Aug. 1, 1933. J. DORST ET AL 1,920,189

LUGGAGE LATCH

Filed Aug. 27, 1932

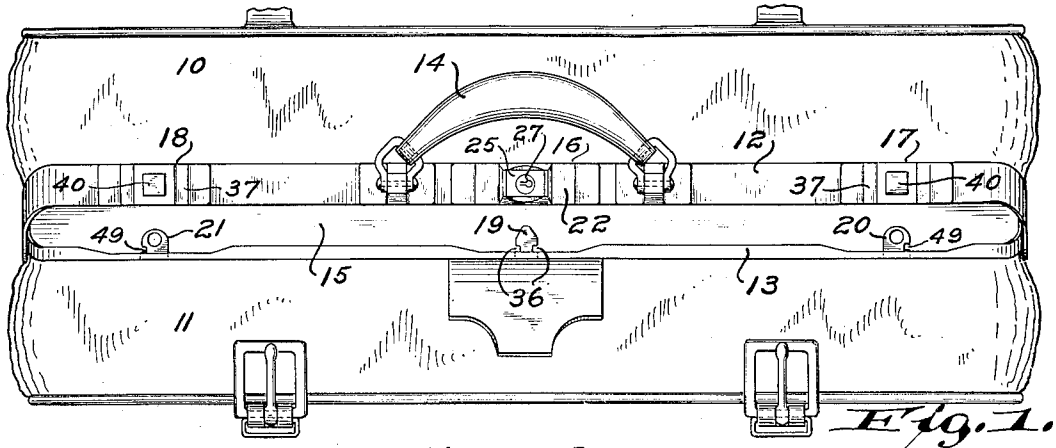


Fig. 1.

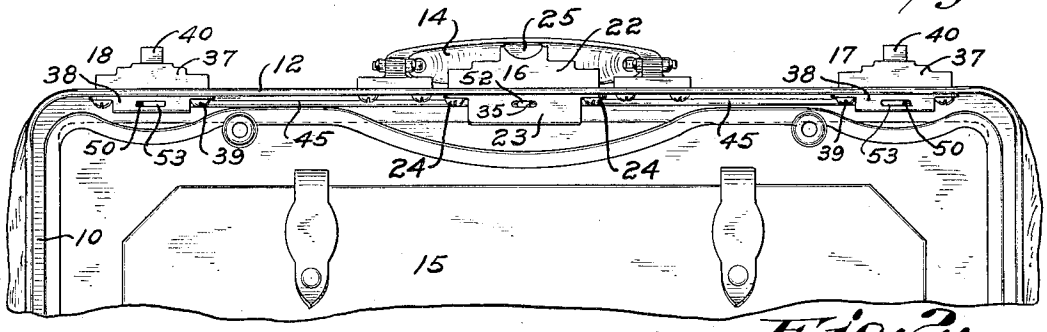


Fig. 2.

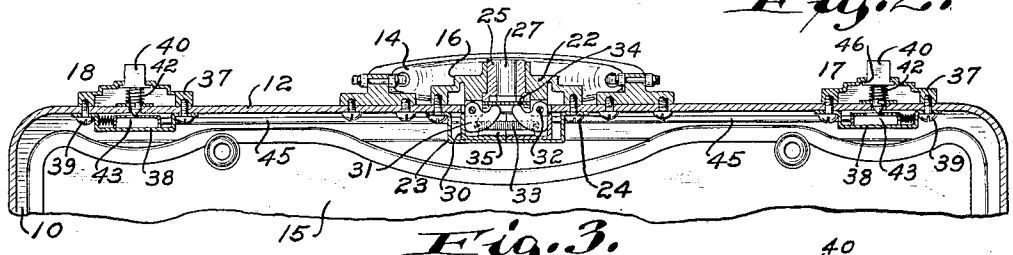


Fig. 3.

