

RETRACTABLE INCREMENTALLY ADJUSTING LUGGAGE ATTACHMENT

This invention relates to attaching an auxiliary luggage case to a main luggage case, and more particularly to a new and improved incrementally adjusting auxiliary luggage case attachment mechanism and method using a link-segmented strap which may be employed independently of other apparatus and methodology for transporting the auxiliary luggage case on the main luggage case.

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Background of the Invention

Luggage, of the type adapted to contain articles of clothing, personal items and the like, has traditionally been transported by lifting the luggage using a carrying handle. More recently, however, particularly with larger pieces of luggage or those adapted to carry heavy articles, wheels have been mounted on the luggage, and an auxiliary handle or tether has been used to push or pull the luggage on its wheels. This type of wheeled luggage has met with considerable acceptance because greater weights can be transported with relative ease. To further take advantage of the conveniences of wheeled luggage, devices have been developed for attaching an auxiliary luggage case to the wheeled main luggage case to allow several luggage cases to be transported simultaneously.

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Initially, the devices for carrying the auxiliary luggage case used fixed-length straps or expandable straps that were wrapped around the auxiliary luggage case as well as a portion of the wheeled luggage case to secure the two luggage cases together. These straps, however, were typically not connected to the wheeled luggage case. The potential for misplacing the strap, the inconvenience of having to separately store the strap, the risk of loss of the strap and the improper length of the strap to adequately attach the auxiliary luggage case were all factors which discouraged use of these separate straps.

Removable devices attached to the main luggage case, such as straps or hooks, have also been used for attaching auxiliary luggage cases to a main luggage case. However, removable devices have also failed to satisfy users. Storing the removable device in the main luggage case was an inconvenience because the device consumed valuable packing space and was sometimes difficult to access when the main case was packed. Removing the device and storing it elsewhere created an inconvenience because access to it was limited, and the device could easily be misplaced.

Devices permanently attached to a main luggage case for carrying auxiliary luggage have also presented issues of convenient use. When the permanent attachment devices are not being used to attach an auxiliary luggage case, they often project from the case and pose the risk of becoming



broken, snagged or otherwise caught on other articles. The permanent nature of the attachment devices on the main luggage case can also make the case difficult to store.

5 Efforts to devise a wheeled main luggage case with the ability to carry an auxiliary luggage case have resulted in attachment devices that depend from an extendable pull handle on the main luggage case. An example of one of these devices is disclosed in U.S. Patent No. 4,759,431, assigned to the assignee hereof. These devices are retractable in
10 conjunction with the retraction of the handle, so an auxiliary luggage case is intended to be attached and carried when the pull handle is extended from the main luggage case. Under some circumstances it may be desirable not to extend the pull handle or to roll the main luggage
15 case on its wheels in order to use the auxiliary luggage attaching capability.

 An difficulty common to many of the attachment devices described above relates to the adjustment of the attachment device to accommodate different-sized auxiliary luggage
20 cases. Typically, where the attachment device includes a strap or a strap with a hook, the length of the strap must be adjusted. Adjusting the strap often requires manipulation of the strap and a clasp or buckle device. The degree of manipulation required often makes it very
25 difficult for the user to accomplish in a convenient manner,



particularly if the user is wearing gloves or is carrying other articles.

Attachment devices using hooks attached to the exterior of the main luggage case do not provide any adjustment for accommodating the varying sizes of auxiliary luggage cases. Because the hook is not adjustable, the auxiliary luggage case is often attached to the main luggage case in a position not optimal for balance and convenient transportation.

Another inconvenience common to many of the previous attachment devices relates to storing the device when it is not in use. Often times the attachment device must be removed, folded or otherwise manipulated in an inconvenient manner before being stored. Any difficulty in storing the attachment device detracts from its overall utility.

It is with respect to these considerations and other background information relative to prior art auxiliary luggage attachment mechanisms that the significant improvements of the present invention have evolved.

Summary of the Invention

One of the important aspects of the present invention relates to an auxiliary luggage case attachment mechanism which is permanently attached to a main luggage case to avoid problems of misplacing or losing it, which is retractable when not in use to avoid problems of



inconvenience, breakage, exposure and the like, which is extendable to the selected degree desirable to accommodate a variety of different types and sizes of auxiliary luggage, which is conveniently and quickly positioned and retained in a multiplicity of selected positions which is functional independently of the other functionability of the main luggage case, and which avoids the necessity to use pull handles and the like in order to utilize the auxiliary case carrying capability.

These and other aspects are achieved by a new and improved mechanism and method for attaching an auxiliary luggage case to a main luggage case. A cassette is attached to the main luggage case and the cassette defines an elongated receptacle and a retention edge adjacent to the receptacle. An elongated flexible belt having an auxiliary luggage case attachment device is connected to an outer end of the belt, and a plurality of substantially abutting link members are connected along the length of the belt. A stop link member is connected to an inner end of the belt, and the cassette retains the stop link member within the receptacle to prevent removal of the stop link member from the receptacle. The receptacle is adapted to receive the belt and the links connected to the belt when the belt and links are retracted to the main luggage case.

The belt is bent over the retention edge at a selected location between the intermediate adjacent links to fix the



position of the attachment device and the extension of the belt. The engagement of the edge with the link within the receptacle establishes a restraining force which is transmitted through the links to the outer end of the belt to hold the belt and the attachment device in the position established by the selected location of the fold.

The links are preferably rectangularly shaped with a front side and a back side, and each has a pair of opposing longitudinal sides, a pair of transverse ends, and a plate extending between the longitudinal sides. The plate extends short of the transverse ends and forms a slot adjacent to each transverse end. The belt is threaded onto each link, passing from the back side to the front side through the slot adjacent to one transverse ends, over the front side of the plate, and through the slot adjacent to the other one of the transverse ends from the front side to the back side.

Upon bending the belt in a direction toward the front side of the links, the transverse ends engage one another and prevents the belt from substantially bending in the forward direction. Upon bending the belt in a direction toward the back side of the plurality of links, the transverse ends move away from one another and the belt incrementally bends at locations between the transverse ends.

The attachment device is preferably a hook, having a front side and a back side corresponding to the front side



and back side of the plurality of links. The hook has a base end, similar to the transverse ends of the links, and an extended end integrally formed together in a J-shape. The base end is operably connected to the belt.

5 The attachment mechanism securely attaches of an auxiliary luggage case to the main luggage case. The attachment mechanism is self storing when not in use, and thus alleviates the problems of the attachment mechanism becoming caught on another item, being damaged by another
10 item, or damaging other items. The attachment mechanism is permanently secured to the main case, alleviating the problem of misplacing the attachment mechanism. The attachment mechanism is incrementally adjustable to easily accommodate the size of the auxiliary luggage case.

15 A more complete appreciation of the present invention and its scope can be obtained from the accompanying drawings, which are briefly summarized below, the following detailed description of presently preferred embodiments of the invention, and the appended claims.

20 Brief Description of the Drawings

FIG. 1 is a front perspective view of a wheeled luggage case having an auxiliary case attachment mechanism incorporating the present invention, shown with the attachment mechanism in a position of non-use.



FIG. 2 is an enlarged rear partial perspective view of the wheeled luggage case as shown in FIG. 1, illustrating a link-segmented belt and a hook in an extended position but not holding an auxiliary luggage case.

5 FIG. 3 is a front perspective view of the wheeled luggage case shown in FIGS. 1 and 2, illustrating use of the attachment mechanism to support an auxiliary luggage case.

10 FIG. 4 is an enlarged perspective view of the attachment mechanism showing the link-segmented strap and hook in an extended position from a cassette, similar to that view shown in FIG. 2.

FIG. 5 is a perspective view from the rear of the link-segmented strap and hook as shown in FIG. 4, separate from the cassette.

15 FIG. 6 is an enlarged section view of the attachment mechanism with the link-segmented strap and hook in a retracted position, taken substantially in the plane of line 6-6 of FIG. 1.

20 FIG. 7 is a section view taken substantially in the plane of line 7-7 of FIG. 6.

FIG. 8 is a partial section view similar to FIG. 6 but illustrating the adjustment of the link-segmented strap and hook.

25 FIG. 9 is a vertical plane section view of the link-segmented strap at its extreme extended position, taken substantially in the plane of line 9-9 of FIG. 4.



Detailed Description

An auxiliary luggage case attachment mechanism 20, which embodies one form of the present invention, is connected to a main luggage case 22 as shown in FIGS. 1-3.

5 The attachment mechanism 20 includes a cassette 24, a plurality of links 26 which are connected together by a flexible belt 28 to form a link-segmented strap 30, and a hook 32. The hook 32 and the links 26 along the belt 28 are operably extendable from and retractable into a
10 receptacle 34 of the cassette 24.

When an auxiliary luggage case 36 is not attached to the main luggage case 22, the link-segmented strap 30 and the hook occupy a retracted position shown in FIG. 1. In the retracted position, the hook 32 covers the cassette
15 receptacle 34, facilitating convenient storage of the hook 32 and eliminating the necessity of having a separate cover for closing the receptacle 34. An exterior surface 38 of the hook 32 is flush with an exterior surface 40 of the cassette 24 in the retracted position.

20 In the extended position, the link-segmented strap 30 and hook 32 extend from the cassette receptacle 34 to carry an auxiliary luggage case 36. When extended, the links 26 allow incremental adjustment of the strap 30 to a suitable and selected length which positions the hook 32 at the best
25 position selected by the user for attaching a variety of



sizes and shapes of auxiliary luggage cases 36 to the main luggage case 22.

To adjust the length of extension, the segmented strap 30 folds between two links 26 over a front outer edge 42 of the cassette 24, as shown in FIGS. 4 and 8. The links 26 are positioned end-to-end essentially along the entire length of the belt 28 with enough space to allow the belt 28 to fold between the links 26. The links 26 are confined between the hook 32 and a second or inner end 44 of the belt 28, so the positions between the links define finite incremental positions to which the segmented strap 30 can be extended. Because the fold in the belt 28 at the edge 42 is fixed in a relative incremental position along the segmented strap 30 by the position of the links 26 and the link contact of a link with the edge 42 at the fold in the belt 28, the link-segmented strap 30 is held in the selected position to which it is adjusted by the position of the fold.

The luggage case 22 may be a conventional hard-sided suitcase having a main body 46 formed from two similar component shells 48 and 50, as shown in FIG. 1. Each shell 48 and 50 has a large side face panel 52 and four perpendicular edge panels 54. A hinge (not shown) extending along the lower edge panels pivotably connects the shell 48 and 50 to form the main body 46. A carrying handle 58 is attached to one shell half 48 or 50 at a centrally located



position on a top edge panel 54 so that the luggage case can be carried in a conventional manner.

5 A pair of roller wheels 60 are rotatably mounted at the bottom of one of the side face panels 52. The wheels 60 engage a support surface 62 to allow the luggage case 22 to be rolled rather than carried, at the user's option. A maneuvering handle 64 is selectively extendable from, and retractable into, the interior of the case 22 at a side face panel 52 as shown in FIGS. 1, 2 and 3. The handle 64, when
10 extended, is used for pulling or maneuvering the luggage case 22 on the wheels 60. The handle 64 is retractable when the luggage case is not being maneuvered on the wheels by the user.

Details of the link-segmented strap 30 and hook 32 are
15 shown in FIGS. 4-9. The link-segment strap 30 has a first front end 66 attached to the hook 32, a second rear end 68 connected to luggage case 22. The rear end 68 of the strap is operably connected within the receptacle 34 of the cassette 24. The link-segmented strap 30 extends from and
20 retract into the cassette receptacle 34 in an extended elongated configuration without being folded or rolled up. In the fully retracted position, the entire segmented strap 30 is located within the receptacle. In the extended position, substantially all of the strap extends from the
25 receptacle 34.



