Jan. 6, 1959 C. C. MORRISON 2,867,348

CONTAINER

Filed March 24, 1955 2 Sheets-Sheet 1

FIG. 1.

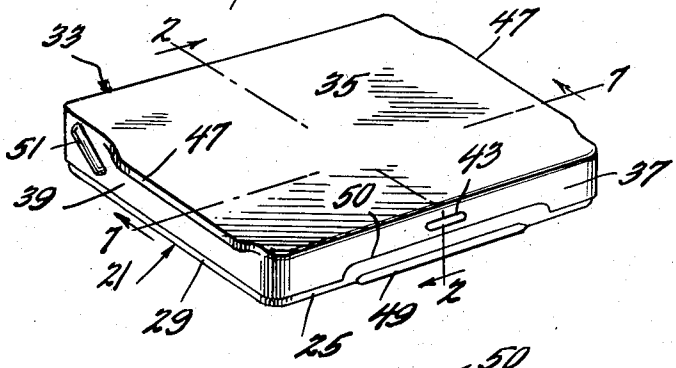


FIG. 2.

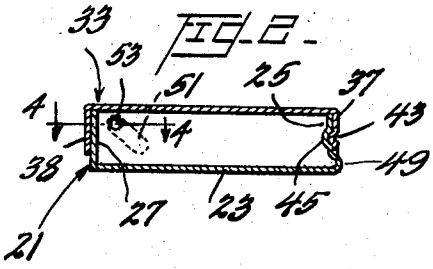


FIG. 3.

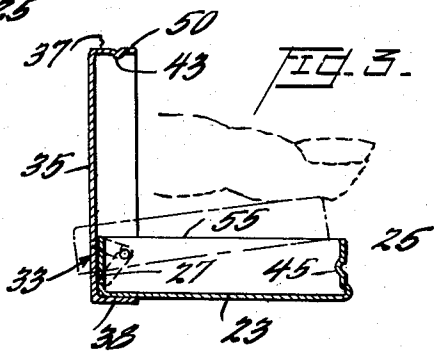


FIG. 4.

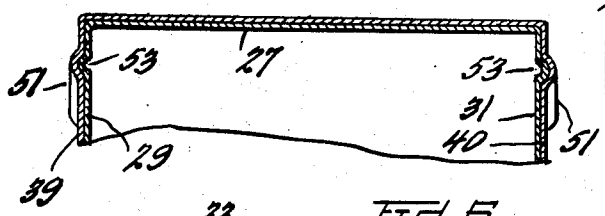


FIG. 5.

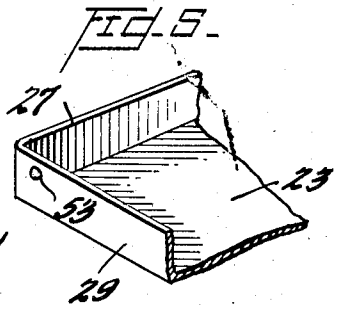
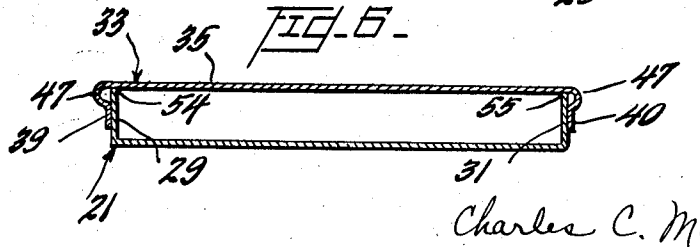


FIG. 6.



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Jan. 6, 1959 C. C. MORRISON 2,867,348

CONTAINER

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FIG. 7.

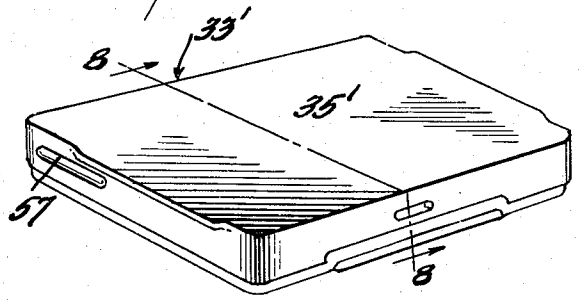


FIG. 8.

