

[54] CORNER SUPPORT STRUCTURE AND CAP MEMBER UTILIZED IN CONNECTION WITH SAME

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[21] Appl. No.: 155,164

[52] U.S. Cl. 403/217, 403/247, 403/263, 403/319, 403/355, 403/375, 403/376, 211/177

[51] Int. Cl. F16b 7/04

[58] Field of Search 287/20.92 C, 20.92 D, 287/54 A, 54 B, 54 C, 53.5, 20.924, 20.925, 20.926, 20.927, 189, 36 C; 312/111, 140, 257, 263, 264, 265; 211/177, 182; 248/165; 52/301, 665; 403/247, 263, 319, 355, 375, 376

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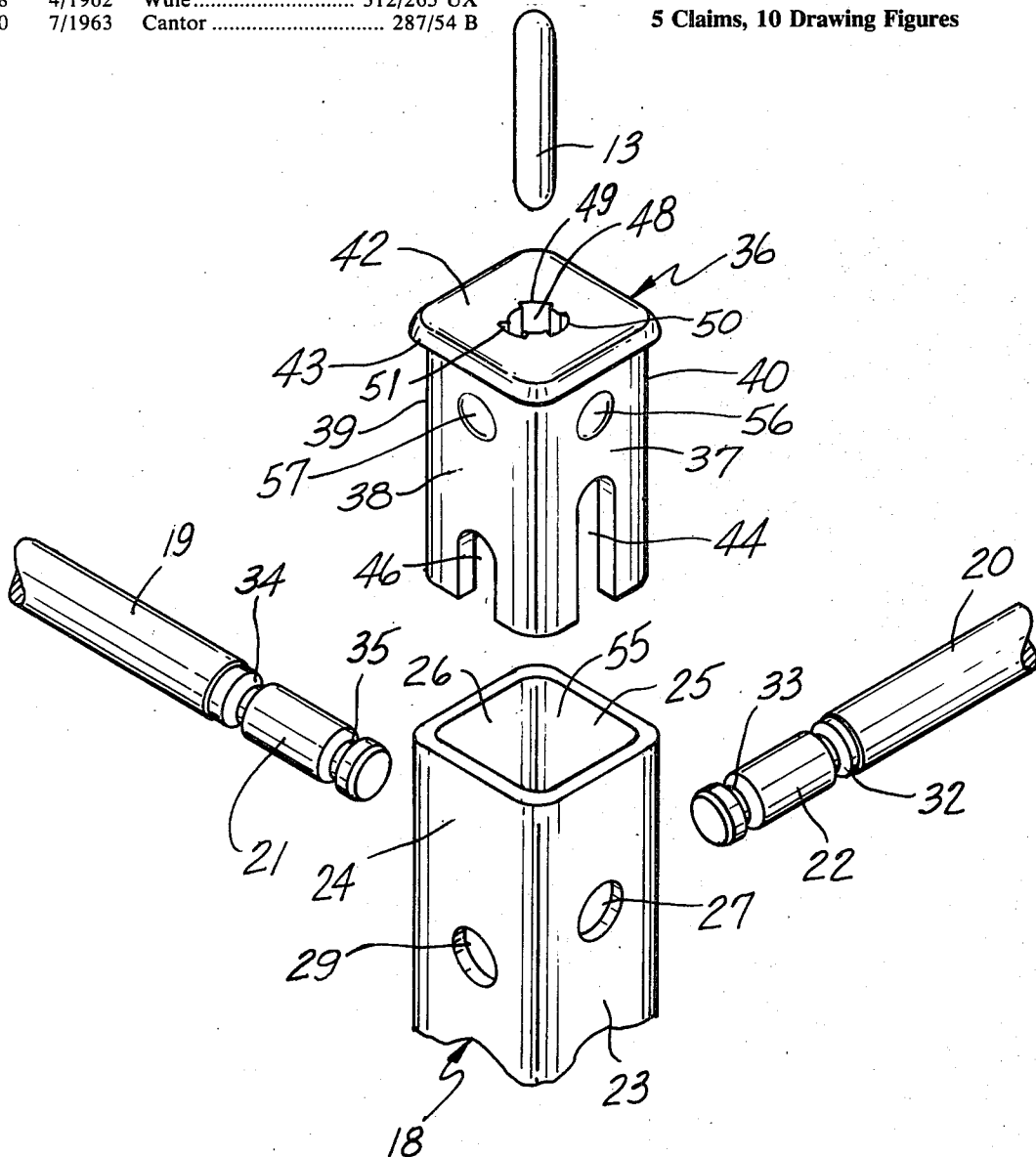
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[57] **ABSTRACT**

