

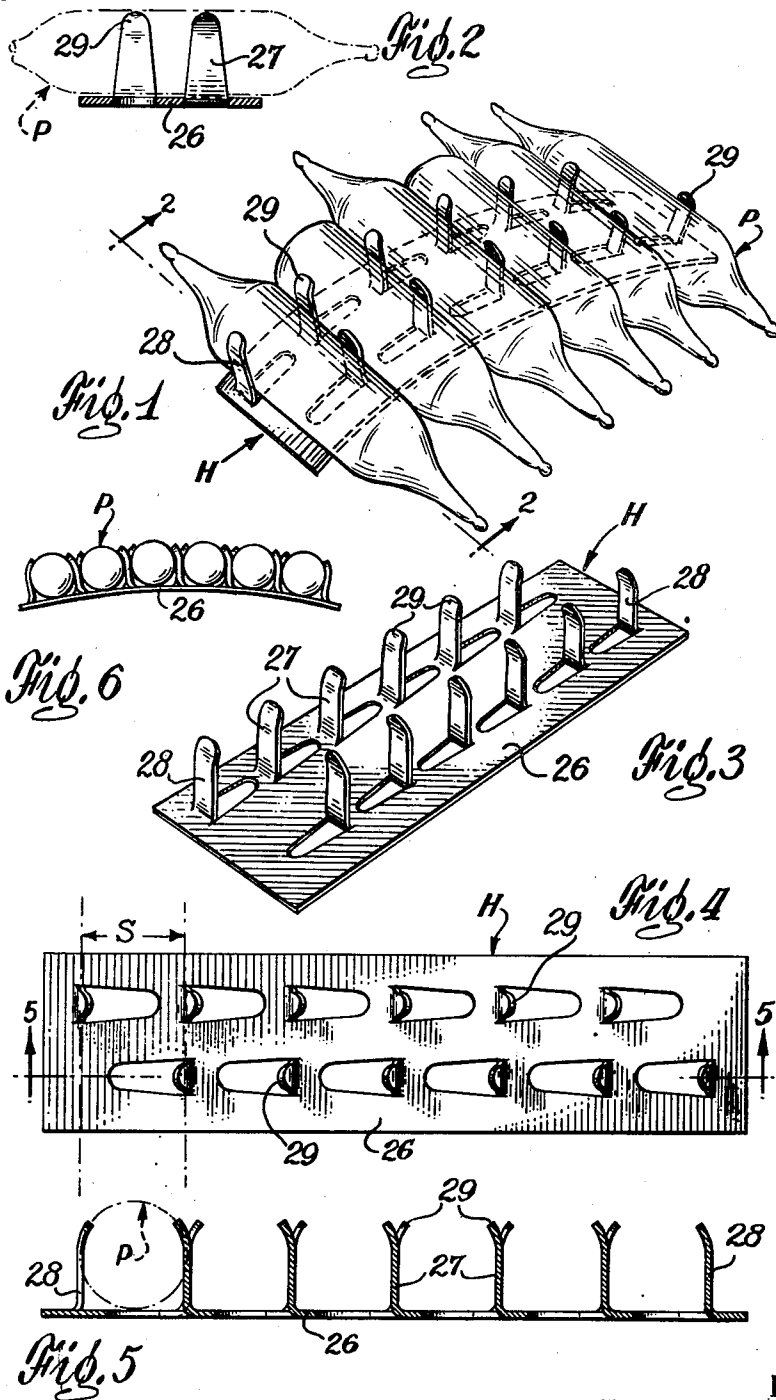
May 27, 1952

J. BOËS
HOLDING AND PACKAGING MEANS
FOR PHARMACEUTICAL PHIALS
AND THE LIKE

2,598,492

Filed May 21, 1949

3 Sheets-Sheet 1



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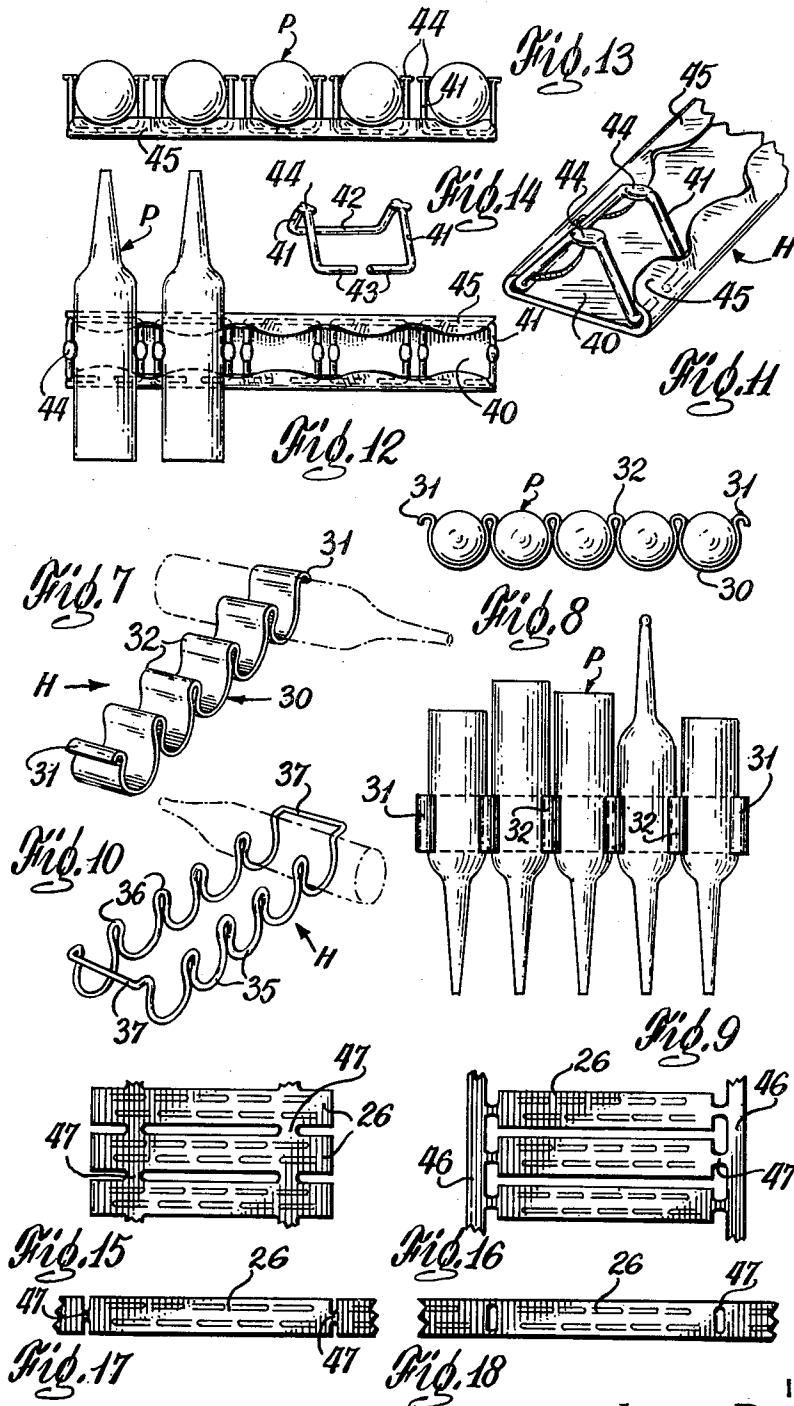
