

May 23, 1944.

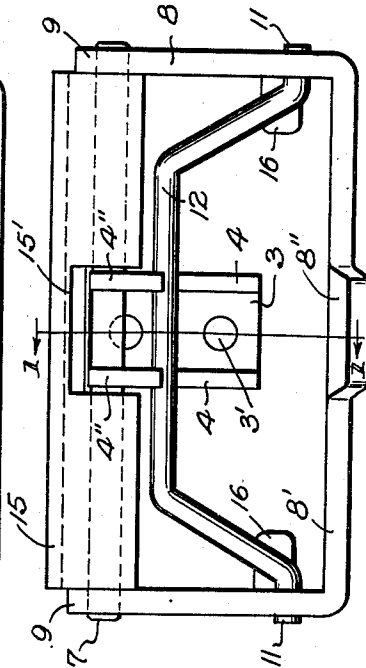
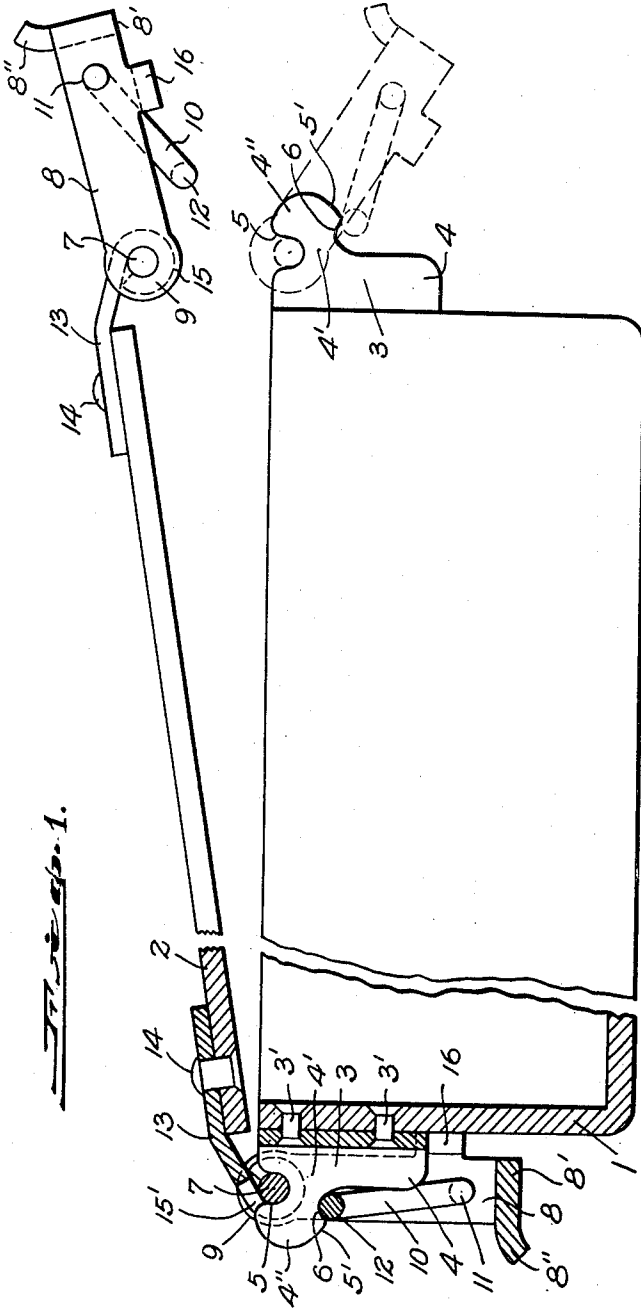
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2,349,486

COMBINED HINGE AND LATCH

Filed July 22, 1943

2 Sheets-Sheet 1



B·Y

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2 Sheets-Sheet 2

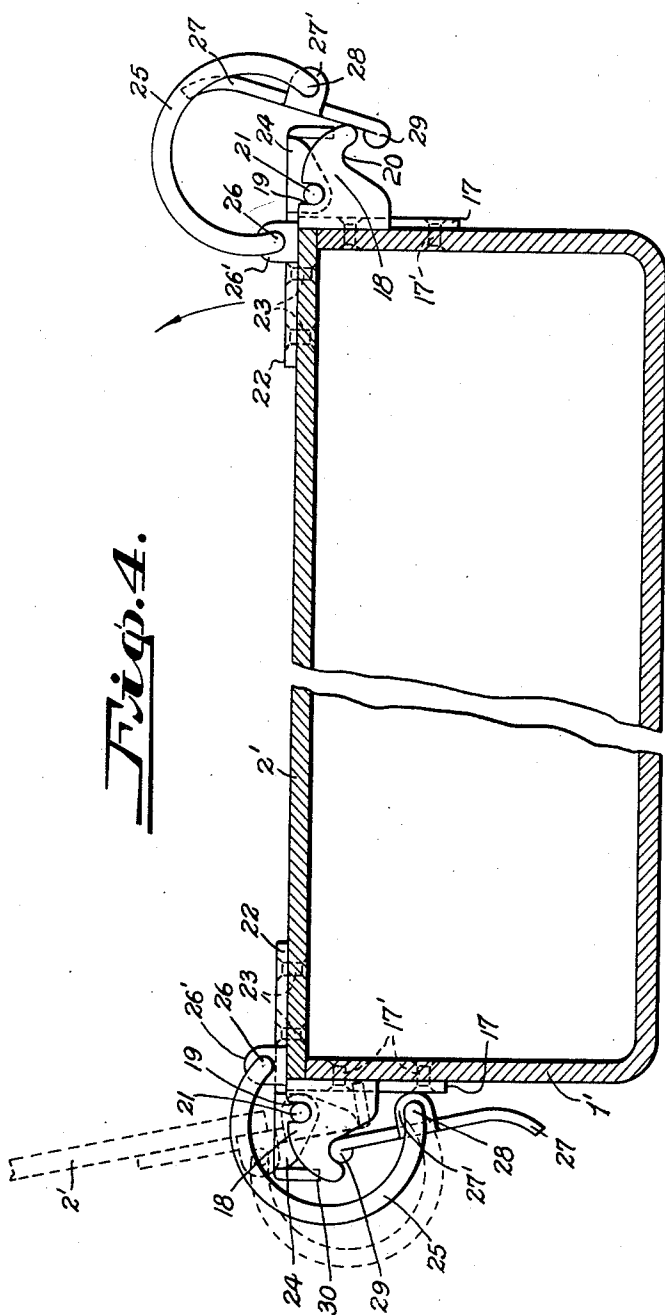


Fig. 4.

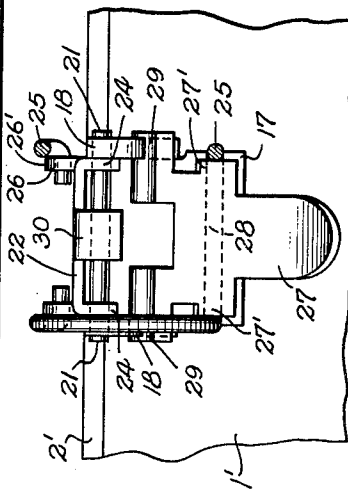


Fig. 3.

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UNITED STATES PATENT OFFICE

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COMBINED HINGE AND LATCH

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7 Claims. (Cl. 16-147)

The invention relates to combined hinges and latches, having for an object the provision of an improved device of this description, the advantages of which will be obvious.

The invention consists in the novel construction and combinations of parts as hereinafter set forth in the claims.

In the accompanying drawings,

Figure 1 is a section on the line 1-1, Figure 2, showing the invention as applied to a box, with the latch released at one side of the box and the cover partially raised, the latch at the raised side of the cover being also shown in dotted lines as swung outwardly just prior to release.

Figure 2 is a front view of the invention.

Figure 3 is a front view of a modification, with part in section.

Figure 4 is a side view of the modification, as applied to a box, shown in section, the positions of the parts with the latch engaged being shown at the left hand side; with the latch released at the right hand side, and with the cover fully opened in dotted lines at the left hand side.

In these drawings, the numeral 1 designates a receptacle or box, having a cover 2, and to which the invention is shown as applied, the combined hinge and latch of the invention while provided in duplicate being described in the singular in most cases.

3 is a combined latch keeper and hinge leaf, secured to the body of the box at 3' and having parallel vertical spaced lugs 4, each of which is provided with an upper open-top seat 5 and a lower open-bottom seat 6. A hinge pintle 7 removably engages the upper seats 5, being thereby held in horizontal position.

The latch includes two bail-form members, the outer 8 of which has its lateral arms pivotally connected at the upper ends thereof at 9 with the end portions of said hinge pintle, and the inner 10 of which is resilient and has its lateral arms pivotally connected at the lower ends thereof at 11 with said outer member and its transverse arm 12 engaging said lower seats. The length of the transverse arm 12 of the inner member considerably exceeds the width of the space between the lugs 4, so that it is the central portion of said transverse arm that engages said lower seats, this tending to resiliently bow said transverse arm downwardly, the tendency being increased by the divergence downwardly of the lateral arms of the inner bail-form member.

The other hinge leaf 13 is secured at 14 to the cover 2 of the box and has pivotal connection at 15 with said hinge pintle between the lateral

arms of the outer bail-form member, the barrel 15 of this pivotal connection being centrally notched at 15' to receive the upper portions of the spaced lugs 4.

The transverse arm 8' of the outer bail-form latch member is provided with a central outer finger-hold extension 8'', adapted to be grasped by the thumb and index finger of one hand of the operator in moving said outer member pivotally upon said hinge pintle to bring the lateral arm pivots 11 of the inner bail-form member into and past alignment with the transverse arm 12 of the inner member pivoting in said lower seats 6 and with the hinge pintle 7 to further tension said transverse arm and, the latch being moved to released position, to suddenly release the tension whereupon the inner bail-form member will spring from said lower seats and release the latch.

The upper seats 5, 5, of the latch keeper and hinge leaf are deep enough to receive more than half of the hinge pintle portion securely seated therein, whereas the lower seats 6, 6, are shallow enough to admit of the transverse arm 12 of the inner bail-form latch member in the sudden release of tension thereof springing from said lower seats. Inasmuch as these upper and lower seats 5, 5, and 6, 6, are open at opposite sides and located substantially opposite, the parallel lugs 4, 4, will each have a neck portion 4' between said seats and an outer enlarged portion or head 4''. The lower part of this head is rounded at 5' concentrically with the upper seat 5 and the upper part thereof is rounded to merge therewith and towards the upper seat.

The latch being released as stated, is lifted to lift therewith the hinge pintle 7, from the upper seats 5, 5, along with the hinge leaf 13 and the cover 2 as a unit, said cover hinging upon the hinge pintle 7 at the opposite side thereof. In this lifting, the inner bail-form latch member 10 will tend to fall by gravity and will have its fall limited by inner lugs 16 of the outer bail-form latch member 8 and assume the position shown in full lines in Figure 1 right hand side.

In the reverse movement of the parts in the closing of the cover 2, the hinge pintle 7 will first become seated in the upper seats 5 of the part 3, after which the outer latch member will swing upon said hinge pintle and the transverse arm 12 of the inner latch member will ride upon the rounded portions 5' of the heads 4'' and cam approaches of lugs 4 into the lower seats 6. The pivotal movement of the latch upon the hinge pintle being continued, the lateral arm pivots 11

of the inner latch member will be brought into and past alignment with the transverse arm 12 of said inner member pivoting in said lower seats 6 and with the hinge pintle 7 to tension said transverse arm and suddenly release a portion of said tension, thereby causing said inner latch member to spring or snap to latching position, (Figure 1, left hand side).

The outer bail-form latch member 8 the free ends of the lateral arms of which are connected by hinge pintle 7 located in upper seats 5 of the part 3, and the inner bail-form latch member 10 the free ends of the lateral arms of which pivot at 11 in seats of said outer member and the transverse arm 12 of which pivots in lower seats 6 of the part 3 form in effect a toggle joint whereof the leaves or bars are prevented from being extended when moved into alignment upon power being applied to the knuckle of said joint. This knuckle is represented by the transverse arm 12 of said inner member pivoting in said lower seats 6, and the power is applied when the latch is pivotally moved upon the hinge pintle from or into latching position as has been explained. As a result the transverse arm 12 of the inner latch member is tensioned and the tension suddenly released to cause said inner latch member to suddenly spring from engagement with said lower seats 6 of the part 3 or into engagement therewith depending upon the direction of the pivotal movement.

In the latched position of the parts, (Figure 1, left hand side) the inner lugs 16 of the outer bail-form latch member 8 abut against the adjacent side of the box 1 to limit the movement of the latch pivotally in that direction in snapping the latch closed and maintaining the latch with the said outer member thereof depending vertically from the hinge pintle 7.

A modification of the invention is shown in Figures 3 and 4 of the drawings, described as follows: 17 designates a combined latch keeper and hinge leaf secured at 17' to the body of the box or receptacle 1' and having parallel spaced lugs 18 provided with aligned open-top seats 19 and aligned open-bottom seats 20. A hinge pintle 21 removably engages the upper seats 19, being thereby held in horizontal position. A hinge leaf 22 is secured at 23 to the cover 2' of the box and is provided with depending lugs 24, perforations of which are engaged by said hinge pintle. A two-part latch includes a member 25 of bowed form, being composed of a single piece of resilient wire or rod metal whereby the free end portions are bent horizontally towards each other, being sprung into and having pivotal engagement with perforation seats 26 of up-standing lugs 26' of said hinge leaf 22. The other member 27 of the latch is pivotally mounted upon the transverse arm 28 of the resilient member 25, being provided with parallel spaced lugs 27' perforations of which are engaged by said transverse arm. Said other member is adapted to have at its upper end 29 pivotal engagement with said lower open-bottom seats 20 of the lugs 18.

In latching, the cover being closed, and the latch depending from the cover, the member 27 of the latch is engaged at its upper end 29 with said lower open-bottom seats 20, said member 27 being then moved pivotally towards the adjacent side of the box from its end engagement with said lower seats as a center against the resistance of resilient member 25 to bring the pivot 28 between the latch members into and

past alignment with said upper end 29 and the end pivot 26 of member 25, to thereby tension the resilient member 25 of the latch and suddenly release the tension, whereupon the latch will snap closed, in which position the lugs 27' of the member 27 will have stop engagement with the adjacent side of the box to limit the movement before the tension of member 25 has been released sufficiently to interfere with said upper end 29 being resiliently held in said lower seats 20.

In releasing the latch, the lower or handle end portion of the member 27 is grasped and the member pulled away from the side of the box, pivoting from its upper end 29 as a center, to bring the pivot 28 between the latch members into and past alignment with the points 29 and 26, to thereby tension the resilient member 25 and suddenly release the tension, whereupon the latch will snap open.

In the hinge action of the modification, the cover being raised upon the hinge pintle 21, to lift the released latch and the other hinge pintle at the opposite edge of the cover from its open-top seats 19, the point of connection 26 between the latch member 25 and the hinge leaf 22, (which point when the cover is closed is located slightly to the right, Figure 4, of alignment with the hinge pintle 21 and the point 29) will be brought to the left into and past alignment with the points 21 and 29, to further tension the resilient member 25 and then release a part of the tension, whereby the cover will be held lightly in open position, and any closing of the cover lightly resisted, as will be obvious. When the cover is fully opened, the downwardly bent stop lug 30 of the hinge leaf 22 will strike against the adjacent side of the box to limit the movement. In this fully open position of the cover, the point 26 will not be moved to the left sufficiently to bring it into and past alignment with point 29 and the pivot 28 between the latch members, which would be objectionable as having the effect of releasing the latch.

The invention is useful also in compressing a washer or gasket located between the upper edge of the body of the box and the cover for sealing purposes.

I claim:

1. In a combined hinge and latch, a combined latch keeper and hinge leaf having an upper open-top seat and a lower open-bottom seat, a hinge pintle removably engaging one of said seats, a hinge leaf pivotally connected with said hinge pintle, and a resilient latch having means pivotally connecting it with said last named hinge leaf and means having removable engagement with the other of said seats.

2. In a combined hinge and latch, a combined latch keeper and hinge leaf having an upper open-top seat and a lower open-bottom seat, a hinge pintle removably engaging one of said seats, a hinge leaf pivotally connected with said hinge pintle, and a resilient two-part latch having means pivotally connecting one part thereof with said last named hinge leaf, the other part of the latch being pivotally mounted upon the first part and having removable engagement with the other of said seats.

3. In a combined hinge and latch, a combined latch keeper and hinge leaf having an upper open-top and a lower open-bottom seat, a hinge pintle removably engaging one of said seats, a hinge leaf pivotally connected with said hinge pintle, and a resilient two part latch one mem-

ber of which is pivotally connected with the hinge pintle and the other member of which is pivotally mounted upon the first member and has removable engagement with the other of said seats.

4. In a combined hinge and latch, a combined latch keeper and hinge leaf having an upper open-top seat and a lower open-bottom seat, a hinge pintle removably engaging the upper seat, a hinge leaf pivotally connected with said hinge pintle, and a latch including two bail-form members the outer of which has lateral arms pivotally connected at the upper ends with said hinge pintle and the inner of which is resilient and has lateral arms pivotally connected at the lower ends with said outer member and a transverse arm removably engaging said lower seat.

5. In a combined hinge and latch, a combined latch keeper and hinge leaf having an upper open-top seat and a lower open-bottom seat, a hinge pintle removably engaging the upper seat, a hinge leaf pivotally connected with the hinge pintle, and a latch including two bail-form members the outer of which has lateral arms pivotally connected at the upper ends with said hinge pintle and the inner of which is resilient, has lateral arms pivotally connected at the lower ends with said outer member and a transverse arm removably engaging said lower seat, said outer member being pivotally movable to bring

the lateral arm pivots of the inner member into and past alignment with the transverse arm of the inner member pivoting in said lower seat and with the hinge pintle to tension said transverse arm and suddenly release the tension to thereby cause the latch to snap open or alternatively to snap closed.

6. In a combined hinge and latch, a combined latch keeper and hinge leaf having an upper open-top seat and a lower open-bottom seat, a hinge pintle removably engaging one of said seats, a hinge leaf pivotally connected with said hinge pintle, and a resilient two part latch, one member of which is pivotally connected with said last named hinge leaf and the other member of which is pivotally mounted upon the first member and has removable engagement with the other of said seats.

7. In a combined hinge and latch, a combined latch keeper and hinge leaf having an upper open-top seat and a lower open-bottom seat, a hinge pintle removably engaging one of said seats, a hinge leaf pivotally connected with said hinge pintle, and a resilient two part latch one member of which is of bowed form and pivotally connected with said last named hinge leaf and the other member of which is pivotally mounted upon the first member and has removable engagement with the other of said seats.

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