The belt 28 is preferably bendable or foldable and is substantially non-expandable in length. The belt is preferably made of fabric material and has a flat front side 70 and a flat back side 72. A front end 74 of the belt is sewn in a loop 76 surrounding an attachment pin 78 of the hook 32. The rear end 44 of the belt 28 is operably attached to a stop link 80.

The links 26 are threaded along the belt 28 between the hook 32 and the stop link 80. Each link 26 is able to move only slightly longitudinally along the belt, because the links are restrained by the hook 32 at one end and the stop link 80 at the other end. Each link 26 is formed substantially as a rectangular frame 82. The link frame 82 has a pair of opposing longitudinal sides 84 and a pair of transverse ends 86.

A plate 88 extends transversely between the two longitudinal sides 84 but extends longitudinally short of the two transverse ends 86 to leave gaps or slots 90 between the plate 88 and the two transverse ends 86. The thickness (the dimension perpendicular to the longitudinal and transverse dimensions) of the transverse ends 86 is somewhat less than the thickness of the longitudinal sides 84, leaving a clearance space 92 in the thickness at the transverse ends 86 at the slots 90. When the plurality of links 26 are threaded onto the belt 28, each of the



transverse ends 86 of each link 26 abuts the transverse end 86 of an adjacent link.

Each link 26 is threaded onto the belt 28 at one longitudinal end by extending the belt through the clearance space 92, through the slot 90 at the one end of the link, 5 over the outward facing surface 93 of the plate 88, through the slot 90 at the other end of the link and through the clearance space 92 at the other end of the link. The thickness of the clearance space 92 is sufficient to 10 accommodate the thickness of the belt 28. All of the links 26 are threaded onto the belt in a similar manner. An identification label 94 may be placed conveniently between the sides 84 and ends 86 above the belt 28 and plate 88 of one of the links.

15 The links 26 on the belt 28 act to cause the link-segmented strap 30 to resist deflection outwardly as indicated by arrow 96 (FIG. 8) and allowing the link-segmented strap 30 to bend only backwards between the links 26 as indicated by arrow 98 (FIG. 8). When the link- 20 segmented strap 30 is attempted to be bent forward in the direction of arrow 96, the transverse ends of the adjacent links 26 engage one another and prevent further bending because there is very little clearance between the links along the belt 28. Consequently, the links prevent the 25 link-segmented strap 30 from bending substantially outward (in direction of arrow 96). However, the links 26 allow the



belt to bend in the reverse direction or outward (shown by arrow 98) because the transverse ends 86 do not contact one another when bent in the reverse direction, thereby allowing the link-segmented strap 30 to bend at the incremental positions between the links 26. When bending in the reverse direction, extra clearance between the links 26 is achieved by the fact that the pivoting occurs at longitudinally facing transverse edges 99 (FIG. 8) of the plates 88. The extra length of the belt through the slots 90 and through the clearance space 92 provides the necessary length for bending in the reverse direction.

The stop link 80 has a main body portion 100 to which the inner end 44 of the belt 28 is operably attached by a suitable fastener, for instance rivets 102, as shown in FIGS. 5, 6 and 9. A pair of laterally opposing tabs 104 extend transversely outwardly away from the main body portion 100 of the stop link 80. The tabs 104 engage the cassette receptacle 34 when the strap 30 is extended therefrom the maximum amount to keep the strap from exiting the cassette receptacle 34, as shown in FIG. 9.

The hook 32, which is attached to the first end 74 of the belt 28, is preferably formed in a general rigid J-shape, as shown in FIGS. 4, 5, 6 and 8. Two slots 106 and 108 are formed in the hook at the location where it connects to the belt. The slots 106 and 108 extend transversely and are located on opposite sides of a shelf 110. A transverse



end 112 of the hook is similar to the transverse ends 86 of the links 26, and also provides a clearance space 114. The belt is threaded through the clearance space 114, the slot 106, over the shelf 110, into the slot 108 where the loop 76 formed in the belt surrounds the attachment pin 78. The pin 78 is inserted into the loop 76. The pin 78 has a diameter larger than the width of the slot 108. The size of the loop 76 and the pin prevent the belt end 44 from sliding through the slot 108, thus anchoring the belt 28 to the hook.

A tab 116 is formed on the back side of the hook 32 and acts as a detent to secure the link-segmented strap 30 in the retracted position, as shown in FIG. 6. The tab 116 creates a friction or restraining force against the cassette 24 when the hook is in the retracted position in the receptacle 34.

An extended end 118 of the hook curves to an ending position substantially parallel to a base end 120 of the hook, as shown in FIGS. 4, 5, 6 and 8. The extended end 118 also tapers or is rounded in the traverse dimension, as shown in FIG. 4, to facilitate placement of an auxiliary luggage handle 122 (FIG. 3) over the hook. A square outer corner 124 is formed on the hook 32 which smoothly initiates the exterior surface 38 of the hook in the retracted position to the shape of the cassette 24. A hole 126 is formed through the base end 120 of the hook for grasping to



extract the link-segmented strap 30 from the cassette receptacle 34.

The cassette 24 is located in or adjacent to one large face panel 52 of the case 22, as shown in FIGS. 1 and 3.

5 The cassette 24 is located near the intersection of the top edge of the side face panel 52 and the top edge panel 54. This position is advantageous for carrying and supporting the auxiliary luggage case 36.

10 A recessed area 128 is formed in the cassette receptacle 34 to receive the hook 32 in the retracted position, as shown in FIGS. 3, 4, 6 and 8. The recessed area 128 has a back wall 130 and a shallow arcuate shaped bottom wall 132. When the hook 32 is placed within the
15 recessed area 128, a flat surface 134 of the hook 32 fits adjacent to the back wall 130 and the exterior surface 38 of the hook 32 is flush with the outer surface 40 of the cassette 24.

The cassette receptacle 34 extends downward from the recessed area 128 within the luggage case 22. The cassette
20 receptacle 34 includes a front wall 136, a rear wall 138, and two opposing side walls 140, as shown in FIGS. 6 and 7. The two opposing side walls 140 are separated by a dimension greater than the transverse dimension of the stop link 80 between the tabs 104, as seen in FIG. 7. The opposing side
25 walls 140 restrain the lateral movement of the link-segmented strap 30. The dimension of the receptacle 34



between the opposing front and rear walls 136 and 138 is greater than the thickness dimension of the links 26. With these dimensions, the link-segmented strap 30 can easily be moved and guided along the length of the receptacle 34.

5 The edge 42 of the cassette receptacle 34 is formed by the front wall 136, as shown in FIGS. 6 and 8. In the extended position, as shown in FIG. 8, the link-segmented strap 30 is bent over the edge 42 at the point of adjacency between two links 26. The links separate when bent over the
10 edge 42 and the exterior links hang adjacent to the front wall 136. The belt 28 folds between the links 26 at the edge 42, and the links along the belt between both ends of the belt prevent the belt from slipping around the edge 42, as shown in FIG. 8. Because of the front and rear walls 136
15 and 138 of the receptacle, the link 26 inside the receptacle cannot pivot around the edge, thus holding the link-segmented strap 30 in position. The front and back walls 136 and 138 of the receptacle 34 maintain the stop link 80 and the other links 26 within the receptacle 34 to
20 maintain the fold of the belt 28 in the single location at the edge.

 When the hook 32 and segmented strap 30 are pulled out of the receptacle 34 a maximum distance, the tabs 104 on the stop link 80 engage shoulders 142 of the cassette 24 near
25 the receptacle 34 and keep the segmented strap 30 from being completely removed from the receptacle, as shown in FIG. 9.



The interaction between the edge 42 and the segmented strap 30 allows the height of the hook 32 to be adjusted easily. To adjust the hook 32, the link-segmented strap 30 is substantially straightened and then moved into or out of the cassette receptacle 34, as shown in FIG. 2. At the appropriate length, the link-segmented strap 30 is bent over the edge 42 between two links 26, as shown in FIGS. 4 and 8. The carrying handle 122 of the auxiliary luggage case 36 is then placed over the hook.

To store the attachment mechanism 20 when not in use, the segmented strap 30 is lifted up substantially straight in line with the receptacle 34 and then lowered into the receptacle. The hook 32 is placed in the recessed area 128 with the flat surface 134 of the extended end 118 of the hook 32 adjacent to the back wall 130, as shown in FIG. 6.

The attachment mechanism 20 is capable of being used with a hard-sided luggage case without wheel capability or an extendable handle. Additionally, with appropriate attachment of the cassette 24, the attachment mechanism 20 is capable of being used with a soft-sided luggage case, or as an add-on feature to an existing hard or soft-sided luggage case.

Numerous advantages accrue as a result of using the attachment mechanism of the present invention. The problems associated with using straps or hooks separate from the wheeled luggage case, straps or hooks permanently attached



to the exterior of the wheeled luggage case, or straps or hooks releasably attached to the exterior of the wheeled luggage case are eliminated. The attachment mechanism 20 is not able to be misplaced. The attachment mechanism 20 will not catch on other articles when not in use, and does not take up a large amount of space when stored.

In addition, the link-segmented strap 30 and hook 32 are easily adjusted for carrying many sizes or configurations of auxiliary luggage cases 36. The links 26 threaded onto the belt 28 provide the belt with rigidity. The rigidity allows the segmented strap 30 to easily be extended from and retracted into the cassette receptacle 34, as well as incrementally adjusted while extended. Many other significant advantages and improvements are apparent after comprehending the improved features of the present invention.

A presently preferred embodiment of the present invention and many of its improvements have been described with a degree of particularity. The previous description is a preferred example for implementing the invention, and the scope of the invention should not necessarily be limited by this description. The scope of the present invention is defined by the scope of the following claims.

The invention claimed is:





THE INVENTION CLAIMED IS:

1. An attachment mechanism adapted to attach an auxiliary luggage case to a main luggage case, comprising:

a cassette attached to the luggage case, the cassette defining a elongated receptacle and a retention

5 edge adjacent to the receptacle;

an elongated flexible belt;

an auxiliary luggage case attachment device connected to an outer end of the elongated belt;

a plurality of link members connected to the belt,
10 one of the link members being a stop link member connected to an inner end of the elongated belt, the other ones of the link members being intermediate link members positioned in substantially abutting relationship with one another along the length of the belt between the attachment device and the
15 stop link;

the receptacle having a length adapted to receive the belt and the links connected to the belt when in the retracted position;

the cassette retaining the stop link member within
20 the receptacle to prevent removal of the stop link member from the receptacle and to allow movement of the stop link member along the length of the receptacle;

a fold of the belt over the edge at a selected location between the intermediate adjacent links fixing the





position of the attachment device and the extension of the belt; and

the engagement with the edge of the link within the receptacle establishing a restraining force which is transmitted through the links to the outer end of the belt to hold the belt and the attachment device in the position established by the selected location of the fold.

2. An attachment mechanism as defined in claim 1 wherein:

the intermediate link members are rectangularly shaped with front side and a back side;

each intermediate link member includes a pair of opposing longitudinal sides, a pair of transverse ends, and a plate extending between the longitudinal sides;

the plate extends short of the transverse sides and forms a slot adjacent to each transverse end;

each of the plurality of links thread onto the belt by the belt passing from the back side to the front side through the slot adjacent to one transverse ends, over the front side of the plate, and through the slot adjacent to the other one of the transverse ends from the front side to the back side; and

each of the plurality of intermediate links substantially abuts an adjacent link along each of the transverse sides.