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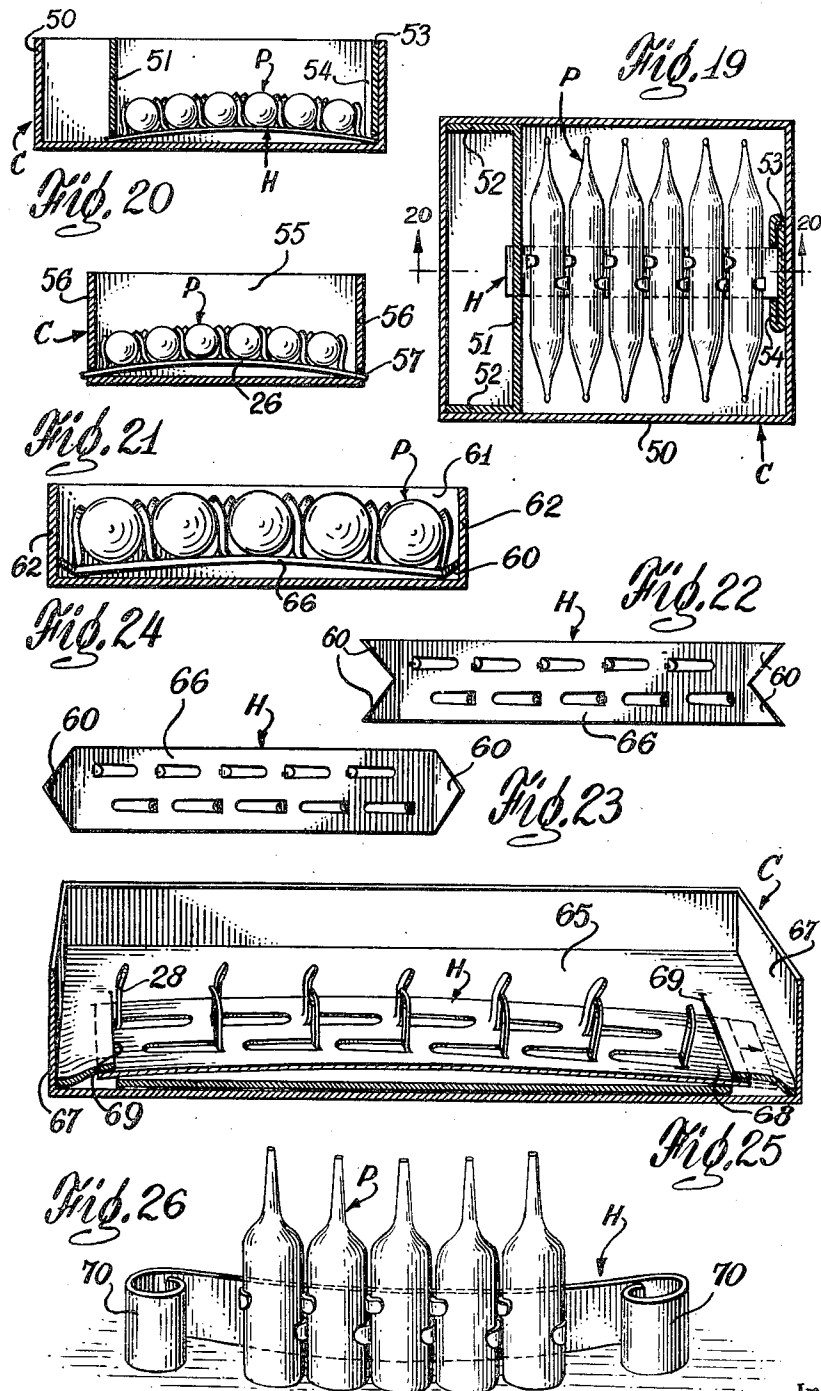
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HOLDING AND PACKAGING MEANS FOR
PHARMACEUTICAL PHIALS AND THE
LIKE