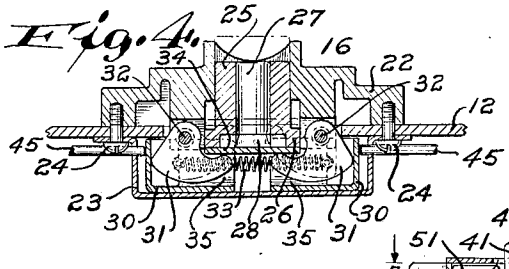


Fig. 4.

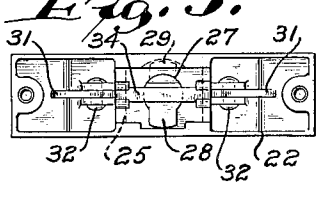


Fig. 5.

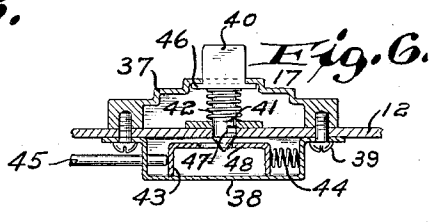


Fig. 6.

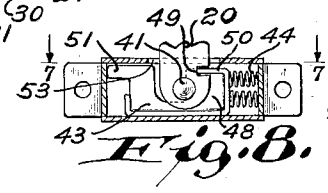


Fig. 8.

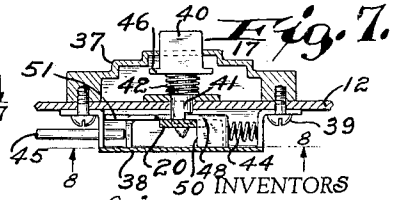


Fig. 7.

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LUGGAGE LATCH

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Application August 27, 1932. Serial No. 630,616

15 Claims. (Cl. 70—2.)

The present invention relates in general to improvements in the art of releasably fastening relatively movable closure parts together, and relates more specifically to improvements in the construction and operation of locking latches especially applicable to the closure sections of luggage carriers and similar containers.

Generally defined, an object of the invention is to provide improved latch mechanism which is easily manipulable, and which functions to effectively lock the fastened parts to each other.

Some of the more specific objects of the invention are as follows:

To provide a new and useful multiple latch for elongated containers, which insures a positive interlock between parts at various portions of the container located at some distance from a conveniently accessible point of control.

To provide an improved latching and locking device for luggage carriers or the like, which positively latches both the end and center portions of the pivotally connected carrier sections, and wherein the individual end latches may be either independently set, or simultaneously released.

To provide improved latch mechanism for connecting relatively flexible flat strips disposed flatwise adjacent to each other, which will effectively resist separation of the elements by bending or prying with an implement.

To provide a multiple point latch for fastening together a pair of superimposed strips so as to positively prevent either separation, or sidewise and longitudinal relative movement of the strips.

To provide a compact combined lock and latch, which is controllable with the aid of a standard cylinder or tumbler lock, to automatically lock one or more latches against manipulation, and to likewise release the same.

To provide an improved fastening which is thoroughly protected against unauthorized manipulation, and especially against release.

To provide a durable and highly attractive article of hardware especially applicable to luggage carriers for traveling use, which will effectively resist abuses of the kind to which such containers are ordinarily subjected, and will assist in maintaining the carrier in shape.

To provide an improved automatic catch fastener having a wide range of application, which may be manufactured at minimum cost, conveniently operated, and which is highly efficient and serviceable in operation.

These and other objects and advantages will be apparent from the following detailed description.

A clear conception of one embodiment of the several features of the invention, and of the construction and mode of operating a multiple luggage carrier latch built in accordance therewith and applied to a Gladstone suit case, may be had by referring to the drawing accompanying and forming a part of this specification in which like reference characters designate the same or similar parts in the various views:

Fig. 1 is a top view of a partially opened leather suit case, showing a full top view of the improved latch in released position;

Fig. 2 is a view looking into a fragment of the lock and handle carrying section of the suit case, disclosing an elevation of a portion of the improved latch mechanism;

Fig. 3 is a longitudinal section through the portion of the latch mechanism shown in Fig. 2;

Fig. 4 is an enlarged longitudinal section through the central lock portion of the latch mechanism;

Fig. 5 is a bottom view of the upper lock carrying part of the central lock portion of the mechanism;

Fig. 6 is an enlarged longitudinal section through one of the individual end latches, showing the same in released position;

Fig. 7 is a similarly enlarged longitudinal section through the individual latch, showing the same in latching position and the section through the inner casing being taken along the line 7—7 of Fig. 3; and

Fig. 8 is a longitudinal horizontal section through the individual latch taken along the line 8—8 of Fig. 7, looking upwardly toward the mechanism while in latching position.