3. An attachment mechanism as defined in claim 2
wherein:

the transverse ends have a thickness less than a
thickness of the longitudinal sides leaving a clearance
5 space adjacent to each transverse end; and

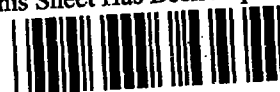
each of the plurality of links thread onto the
belt by the belt passing from the back side to the front
side through the clearance space and slot adjacent to one
transverse end, over the front of the plate, and through the
10 clearance space and slot from the front side to the front
side adjacent to the other one of the transverse ends.

4. An attachment mechanism as defined in claim 3
wherein:

the transverse ends of the plurality of links
15 engage one another upon bending the belt in a direction
toward the front sides of the links away from the belt
located on the back sides of the links to prevent the belt
from substantially bending in the forward direction.

5. An attachment mechanism as defined in claim 3
20 wherein:

the transverse ends move away from one another to
allow the belt to bend at incremental locations between the
transverse ends of the plurality of links when the belt
bends in a direction toward the back sides of the plurality
25 of links.





6. An attachment mechanism as defined in claim 5
wherein:

the cassette has an exterior wall common with a
front wall of the receptacle;

5 the belt, when bent in a direction toward the back
sides of the plurality of links, bends over the edge at
locations between the transverse ends;

the outer end of the belt extends from the
receptacle and hangs adjacent to the exterior wall of the
10 cassette; and

the inner end of the belt is restrained inside the
receptacle and hangs adjacent to the front wall of the
receptacle.

7. An attachment mechanism as defined in claim 6
15 wherein:

the stop link has a pair of laterally opposing
outwardly extending tabs;

the receptacle has a pair of laterally opposing
inwardly extending shoulders; and

20 the tabs engage the shoulders to restrain the stop
link in the receptacle when the belt is extended a maximum
amount.

8. An attachment mechanism as defined in claim 1
wherein:

25 the attachment device includes a hook having a
front side and a back side which corresponds in orientation





on the belt to the front side and back side of the plurality of links.

9. An attachment mechanism as defined in claim 8 wherein:

5 the hook has a base end of substantially the same configuration as the transverse ends of the links, and an extended end integrally formed with the base end in a general J-shape;

 the base end is operably connected to the belt;
10 the extended end curves to the front side ending substantially parallel with the first end; and
 the extended end tapers in width.

10. An attachment mechanism as defined in claim 9 wherein:

15 the belt has a loop sewn on its inner end;
 the base end of the hook has a first and second transverse slot, each slot having a longitudinal width dimension, the first and second slots separated by a transverse shelf, the first slot being closer to the
20 transverse end of the hook;

 the belt passes from back to front through the first slot, over the front of the shelf, and from front to back through the second slot; and

 a restraining element having a width dimension
25 greater than the longitudinal width of the second slot is received within the loop to secure the belt to the hook.





11. An attachment mechanism as defined in claim 10
wherein:

a tab extends from the back side of the hook.

12. An attachment mechanism as defined in claim 11
5 wherein:

the cassette comprises a recessed area adjacent to
the receptacle to receive the hook when the belt with the
links connected to the belt are in the retracted position.

13. An attachment mechanism as defined in claim 12
10 wherein:

the recessed area has a shape complementary to the
hook to allow the back side of the hook to be flush with an
outer surface of the cassette when the hook and belt are in
the retracted position and received in the recessed area and
15 receptacle.

14. An attachment mechanism as defined in claim 13
wherein:

the tab extending from the back of the hook
engages the receptacle below the retention edge when the
20 hook and belt are in the retracted position to releasably
secure the hook and belt in the retracted position.

15. An attachment mechanism adapted to attach an
auxiliary luggage case to a main luggage case, comprising:
an elongated flexible belt having a plurality of
25 incrementally located restraints positioned along its length





and an attachment device at an outer end of the belt to connect to the auxiliary luggage case;

a structure attached to the luggage case and defining an elongated receptacle and a retention structure adjacent to the receptacle, the receptacle having a length
5 sufficient to receive the belt; and

the engagement of a selected restraint with the retention structure creating a restraining force on the belt to hold the belt and the attachment device in the position
10 established by the selected restraint.

16. An attachment mechanism as defined in claim 15 wherein:

the restraints are rectangularly shaped links having a front and back side, a pair of longitudinal sides, a pair of transverse ends, and a pair of slots, one adjacent
15 to each transverse end;

the belt is threaded through the slots to slidably secure the links along the length of the belt between the attachment device and an inner end of the belt; and

20 the transverse ends of the links substantially abutting each adjacent link.

17. An attachment mechanism as defined in claim 16 wherein:

the structure comprises a cassette having an outer surface and the cassette forms the receptacle and a recessed
25 area;





the recessed area having sufficient size to receive the attachment device; and

the attachment device is flush with an outer surface of the main luggage case when received in the recessed area.

18. An attachment mechanism as defined in claim 17 wherein:

the retention structure is an edge; and

the belt bends toward the back side of the links over the edge between adjacent links and hangs adjacent to the outer surface of the cassette when prepared to support an auxiliary case.

19. A method for carrying an auxiliary luggage case on a main luggage case using an attachment mechanism, said method comprising the steps of:

forming a cassette attached adjacent to an outer surface of the main luggage case, the cassette having an elongated receptacle and a retention edge adjacent to the receptacle;

providing an elongated flexible belt; slidably restraining the belt at an inner end inside the receptacle;

attaching an attachment device to an outer end of the elongated belt;

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slidably placing a plurality of adjacent abutting link members along the belt between the attachment device and the inner end;

5 forming the receptacle with a dimension adapted to receive the belt and the links connected to the belt when in a retracted position;

extracting the belt and links from the receptacle;
folding the belt over the edge at a selected location between the adjacent links to fix the position of the attachment device and the extension of the belt;

10 engaging the edge and the link within the receptacle establishing a restraining force which is transmitted through the links to the outer end of the belt to hold the belt and the attachment device in the position established by the selected location of the fold;

15 attaching the auxiliary luggage case to the attachment device to support the auxiliary luggage case upon the main luggage case;

removing the auxiliary luggage case from the attachment device;

20 unfolding the belt and links from over the edge and positioning the belt and links in a substantially linear position; and

inserting the belt and links into the receptacle.

25 20. A method as defined in claim 19, comprising the following additional steps:





forming the link members in rectangular shapes which each have a front side and a back side, a pair of longitudinal sides, a pair of transverse ends, a plate extending between the longitudinal sides, and a first slot
5 and a second slot, each slot along the transverse ends, the longitudinal sides and transverse ends having a thickness, the thickness of the transverse ends forming a shoulder;

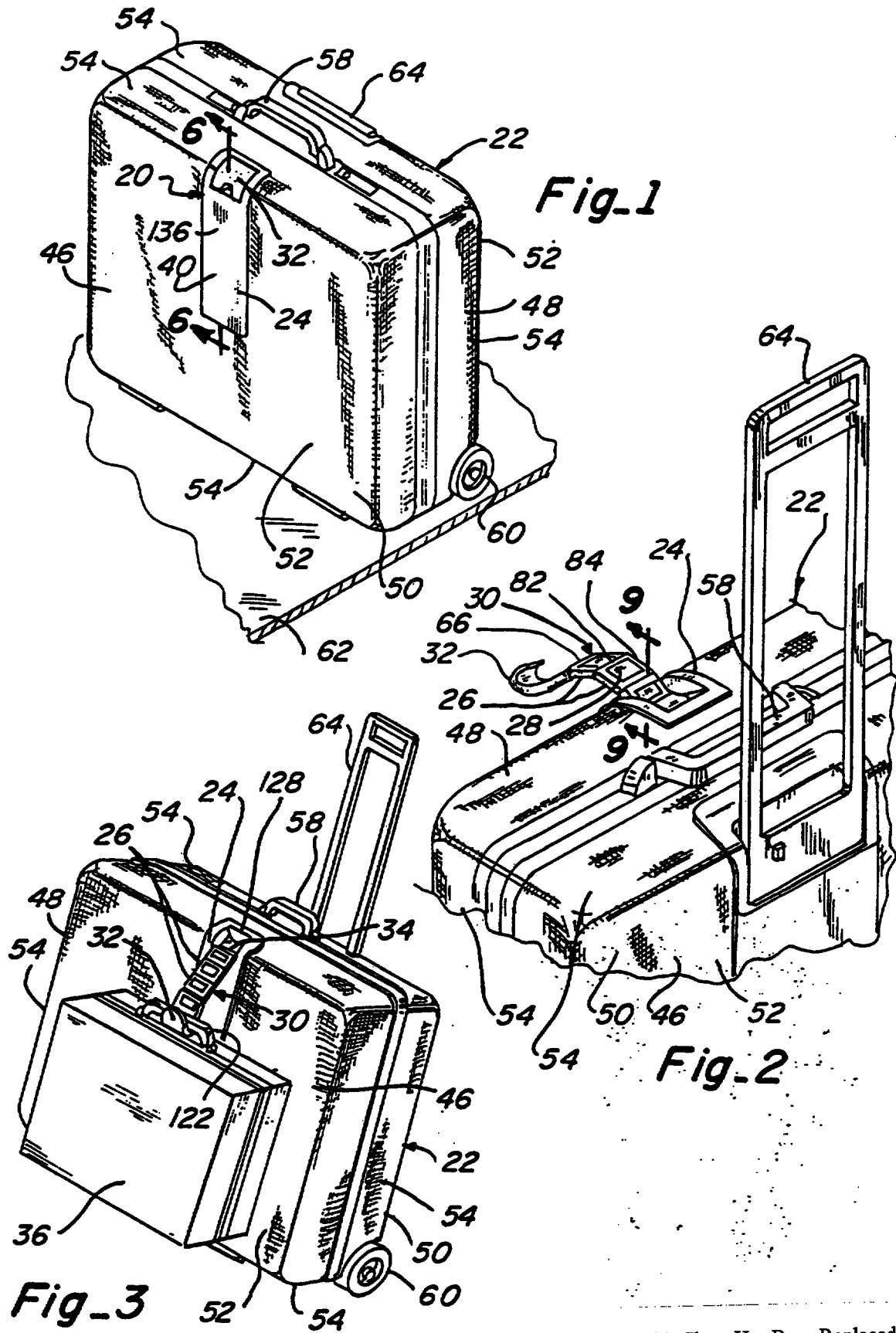
threading the belt through the first slot at one end of a link from the back side to the front side of the
10 link, over the front of the plate, and threading the belt through the second slot at the other end of the link from the front side to the back side;

impeding bending of the belt toward the front sides of the links by engaging with one another the
15 shoulders of the adjacent links threaded along the belt; and

separating the shoulders of the adjacent links threaded along the belt by folding the belt toward the back sides of the links.

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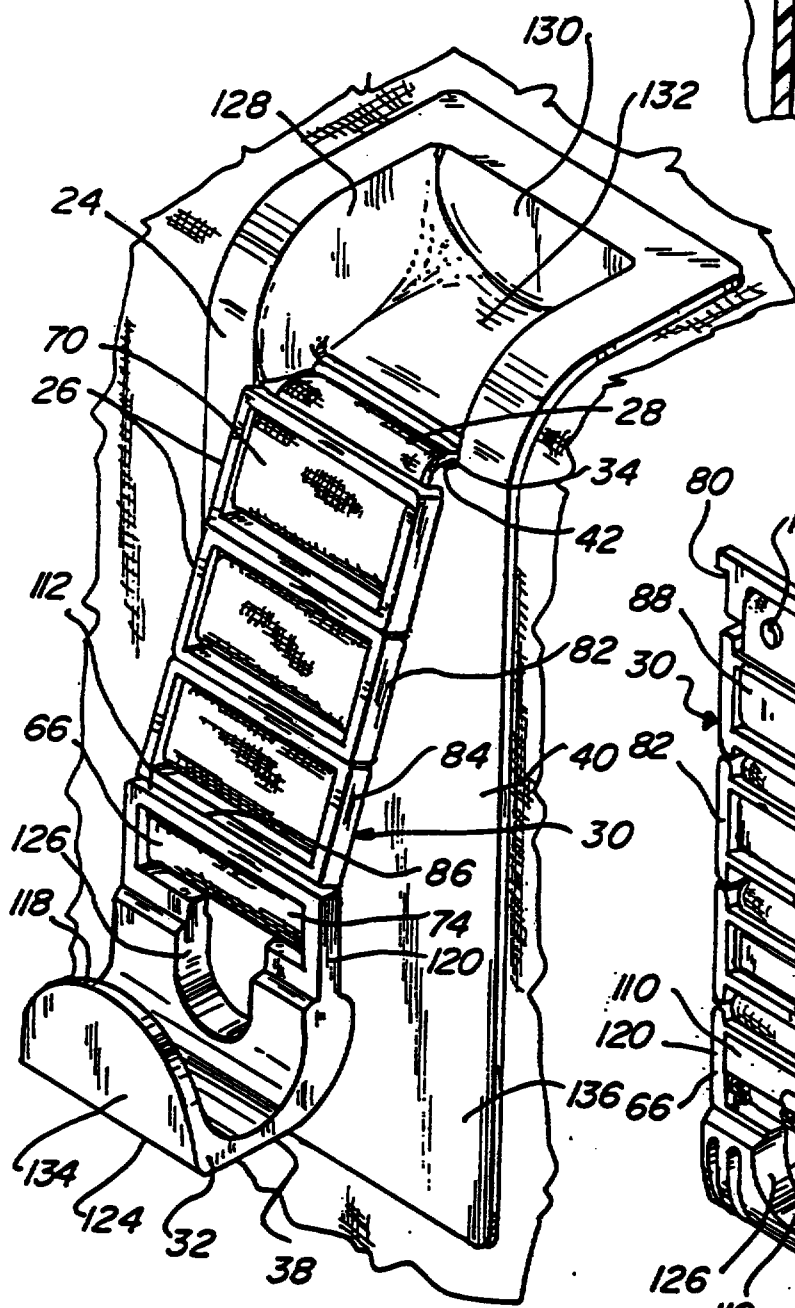


Fig. 4

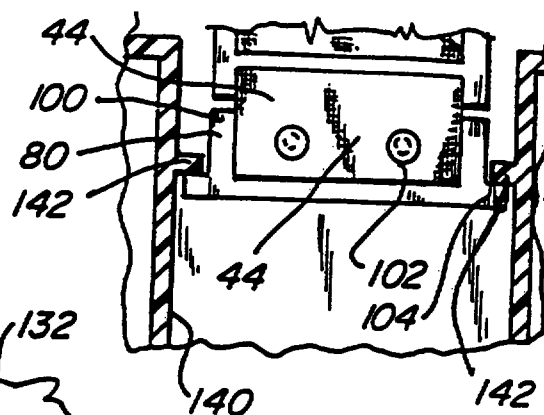


Fig. 9

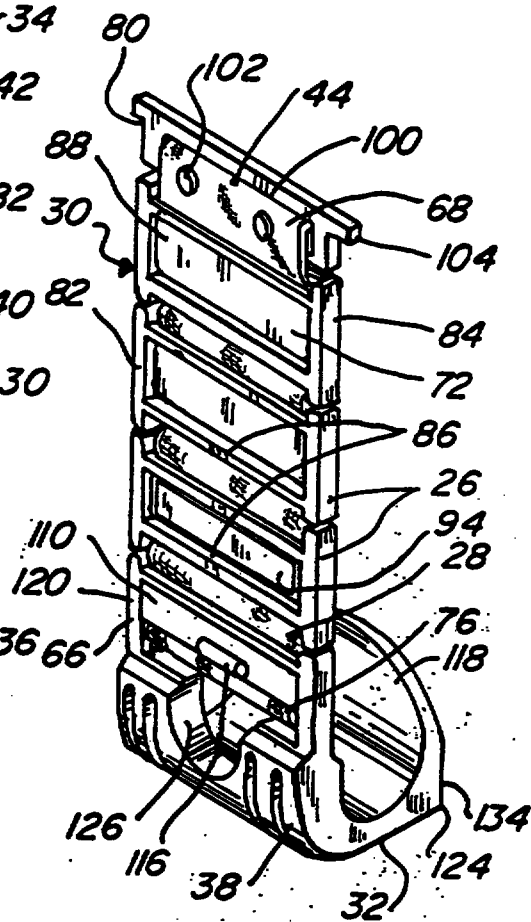
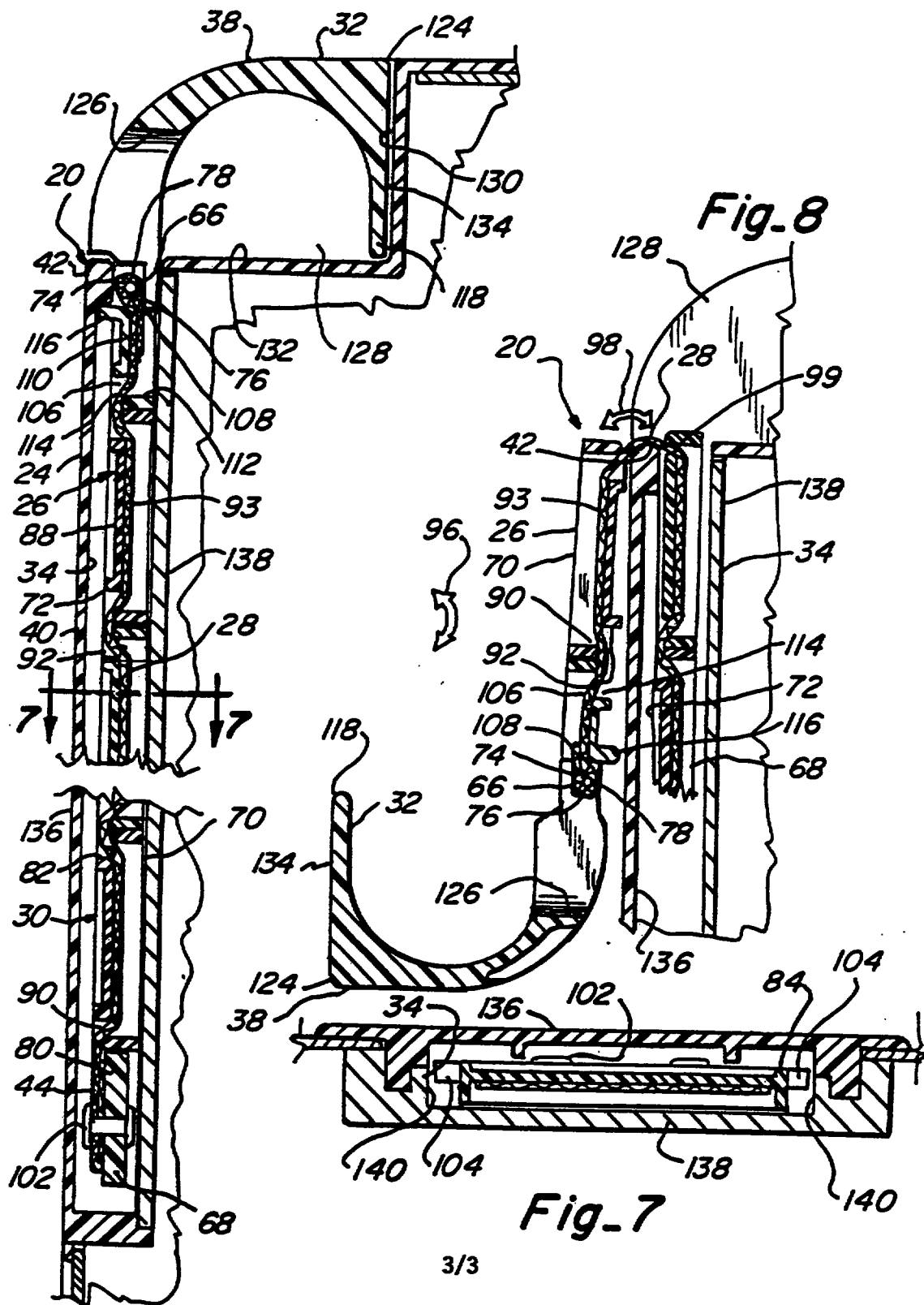


Fig. 5





3/3

Fig. 6**Fig. 7****Fig. 8**

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RETRACTABLE INCREMENTALLY ADJUSTING LUGGAGE ATTACHMENT

This invention relates to attaching an auxiliary luggage case to a main luggage case, and more particularly to a new and improved incrementally adjusting auxiliary luggage case attachment mechanism and method using a link-segmented strap which may be employed independently of other apparatus and methodology for transporting the auxiliary luggage case on the main luggage case.

10

Background of the Invention

Luggage, of the type adapted to contain articles of clothing, personal items and the like, has traditionally been transported by lifting the luggage using a carrying handle. More recently, however, particularly with larger pieces of luggage or those adapted to carry heavy articles, wheels have been mounted on the luggage, and an auxiliary handle or tether has been used to push or pull the luggage on its wheels. This type of wheeled luggage has met with considerable acceptance because greater weights can be transported with relative ease. To further take advantage of the conveniences of wheeled luggage, devices have been developed for attaching an auxiliary luggage case to the wheeled main luggage case to allow several luggage cases to be transported simultaneously.

This is the replacement sheet

Date: 22 OCT 1996

REPLACEMENT SHEETS	SG
☒ Description	: paged .1. to paged .11.
☒ Claim(s)	: paged .2. to paged .21.
☒ Drawing(s)	: paged .3. to paged .36.
☒ Abstract	: paged .2. to paged .11.
DATE OF RECEIPT 22/10/96	

1-1058022

Initially, the devices for carrying the auxiliary luggage case used fixed-length straps or expandable straps that were wrapped around the auxiliary luggage case as well as a portion of the wheeled luggage case to secure the two luggage cases together. These straps, however, were typically not connected to the wheeled luggage case. The potential for misplacing the strap, the inconvenience of having to separately store the strap, the risk of loss of the strap and the improper length of the strap to adequately attach the auxiliary luggage case were all factors which discouraged use of these separate straps.

Removable devices attached to the main luggage case, such as straps or hooks, have also been used for attaching auxiliary luggage cases to a main luggage case. However, removable devices have also failed to satisfy users. Storing the removable device in the main luggage case was an inconvenience because the device consumed valuable packing space and was sometimes difficult to access when the main case was packed. Removing the device and storing it elsewhere created an inconvenience because access to it was limited, and the device could easily be misplaced.

Devices permanently attached to a main luggage case for carrying auxiliary luggage have also presented issues of convenient use. When the permanent attachment devices are not being used to attach an auxiliary luggage case, they often project from the case and pose the risk of becoming

broken, snagged or otherwise caught on other articles. The permanent nature of the attachment devices on the main luggage case can also make the case difficult to store.

5 Efforts to devise a wheeled main luggage case with the ability to carry an auxiliary luggage case have resulted in attachment devices that depend from an extendable pull handle on the main luggage case. An example of one of these devices is disclosed in U.S. Patent No. 4,759,431, assigned to the assignee hereof. These devices are retractable in
10 conjunction with the retraction of the handle, so an auxiliary luggage case is intended to be attached and carried when the pull handle is extended from the main luggage case. Under some circumstances it may be desirable not to extend the pull handle or to roll the main luggage
15 case on its wheels in order to use the auxiliary luggage attaching capability.

 An difficulty common to many of the attachment devices described above relates to the adjustment of the attachment device to accommodate different-sized auxiliary luggage
20 cases. Typically, where the attachment device includes a strap or a strap with a hook, the length of the strap must be adjusted. Adjusting the strap often requires manipulation of the strap and a clasp or buckle device. The degree of manipulation required often makes it very
25 difficult for the user to accomplish in a convenient manner,

particularly if the user is wearing gloves or is carrying other articles.

Attachment devices using hooks attached to the exterior of the main luggage case do not provide any adjustment for accommodating the varying sizes of auxiliary luggage cases. Because the hook is not adjustable, the auxiliary luggage case is often attached to the main luggage case in a position not optimal for balance and convenient transportation.

Another inconvenience common to many of the previous attachment devices relates to storing the device when it is not in use. Often times the attachment device must be removed, folded or otherwise manipulated in an inconvenient manner before being stored. Any difficulty in storing the attachment device detracts from its overall utility.

It is with respect to these considerations and other background information relative to prior art auxiliary luggage attachment mechanisms that the significant improvements of the present invention have evolved.

Summary of the Invention

One of the important aspects of the present invention relates to an auxiliary luggage case attachment mechanism which is permanently attached to a main luggage case to avoid problems of misplacing or losing it, which is retractable when not in use to avoid problems of

inconvenience, breakage, exposure and the like, which is extendable to the selected degree desirable to accommodate a variety of different types and sizes of auxiliary luggage, which is conveniently and quickly positioned and retained in a multiplicity of selected positions which is functional independently of the other functionability of the main luggage case, and which avoids the necessity to use pull handles and the like in order to utilize the auxiliary case carrying capability.

These and other aspects are achieved by a new and improved mechanism and method for attaching an auxiliary luggage case to a main luggage case. A cassette is attached to the main luggage case and the cassette defines an elongated receptacle and a retention edge adjacent to the receptacle. An elongated flexible belt having an auxiliary luggage case attachment device is connected to an outer end of the belt, and a plurality of substantially abutting link members are connected along the length of the belt. A stop link member is connected to an inner end of the belt, and the cassette retains the stop link member within the receptacle to prevent removal of the stop link member from the receptacle. The receptacle is adapted to receive the belt and the links connected to the belt when the belt and links are retracted to the main luggage case.

The belt is bent over the retention edge at a selected location between the intermediate adjacent links to fix the

position of the attachment device and the extension of the belt. The engagement of the edge with the link within the receptacle establishes a restraining force which is transmitted through the links to the outer end of the belt to hold the belt and the attachment device in the position established by the selected location of the fold.

The links are preferably rectangularly shaped with a front side and a back side, and each has a pair of opposing longitudinal sides, a pair of transverse ends, and a plate extending between the longitudinal sides. The plate extends short of the transverse ends and forms a slot adjacent to each transverse end. The belt is threaded onto each link, passing from the back side to the front side through the slot adjacent to one transverse ends, over the front side of the plate, and through the slot adjacent to the other one of the transverse ends from the front side to the back side.

Upon bending the belt in a direction toward the front side of the links, the transverse ends engage one another and prevents the belt from substantially bending in the forward direction. Upon bending the belt in a direction toward the back side of the plurality of links, the transverse ends move away from one another and the belt incrementally bends at locations between the transverse ends.

The attachment device is preferably a hook, having a front side and a back side corresponding to the front side

and back side of the plurality of links. The hook has a base end, similar to the transverse ends of the links, and an extended end integrally formed together in a J-shape. The base end is operably connected to the belt.

5 The attachment mechanism securely attaches of an auxiliary luggage case to the main luggage case. The attachment mechanism is self storing when not in use, and thus alleviates the problems of the attachment mechanism becoming caught on another item, being damaged by another
10 item, or damaging other items. The attachment mechanism is permanently secured to the main case, alleviating the problem of misplacing the attachment mechanism. The attachment mechanism is incrementally adjustable to easily accommodate the size of the auxiliary luggage case.

15 A more complete appreciation of the present invention and its scope can be obtained from the accompanying drawings, which are briefly summarized below, the following detailed description of presently preferred embodiments of the invention, and the appended claims.

20 Brief Description of the Drawings

FIG. 1 is a front perspective view of a wheeled luggage case having an auxiliary case attachment mechanism incorporating the present invention, shown with the attachment mechanism in a position of non-use.

FIG. 2 is an enlarged rear partial perspective view of the wheeled luggage case as shown in FIG. 1, illustrating a link-segmented belt and a hook in an extended position but not holding an auxiliary luggage case.

5 FIG. 3 is a front perspective view of the wheeled luggage case shown in FIGS. 1 and 2, illustrating use of the attachment mechanism to support an auxiliary luggage case.

10 FIG. 4 is an enlarged perspective view of the attachment mechanism showing the link-segmented strap and hook in an extended position from a cassette, similar to that view shown in FIG. 2.

FIG. 5 is a perspective view from the rear of the link-segmented strap and hook as shown in FIG. 4, separate from the cassette.

15 FIG. 6 is an enlarged section view of the attachment mechanism with the link-segmented strap and hook in a retracted position, taken substantially in the plane of line 6-6 of FIG. 1.

20 FIG. 7 is a section view taken substantially in the plane of line 7-7 of FIG. 6.

FIG. 8 is a partial section view similar to FIG. 6 but illustrating the adjustment of the link-segmented strap and hook.

25 FIG. 9 is a vertical plane section view of the link-segmented strap at its extreme extended position, taken substantially in the plane of line 9-9 of FIG. 4.

Detailed Description

An auxiliary luggage case attachment mechanism 20, which embodies one form of the present invention, is connected to a main luggage case 22 as shown in FIGS. 1-3.

5 The attachment mechanism 20 includes a cassette 24, a plurality of links 26 which are connected together by a flexible belt 28 to form a link-segmented strap 30, and a hook 32. The hook 32 and the links 26 along the belt 28 are operably extendable from and retractable into a
10 receptacle 34 of the cassette 24.

When an auxiliary luggage case 36 is not attached to the main luggage case 22, the link-segmented strap 30 and the hook occupy a retracted position shown in FIG. 1. In the retracted position, the hook 32 covers the cassette
15 receptacle 34, facilitating convenient storage of the hook 32 and eliminating the necessity of having a separate cover for closing the receptacle 34. An exterior surface 38 of the hook 32 is flush with an exterior surface 40 of the cassette 24 in the retracted position.

20 In the extended position, the link-segmented strap 30 and hook 32 extend from the cassette receptacle 34 to carry an auxiliary luggage case 36. When extended, the links 26 allow incremental adjustment of the strap 30 to a suitable and selected length which positions the hook 32 at the best
25 position selected by the user for attaching a variety of

sizes and shapes of auxiliary luggage cases 36 to the main luggage case 22.

To adjust the length of extension, the segmented strap 30 folds between two links 26 over a front outer edge 42 of the cassette 24, as shown in FIGS. 4 and 8. The links 26 are positioned end-to-end essentially along the entire length of the belt 28 with enough space to allow the belt 28 to fold between the links 26. The links 26 are confined between the hook 32 and a second or inner end 44 of the belt 28, so the positions between the links define finite incremental positions to which the segmented strap 30 can be extended. Because the fold in the belt 28 at the edge 42 is fixed in a relative incremental position along the segmented strap 30 by the position of the links 26 and the link contact of a link with the edge 42 at the fold in the belt 28, the link-segmented strap 30 is held in the selected position to which it is adjusted by the position of the fold.

The luggage case 22 may be a conventional hard-sided suitcase having a main body 46 formed from two similar component shells 48 and 50, as shown in FIG. 1. Each shell 48 and 50 has a large side face panel 52 and four perpendicular edge panels 54. A hinge (not shown) extending along the lower edge panels pivotably connects the shell 48 and 50 to form the main body 46. A carrying handle 58 is attached to one shell half 48 or 50 at a centrally located

position on a top edge panel 54 so that the luggage case can be carried in a conventional manner.

5 A pair of roller wheels 60 are rotatably mounted at the bottom of one of the side face panels 52. The wheels 60 engage a support surface 62 to allow the luggage case 22 to be rolled rather than carried, at the user's option. A maneuvering handle 64 is selectively extendable from, and retractable into, the interior of the case 22 at a side face panel 52 as shown in FIGS. 1, 2 and 3. The handle 64, when
10 extended, is used for pulling or maneuvering the luggage case 22 on the wheels 60. The handle 64 is retractable when the luggage case is not being maneuvered on the wheels by the user.

15 Details of the link-segmented strap 30 and hook 32 are shown in FIGS. 4-9. The link-segment strap 30 has a first front end 66 attached to the hook 32, a second rear end 68 connected to luggage case 22. The rear end 68 of the strap is operably connected within the receptacle 34 of the cassette 24. The link-segmented strap 30 extends from and
20 retract into the cassette receptacle 34 in an extended elongated configuration without being folded or rolled up. In the fully retracted position, the entire segmented strap 30 is located within the receptacle. In the extended position, substantially all of the strap extends from the
25 receptacle 34.

The belt 28 is preferably bendable or foldable and is substantially non-expandable in length. The belt is preferably made of fabric material and has a flat front side 70 and a flat back side 72. A front end 74 of the belt is sewn in a loop 76 surrounding an attachment pin 78 of the hook 32. The rear end 44 of the belt 28 is operably attached to a stop link 80.

The links 26 are threaded along the belt 28 between the hook 32 and the stop link 80. Each link 26 is able to move only slightly longitudinally along the belt, because the links are restrained by the hook 32 at one end and the stop link 80 at the other end. Each link 26 is formed substantially as a rectangular frame 82. The link frame 82 has a pair of opposing longitudinal sides 84 and a pair of transverse ends 86.

A plate 88 extends transversely between the two longitudinal sides 84 but extends longitudinally short of the two transverse ends 86 to leave gaps or slots 90 between the plate 88 and the two transverse ends 86. The thickness (the dimension perpendicular to the longitudinal and transverse dimensions) of the transverse ends 86 is somewhat less than the thickness of the longitudinal sides 84, leaving a clearance space 92 in the thickness at the transverse ends 86 at the slots 90. When the plurality of links 26 are threaded onto the belt 28, each of the

transverse ends 86 of each link 26 abuts the transverse end 86 of an adjacent link.

Each link 26 is threaded onto the belt 28 at one longitudinal end by extending the belt through the clearance space 92, through the slot 90 at the one end of the link, over the outward facing surface 93 of the plate 88, through the slot 90 at the other end of the link and through the clearance space 92 at the other end of the link. The thickness of the clearance space 92 is sufficient to accommodate the thickness of the belt 28. All of the links 26 are threaded onto the belt in a similar manner. An identification label 94 may be placed conveniently between the sides 84 and ends 86 above the belt 28 and plate 88 of one of the links.

The links 26 on the belt 28 act to cause the link-segmented strap 30 to resist deflection outwardly as indicated by arrow 96 (FIG. 8) and allowing the link-segmented strap 30 to bend only backwards between the links 26 as indicated by arrow 98 (FIG. 8). When the link-segmented strap 30 is attempted to be bent forward in the direction of arrow 96, the transverse ends of the adjacent links 26 engage one another and prevent further bending because there is very little clearance between the links along the belt 28. Consequently, the links prevent the link-segmented strap 30 from bending substantially outward (in direction of arrow 96). However, the links 26 allow the

belt to bend in the reverse direction or outward (shown by arrow 98) because the transverse ends 86 do not contact one another when bent in the reverse direction, thereby allowing the link-segmented strap 30 to bend at the incremental positions between the links 26. When bending in the reverse direction, extra clearance between the links 26 is achieved by the fact that the pivoting occurs at longitudinally facing transverse edges 99 (FIG. 8) of the plates 88. The extra length of the belt through the slots 90 and through the clearance space 92 provides the necessary length for bending in the reverse direction.

The stop link 80 has a main body portion 100 to which the inner end 44 of the belt 28 is operably attached by a suitable fastener, for instance rivets 102, as shown in FIGS. 5, 6 and 9. A pair of laterally opposing tabs 104 extend transversely outwardly away from the main body portion 100 of the stop link 80. The tabs 104 engage the cassette receptacle 34 when the strap 30 is extended therefrom the maximum amount to keep the strap from exiting the cassette receptacle 34, as shown in FIG. 9.

The hook 32, which is attached to the first end 74 of the belt 28, is preferably formed in a general rigid J-shape, as shown in FIGS. 4, 5, 6 and 8. Two slots 106 and 108 are formed in the hook at the location where it connects to the belt. The slots 106 and 108 extend transversely and are located on opposite sides of a shelf 110. A transverse

end 112 of the hook is similar to the transverse ends 86 of the links 26, and also provides a clearance space 114. The belt is threaded through the clearance space 114, the slot 106, over the shelf 110, into the slot 108 where the loop 76 formed in the belt surrounds the attachment pin 78. The pin 78 is inserted into the loop 76. The pin 78 has a diameter larger than the width of the slot 108. The size of the loop 76 and the pin prevent the belt end 44 from sliding through the slot 108, thus anchoring the belt 28 to the hook.

A tab 116 is formed on the back side of the hook 32 and acts as a detent to secure the link-segmented strap 30 in the retracted position, as shown in FIG. 6. The tab 116 creates a friction or restraining force against the cassette 24 when the hook is in the retracted position in the receptacle 34.

An extended end 118 of the hook curves to an ending position substantially parallel to a base end 120 of the hook, as shown in FIGS. 4, 5, 6 and 8. The extended end 118 also tapers or is rounded in the traverse dimension, as shown in FIG. 4, to facilitate placement of an auxiliary luggage handle 122 (FIG. 3) over the hook. A square outer corner 124 is formed on the hook 32 which smoothly initiates the exterior surface 38 of the hook in the retracted position to the shape of the cassette 24. A hole 126 is formed through the base end 120 of the hook for grasping to

extract the link-segmented strap 30 from the cassette receptacle 34.

The cassette 24 is located in or adjacent to one large face panel 52 of the case 22, as shown in FIGS. 1 and 3.

5 The cassette 24 is located near the intersection of the top edge of the side face panel 52 and the top edge panel 54. This position is advantageous for carrying and supporting the auxiliary luggage case 36.

A recessed area 128 is formed in the cassette
10 receptacle 34 to receive the hook 32 in the retracted position, as shown in FIGS. 3, 4, 6 and 8. The recessed area 128 has a back wall 130 and a shallow arcuate shaped bottom wall 132. When the hook 32 is placed within the recessed area 128, a flat surface 134 of the hook 32 fits
15 adjacent to the back wall 130 and the exterior surface 38 of the hook 32 is flush with the outer surface 40 of the cassette 24.

The cassette receptacle 34 extends downward from the recessed area 128 within the luggage case 22. The cassette
20 receptacle 34 includes a front wall 136, a rear wall 138, and two opposing side walls 140, as shown in FIGS. 6 and 7. The two opposing side walls 140 are separated by a dimension greater than the transverse dimension of the stop link 80 between the tabs 104, as seen in FIG. 7. The opposing side
25 walls 140 restrain the lateral movement of the link-segmented strap 30. The dimension of the receptacle 34

between the opposing front and rear walls 136 and 138 is greater than the thickness dimension of the links 26. With these dimensions, the link-segmented strap 30 can easily be moved and guided along the length of the receptacle 34.

5 The edge 42 of the cassette receptacle 34 is formed by the front wall 136, as shown in FIGS. 6 and 8. In the extended position, as shown in FIG. 8, the link-segmented strap 30 is bent over the edge 42 at the point of adjacency between two links 26. The links separate when bent over the
10 edge 42 and the exterior links hang adjacent to the front wall 136. The belt 28 folds between the links 26 at the edge 42, and the links along the belt between both ends of the belt prevent the belt from slipping around the edge 42, as shown in FIG. 8. Because of the front and rear walls 136
15 and 138 of the receptacle, the link 26 inside the receptacle cannot pivot around the edge, thus holding the link-segmented strap 30 in position. The front and back walls 136 and 138 of the receptacle 34 maintain the stop link 80 and the other links 26 within the receptacle 34 to
20 maintain the fold of the belt 28 in the single location at the edge.

 When the hook 32 and segmented strap 30 are pulled out of the receptacle 34 a maximum distance, the tabs 104 on the stop link 80 engage shoulders 142 of the cassette 24 near
25 the receptacle 34 and keep the segmented strap 30 from being completely removed from the receptacle, as shown in FIG. 9.

The interaction between the edge 42 and the segmented strap 30 allows the height of the hook 32 to be adjusted easily. To adjust the hook 32, the link-segmented strap 30 is substantially straightened and then moved into or out of the cassette receptacle 34, as shown in FIG. 2. At the appropriate length, the link-segmented strap 30 is bent over the edge 42 between two links 26, as shown in FIGS. 4 and 8. The carrying handle 122 of the auxiliary luggage case 36 is then placed over the hook.

To store the attachment mechanism 20 when not in use, the segmented strap 30 is lifted up substantially straight in line with the receptacle 34 and then lowered into the receptacle. The hook 32 is placed in the recessed area 128 with the flat surface 134 of the extended end 118 of the hook 32 adjacent to the back wall 130, as shown in FIG. 6.

The attachment mechanism 20 is capable of being used with a hard-sided luggage case without wheel capability or an extendable handle. Additionally, with appropriate attachment of the cassette 24, the attachment mechanism 20 is capable of being used with a soft-sided luggage case, or as an add-on feature to an existing hard or soft-sided luggage case.

Numerous advantages accrue as a result of using the attachment mechanism of the present invention. The problems associated with using straps or hooks separate from the wheeled luggage case, straps or hooks permanently attached

to the exterior of the wheeled luggage case, or straps or hooks releasably attached to the exterior of the wheeled luggage case are eliminated. The attachment mechanism 20 is not able to be misplaced. The attachment mechanism 20 will
5 not catch on other articles when not in use, and does not take up a large amount of space when stored.

In addition, the link-segmented strap 30 and hook 32 are easily adjusted for carrying many sizes or configurations of auxiliary luggage cases 36. The links 26
10 threaded onto the belt 28 provide the belt with rigidity. The rigidity allows the segmented strap 30 to easily be extended from and retracted into the cassette receptacle 34, as well as incrementally adjusted while extended. Many other significant advantages and improvements are apparent
15 after comprehending the improved features of the present invention.

A presently preferred embodiment of the present invention and many of its improvements have been described with a degree of particularity. The previous description is
20 a preferred example for implementing the invention, and the scope of the invention should not necessarily be limited by this description. The scope of the present invention is defined by the scope of the following claims.

The invention claimed is:



THE INVENTION CLAIMED IS:

1. An attachment mechanism adapted to attach an auxiliary luggage case to a main luggage case, comprising:

a cassette attached to the luggage case, the cassette defining a elongated receptacle and a retention edge adjacent to the receptacle;

an elongated flexible belt;

an auxiliary luggage case attachment device connected to an outer end of the elongated belt;

a plurality of link members connected to the belt, one of the link members being a stop link member connected to an inner end of the elongated belt, the other ones of the link members being intermediate link members positioned in substantially abutting relationship with one another along the length of the belt between the attachment device and the stop link;

the receptacle having a length adapted to receive the belt and the links connected to the belt when in the retracted position;

the cassette retaining the stop link member within the receptacle to prevent removal of the stop link member from the receptacle and to allow movement of the stop link member along the length of the receptacle;

a fold of the belt over the edge at a selected location between the intermediate adjacent links fixing the



position of the attachment device and the extension of the belt; and

the engagement with the edge of the link within the receptacle establishing a restraining force which is transmitted through the links to the outer end of the belt to hold the belt and the attachment device in the position established by the selected location of the fold.

2. An attachment mechanism as defined in claim 1 wherein:

the intermediate link members are rectangularly shaped with front side and a back side;

each intermediate link member includes a pair of opposing longitudinal sides, a pair of transverse ends, and a plate extending between the longitudinal sides;

the plate extends short of the transverse sides and forms a slot adjacent to each transverse end;

each of the plurality of links thread onto the belt by the belt passing from the back side to the front side through the slot adjacent to one transverse ends, over the front side of the plate, and through the slot adjacent to the other one of the transverse ends from the front side to the back side; and

each of the plurality of intermediate links substantially abuts an adjacent link along each of the transverse sides.



3. An attachment mechanism as defined in claim 2
wherein:

the transverse ends have a thickness less than a
thickness of the longitudinal sides leaving a clearance
5 space adjacent to each transverse end; and

each of the plurality of links thread onto the
belt by the belt passing from the back side to the front
side through the clearance space and slot adjacent to one
transverse end, over the front of the plate, and through the
10 clearance space and slot from the front side to the front
side adjacent to the other one of the transverse ends.

4. An attachment mechanism as defined in claim 3
wherein:

the transverse ends of the plurality of links
15 engage one another upon bending the belt in a direction
toward the front sides of the links away from the belt
located on the back sides of the links to prevent the belt
from substantially bending in the forward direction.

5. An attachment mechanism as defined in claim 3
20 wherein:

the transverse ends move away from one another to
allow the belt to bend at incremental locations between the
transverse ends of the plurality of links when the belt
bends in a direction toward the back sides of the plurality
25 of links.



6. An attachment mechanism as defined in claim 5
wherein:

the cassette has an exterior wall common with a
front wall of the receptacle;

5 the belt, when bent in a direction toward the back
sides of the plurality of links, bends over the edge at
locations between the transverse ends;

the outer end of the belt extends from the
receptacle and hangs adjacent to the exterior wall of the
10 cassette; and

the inner end of the belt is restrained inside the
receptacle and hangs adjacent to the front wall of the
receptacle.

7. An attachment mechanism as defined in claim 6
15 wherein:

the stop link has a pair of laterally opposing
outwardly extending tabs;

the receptacle has a pair of laterally opposing
inwardly extending shoulders; and

20 the tabs engage the shoulders to restrain the stop
link in the receptacle when the belt is extended a maximum
amount.

8. An attachment mechanism as defined in claim 1
wherein:

25 the attachment device includes a hook having a
front side and a back side which corresponds in orientation



on the belt to the front side and back side of the plurality of links.

9. An attachment mechanism as defined in claim 8 wherein:

5 the hook has a base end of substantially the same configuration as the transverse ends of the links, and an extended end integrally formed with the base end in a general J-shape;

 the base end is operably connected to the belt;
10 the extended end curves to the front side ending substantially parallel with the first end; and
 the extended end tapers in width.

10. An attachment mechanism as defined in claim 9 wherein:

15 the belt has a loop sewn on its inner end;
 the base end of the hook has a first and second transverse slot, each slot having a longitudinal width dimension, the first and second slots separated by a transverse shelf, the first slot being closer to the
20 transverse end of the hook;

 the belt passes from back to front through the first slot, over the front of the shelf, and from front to back through the second slot; and

 a restraining element having a width dimension
25 greater than the longitudinal width of the second slot is received within the loop to secure the belt to the hook.



11. An attachment mechanism as defined in claim 10
wherein:

a tab extends from the back side of the hook.

12. An attachment mechanism as defined in claim 11
5 wherein:

the cassette comprises a recessed area adjacent to
the receptacle to receive the hook when the belt with the
links connected to the belt are in the retracted position.

13. An attachment mechanism as defined in claim 12
10 wherein:

the recessed area has a shape complementary to the
hook to allow the back side of the hook to be flush with an
outer surface of the cassette when the hook and belt are in
the retracted position and received in the recessed area and
15 receptacle.

14. An attachment mechanism as defined in claim 13
wherein:

the tab extending from the back of the hook
engages the receptacle below the retention edge when the
20 hook and belt are in the retracted position to releasably
secure the hook and belt in the retracted position.

15. An attachment mechanism adapted to attach an
auxiliary luggage case to a main luggage case, comprising:
an elongated flexible belt having a plurality of
25 incrementally located restraints positioned along its length



and an attachment device at an outer end of the belt to connect to the auxiliary luggage case;

5 a structure attached to the luggage case and defining an elongated receptacle and a retention structure adjacent to the receptacle, the receptacle having a length sufficient to receive the belt; and

10 the engagement of a selected restraint with the retention structure creating a restraining force on the belt to hold the belt and the attachment device in the position established by the selected restraint.

16. An attachment mechanism as defined in claim 15 wherein:

15 the restraints are rectangularly shaped links having a front and back side, a pair of longitudinal sides, a pair of transverse ends, and a pair of slots, one adjacent to each transverse end;

the belt is threaded through the slots to slidably secure the links along the length of the belt between the attachment device and an inner end of the belt; and

20 the transverse ends of the links substantially abutting each adjacent link.

17. An attachment mechanism as defined in claim 16 wherein:

25 the structure comprises a cassette having an outer surface and the cassette forms the receptacle and a recessed area;



the recessed area having sufficient size to receive the attachment device; and

the attachment device is flush with an outer surface of the main luggage case when received in the recessed area.

18. An attachment mechanism as defined in claim 17 wherein:

the retention structure is an edge; and
the belt bends toward the back side of the links over the edge between adjacent links and hangs adjacent to the outer surface of the cassette when prepared to support an auxiliary case.

19. A method for carrying an auxiliary luggage case on a main luggage case using an attachment mechanism, said method comprising the steps of:

forming a cassette attached adjacent to an outer surface of the main luggage case, the cassette having an elongated receptacle and a retention edge adjacent to the receptacle;

providing an elongated flexible belt;
slidably restraining the belt at an inner end inside the receptacle;

attaching an attachment device to an outer end of the elongated belt;



slidably placing a plurality of adjacent abutting link members along the belt between the attachment device and the inner end;

5 forming the receptacle with a dimension adapted to receive the belt and the links connected to the belt when in a retracted position;

extracting the belt and links from the receptacle;

10 folding the belt over the edge at a selected location between the adjacent links to fix the position of the attachment device and the extension of the belt;

engaging the edge and the link within the receptacle establishing a restraining force which is transmitted through the links to the outer end of the belt to hold the belt and the attachment device in the position
15 established by the selected location of the fold;

attaching the auxiliary luggage case to the attachment device to support the auxiliary luggage case upon the main luggage case;

20 removing the auxiliary luggage case from the attachment device;

unfolding the belt and links from over the edge and positioning the belt and links in a substantially linear position; and

inserting the belt and links into the receptacle.

25 20. A method as defined in claim 19, comprising the following additional steps:



forming the link members in rectangular shapes which each have a front side and a back side, a pair of longitudinal sides, a pair of transverse ends, a plate extending between the longitudinal sides, and a first slot and a second slot, each slot along the transverse ends, the longitudinal sides and transverse ends having a thickness, the thickness of the transverse ends forming a shoulder;

threading the belt through the first slot at one end of a link from the back side to the front side of the link, over the front of the plate, and threading the belt through the second slot at the other end of the link from the front side to the back side;

impeding bending of the belt toward the front sides of the links by engaging with one another the shoulders of the adjacent links threaded along the belt; and

separating the shoulders of the adjacent links threaded along the belt by folding the belt toward the back sides of the links.

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ABSTRACT**RETRACTABLE INCREMENTALLY ADJUSTING LUGGAGE ATTACHMENT**

A mechanism (20) for attaching an auxiliary luggage case (36) to a main luggage case (22) including a cassette (24) attached to the main luggage case, the cassette defining an elongated receptacle (34) and a retention edge (42) adjacent to the receptacle. The receptacle (34) is adapted to receive the belt (28) and the links (26) connected to the belt when the belt and links are retracted to the main luggage case (22). An elongated flexible belt is attached at an inner end to the cassette, and has an attachment device (32) connected to its outer end. A plurality of links (26) are connected along the length of the belt. The belt is bent over the retention edge between the links to fix the position of the attachment device and the extension of the belt. The engagement of the edge with the link within the receptacle holds the belt and the attachment device in the position established by the selected location of the fold.

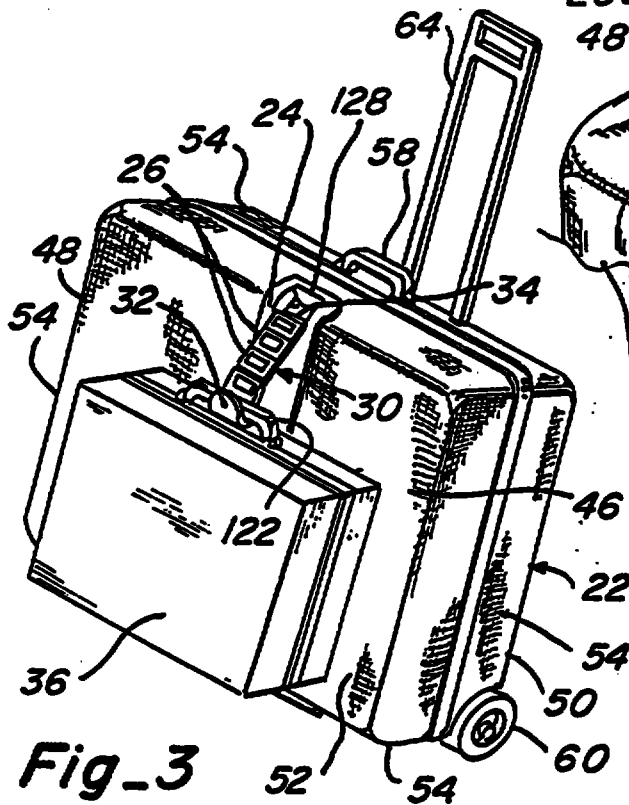
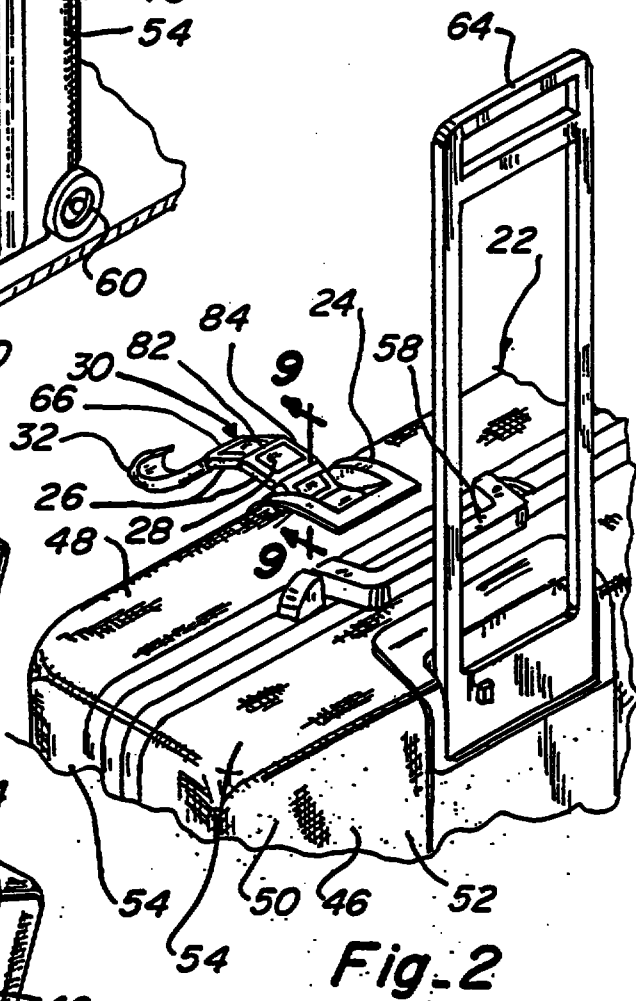
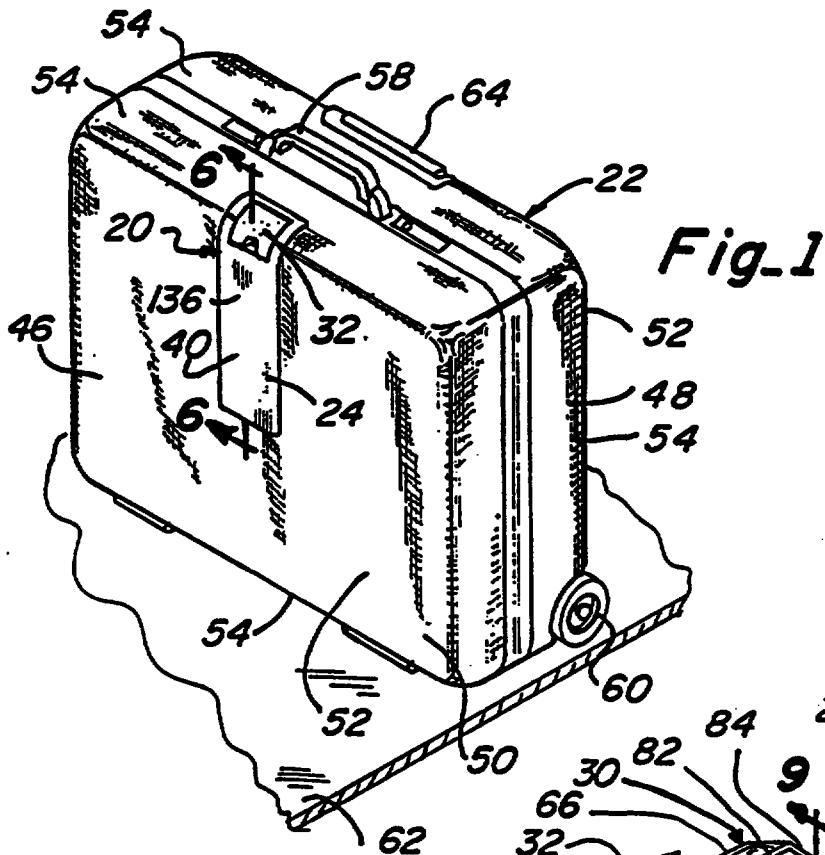
Figure 3