A corner support structure is shown which includes a hollow upstanding post which is provided with a plurality of angularly disposed lateral openings there-within, one above another. Within each of the openings the end portion of an outwardly extending member is disposed. A cap is disposed within the post and overlies the outwardly extending members. The cap has securing means therewithin to hold the extending members in position. The cap is preferably made of a machineable resilient plastic material and has an outwardly laterally extending top portion and an open bottom. The cap is provided with a downwardly depending opening within the top portion and also has a plurality of downwardly depending peripheral spaced openings adjacent the first-named downwardly depending opening.

5 Claims, 10 Drawing Figures



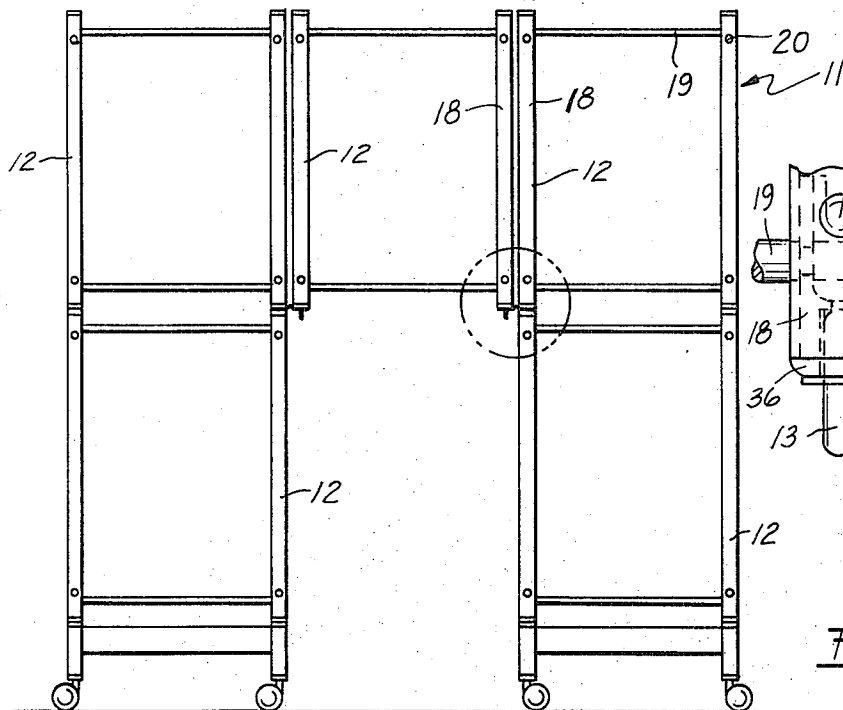


FIG. 1

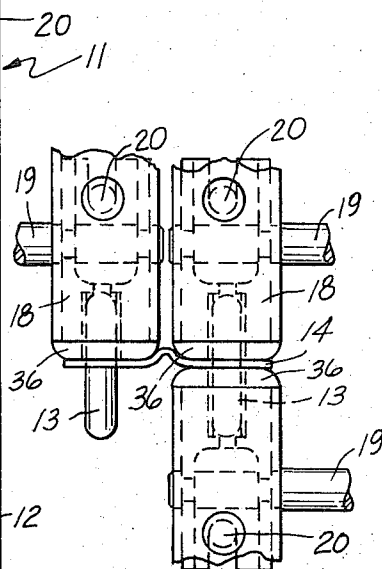


FIG. 2

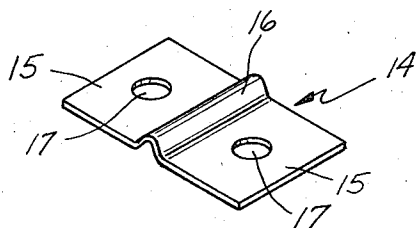


FIG. 3

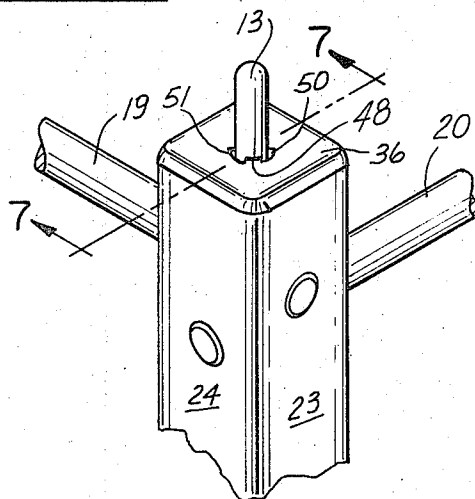


FIG. 4

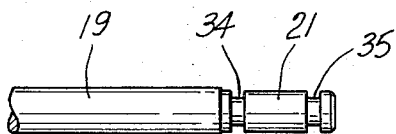
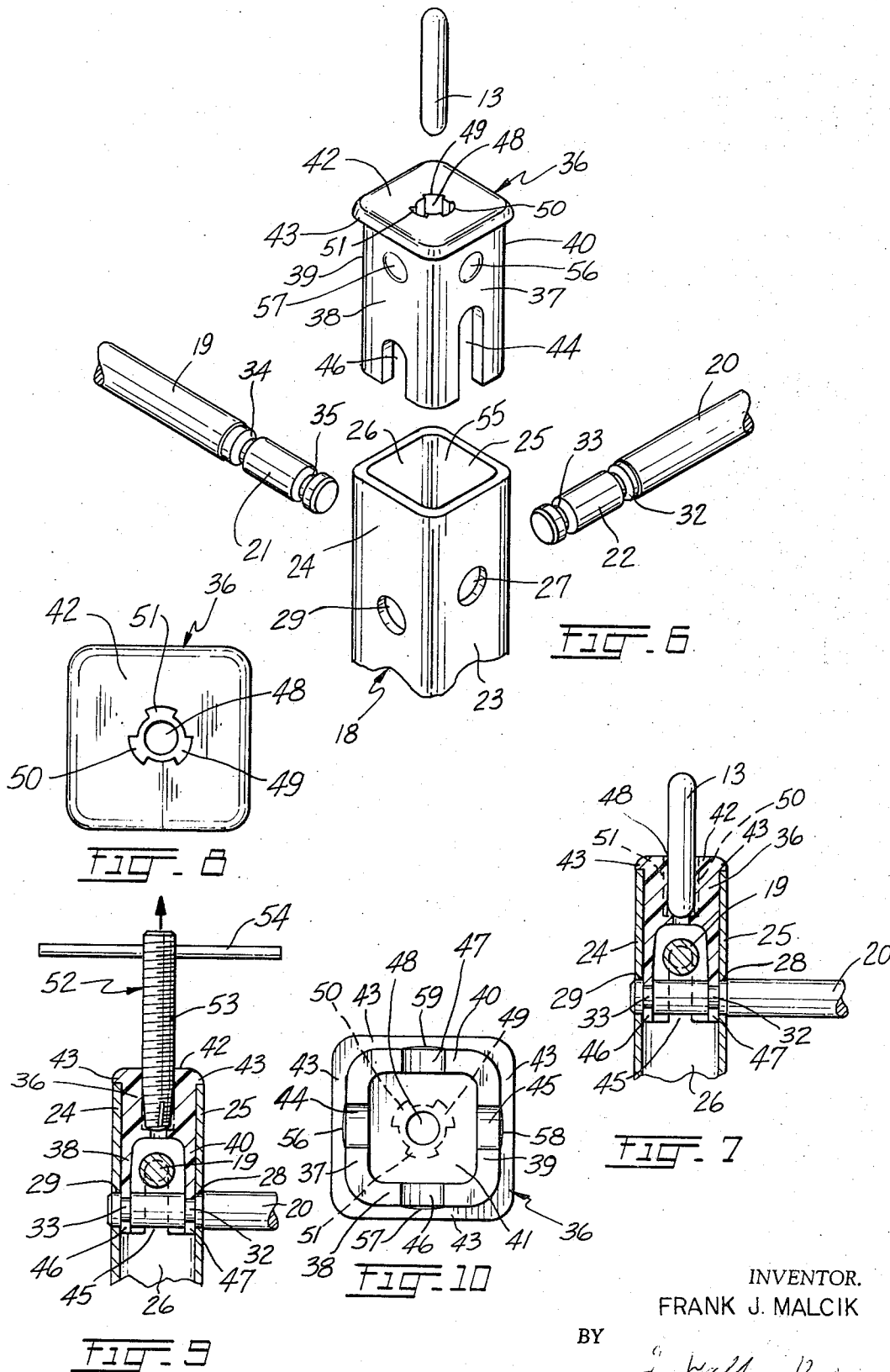


