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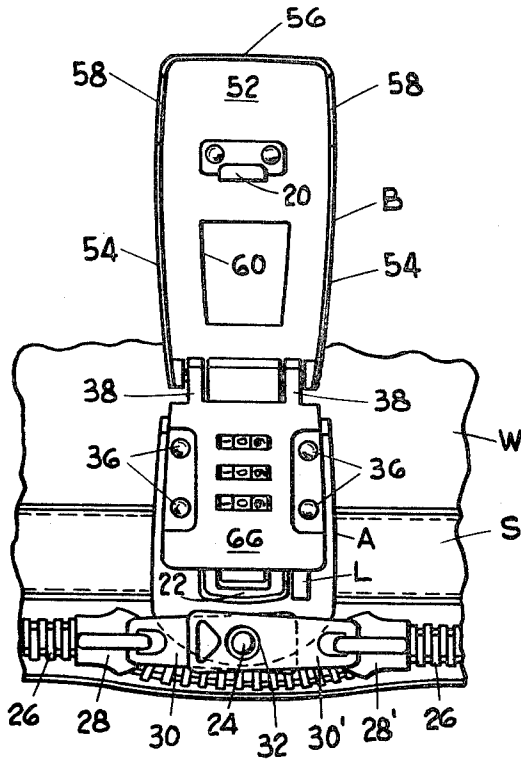
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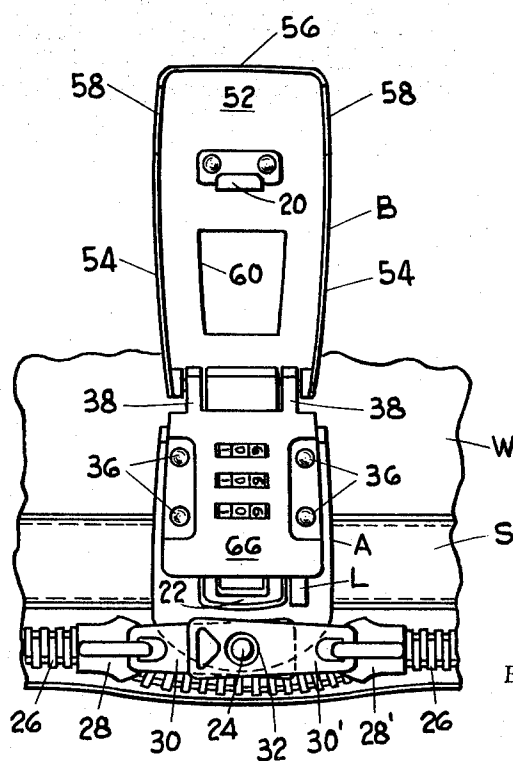
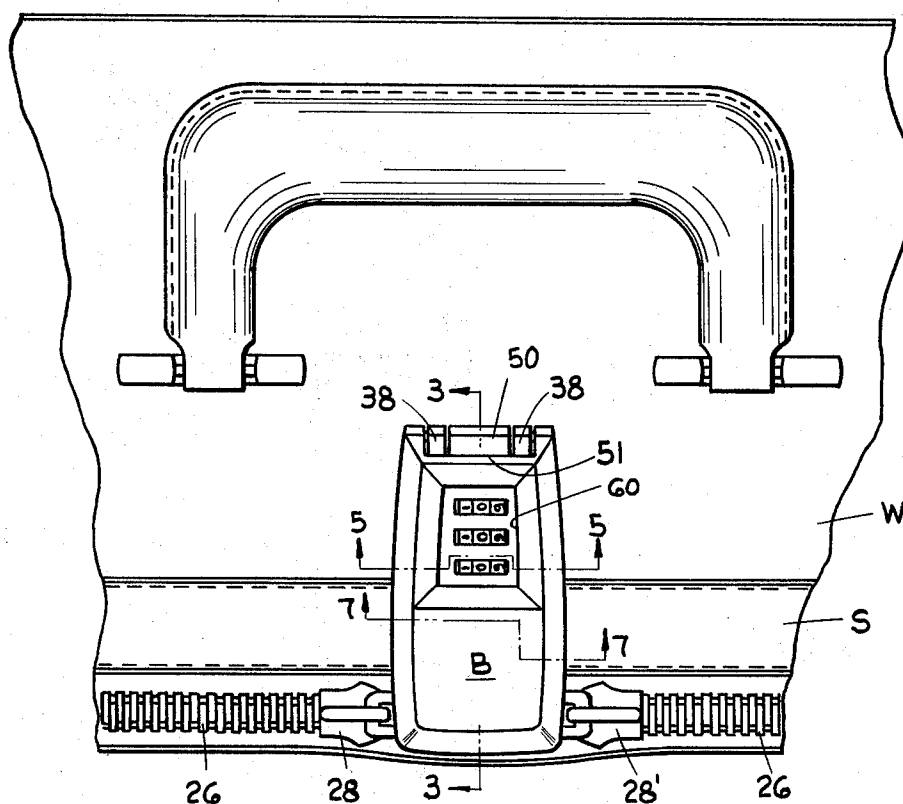
[54] **LATCHING DEVICE AND COMBINATION
LOCKING MEANS**
19 Claims, 16 Drawing Figs.

[52] U.S. Cl..... 70/74,
70/68, 70/312, 70/318, 292/283
[51] Int. Cl..... A45c 13/10,
E05b 37/02, E05b 65/52
[50] Field of Search..... 70/3, 4, 5,
67, 68, 74, 312, 316, 318, 6, 7, 8, 9, 10, 66, 208;
292/106, 283; 190/48; 150/4

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ABSTRACT: A latching device of the type which includes a latch pivotally connected to a body member employs a resiliently mounted, manually operable plug connected to the body member for longitudinal sliding movement with respect thereto. Cooperable means are provided by the latch and the plug to releasably connect the latch to the plug. The latch overlies the body member in the latched condition of the device and, in such condition, the exposed side of the device provides a flat, continuous surface. Combination locking means of the type to permit the selection of a combination of one's own secret choice is associated with the plug to releasably lock the plug in its latched position. The means for selecting or changing the combination is covered by the latch in the latched condition of the device. In the unlatched position of the latch, the means for changing the combination is exposed at the front of the device and on the same side that one views the dials of the combination locking means.