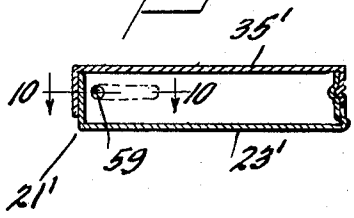


FIG. 9.

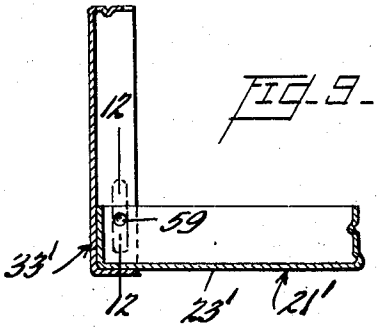


FIG. 10.

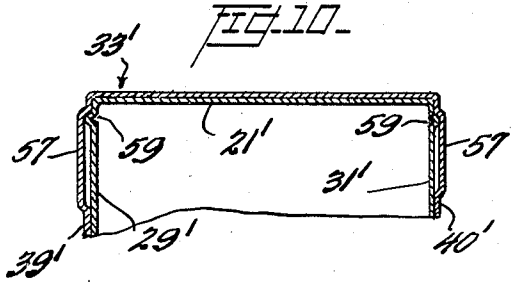
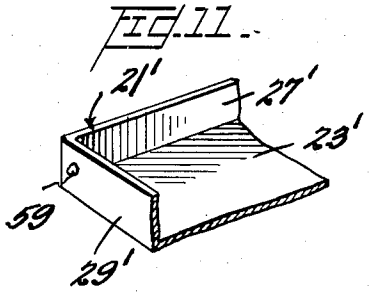


FIG. 11.



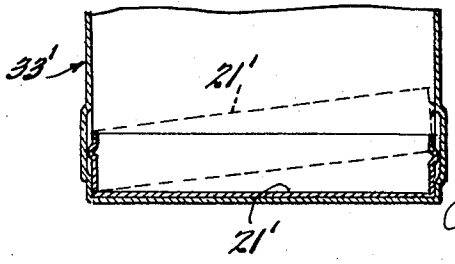


FIG. 12.

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2,867,348

CONTAINER

Charles C. Morrison, Little Neck, N. Y., assignor to F. N. Burt Company, Inc., Buffalo, N. Y., a corporation of Delaware

Application March 24, 1955, Serial No. 496,531

4 Claims. (Cl. 220—31)

This invention relates to improvements in the art of containers and is more especially concerned with an improved two-part rectangular container of the type having a lower section formed with upstanding side walls and an upper section formed with a downwardly dependent skirt, the skirt overlapping in normally closed position, at least in part, with the lower section side walls and the upper and lower sections being pivotally connected together.

The invention has particular utility when applied to pocket-size containers constructed of deformable sheet material, such as thin sheet metal, which containers are commonly used for the reception of small articles, such as pills, tablets and the like, although the scope of its application is by no means restricted to this narrow field. It provides certain advantages when adopted in connection with any container of the general type described regardless of whether the container is made up of metal, plastic or other known material and irrespective of the intended purpose of the container. To simplify and facilitate the description of the invention, however, such description will be confined to the pocket-size pill container.

For many years, these containers were constructed in the simplest form, with a friction catch provided on the side opposite to the hinge connection and a small projection or recess formed in the lower section below the friction catch and accessible from the exterior. The procedure normally employed in opening such a container was to hold, or try to hold, with the fingers of one hand the skirt of the upper section along two of its sides while engaging the projection or recess on the other section with the thumb or fingernail of the other hand and prying the two sections apart. This procedure was frequently exasperating because of the tightness of the friction catch and the difficulty in effectively engaging the small projection or recess.

Recently, in an attempt to eliminate this difficulty in opening the container, there has been adopted the principle of fulcrum opening. In accordance with this principle, a fulcrum point is provided on two sides of the lower section forward of the pivotal connection; pressure applied to the two sections rearwardly of the fulcrum points causes the top section to pivot about the fulcrum points, disengaging the friction catch. Many variations employing this principle have been suggested; all have and must have two common features: first, a fulcrum point and, second, the rear portions of the two sections must be capable of assuming a position of lesser overall vertical dimension than that existing when the box is in normally closed position. In some cases, these features have been achieved by forming the upper section with a greater vertical dimension than usual and interposing a fulcruming means between the plane of the top horizontal wall of the upper section and the horizontal plane of the upper edges of the upstanding side walls of the lower section; in others, by cutting away the rear portions of the skirt of the upper section and the wall

of the lower section. In the latter cases, to permit the rear portions to be compressed together, a yieldable wire hinge was sometimes employed as the pivotal connection, as was a "lost motion" mating node and recess formed on the respective sections.

While these arrangements were functionally successful in facilitating the opening of the container, this improvement in function was at the expense of the production cost of the container and its esthetic appeal from the standpoint of design. For example, the use of a wire hinge increases the unit production costs appreciably, almost to the point where containers embodying this feature are non-competitive. In the case of containers of increased vertical dimension, additional material is required to permit this increase and, in addition, the upper edge of the sides of the skirt must be deformed to provide the necessary fulcrum, which deformation must extend along a major portion of the length of each side if the upper section is to seat satisfactorily against the top edge of the side walls of the lower section. In the case of containers with the "cut-away" rear end, the rear wall of both sections must be approximately one-half of the height of the remaining walls, with the side walls of the lower section inclined upwardly from a correspondingly reduced height at their point of juncture with the rear wall to normal height at about the fulcrum point, and with the side walls of the upper section increasing to normal height much more sharply. Also, it is the usual practice in the latter case to slightly relieve or cut away the front corners of both sections, as well, and to bend the upper marginal portion of the front wall of the lower section toward the rear, these expedients apparently being desirable, if not essential, if the front skirt wall of the upper section is to properly clear the front wall of the lower section during opening and, particularly, closing. Such trimming away of portions of the sides requires separate operations with special equipment and increases the production costs.

In design, these changes have detracted from the straight unbroken lines of the original container, either by interrupting these lines with unattractive depressions and the like or by changing them into irregular curves which have little appeal to the consumer.

It is therefore evident that while the adoption of the "fulcrum" principle may have solved the problem of opening containers of the type defined, it has given rise to other problems of no less serious proportions, e. g., the problems of maintaining manufacturing cost at a minimum and of providing a container having sound design appeal to the consumer.

The present invention represents a departure from the fulcrum principle and is, in the basic sense, an improvement on the original design of the class of containers under discussion. It has for its primary object the provision of a rectangular container which is relatively easy to open, inexpensive to manufacture, and which is provided with pivotal means connecting the two sections, the pivotal means during opening and closing being operative to automatically clear the rear skirt wall of the upper section for swinging movement about the lower rear corner edge of the lower section.

A further object of the invention is to provide a rectangular container including an upper and lower section, pivotally connected together, the respective sections having downwardly and upwardly extending walls along all four sides, which walls overlap, at least in part, when the container is in normally closed position, an outwardly projecting rib or bead being formed on the lower marginal portion of the front wall of the lower section and on each of the two side walls which are adjacent the corresponding front wall of the upper section, the ribs extending over a substantial portion of the length of the respective walls.

Another object of the invention is to provide a rectangular two-part telescoping container having a manually engageable opening rib extending along a substantial portion of each of the two side walls of the upper section and the front wall of the lower section, the two sections being pivotally connected together at the rear of their side walls, the pivotal connection taking the form, in one embodiment, of an elongated depression inclined downwardly and forwardly from rear to front on one of such sections and a node or trunnion on the other of the sections mating with the depression and, in another embodiment, of an elongated depression extending parallel to the planes of the top and bottom walls of the container provided on one of the sections and a point trunnion on the other section, mating with the depression.

Other objects and advantages will be apparent from the following detailed description when read with the accompanying drawings, in which:

Figure 1 is a perspective view of one embodiment of the invention, with the container in closed position;

Figure 2 is a transverse cross-section taken along line 2—2 of Figure 1;

Figure 3 is a transverse cross-section similar to Figure 2 but with the container in open position;

Figure 4 is an enlarged fragmentary section looking down along lines 4—4 of Figure 2;

Figure 5 is an enlarged fragmentary perspective of a rear corner of the lower section, showing the point trunnion of the pivotal connection;

Figure 6 is a longitudinal cross-section taken along line 6—6 of Figure 1;

Figure 7 is a perspective view of another embodiment of the invention, with the container in closed position;

Figure 8 is a transverse cross-section taken along line 8—8 of Figure 7;

Figure 9 is a transverse cross-section similar to Figure 8 but with the container of Figure 7 in open position;

Figure 10 is an enlarged fragmentary section looking down along line 10—10 of Figure 8;

Figure 11 is a fragmentary perspective of a rear corner of the lower section of the container of Figure 7; and

Figure 12 is a partial vertical section taken along line 12—12 of Figure 9.

Turning now to a detailed description of the invention, in Figures 1–5 the numeral 21 designates the lower section of the container which is of generally rectangular configuration with rounded corners, having a bottom wall or floor 23, upstanding front and rear side walls 25 and 27, respectively, and upstanding left and right side walls 29 and 31, respectively, when viewed from the front. The upper section 33 takes the same configuration as that of lower section 21 but is slightly greater in longitudinal and transverse dimension. Upper section 33 includes a top wall 35, downwardly dependent front and rear side walls 37 and 38, respectively, and downwardly dependent left and right side walls 39 and 40, respectively, when viewed from the front. The side walls of the upper section all together are commonly known as a skirt. Each of the upper and lower sections is normally constructed as an integral unit with each of the side walls connected to the top or bottom wall and to the side walls adjacent thereto. For practical reasons as will hereinafter appear, the vertical dimension of the container is limited and is preferably of a lower order of magnitude than the longitudinal and transverse dimensions so that the container as a whole is of "pancake" or "wafer-like" appearance.

The upper and lower sections are secured together adjacent the rear corners of their left and right side walls by means of a pivotal connection, which will be described in detail shortly, and the two sections are adapted to be held together in normally closed position by a friction latch, ordinarily taking the form of a lug 43 pressed out of the front wall of one of the sections and a mating recess 45 provided in the front wall of the other section. When the container is in normally closed position, the upper section fits over the lower section as a cover therefor, the skirt of the upper section overlapping, at least in part, with the upstanding side walls of the lower section, as is clearly apparent in Figures 2 and 6.

To enable upper section 33 to be grasped and held during opening, left and right side walls 39 and 40 of upper section 33 are each provided with an outwardly directed wing or rib 47 projecting exteriorly from the plane of the side walls and parallel to the plane of top wall 35. Preferably, the ribs are disposed adjacent the junction of top wall 35 and the side walls in order that the curve of the rib may flow or merge smoothly into the plane of the top wall. The length of the ribs should be substantial although the actual length will be primarily dependent upon the dimensions of the particuar container to be manufactured. Thus, with a container of the pocket-size variety designed for use with pills or tablets, the ribs will extend along a major portion of the transverse dimension of the container and will be slightly longer than the width of the average human finger tip. For larger containers, the length will be greater, permitting engagement by two or three fingertips, as desired. In any event, the projections 47 are not merely small lugs, but are well defined ribs of substantial length compared to the transverse dimension of the container. It is desirable that the ends of the ribs taper smoothly into the plane of the side walls.

Manual engagement of lower section 21 during opening is effected with the aid of an outwardly directed bead or rib 49 formed in front wall 25 of lower section 21 adjacent the lower edge thereof, the rib preferably merging smoothly into the plane of bottom wall 23 and tapering at its ends into the plane of the front wall. The length of front bead is also substantial and should be at least equal to the width of the average thumb-tip. As the front bead is ordinarily engaged only by the thumb-tip or thumb-nail regardless of the size of the container, in most cases it is not necessary to vary its length for different size containers. If the extent of the skirt is such as to interfere with easy access to rib 49, the lower medial portion of front wall 25 may be relieved slightly, as at 50.

Containers in which the sections pivoted together at the rear of their side walls differ from containers in which the sections are merely hinged together at the edges of the rear walls in that, in opening, the inner, i. e., lower, section must shift forwardly with respect to the other section, assuming, of course that the container is open to such an extent that the front wall of the lower section clears the front wall of the upper section, in order that the lower back corner edge of the lower section may clear the rear wall of the upper section during the pivotal opening movement. Consequently, a node or trunnion and elongated recess union is essential with containers connected in this fashion.

There is disclosed in Figures 1–5 one embodiment of a node and elongated recess union which offers particular advantages when employed in the present invention. In accordance with this embodiment, an elongated recess is provided on the rear corner of the left and right side walls of either of the upper and lower sections, which recess is inclined forwardly and downwardly in the direction of rear to front, and a node or trunnion is formed adjacent the terminal edge of the side walls of the other section, the node projecting into and engaging with the recess. By "terminal edge" is meant that edge of the side walls which does not join directly with the top or bottom wall, as the case may be. As specifically shown in the drawings, recesses 51 are pressed out from the side walls 29 and 31 while the nodes 53 are pressed out from the side walls 39 and 40 adjacent the edges 54 and 55. The benefit afforded by this arrangement, apart from the fact that it permits the sections to clear during opening, is that the inclination of the ribs brings the two sections into proper alignment or registration during closing.

Hence, in the event the two sections are brought together during closing in such a way that the front wall of the upper section does not clear the front wall of the lower section but rather contacts the forward part of the side wall edges, as shown in dotted lines in Figure 3, application of a moderate degree of pressure by the opposed fingers between which the sections are held causes the upper section to move forward and snap into place. This is due to the fact the closing pressure applied downwardly and upwardly by the fingers is resolved by the inclination of the recess into a horizontal as well as a vertical component, which horizontal component acts to bring the sections into proper alignment. This closing action is effective virtually without regard to the point at which the closing pressure is applied. It may be pointed out the arrangement just described would not be inoperative on containers employing the fulcrum principle since these containers, of necessity, pass during closing through a position at which the rear portions of the two sections are closer together vertically than in normally closed position, after which position the rear portions move apart so that the sections would be urged into misalignment rather than alignment. The degree of inclination of the recess may, of course, be varied, although at lesser inclinations the horizontal component decreases. An angle of about 45° is preferred. For best results, at least the forward portion of the terminal edge of the lower section should be free of irregularities and roughness which might prevent or resist free forward movement of the upper section when its forward edge is in contact with the forward edge of the lower section.

A second form which the node and elongated recess pivotal connection may take is illustrated in Figures 6–10. The basic elements of the container incorporating this alternative arrangement are identical to those of the container described in connection with Figures 1–5 and a detailed discussion of the modified container is deemed unnecessary. Where reference to parts of the basic elements is required for a full understanding of the modified concept, prime designation will be used. The alternative arrangement contemplates the provision of an elongated recess **57** on each of the side walls **39'** and **40'** of the upper section **33'**, which recess is parallel to the planes of top wall **35'** and bottom wall **23'** and a node or trunnion **59** on each of the side walls **29'** and **31'** of lower section **21'** engaging with the corresponding recess **57**. The length of the recess is substantially greater than the length necessary for clearance between the respective rear walls of the two sections during opening and closing, in other words, greater than a distance slightly in excess of the dimension between nodes **57** and the rear corner edge of rear wall **27'** of lower section **21'**.

The purpose of the unusually long recess is to permit easy dis-assembly of the upper and lower sections. Containers of the type defined are produced in large volume and must therefore be adapted for manufacture, assembly and filling by automatic machinery. It is therefore advantageous for the two sections to be capable of assembly both easily and quickly. Furthermore, under some conditions, the consumer may prefer to detach the upper cover section from the lower section and such detachment should be capable of being effected without permanent distortion of the elements of the container or the use of an undue amount of force. These objects are realized in the alternative form of pivotal connection. By virtue of the lengthened recess, the inner section can be tilted about one side edge to a position at which the nodes are disengaged from their corresponding recesses, as shown in Figure 12. In this position, the lower section separates from the upper section by merely moving them apart without the use of any force whatsoever and without springing the side walls from their normal parallel position.

Reference has already been made to the desirability of confining the use of the node and recess pivotal connection to containers having a vertical dimension of low order of magnitude as compared with the other dimensions thereof. This is due to the necessity of the rear of the upper section clearing the rear of the lower section and ultimately fitting around the rear of the lower section. Where the container is relatively deep, the recess must become relatively longer and the clearing action more difficult.

Smooth relative movement between the nodes and recesses without binding is a requisite characteristic of either embodiment of the invention and to this end the recesses should be slightly deeper and wider than the nodes by which they are engaged. The formation of the various ribs, recesses and nodes is within the skill of the art. Where sheet metal is the material involved, expanding dies are ordinarily used; in the case of plastics, these components may be cast as a part of the section with which they are associated.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A shallow rectangular container of sheet material comprising a body member and a cover member, each having front, rear, and side walls integrally formed with a top and bottom wall, respectively, the rear wall and the immediately adjacent sections of the side walls of the body member having a portion equal in height to the maximum height of the remaining sections of said side wall, said cover member fitting snugly over the body member with its front, rear, and side walls overlapping, at least in part, the corresponding walls of the body member with the edges of portions of the body walls of maximum height abutting the top wall of the cover member, a pivotal connection between the members to permit relative swinging movement thereof about a horizontal axis adjacent said rear walls, which connection consists of mating nodes and elongated recesses formed in the side walls of the two members adjacent the rear walls thereof, said recesses each extending from a point adjacent the rear end of the upper edge of a side wall of the cover member forwardly towards the front end and downwardly to a point adjacent the lower edge of said side wall, and said nodes being each located adjacent the rear end of the upper edge of a side wall of the body member, whereby when said container is open said nodes are positioned adjacent the lower ends of said recesses and the application of pressure to the members to close the container moves the nodes towards the upper ends of the recesses, thereby guiding the members into proper closing alignment, said nodes being positioned adjacent the upper ends of the recesses when the container is closed.

2. The container of claim 1 wherein said members include opposing external projections which are adapted to be engaged to facilitate opening thereof.

3. A generally shallow rectangular container comprising a body member and a cover member, each having substantially rectangular front, rear, and side walls with corresponding edges at one end of said side walls being connected to end edges of the front wall and corresponding end edges at the other end of said side walls being connected to the edges of the rear wall, the upper edges of the respective cover member walls being connected to the edges of a top wall with the lower edges of said cover member walls being unconnected, the lower edges of the respective body member walls being connected to the edges of a bottom wall and the upper edges of said body member walls being unconnected, the rear wall and immediately adjacent sections of the side walls of the body member having at least a portion thereof equal in height to the maximum height of the remaining sections of said side walls, said cover member being adapted to fit snugly over the body member with its front, rear and side walls overlapping, at least in part, the corresponding walls of the body member and with the unconnected edges of the walls of the respective members in mutually opposed relationship; and a pivotal connection between the mem-

bers to permit relative swinging movement thereof about an axis perpendicular to the side walls consisting of mating pairs of nodes and elongated recesses formed in the side walls of the two members adjacent the rear walls thereof, one of said elongated recesses extending in each of the side walls of one of said members from adjacent the upper edge of said side wall at the rear end portion thereof downwardly and forwardly towards the front end of said wall to adjacent the lower edge thereof, and one of said nodes being located in each side wall of the other member adjacent the unconnected edge thereof, whereby when the container is closed the relative movement of the nodes within the recesses brings the two members into proper closing relationship.

4. A generally shallow rectangular container comprising a body member and a cover member, each having substantially rectangular front, rear, and side walls with corresponding edges at one end of said side walls being connected to end edges of the front wall and corresponding end edges at the other end of said side walls being connected to the edges of the rear wall, the upper edges of the respective cover member walls being connected to the edges of a top wall with the lower edges of said cover member walls being unconnected, the lower edges of the respective body member walls being connected to the edges of a bottom wall and the upper edges of said body member walls being unconnected, the rear wall and immediately adjacent sections of the side walls of the body member having at least a portion thereof equal in height to the maximum height of the remaining sections of said side walls, said cover member being adapted to fit snugly over the body member with its front, rear and side walls overlapping, at least in part, the corresponding walls of the body member and with the unconnected edges of the walls of the respective members in mutually opposed relationship; and a pivotal connection between the

members to permit relative swinging movement thereof about an axis perpendicular to the side walls consisting of mating pairs of nodes and elongated recesses formed in the side walls of the two members adjacent the rear walls thereof, one recess in each side wall of one of said members, said recess being inclined at an angle of approximately 45° relative to the plane of the rear wall of said member and extending from one end, which is adjacent said rear wall and nearer the upper edge of said side wall, to the other end, which is spaced from said first-mentioned end forwardly towards the front wall and downwardly adjacent the lower edge of said side wall, and a node in each side wall of the other of said members, said node being located adjacent the unconnected edge of said side wall whereby when closing pressure is applied to said sections, said recesses act as a cam for said nodes and bring the members into proper position with the cover member overlapping the body member.

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