It should be noted, that while the invention is shown and described herein as being specifically applied to a leather suit case of the Gladstone type, the various features are capable of more general application to containers and closures of various kinds.

Referring to the drawing, the suit case is composed of a pair of complementary hingedly connected sections 10, 11 having cooperable metal frame strips 12, 13 respectively, adapted to be inserted or disposed one within the other when the case is closed. The section 10 which carries the outer strip 12, may also be provided with a carrying handle 14 attached to the medial upper portion of the strip 12, and the interior of the suit case may have a swinging division partition 15 disposed therein.

The improved lock and latch mechanism is associated directly with the upper cooperating medial portions of the frame strips 12, 13, and comprises a central combined lock and latch elements 16, and two end latch elements 17, 18 of similar construction disposed equi-distant from the opposite ends of the central element 16, near the ends of the upper portions of the strips 12, 13. The lower or inner strip 13 has a rigid laterally extending central oppositely notched tongue 19 cooperable with the central element 16, and is also provided with a pair of rigid laterally extending singly notched tongues 20, 21 cooperable respectively with the elements 17, 18, to latch and lock the strips 12, 13 together when the suit case is closed.

The central combined lock and latch element 16 is illustrated in detail in Figs. 4 and 5, and consists of a lock housing 22 of artistic design and an inner complementary casing 23 rigidly attached to the frame strip 12 and to the housing 22 by screws 24 accessible only from within the suit case; a plunger 25 of rectangular cross-section slidable within the housing 22 and having an inner widened head portion 26 movable through an opening in the frame strip 12 into the interior of the casing 23; a tumbler lock 27 mounted centrally within the plunger 25 and having a concealed rotary tumbler 28 cooperable with a side groove 29 of the casing 23 to lock the plunger 25 against movement while in uppermost position; a pair of slides 30 snugly fitting and movable longitudinally within the casing 23 in opposite directions; a pair of cam levers 31 pivotally attached to the housing 22 by normally concealed pivot pins 32 and having swinging portions interposed between the plunger 25 and the slides 30; and one or more tension springs 33 connecting the slides 30 and coacting through the cam levers 31 to constantly urge the plunger 25 into its uppermost position.

The tumbler lock 27 is confined within the central bore of the plunger 25, by means of a retainer strip 34 rigidly attached to the lower portion of the plunger head 26, and the head 26 serves as a stop for limiting the upward movement of the plunger 25 relative to the housing 22. The upper side walls of the housing 22 are preferably cut away as shown in Figs. 2 and 4 in order to permit depression of the plunger 25 by application of a finger or thumb of the operator. The inner adjacent ends of the cam levers 31 coact directly with the lock retainer strip 34, and the outer portions of these levers directly engage the end walls of the slides 30 which are constantly forced in contact with the levers 31 by the springs 33. The slides 30 snugly but slidably fit the casing 23 and have side walls 35 adapted to engage the opposite notches 36 of the central tongue 19, this tongue being tapered so that it may be forced between the side walls 35 to spread the slides 30 apart when the suit case is being closed. After closing of the suit case has been effected, the springs 33 function to snap the edges of the slide walls 35 in to the tongue notches 36 and thus positively lock the strips 12, 13 against separation until the slides 30 are again spread apart by the application of downward pressure against the plunger 25.

The two individual latch elements 17, 18 are of like construction, so that a detailed description of one will suffice for the other. From the disclosure in Figs. 6, 7 and 8, it will be apparent that the latch element 17 comprises a housing 37 of design corresponding to that of the lock housing 22, and an inner complementary casing 38 rigidly attached to the frame strip 12 and to the housing 37 by screws 39 accessible only from within the suit case; a push button 40 of square cross-section slidable within the housing 37 and having an integral central pointed rod 41 projectable through a hole in the strip 12 and into the casing 38; a coil spring 42 embracing the rod 41 and coacting with the button 40 and with the frame strip 12 to constantly urge the button toward its uppermost release position; a slide 43 snugly fitting but movable longitudinally within the casing 38; a pair of compression springs 44 which tend to constantly urge the slide 43 within the casing 38 toward the central element 16; and a horizontal compression rod 45 having one end abutting against an end wall of the slide 43 and having its opposite end in contact with the adjacent end wall of the corresponding slide 30 within the central casing 23.

The button 40 has lateral lower projections 46 which form stops for limiting the upward movement of the button, and the pointed rod 41 has a lateral notch 47 near the point thereof, which is adapted to receive a medial edge of the upper wall 48 of the slide 43 when the notch 47 is pushed downwardly into alinement with said wall 48, as illustrated in Fig. 7. The point of the rod 41 is also adapted to enter a central hole in the corresponding side tongue 20, and this tongue has a lateral notch 49 which is formed to receive the end of a side wall 50 of the slide 43 when the rod 41 penetrates the hole in the tongue 20. The slide 43 also has an integral stop lug 51 cooperable with an end of the casing 38 to limit the movement of the slide by the springs 44, and the end portions of the horizontal compression rod 45 pass through end openings in the casings 23, 38 thus retaining these rods in position. The several latch casings 23, 38 are also provided with front slots 52, 53 respectively, formed for reception of the latches 19, 20, 21 as clearly indicated in Fig. 2, and the frame strip 13 is preferably cut away adjacent to the tongues 10, 20, 21 as shown in Fig. 1, in order to clear the inner casings 23, 38.

While the mode of operation of the improved latch mechanism should be apparent from the foregoing description, it will again be briefly described. When the suit case is open as shown in Fig. 1, the lock tumbler 28 is in release position as indicated in Fig. 5, and the plungers 25, 40 are in uppermost position as in Figs. 2, 3 and 6, being thus retained by the springs 33, 42 respectively. As the sections 10, 11 are swung toward each other during closing, the frame strip 13 moves within and beneath the outer strip 12, and the central tongue 19 passes through the opening 52 and between the slides 30 within the central inner casing 23, spreading the slides against the action of the springs 33 until the tongue notches 36 are disposed in line with the slide side walls 35, whereupon the springs 33 quickly become effective to snap the slides toward each other and to lock the tongue 19 within the casing 23. The suit case sections 10, 11 are thus locked centrally, and during such closing, the end tongues 20, 21 also enter the end casings 38 through the openings 53 and coact with the side walls 50 of the slides 43, to move these slides away from the central element 16 until the tongue notches 49 are brought into registry with the edges of the walls 50, whereupon the springs 44 quickly become effective to snap the slides 43

toward each other and thus likewise lock the tongues 20, 21 within their respective casings 38. The suit case sections 10, 11 may therefore be effectively and automatically latched together against direct lateral separation, both at the center and at the ends, by merely swinging the case sections together.

If it becomes desirable to further protect the frame strips 12, 13 against vertical spreading, after such automatic initial closure and latching has been effected, the buttons 40 may be individually pressed from the position shown in Fig. 6 to that of Fig. 7. Upon application of downward pressure to a button 40, the corresponding spring 42 is compressed and the point of the rod 41 passes through the opening in the top of the adjacent slide 43 and forces this slide against the action of the springs 44, away from the central element 16 until the rod notch 47 is brought into registry with the upper slide wall 48, whereupon the springs 44 quickly become effective to snap the edge of the wall 48 into the notch 47. The button 40, rod 41, casing 38 and slide 43 then cooperate to effectively resist possible spreading of the tongues 20, 21 away from the outer frame strip 12, and this additional latching action is obtained without releasing the central latching afforded by the doubly notched tongue 19.