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The present invention relates to holding and supporting means and, more particularly, such means for carrying a number of pharmaceutical, or the like, phials.

The main object of the invention resides in the provision of means for the convenient and improved support of phials during the filling thereof, sealing, sterilization, control, conditioning, transport and, eventually, the resilient mounting in a packing container.

Another object of the invention contemplates a phial support constituted of a single element capable of holding a number of units of various lengths but of substantially constant diameter.

A further object of the invention is the provision of a holder of the character described which is inexpensive, easy to use and make and which is efficient for the purpose in view.

It is a feature of the invention that the phial holder conceived be formed of a single flat strip of essentially rigid material, but elastically constituted, and provided with transverse projections associated in pairs to provide open clamping collars.

As a further characteristic of the invention, it is intended that the collars of the supporting strip be so calculated in size, with respect to the phials diameter, that a slight convex camber be imparted to the assembly. Thus, a number of phials can be held together elastically, in parallel arrangement, and manipulated simultaneously as a unit through the entire process of manufacture.

It is an additional advantage of the invention that the inexpensive holder be used also for holding the phials in their packing box, said invention contemplating also a packing container adapted to hold the phial support in a resilient manner.

Other objects and advantages of the invention will become apparent during the description to follow.

As examples, and for purposes of illustration only, several embodiments of the invention are shown in the annexed drawings, wherein:

Figure 1 is a perspective view of a holder according to the invention, carrying a number of phials;

Figure 2 is a transverse section of the holder taken on line 2—2 of Figure 1;

Figure 3 is a perspective view of the holder proper, without phials;

Figure 4 is a plan view of said holder;

Figure 5 is a sectional elevation taken on line 5—5 of Figure 4;

Figure 6 is an end elevation of the holder as in Figure 1;

Figure 7 is a perspective view of a modified form of supporting strip;

Figure 8 is a side elevational view of such a strip with inserted phials;

Figure 9 is a plan view of the strip of Figure 8;

Figure 10 is a perspective view of a still modified form of the strip of Figure 7, using wire as a forming medium;

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Figure 11 is a fractional perspective view of a further modification of the holder, embodying a rigid base strip with inserted flexible clips forming the phial-receiving collars;

Figure 12 is a plan view of such a holder partly filled with phials;

Figure 13 is an end elevation view of the holder filled with phials;

Figure 14 is a perspective view of the wire clip used for the holder of Figure 11.

