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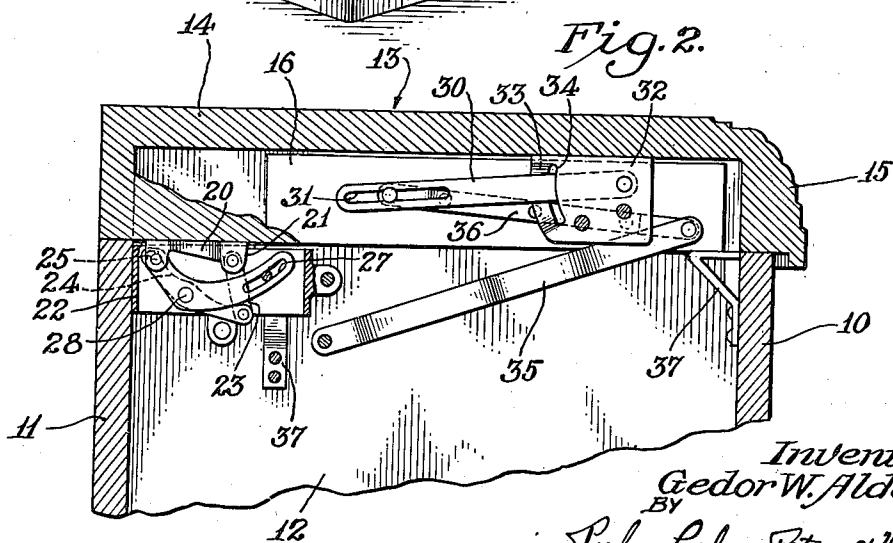
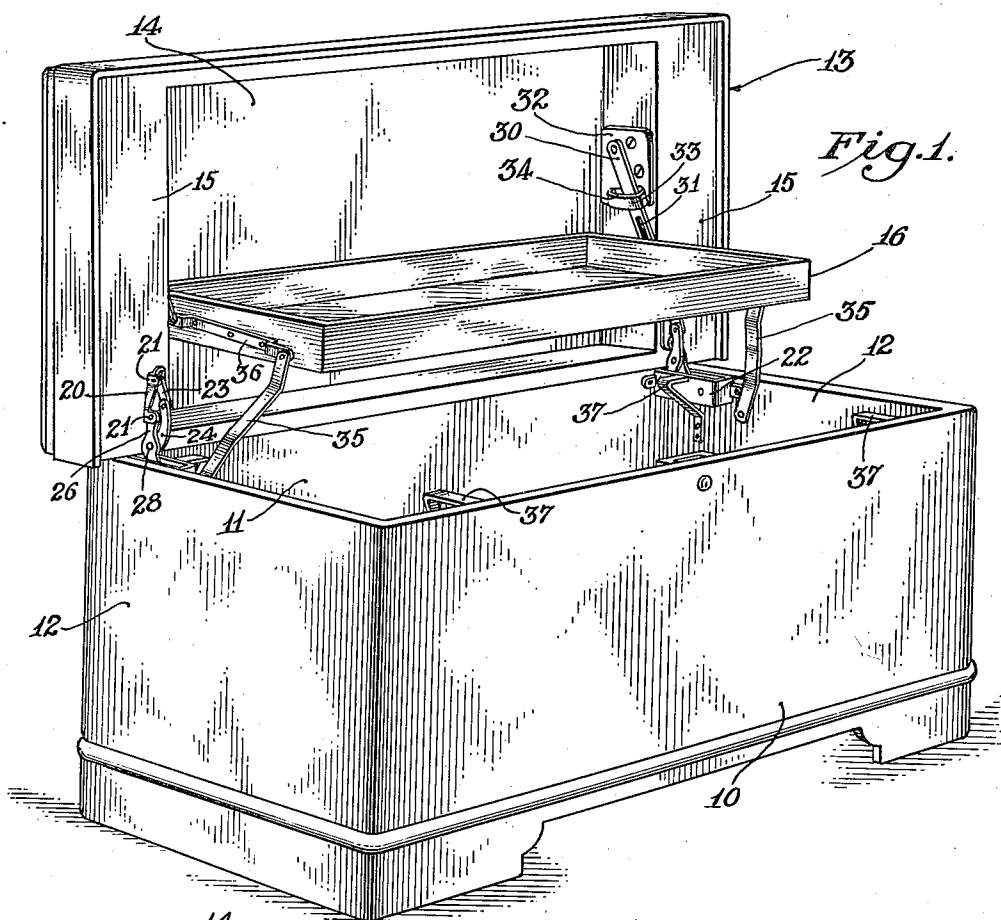
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2,258,838