When it becomes desirable to open the suit case, after the same has been closed as above described, it is only necessary to press down upon the central plunger 25, and it is unnecessary to separately actuate the buttons 40. As the plunger 25 moves downwardly, the lock retainer strip 34 causes the cam levers 31 to swing outwardly and to move the slides 30 away from each other thus stretching the springs 33. This motion of the slides 30 simultaneously disengages the side walls 35 from the tongue notches 36, and moves the horizontal rods 45 longitudinally to thereby shift the slides 43 against the pressure imposed thereon by the springs 44. This shifting of the slides 43 causes the side walls 50 to disengage the tongue notches 49 and also releases the slide top walls 48 from the button rod notches 47, thereby causing the rods 41 to snap out of the central holes of the tongues 20, 21 due to the action of the springs 42. The suit case sections 10, 11 are thus completely released and may be pulled freely apart while the plunger 25 is pressed downwardly.

In order to positively lock the sections 10, 11 and the frame strips 12, 13 against opening or separation, it is only necessary to lock the plunger 25 against movement. This may be accomplished by actuating the lock 27 with the aid of a key, to swing the lock tumber 28 into engagement with the groove 29 of the housing 22. When the tumbler 28 has been thus positioned, the plunger 25 cannot be shifted, and the slides 30, 43 therefore cannot be shifted to release the tongues 19, 20, 21. This situation exists whether or not the push button rods 41 are in locking position, so that the lock 27 in fact positively prevents release of the sections 10, 11 without utilizing the key to remove the tumbler 28 from the groove 29.

From the foregoing description, it will be apparent that the improved lock and latch mechanism functions to effectively fasten the frame strips 12, 13 together so as to prevent both horizontal and vertical separation thereof. The side walls of the slides 30, 43 cooperating with the tongue notches 36, 49, positively prevent horizontal separation, whereas vertical separation or spreading is likewise positively prevented by the top walls of the slides engaging the rod notches 47 and by the coaction of the casings 23, 38 with the upper and lower surfaces of the tongues 19, 20, 21 formed integral with the frame 13, at the openings or slots 52, 53. The central element 16 affords a conveniently manipulable control for effecting automatic latching and release of the sections, and positive locking thereof, while the push buttons 40 may be set without interfering with the central latch. The housings 22, 37 and the casings 23, 38 are of rigid construction and are firmly attached to the frame strip 12 from the interior of the suit case, and the slides 30, 43 are likewise of durable construction so as to insure most efficient service. The entire mechanism is constructed to present a neat and highly finished appearance, and has proven far superior to other fastenings for the same general field of use, previously on the market.

It should be understood that it is not desired to limit the invention to the exact details of construction and to the precise mode of operation herein shown and described, for various modifications within the scope of the claims may occur to persons skilled in the art.

It is claimed and desired to secure by Letters Patent:

1. In combination, a pair of relatively movable sections having cooperating closure portions, means for simultaneously latching said portions at remotely spaced points against separation, independently operable means for additionally latching said portions at some of said points, and common control means for simultaneously releasing all of said latching means.

2. In combination, a pair of relatively movable sections having cooperating closure frames, means for simultaneously latching said frames at several places against separation, independently operable means for additionally latching said frames at several of said places, and common control means for simultaneously locking all of said latching means against release.

3. In combination, a pair of relatively movable sections having cooperable closure frames movable one within the other, means for simultaneously latching said frames at a central and two end points against separation, independently operable means for additionally latching said frames at said end points, and common control means located at said central point for simultaneously releasing all of said latching means.

4. In combination, a pair of relatively movable sections having cooperating closure frames means for simultaneously latching said frames centrally and near the ends thereof against separation, means for independently additionally latching said frames near the ends thereof, and common means for simultaneously releasing all of said latching means.

5. In combination, a pair of relatively movable sections having cooperating closure portions, means for simultaneously latching said portions against separation at remotely spaced points, means for independently additionally latching said portions against separation, common control means for simultaneously releasing all of said latching means, and means for locking said common control means and said latching means against movement.

6. In combination, a pair of relatively movable sections having cooperating closure portions,

means for simultaneously latching said portions at remotely spaced points against separation, independently operable means for additionally latching said portions at said points, common control means disposed between said points for simultaneously releasing all of said latching means, and means for locking said common control means and said latching means against movement.

7. In combination, a pair of relatively movable sections having cooperating closure frames, means for simultaneously latching said frames centrally and near the ends thereof against separation, means for independently additionally latching said frame near the ends thereof, common means for simultaneously releasing all of said latching means, and means for simultaneously locking said releasing means and all of said latching means against movement.

8. In combination, a pair of relatively movable sections having cooperating closure portions, common means for simultaneously latching said portions at remotely spaced points against separation, independently operably means for additionally individually latching said portions at some of said points, and common means for simultaneously locking all of said latching means against movement.

9. In combination, a pair of relatively movable sections having cooperating closure frames, one of said frames having a plurality of notched tongues movable in close proximity to the other of said frames, slides carried by said other frame and cooperable with the notches of said tongues to latch said sections together, a plunger carried by one of said frames and movable toward the other, cam levers shiftable by the movement of said plunger to release said slides from engagement with said tongue notches, and independently manipulable means cooperable with some of said slides and tongues for additionally latching said sections together.

10. In combination, a pair of relatively movable closure frames, one of said frames having a series of notched tongues movable in proximity to the other frame, slides movably supported by said other frame and engageable with the notches of said tongues to lock said frames against separation, and notched rods engageable with said slides to additionally individually lock said tongues against movement away from said other frame.

11. In combination, a pair of relatively movable closure frames, one of said frames having a series of notched tongues movable in proximity to the other frame, slides movably supported by said other frame and engageable with the notches of said tongues to lock said frames against separation, notched rods engageable with said slides to additionally independently lock said tongues against movement away from said other frame, and common means for simultaneously locking all of said slides against displacement.

12. In combination, a pair of relatively swingable frames one of which has three integral laterally-spaced notched tongues movable in close proximity to the other, slides movable longitudinally of and within said other frame and engageable with the notches of said tongues to simultaneously lock said frames against separation, latch means movable transversely of said frames and through the two end tongues for independently and additionally locking said frames against separation at said end tongues, and common means for simultaneously releasing the locks afforded by said slides and by said latch means.

13. In combination, a pair of relatively swingable frames one of which has three integral laterally-spaced notched tongues movable in close proximity to the other, slides movable longitudinally of and within said other frame and engageable with the notches of said tongues to simultaneously lock said frames against separation, latch means movable transversely of said frames and through the two end tongues for independently and additionally locking said frames against separation at said end tongues, and common means for simultaneously locking said slides and said latch means against release from said tongues.

14. In combination, a pair of relatively swingable frames one of which has three integral laterally-spaced notched tongues movable in close proximity to the other, slides movable longitudinally of and within said other frame and engageable with the notches of said tongues to simultaneously lock said frames against separation, latch means movable transversely of said frames and through the two end tongues for independently and additionally locking said frames against separation at said end tongues, common means for simultaneously releasing the locks afforded by said slides and by said latch means, and common means for simultaneously locking said slides and said latch means against release from said tongues.

15. In combination, inner and outer relatively movable frames, a housing secured to said outer frame, a button slidably mounted in said housing for movement toward and away from said inner frame and having a stop flange within said housing, a rod secured to said button and movable through said housing into and out of an opening in said inner frame, a main coil spring coacting with said button to urge said rod away from said inner frame opening, a slide movable along said outer frame transversely of said rod and adapted to retain said rod within said inner frame opening in opposition to said main spring, a second coil spring normally urging said slide into rod latching position, and means for moving said slide longitudinally of said outer frame in opposition to said second spring to release said rod and to permit said main spring to move said rod out of said inner frame opening.

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