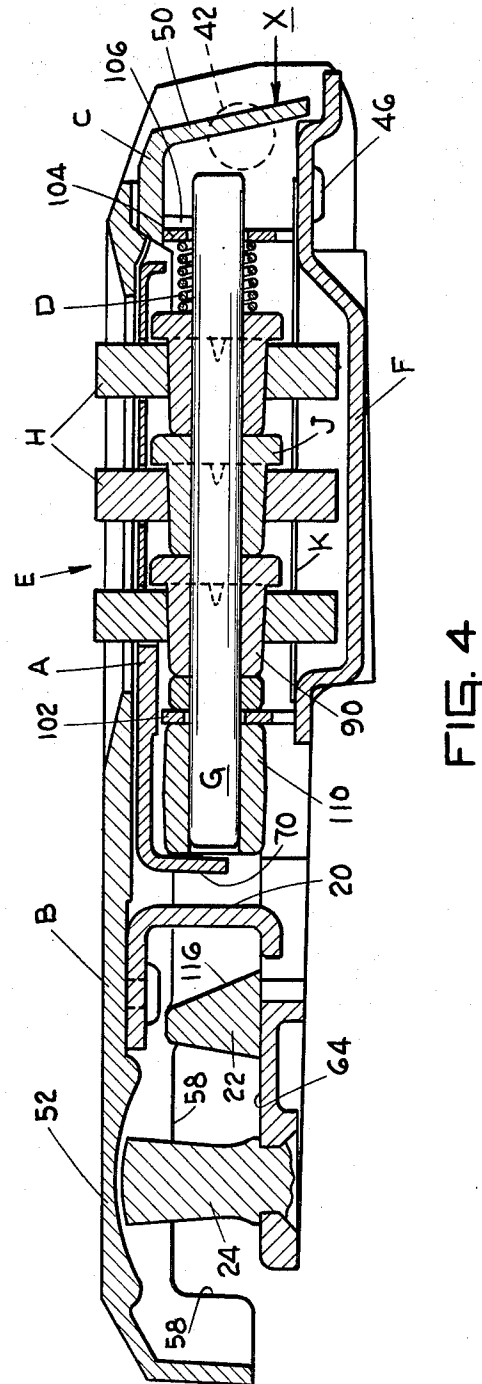
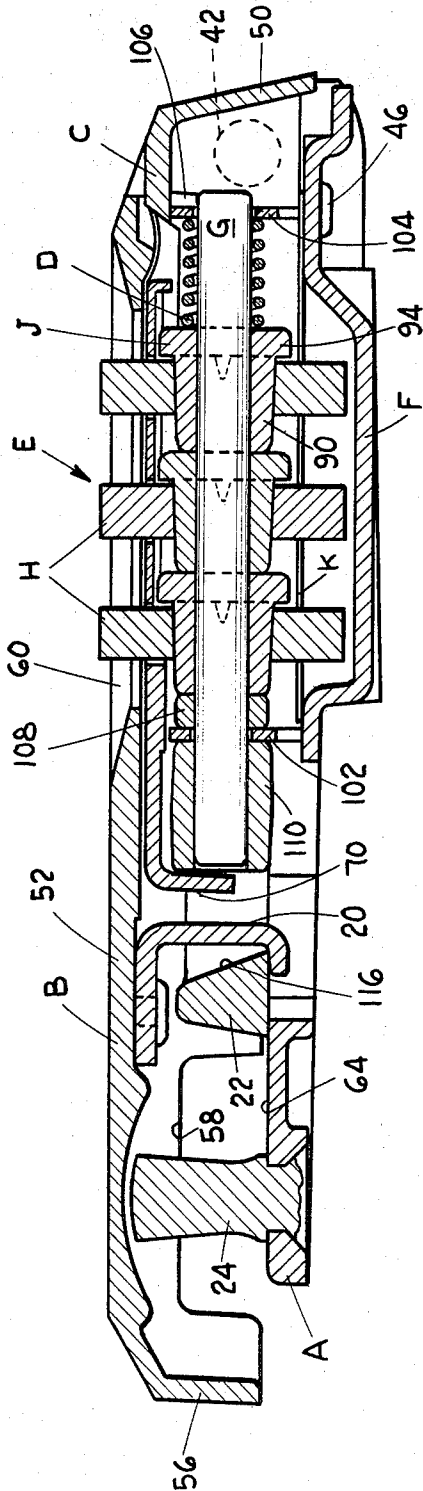


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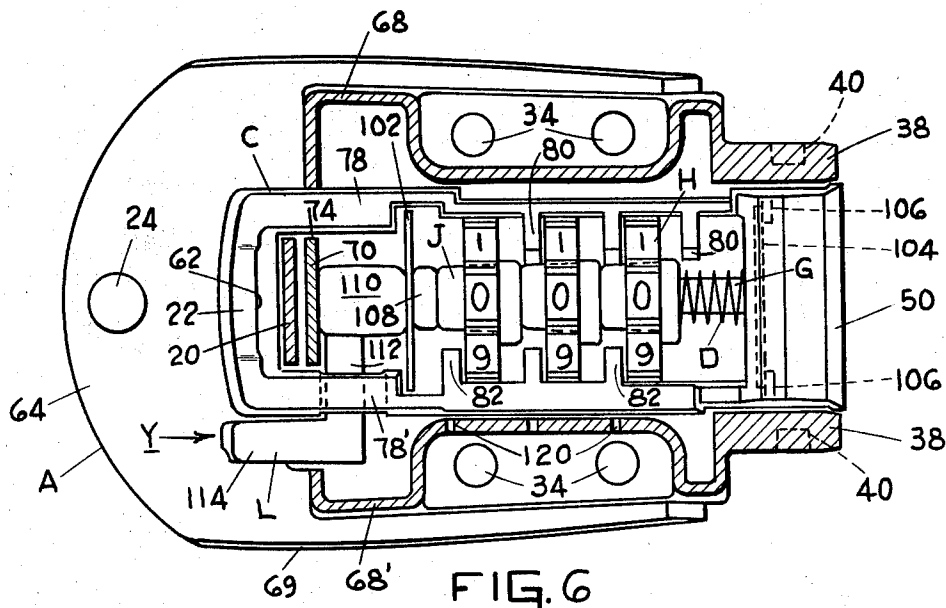


