein being intended to be reserved especially as they fall within the scope and breadth of this patent application.

I claim:

1. Shielding holder for a container or receptacle having longitudinally extending scale means for determining the amount of radioactive material disposed therein comprising, a holder portion of high density material and of generally U shaped configuration, said holder being provided with a generally cylindrical bore extending generally eccentrically longitudinally there-through to receive said container and having a slot extending generally longitudinally, for at least a portion of the length of said high density portion, and through the thickest portion thereof, and into communication with said eccentric bore, a rectangular insert of transparent material disposed within said slot, said transparent material comprising a high density glass, and cover means for said bore of high density material, whereby the amount of radioactive material held within said container may be visually perceived and quantitatively ascertained.

2. The holder defined in claim 1, wherein said cover means is a cover threadably secured to said holder portion.

3. The shielding holder defined in claim 1, further comprising a threaded hole extending generally radially outwardly of said bore and a threaded screw disposed therein for clamping and positioning said container within said bore.

4. Holder defined in claim 1, wherein said cover is generally disk-shaped.

5. Holder defined in claim 4, wherein said cover is provided with a concentric bore, a plug, and said plug being adapted to be inserted in said concentric bore.

6. Holder defined in claim 1, wherein said high density material is lead.

7. Holder defined in claim 1, wherein said transparent material is adhesively secured to said slot.

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