Figures 15 and 16 show, in plan views, multiple blanks of the strip of Figure 4, said strips being held together in parallel formation by lateral and end tearing lugs, respectively;

Figures 17 and 18 show, as in the preceding figures, strip blanks in end-to-end arrangement;

Figure 19 shows in plan view a packing container designed to receive the holder of Figure 1;

Figure 20 is a side elevational view through the container taken on line 20—20 of Figure 19;

Figure 21 is another side elevation through a modified form of container;

Figure 22 is a plan view of a strip according to Figure 4 but provided with end claws;

Figure 23 is another form of strip with single end claws;

Figure 24 is a side elevation through a container embodying the strip of Figure 23;

Figure 25 is still a modified form of container for receiving the strip of Figure 3, and

Figure 26 is a perspective view of a strip according to Figure 3 but modified to include rolled ends, whereby said strip can be stood upright during manipulation of the phials and frictionally inserted in a suitable container.

In the drawings, wherein similar reference characters represent corresponding parts throughout, the reference letter H indicates generally, in all modifications, the holder proper, as a unit adapted to receive a plurality of phials.

Similarly, the letter C designates the packing container, in all its forms. The phials are represented by the letter D.

Considering, now, the preferred concept of the invention, namely: the flexible holder of Figures 1 to 5, it is seen that said holder consists of a base strip 26 of any suitable material having inherent rigidity and of a thickness such as to provide the required flexibility and strength for the purpose in view. Consequently, metals, plastics and even stiff paper can be used.

Said strip is of a length such as to accommodate more than one phial in parallel, closely nested position, as shown, the width corresponding substantially to that of the cylindrical portion of the phials.

In any suitable manner, as by punching, a plurality of lugs are struck from the strip proper which, after being bent right-angularly and slightly curved at the end, form the phial-holding fingers 27. Two rows of such fingers are provided, arranged in spaced parallel relation longitudinally of the strip. The fingers of each row

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are substantially aligned transversely with a corresponding finger of the opposite row, to form transverse pairs of fingers defining therebetween spaces S (Fig. 4) slightly, if at all, smaller than the mean diameter of phials to be received therein.

As shown to advantage in Figs. 4 and 5, the curved ends of the fingers, forming lips 29, are all directed in the same direction, in one row, and directed in the opposite direction, in the other facing row. Consequently, each transverse pair of fingers has its lips divergent, that is: oppositely directed, and the fingers of alternate pairs converging together to form phial-receiving collars. So, when the phials are in place, as shown in Fig. 1, the said phials are embraced by alternate fingers in staggered formation.

Therefore, the distance between converging lips is somewhat less than the diameter of a phial, whereby the insertion of a phial in its collar is preferably a sliding action along its longitudinal axis, the loading of the holder H being effectuated in any order.

Since the width of the collars is slightly less than, or at most equal to, the diameter of the phials, it is necessary to exert a certain force thereon: except for the end fingers 28 which can yield sidewise, the intermediate fingers bear against an adjacent phial and, accordingly, are not yieldable. Consequently, the forcing of the phials in their collars results in a slight camber imparted to the strip 26 itself, as illustrated specifically in Figs. 1 and 6, said camber causing the collars to spread open while remaining perpendicular to said strip.

Removal of the phials is effectuated by a simple pulling action, the fingers being then easily opened to allow the phial withdrawal.

Whenever a very elastic metal or plastic is used for forming the strip 26, it is evident that upon removal of the phials said strip will resume automatically its original plane form. In the case of softer metals, or stiff paper, however, the elasticity may be sufficient to insure perfect support of the phials during manipulation and even packaging, although it may not be adequate for re-use of the holder. But since used packages are usually discarded, or disposed of, the lack of elasticity in the holders for re-use is not considered a disadvantage.