FIG. 6

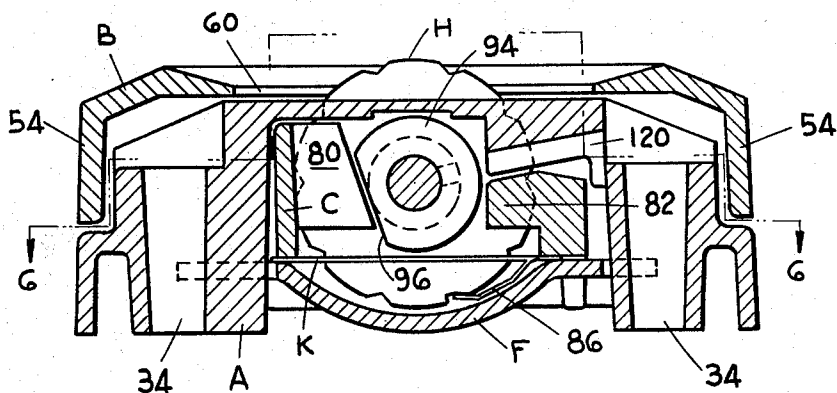


FIG. 5

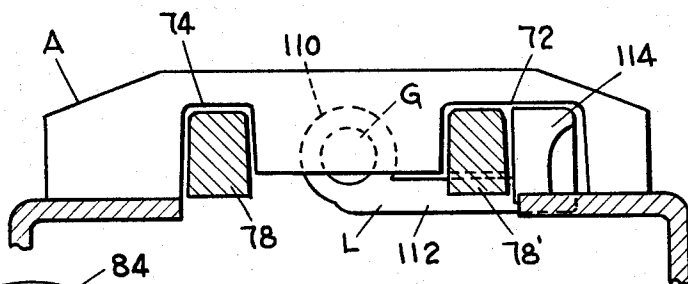


FIG. 7

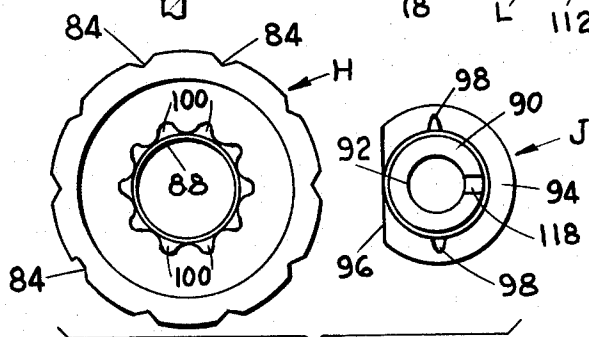


FIG. 8

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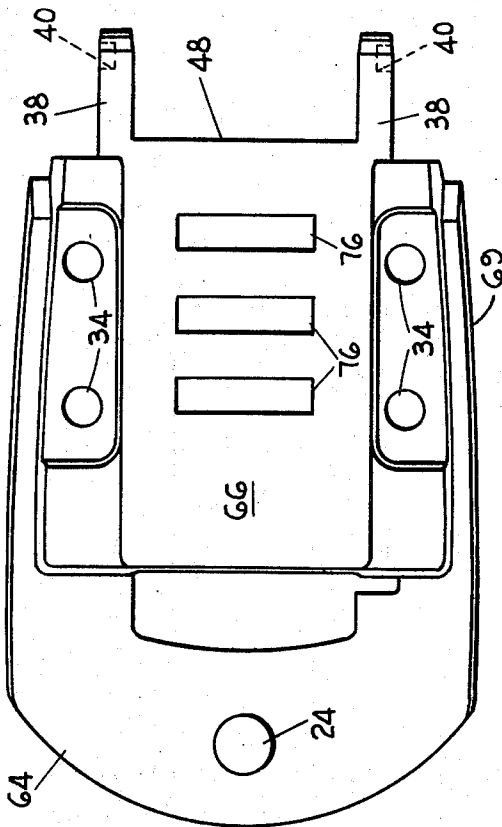


FIG. 9

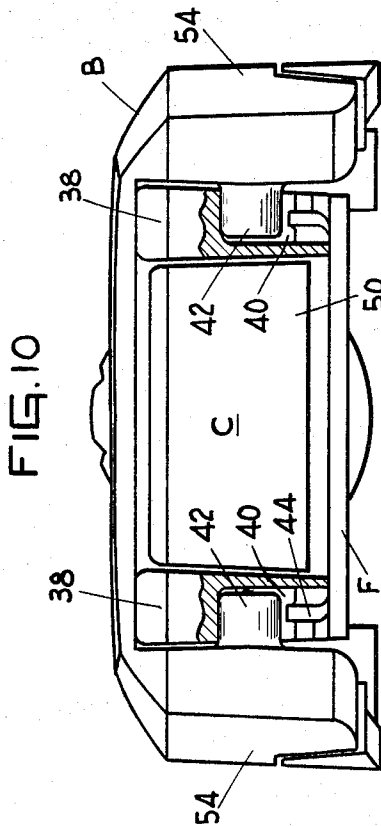


FIG. 10

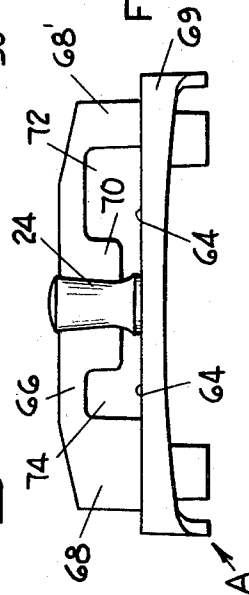


FIG. 11

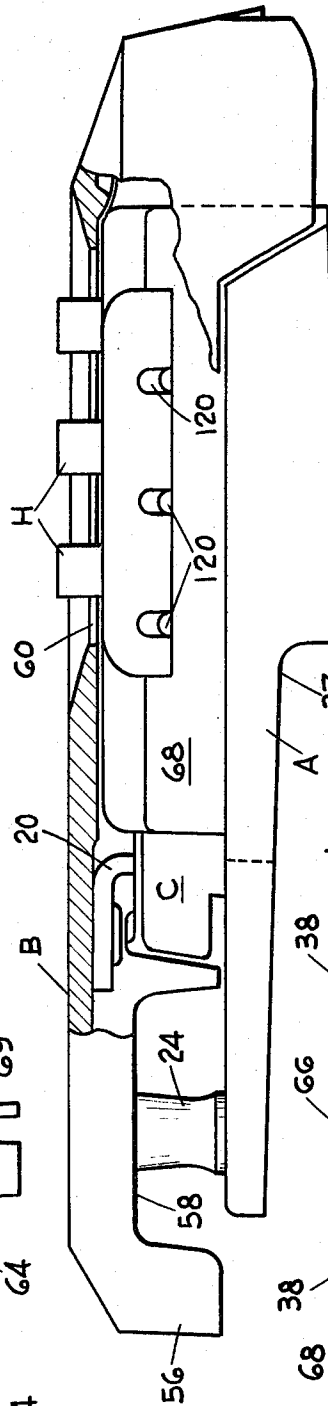


FIG. 12

FIG. 13

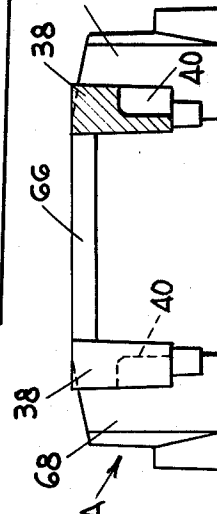


FIG. 14

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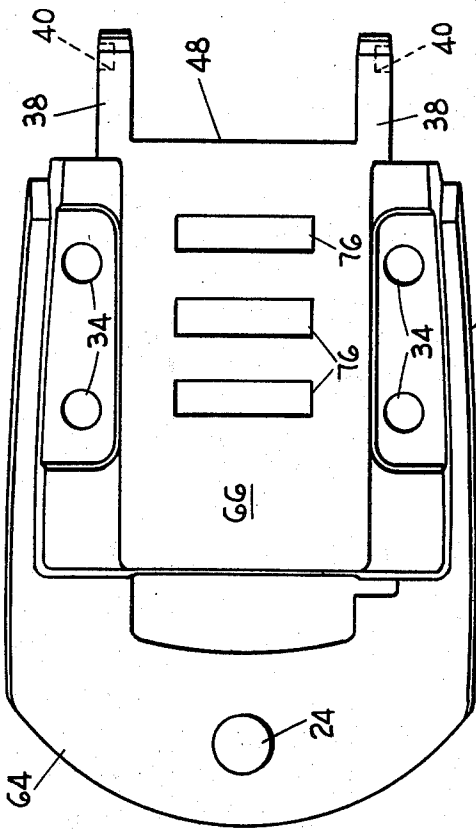


FIG. 11

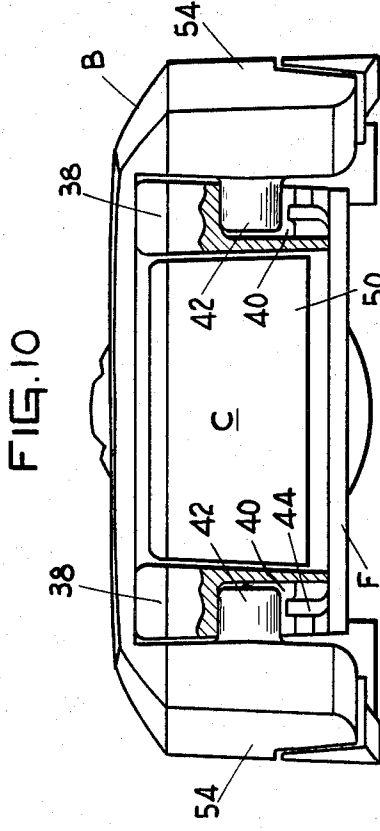


FIG. 10

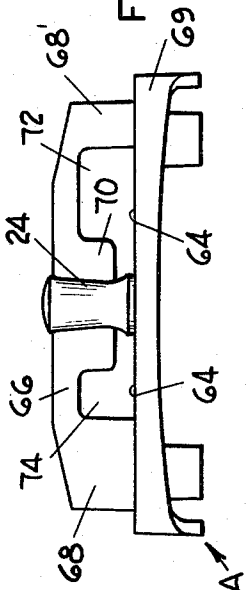


FIG. 12

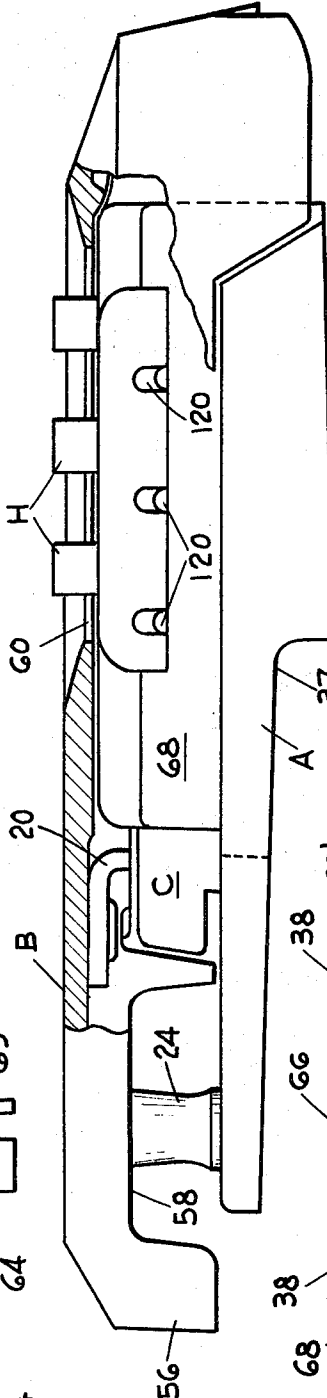


FIG. 9

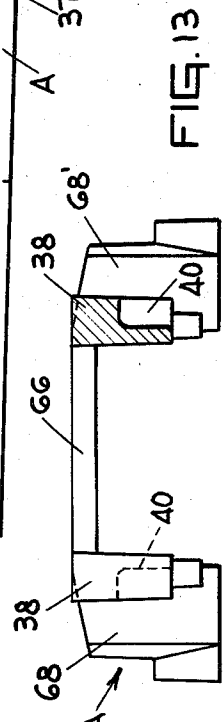


FIG. 13

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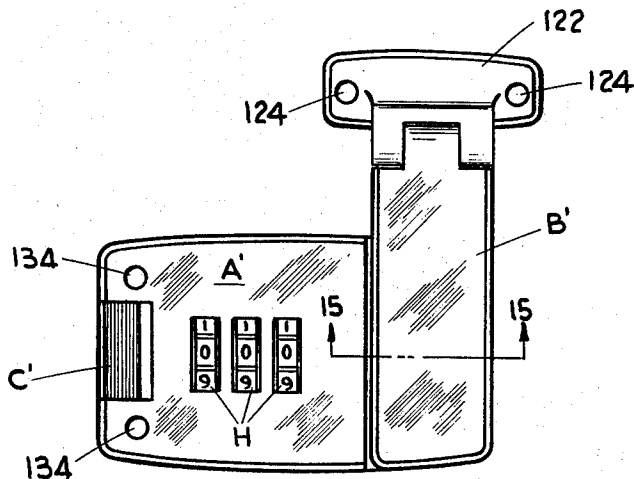


FIG. 14

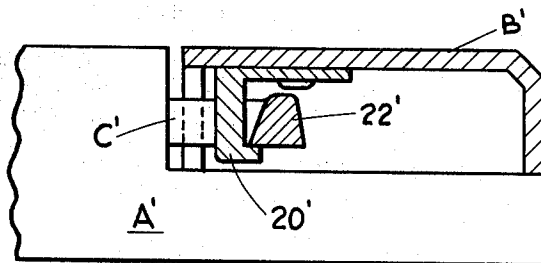


FIG. 15

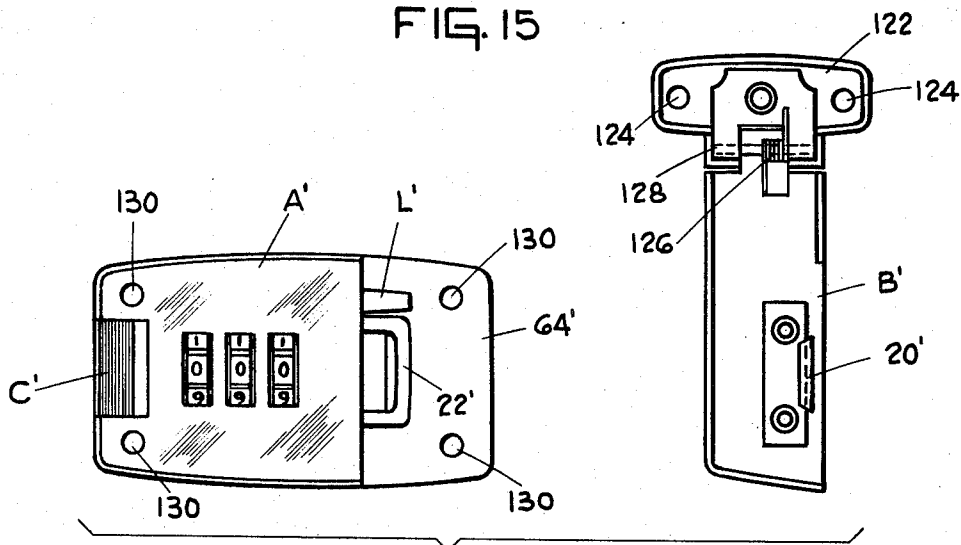


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LATCHING DEVICE AND COMBINATION LOCKING MEANS

The invention relates to latching devices, and is more particularly directed to improvements in such devices provided with combination locking means of the multiple dial type.

