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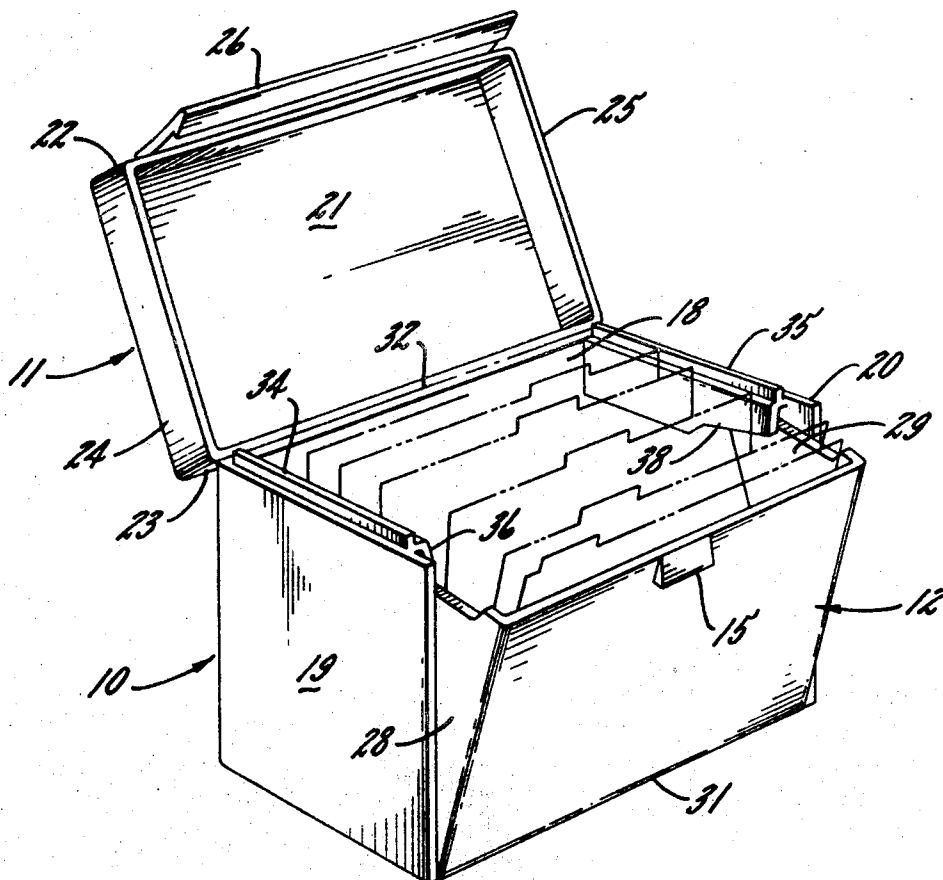
[54] **CARD FILES WITH A DROP FRONT**
8 Claims, 11 Drawing Figs.

[52] **U.S. Cl.**..... 220/31 S

[51] **Int. Cl.**..... B65d 51/04,
B65d 43/16

[50] **Field of Search**..... 220/29, 31
SR, 31 S; 206/44 B

ABSTRACT: A filing case is formed as a unitary resilient, or flexible, plastic structure. A forward-swinging or dropfront panel is released when the filing case is opened, thereby making the contents readily accessible. All components of the case, including cover, panel, and hinges, are molded as an assembled structure from one mass of resilient plastic material. The cover and front panel are each formed in an open position so as to bias these elements in that position.



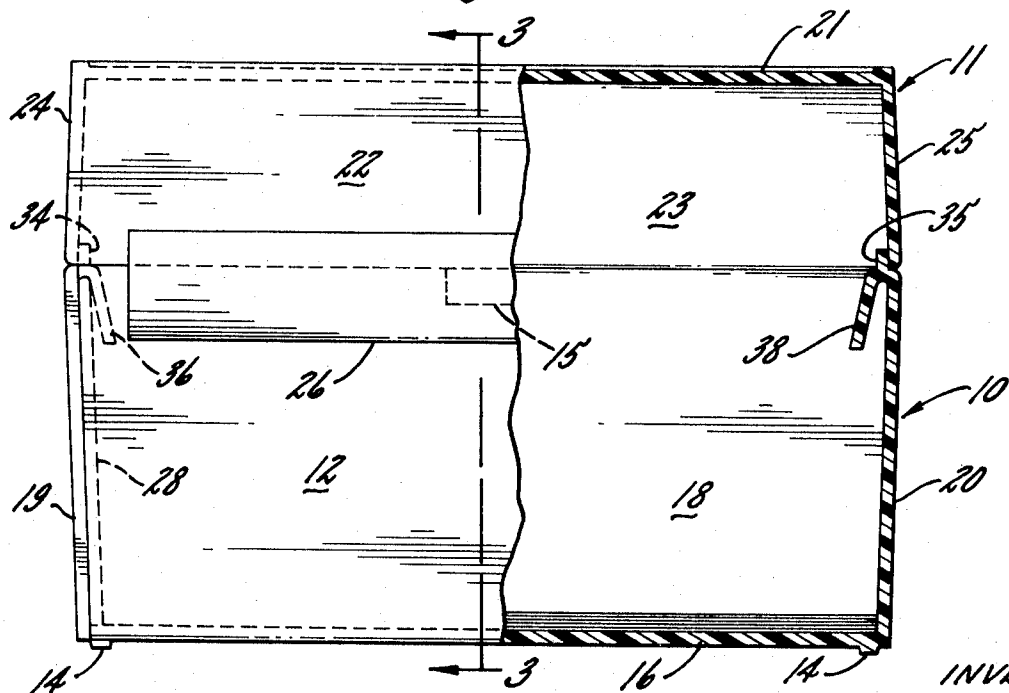
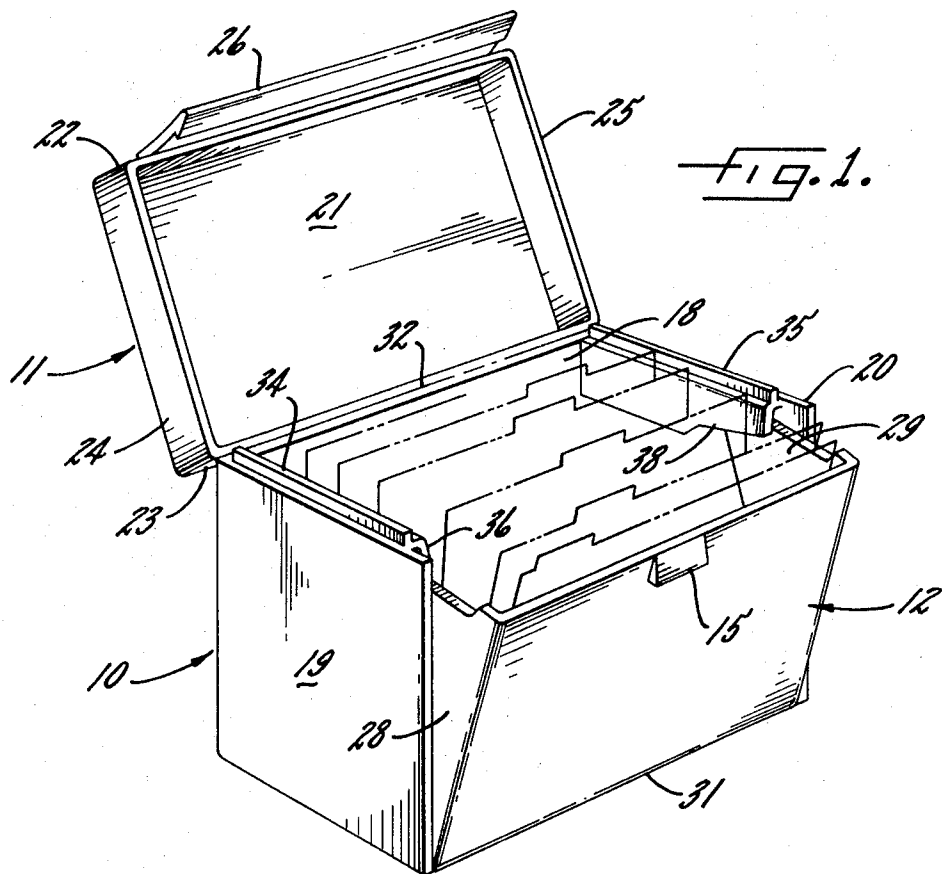


FIG. 2.

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Fig. 3.

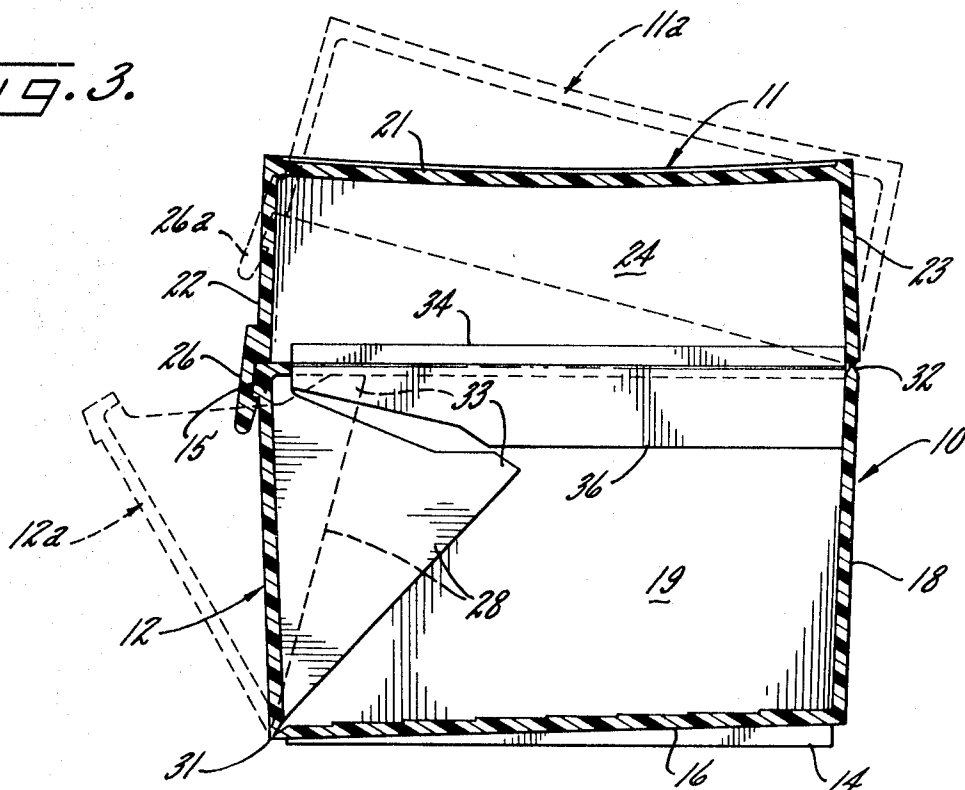


Fig. 4.

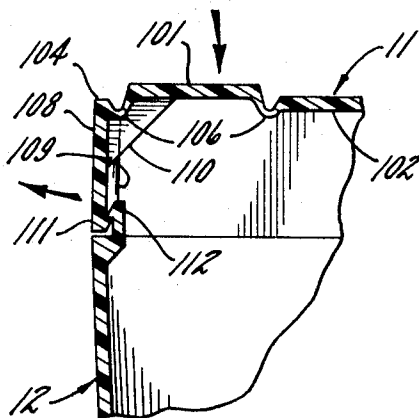
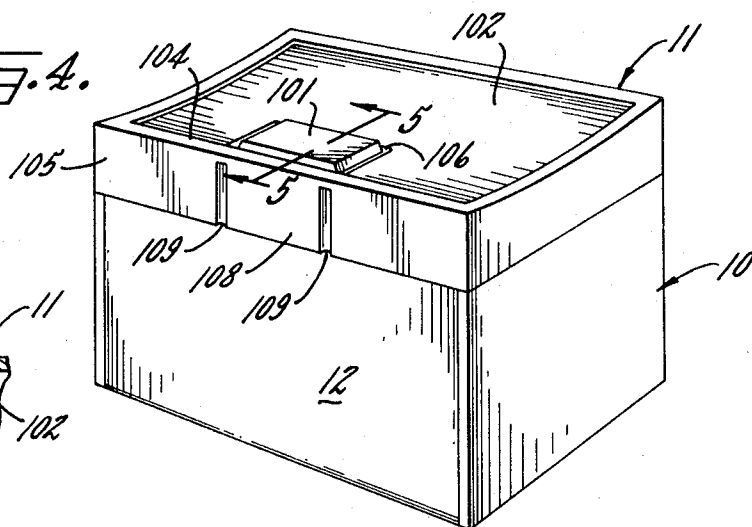


Fig. 6.

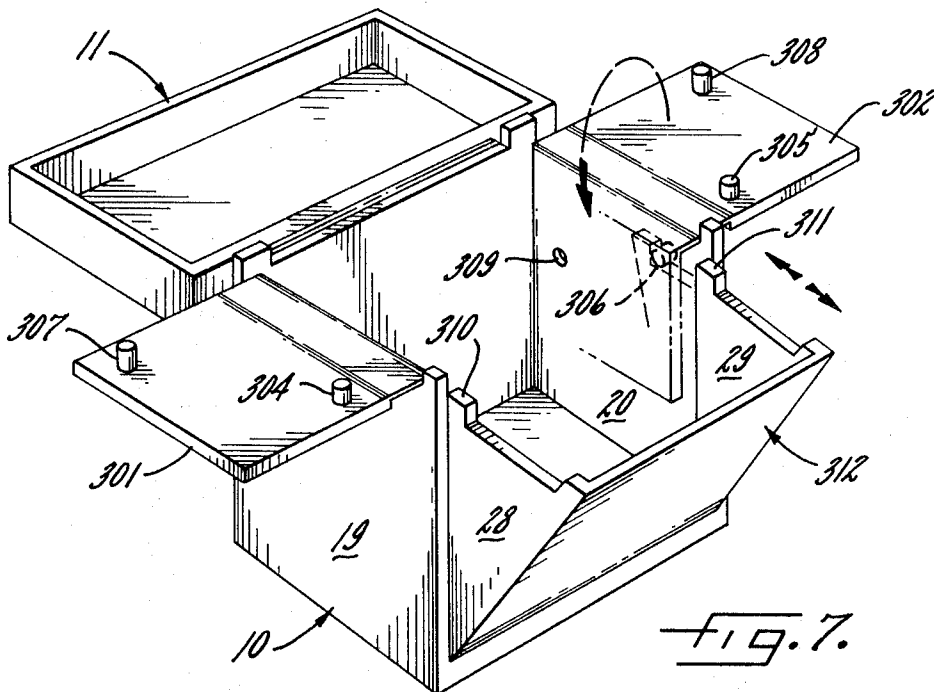
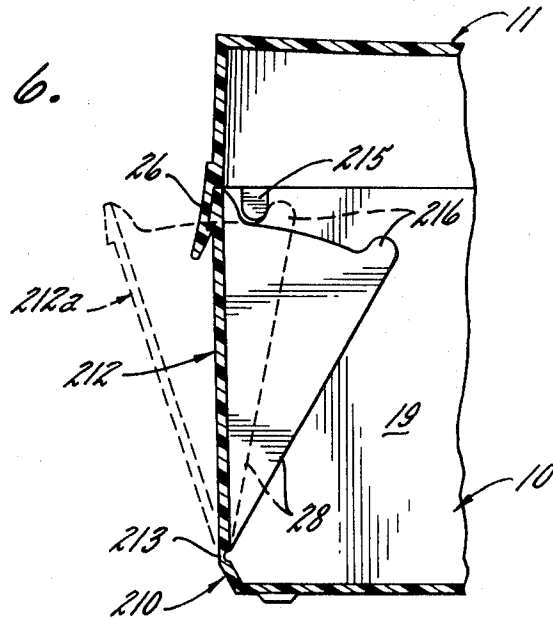
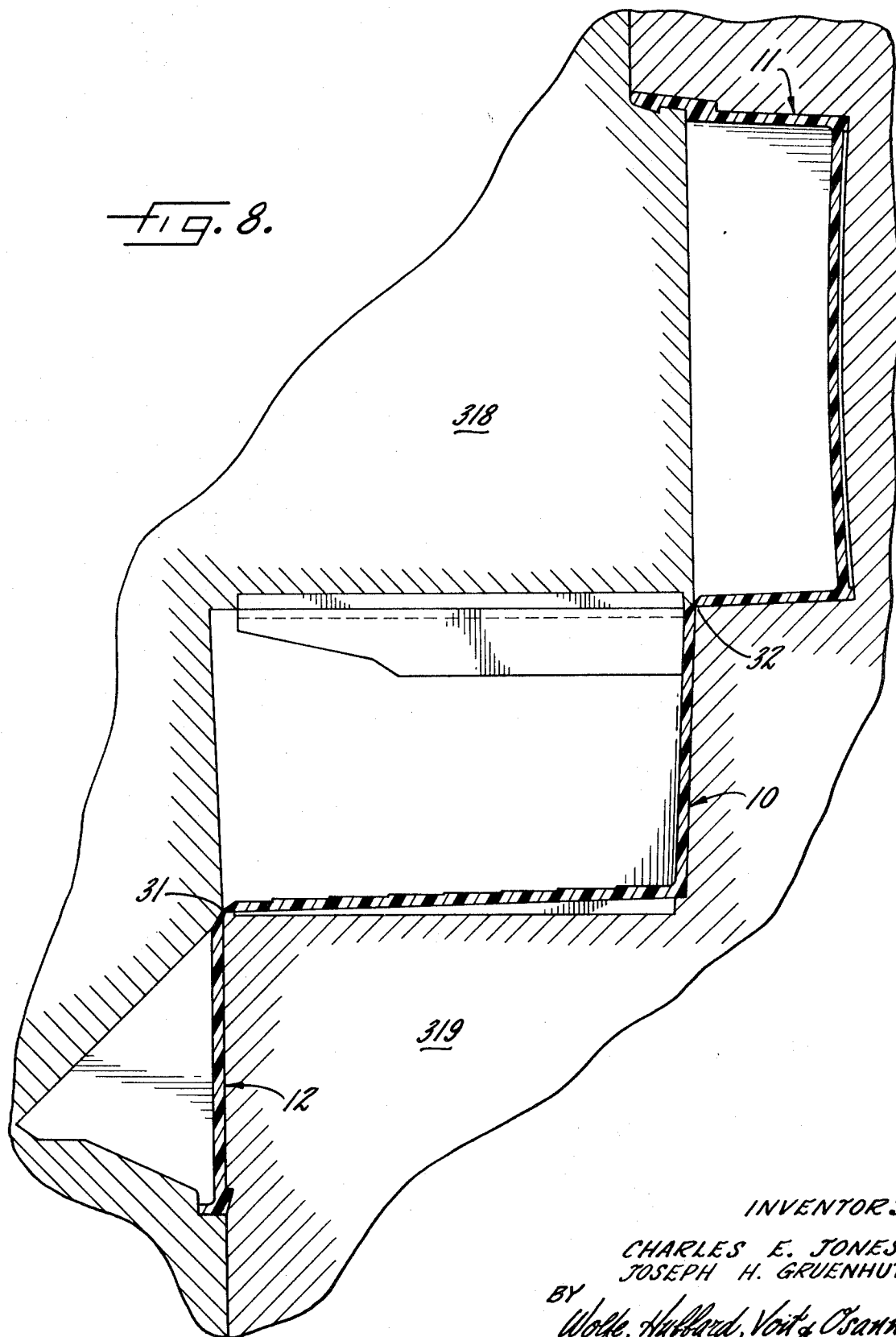


Fig. 7.

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Fig. 8.



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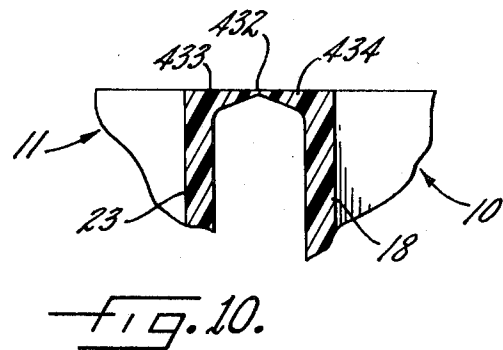
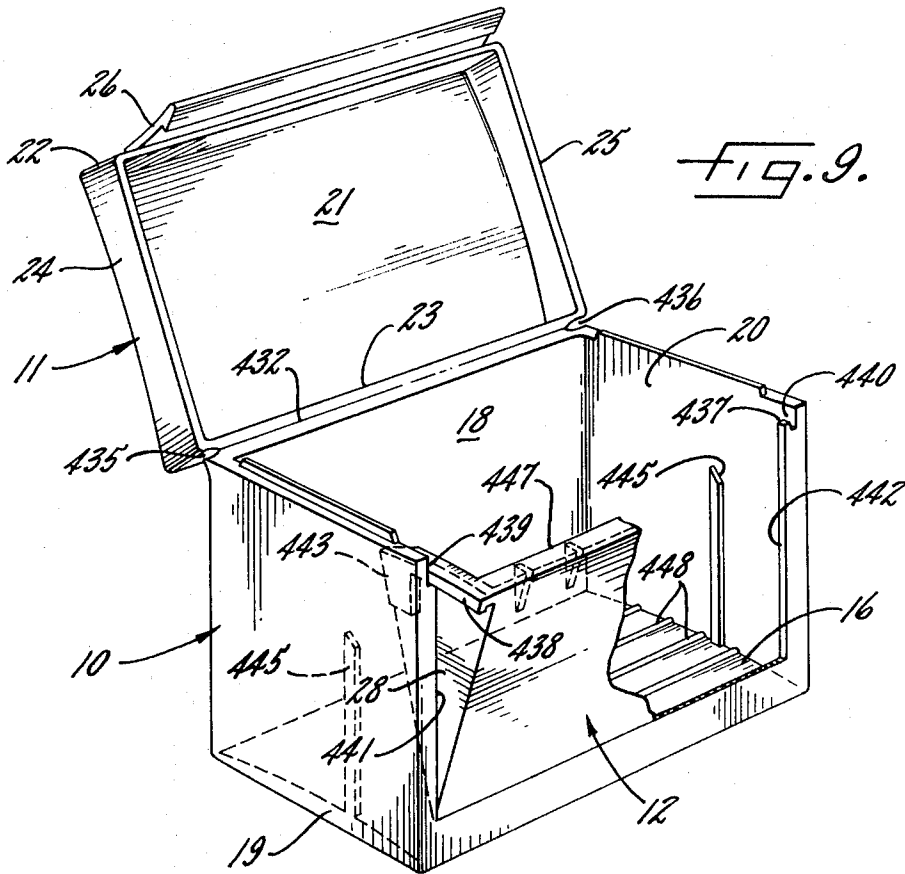
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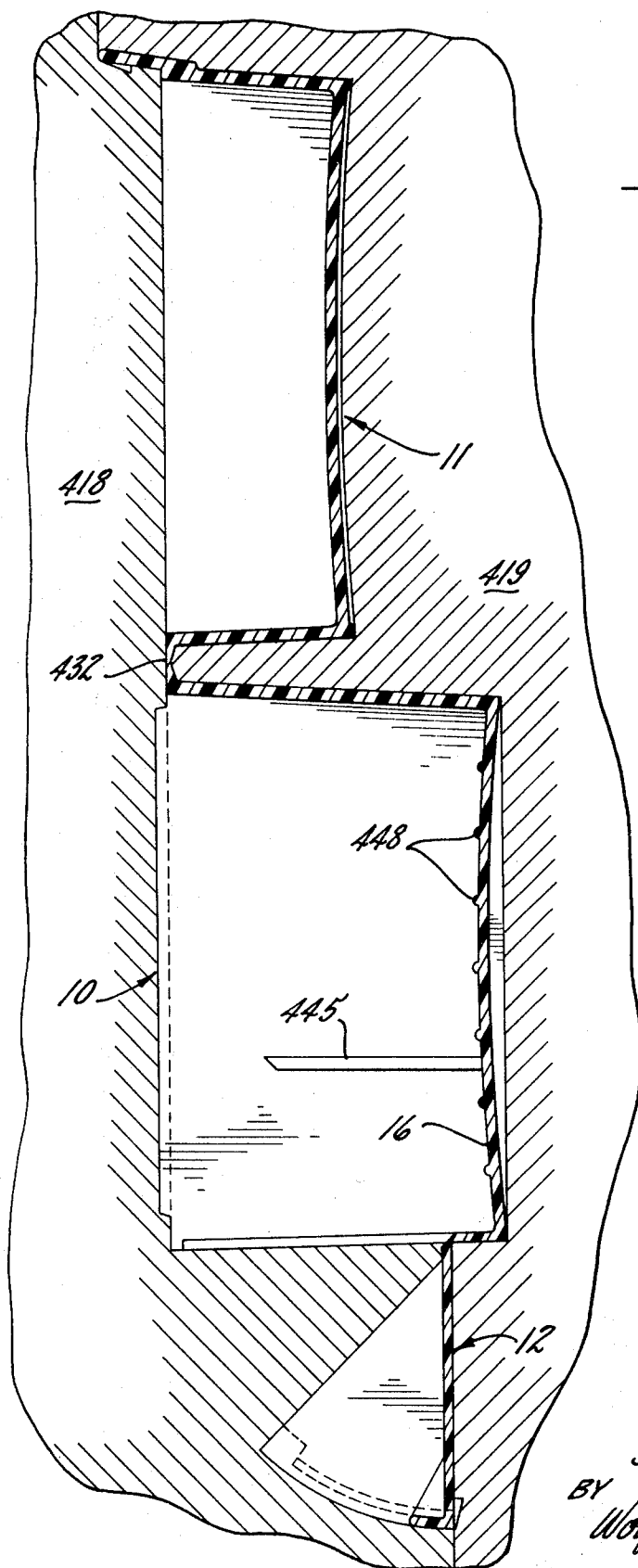


Fig. 11.

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CARD FILES WITH A DROP FRONT

FIELD

This invention relates to containers for use as filing cases or the like, and more particularly concerns the provision of a dropfront filing case formed as an assembled unitary structure from a single mass of resilient, or flexible, plastic material.

OBJECTS

The primary object of the invention is to provide a dropfront filing case fabricated of one piece of plastic material, utilizing the cost and ease of fabrication characteristic of plastic, in a structure having the attractiveness, security, and ease of operation generally associated only with metal cases.

Another object is to provide a filing case that is easily made, requiring only one step in its fabrication, and yet which has features heretofore available only in more complicated and expensive structures.

A further object is to provide a unitary plastic filing case having a forward-swinging front panel permitting easy accessibility of file cards or the like, and which is molded of one mass of resilient or flexible plastic material.

A further object is to provide such a filing case in which the forward-swinging panel and the case cover are readily opened and, indeed, tend to remain in an open position unless latched.

More specific objects are to provide such cases and similar containers adaptable for a variety of uses and in different sizes, together with improvements therein to facilitate such adaptations.

While the invention will be described in connection with preferred embodiments, it will be understood that it is not intended to limit the invention thereto, but it is intended to cover all modifications, and alternative constructions falling within the spirit and scope of the invention as

BRIEF DESCRIPTION OF DRAWINGS

The invention will become further evident in conjunction with the following drawings wherein:

FIG. 1 is a perspective of one form of the inventive container, showing the dropfront and the cover in an open position and depicting file cards in phantom;

FIG. 2 is a front elevation, in partial section, of the embodiment of FIG. 1, with the container in the closed position;

FIG. 3 is a side sectional view of the containers of FIGS. 1 and 2, showing the container in closed position in solid lines and in open position in phantom. The view is taken along 3-3 of FIG. 2;

FIG. 4 is a perspective of an alternative form of the invention utilizing a particularly advantageous integral latch and catch mechanism;

FIG. 5 is an enlarged sectional view taken along 5-5 of FIG. 4, depicting the operation of the novel latch and catch;

FIG. 6 is a side sectional view of yet another alternative form of the inventive container, showing the dropfront in closed position in solid lines, and in open position in phantom;

FIG. 7 is a perspective of still another embodiment of the invention, showing the dropfront disengaged from movement-limiting projections in solid lines and engaged in phantom view;

FIG. 8 is a construction view of the embodiment of FIG. 3, depicting the container of FIG. 3 as it is formed in an injection casting mold with the cover and dropfront in open positions;

FIG. 9 is yet another embodiment of the invention, showing an open container in perspective;

FIG. 10 is an enlarged view, in partial section, of the hinge interconnecting the cover and rear panel of the container of FIG. 9; and

FIG. 11 is a construction view, similar to that of FIG. 8, but relating to the embodiment of FIG. 9.

DETAILED DESCRIPTION OF THE INVENTION

As indicated, a primary feature of the invention is to provide a filing case wherein filing cards and filing card indices are protectively housed while the case is in a closed position but are readily exposed when the case is opened. To this end, and directing attention to FIG. 1, an embodiment of the invention is depicted where the case, in open position, is shown exposing the index card guides, shown in phantom, to view and accessibility.

The case itself comprises essentially a body 10, a hinged cover 11, and a swinging or dropfront panel 12. The cover 11 is integrally hinged to the body 10, as will be described in more detail hereinafter, and the front panel 12 is similarly hinged to the body 10. The body portion has a contiguous bottom panel 16, ribbed or stepped (as best shown in FIG. 3) to assist in aligning the index cards. Also contiguous is the rear panel 18, and the pair of side panels 19, 20.

The term "contiguous" as used throughout is intended to mean integrally joined at their mating surfaces or edges. Thus, with respect to the body 10, the bottom panel 16, the rear panel 18, and the pair of side panels 19, 20 are joined together in the molding or casting operation so as to form an integral unit, in this case a four-sided open troughlike structure.

The container cover 11 is similarly composed of contiguously joined panel sections, namely the top panel 21, a front panel 22, a rear panel 23, and a pair of side panels 24, 25. These constitute, in effect, an inverted open tray. Again, the several panels are contiguously joined in the casting operation.

In the above description, and throughout the remaining description of this and similar containers, the direction of view is from the position shown in FIG. 2, that is, looking toward the dropfront of the container while the container is in an erect position. This convention is adopted to facilitate the description, as it is the normal position of containers of this general type. Also, the adjectives "inwardly" or "outwardly" refer to directions with respect to the center of the container.

As shown further in FIGS. 1, 2, and 3, the front panel 12 has a pair of side panels 28, 29, generally triangular in shape and extending approximately perpendicularly of the front panel 12 and inwardly of the container. These guide tabs 28, 29 thus are adjacent to the respective side panels 19, 20 of the container, and serve to confine the indices when the front panel 12 is in an open position. Although not shown in the drawings, it is preferred that the guide tabs 28, 29 be bowed slightly outward so as to rest snugly against the sides of side panels 19, 20, respectively.

In keeping with the invention, to permit only limited forward movement of the front panel 12 about its integral hinge 31 (as best shown in FIG. 3), cooperation is effected between the guide tabs 28, 29 and abutments on the container side panels 19, 20. In the embodiment of FIGS. 1, 2, and 3, and as best shown in FIG. 2, the abutments comprise a pair of channel elements 36, 38 near the tops of the side panels 19, 20, respectively, and extending inwardly and downwardly of the body side panels. The channel elements 36, 38 are contiguous with the side panels and with the rear panel 18. These channel elements 36, 38 serve both as confining channels for the guide tabs 28, 29 while the inner sections of the channel elements 36, 38 act as stops or abutments for corresponding projections 33 (FIG. 3) on each of the guide tabs.

Directing attention particularly to FIG. 3, this figure shows in solid lines the container in a closed position and, in dotted lines or phantom, the container when 11a The swinging front panel 12 is hinged about an integral hinge 31, moving from a closed position illustrated by panel 12 to an open position of panel 12a.

By the same token, the cover 11 swings about an integral hinge 32 from its closed position shown as cover 11 to an open position shown as cover 11a in dotted or phantom view.

FIG. 3 further illustrates the action of an integral latch 26 on the cover 11 in its engaged and in its disengaged position

with a mating integral latch 15 on the front panel 12. When the container or box of FIG. 3 is closed, the two latches 26, 15 are in the engaged position, being held in that position by reason of the resilient nature of the plastic material of the container.

As better shown in FIG. 1, the latch 26 integral with the cover 11 advantageously extends longitudinally along substantially the entire length of the cover front panel 22, while the latch 15 integral with the dropfront panel 12 preferably extends only over a small proportion of the top of the front panel 12. Thus, manual lifting of the outer latch or catch 26 anywhere along its length serves to disengage the two latches and permit the cover 11 to be opened, while, conversely, pressure at about the center of the front panel 12 will accomplish the same purpose.

When the cover 11 is closed, a pair of flanges 34, 35 along the tops of the side panels 19, 20 and positioned in an inwardly offset relation contact the inwardly facing surfaces of cover side panels 24, 25 to insure that the cover is positioned securely in place. This insures protection for the contents of the container.

If desired, a pair of feet 14 (FIGS. 2, 3) may be provided to secure the container in an upright position.

Also, as shown in FIGS. 2 and 3, the cover top panel 21 is advantageously slightly recessed below the edges of the cover front, rear, and side panels, and is dished slightly inwardly as viewed from the side (FIG. 3). Not only does this concavity provide a more pleasing appearance, but it further insures structural rigidity of the cover.

Containers of the invention are integrally formed as a unitary structure of a resilient plastic material, advantageously a flexible organic thermoplastic such as isotactic polypropylene. Isotactic polypropylene is sufficiently rigid to provide a protective container, yet flexible enough to permit the employment of an integral latch mechanism (latches 15, 26 of FIG. 3) and integral hinges (hinges 31 and 32 of FIG. 3) to enable the components of the container to be opened.

A somewhat more complicated but in many respects more advantageous latch mechanism is depicted in the embodiment of FIG. 4, showing an alternative latch, and of FIG. 5, which is an enlarged sectional view taken along 5-5 of FIG. 4. This latch mechanism permits pressure on the cover 11 of the container to disengage the latch and release the dropfront panel 12.

The latch of FIGS. 4 and 5 is likewise integral with the front panel 12 of container cover 11. The latch comprises a first generally thick portion 101 of the cover top panel 102, located near the edge or intersection 104 of the cover top panel 102 with the cover front panel 105. A resilient, generally thinner boundary portion 106 surrounds at least a major part of the first generally thick portion 101, and is contiguous with this generally thick portion and with the remainder of the cover top panel 102. This boundary portion 106 is generally U-shaped, as seen in FIG. 5, forming an upward facing trough.

A second generally thick portion 108 is provided on the cover front panel 105, near the intersection 104 of the top panel 102 and the front panel 105 and adjacent the first generally thick portion 101. This second generally thick portion similarly has a resilient generally thinner boundary portion 109 defining at least a part of this thick portion 108, and contiguous with the portion 108 and with the remainder of the front panel 105. Consequently, both thick portions 101 and 108 are somewhat free to move relative to the cover top panel 102 and front panel 105.

As best shown in FIG. 5, a gusset 110 is provided to connect the two thick portions 101, 108. Thus, finger pressure applied to the first generally thick portion 101 causes both of the thick portions 101, 108 to swing as a unit about the intersection 104.

As the thick portions 101, 108 swing or pivot about intersection 104, a latch 111 on the second thick portion 108 swings outwardly and disengages from a mating latch 112 on

the front panel 12. This permits the front panel 12 to swing forward, whereupon the cover 102 of the container may be lifted upward to fully expose the contents of the container.

Alternative constructions for all or some of the components described previously may be provided, and FIG. 6 illustrates one such construction. Turning to this Figure, it is seen that the front panel is divided into a lower section 210 which is rigidly connected to the container body 10, and an upper portion 212 hingedly connected through integral hinge 213 to the lower portion 210. FIG. 6 also shows an alternative construction to permit limited forward movement of the upper portion 212 to its open position shown in phantom at 212a; in contrast to the channel elements 36, 38 of FIG. 2, a pair of projections 215 are located on the inwardly facing sides of body side panels 19, 20. As shown in FIG. 6, these engage similar projections 216 on guide tabs 28, 29. Thus, when the dropfront panel is in position shown in phantom at 212a, the respective projections 215, 216 abut each other and prevent further forward movement.

FIG. 7 shows yet another alternative embodiment of the container. This embodiment features flat inner surfaces of the body side panels 19, 20 to prevent smooth inward facing surfaces to the interior of the container and thus avoid impeding tilting of the index cards. The smooth surfaces are provided by a pair of flaps 301, 302, integrally hinged to the tops of side panels 19, 20 respectively, and foldable inwardly of the side panels and body. A pair of projections 304, 305, disposed respectively on the flaps 301, 302, are positioned as shown in phantom 306 when the flaps 301, 302, are folded inwardly of the container. To secure the flaps in this position, projecting snaps 307, 308, engaging holes 309, are provided. As a result, when the flaps 301, 302 are in a closed position (as partially shown in phantom 306), the projections or bosses 304, 305 abut against projections 310, 311 on the front panel guide tabs 28, 29 and prohibit further forward movement.

An advantageous feature of the invention is the provision whereby all of the components are cast or molded as a unitary structure in a single molding operation. Thus, no assembly operations are required beyond merely closing the container. To this end, and as shown in FIG. 8, a mold cavity is provided which forms the entire container in one piece. The body 10, to cover 11, and the front panel 12, together with all their several constituents and the integral hinges 31, 32, are cast in a mold cavity as a single unitary mass of plastic.

The mold cavity, formed by cope 318 and drag 319, is shaped such that the cover 11 is open 90° with respect to the body 10, and such that the front panel 12 is open 180° with respect to the body 10. When the integral hinges are cast with the cover 11 and the front portion 12 in these open positions, there is sufficient rigidity in the hinges to bias these members in normally open positions. In other words, the container tends to remain open.

It has been found that an even more advantageous structure is provided when the container is of the form depicted in FIG. 9. The hinge 432 of the structure of FIG. 9 (as best shown in FIG. 10) is formed by a constricted intersection of a pair of tapered flanges 433, 434, which extend transversely, preferably at about right angles, from the cover rear panel 23, and the body rear panel 18, respectively. Smooth U-shaped cuts 435, 436, at the ends of the hinge 432, protect against notch sensitivity of the hinge. In the structure of FIG. 9, as in the other structures, hinge thicknesses of about 0.005 inch are convenient. Slitting a center portion of the hinge 432 reduces the opening and closing effort.

The front panel 12 structure of FIG. 9 also differs from that of the previous embodiments. A flange 438 is provided on the peripheral edges of the front panel guide tabs 28; a similar flange on the opposing other guide tab is omitted in this sectioned drawing. These flanges 438 extend outwardly and downwardly so as to engage mating guides 437 to provide tracks for the guide tabs 28 during the entire arcuate movement of the front panel 12.

The flange 438, and a corresponding flange on the other front panel guide tab, not shown, swing along a projecting shouldered portion 439, 440 formed by inwardly extending flanges 441, 442 along the front edges of the side panels 19, 20. These flanges 441, 442 serve as abutments for outwardly directed bosslike projections 443 on front panel guide tab 28, and on a similar projection on the other guide tab, not shown, to limit forward movement of the front panel 12.

In manufacturing the structure of FIG. 9 it is preferred that the cover 21 be open 180° during the casting operation. This is best indicated in FIG. 10 showing the cover rear panel 23, and the body rear panel 18 parallel to each other in the as-cast unassembled position. The front panel 12 in this case is advantageously molded in the 90° open position.

Certain additional features of the structure of FIG. 9 bears attention. An upright projection 445, integral with body side panel 20, and a corresponding projection on the inside of body side panel 19, prevent the front panel 12 from closing too far, particularly when the front panel 12 is compressed to open the container. (In the embodiment of FIG. 9 these projections 445 are shown as being generally rodlike in shape, with their top ends undercut so as to engage the tapered inner edges of the guide tabs 28; it is preferable from a manufacturing standpoint that the projections be generally rectangular as viewed from the container interior, and continue perpendicularly down to the bottom panel 16.)

An inwardly extending gusseted flange 447 is desirably provided along the top edge of the front panel 12 to compress index cards away from the cover 21 when the cover 21 is being closed. This prevents damage to the cards by inadvertent contact with the cover, while the gussets prevent the cards from being caught under the flange 447.

In the embodiment of FIG. 9, and as more clearly shown in FIG. 11 portraying a construction view, the bottom panel 16 is curved or arched upward and is also provided with a series of parallel ridges 448. These in cooperation serve to align the index cards and to allow the cards to separate easily when the container is open.

Manufacture of the FIG. 9 embodiment is illustrated in FIG. 10, a construction view of the embodiment in a casting mold comprising cope 418 and drag 419. Here the front panel 12 is 90° open and the cover 11 is 180° open. As a result, the draw depth and consequently the mold height are reduced (in comparison with the FIG. 8 construction), and mold heating and cooling are consequently improved.

Thus it is apparent that there has been provided according to the invention a structure that fully meets the objectives, aims, and advantages asserted.

While the invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications, and variations will be apparent to those skilled in the art in light of the foregoing description.

We claim as our invention:

1. In a one-piece dropfront container for use as a filing case or the like, and including

A. a body having contiguous bottom, rear, and a pair of side panels,

B. a cover integrally hinged to the top of said rear panel, and having contiguous top, front, rear, and a pair of side panels,

C. a forward swinging front panel integrally hinged to the front of said bottom panel, with a pair of guide tabs contiguous with said first panel and extending into said body adjacent said side panels, and

D. means cooperating with said guide tabs for permitting limited forward movement of said front panel, said body, cover, hinges, guide tabs, and limited movement means being integrally formed as a unitary structure of resilient

plastic material, the improvement comprising:

1. a first, inwardly extending, latch integral with said cover, said latch being manually liftable when said front panel and said cover are in closed position, and
2. a second, outwardly extending, latch integral with said front panel and matable with said first latch when said cover and said front panel are both in closed position,

so that either outward lifting of said first latch or inward pressure on said front panel disengages said latches and permits said cover to be opened and said front panel to be swung outward.

3. Container of claim 1 wherein said structure is formed with said cover and said front panel in open positions so that said hinges bias said cover and said front panel in open positions.

3. Container of claim 1 wherein said resilient plastic comprises isotactic polypropylene.

4. Container of claim 1 wherein said limited movement means comprises a pair of channel elements near the tops of said side panels and inwardly of said body, said channel elements being contiguous with said side panels and with said rear panel, said channel elements providing a movement-limiting abutment for said guide tabs.

5. Container of claim 1 wherein said limited movement means comprises a pair of projections on the inwardly facing sides of said side panels near the top thereof to provide a movement-limiting abutment for said guide tabs.

6. Container of claim 1 wherein said limited movement means comprises a pair of outwardly extending projections on said side panels, and a pair of inwardly extending flanges along the front edges of said side panels to provide movement-limiting abutments for said projections.

7. Container of claim 1 wherein said hinge connecting said cover and said body comprises a pair of tapered flanges extending outwardly of the rear panels of said cover and said body, the intersection of said flanges being of relatively thin material.

8. A one-piece dropfront container for use as a filing case or the like comprising:

A. a body having contiguous bottom, rear, and a pair of side panels,

B. a cover integrally hinged to the top of said rear panel, with

1. contiguous top, front, rear, and a pair of side panels and,

2. a first, inwardly extending, latch integral with said cover,

C. a front panel integrally hinged to the front of said bottom panel, with

1. a pair of guide tabs contiguous with said front panel and extending into said body adjacent said side panels, and

2. a second outwardly extending latch integral with said front panel mating with said first latch when said cover and said front panel are both in closed positions, and

D. a pair of flaps cooperating with said guided tabs integrally hinged to the tops of said side panels and foldable inwardly of said body, and a pair of inwardly facing projections on said flaps to provide a movement limiting abutment for said guide tabs,

said body, cover front panel, hinges, guide tabs, latches, and limited movement means being integrally formed as a unitary structure of resilient plastic material, so that lifting of said first latch or pressure on said front panel disengages said latches and permits the cover to be opened and said front panel to be swung outward.