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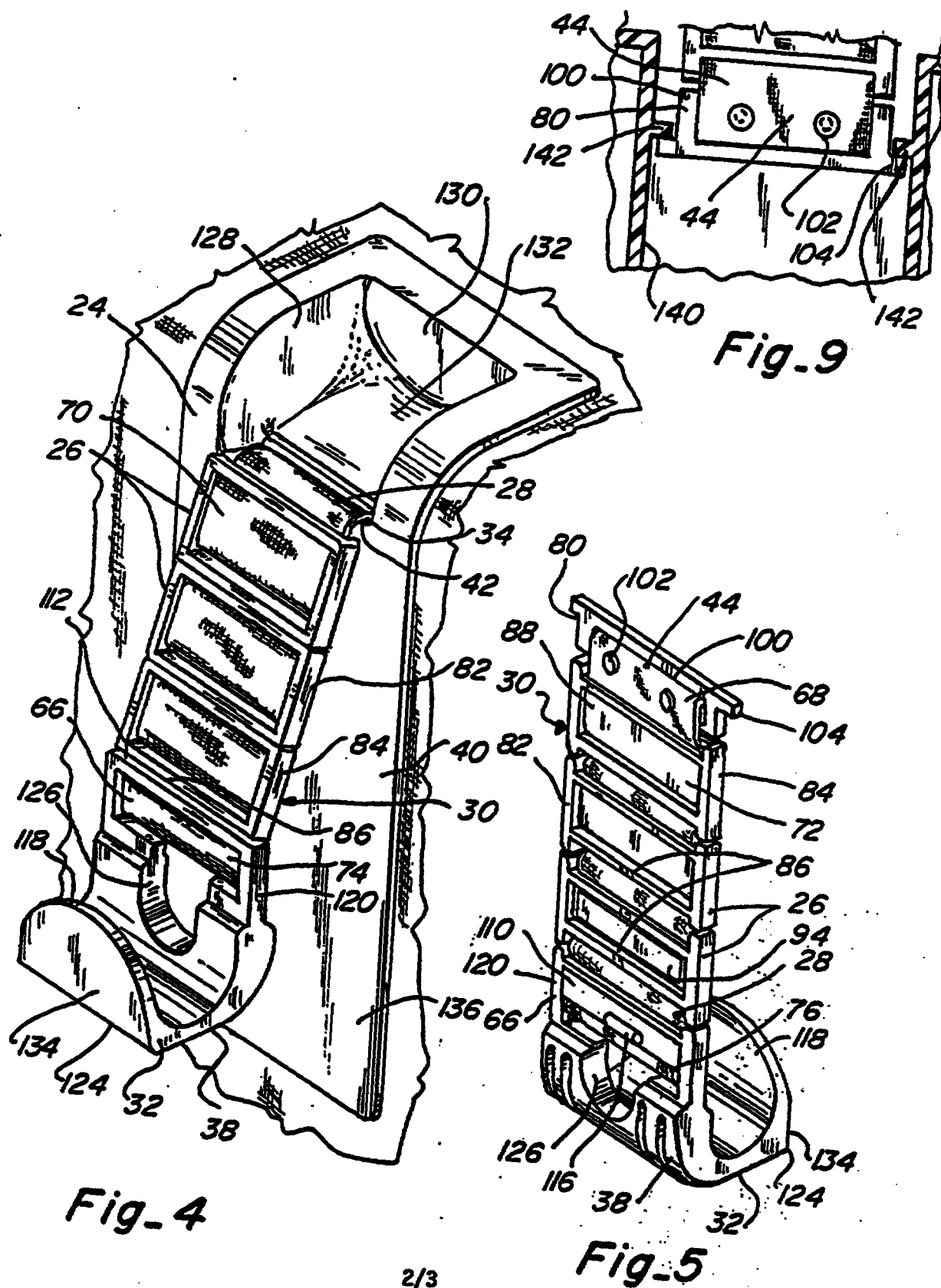
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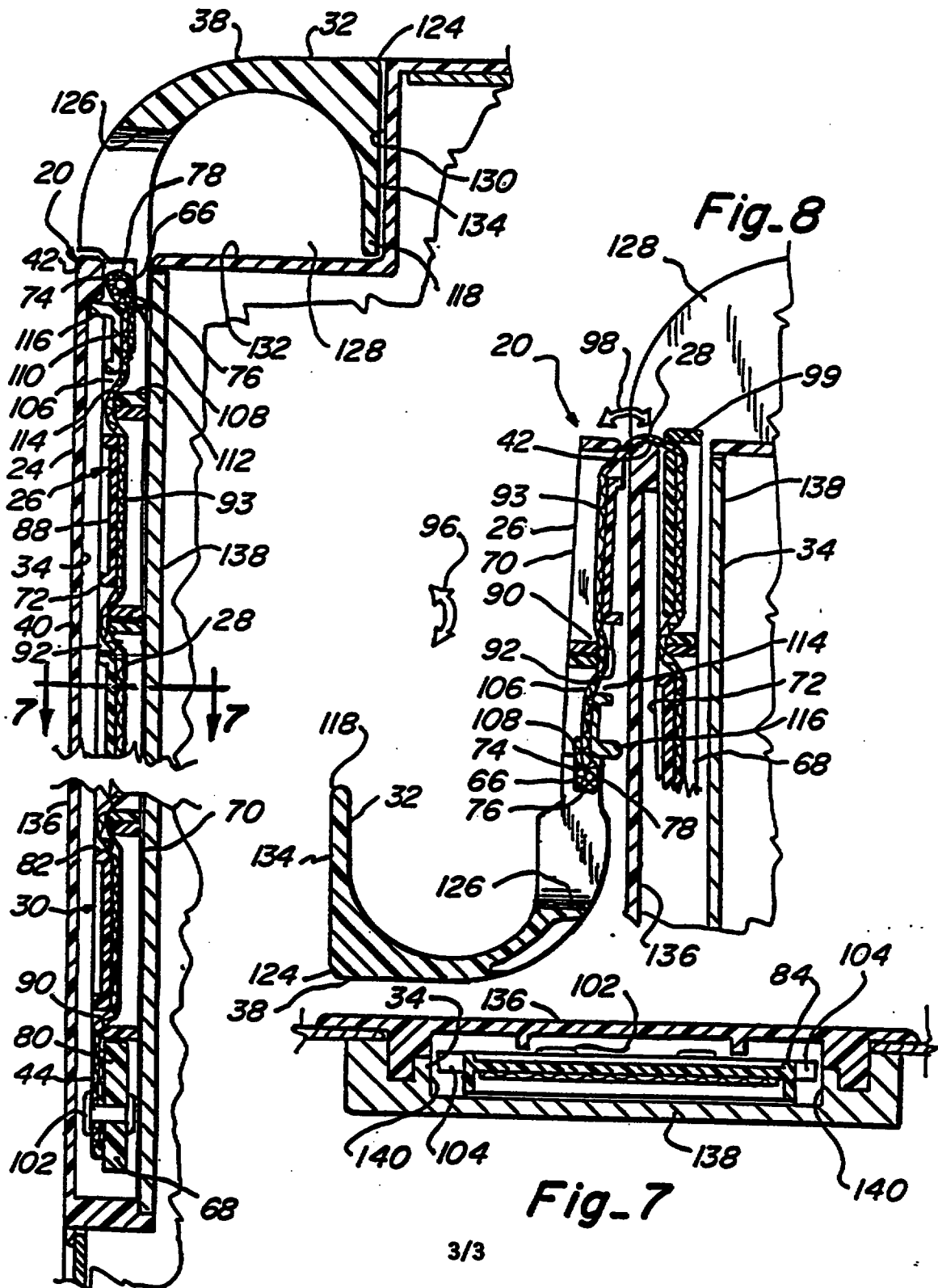


Fig. 6

Fig. 7

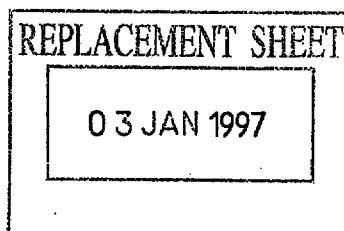
Fig. 8

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ABSTRACT**RETRACTABLE INCREMENTALLY ADJUSTING LUGGAGE ATTACHMENT**

A mechanism (20) for attaching an auxiliary luggage case (36) to a main luggage case (22) including a cassette (24) attached to the main luggage case, the cassette defining an elongated receptacle (34) and a retention edge (42) adjacent to the receptacle. The receptacle (34) is adapted to receive the belt (28) and the links (26) connected to the belt when the belt and links are retracted to the main luggage case (22). An elongated flexible belt is attached at an inner end to the cassette, and has an attachment device (32) connected to its outer end. A plurality of links (26) are connected along the length of the belt. The belt is bent over the retention edge between the links to fix the position of the attachment device and the extension of the belt. The engagement of the edge with the link within the receptacle holds the belt and the attachment device in the position established by the selected location of the fold.

Figure 3



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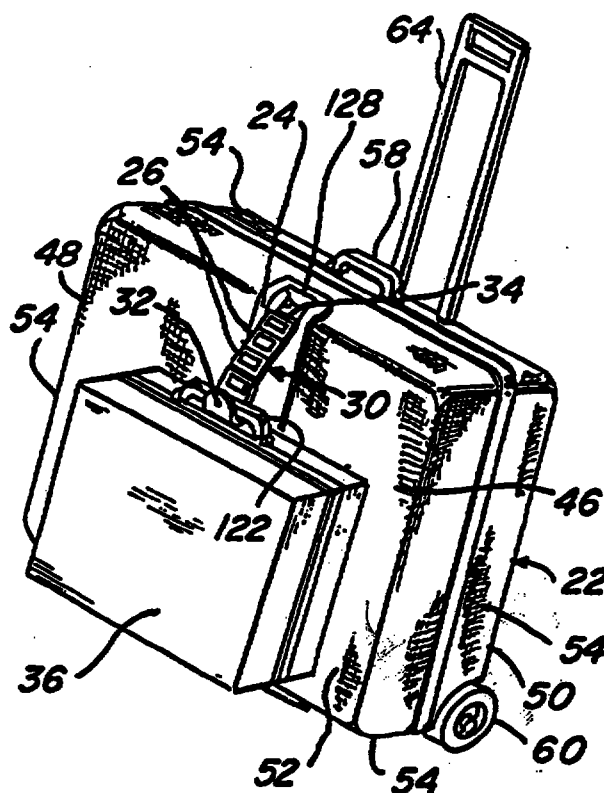
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(21) International Application Number: PCT/US95/00822 (22) International Filing Date: 17 January 1995 (17.01.95) (30) Priority Data: 08/182,495 18 January 1994 (18.01.94) US (71) Applicant: SAMSONITE CORPORATION [US/US]; 11200 East Forty-Fifth Avenue, Denver, CO 80239 (US). (72) Inventor: KING, William, L.; Apartment #1108, 3100 Cherry Creek Drive South, Denver, CO 80209 (US). (74) Agent: O'CONNOR, Gregory, W.; Samsonite Corporation, 11200 East Forty-Fifth Avenue, Denver, CO 80239 (US).			(81) Designated States: AU, BR, CA, CN, JP, KR, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report.												
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(54) Title: RETRACTABLE INCREMENTALLY ADJUSTING LUGGAGE ATTACHMENT

(57) Abstract

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