BACKGROUND OF THE INVENTION

A latching device of the type wherein a latch is pivotally connected to a baseplate having an upstanding stud adapted to be covered by the latch is known. In such known device, a separate component for connection to the baseplate is provided with an upstanding projection which is adapted to extend through a window provided in the pivoted latch. The upstanding projection contains a mechanism which includes spring-mounted means on opposite sides adapted to be grasped between the fingers of one hand and pushed together so that sufficient clearance of the latch will be provided to enable the lifting of the latch with the other hand. The parts must project above the latch in sufficient amount to permit the parts to be grasped between the fingers, thereby presenting a contour marred by the irregularity furnished by the projecting parts.

SUMMARY OF THE INVENTION

In accordance with the invention, a latching device is provided wherein a latch is pivotally connected to one end of a body member to which a manually operable plug is connected for longitudinal sliding movement with respect thereto. The latch and the plug are provided with cooperable means to releasably connect the latch to the plug when the latch is in latched position underlying the body member. Resilient means is associated with the plug to normally urge the plug toward latched position. Due to the relationship of the body member, latch and plug, there are no protruding parts to mar the exposed side of the latching device.

Where the latching device of the invention is provided with means for locking the latch in its latched position, a window is provided in the face of the latch for access to the locking means. In the preferred form of the invention, combination locking means of the type comprising a plurality of dials is associated with the plug to lock the latch to the plug. The combination lock is provided with means for changing the combination of one's own choice. In accordance with another aspect of the invention applicable to a latching device of the pivoted latch type as referred to above, or to a latch constituting a latch separate from the combination lock, the means for changing the combination is exposed on the front of the lock to permit the viewing of the dials from the same side of the device where the combination changing means is located and actuated. The combination changing means is covered by the latch when the device is in latched or locked condition.

These, and other advantages and improved results furnished by the latching device and combination lock of the invention will be apparent from the following detailed description of the illustrated and preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view of a combination lock made in accordance with the invention as applied to a luggage case, partially shown, the lock being shown in its latched condition;

FIG. 2 is a view similar to FIG. 1, this view showing the latch in unlatched position;

FIG. 3 is a longitudinal, vertical cross-sectional view taken approximately in the plane of line 3-3 of FIG. 1, this view showing the lock in latched condition and apart from its connection to a luggage case;

FIG. 4 is a view similar to FIG. 3, this view showing the plug member displaced to unlatched position to allow the cooperable latch to be rotated to the position shown in FIG. 2;

FIG. 5 is a transverse, cross-sectional view taken approximately in the planes of line 5-5 of FIG. 1;

FIG. 6 is a top plan view, partly in cross section, taken approximately in the planes of line 6-6 of FIG. 5;

FIG. 7 is a transverse cross-sectional view taken approximately in the planes of line 7-7 of FIG. 1;

FIG. 8 shows a dial with an associated flanged sleeve comprising elements of the combination locking means;

FIG. 9 is a side elevational view, partly broken away and in cross section, of the combination lock of the invention;

FIG. 10 is an end view of the lock, partly broken away and in cross section, as viewed from the right of FIG. 9;

FIG. 11 is a top plan view of the body member element of the device;

FIG. 12 is an end view of the body member viewed from the left of FIG. 11;

FIG. 13 is an end view of the body member viewed from the right of FIG. 11;

FIGS. 14, 15 and 16 illustrate another embodiment of the invention, FIG. 14 being a top plan view, this view showing the latch in latched position;

FIG. 15 is a vertical cross-sectional view taken approximately in the plane of line 15-15 of FIG. 14; and

FIG. 16 illustrates the combination lock and the latch separated, with the latch in bottom plan view.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring to the drawings, a latching device made in accordance with one aspect of the invention comprises a mounting plate or body member A and a latch B pivotally connected to one end of the body member. The latch overlies the body member in the latched position (FIGS. 1 and 3). A manually operable plug C is connected to the body member A for longitudinal sliding movement with respect thereto. The latch B is provided with means 20 cooperable with means 22 provided by the plug C to releasably connect the latch to the plug in the latched position of the latch (FIG. 3). Resilient means D, preferably in the form of a helically coiled compression spring, normally urges the plug toward latched position. As will be subsequently explained, the resilient means D has an added function in the operation of a combination locking means, generally designated E, which is associated with the plug to lock it to the latch. A stud 24 located at the end of the assembly opposite the end to which the latch is pivotally connected is adapted to be covered by the latch in the latched position of the latch. The stud is adapted to receive or extend through an eyeletted member.

The latching device of the invention is particularly suited for use in connection with luggage, particularly of the type which, as illustrated, includes a slide fastener or zipper as the closure for the case. As shown in FIGS. 1 and 2, the latching device may be related to a slide fastener or fasteners 26 provided with a pair of oppositely arranged sliders 28, 28' having the respective pulls 30, 30'. The pulls are each provided with an opening 32 (FIG. 2) and, in effect, constitute eyeletted members through which the stud 24 is extended when the slide fastener or fasteners are in their closed condition. The stud 24 may be provided by the latch B. However, to facilitate the entry of the stud into an aperture or eyelet, it is preferred that the stud constitute a projection upstanding from the body member A as illustrated. The body member may be provided with an opening through which a connecting portion of the stud is extended and headed over, as shown in FIGS. 3 and 4. Preferably, the body member is formed as a die-cast part and the stud is formed integrally therewith.

A single slide fastener 26 is shown in FIG. 2. As known in the art, the pair of sliders 28, 28' may be related to a single slide fastener when the fastener elements or scoops are of the double-acting type. As also known in the art, fasteners having one way acting fastener elements may be used. Then a pair of slide fasteners with their respective sliders are arranged so that the top stop ends of the fasteners are adjacent to one another in the area of the latching device to permit the pulls of the sliders, with their openings 32, to be positioned over the stud 24. As shown in FIG. 1, also FIG. 3, when the latch B is in

latched position and overlying the body member A, the stud 24 and the pulls 30, 30' are covered by the latch. When the latching device is locked, the latch cannot be raised and the slide fastener or fasteners in their closed condition serve to lock the luggage case.

As shown in FIGS. 1 and 2, the latching device is fastened to a wall W of the case by any suitable means. As shown in FIGS. 6 and 11, the body member A may be provided with a plurality of openings 34 through which headed rivets 36 (FIG. 2) are extended, also through aligned openings provided in the luggage case wall W. The connection is completed by heading over the shank ends of the rivets. Where the case is provided with a reinforcing strip S as shown in FIGS. 1 and 2, the underside of the body member is relieved at 37 (FIG. 9) to accommodate the added thickness at such area.

The described arrangement of the parts of the assembly whereby the stud 24 is covered by the latch B in the latched condition of the device is suitable for a number of applications in addition to the illustrated application for luggage, for example, in garment bags, brief cases and other carrying units or receptacles which utilize a strap or any other member having an eyelet or otherwise well-defined aperture. The eyeletted strap or the like is cooperable with the stud in the manner above described.

In greater detail, the body member A is provided at one end with a pair of longitudinally extending, transversely spaced extensions 38, as shown in FIGS. 10, 11 and 13. The extensions are formed to provide bearings 40 within which inwardly extending trunnions 42 provided by the latch B are received for the pivotal connection of the parts. For convenience of manufacture and assembly, both the body member A and latch B preferably are made by die casting. The body member has bearing recesses cast in the extensions 38 and the trunnions 42 are cast integrally with the latch. Upon positioning the trunnions in the bearing recesses, the connection is completed by a bottom plate or frame F having projections 44 (FIG. 10) which extend into and close off the bearing recesses, and closely confine each trunnion. The bottom plate F is secured to the body member A in any suitable manner, as by forming the body member with integral connecting studs 46 (FIGS. 3 and 4), which are extended through aligned openings in the bottom plate and headed over.

