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Flider

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[45] **Feb. 26, 1974**

[54] **PLASTIC SAFETY CONTAINER FOR INFLAMMABLES**

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[22] Filed: **Aug. 13, 1971**

[21] Appl. No.: **171,537**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 97,713, Dec. 14, 1970, Pat. No. 3,727,807.

[52] **U.S. Cl.** **222/471**

[51] **Int. Cl.** **B65d 47/08**

[58] **Field of Search** ..... 222/472–474, 509, 222/465, 470, 471; 220/94 A

[56] **References Cited**

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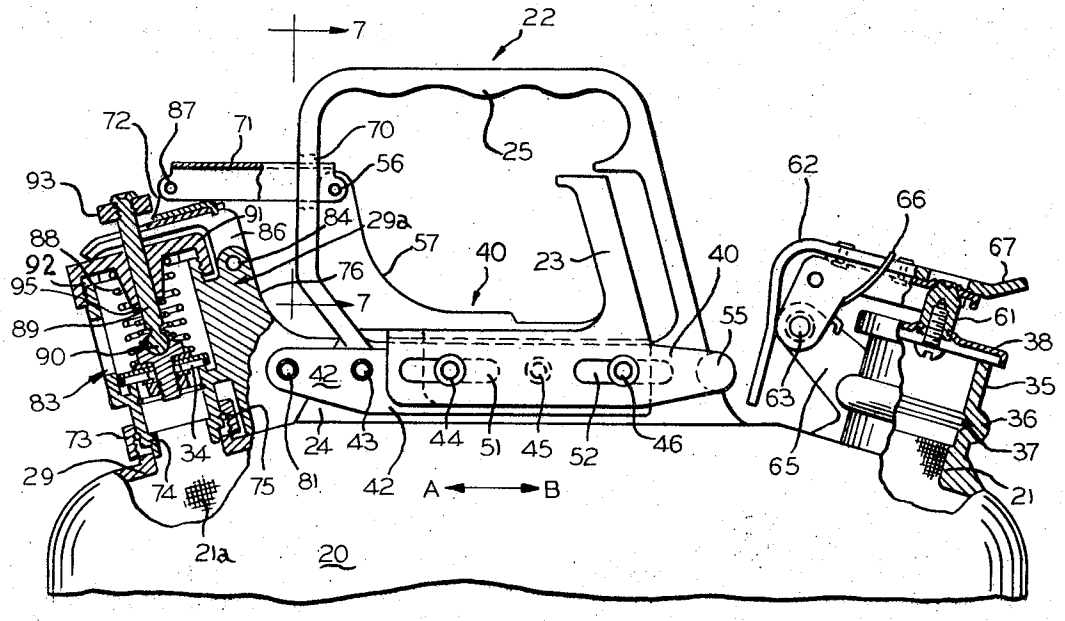
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Assistant Examiner—Norman L. Stack, Jr.
Attorney, Agent, or Firm—Alter, Weiss, Whitesel & Laff

[57] **ABSTRACT**

An all-plastic safety container has a hollow plastic wall with a continuously closed inner surface terminating at a pair of openings; one for venting and filling, and one for pouring. An integral, upstanding, thickened fin and handle combination formed on the outside surface of the container, facilitates the attachment of trigger controlled, safety cap linkage and hardware to the can, without breaking through the inner surface. Yet, the container and its handle are mechanically strong enough to withstand severe usage and to life heavy weights.

8 Claims, 8 Drawing Figures



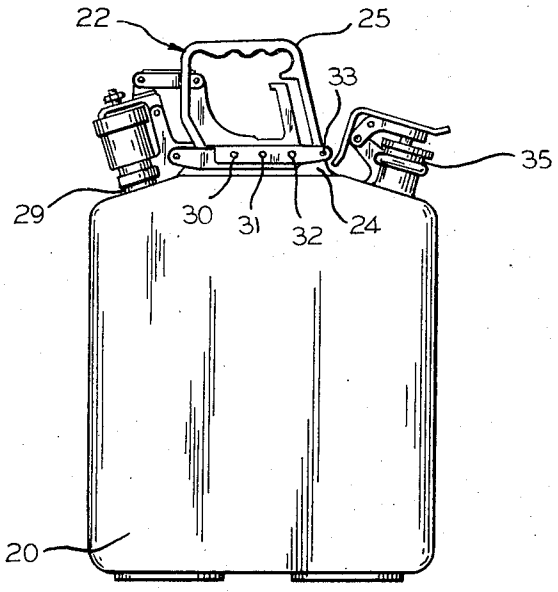


FIG. 1

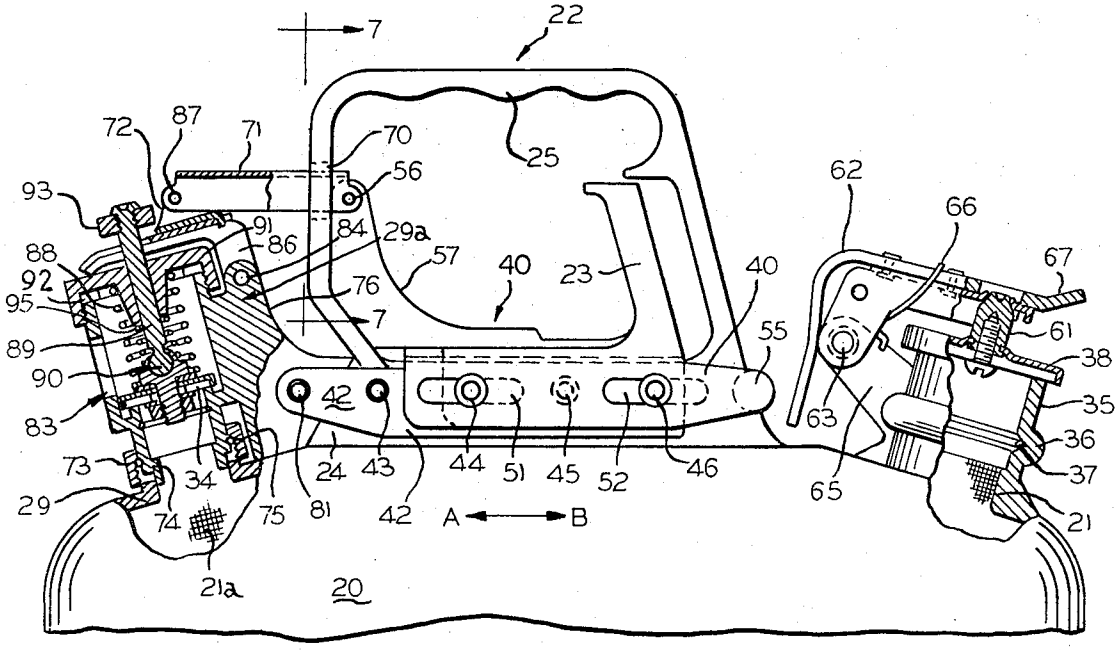


FIG. 2

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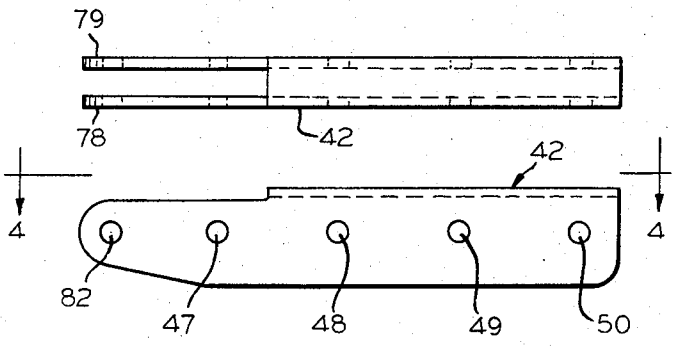


FIG. 4

FIG. 3

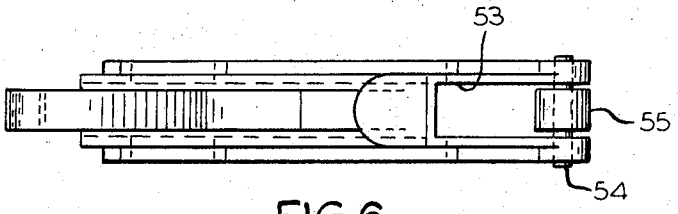


FIG. 6

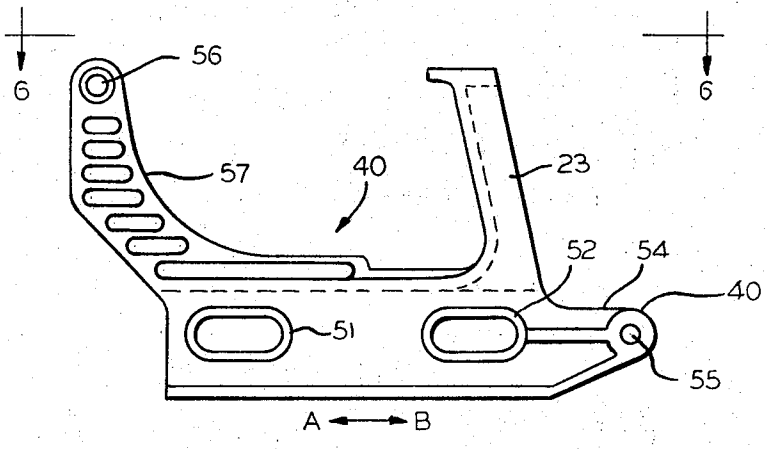


FIG. 5

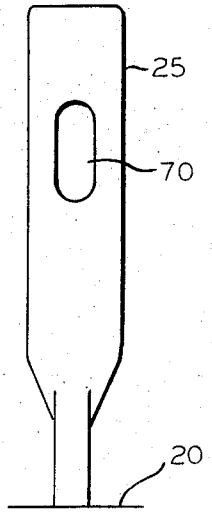


FIG. 7

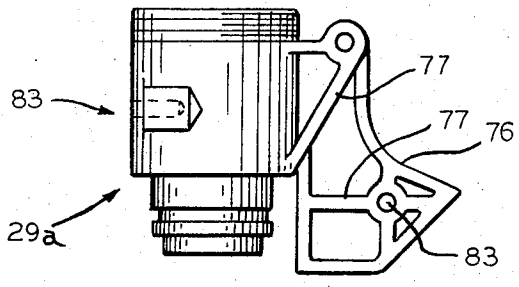


FIG. 8

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PLASTIC SAFETY CONTAINER FOR INFLAMMABLES

This is a continuation in part of my earlier filed, copending application entitled "SAFETY CONTAINER FOR INFLAMMABLES," Sen. No. 97,713, filed Dec. 14, 1970, now U.S. Pat. No. 3,727,807 and assigned to the assignee of this invention.

This invention relates to plastic safety cans or containers, especially although not exclusively to containers for inflammable fluids, and more particularly to low-cost containers having two vents with manually controlled, spring biased caps or valves attached thereto.

Containers for inflammables usually have prescribed safety specifications which are enforced by governmental, industrial, or trade agencies. Thus, improved containers must meet or exceed specifications. Also, they must have a sales appeal which goes beyond the sales appeal of previously available safety cans or containers. The exact nature and purpose of these structures is not too important. Therefore, the terms "can" or "container," as used hereinafter, are intended to encompass any and all uses and structures falling within the scope of the invention.

Generally, previously known containers have been made of a heavy gauge steel material, which had drawbacks in that they were expensive to make, hazardous in an explosive atmosphere, and shortlived in use. They tend to corrode, create hazardous sparks, and scratch the surfaces they contact. Moreover, when metal cans are bumped, they sometimes leak air and thereafter sustain internal fire.

Attractive, all-plastic safety cans or containers have been developed to provide spring loaded caps which automatically open when the can or container is tipped and close when it is at rest. These plastic cans or containers answer many long felt needs, with ease and convenience. However, they also present some problems, since it is not always desirable to open the can every time that it is tipped. Sometimes it is desirable for the can to remain closed after it is tipped and until its pouring spout or vent is brought into contact with the tank for receiving fluids poured from the can. Only then should the safety cap be opened to release the fluids. If the can is a heavy one, such as a five gallon gasoline can, for example, the trigger for manually controlling the pouring should not require the user to shift or loosen his grip when he operates the trigger. Also, the trigger should be positioned for easy and positive operation.

Accordingly, an object of the invention is to provide plastic containers having solid and upstanding, integral handles and fins thereon, which provide anchor points for attaching cap controlling hardware to the containers. Here, an object is to provide as many all-plastic pieceparts as possible.

Still another object of the invention is to provide a spring loaded, safety valve which is linked to a handle arrangement to open only when the user moves a trigger. Here, an object is to avoid a container which pours gasoline whenever it is tipped.

A further object is to provide a low-cost, explosion-proof, automatically venting gasoline container.

These and other objects are accomplished by an all-plastic safety container, which has a hollow plastic wall with a continuously closed inner surface terminating at a pair of openings. An integral, upstanding, thickened fin and handle combination on the outside surface of the container facilitates the attachment of trigger controlled, safety cap hardware and linkage to the container, without breaking through the inner surface. Yet, the container and its handle are mechanically strong enough to withstand severe usage and to lift heavy weights.

The nature of a preferred embodiment of the invention, for accomplishing these and other objects may be understood best from a study of the following description and the attached drawing in which:

FIG. **1** is an elevation side view of an all-plastic container;

FIG. **2** is a side elevational view (partly in cross-section) of the top of a plastic safety container with a fin and plastic handle arrangement showing the hardware, linkage, cap and valve used to control the pouring of fluids;

FIG. **3** is a side elevation view of a saddle bracket used to attach a cap control linkage to a plastic container;

FIG. **4** is a top plan view of the saddle bracket taken along line **4—4** of FIG. **3**;

FIGS. **5** and **6** are side elevation and top plan views of the plastic control trigger and linkage piecepart;

FIG. **7** is a side elevation view (taken along line **7—7** of FIG. **2**) of the container handle; and,

FIG. **8** is a side elevation view of an injection molded part used in conjunction with the pouring spout of the can of FIG. **1.**

The principal elements in FIGS. **1** and **2** are an all-plastic container **20,** a filter screen arrangement **21,** **21*a***, and a handle and linkage cap control arrangement **22.** The container is filled and vapors are vented via an opening on the right, and fluids are poured via an opening on the left, (as viewed in FIGS. **1** and **2.**) The cap control linkage **22** is normally set to close the container except when a trigger is operated. The cap recloses when the trigger is released. The plastic container **20** may be formed by any suitable means — such as blow molding inside a mold cavity formed by two pieceparts with a parting line which is thickened to form an upstanding fin or rib **24** and handle **25.** For strength and support, fin **24** may be made integral with a pouring neck **29**; or, when the embodiment of FIG. **8** is used, an all-plastic injection molded neck part **29a** may be joined to the fin by a suitable saddle-bracket, for strength and support. The handle **25** is fairly massive, in the order of an inch wide and a half-inch thick. The strength of the resulting structure is adequate to support a large, full container without distortion of the plastic. A series of holes **30, 31** and **32** are molded into the plastic fin **24** in order to provide a means for attaching the trigger and linkage mechanism to the container without piercing the walls thereof.

The plastic at pouring neck **29** is shaped somewhat as the neck of a bottle — which enables fluid or other material to be poured out of the container **20.** The exterior of the neck opening **29** is threaded to receive molded piecepart **29*a*** (FIG. **8**) which is normally closed by a spring biased safety cap and an integral valve **34** (FIG. **2**). Suspended inside a second and oppositely disposed filling and venting neck **35** is filter screen **21,** which strains the fluid entering the container and which provides a fire barrier. To facilitate the suspension, the neck **35** has an annular ring **36** for captur-

ing a circular lock ring **37** having the filter screen **21** attached thereto. A similar screen **21a** strains fluids leaving the container and presents a fire barrier at the pouring neck **29***a*.

Positioned over the filling and pouring neck is a safety cap **38** (FIG. **2**) controlled by the trigger **23** and associated linkage **40** mounted on fin **24** by a saddle bracket **42**(FIGS. **3** and **4**). The bracket **42** is attached to the rib **24** by means of rivets **43–46** passing through the holes **30–33** (FIG. **1**) in fin **24** and holes **47–50** in the saddle bracket **42** (FIGS. **3** and **4**). The handle **25** and the bracket **42** are located at the top of the container **20**, at the center of gravity thereof.

In keeping with an aspect of the invention, means are provided for controlling the opening and closing of the openings **29, 35** in a predetermined sequence. More particularly, the trigger **23** and linkage **40** assembly is preferably a single injection molded piecepart (FIG. **5**). This part may be described as having a somewhat sleigh-shape with a pair of elongated mounting slots **51, 52** which fit over the rivets **44, 46** to permit a reciprocal sliding motion in the directions A, B. This sleigh-shaped part also includes a pair of spaced parallel runners **53, 54** (FIG. **6**) which loosely fit on opposite sides of the saddle bracket **42** to provide horizontal stability. A pusher wheel **55** is rotably mounted on the tips of the runners **53, 54** to provide a linkage actuation point for controlling safety cap **38**, and a hole **56** on upstanding tab end **57** provides a linkage connection point for controlling the valve **34**. Thus, if part **40** slides in direction A, valve **34** and cap **38** are closed. If it slides in direction B, the valve and cap open. The integrally formed trigger **23** provides a convenient squeeze actuated part for imparting such sliding motion.

Attached to the filling and venting cap **38** (FIG. **2**), and forming a part thereof, is a pin bracket **61** connected to an "L-shaped" assembly **62**, which, in turn is pivotally connected by the pin **63** to an elongation **65** of the neck **35**. Internal vapor pressure may overcome the bias of a spring **66**, to vent the can, which normally urges cap **38** to a closed position. As the internal vapor pressure falls, the spring **66** recloses the cap **38**. To fill the can, a user may lift at **67** to raise the cap **38** far enough to insert the nozzle of a hose.

When trigger **23** is pulled and the pusher wheel **55** moves in direction B, it encounters the end of L-shaped bracket assembly **62** which pivots and rotates to lift or pull pin bracket **61**, with a force sufficient to open the cap **38** against the bias of the spring **66**. When the trigger **23** is released, the reverse action takes place. The part **40** slides to the left, in direction A, and spring **66** closes the cap **38**.

At the opposite end of the part **40**, the connecting point **56** is positioned opposite a hole **70** (FIG. **7**) in handle **25**. Pivotally connected at **56**, and extending through hole **70** is an arm **71** which is connected to a bracket **72**.

As shown in FIGS. **2** and **8**, the pouring spout comprises two distinct parts **29, 29***a*. The cylindrical portion **29**, terminates in threads, and may be an integral part of body **20**. The part **29***a* may be made of any suitable material, but an injection molding is preferred. A valve body swivel ring **73** turns onto the neck threads of part **29** and fits over a lock ring **74** which is integral with the valve body **29a**. An O-ring seal **75** prevents leakage at the coupling point between rings **73, 74**.

The injection molded portion **29a** (FIG. **8**) includes an integral bracket **76** which may have externally molded trusses (two of which are marked **77**) for giving further strength. The integral bracket **76** abuts against the end of fin **24** on the blow molded container **20** and is joined thereto by the saddle bracket **42**, side plates **78, 79**(FIG. **4**) and fastener **81** fitting through apertures **82, 83**. The valve body **29a** may include a flange section **83** for connecting an outlet hose (not shown) thereto or for permitting fluid to flow therefrom.

In greater detail, bracket **76** (FIG. **2**) supports pin **84** which pivotally attaches an L-shaped bracket **86** to the pouring vent or valve body **29***a*. The cap control linkage comprises a sliding bar **71** passing through slot **70** in handle **25**. The bar **71** is pivotally attached at **87** to an integral lug **72**. Spring **88** normally forces the bar **71** to slide in the direction A to a valve closed position.

The coil spring **88** and valve **34**, with valve stem **89** attached thereto by a swivel joint at **90**, are positioned inside the pouring vent or valve body **29***a*. The upper end of the pouring vent or valve body **29***a* is closed and sealed by a cap **91** and a gasket **92**. The cap **91** may be threaded to mate with threads on the outside of the cylinder part of body **29***a*. Alternatively, the cap **91** may be attached by any other well-known means. The valve stem **89** projects through a hole in the cap **91** and engages a nut and washers combination **93**. A second spring **95** keeps the swivel joint **90** in a tight state to preclude a feel of looseness. After assembly **93**, the top of the stem **89** is swaged to make a complete subassembly.

Mounted on the integral bracket **76** is an L-shaped bracket **86**, which has fork-shaped tines that fit under the nut and washer assembly **93** to control the valve **34**. Normally, the spring **88** presses the valve **34** downwardly to seal the container **20**. This pressure pulls the bar **71** to the left and moves the unit **50** in direction A.

A particularly attractive feature of the invention is that the trigger **23** is positioned to be operated by the user's finger tips, in a squeeze motion. Thus, the user may pick up the container by holding the handle **25**. After a comfortable grip is secured, the container is lifted and the container is tipped to a pouring position, the user squeezes his hand to move trigger **23** and open the two vents. When bar **71** moves, the nut and washer **93** are lifted by the tines on the L-bracket **86**, spring **88** is compressed, valve **34** opens, and fluid may be poured from the container through the opening **83**. This is done without having to shift the grip on the container.

The trigger controlled linkage **50** operates the two vents in a pre-determined sequence. More particularly, the righthand (as viewed in FIG. **2**) end **55** of the linkage **50** is positioned to bear against a control lever of L-bracket **62**, which lifts the safety cap **38**. The lefthand end of the same linkage **50** lifts the valve stem **89** for raising and lowering the internal valve **34**, to enable or prevent the flow of fluids from the container **20** and through the opening **83**. The proportions of linkage **50**, and the various brackets and actuating arms, are such that the cap **38** opens first to vent the container; then, the valve **34** opens to allow passage of the fluid. On closing, the valve **34** closes first to stop the flowing fluid, and then the cap **38** closes the vent.

Among other things, the described structure enables the use of many more plastic parts than was heretofore possible. There is a lower cost and greater convenience. The user has a greater control than in previous

models. The plastic has greater strength, is more resistant to dents, and is cooler handling. The method of hardware attachment to the fin makes a good, strong, and durable connection without piercing the wall of the container. The metal hardware parts may be dip-coated with plastic to preclude exposure of bare metal surfaces which may corrode, rust, or generate sparks.

While the principles of the invention have been described above in connection with specific embodiments, apparatus, and applications, it is to be understood that this description is made only by way of example and not as a limitation on the scope of the invention. Therefore, the appended claims are to be construed to cover all equivalent structures.

I claim:

1. A safety container comprising an all plastic wall having a continuously closed inner surface except for a pair of longitudinally displaced upstanding cylindrical tubes with openings therein,

a handle and fin combination integrally formed between said tubes and upstanding upon the top outer surface of said wall,

cover means over the tubes for closing each of said openings,

a trigger controlled sliding linkage means attached to said fin without breaking through said inner surface for selecti-vely controlling the cover means for opening and closing said openings, and

said sliding linkage means comprising a plastic piece part having a pair of spaced parallel linkage arms with each linkage arm fitting against opposite sides of said fin and attached to said fin by elongated mounting slots fitting over the ends of rivets passing through said fin.

2. The container of claim **1** wherein the cover means at one of said openings is closed by a pivoted cap and the cover means at the other of said openings is closed by a spring-biased valve, and said sliding linkage has proportions which open and close said cover means at said two openings in a predetermined sequence.

3. A safety container comprising an all-plastic wall having a continuously closed inner surface except for a pair of longitudinally displaced upstanding cylindrical tubes with openings therein,

a handle and fin combination integrally formed between said tubes and upstanding upon the top outer surface of said wall,

cover means over the tubes for closing each of said openings,

said cover means at one of said openings comprising a pivoted cap,

the cover means at the other of said openings comprising a spring biased valve,

a trigger controlled sliding linkage means attached to said fin without breaking through said inner surface for selectively controlling the cover means for opening and closing said openings,

said sliding linkage means dimensioned to open and close said cover means at said two openings in a pre-determined sequence, and

said sliding linkage means comprising a plastic piece part having a pair of spaced parallel linkage arms with each linkage arm fitting against opposite sides of said fin and attached to said fin by elongated mounting slots fitting over the ends of rivets passing through said fin.

4. The container of claim **3** wherein one end of said linkage arms operates a closure means over one of said openings before the other end of said linkage arms operates a closure means over the other of said openings.

5. The container of claim **4** wherein said arms have an upstanding trigger thereon positioned in relation to said handle so that said linkage arms may be slid without requiring the user to shift or loosen his grip on the handle.

6. The container of claim **5** wherein said trigger is positioned to be operated by a squeeze of a hand holding the handle.

7. A safety container comprising an all-plastic wall having a continuously closed inner surface except for a pair of longitudinally displaced upstanding cylindrical tubes with openings therein,

a handle and fin combination integrally formed between said tubes and upstanding upon the top outer surface of said wall,

cover means over the tubes for closing each of said openings,

one of said cover means comprising a cap lifted by an L-shaped bracket pivotally connected to said container,

the other of said cover means comprising a spring biased valve enclosed within a valve body,

said sliding linkage means comprising a piece part having a pair of spaced, parallel linkage arms with said arms fitting against opposite sides of said fin,

one end of said sliding linkage being positioned to engage said L-shaped bracket and the other end of said sliding linkage being positioned to control said valve,

said linkage having a length whereby said one end operates said L-shaped bracket to lift the cap over one of the said openings before the other end of said linkage operates said valve, and

said sliding linkage further including an upstanding integral trigger positioned in said handle to slide said linkage along said arms.

8. The container of claim **7** wherein said piece part is all plastic.

* * * * *