

Jan. 30, 1951

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2,539,966

FOLDING FRAME OR RECEPTACLE

Filed Jan. 18, 1947

FIG. 1.

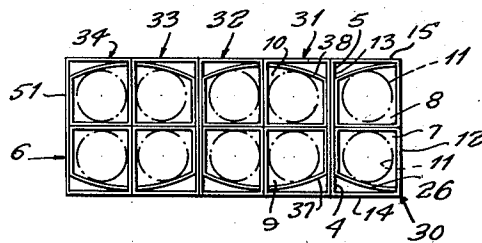


FIG. 3.

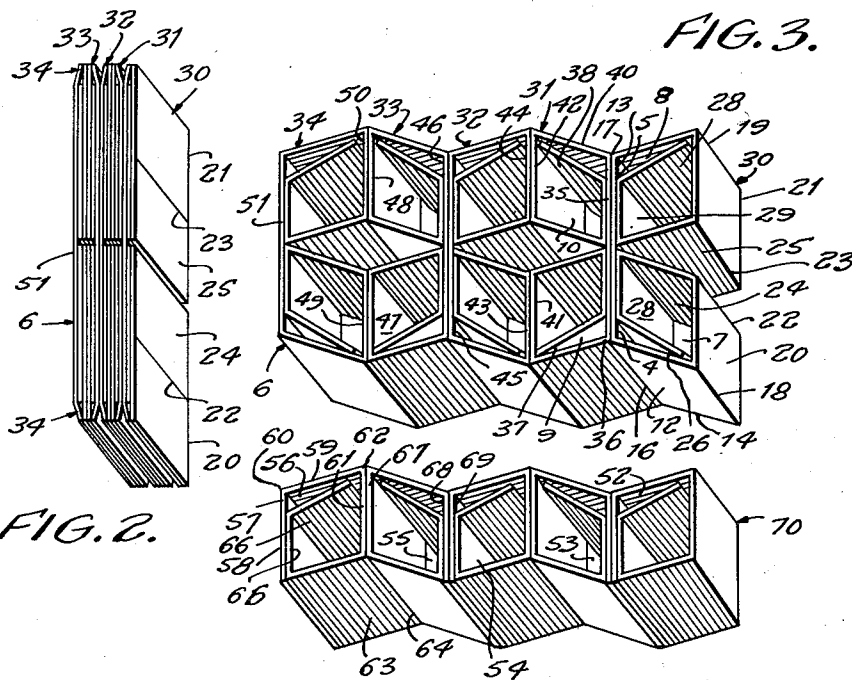


FIG. 2.

FIG. 4.

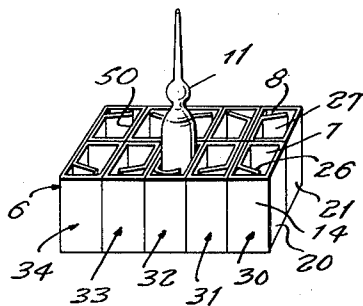


FIG. 5.

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## UNITED STATES PATENT OFFICE

2,539,966

## FOLDING FRAME OR RECEPTACLE

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Application January 18, 1947, Serial No. 722,916  
In Spain November 2, 1942Section 1, Public Law 690, August 8, 1946  
Patent expires November 2, 1962

11 Claims. (Cl. 217—34)

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This invention relates to frames and receptacles for transporting fragile objects, and particularly to a receptacle for individually receiving bottles, vials and the like in separate compartments.

The main object of my invention is to provide a frame or receptacle adapted to be inserted into boxes and containers for receiving medicinal bottles, vials, ampules and the like made of crystal and glass, and particularly to a frame or receptacle having facilities in the compartments thereof for preventing shifting of the vials or ampules and transmission of vibration, shocks and jars thereto which might tend to fracture said vials or ampules in the receptacle.

Another object is to make a frame or receptacle of the character indicated of one or more strips of cardboard or the like bent into shape to form a plurality of compartments having articulated walls allowing the receptacle to be collapsed when desired.

A further object is to provide in each compartment of the frame or receptacle a transverse internal wall serving to wedge the vial, ampule or other object firmly in position in the compartment involved and thereby prevent shifting or rattling of the object thus located in said compartment.

It is likewise an object of my invention to provide such a folding frame or receptacle with side walls forming the compartments thereof and articulated along fold lines in such fashion that the entire frame or receptacle may be collapsed to form a thin, compact elongated block when empty.

Other objects and advantages of my invention will appear as the specification proceeds.