As shown in FIGS. 1, 2, 6 and 11, the area between the extensions 38 of the body member A furnish a cutout 48 within which one end 50 of the plug C is positioned for manual engagement and actuation of the plug against the resilient pressure provided by the spring D. The latch also is provided with a cutout 51 (FIG. 1) to further expose the plug end 50. As shown in FIG. 10, the latch B is pivotally connected to the extensions 38 of the body member in a manner whereby the corresponding end portions of the latch are located on the outer sides of the extensions. Such arrangement permits the location of the end 50 of the plug intermediate the extensions. Although it is preferred to provide the cast-bearing recesses and integrally formed trunnions as illustrated and described, it will be understood that separate pins and drilled holes may be used to furnish the pivotal connection of the latch to the body member. Also, the body member A may be provided with integrally formed outwardly projecting trunnions to extend through mating openings provided in the latch, whereby the ends of the trunnions would be headed over to furnish the pivotal connection.

As shown in FIGS. 3 and 4, also FIG. 2, the means 20 provided by the latch B preferably is in the form of a hook which extends from the underside of the latch. The hook may be made as a separate element and secured to the latch by a pair of spaced connecting studs cast on the underside of the latch. When the latch is in its down or latched position, the hook engages the transverse end 22 of the plug C. Applying pressure against the end 50 of the plug C moves the plug against the resilient force of the spring D from the plug's latched position shown in FIG. 3 to the unlatched position shown in FIG. 4. In the latter position, the hook 20 is disengaged from the plug to allow the latch B to be rotated to the position shown in FIG. 2.

The latching end of the plug C may be provided with an upstanding hook portion instead of the crossbar 22 furnished by the end of the plug; and concomitantly, the latch may be provided with an opening formed to extend through the face thereof. With this arrangement, the hook on the plug may engage an edge defining the opening in the latch in the latched position of the plug. The illustrated arrangement is preferred because the outer face of the latch is unmarred by any projections, and the exposed face of the latching device presents a flat, substantially continuous surface (FIGS. 3, 4 and 9).

The latch B comprises a face portion 52, downwardly projecting longitudinal extending side flanges 54 and an end flange 56 at the end opposite the end where the latch is pivotally connected to the body member. As shown in FIGS. 2, 3, 4 and 9, the side flanges are provided with cutouts or openings 58 to permit clearing the pulls 30, 30' when the latch is in the latched position of FIG. 1. The face plate portion 52 of the latch is provided with an aperture or window 60 to allow access to the means for locking the plug and latch in their latched positions.

As best shown in FIG. 6, the plug C is rectangularly shaped and has a central opening 62 of generally rectangular outline. The plug is confined for longitudinal sliding movement by portions of the body member A and is maintained within a recess provided on the underside of the body member by the aforementioned bottom plate F. The end of the plug where the latch cooperable portion 22 is located rests upon a surface 64 provided by the base portion of the body member as shown in FIGS. 3 and 4. This is the surface from which the stud 24 projects, and the stud is longitudinally spaced from and beyond the portion 22 of the plug in the fully displaced or unlatched position of the plug (FIG. 4).

As shown in FIGS. 5, 11, 12 and 13, the body member A is contoured to furnish the portion which provides the surface 64 at one level and a face portion 66 located on a different or higher level. The body member has sides 68, 68' extending downwardly from the face portion, the sides terminating in a base portion 69, an extension of which provides the surface 64. At the front end, an extension 70 projects downwardly from the face portion 66. At the sides of the extension there are openings 72 and 74 leading into the interior of the body member (FIG. 12). The opening 72 is wider than the opening 74 for a purpose to be subsequently described. The underside of the body member is open except at the area which provides the surface 64. The body member provides a longitudinally extending recess on the underside thereof for the confined longitudinal movement of the plug C and furnishes space for the elements of the combination locking means E. The bottom plate F closes off the underside of the recess to complete the assembly of the plug with the body member and to protect the elements of the locking means. The body member and the bottom plate connected thereto encapsulate the plug and the elements of the combination locking means, except for the exposed portion 50 of the plug at one end of the assembly and the means 22 cooperable with the latch at the other end.

As shown in FIG. 11, the face portion 66 of the body member A is provided with a plurality of longitudinally spaced slots 76 through which the dials of the combination locking means are partially extended. Access to the locking means is provided by the aperture or window 60 in the latch when the device is in latched condition (FIG. 1).

Referring to FIG. 6, the plug C comprises the latching portion 22 at one end and the opposite manual or finger engageable end 50 which are connected to one another by the longitudinally extending, transversely spaced side arms 78, 78'. The arm 78 is positioned to extend through the opening 74 and is guided by the sides confining the opening. The outer side of the arm 78' is confined for guidance by the inner side of the body member's sidewall 68' which is formed as shown to closely parallel this side of the plug. The opposite sidewall 68 is also formed with a similarly indented area so that the aforementioned openings 34 may be provided in the base of the body member, and to afford a minimal width of the device.

Where, as illustrated and preferred, the locking means is in the form of a combined lock, the plug C is provided with a plurality of inwardly projecting, longitudinally spaced blocking means or lugs 80 which extend partially toward the centerline of the device. As shown in FIG. 6, the lugs extend from the inner face of the side arm 78. A second set of longitudinally spaced lugs 82 extend from the inner side of the arm 78'. The latter set of lugs is longitudinally offset from the lugs on the opposite side of the part for a purpose to be subsequently described.

In the preferred embodiment of the invention and as illustrated, combination locking means E is related to the plug C to releasably lock the plug in its latched position. The combination locking means comprises a longitudinally extending shaft G positioned on the underside of the body member A, a plurality of dials H positioned to extend partially through the slots 76 in the body member, a sleeve J for each dial mounted on the shaft and resilient dial-cooperable means K. Where, as preferred and illustrated, it is desired to make the combination lock of a construction which enables the user to set the combination to a choice of his own and secret selection, means L is provided for permitting a selected relationship between the dials and their respective sleeves. The previously described resilient means D which acts to normally urge the plug C toward latched position is related to the parts to additionally function as an element in the means for the selection of a combination of one's own secret choice.

Each dial H is provided with indicia or numbers in equidistantly spaced relation on the outer circumference. As shown in FIG. 8, between adjacent numbers there are grooves 84 adapted to receive means provided by the resilient dial-cooperable means K so that the dials when related to their respective sleeves J and mounted on the shaft G may be resiliently maintained in selected circumferential position. The means K comprises a flat member made of a material having spring characteristics. The spring member K is provided with slots to allow the dials H to project therethrough and is formed with a plurality of spring fingers 86, one finger for each dial (FIG. 5). As known in the art, the spring fingers are struck out from the piece and bent so that their forward edges engage the periphery of each dial with resilient pressure.