A modification of the invention is shown in Figs. 7-8-9 which consists essentially of a long narrow strip 30 of suitable material having suitable elasticity. This strip has a bead 31 at both ends and is bent to assume a generally corrugated shape: the corrugations 31 are cylindrical in form, each constituting a phial-receiving collar open at the top and each connected to an adjacent one by a rolled portion 32, the space between each pair of said portions defining a restricted mouth.

The insertion, or removal, of the phials can be effectuated as follows:

Either by forcing the phial into its corresponding collar,

Or by bending the strip backwards so as to "open" the mouths of the collars and, thereafter, slipping the phials therein.

In any case, when the holder has been filled, the spreading apart of the collars by the slightly larger phials, said holder will be cambered as in Fig. 1, for the same reason.

As an extension of the same modification, shown in Fig. 10, the holder H is formed of a wire bent and rolled to provide collars 35 joined

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by the rolls 33, two of such wire forms being joined together, by crossbars 37, to constitute a rectangular frame having very substantially the same characteristics as the holder of Fig. 7.

Still another modification is shown in Figs. 11 to 14 wherein an essentially rigid base strip 40 is provided with inherently resilient clips adapted to frictionally secure a phial at the middle thereof. Such a clip is shown in Fig. 14 and will be seen to consist of two triangular arms 41 joined together by the base crossbar 42, the free ends of the arms being bent towards each other and parallel to the crossbar, thereby forming the legs 43. The parallel arms 41 define therebetween a collar adapted to receive snugly a phial P, said phial being retained, furthermore, by the side projections constituted by flats 44, made at the apices of the triangles by a simple pressing operation.

As shown to advantage in Fig. 11, the clips are held onto the strip 40, in spaced arrangement, by folding over the bar 42 and legs 43 the marginal side edge 45 of the strip, said edge being rolled around the lower part of the arms to secure same against longitudinal displacement on the strip. Consequently, when the phials are inserted, or removed, the arms are spread apart as the largest diameter of the phials encounters the restricted space defined between the flats 44 of each clip, the natural elasticity of the clips, however, closing the arms against the phials, or to their original position, as the case may be. Obviously, this type of holder is of a more or less permanent nature and may be desirable for specific conditions of manipulation or packaging.

As an example of the manner in which the strips 26 (Fig. 1) may be punched, on a production basis, especially where cheapness is a factor, said strip may be die-cut in parallel, or end-to-end, arrangement in a single blank embodying a great number of said strips. This is shown in Figs. 15 to 18, wherein the strips 26 are held together, or to marginal tapes 46, by means of reduced frangible lugs 47. Thus, any number of strips may be conveniently held together for easier storage and shipping, individual elements being easily separated from the main blank body, as the need arises. Of course, this particular embodiment is specially adaptable to the use of soft metals, plastics and even cardboard, stiff paper and the like pasteboard.

Various forms of packaging are shown in Figs. 19-20-21 and 25, using the holder of Fig. 1. In the form of Figs. 19-20, a box 50 is provided on one side with a partition 51 held to the adjacent sides by the flaps 52. Said partition does not extend quite to the bottom of the box, but is raised slightly therefrom, as shown in Fig. 20, to allow passage thereunder of one end of holder H. The other end of said holder is retained under the lower edge of bracket 53 stuck to the opposite side of the box, said bracket having its vertical ends 54 folded inwardly defining a slot in which the end of the holder is slid and held against lateral displacement. The dimensions of the box are so chosen that the cambered and filled holder may be secured at one end by the bracket and, at the other, by the partition against which the end phial rests. The resiliency of the whole assembly retains the holder securely in place.

In the form of packing container shown in Fig. 21, the dimensions of the box 55 are such that the end phials of the holder contact the sides 56 of the box, slits 57 being formed at the lower edge

of said sides 56 to allow passage of the strip ends. The holder is therefore retained in place, unless the said holder be cambered sufficiently for its ends to be withdrawn from the slits 57.

As a further embodiment of packaging, utilizing a slightly modified holder strip, Figs. 22 and 23 illustrate holders H provided with end claws 60, either single (Fig. 23) or dual (Fig. 22). Said claws are pointed projections formed at the free ends of a strip 66 in all other respects similar to that of Fig. 1. The arrangement of such holders in a container is shown in Fig. 24: the box 61 is only slightly shorter than the strip 66 and, consequently, the points of the claws 60 penetrate superficially the side walls 62. Since the said claws are angularly directed upwardly, they resist successfully any natural tendency of the filled holder to move upwardly, while entering the box readily from above.