In order to facilitate ready comprehension of this invention for a proper appreciation of the salient features thereof, the invention is illustrated on the accompanying drawing forming part hereof and in which:

Fig. 1 is a plan view of a folding frame or receptacle made according to the invention and embodying the same in a practical form, the frame being shown in expanded useful position and condition with a plurality of vials or other objects inserted into the various compartments thereof;

Fig. 2 is a perspective view of the frame or receptacle in collapsed condition in which it forms a thin compact block;

Fig. 3 is a perspective view of the frame or receptacle in expanded condition ready to receive

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vials or other objects into the various compartments of the same;

Fig. 4 is a perspective view of a modification of the frame or receptacle of Fig. 3; and

Fig. 5 is a perspective view of the frame or receptacle of Figs. 1 and 3, with a medicinal vial or ampule inserted in one compartment thereof in upright position.

Throughout the views the same reference numerals indicate the same or like parts.

When packing medicinal bottles, vials, ampules and the like, which are made of glass or crystal, especially vials and ampules containing fluids for injection, it is important to be able to so dispose the vials or ampules in the packages containing them that they will be safe and well protected from movement or rattling in situ, as well as from shocks and jars from without during transportation that would tend to fracture the vials or ampules referred to. Nonetheless, there seems to be no proper receptacle, frame or special package available for safely transporting fragile medicinal vials and the like, capable of protecting them from vibration, shocks and jars and preventing shifting or rattling thereof within the package. Of course, various types of packages and packings exist and receptacles in considerable variety, some of them being dependent on the use of excelsior, fibrous material, fabric and other fillers, as well as inserted transverse shelves or buffer boards of corrugated cardboard and the like, but all such packages or packings are more or less makeshift when the present purpose is considered.

Obviously a need exists for a special type of package for receiving sensitive crystal or glass vials, ampules and the like, particularly in view of the fact that these vials or ampules frequently contain valuable and sorely needed serums and other medicinal fluids for combatting serious diseases, epidemics and critical conditions, so that prompt delivery without loss is absolutely imperative and even crucial.

Upon considering this problem it has occurred to me that a special frame or receptacle should be readily available for individually holding a group of vials or ampules firmly in position in safely protected condition for portability and safe transportation and delivery thereof. As a result of such consideration, I have succeeded in producing such a frame or receptacle suitable for insertion into a box or container to retain medicinal vials, ampules and the like firmly yet safely in place without danger of damage occurring in transit, as will now be particularly described,

Hence, in the practice of my invention, and referring again to the drawing, a receptacle or frame, generally indicated at 6 includes a group of pairs of receptacle compartments 7, 8, 9, 10, etc. adapted to receive individually vials, ampules or other objects 11, 11. The compartments are open at the top and bottom and the entire frame or receptacle 6 is adapted to be encased in a box or substantially rectangular container having a conventional bottom and a cover (not shown).

As best seen in Figs. 2, 3, and 5, each pair of adjacent chambers 7 and 8 is formed by a single strip 12 of cardboard, stiff paper or the like, bent to form a main side or wall 13 which virtually constitutes two rigidly aligned first-formed sides 4 and 5 of both compartments 7 and 8, to the outer ends of which are connected the outer compartment sides 14 and 15 at the folds 16 and 17. At the outer ends of sides 14 and 15, the latter are connected at folds 18 and 19 to a pair of compartment sides 20 and 21 which are substantially parallel to the aligned sides 4 and 5 and at the inner ends, these sides or walls 20 and 21 are connected at the folds 22 and 23 with a pair of inner sides 24, 25 which are substantially parallel to the outer sides 14 and 15.

The extremities of strip 12 at 26 and 27 are disposed within compartments 7 and 8, extending from intermediate portions of the wall sections 4 and 5 of side 13 common to both chambers, intermediate portions of the strip at 28 and 29 between the free ends 26 and 27 and the inner sides 24 and 25 being adhesively attached by glue or cement to the main wall 13 to complete both compartments. The mentioned terminals or ends 26 and 27 of the strip form transverse internal walls within the compartments which are capable of flexing outwardly when the ampules or vials 11, 11 are inserted as best seen in Fig. 1, the transverse walls being resiliently yielding and thus serving to wedge the vials into the corners formed by walls 20 and 21 and inner walls 24 and 25 connected thereto. The vials are therefore firmly held against shifting or rattling around in compartments 7 and 8, so that fracture or scratching or any other injury to the ampule or vial caused by any such movement would be prevented.

The first section including the first pair of compartments 7 and 8 formed by strip 12 is conveniently indicated at 30, but the second, third, fourth and fifth sections, indicated at 31, 32, 33 and 34 are mere repetitions of the first section 30 in every detail, as already described in connection with this first section. The second strip 35 from which the second section 31 is formed is also primarily formed into an elongated main wall 30 co-extensive with and attached to the similar wall 13 of section 30, while the extremities 37 and 38 in compartments 9 and 10 form the individual internal transverse walls in the latter compartments of said section 31.

In the latter section, the outer walls 39 and 40 are connected to the main wall 35, while to these outer walls or sides 39 and 40 are connected the two walls 41 and 42 parallel with wall 35 and preferably co-extensively attached or glued to corresponding walls 43 and 44 of the third section 32. This section 32 has the elongated wall 45 thereof co-extensively attached or glued to the corresponding elongated wall 46 of the fourth section 33, while the two walls 47 and 48 of the latter parallel to wall 46 are co-extensively attached to corresponding two walls 49 and

50 of the last section 34. On this section the elongated main wall 51 forms the end wall of the entire frame or receptacle 6, while the two walls 20 and 21 terminate the other extremity of the receptacle.

When the frame 6 is empty, it will normally tend to assume the partly open condition illustrated in Fig. 3, but when the vials and the like are inserted as in Fig. 1, the entire receptacle will assume a rectangular form as shown in said figure.

On the other hand, the receptacle when empty may be collapsed from the more or less expanded condition of Fig. 3 into the substantially flat compact condition shown in Fig. 2, in which it forms a block which occupies a minimum of space for storage.

As shown in Fig. 4, the receptacle or frame is not necessarily built up of pairs of compartments but may consist of a series of single compartments 52, 53, 54, 55, and 56, more or less, each compartment being formed of a single strip, as for example strip 57 upon which one outer end wall 58 forms one terminal of the strip provided with the side wall 59 connected by a fold 60 thereto. The latter side has a further compartment or side wall 61 connected to the same by a fold 62 while a fourth side 63 is connected by a fold 64 to side 61 and is parallel to side wall 59. The outer end wall 58 is parallel to wall 61 and has an intermediate portion 65 of the other end of the strip attached thereto upon the inside of the same, while from the mentioned wall 58, the inner extremity 66 extends from wall 58 toward the corner of compartment 56 formed by sides 59 and 61 to form the internal transverse wall in the compartment.

Wall 61 of compartment 56 is attached co-extensively to the corresponding wall 67 of compartment 55, while the opposite wall 68 of the latter is coextensively attached to wall 69 of compartment 54, and so on through the series, forming a receptacle or frame generally indicated at 70. This receptacle or frame is of course collapsible into compact condition to resemble Fig. 2 and in each compartment, as in frame or receptacle 6 is provided with an internal transverse wall for wedging the vial or ampule 11 firmly in place within each chamber thereof.

While in the foregoing I have stated that a single series or pairs of compartments may be arranged to form a collapsible receptacle or frame for receiving the vial and the like, the number of compartments involved may be varied, and the material of the strip of which the strip is made in each case may likewise be varied, so that other cellulose base materials may be used instead of cardboard and heavy paper.

Manifestly, variations may be resorted to and parts and features may be modified or used without others within the scope of the appended claims.

Having now fully described my invention I claim:

1. A receptacle for the transport of fragile goods, like medicinal vials, comprising a plurality of polygonal compartments forming a framework open at the top and bottom, each compartment having side walls and an inner transversal wall, the said side walls being formed from one single strip of a foldable relatively stiff material bent upon itself so as to form movable joints along the fold lines, and the said transversal wall being constituted by the terminal portion of said strip, the said terminal portion being doubled along a

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portion of the first formed side wall and being adhered thereto along such portion and then being bent inwards and extending loosely into an opposite corner of the compartment.

2. A folding frame or receptacle for fragile goods such as medicinal vials, ampules and the like, capable of being collapsed to form a narrow elongated block, said folding frame or receptacle including a single strip of a foldable relatively stiff material bent upon itself and secured together so as to form a quadrangular compartment and an inner transverse wall, said compartment being open at the top and bottom with adjacent side walls connected by movable joints along the fold lines and opposite side walls disposed substantially parallel; and a terminal portion of the strip being adhered to a limited portion of the first formed side wall and extending from an intermediate portion of the latter side wall loosely toward an opposite corner of the compartment thereby forming said inner transverse wall.

3. A folding frame or receptacle for fragile goods such as medicinal vials, ampules and the like, capable of being collapsed to form a narrow elongated block, said folding frame or receptacle including a plurality of strips of a foldable relatively stiff material and each strip bent upon itself and secured together so as to form a quadrangular compartment and an inner transverse wall, said compartment being open at the top and bottom with adjacent side walls connected by movable joints along the fold lines and opposite side walls disposed substantially parallel; and a terminal portion of each strip being adhered to a limited portion of the first formed side wall and extending from an intermediate portion of the latter side wall loosely toward an opposite corner of the compartment thereby forming said inner transverse wall, the first formed side wall of one compartment being adherently attached co-extensively to the corresponding first formed side wall of the next adjacent compartment, and the side wall opposite the first formed side wall of the latter compartment being adherently attached coextensively to the corresponding side wall of the next adjacent or third compartment opposite said first formed side wall of said third compartment.

4. A folding frame or receptacle for fragile goods such as medicinal vials, ampules and the like, capable of being collapsed to form a narrow elongated block, said folding frame or receptacle including a single strip of foldable relatively stiff material bent upon itself and secured together so as to form two adjacent quadrangular compartments with an inner transverse wall in each, said compartments being open at the top and bottom with the two first formed side walls thereof rigidly aligned and the adjacent side walls of each compartment connected by movable joints along the fold lines and respectively opposite side walls disposed substantially parallel; and the two terminal portions of the strip being individually adhered in said two compartments to limited portions of said first formed rigidly aligned side walls and extending individually from intermediate portions of the latter side walls loosely toward opposite corners of the two compartments thereby forming said inner transverse walls.

5. A folding frame or receptacle for fragile goods such as medicinal vials, ampules and the like, capable of being collapsed to form a narrow elongated block, said folding frame or recepta-

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cle including two strips of a foldable relatively stiff material and each strip bent upon itself and secured together so as to form two adjacent quadrangular compartments with an inner transverse wall in each, said compartments being open at the top and bottom with the two first formed side walls thereof rigidly aligned and the adjacent side walls of each compartment connected by movable joints along the fold lines and respectively opposite side walls disposed substantially parallel; and the two terminal portions of the strip being individually adhered in said two compartments to limited portions of said first formed rigidly aligned side walls and extending individually from intermediate portions of the latter side walls loosely toward opposite corners of the two compartments thereby forming said inner transverse walls, the two rigidly aligned first formed side walls upon one strip being adherently secured co-extensively to the corresponding two rigidly aligned first formed side walls upon the other strip.

6. A folding frame or receptacle for fragile goods such as medicinal vials, ampules and the like, capable of being collapsed to form a narrow elongated block, said folding frame or receptacle including two strips of a foldable relatively stiff material and each strip bent upon itself and secured together so as to form two adjacent quadrangular compartments with an inner transverse wall in each, said compartments being open at the top and bottom with the two first formed side walls thereof rigidly aligned and the adjacent side walls of each compartment connected by movable joints along the fold lines and respectively opposite side walls disposed substantially parallel; and the two terminal portions of the strip being individually adhered in said two compartments to limited portions of said first formed rigidly aligned side walls and extending individually from intermediate portions of the latter side walls loosely toward opposite corners of the two compartments thereby forming said inner transverse walls the two side walls opposite to the two rigidly aligned first formed side walls upon one strip being individually adherently secured co-extensively to the corresponding two side walls upon the other strip which are opposite to the two rigidly aligned first formed sides thereof.

7. A folding frame or receptacle for fragile goods such as medicinal vials, ampules and the like, capable of being collapsed to form a narrow elongated block, said folding frame or receptacle including three strips of a foldable relatively stiff material and each strip bent upon itself and secured together so as to form two adjacent quadrangular compartments with an inner transverse wall in each, said compartments being open at the top and bottom with the two first formed side walls thereof rigidly aligned and the adjacent side walls of each compartment connected by movable joints along the fold lines and respectively opposite side walls disposed substantially parallel; and the two terminal portions of the strip being individually adhered in said two compartments to limited portions of said first formed rigidly aligned side walls and extending individually from intermediate portions of the latter side walls loosely toward opposite corners of the two compartments thereby forming said inner transverse walls, and the two side walls opposite to the two rigidly aligned first formed side walls upon one strip being individually adherently secured co-exten-

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sively to the corresponding two side walls upon the other strip which are opposite to the two rigidly aligned first formed side walls thereof.

8. A folding frame or receptacle according to claim 4, wherein the rigidly aligned first formed side walls from which the inner transverse walls extend are disposed mutually adjacent upon the intermediate portion of the strip.

9. A folding frame or receptacle according to claim 5, wherein the limited portions of the rigidly aligned first formed side walls on each strip from which the inner transverse walls extend are disposed mutually adjacent upon the intermediate portion of each strip involved.

10. A folding frame or receptacle according to claim 6, wherein the limited portions of the rigidly aligned first formed side walls on each strip from which the inner transverse walls extend are disposed mutually adjacent upon the intermediate portion of each strip involved.

11. A folding frame or receptacle according to claim 7, wherein the limited portions of the

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rigidly aligned first formed side walls on each strip from which the inner transverse walls extend are disposed mutually adjacent upon the intermediate portion of each strip involved.

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