Referring to FIG. 8, each dial H has a central opening 88 through which the shank 90 of a sleeve J may be extended with a slight amount of clearance. The sleeve has a central bore 92 of a diameter slightly greater than the diameter of the shaft G. At one end thereof, each sleeve is provided with a flange 94 having a larger diameter than the central opening 88 of a dial. The flanged end of the sleeve is provided with a flat portion 96. At the juncture of the flange and the sleeve's shank, a detent or detents 98 are provided. On one side of each dial, circumferentially arranged detent receiving recesses 100 are provided adjacent the opening 88, there being one recess in alignment with each number on the dial's outer circumference. The recesses extend only partially into the sidewall of the dial and are adapted to receive the detents 98, whereby a dial and an adjoining sleeve may be keyed or meshed to one another.

As shown in FIGS. 3, 4 and 6, the sleeves J are mounted on the shaft G with a respective dial H surrounding the shank portion 90 of each sleeve. Beyond the assembly of dials and sleeves, the ends of the shaft extend through a pair of longitudinally spaced brackets 102 and 104, each provided with an opening to allow the shaft to extend therethrough. The opening in the bracket 104 is slightly larger than the diameter of the shaft so that this bracket may have longitudinal movement with respect to the shaft. The bracket 104 abuts a pair of opposite inwardly extending projections 106 provided by the plug C. One end of the coiled compression spring D engages the bracket 104 to maintain the bracket in engagement with the projections 106, and the opposite end of the spring engages an adjoining sleeve J. On the opposite side of the dial sleeve assembly, a washer 108 is positioned upon the shaft between the bracket 102 and the adjoining shank of a sleeve J.

On the opposite side of the bracket 102, the means L for disengaging the sleeves J from their respective dials H, or the means for changing the combination, has a portion thereof 110 which encircles and is fixed to the shaft G in any suitable manner, for example, by a friction fit.

The brackets 102 and 104 are rectangular in shape, and are confined for longitudinal movement on their top and bottom sides by the underside of the face portion 66 of the body member A and the bottom plate F, and on their sides by surfaces provided by the side arms 78, 78' of the plug C. The described components mounted on the shaft G are confined in a longitudinal direction between the downturned extension 70 of the body member A at one end, and the bracket 104 in engagement with the projections 106 of the plug C.

As shown in FIGS. 2, 6 and 7, the means L for disengaging the sleeves from the dials or for changing the combination comprises the shaft encircling portion 110, an arm 112 extending transversely therefrom and a manually engageable portion 114 which extends in a longitudinal direction adjacent a portion of the side arm 78' of the plug C. The portion 114 extends through the opening 72 in the body member A and is positioned to lie over the member's surface 64. Thus, the actuating portion of the combination changing means L is exposed on the top of the device for manual engagement when the latch B has been rotated to the position shown in FIG. 2.

When the lock is on "open combination," all the sleeves J are oriented so that their flat portions 96 face and clear the adjoining surfaces of the plug's lugs 80 as shown in FIG. 5. In this relationship of the sleeves and the plug, manual pressure in the direction of the arrow x upon the end 50 of the plug, as shown in FIG. 4, will cause the opposite end 22 of the plug to be disengaged from the hook 20 on the latch B, thereby allowing the latch B to be rotated about its pivotal connection to the body A to the position of the latch shown in FIG. 2. The pressure upon the end 50 of the plug is against the resilient force exerted by the spring D. The spring is compressed because the longitudinal movement imparted to the plug causes the plug's projections 106 to displace the bracket 104 which is in engagement with one end of the spring. The release of pressure will cause the plug to return to the position shown in FIG. 3. With the lock on "open combination," the hook 20 of the latch automatically engages the portion 22 of the plug when the latch is rotated from its up position of FIG. 2 to the down position of FIG. 3. This automatic connection of the latch and plug is furnished by the resilient force exerted on the plug by the spring, and by the camming action afforded by the end of the hook engaging the slanted surface 116 on the inner side of the plug portion 22. As shown in FIGS. 3 and 4, the spring D is associated with the stationary body member A and slidably mounted plug C through the medium of the elements between the body member extension 70 at one end of the assembly and the extensions 106 of the plug at the other end of the assembly.

When the lock is on "open combination," the combination may be changed to a combination of one's own secret choice. Referring to FIG. 6, applying pressure to the portion 114 of the means L in the direction of the arrow y causes displacement of the sleeves J with respect to their respective dials H. The detents 98 are moved out of the recesses 100. Manual pressure upon the portion 114 causes longitudinal movement of this part, the shaft G to which the part is secure, the bracket 102 and the washer 108, these components and the sleeves having longitudinal movement imparted thereto against the resilient force of the spring D. With the parts so displaced, one may then rotate the dials to the desired secret combination. When pressure is released upon the portion 114 of the combination changing means, the spring D causes the sleeves to remesh with the dials. When one or more of the dials are now rotated, the device is on "closed combination"; that is, a flange 94 on a sleeve is positioned to transversely overlap a lug 80 to block the movement of the plug C. When the latch B has previously been rotated to the position shown in FIG. 3, the device is locked.

The significance of the relationship of the shifting means L with respect to the shaft G and the exposed position of the shifting means on the outside of the device, except when the latch B is raised, is that the mechanics of selecting a combination of one's own choice is greatly facilitated. In combination locks of the prior art, the means for shifting the sleeves or to change the combination have been located on the underside of the device, and required an opening in the wall of the receptacle to which the device is connected. In such prior art arrangements, the combination changing means has to be manipulated from the inside of the receptacle while the dials are being viewed on the outside of the receptacle. This presents a clumsy and manipulatively difficult situation. With the shifting means positioned on the same side of the device where the dials are exposed for viewing, changing the combination to a combination of one's own selection is simply accomplished. Access to the means for changing the combination is of course prevented when the latch B is in its down position as shown in FIG. 1, where the latch covers the combination changing means.

It has been found that prospective customers of luggage are tempted to manipulate combination locks before becoming familiar with the written instructions which accompany the locks. As a result, the plug or sliding member may be locked in its latched condition with the "open combination" unknown. This situation has occurred frequently, and has caused much difficulty. Luggage cases or containers with the tampered locks are returned to the case manufacturer. In addition to the onerous shipping charges, the manufacturer must bear the expense of trying to salvage the locks. The locks must be removed to obtain access to the interior of the container, and then the back cover must be removed to expose the interior of the lock. Hopefully, parts of the lock may be salvaged. This entails a great deal of effort and expense.

The foregoing problem and attendant difficulties are overcome by providing cooperable means in the shanks of the sleeve and the body member A and the plug C. As shown in FIG. 8, the shank of each sleeve is provided with a slot 118 located on the side directly opposite the flat portion 96. The side wall 68' of the body member A, at its indented area (FIG. 6) is provided with a plurality of longitudinally spaced openings 120 of a diameter to allow a fine wire to be extended through each opening. The lugs 82 provide guides for the finding wire. With the wire extended through each opening, each dial is rotated until the end of the wire, held to press against the shank 90 of the sleeve, enters the slot 118. When this is accomplished with each dial, and associated sleeve, the lock is on "open combination" thereby allowing the plug to be moved to unlatched position, and to allow the latch B to be lifted.

Regarding the construction of the combination lock wherein the means for changing the combination is located at the front of the lock, this aspect of the invention is applicable to devices of the type in which the latch is a separate part instead of being pivotally connected to a body member as hereinbefore described. Utilizing the same reference characters where applicable, with the reference characters primed, FIGS. 14-16 illustrate the invention in terms of a latch B' which is pivotally connected to a mounting plate 122. The mounting plate has a pair of spaced openings 124 through which the shanks of rivets are extended for connection to one of a pair of case sections. As is known in the art, a coiled spring 126 surrounds a pivot pin 128 with one end of the spring bearing on the mounting plate 122 and the other end bearing against a surface provided by the latch B'. The combination lock is of essentially the same construction as hereinbefore described and comprises a body member A' having a plug C' connected thereto and related to the elements of the combination lock, including the dials H, as hereinbefore described. Also as previously described, the means for shifting the sleeves or changing the combination, designated L', is exposed at the front of the lock for manual engagement when it is desired to change the combination. As shown in FIG. 14, the

latch B' covers the combination changing means L' in the latched or latched and locked condition of the device. The combination lock is provided with the usual openings 130 to permit connecting the lock by rivets to a case section.

It is believed that the advantages and improved results afforded by the latching device and combination lock of the invention will be apparent from the foregoing detailed description of the illustrated preferred embodiments of the invention.

I claim:

1. A latching device comprising a body member having a pair of transversely spaced extensions at one end of the body member, a latch pivotally connected to the outer sides of the extensions, a plug connected to the body member for longitudinal sliding movement with respect thereto, the plug having an end portion positioned between the extensions for manual engagement, the opposite end of the plug providing means cooperable with means on the latch to releasably connect the latch to the plug, and resilient means related to the plug to normally urge the plug toward latched position.

2. A latching device according to claim 1, wherein the latch is provided with an aperture, and locking means cooperable with the plug is accessible through the aperture.

3. A latching device according to claim 1, wherein the body member comprises a face portion, and a pair of sidewalls extending downwardly from the face portion and terminating in a base portion, an extension of the base portion beyond said face portion and sidewalls at the end opposite the end of the body member to which the latch is pivotally connected, an opening at each end of the body member defined by the face portion and sidewalls, the plug having the ends thereof extending through said openings, the end of the plug overlying said extension having the means cooperable with the latch, and a bottom plate connected to the underside of the body member to confine the plug between the body member and the bottom plate.

4. A latching device according to claim 3, wherein a hook is provided on the underside of the latch, and the end of the plug having the means cooperable with the means on the latch is provided with a camming surface cooperable with the hook.

5. A latching device according to claim 3, wherein said extension is provided with an upstanding stud beyond the end of the plug.

6. A latching device according to claim 3, wherein the plug comprises a pair of transversely extending ends connected by a pair of opposite longitudinally extending arms.

7. A latching device according to claim 6 wherein one of the longitudinally extending arms has a plurality of longitudinally spaced lugs; and wherein the face portion of the body member has a plurality of longitudinally spaced slots, a longitudinally extending shaft on the underside of the face portion, dials positioned in said slots, a sleeve for each dial mounted on the shaft with the sleeves in abutting, end-to-end relationship, each sleeve having a flange and a flat portion, a flange being cooperable with a spaced lug to block the movement of the plug, the plug being movable when said flat portions are in alignment with the lugs, the latch having an aperture to permit access to the dials.

8. A latching device according to claim 7, wherein each dial and its respective sleeve are provided with means for keying them together; wherein the resilient means related to the plug to normally urge the plug toward latched position is positioned on the shaft and also acts to normally urge the sleeves into keyed relationship with their respective dials, and means extending from the shaft for moving the sleeves out of keyed engagement from their respective dials.

9. A latching device according to claim 8, wherein the means extending from the shaft for moving the sleeves out of keyed engagement from their respective dials includes a manually engageable portion positioned on the extension of the base position, said manually engageable portion being exposed on the same side of the device as the dials and being covered when the latch is in latched position.

10. A latching device according to claim 8, wherein each sleeve is provided with a slot on the side diametrically opposite the flat portion, wherein the longitudinally extending arm opposite the arm having the plurality of longitudinally spaced lugs is provided with guiding means for each sleeve slot; and wherein an adjacent sidewall of the body member is provided with longitudinally spaced openings aligned with said guiding means.

11. A latching device according to claim 9, wherein each sleeve is provided with a slot on the side diametrically opposite the flat portion, wherein the longitudinally extending arm opposite the arm having the plurality of longitudinally spaced lugs is provided with guiding means for each sleeve slot; and wherein an adjacent sidewall of the body member is provided with longitudinally spaced openings aligned with said guiding means.

12. A latching device comprising a body member having longitudinally spaced slots, a latch having an aperture pivotally connected to one end of the body member, a manually operable plug connected to the body member for longitudinal sliding movement with respect thereto, cooperable means provided by the latch and the plug to releasably connect the latch to the plug in the latched position of the latch wherein the latch overlies the body member, resilient means related to the plug to normally urge the plug toward latched position, and combination locking means cooperable with the plug, said combination locking means including a plurality of dials positioned to partially extend through said slots, access to the dials being through said aperture in the latch.

13. A combination lock comprising a body member having a plurality of spaced aligned slots, a manually operable plug cooperable with a latch, a longitudinally extending shaft, a dial positioned to extend partially through each of said slots, a sleeve for each dial mounted on the shaft, each sleeve having a flange and a flat portion cooperable with means provided by the plug to selectively block and allow movement of the plug, cooperable means provided by each dial and its respective sleeve for keying them together, spring means on the shaft normally urging the sleeves into keyed relationship with their

respective dials, a backplate for the plug, shaft, dials and sleeves connected to the underside of the body member, and a sleeve-shifting member connected to the shaft having a manually engageable portion positioned on the same side of the body member as the exposed portions of the dials adapted to be covered when the latch is in latched position.

14. A combination lock according to claim 13, wherein the spring means also acts to normally urge the plug toward latched position.

15. A combination lock according to claim 13, wherein the body member comprises a face portion, and a pair of sidewalls extending downwardly from the face portion and terminating in a base portion, an extension of the base portion beyond said face portion and sidewalls, an opening at each end of the body member defined by the face portion and sidewalls, the manually operable plug having the ends thereof extending through said openings, the end of the plug overlying said extension providing the means cooperable with the latch.

16. A combination lock according to claim 15, wherein the manually engageable portion of the sleeve-shifting member is positioned to overlie the base portion extension.

17. A combination lock according to claim 16, wherein the shifting member comprises a portion fixed to the shaft, a transverse portion extending from the shaft, and the manually engageable portion extending parallel to the shaft.

18. A combination lock according to claim 15, wherein the plug comprises a pair of transversely extending ends connected by a pair of opposite longitudinally extending arms, one of the arms having a plurality of longitudinally spaced lugs, a flange being cooperable with a spaced lug to block movement of the plug, the plug being movable when the flat portions are in alignment with the lugs.

19. A combination lock according to claim 18, wherein each sleeve is provided with a slot on the side diametrically opposite the flat portion, wherein the longitudinally extending arm opposite the arm having the plurality of longitudinally spaced lugs is provided with guiding means; and wherein an adjacent sidewall of the body member is provided with longitudinally spaced openings aligned with said guiding means.

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