Jan. 6, 1953

G. L. BODEN ET AL

2,624,191

COMBINED LATCH AND LOCK

Filed Dec. 23, 1948

2 SHEETS—SHEET 1

Fig. 1.

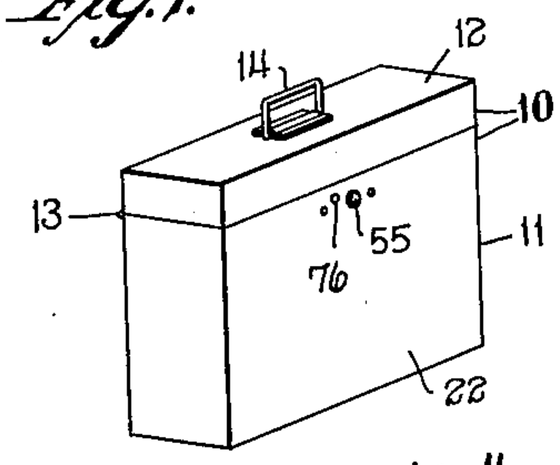


Fig. 5.

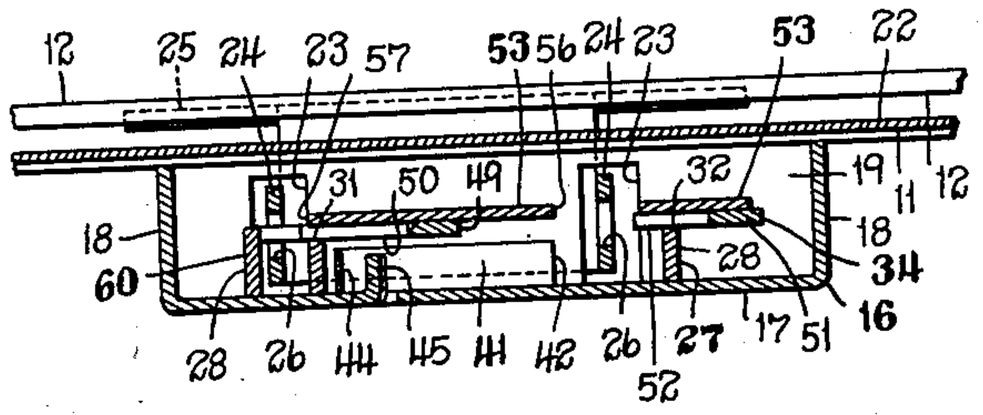


Fig. 2.

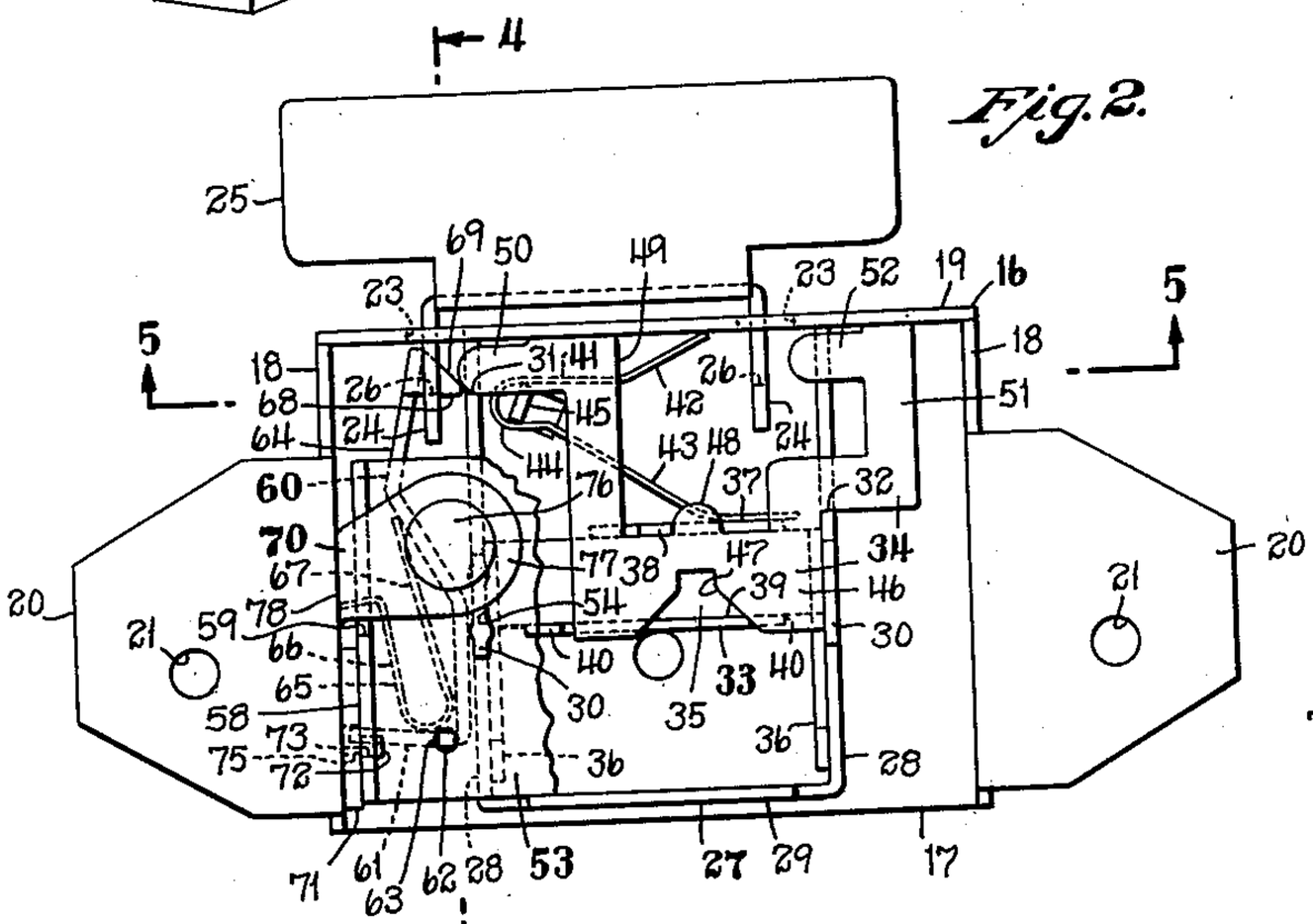
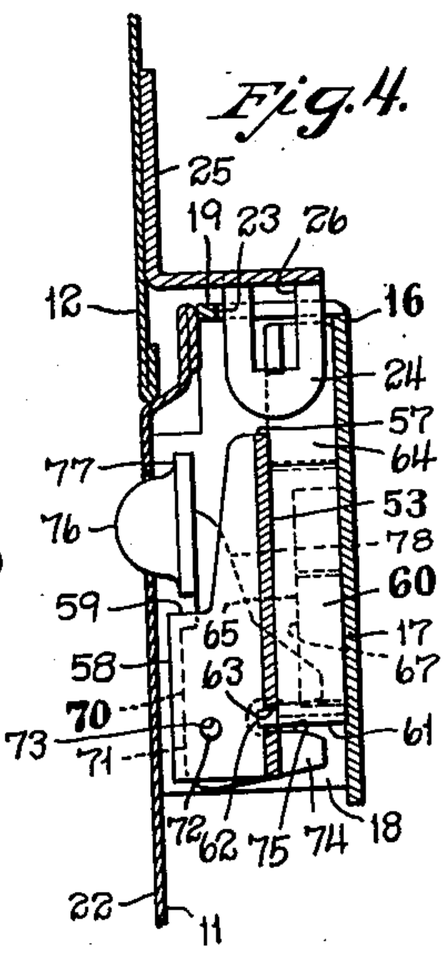


Fig. 4.



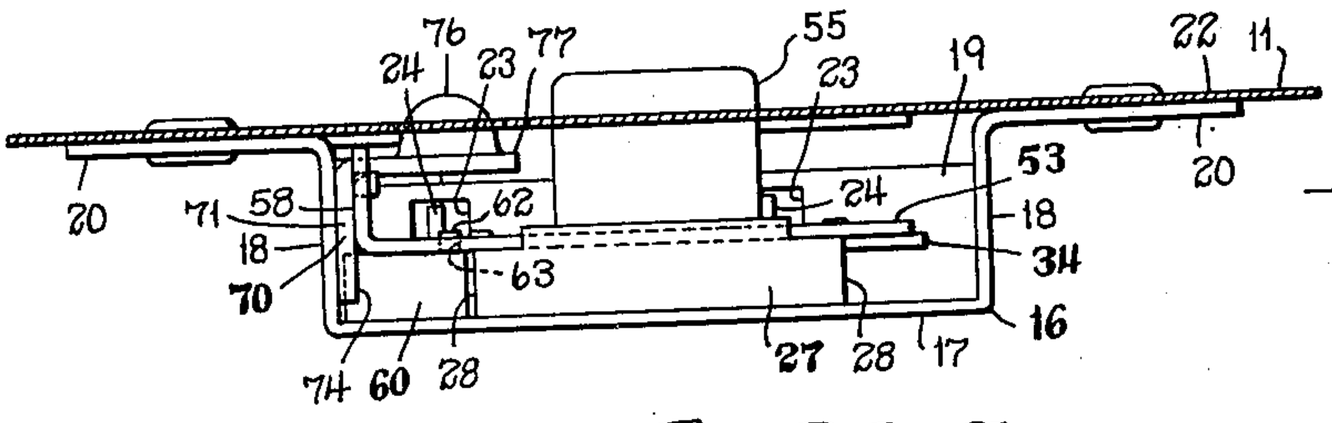


Fig. 3.

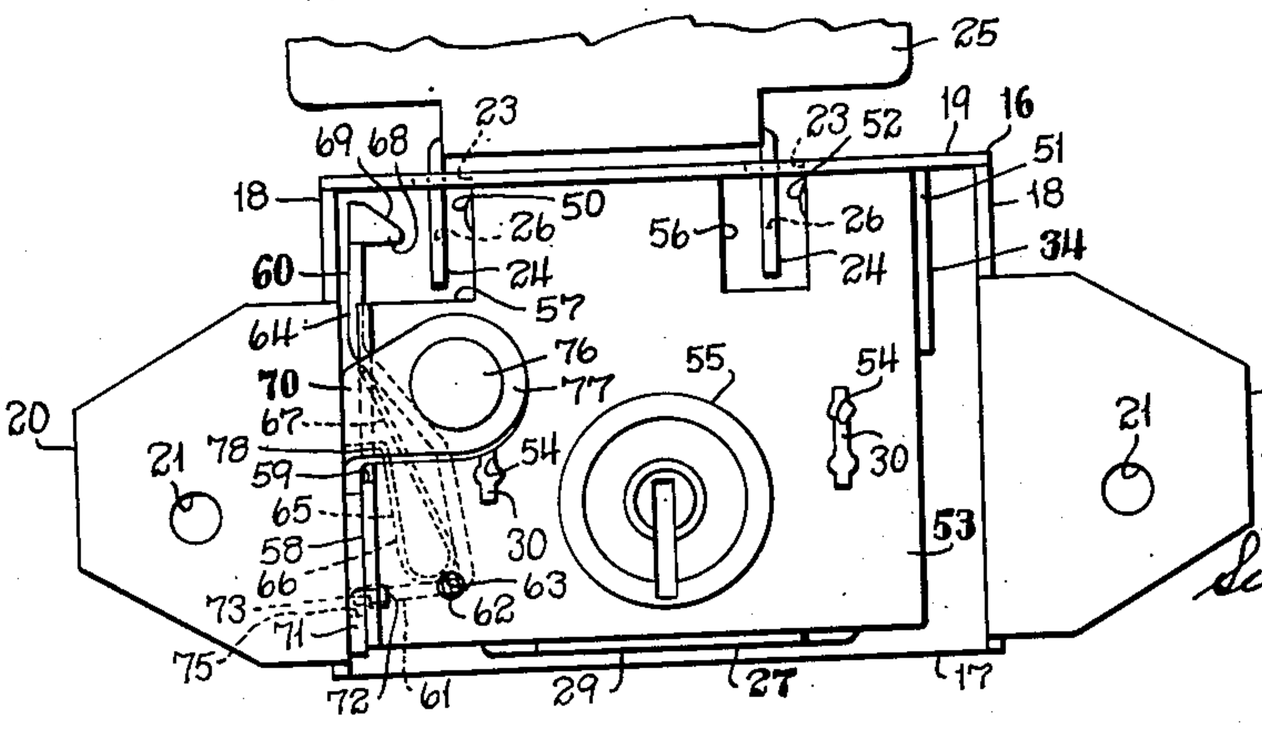


Fig. 6.

Inventors
George L. Boden
George D. Wiepert
By Seymour Earl Nichols
Attorneys

Jan. 6, 1953

G. L. BODEN ET AL

2,624,191

COMBINED LATCH AND LOCK

Filed Dec. 23, 1948

2 SHEETS—SHEET 2

Fig. 7.

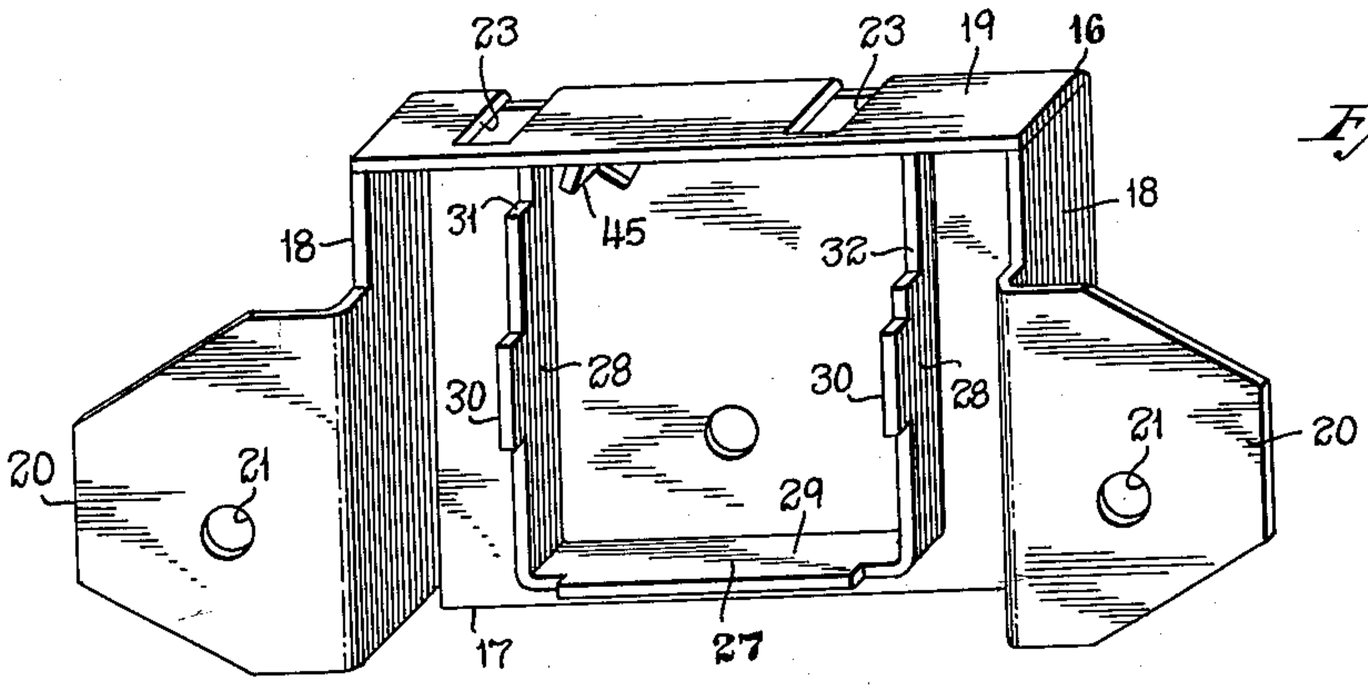


Fig. 8.

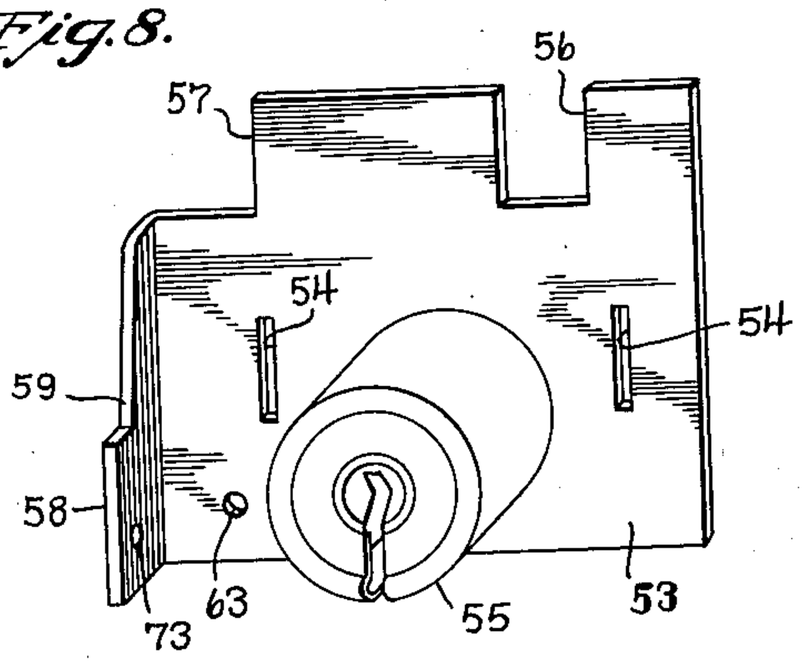


Fig. 9.

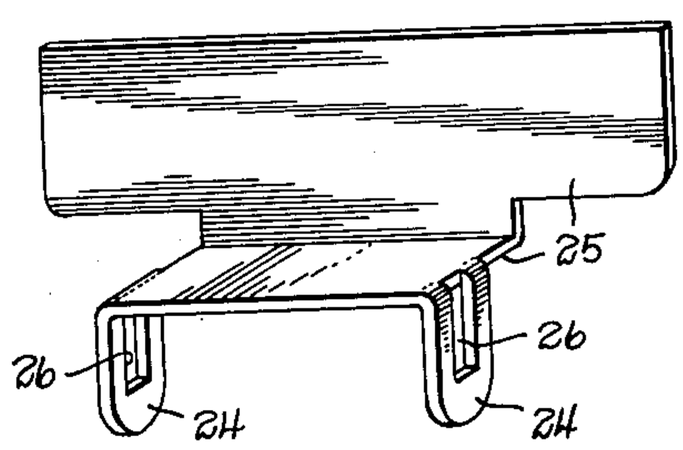


Fig. 10.

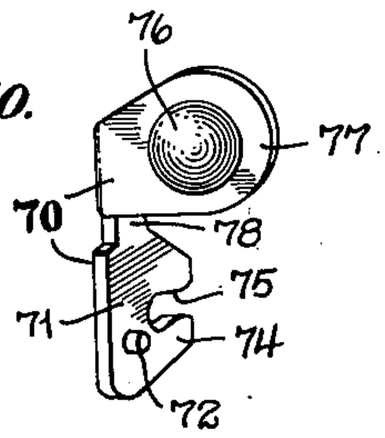


Fig. 11.

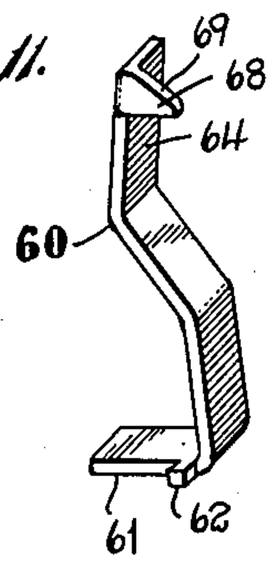
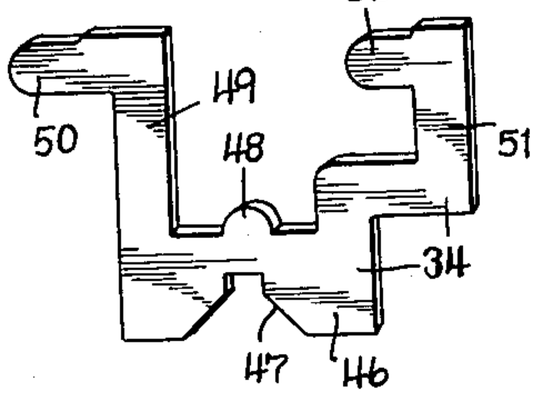


Fig. 12.



inventors
George L. Boden
George D. Wiepert
By Seymour Earle Nichols
Attorneys

Patented Jan. 6, 1953

2,624,191

UNITED STATES PATENT OFFICE

2,624,191

COMBINED LATCH AND LOCK

George L. Boden, Middle Haddam, and George D. Wiepert, Branford, Conn., assignors to The Merriam Manufacturing Company, Durham, Conn., a corporation of Connecticut

Application December 23, 1948, Serial No. 66,953

2 Claims. (Cl. 70—70)

1

The present invention relates in general to locks and more especially to a combination latch-and-lock for personal file boxes, cash boxes and the like.

It is desirable in boxes of this type to have means for transporting a box and hence a handle is usually secured on the hinged cover of the box whereby the box may be lifted and carried from place to place. It has frequently happened, however, that when a box of this type is unlocked and lifted by its handle, the body of the box swings downwardly away from the cover, spilling the contents of the box onto the floor. It is expedient, therefore, to provide latch-means for securing the cover to the body of the box so that the box may be carried successfully from place to place without the necessity of turning the lock.

It is an object of the invention, therefore, to provide a personal file box or the like with a superior lock wherein a latch is employed for releasably holding the cover of the box closed whenever the cover is unlocked.

A further object of the invention is to provide a superior combination latch-and-lock for personal file boxes and the like wherein the latch and locking-dogs move in opposition to each other such that when the locking-dogs are withdrawn from locking engagement with the striker of the cover, the latch automatically moves into latching engagement with the striker.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art.

In the accompanying drawings, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a perspective view of a file box embodying the improved combination latch-and-lock of this invention;

Fig. 2 is an enlarged front elevation of the combined latch-and-lock of Fig. 1 with the face-plate of the lock removed and the strikers of the striker-plate in latching engagement with the latch of the lock;

Fig. 3 is a bottom elevation of the combination latch-and-lock mounted on the front panel of the file box of Fig. 1, the front panel of which is shown in section;

Fig. 4 is an end elevation of the combined latch-and-lock and striker on section line 4—4 of Fig. 2, including a fragmentary portion of the cover of the box;

2

Fig. 5 is a transverse section of the combination latch-and-lock on section line 5—5 of Fig. 2, including a fragmentary portion of the cover of the box;

Fig. 6 is a front elevation of the combination latch-and-lock, including a fragmentary portion of the striker-plate and the face-plate, the latch of the lock being out of engagement with the strikers;

Fig. 7 is a perspective view of the frame-member of the combination latch-and-lock of this invention;

Fig. 8 is a perspective view of the face-plate of the frame-member shown in Fig. 7, including the cylindrical key-plug;

Fig. 9 is a perspective view of the striker-plate adapted to be secured to the cover of the box and having a pair of depending strikers for engagement with the combination latch-and-lock mechanism;

Fig. 10 is a perspective view of the latch-operating member of the combination latch-and-lock;

Fig. 11 is a perspective view of the latch per se of the combination latch-and-lock; and

Fig. 12 is a perspective view of the dog-carrier of the combination latch-and-lock of this invention.

Referring to the drawings, the latter illustrate an exemplary embodiment of the invention as used on a box 10 designed for filing personal papers, the box comprising a substantially-rectangular body 11 and a cover 12. The cover 12 is hinged along one edge, as shown at 13 in Fig. 1, to the corresponding edge of the upper end of the body 11 of the box so as to swing relative thereto for closing and opening the box. A handle 14 is secured on the top of the cover 12 for transporting the box from place to place.

The combination latch-and-lock of this invention comprises a frame-member 16 consisting of a substantially-rectangular back-plate 17 having side walls 18—18 and a top wall 19 bent upwardly therefrom at substantially right angles thereto, each side wall 18 having an integral ear 20 projecting laterally therefrom and provided with an aperture 21 to receive fastening-means whereby the frame-member 16 is adapted to be secured to the inside of the front panel 22 of the body 11 of the box, with the top wall 19 of the frame-member 16 substantially flush with the upper edge of the front panel 22. The top wall 19 of the frame-member 16 is provided with a pair of laterally-spaced substantially-rectangular apertures 23—23 extending substantially

vertically therethrough to receive the corresponding laterally-spaced strikers 24—24 of a striker-plate 25, which is secured to the front wall of the cover 12 by a welded joint or equivalent fastening-means, each striker 24 being formed with a transverse substantially-rectangular aperture 26 for accommodating a locking-dog of the lock-mechanism, as hereinafter described.

Fixedly secured on the inside of the back-plate 17 of the frame-member 16 is a substantially U-shaped retainer 27 comprising laterally-spaced substantially-parallel side walls 28 projecting substantially perpendicularly from the back-plate 17 of the frame-member 16, and a substantially-perpendicular end wall 29. Each side wall 28 is provided on its upper edge intermediate its ends with an upwardly-projecting lug 30 for securing the face-plate of the frame-member 16 to the retainer 27, in the manner hereinafter described.

As shown especially well in Fig. 2, the retainer is located substantially centrally of the back-plate 17 of the frame-member, while the apertures 23 in the top wall 19 of the frame-member are offset laterally with respect to the retainer such that the upper ends of the side walls 28 are displaced to the right of the apertures 23. In this connection, the upper end of the left-hand side wall 28 is provided with a notch 31 to provide clearance for the passage of the corresponding locking-dog of the dog-carrier, as hereinafter described. Further, the right-hand side wall 28 is similarly provided with a notch 32 for clearance of the right-hand locking-dog of the dog-carrier, the notch 32 of the right-hand side wall 28 extending from the forward end of the latter rearwardly to a point immediately adjacent the lug 30.

The lock-mechanism is mounted within the frame-member 16 and comprises, in the main, a keeper 33 (see Fig. 2), supported on the back-plate 17 of the frame-member for sliding movement vertically between the side walls 28 of the retainer 27; and a dog-carrier 34 slidably supported on the upper edges of the retainer above said keeper for movement laterally with respect thereto. The keeper 33 comprises a transverse bar 35 having integral legs 36 formed at opposite ends thereof and extending downwardly therefrom, each leg slidably engaging the corresponding inner wall of the respective side wall 28 of the retainer 27 to guide the transverse bar 35 of the keeper for substantially-vertical sliding movement within the retainer. The upper edge of the transverse bar 35 is provided with an upstanding flange 37 having a carrier-stop 38 projecting upwardly therefrom, the stop 38 being substantially intermediate the opposite ends of the transverse bar 35. The bottom edge of the transverse bar is also provided with an upwardly-projecting flange 39, the latter having upwardly-projecting knobs 40 at opposite ends thereof respectively for slidably supporting the dog-carrier, as hereinafter described.

The aforesaid keeper 33 is adapted to be held in a normal position within the retainer 27 by resilient-means comprising a two-legged spring 41, the upper leg 42 of which is adapted to bear against the top wall 19 of the frame-member and the lower leg 43 of which is adapted to bear against the upper flange-wall 37 of the transverse bar 35, the apex-portion 44 of the spring 41 being detachably secured on the back-plate 17 of the frame-member by means of a tongue 45 struck up therefrom and constituting a post over

which the apex-portion 44 of the spring 41 engages.

The dog-carrier 34 comprises a sheet-metal member embodying a transverse base-portion 46 having a ward 47 on its lower edge intermediate the upper ends thereof for the reception of the flange of the dog-carrier operating-key, and a nose 48 on its upper edge substantially opposite the ward 47. Projecting upwardly substantially vertically from the left-hand end of the transverse base-portion 46 of the dog-carrier, is an arm 49 having a locking-dog 50 projecting laterally from the outer end thereof at substantially right angles thereto. The right-hand end of the transverse base-portion 46 of the dog-carrier is provided with an arm 51 which is substantially Z-shaped and provided at its outer end with a laterally-extending locking-dog 52 which is in substantial longitudinal alignment with the locking-dog 50.

The dog-carrier 34 is adapted to be supported on the keeper 33 by engagement with the upper edge of its flange 37 and the knobs 40 of its lower flange 39 with the outer end of the locking-dog 50 engaged in the notch 31 of the retainer and the Z-shaped arm of the locking-dog 52 engaging in the notch 32 of the retainer. Moreover, when so assembled, the nose 48 of the transverse base-portion 46 of the dog-carrier is engaged against the right-hand edge of the carrier-stop 38 such that the right-hand end of the transverse base-portion 46 of the dog-carrier is held positively in engagement with the corresponding side wall 28 of the retainer 27.

The above-described elements of the lock-mechanism are adapted to be held in assembled relationship within the frame-member 16, in the manner shown in Figs. 2 through 6, by means of a substantially-rectangular face-plate 53 adapted to fit within the frame-member and having laterally-spaced slots 54 adapted to receive the upwardly-projecting lugs 30 of the retainer, the aforesaid lugs projecting through the slots so that by peening or otherwise striking over the upper edges of the lugs, the face-plate may be permanently secured to the frame-member 16. The face-plate 53 carries a conventional cylindrical key-plug 55 for receiving the key of the lock. The upper edge of the face-plate is provided with apertures 56 and 57 respectively substantially opposite the corresponding dog-receiving apertures 23—23 in the top wall 19 of the frame-member, both of the apertures 56 and 57 intersecting the upper edge of the face-plate and the aperture 57 also intersecting the left-hand edge thereof. The latter, as shown especially well in Fig. 8, is provided with an integral upwardly-bent side wall 58 having a notch 59 formed adjacent the upper end thereof, the notch 59 being suitably formed to provide clearance for operation of the latch-release button hereinafter described.

Referring especially to Fig. 11, the latch 60 comprises a bell-crank lever having a short transverse leg 61 which is accommodated in the space between the left-hand side wall 28 of the retainer and the left-hand wall 18 of the frame-member 16, the upper edge of the short leg 61 being provided at its inner end with an upwardly-projecting trunnion 62 adapted to extend through an aperture 63 in the face-plate whereby the lever 60 is pivotally supported on the back-plate 17 of the frame-member for oscillatory movement in a plane parallel thereto. To hold the lever in its latching position, the long sub-

stantially-vertical leg 64 of the bell-crank lever is engaged by a spring 65, one arm 66 of which engages against the left-hand wall 18 of the frame-member and the opposite arm 67 of which engages against the long leg 64 of the bell-crank lever substantially intermediate its opposite ends. The upper end of the aforesaid long leg 64 is bent outwardly laterally away from its base-portion such that the upper end of the long leg 64 is located normally substantially intermediate the left-hand side wall of the retainer and the left-hand wall of the back-plate. Formed integrally or otherwise secured on the upper end of the long leg 64 is a laterally-projecting catch 68 extending to the right of the long leg 64 and at substantially right angles thereto, the upper edge of the catch being provided with an upwardly-and-rearwardly-sloping cam-face 69. The length of the long leg 64 of the latch is such that the catch 68 is normally disposed substantially opposite the notch 31 of the wall 28, with the cam-surface 69 of the catch in alignment with the end of the dog 50 immediately beneath the corresponding aperture 23 of the top wall 19 of the frame-member.

The latch 60 is adapted to be actuated by means of a latch-operating member 70 comprising a bell-crank lever 71 having a trunnion 72 pressed or otherwise made to project substantially perpendicularly from the right-hand face of its knee and to pivotally engage in an aperture 73 provided in the side wall 58 of the face-plate 53 for pivotally supporting the bell-crank lever 71 in the vertical recess formed between the side wall 57 of the face-plate and the left-hand side wall 18 of the back-plate. The short arm 74 of the bell-crank lever 71 is provided with a longitudinal slot 75 which intersects the free end of the arm, the longitudinal axis of the slot being slightly forwardly of the trunnion 72. The slot 75 is adapted to engage over the short leg 61 of the latch 60 adjacent the outer extremity thereof to form an articulated connection therewith whereby pivotal movement of the bell-crank lever 71 about its trunnion 72 in the plane perpendicular to the back-plate 17 of the frame-member will oscillate the bell-crank lever-latch 60 in the plane of the back-plate 17 of the frame-member against the resistance of its compressed spring 65 thereby swinging its catch 68 from its normal position immediately beneath the aperture 23 in the top wall 19 of the frame-member to the left, out of alignment with the aforesaid aperture 23. The bell-crank lever 71 is adapted to be actuated manually to operate the latch 60 in the manner described above, by means of a button 76 struck up or otherwise formed from an arm 77 extending substantially transversely of the forward end of the long arm 78 of the bell-crank lever 71, the arm 77 of the button 76 being located substantially opposite the clearance-notch 32 in the side wall 28 of the retainer 27 whereby the button 76 may be pressed inwardly to operate the bell-crank lever 71 for oscillating the latch 60 in the manner hereinabove described. With the latch-and-lock assembly secured on the inner face of the front panel 22 of the box 10, the key-plug 55 projects through an aperture therein so as to be engaged by a key from the front face of the front panel 22, and the latch-operating button 76 projects through a second aperture in the front panel 22 to permit operation of the latch.

The operation of the combination latch-and-lock may be described briefly as follows. With

the locking-dogs displaced to the right, as seen in Fig. 2, corresponding to their unlocked positions and the latch 60 in its normal position, then on closing the cover of the box, the strikers 24 of the cover will move down through the corresponding apertures 23 in the top wall 19 of the frame-member, the left-hand striker engaging the cam-face 69 of the catch 68 thereby positively camming the latch 60 in a counterclockwise direction against the resistance of its spring 65. When the cover is fully closed, the apertures 26 of the strikers 24 are substantially opposite the locking-dogs 50 and 52 of the lock-mechanism. Moreover, as soon as the aperture 26 of the left-hand striker arrives opposite its respective locking-dog 50, it is likewise substantially opposite the catch 68 of the latch 60, whereupon the latter is released and swings back to its normal position under the urgency of its spring 65, the catch 68 engaging in the aperture 26 of the striker 24 thereby successfully latching the cover to the body of the box. Now, if it is desired to lock the cover in its closed position, the operator inserts a key into the key-plug 55 and turns the key in a counterclockwise direction, whereupon an inner bit of the key cammingly engages the lower flange 39 of the transverse bar 35 of the keeper, thereby elevating the keeper against the resistance of its spring 41, as a consequence of which the carrier-stop 38 on the upper flange 37 of the keeper is moved upwardly with respect to the nose 48 of the dog-carrier 34 such that the stop is clear of the aforesaid nose 48. Further counterclockwise rotation of the key will engage an outer bit of the key in the ward of the dog-carrier thereby picking up the latter and sliding it from right to left such that the locking-dogs 50 and 52 move into the corresponding apertures 26 of the strikers 24 to positively lock the cover in its closed position. As the counterclockwise rotation of the key is continued, its outer bit disengages the ward of the dog-carrier so that further rotation of the key has no effect thereon. Subsequent counterclockwise rotation of the key then carries its inner bit out of engagement with the lower flange of the keeper, whereupon the keeper is lowered by the force of its compressed spring 41 until its carrier-stop 38 re-engages the nose 48 of the dog-carrier but on the opposite side thereof from its normal position, thereby preventing inadvertent displacement of the locking-dogs 50 and 52 from the respective apertures 26 of the strikers. It will be clear that when the dogs 50 and 52 are displaced to the left to lockingly engage in the apertures 26 of the strikers, the locking-dog 50 will engage the catch 68 to move the latter to the left against the resistance of the latch-spring 65 out of the aperture 26 of the left-hand striker 24. The catch 68 of the latch is so held by the locking-dog 50 until the cover is unlocked.

To unlock the cover, the key is inserted in the key-plug 55 and rotated in a clockwise direction, whereupon the inner bit of the key elevates the keeper against the resistance of the keeper-spring 41 to move its carrier-stop 38 upwardly out of engagement with the nose 48 of the dog-carrier. Further rotation of the key engages its outer bit with the ward of the dog-carrier to displace the latter from its left-hand position to its right-hand or normal position in which the locking-dogs 50 and 52 respectively are withdrawn from the corresponding apertures 26 of the strikers 24. As the locking-dogs are moved out of locking engagement with the strikers into their normal positions, the spring-loaded latch and, in particular,

its catch 68, is released by the locking-dog 50 and swings back to its normal position, thereby re-engaging the aperture 26 of the left-hand striker 24. The latch thus automatically latches the cover to the box-body whenever the cover is unlocked by withdrawal of the locking-dogs from the strikers. When the dog-carrier reaches its normal extreme right-hand position in the frame-member, the outer bit of the key moves out of the ward of the dog-carrier and subsequently the inner bit of the key disengages the keeper which is then lowered by the force of its compressed spring 41 to re-engage its stop 38 with the nose 48 of the dog-carrier, so as to positively hold the latter in its normal position, with the locking-dogs out of engagement with the strikers of the cover.

From the foregoing description, it will be clear that the latch is arranged in conjunction with the lock to automatically latch the cover to the body of the box whenever the cover is closed and the lock is not turned; and, further, that the latch is adapted to be moved laterally by the locking-dogs with the corresponding lateral movement thereof out of latching engagement with the striker as the locking-dogs are moved into locking engagement therewith and to be moved automatically into re-engagement with the striker as the locking-dogs are moved out of engagement therewith. The foregoing movements of the latch are accomplished automatically. It is clear, however, that in order to unlatch the cover when the lock is not turned, the latch-button 76 is pressed inwardly manually, as indicated in Fig. 6, thereby oscillating the latch in a counterclockwise direction against the resistance of its spring 65, so as to disengage its catch from the aperture 23 of the corresponding striker of the cover to release the latter. On releasing the button, the compressed latch-spring 65 returns the latch to its normal position for re-engaging the striker of the cover when the cover is again closed, the catch automatically latching the cover closed, thereby precluding inadvertent emptying of the contents of the box onto the floor when the box is lifted by the handle of its cover.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

We claim:

1. In a lock for a box having a body, a cover hinged thereto and a striker secured to said cover, the combination including: lock-mechanism secured to the body of said box, said lock-mechanism being arranged to be operated by a key to move into and from engagement with said striker when said cover is closed to lock and unlock said cover to and from said box-body respectively; a latch mounted on said box-body in the plane of said lock-mechanism and to one side thereof; resilient-means in engagement with said latch, said resilient-means being adapted to hold said latch normally in engagement with said striker when said cover is closed thereby to latch said cover to said box-body, said latch being arranged to be engaged by said lock-mechanism and moved out of engagement with said striker against the resistance of said resilient-means as said lock-mechanism is moved into engagement with said striker and to be automatically re-engaged with said striker by the force of said resilient-means as said lock-mechanism is moved away from said latch out of engagement with said striker; and means for operating said latch independently of said lock-mechanism, said latch-operating means comprising a bell-crank lever having an articulated connection with said latch and a button for manually actuating said bell-crank lever.

2. In a lock for a box having a body, a cover hinged thereto and a striker secured to said cover, the combination including: lock-mechanism secured to the body of said box, said lock-mechanism being arranged to be operated by a key to move into and from engagement with said striker when said cover is closed to lock and unlock said cover to and from said box-body respectively; a latch comprising a bell-crank lever pivotally supported in said lock to one side of said lock-mechanism in the path of movement thereof, said bell-crank lever having a catch; resilient-means in engageemnt with said bell-crank lever, said resilient-means being adapted to hold the catch of said bell-crank lever normally in engagement with said striker when said cover is closed thereby to latch said cover to said box-body, said catch being arranged to be engaged by said lock-mechanism and moved out of engagement with said striker against the resistance of said resilient-means as said lock-mechanism is moved into engagement with said striker and to be automatically re-engaged with said striker by the force of said resilient-means as said lock-mechanism is moved away from the catch of said bell-crank lever out of engagement with said striker; and manually-operated means for actuating said bell-crank lever independently of said lock-mechanism, said latch-actuating means comprising a second bell-crank lever supported in said lock for pivotal movement in a plane substantially perpendicular to the plane of said first bell-crank lever, said second bell-crank lever having an articulated connection with said first bell-crank lever, and a button on said second bell-crank lever for manually operating the latter to actuate the catch of said first bell-crank lever.

GEORGE L. BODEN.
GEORGE D. WIEPERT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
868,036	Tong	Oct. 15, 1907
1,321,605	Deren	Nov. 11, 1919
2,030,456	Ledin	Feb. 11, 1936