FIG. 5

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CORNER SUPPORT STRUCTURE AND CAP MEMBER UTILIZED IN CONNECTION WITH SAME

DESCRIPTION OF THE INVENTION

This invention relates to a corner support structure and a cap member utilized in connection with the same. The structure is particularly useful in connection with the Support Device for Record Elements invented by this inventor together with Edward Whittemore and John Clark, the said Support Device for Record Elements being the subject of patent application Ser. No. 141,183, filed May 7, 1971, now abandoned and a continuing patent application Ser. No. 280,116, filed Aug. 14, 1972, now pending.

In the structure of the pending patent application it is necessary to provide structure to support the end portions of the outwardly extending members upon which the hanging files are disposed. The structure of the present application constitutes an improvement over the structure shown in the pending patent application.

In providing supporting structure for the outwardly extending members upon any post to which they are secured it is necessary to permit simple assembly and disassembly of the parts. Since the posts and members are designed for sectional use they must be conveniently assembled and disassembled. The structure of this application permits this to be done simply and rapidly.

The structure of this invention is also relatively inexpensive to manufacture, and simple and foolproof in operation.

The above constitutes the principal objects and advantages of this invention. Other objects and advantages of this invention will become apparent to the reader of this specification as the description proceeds.

A brief description of this invention will now be given. In connection therewith and with the detailed description of this invention, there is incorporated by reference the specification of the previously mentioned Malcik, Whittemore and Clark application.

The invention herein is in two parts, the first being the corner support structure which includes a cap member and the second being the cap member itself. Both structures are separately claimed in this application.

The corner support structure of this invention includes, in combination, an upstanding hollow post (preferably rectangular) having an open top and provided with a pair of angularly (preferably right-angularly) disposed openings passing therethrough. One of the laterally disposed openings is above the other opening. An outwardly extending member is disposed within each of the openings and a cap member having a downwardly depending portion is disposed within the post. The downwardly depending portion of the cap member overlies the outwardly extending member and secures it into position.

In the preferred modification of this invention the cap is also formed with an outwardly extending lateral portion and provided with a downwardly depending opening within its top.

