

# United States Patent

Norrenberg-Sudhaus

[15] 3,646,787

[45] Mar. 7, 1972

[54] **CLOSURE FOR SUITCASES AND THE LIKE WITH JIMMYPROOF LOCKING MECHANISM**

3,402,578 9/1968 Atkinson .....70/70  
3,440,844 4/1969 Constable .....70/70  
3,464,240 9/1969 Brody .....70/71

[72] Inventor: Ernst Norrenberg-Sudhaus, Iserlohn, Germany

[73] Assignee: Heinrich Sudhaus Soehne Metall-  
warenfabrik, Iserlohn, Germany

[22] Filed: July 14, 1969

[21] Appl. No.: 841,362

Primary Examiner—Stephen J. Novosad  
Assistant Examiner—Edward J. McCarthy  
Attorney—Karl F. Ross

[30] Foreign Application Priority Data

July 13, 1968 Germany .....S 65 510

[52] U.S. Cl. ....70/70, 70/75, 292/283

[51] Int. Cl. ....E05b 65/48, E05c 19/08

[58] Field of Search .....70/69, 70, 71, 73, 79, 81,  
70/75, 74, 9, 10; 292/163, 165, 283, 830

[57]

## ABSTRACT

A swingable or slidable latch in a housing secured to the body of a suitcase, adapted to engage a cooperating tongue on the suitcase lid, is indexable in or spring-urged into an engaged position from which it can be released by depression of a swingable flap except when blocked by a locking mechanism. The release may be effected through the intermediary of a resilient member which yields ineffectually in the blocked condition of the latch.

[56] References Cited

11 Claims, 12 Drawing Figures

## UNITED STATES PATENTS

3,391,553 7/1968 Norrenberg-Sudhaus .....70/70

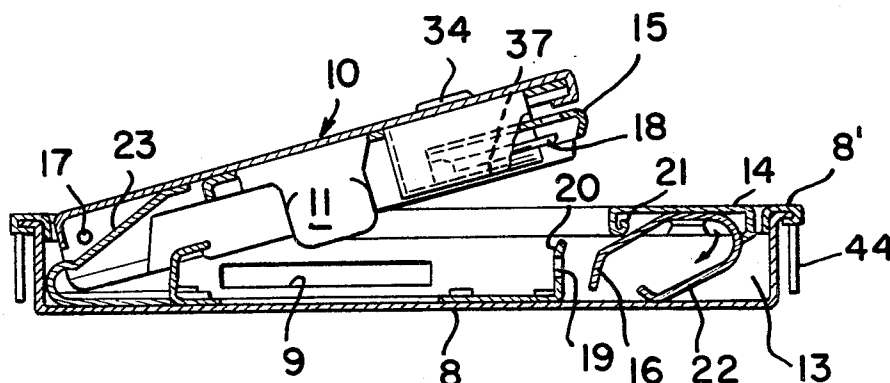


FIG. 1

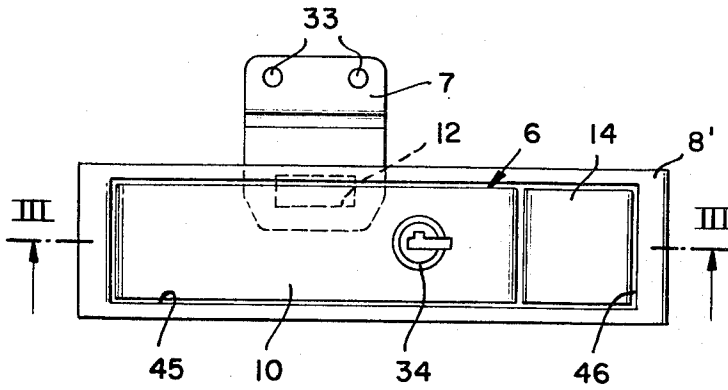


FIG. 3

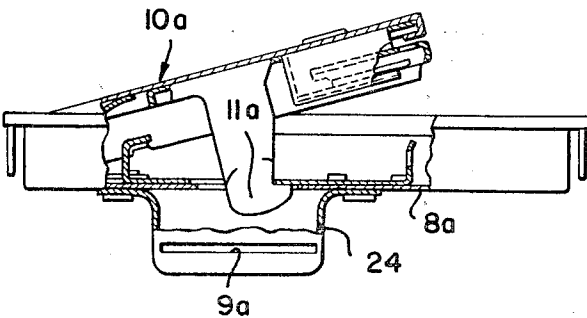
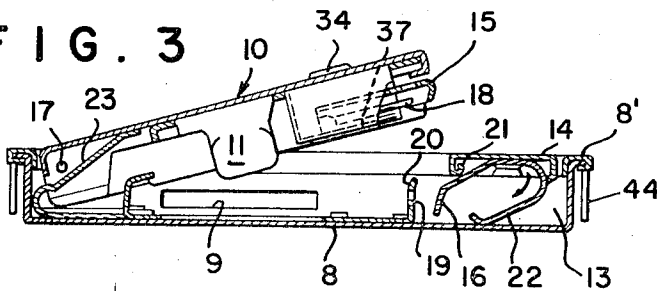


FIG. 4

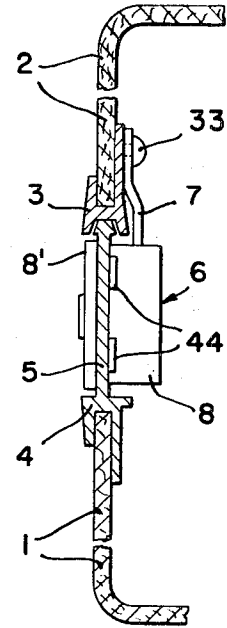


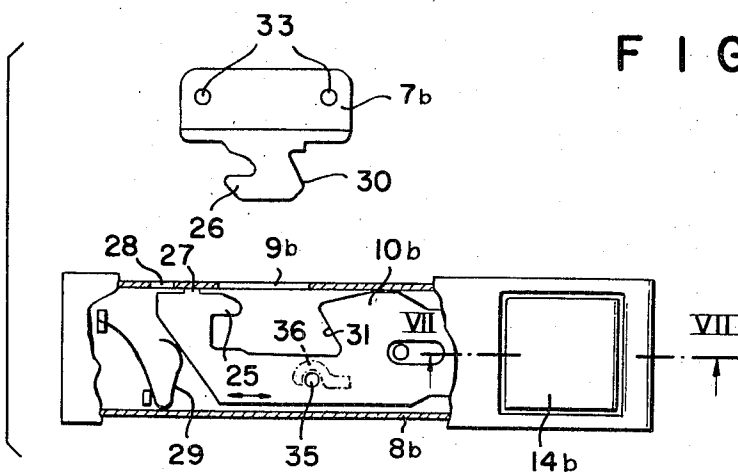
FIG. 2

Ernst Nörrenberg-Sudhaus  
INVENTOR.

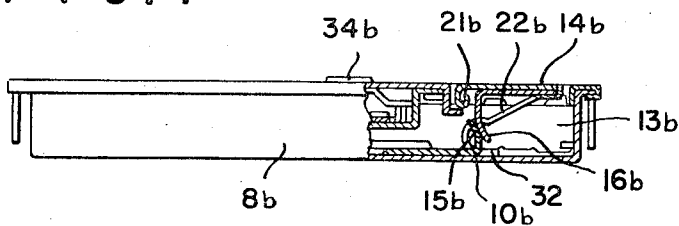
BY

Karl F. Ross

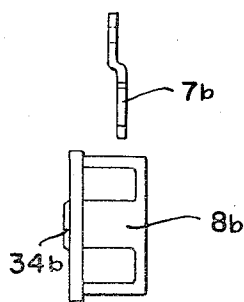
ATTORNEY



**FIG. 7**



**FIG. 6**



Ernst Nörrenberg-Sudhaus  
INVENTOR.

BY

*Karl J. Fr.*

ATTORNEY

FIG. 8

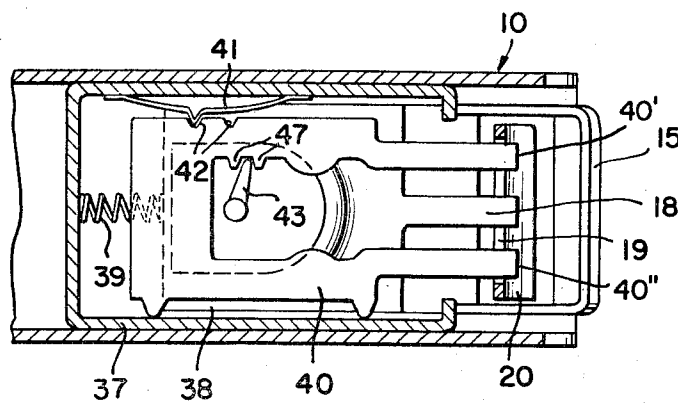
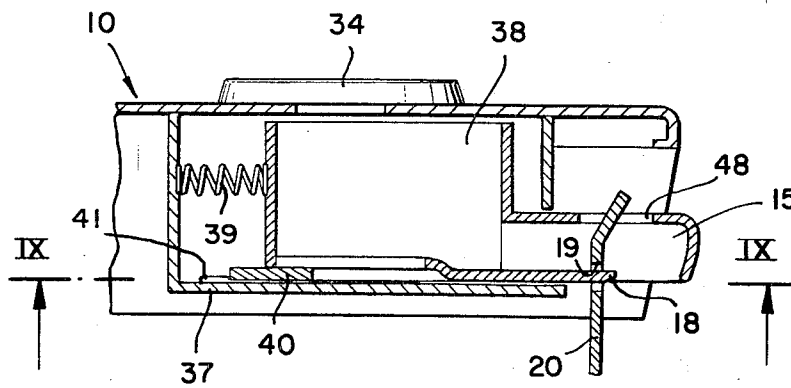


FIG. 9

Ernst Nörrenberg-Sudhaus  
INVENTOR.

BY

*Karl G. K...*

ATTORNEY

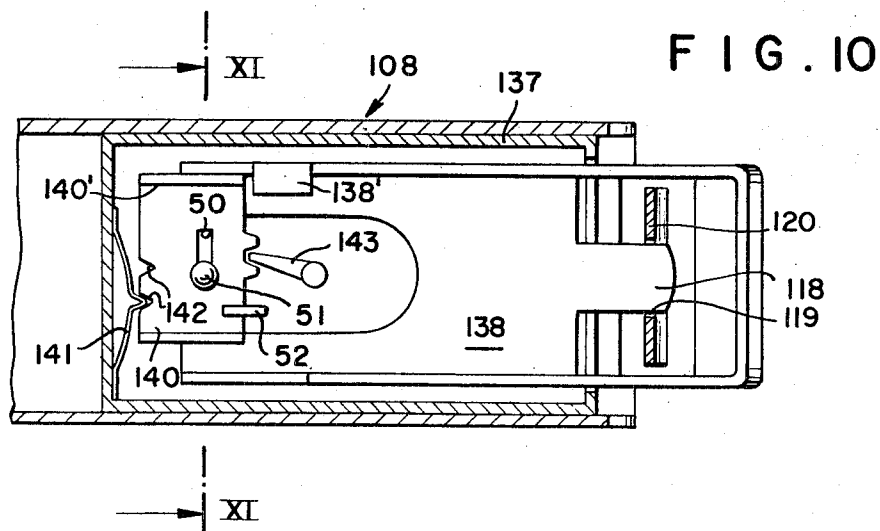


FIG. 11

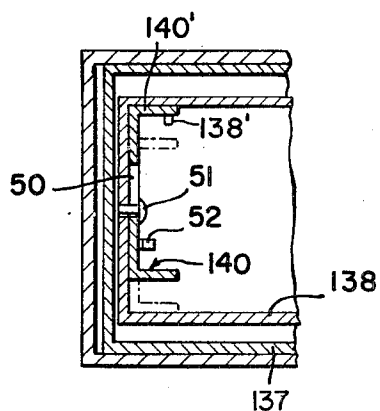
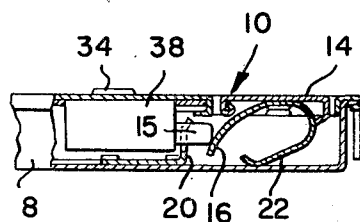


FIG. 12



Ernst Nörrenberg-Sudhaus  
INVENTOR.

BY

ATTORNEY

# CLOSURE FOR SUITCASES AND THE LIKE WITH JIMMYPROOF LOCKING MECHANISM

My present invention relates to a closure device for suitcases, trunks or other containers having two separable parts, such as a base and a lid, adapted to be latched in a closed position from which they can be released by manual operation of an actuating element.

In a known closure device of this kind wherein an elongate housing, secured to the base of a suitcase adjacent its parting line with the lid and having a slot facing that lid, is provided with an outwardly swingable lever carrying a detent formation which engages a tongue-shaped locking formation of a coacting member on the lid, inserted into the housing through the aforementioned slot, when the lever is swung back into a position substantially flush with the front wall of the housing. On the same front wall, next to the cutout accommodating the lever, there is provided an opening normally occupied by a pivoted flap which can be depressed with the finger to give access to the interior of the housing, the finger being thus insertable behind the free end of the lever in order to pull the latch to disengage its detent from the coacting tongue. A key-controlled locking mechanism is designed to prevent any untimely release.

This arrangement is structurally and esthetically satisfactory but allows the lock to be forced by the insertion of a screwdriver or similar tool behind the lever, upon depression of the adjoining flap, with resulting destruction of the latching mechanism.

An object of my present invention, therefore, is to provide a closure device of this general type in which any jimmying of the lock becomes virtually impossible.

Another object of my invention is to provide a trunk closure or analogous device which can be released, in its unlocked condition, by the simple displacement of an actuating element (such as the aforementioned flap) also doubling as a complement of a housing wall to prevent the intrusion of dust and dirt and to give a pleasing overall appearance.

A more specific object of my invention, allied to the preceding one, is to provide an actuator of the aforescribed type which automatically retains its depressed state as long as the closure device is released, returning to its normal position flush with the housing wall upon a relatching of the interacting elements.

In accordance with my present invention, a lever or slider forming part of a latching mechanism (and including detent means for engagement with a coacting tongue or the like as described above) is movable on the lock housing between an inoperative and an operative position, being held in the latter position by retaining means which may take the form of a biasing spring and/or of a separate spring-biased bolt thereon engageable with a catch in the housing. A manually depressible, outwardly biased actuating element on the housing, preferably in the form of a pivoted flap, is disposed at a location laterally offset from the insertion slot for the latching tongue and is provided with force-transmitting means for releasing the slidable or swingable latch means from its operative position upon inward depression of this element.

If, as will usually be the case, the closure device is provided with a lock to prevent any unauthorized or accidental opening of the container equipped therewith, operation of that lock will block the release of the latch means by the manual actuator. If this blocking effect is exerted directly upon the element displaceable by the actuator (i.e., upon the latch itself or upon a bolt carried thereon), a forcible depression of the actuator against the blocked element could damage the force-transmitting portion of the actuator unless, in accordance with another advantageous feature of my invention, this force-transmitting portion is made resilient so as to yield ineffectually when the release mechanism is blocked. In any event, the design of the actuator as a flap swingable about an axis proximal to the latching mechanism protects this mechanism against tampering from without by maintaining the actuator interposed between the finger of the user and the interior of the housing containing the lock.

The above and other embodiments of my invention will become more fully apparent from the following detailed description given with reference to the accompanying drawing in which:

FIG. 1 is a front view of a closure device embodying the invention;

FIG. 2 is a fragmentary sectional view of a suitcase provided with the device of FIG. 1;

FIG. 3 is a longitudinal sectional view taken on the line III — III of FIG. 1;

FIG. 4 is a view similar to FIG. 3, illustrating a modification;

FIG. 5 is a front view, with parts broken away, of another embodiment of my improved closure device;

FIG. 6 is a side view of the device of FIG. 5;

FIG. 7 is a bottom view of the device of FIGS. 5 and 6, shown partly in section on line VII — VII of FIG. 5;

FIG. 8 is a fragmentary sectional view of a latching lever forming part of the device of FIGS. 1 — 3;

FIG. 9 is a cross-sectional view taken on the line IX — IX of FIG. 8;

FIG. 10 is a view similar to FIG. 9, showing a modification;

FIG. 11 is a view similar to FIG. 10, taken on the line XI — XI of FIG. 10; and

FIG. 12 is a front elevational view of part of the device of FIGS. 1 — 3 in an alternate position.

Reference will first be made to FIGS. 1 — 3 showing a closure device 6 for a suitcase partly illustrated in FIG. 2. The suitcase includes a base portion 1 and a lid portion 2 whose confronting edges are reinforced by metallic frames designated 3 for the lid and 4 for the base. The lower frame 4 includes a web 5 set back to form a channel for the front plate 8' of a housing 8 which constitutes one of the two relatively movable parts of device 6, the other of these parts being a locking element in the form of a tongue 7 which is riveted to lid 2 at 33 and whose lower end, formed with a rectangular aperture 12, extends into housing 8 through a slot 9 upon a lowering of lid 2 on the base 1 as illustrated in FIGS. 1 and 2. Tabs 44 on front plate 8' are shown bent over in FIG. 2 to fasten the housing 8 to the web 5.

The closure device so far described is broadly similar to that shown in my prior U.S. Pat. No. 3,391,553.

Front plate 8' is divided into a main portion, formed with a cutout 45, and a side portion, formed with an opening 46 in line with that cutout. A lever 10, pivotable about a fulcrum 17 at the left-hand end of housing 8 as viewed in FIG. 3, is urged outwardly by a leaf spring 23 and can be pressed back into the cutout 45, against the spring force, so as to lie flush with the front plate 8'. A projection 11 on lever 10 forms a detent for tongue 7 by engaging in the aperture 12 thereof when the lever is thus pressed home. Upon such inward swing or lever 10, a bar 18 rigid with a pusher member or bolt 15 on the free right-hand end of that lever snaps into engagement with a slot 19 in a bracket 20 extending from the rear wall of housing 8. Bolt 15 projects from a prismatic casing 37 integral with lever 10 and is spring-urged, as more fully described hereinafter with reference to FIG. 9, for inserting the tip of its bar 18 into the slot 19 when the lever 10 is swung in to latch the tongue 7 in place.

The boundary between cutout 45 and opening 46 is marked by a pin 21 about which a flap 14, serving as an actuating element, is swingable in a clockwise sense into a space 13 of housing 8 as indicated by an arrow in FIG. 3. Flap 14 is normally held in a position flush with front wall 8' by a resilient element 22 which forms one leg of a generally U-shaped spring 22 secured to the rear surface of the flap; the other leg 16 of that spring is a force-transmitting element bearing upon bolt 15 to dislodge the bar 18 from the slot 19 of bracket 20 when the flap 14 is thrust inwardly. Such dislodgment releases the lever 10 from its latching position and allows the spring 23 to restore that lever to its swung-out position shown in FIG. 3, thereby freeing the tongue 7.

Lever 10 carries a lock 34 with a keyhole for the insertion of a key 43 or 143 (FIG. 9 or 10) to block the operation of the release mechanism just described. Two types of blocking

means are shown in FIGS. 8, 9 and 10, 11, respectively. According to the first embodiment, a slider 38 in casing 37 is integral with bolt 15 and bar 18 and is urged toward the right by a spring 39 interposed between the slider and the inner casing wall. This slider overlies a locking slide 40 with two prongs 40', 40'' straddling the bar 18 and with a pair of humps 47 engageable by the key 43 to displace the slide 40 between its blocking position and a nonblocking position to the left thereof. The two positions are defined by a pair of notches 42 in slide 40 alternately engageable by a kink in a leaf spring 41. In the illustrated blocking position, prongs 40' and 40'' pass through the slot 19 of bracket 20 so as to maintain the engagement between this bracket and lever 10 even when the bar 18 is withdrawn by leftward pressure upon bolt 15 from the spring leg 16 of FIG. 3. Bolt 15 also has a slot 48 which receives the slightly inclined free end of bracket 20 with enough clearance to allow unhindered displacement of the bolt within its operating range.

With the arrangement shown in FIGS. 8 and 9, operation of the lock 34 does not prevent any shifting of bolt 15; hence, the force-transmitting element 16 of actuating flap 14 could also be rigid in that case. The bottom of the upwardly open slide 38 (seen from below in FIG. 9) is partly cut away to accommodate the key 43.

In FIGS. 10 and 11, wherein elements corresponding to those of FIGS. 8 and 9 have been designated with the same numerals preceded by a "1" in the position of the hundreds digit, I have shown a modified latching mechanism with a locking slide 140 displaceable transversely to the direction of movement of the pusher-bar head or slider 138 rather than parallel thereto as in the preceding case. Slide 140, indexable in either of two alternate positions by a leaf spring 141 engaging in notches 142, has a fin 140' coacting with a lug 138' on slider 138 in the illustrated blocking position in which the bar 118 cannot be retracted from the slot 119 of bracket 120. This is also the position illustrated in FIG. 12 which shows the spring leg 16 bearing ineffectually upon the extended pusher member or bolt 15. Resilient means not shown, similar to spring 39 of FIGS. 8 and 9, urge the slider 138 into the engaged position illustrated in FIGS. 10 and 11. A headed stud 51, traversing a slot 50 in slide 140, and a hooked pin 52 overlying that slide serve to hold the latter in position above the bottom of head 138.

In FIG. 4 I have shown a modified housing 8a having a rearward extension 24 formed with a slot 9a; the detent 11a of lever 10a has been correspondingly lengthened to project into the housing extension 24. This arrangement is particularly designed for larger suitcases and trunks, its operation being similar to that of the device of FIGS. 1-3.

In FIGS. 5-7 I have illustrated a latch mechanism of a type described in my copending application U.S. Ser. No. 822,550 filed 7 May 1969 (now abandoned). The locking tongue 7b of this device, entering the housing 8b through a slot 9b, has a camming formation 26 coacting with a similar formation 25 on a sliding latch 10b within the housing whereby this latch is moved to the left (FIGS. 5 and 7), against the force of a spring 29, when the tongue enters the slot on closure of the suitcase or other containers equipped with that device. Slider 10b is formed with an abutment 15b contacting a thrust plate 16b on a preferably resilient arm 22b which extends from the rear surface of flap 14b, the latter being pivotable about a pin 21b so as to enter the space 13b of housing 18b upon being manually depressed. Such displacement of actuator 14b shifts the sliding latch 10b to the left, beyond the limit of its displacement by the camming formations 25 and 26 as described above, whereby a lug 27 on latch 10b enters a hole 28 in housing 8b to index the latch in its inoperative position. The lower end of thrust plate 16b, having entered an opening 32 in slider 10b, is then also arrested in an off-normal position so that the flap 14b remains inwardly deflected to indicate the inoperative condition of the latch; in this condition, the lid 2 (FIG. 2) can be conveniently lifted off the base 1 since the user has both hands free to do so, being no longer required to hold the latch

open. The raising of the lid results in a camming engagement between two inclined edges 30, 31 on members 7b and 10b whereby the latter member is released from its indexed position, such release being facilitated by a slight inclination of the right-hand edges of lug 27 and slot 28 whereby the lug is cammed out of the slot in response to a horizontal force component sufficient to overcome the upward thrust of spring 29. The suitcase can then be reclosed with a snap-action interengagement of tongue 7b and latch 10b.

The positioning of pivot 21 or 21b of actuator 14 or 14b at the junction of the main and lateral housing portions, thus at a location proximal to the latch mechanism, protects this mechanism against tampering even upon inward deflection of the flap.

A suitable blocking mechanism, controlled by a key inserted in lock 34b, is also contemplated for the system of FIGS. 5-7. As diagrammatically indicated in FIG. 5, this mechanism may include a stud 35 on latch 10b engageable by a hook 36 which can be swung out of such engagement by rotation of the lock barrel with the key. With the latch 10b thus arrested in its operative right-hand position, actuator 14b is immobilized if the link 22b is rigid or can be ineffectually depressed if that link is resilient.

When the latch 10b has its normal mobility, being neither indexed by the lug 27 nor blocked by the hook 36, its loading spring 29 acts through abutment 15b and arm 22b to bias the flap 14b into its normal position flush with the front plate of housing 8b. Naturally, the stiffness of arm 22b must be sufficient to overcome the restoring force of spring 29 when the flap 14b is depressed.

I claim:

1. A closure device for a container having two separable parts meeting along a parting line in a closed position, comprising:

an elongate housing on one of said parts adjacent and substantially parallel to said parting line, said housing having a slot facing the other of said parts;

a coacting member on the other of said parts having a locking formation positioned for insertion into said housing through said slot upon closure of said container;

latch means movable in said housing between an inoperative and an operative position, said latch means being provided with detent means engageable with said locking formation in said operative position for preventing separation of said parts, said housing having a front wall with a main portion overlaying said latch means and with an opening in a side portion adjoining said main portion; retaining means for releasably holding said latch means in said operative position;

a manually depressible outwardly biased flap in said opening laterally offset from said slot, said flap being pivotable about an axis extending along the junction between said main and side portions; and

force-transmitting means controlled by said flap upon inward depression thereof for releasing said latch means from said operative position, thereby disengaging said detent means from said locking formation.

2. A device as defined in claim 1 wherein the main portion of said front wall has an elongate cutout adjacent said opening, said latch means comprising a lever swingably mounted in said cutout and disposed flush with said front wall in said operative position.

3. A device as defined in claim 1, further comprising key-controlled locking means for blocking the release of said latch means.

4. A device as defined in claim 3 wherein said force-transmitting means comprises a resilient extension of said flap and said latch means includes a coacting member blockable by said locking means and displaceable by said extension unless blocked.

5. A device as defined in claim 1 wherein said latch means comprises a spring-loaded member urged toward said operative position and indexing means for releasably maintaining

said spring-loaded member in said inoperative position, said force-transmitting means being positively engageable with said spring-loaded member for holding said flap depressed upon the indexing of said spring-loaded member in said inoperative position.

6. A closure device for a container having two separable parts meeting along a parting line in a closed position, comprising:

an elongate housing on one of said parts adjacent and substantially parallel to said parting line, said housing having a slot facing the other of said parts and further having a front wall provided with an elongate cutout;

a coacting member on the other of said parts having a locking formation positioned for insertion into said housing through said slot upon closure of said container;

a latch lever mounted in said cutout for swinging about a first pivotal axis between an operative position flush with said front wall and an inoperative position, said latch lever being provided with detent means engageable with said locking formation in said operative position for preventing separation of said parts;

retaining means for releasably holding said latch lever in said operative position;

a manually depressible outwardly biased flap on said housing laterally offset from said slot and swingable about a second pivotal axis parallel to said first pivotal axis; and

force-transmitting means on said actuating element for releasing said latch lever from said operative position upon inward depression of said actuating element, thereby disengaging said detent means from said locking formation.

7. A device as defined in claim 6 wherein said retaining means includes a catch in said housing and a spring-biased bolt on a free end of said lever engageable with said catch in said operative position, said flap being provided with an extension positioned to bear upon said bolt upon an inward swing of said flap for disengaging same from said catch.

8. A closure device for a container having two separable

parts meeting along a parting line in a closed position, comprising:

an elongate housing on one of said parts adjacent and substantially parallel to said parting line, said housing having a slot facing the other of said parts;

a coacting member on the other of said parts having a locking formation positioned for insertion into said housing through said slot upon closure of said container;

latch means movable in said housing between an inoperative and an operative position, said latch means being provided with detent means engageable with said locking formation in said operative position for preventing separation of said parts, said latch means comprising a spring-loaded member urged toward said operative position and indexing means for releasably maintaining said spring-loaded member in said inoperative position;

a manually depressible outwardly biased actuating element on said housing laterally offset from said slot; and

force-transmitting means on said actuating element for releasing said latch means from said operative position upon inward depression of said actuating element, thereby disengaging said detent means from said locking formation, said force-transmitting means being positively engageable with said spring-loaded member for holding said actuating element depressed upon the indexing of said spring-loaded member in said inoperative position.

9. A device as defined in claim 8 wherein said housing is provided with a front wall having a main portion overlying said latch means and a side portion with an opening normally occupied by said actuating element.

10. A device as defined in claim 9 wherein said actuating element is a flap pivotable about an axis extending along the junction between said main and side portions of said front wall.

11. A device as defined in claim 8 wherein said spring-loaded member is a slider longitudinally shiftable in said housing.

\* \* \* \* \*

40

45

50

55

60

65

70

75