Another form of packaging container is shown in Fig. 25 wherein a holder H is secured to the bottom of a box or, preferably, to an auxiliary bottom sheet 65 in which spaced parallel slits 69 are made near the opposite sides 67 of the box. A holder of the type shown in Fig. 1 has its ends inserted in said slits, one of said ends 68 extending a longer distance than normal from the end finger 28. This end 68 is first inserted in one slit 69 and pushed until the other end of the strip is in position to enter the other slit 69: the holder is then withdrawn from the first slit until the end finger 28 of the strip abuts against the edge of said first slit. The holder is thus held securely in place if the slits have been properly spaced apart.

A final embodiment of the holder H is depicted in Fig. 26: this holder is similar to that of Fig. 1, with the exception of the rolled ends, forming cylinders 70, of a size such as to allow the strip to stand edgewise. In this position, the phials are displayed and held in vertical position for filling, inspecting, labelling, etc. operations. Numerous advantages may accrue from this manner of mounting the phials: advertising displays can be easily arranged, manipulation in manufacture greatly simplified and certain processing steps rendered feasible thereby, such as the automatic flame-sealing of the phials by conveying same, in upstanding position, under a sealing header. The packaging of such holders is easily visualized, also, by using the natural resiliency of the cylinders 70 to hold the assembly in a container, such as that of Fig. 24.

From the foregoing, it should be evident that the present invention is an advance in the art of manipulating, holding, displaying and packaging pharmaceutical phials, or the like cylindrical bodies.

Notwithstanding the fact that the invention provides phial-holding means which are extremely economical, nevertheless said means constitute improved supports facilitating handling during manufacture, representing a saving of labour and time, and having enhanced advertising and packaging possibilities, while being extremely versatile in applications.

It must be understood that various changes as to the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention, or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A phial holder comprising a resilient elongated base strip, a plurality of phial-clamping fingers struck from, and integral with, the base

strip and extending perpendicularly therefrom, said fingers being disposed in longitudinal rows and aligned transversely in spaced pairs, and curved lips formed at the ends of the fingers, said lips all being directed one way in one row of fingers and directed in the opposite direction in the other row, the fingers in any longitudinal rows being spaced such a length as to be outwardly urged upon insertion of a phial therebetween, said insertion causing said base strip to assume cambered position.

2. In phial-holding and packaging means, a parallelepipedic container, an elongated narrow strip of flexible material held in cambered position within said container, upstanding fingers projecting from said strip in transversely aligned pairs defining phial-receiving collars, claws at the ends of said strip superficially penetrating the inside of the container, and phials held side by side on each side of said fingers and transversely of said strip.

3. In phial-receiving means, a resilient elongated normally flat base strip, a plurality of phial-clamping fingers, said fingers being struck from, and integral with, the base strip to extend perpendicularly therefrom, said fingers being disposed in longitudinal rows and aligned transversely in pairs to define transverse phial clamping collars on each side of said fingers, the spacing between two adjacent fingers in a longitudinal row being of a length slightly smaller than the width of said phials so that said fingers are urged outwardly upon insertion of said phials therebetween, said insertion causing said resilient base strip to assume a cambered position.

4. In phial-receiving means as claimed in claim 3, claws at the ends of said strip for superficially penetrating the inside of a container.

5. In phial-holding means, as claimed in claim 4, said claws upwardly inclined to facilitate insertion of said strip into said container but to prevent its removal therefrom.

6. A phial holder comprising in combination a container, an elongated narrow strip of flexible resilient material held in cambered position within said container, upstanding fingers projecting from said strip in longitudinal rows and in transversely aligned pairs, a cylindrical phial received between each successive pair and transversely of said strip the longitudinal spacing between each said successive pair being less than the diameter of said phials to cause said cambered position of said strip upon insertion of said phials between said pairs of fingers, and upwardly inclined claws at the ends of said strip superficially penetrating the inside of the container.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
D. 118,045	Ignall et al.	Dec. 12, 1939
450,858	Zan	Apr. 21, 1891
593,312	Schandein et al.	Nov. 9, 1897
664,475	Graves	Dec. 25, 1900
832,086	Schweitzer	Oct. 2, 1906
884,315	Carroll	Apr. 7, 1908
1,688,983	O'Keefe	Oct. 23, 1928
1,932,353	Pfueger	Oct. 24, 1933
1,953,627	Overholtz	Apr. 3, 1934
2,076,941	Farr	Apr. 3, 1937
2,280,003	Pearson	Apr. 14, 1942