CHEST STRUCTURE

Filed Oct. 12, 1938

2 Sheets-Sheet 1



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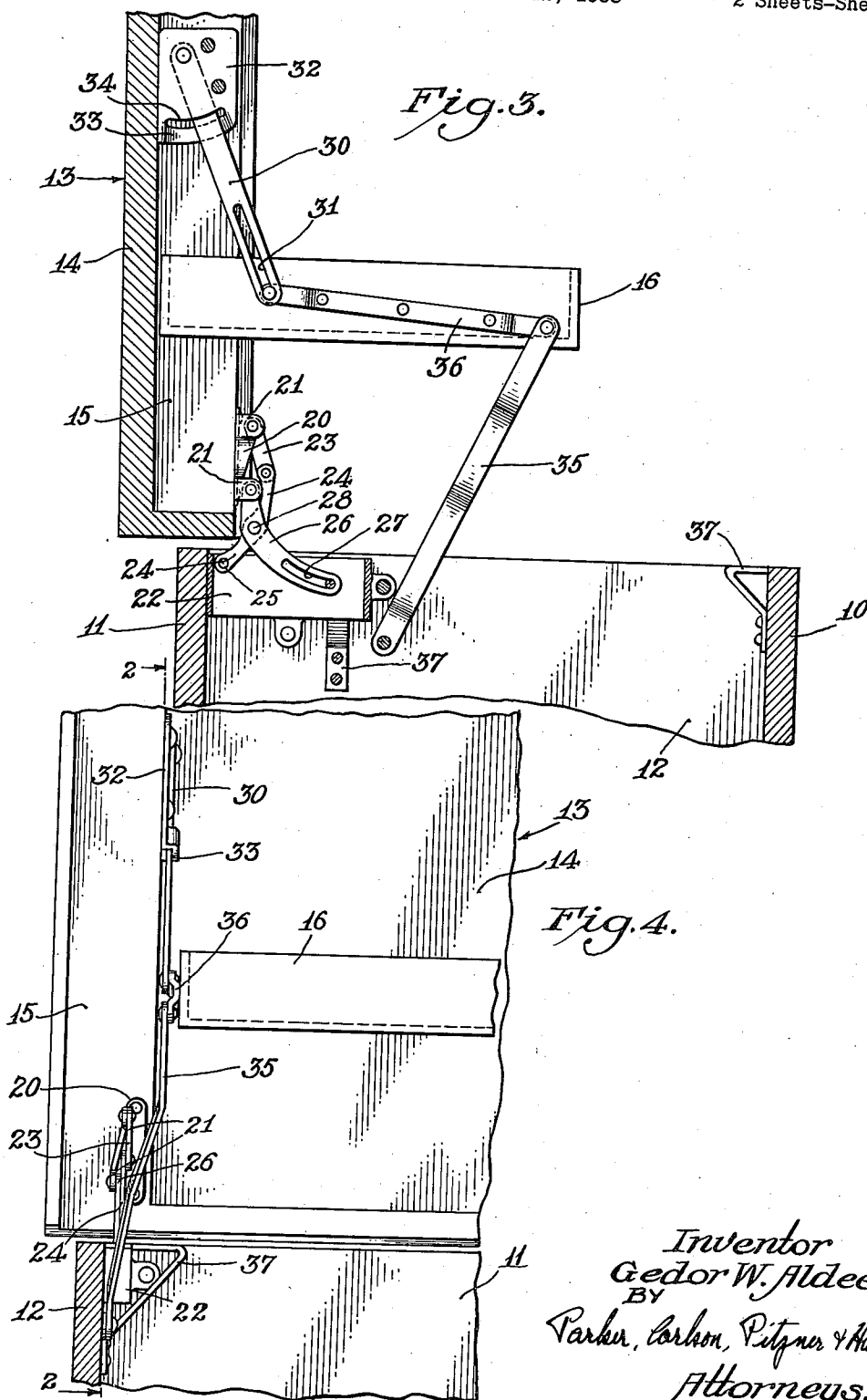
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UNITED STATES PATENT OFFICE

2,258,838

CHEST STRUCTURE

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4 Claims. (Cl. 206—10)

The invention relates generally to chests having hinged covers, and more particularly to a chest of this type provided with a tray in the upper part thereof adapted to be automatically lifted upon raising the cover of the chest.

The general object of the invention is to provide a chest of this type in which the lid is so hinged and the tray so supported that a relatively large tray may be used without interfering with access to the chest proper.

More specifically, it is an object of the invention to provide a chest of this type in which the lid is so hinged and the tray so supported that a tray having a width, front to rear, only a small amount less than the corresponding dimension of the lid may be used and, when the lid is opened, the tray is raised not only relative to the chest but also relative to the lid to avoid interfering with easy access to the chest proper.

Another important object is to provide a chest in which the lid is so hinged and the tray so supported that the tray, even when loaded, does not materially tend to cause the chest lid to close until the lid has moved to a considerable angle forwardly of its vertical or open position.

Other objects and advantages will become apparent from the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a perspective view of a chest having its lid open to show the position of the tray, and embodying the features of the invention.

Fig. 2 is a fragmentary vertical section taken on the line 2—2 of Fig. 4 and showing the chest with the lid closed.

Fig. 3 is a view similar to Fig. 2 but showing the position of the parts when the lid is opened.

Fig. 4 is a fragmentary longitudinal vertical section showing the lid open.

The invention is embodied in a chest having either the "waterfall" type of lid, or the flat type of lid. Cedar chests of the type used in homes for storing articles of woollen clothing or the like are of this construction. For purposes of illustration, a chest having a lid of the waterfall type is shown in the drawings, in which the body of the chest comprises a front wall 10, a rear wall 11, and two end walls 12. The lid, indicated generally at 13, comprises a top wall 14 and a downwardly extending skirt 15 around its edge, constituting in appearance a continuation of the walls of the chest proper. In cedar chests such as are used in homes, the skirt 15 is of substantial depth. However, when packing clothing into the chest, it cannot be conveniently packed above

the level of the top edge of the walls thereof. Thus the space within the skirt 15 would not be utilized for storage purposes.

To utilize such space, a tray 16 is provided which is of a depth substantially equal to the depth of the skirt 15. As a matter of convenience, it is desirable to provide structure for automatically lifting the tray when the lid of the chest is opened. While the depth of the tray may be substantially equal to that of the skirt 15, the width, front to rear, of the tray cannot be made equal to that of the lid, since when the lid is open, the tray would interfere with convenient access to the chest proper. It is therefore necessary to make the tray of a width less than the corresponding dimension of the lid.

In most of the chests heretofore commercially available, the tray is usually pivoted to the inside surface of the top wall 14 of the lid by means of a hinge of the butt type having its axis located substantially at the upper rear edge of the tray. With a hinge so located, the tray is necessarily narrow. This is due to the fact that the wider the tray is, the lower is the position that it must occupy when the lid is open, and hence with a wide tray, access to the chest proper is interfered with. Commercially, such trays are made only about half the width of the lid.

In the ordinary construction of such chests, the lid is also hinged to the chest proper by an ordinary butt type hinge. The front portion of the tray is supported by arms extending upwardly from the end walls 12 of the chest. When the lid is open, such arms have to extend slightly rearwardly of the vertical position in order to prevent the weight of the tray and its contents from overbalancing the lid and causing it to close. Moreover, even though the arms be so positioned, a slight movement forward of the lid will cause the weight of the tray and its contents to close the lid because the center of gravity of the tray and contents, together with the lid, is forward of the pivotal axis of the hinge by which the lid is attached to the chest.

The present invention provides a tray supporting and operating device which permits the use of a much wider tray and still gives sufficient space for easy access to the chest proper. Moreover, the tray supporting and operating device co-operates with the lid hinge herein disclosed to avoid any danger of the lid falling forwardly to a closed position until it has been moved to a considerable angle forwardly of its vertical position. Thus the maximum amount of the space provided by the skirt 15 is utilized and there is not the

danger of loading the tray to such an extent that it would cause the lid to slam closed.

The hinge means herein disclosed by which the lid is attached to the chest proper is constructed to cause the lid to have combined shifting and pivotal movement, the axis of such movement being a substantial distance forwardly of the lid when opened, so that the center of gravity of the tray, its contents, and the lid, lies well to the rear of such axis when the lid is opened. Thus the weight of these will not have any tendency to close the lid.

In a cedar chest construction, a pair of hinge means of the type hereinbefore mentioned, are utilized, one adjacent each end of the lid. As shown herein, each hinge means comprises an attaching member 20 adapted to be secured to a flat face on the lid, as by means of screws. The attaching member has a pair of spaced lugs 21 extending perpendicularly to the plane of the lid. For securing the hinge means to the chest, a box-like structure 22 is provided which is adapted to be secured to the inner face of the end wall 12 of the chest. The box-like structure 22 provides a space within which parts of the hinge means may fold so that they will not come in contact and tangle with articles of clothing or the like placed in the chest.

Connecting the attaching member 20 with the box-like structure 22 are a plurality of links by which the desired pivotal and shifting movement of the lid is attained. As shown herein, such links comprise a short link 23 having one end pivotally attached to the outer lug 21. Pivotally secured to the other end of the link 23 is a second link 24 having its end pivotally secured, as at 25, to the box-like structure 22. Cooperating with these two links is a third link 26 having one end pivotally attached to the other lug 21 of the lid-attaching member. The link 26 is of generally arcuate form and is slotted, as at 27, to provide a sliding pivotal connection with the box-like structure 22. The two links 24 and 26 are pivotally connected to each other, as at 28, intermediate their ends.

The effect of hinging the lid to the chest by means of the links 23, 24, and 26, is to cause the lid to have a combined shifting and pivotal movement. Thus the lid will swing from the horizontal position shown in Fig. 2 to the substantially vertical position shown in Figs. 3 and 4. During such movement, the lid not only pivots through such an angle, but also shifts bodily forward, as will be apparent from Fig. 3, where it is to be noted that the skirt at the rear portion of the lid is forward of the position which it would occupy were it mounted on a simple butt-type hinge. The axis of such movement, while it need not be exactly located for present purposes, shifts during the movement of the lid, but is at all times located a substantial distance forwardly of the lid when in its open position.

The tray support and operator comprises generally means for pivotally connecting the tray to the lid at a point spaced a substantial distance forwardly of the rear edge of the tray, and means attached to the front end of the tray for holding the tray substantially horizontal throughout its movement. The spacing forwardly of the rear edge of the tray of the connection between the tray and the lid provides a lifting movement of the tray relative to the lid as the latter is opened. To illustrate this, it will be noted in Fig. 2 that the rear edge of the

tray is only a short distance from the rear edge of the lid, while the distance from the tray to the bottom or rear edge of the lid, as shown in Fig. 3, is substantially greater. It is this lifting movement which raises the tray a sufficient distance above the chest to permit easy access to the chest and consequently permit the tray to be wider in its front to rear direction than would be possible if the rear edge of the tray were attached to the lid by the ordinary butt-type hinge. With a tray of the size shown herein, it is obvious that, with an ordinary butt-type hinge, the tray would be positioned very close to the upper edge of the chest proper when the lid is open, and would prevent such access to the chest.

Preferably the means for connecting the tray and the lid comprises a link 30 pivotally connected at its upper end to the lid. The lower end of the link 30 has a longitudinal slot 31 providing a sliding pivotal connection with the tray at a point spaced a substantial distance forwardly of the rear edge of the tray. In the present embodiment the upper end of the link is pivotally secured to an attaching plate 32 and the latter is rigidly secured to the lid. The attaching plate 32 is also provided with a means for limiting the pivotal movement of the link 30 relative thereto, so that, when the lid is in the raised position, the tray cannot swing forwardly, and so that during the movement of the lid between the open and closed positions, the link 30 is held against downward swinging movement and consequently prevents the tray from swinging downwardly to too great an extent. In the present instance, to so limit the movement of the link 30, the plate 32 has its lower edge bulged outwardly, as at 33, and a slot 34 is therein provided through which the link 30 extends.

The tray is kept in horizontal position throughout its movement and is supported adjacent its front edge by a link 35 pivotally connected at its upper end to the tray and having a pivotal connection at its lower end to the end wall 12 of the chest. The link 35 may be bent out of a single plane, as shown in Fig. 4, in order to provide for differences in length between the tray and the chest. Since the center of gravity of the tray, its contents, and the lid, lie rearwardly of the pivotal axis of the lid when the latter is opened, it is unnecessary to have the link 35 occupy a vertical position when the lid is opened. Preferably the link 35 extends upwardly and forwardly when the lid is in the open position, and it thereby occupies an out-of-the-way position which does not interfere with access to the chest at the ends thereof.

To simplify the installation of the tray support and operator, the pivotal connections of the links 30 and 35 to the tray are provided on the ends of a strip 36 having its intermediate portion lying flat against the end wall of the tray and secured thereto as by screws. The ends of the strip 36 are preferably bent away from the plane of the intermediate portion to provide space for heads of riveted pivots.

When the tray is completely lowered, it is adapted to rest on suitable stops or angle brackets 37 mounted within the chest. By such stops, the weight of the tray is amply supported and the links 30 and 35 are relieved of weight.

Since the lid has a combined shifting and pivotal movement, and since the front portion of the tray has a pure pivotal movement due to the

links 35, the tray shifts relative to the lid, in addition to its swinging movement. The longitudinal slot 31 in the link 30 permits such shifting movement of the tray relative to the lid. Thus, as shown in Fig. 3, the pivotal connection of the link 30 with the tray is located at the lower end of the slot 31, while in Fig. 2 it will be noted that this pivotal point has moved upwardly or forwardly in the slot 31.

As is obvious, two tray supports and operators of the character herein disclosed are used with the tray, one on each end.

From the foregoing description, it is evident that I have provided a chest in which the lid is so hinged and the tray so supported that a tray larger than has heretofore been possible may be used without interfering with access to the chest. Thus a large portion of the space within the skirt 15 of the lid is occupied by the tray when the lid is closed, and the tray, when the lid is opened, is raised to a sufficient height above the chest so that it does not interfere with access to the chest. Moreover, it is evident that, with a hinge of the character herein disclosed, the weight of the tray, its contents, and the lid, does not materially tend to cause the chest lid to close when the lid is open or adjacent to such position. There is no tendency of such weight to close the lid until the lid has been moved to an angle considerably forward of its open position. Moreover, the hinge herein disclosed permits the link 35 to extend at an angle upwardly and forwardly when the lid is open, instead of in a vertical position, so that it does not interfere with access to the chest.

I claim as my invention:

1. A tray support and operator for a chest having a hinged lid and a horizontal tray located at the top of the chest when the lid is closed and above the body and extending forwardly from the lid when the lid is opened, said tray support and operator comprising, in combination, a plate secured to the lid and located above the tray when the lid is open, a link pivotally attached at one end to said plate and having a longitudinal slot in its other end, said plate having a slot through which said link extends to limit the swinging movement thereof, an attaching strip secured to the tray and having a pivot at its rear end located in said longitudinal slot, and a second link pivotally secured at one end to the front end of said attaching strip and at its other end to the chest.

2. In a chest having a lid swingable upwardly and rearwardly and a tray positioned under the lid when closed and adapted to be raised when the lid is open, the combination of a tray support and operator comprising a member pivotally attached at one end to the lid and at its other end to the tray forwardly of the rear edge thereof, and means swingably supporting the front of the tray and holding the tray in a substantially horizontal position during its movement, and hinge means for the lid attached to the rear of the chest and constructed to swing the lid about an axis spaced a substantial distance forward of the rear edge of the chest to avoid a tendency of the weight of the tray and its contents to tip the lid forwardly.

3. In a chest having a lid swingable upwardly and rearwardly and a tray positioned under the lid when closed and adapted to be raised when the lid is open, the combination of a tray support and operator comprising a link pivotally attached at one end to the lid and at its other end to the tray forwardly of the rear edge thereof, and means attached to the front of the tray for holding the tray in a substantially horizontal position during its movement, and hinge means attached to the chest adjacent the rear edge thereof and constructed to swing the lid with a combined shifting and pivotal movement about an axis spaced a substantial distance forward of the rear edge of the chest to prevent the weight of the tray and its contents from tipping the lid forwardly, said link also being constructed to slide relative to its pivotal attachment to the tray to provide for the said shifting movement of the lid.

4. In a chest having a lid swingable upwardly and rearwardly and a tray positioned under the lid when closed and adapted to be raised when the lid is open, the combination of a tray support and operator comprising a first means attached to the lid and pivotally supporting the tray at a point spaced forwardly of the rear edge thereof, and means for holding the tray in a substantially horizontal position throughout its movement, and hinge means for the lid attached to the chest adjacent the rear edge thereof and constructed to swing the lid about an axis spaced a substantial distance forward of the rear edge of the chest to prevent the weight of the tray and its contents from tipping the lid forwardly.

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