The cap itself is preferably made of machineable plastic material and integrally molded. It is preferably made of a hollow rectangular body having four sides,

an overlying closed top and an open bottom. Each member of each pair of oppositely disposed sides is provided with a slot extending upwardly from the bottom thereof with the slots within one pair of opposite sides being deeper than the slots within the adjacent pair of opposite sides. In order to permit simple removal of the cap when required the preferred modification also includes a downwardly depending opening within the top of the cap and an additional plurality of spaced peripheral downwardly depending openings adjacent the first-named downwardly depending opening.

The invention will now be further described by reference to the accompanying drawings which are made a part of this specification.

FIG. 1 is a side elevational view of a modular file support including the corner support structure of this invention.

FIG. 2 is an enlarged side elevational view of the abutting and secured corner portions of a plurality of modular file elements composing the support of FIG. 1.

FIG. 3 is an isometric view of a clip member that can be used to secure adjacent file elements to one another.

FIG. 4 is a detail isometric view of a corner support made in accordance with this invention.

FIG. 5 is a detail side elevational view of an end portion of an outwardly extending member of this invention.

FIG. 6 is an exploded isometric view of the corner support structure of this invention showing the parts thereof.

FIG. 7 is a fragmentary cross-sectional view of the corner support structure of this invention taken along lines 7-7 of FIG. 4.

FIG. 8 is a top plan view, on an enlarged scale, of the cap member of the corner support structure of this invention.

FIG. 9 is a view similar to FIG. 7 but showing the convenient manner in which the cap member of this invention can be removed from the remainder of the structure if desired.

FIG. 10 is a bottom plan view, on an enlarged scale, of the cap member of the invention.

The invention will now be described in detail by reference to the specific form thereof as shown in the accompanying drawings. In this connection, however, the reader is cautioned to note that such specific form of this invention, as set forth in the specification herein, is merely for illustrative purposes and for purposes of example only. Various changes and modifications could obviously be made within the spirit and scope of this invention. The specific description set forth herein represents the best mode known to the inventor of taking advantage of his invention.

A modular file support 11 consists of a plurality of modular elements 12. Each element 12 is secured to one another by means of a pin 13 and, in some cases a clip 14. The clip 14, where used, has a pair of opposite leaves 15 joined together with a V-shaped bridge portion 16 with each of leaves 15 provided with an opening 17 therewithin. The modular file support itself is described and claimed in the patent application previously referred to.

Each modular element 12 consists of a plurality of upstanding posts 18 to which are secured at least one

pair of angularly disposed outwardly projecting members 19 and 20. Members 19 and 20 are secured within a post 18 by their end portions 21 and 22. Members 19 and 20 are preferably round in cross-section and each of posts 18 are preferably formed of rectangular sides 23, 24, 25 and 26.

Opposite sides 23 and 26 and opposite sides 24 and 25 are formed with a pair of laterally aligned openings (preferably round) 27, 28, 29 and 30. Openings 29 and 28 are laterally aligned with one another and openings 27 and 30 are also laterally aligned with one another.

End portion 22 of outwardly projecting member 20 is disposed within aligned openings 28 and 29. End portion 22 is formed with spaced depressed portions 32 and 33 which are respectively adjacent openings 28 and 29. Similarly end portion 21 of outwardly projecting member 19 is disposed within openings 27 and 30 with depressed portions 34 and 35 adjacent openings 30 and 27 respectively.

A cap 36 is disposed within the open top portion of post 18 and is formed with four rectangular sides 37, 38, 39 and 40. Side 37 is formed with slot 44, side 38 is formed with slot 46, side 39 is formed with slot 45 and side 40 is formed with slot 47. Slots 44 and 45 and slots 46 and 47 are laterally aligned with one another and slots 44-45 are deeper than slots 46-47. A top 42 is provided upon cap 36 and is formed with a laterally projecting portion 43. The bottom of cap 36 is open at 41 and a downwardly depending opening 48 is provided within top 42. A plurality of spaced peripheral openings 49-51 are provided adjacent opening 48 and also extend downwardly. The sides 37-40 of cap 36 also bears rounded laterally and outwardly projecting portions 56-59 thereupon. Each portion 56-59 extends outwardly from the respective side a distance of from 0.001 inches to 0.01 inches. Portions 56-59 aid in retaining cap 36 in position upon the respective post.

With the foregoing specific description the operation of this invention will now be explained.

In the normal operating position of this invention the parts assume the configuration shown in FIG. 4. In this configuration members 19 and 20 are at right angles to one another with member 19 overlying member 20 at the end portions 21 and 22 thereof. Cap 36 is disposed within the open top 55 of the post 18 with the portion 43 of cap 36 retaining the cap in position. Slots 47 and 46 embrace depressed portions 32 and 33 of member 20 and slots 44 and 45 embrace depressed portions 35 and 34 of member 19. Since members 19 and 20 are in overlying position slots 44-45 are deeper than slots 46-47 and the difference in depth is made substantially equal to the overlying distance between members 19 and 20. The opening 48 in cap 36 is made substantially equal to the thickness of pin 13 and, in the preferred modification of this invention, where the cap 36 is made of a flexible and resilient plastic material such as polyethylene, polypropylene or other similar material opening 48 is made slightly smaller.

It is noted that the structure defined herein is extremely strong and will withstand a considerable force

without deformation. Accidental disassembly is practically impossible.

However, under certain conditions, such as shipment of the device or for other reasons it may be necessary to disassemble the device. Because of the constructions of the parts without the special provisions made herein, it would be normally impossible to easily remove cap 36 from post 18 without damage to the parts. However, the disassembly can be done by removing pin 13 by a plier tool or the like and then utilizing a self-tapping device 52 having a handle 54 and a thread tapping portion 53. After removal of pin 13 the portion 53 is placed within opening 48 and rotated. Simple tapping of threads will occur primarily because of openings 49-51 adjacent opening 48 which relieves the tapping pressure and provides a space for the tapped material to be displaced. After portion 53 had been secured to cap 36 upwardly directed pressure on cap 36 will cause it to be removed from post 18 and the other parts can now be simply and easily disassembled. Re-assembly of the parts is likewise simple. The end portions 21 and 22 of members 19 and 20 are placed within the openings 27-30 and 28-29 with the depressed portions 35-34 and 32-33 adjacent the respective openings. The cap 36 is then inserted into the open top of post 18 and moved downwardly until stopped. The parts will now be secured into position.

The foregoing sets forth the manner in which the objects of this invention are achieved.

I claim:

1. A corner support structure comprising, in combination, an upstanding hollow post having an open top and provided with at least two pairs of angularly disposed lateral openings passing therethrough, one pair of said openings being above the other pair of said openings, an outwardly extending member disposed within each pair of said openings with each member having a pair of spaced depressions, each of said depressions being adjacent a side of said post, and a cap member having a downwardly depending portion disposed within said post, the downwardly depending portion including pairs of opposing slots being angularly disposed one to the other and slidingly engaged with pairs of spaced depressions on the outwardly extending members.

2. A structure of claim 1 in which said outwardly extending members are cylindrical in cross-section and said lateral openings are round.

3. A structure of claim 1 in which the body sides are integral with the body top, and said body being made of a machineable plastic material.

4. A structure of claim 1 in which the cap member includes a hollow rectangular body having four sides, an overlying top and an open bottom, each pair of oppositely disposed sides provided with a slot therewithin extending upwardly from the bottom, the slots within one pair of opposite sides being deeper than the slots within the adjacent pair of opposite sides.

5. A structure of claim 4 wherein the overlying top extends laterally outwardly and downwardly.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,837,754

Dated September 24, 1974

Inventor(s) Frank J. Malcik

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Front page:

Second column, in the Abstract, line 12, after the word "bottom." the following sentence was left out --The lateral openings of the cap are within the sides.--.

In the Claims:

Claim 1, line 10, "portion" should read --position--.

Signed and sealed this 11th day of March 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks