United States Patent

Furniss et al.

[15] **3,642,102**

[45] **Feb. 15, 1972**

[54] **LOCK CONSTRUCTION FOR STORAGE BOX**

[72] Inventors: **William R. Furniss**, Glendale; **Dominick Verga**, Mequon, both of Wis.

[73] Assignee: **Milprint, Inc.**, Milwaukee, Wis.

[22] Filed: **Oct. 24, 1969**

[21] Appl. No.: **869,220**

[52] **U.S. Cl.** .....**190/48**, 150/42, 190/55 R

[51] **Int. Cl.**.....**A45c 3/00**

[58] **Field of Search**.....190/55, 48; 229/45; 150/42; 222/556, 484, 565, 566

[56] **References Cited**

UNITED STATES PATENTS

3,266,605	8/1966	Anderson et al.	190/48
3,339,781	9/1967	Schurman et al.	190/48 X
2,808,092	10/1957	Green	150/42
3,122,289	2/1964	Prahl, Jr.	222/566
3,282,476	11/1966	Tracy	222/484
3,391,765	7/1968	Baker	220/316
3,404,816	10/1968	Weber	222/566 X

Primary Examiner—Samuel F. Coleman
Assistant Examiner—Norman L. Stack
Attorney—Donald G. Casser and Adrian L. Bateman, Jr.

[57] **ABSTRACT**

A lock construction for a storage box having a pair of complementary closure portions which complete the box enclosure comprising at least one locking tab attached to one of the closure portions and a locking recess defined in the other closure portion. The tab is inserted into and retained in the recess to effect a locked closure of the storage box.

1 Claims, 3 Drawing Figures

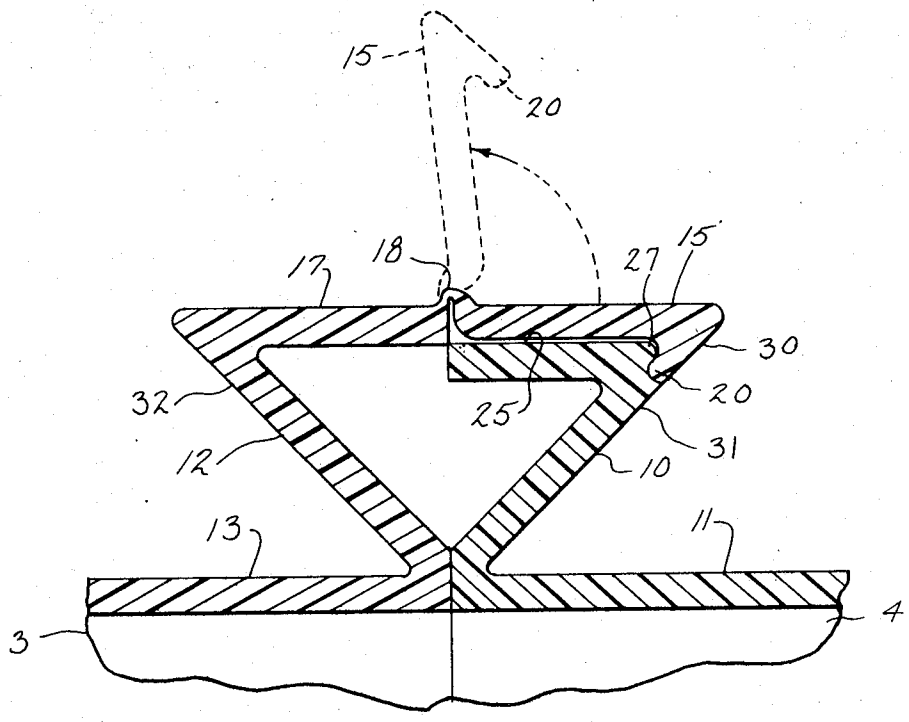


Fig. 1

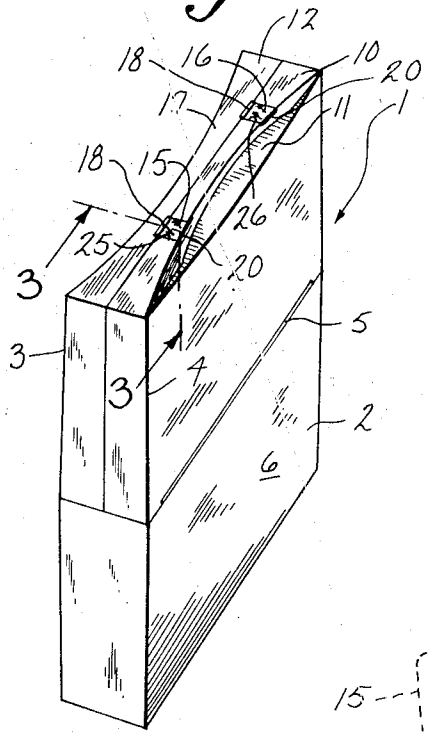


Fig. 2

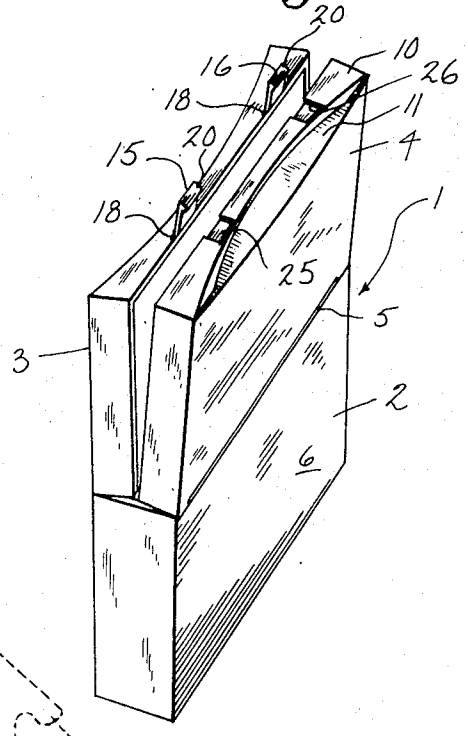
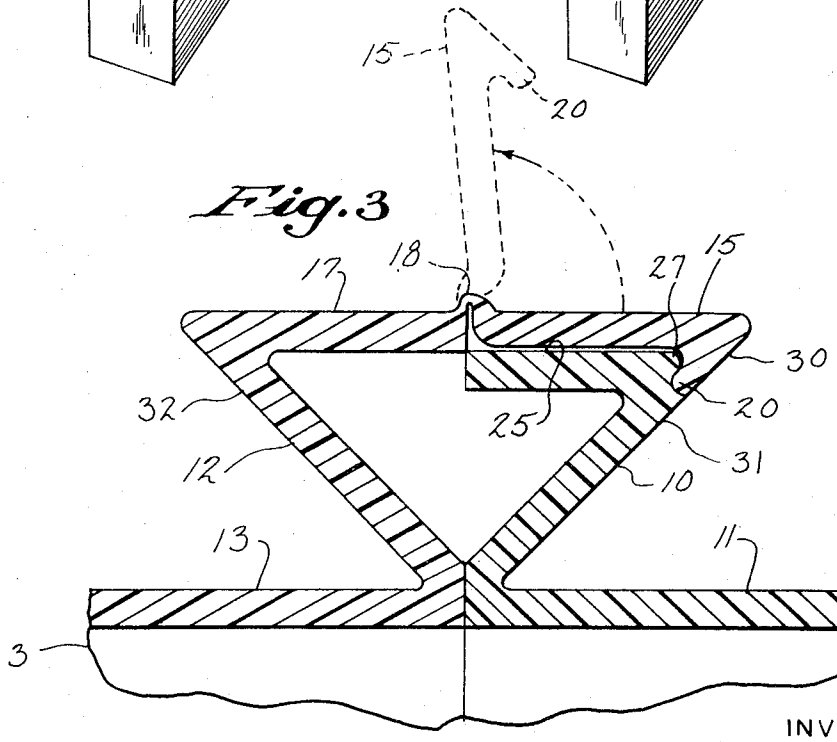


Fig. 3



INVENTORS
WILLIAM R. FURNISS
DOMINICK VERGA.

BY

ATTORNEY

LOCK CONSTRUCTION FOR STORAGE BOX

BACKGROUND OF THE INVENTION

This invention relates to the art of closures for storage receptacles, more particularly, locking closures for such articles.

Many types of locking constructions for storage boxes and similar receptacles are known in the prior art. In general, however, these locks incorporate a pair of complementary lock members including a hook or a finger and a latch adapted to cooperate therewith in which the latch comprises an upstanding or projecting lip, nib or bar. See, for example, U.S. Pat. Nos. 3,391,765, 2,808,092, and 2,687,154.

Prior art locking structures such as those described above have a common feature in that the latch member extends from the surface of the body of the receptacle. Further, both members of the locking structure are often placed on the exterior surface of the receptacle. These constructions present problems in that the projecting lock structure detracts from the appearance of the storage box, interferes with the handle function when a lock is attached to a handle portion of the storage box, and the projecting member of the lock is subject to being broken away from the body of the box such as when it is relatively small in size and made of molded plastic material.

SUMMARY OF THE INVENTION

Our present invention provides a locking construction for a storage box of the type having a receptacle body closed on one portion by a pair of complementary closure portions in which the lock includes a tab integrally hinged to one closure portion and a recess formed in the other closure portion, there being one recess for each such tab and the shape of the recess being the same as that of the tab. The tab has an extending hook portion which coacts with a lip portion of the recess to effect closure when the tab is inserted into the recess.

Our present invention provides a lock construction for storage boxes which can be readily molded of plastic material, that is attractive in appearance in that the locking construction does not comprise elements attached to the exterior surface of the storage box, and which will provide a strong, effective lock for the storage box. Further, there is a reduction in the likelihood of damage to either element of our lock construction in comparison to locks having one or both elements extending from the surface of the storage box.

DESCRIPTION OF THE DRAWINGS

The present invention is described in reference to the following drawings which illustrate a presently preferred embodiment of this invention in order to illustrate, not limit, the invention inasmuch as it is anticipated that changes can be made in the illustrated embodiment which will remain within the true spirit and scope of this invention. In the drawings:

FIG. 1 is a perspective view of a storage box incorporating a lock construction of this invention in which the lock is shown in the closed position;

FIG. 2 is a perspective view similar to FIG. 1 showing the lock construction in an open position; and

FIG. 3 is a sectional view, with a portion broken away, showing the closed position of the lock construction in full lines and the open position of the lock in dotted lines.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The storage box 1 illustrated in FIGS. 1–3 is shown as being of the type comprising a lower rectangular portion 2 having an open end which is closed by complementary closure portions 3 and 4. Each closure portion is hinged to the lower portion 2 in the manner illustrated by the hinge 5 joining closure portion 4 to the sidewall 6 of the lower portion of the storage box. When the storage box is of molded plastic construction, the hinge 5 is conveniently an integral hinge so that the entire box can be molded as a single piece unit, preferably of polyethylene or polypropylene.

The closure portions of the storage box 1 have handle portions which combine with each other to form a completed handle when the box is closed. With reference to FIG. 1, handle portion 10 is connected to the upper wall 11 of the closure portion 4 and handle portion 12 is connected to the top wall 13 of the closure portion 3, the top wall 13 being visible in FIG. 3.

The storage box 1 as described to this point does not constitute part of the present invention, which relates to the lock construction employed with the box.

Locking tabs 15 and 16 are joined to the handle portion 12, see especially FIGS. 2 and 3. Although two locking tabs are shown with the storage box 1, only a single locking tab and its complementary recess need be used if the storage box is small and more than two tabs and recesses may be used if the box is large. FIG. 3 illustrates the construction of locking tab 15 in detail, it being understood that locking tab 16 is of the same construction. The locking tab 15 is joined to the upper surface 17 of the handle portion 12 by means of an integral hinge 18. The locking tab has a lip 20 at its outer end.

The other member of the lock construction of the present invention comprises a recess formed in the handle portion 10, there being one recess for each locking tab. Recesses 25 and 26 are shown as being formed in handle portion 10, see FIG. 2; each recess is of the same construction and recess 25 is shown in detail in FIG. 3. The recess has the same configuration as the locking tab, and the depth of recess 25 is equal to the thickness of the locking tab 15 so that the locking tab when inserted in the recess in the full line position shown in FIG. 3 will be essentially coplanar with the upper surface 15 of the handle portion 12. The outer portion of the recess 25 includes a locking ledge 27 which is adapted to cooperate with the lip 20 of the tab 15. When the storage box is made of molded plastic material, it is most effective to position the locking ledge 27 relative to the lip 20 such that there will be a firm engagement between the two so that the tab will be retained in a closed position when the tab is inserted in the recess. This is readily accomplished when the box is molded plastic due to the slight resiliency of the plastic material and will provide a snap-action type of closure.

The unlocked position of the lock of this invention is illustrated in FIG. 3 wherein the locking tab 15 is shown in dotted lines, and also in FIG. 2. Closure of the box is effected by bringing the closure portions 3 and 4 together and then hinging each locking tab downward so that it is received in its respective locking recess. In the locked position, the lip 20 of each tab engages the locking ledge 27 formed as part of the locking recess. It will be noted from FIG. 3 that the cross-sectional shape of each locking tab corresponds to the cross-sectional shape of the handle of the box so that when the box is locked, each handle portion will be symmetrical. Thus, the locking tab 15 has an end wall portion 30 which corresponds in shape and slope to the end wall 31 of the handle portion 10. When the tab is inserted in the recess, the combination of the end walls 30 and 31 corresponds in shape and appearance to the end wall 32 of the handle portion 12. Further, the locking tab 15 is received entirely within each recess so that there are no projecting portions which extend beyond the handle of the box. Referring now to FIG. 1, the locking tabs 15 and 16 are coplanar with the balance of the handle when they are inserted in their respective complementary recesses, the only projection being hinges 18 which extend slightly beyond the surface of the handle.

Our invention as described above provides a lock construction for a storage box of the type having a receptacle portion closed along one end by a pair of closure portions wherein the lock construction comprises a tab attached to one portion and a recess defined in the other, the recess being the same configuration as the shape of the tab so as to accept the same therein. Effective locked closure of the box is thereby obtained, while at the same time the lock does not detract from the appearance of the storage box and does not have projecting members which can be readily damaged. Further, when

the lock construction is attached to handle members of the box, the lock construction of this invention does not project from the handle and therefore does not interfere with the comfort or utility of the handle.

We claim:

1. A lock construction for a storage box of the type having a receptacle portion, a pair of closure portions adapted to be brought together for closure of an end of said receptacle portion, and a handle portion attached to each such closure portion whereby a complete handle is formed when the two closure portions are brought together, said lock construction comprising:

at least one locking tab hinged to one of said handle portions and a locking recess defined in the other handle portion, there being one locking recess for each such locking tab;

an outer lip attached to each locking tab and an interior ledge defined in each locking recess, the lip and ledge being adapted to engage each other to hold a locking tab in a locking recess;

each locking recess being of the same configuration as its respective integral locking tab and the depth of each recess being equal to the thickness of its respective locking tab so that a locking tab will be essentially coplanar with its handle portion when inserted into a recess, and the lip of each locking tab being of the same configuration as the handle portion to which the tab is hinged so that the handle will have a symmetrical configuration when a locking tab is inserted into a locking recess.

* * * * *

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,642,102 Dated February 15, 1972

Inventor(s) William R. Furniss and Dominick Verga

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

Column 3, line 13, insert –integral– before locking.
Column 4, line 7, cancel "integral."

Signed and sealed this 13th day of June 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents