April 15, 1969 K. A. MILETTE ET AL 3,438,467

RETRACTABLE HANDLES FOR LUGGAGE CASES

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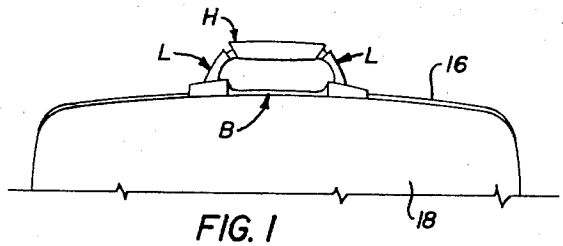


FIG. 1

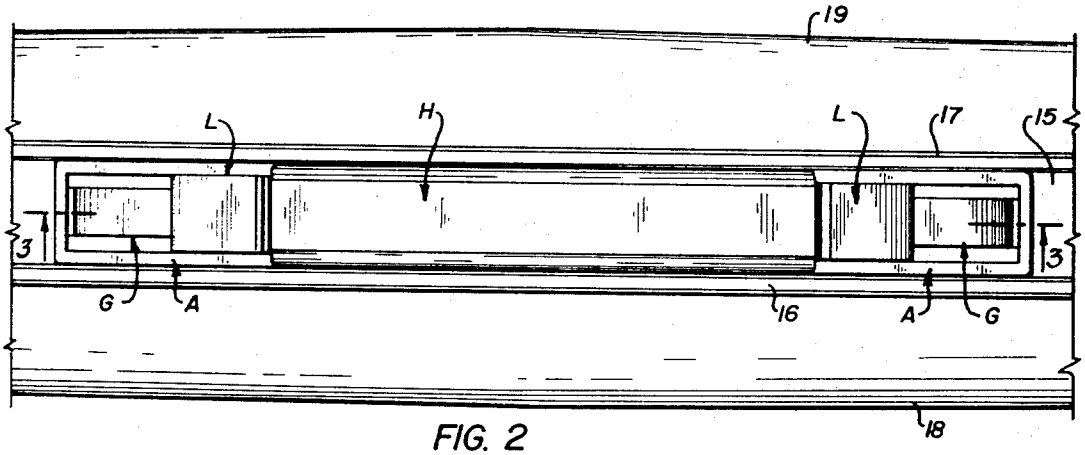


FIG. 2

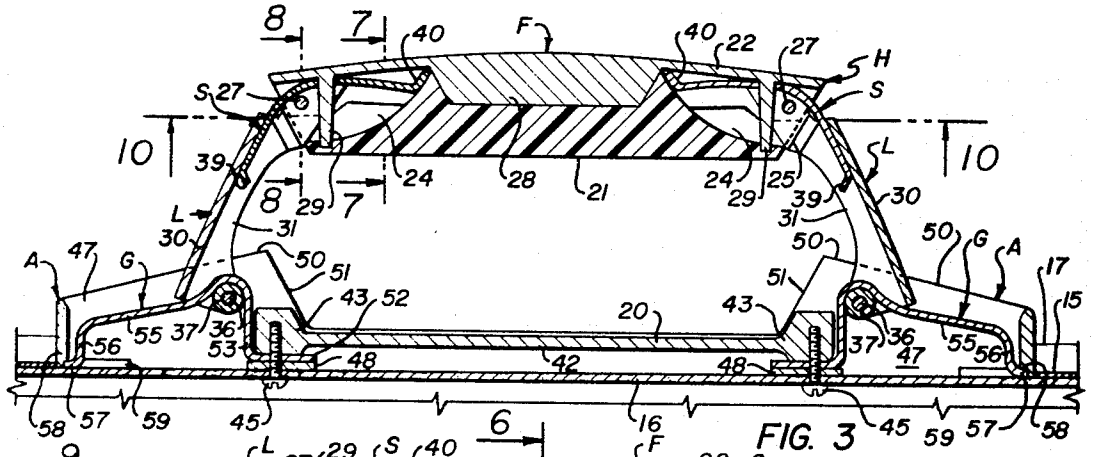


FIG. 3

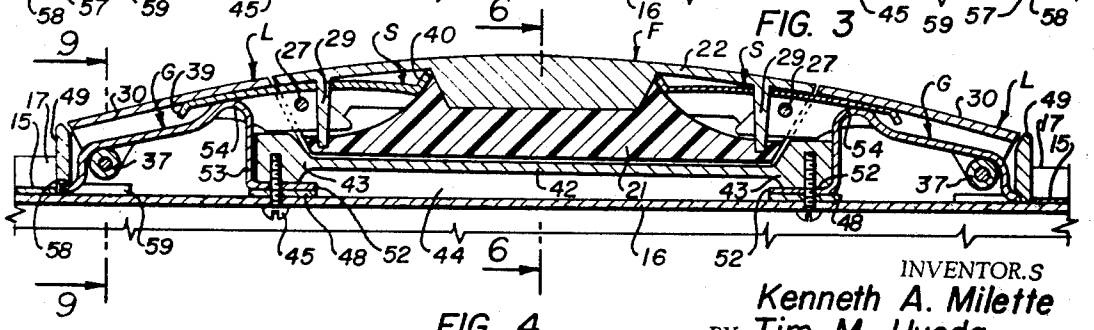


FIG. 4

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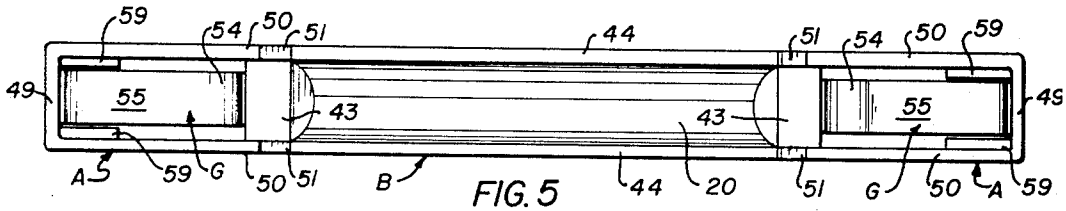


FIG. 5

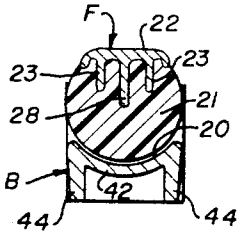


FIG. 6

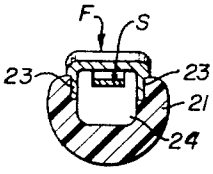


FIG. 7

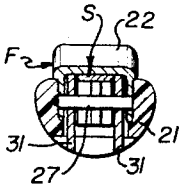


FIG. 8

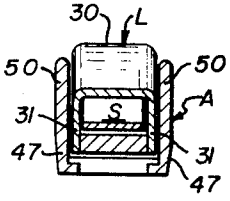


FIG. 9

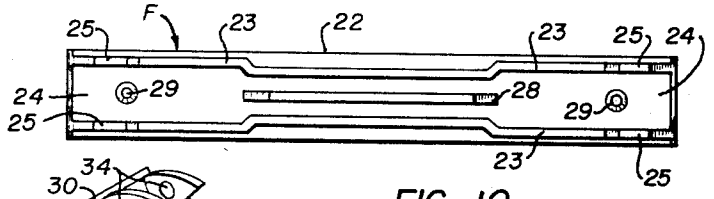


FIG. 10

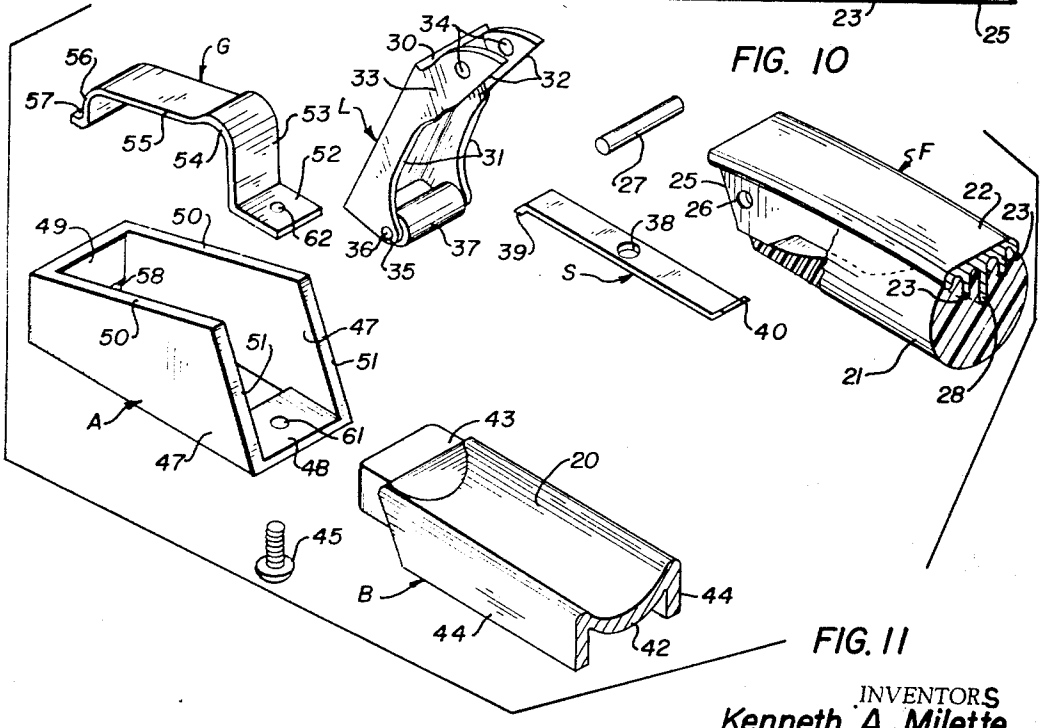


FIG. 11

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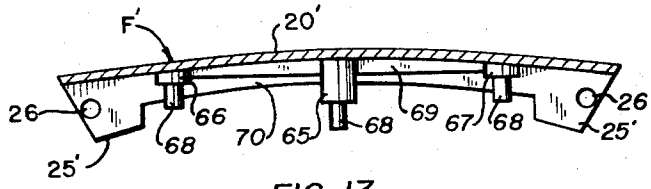


FIG. 13

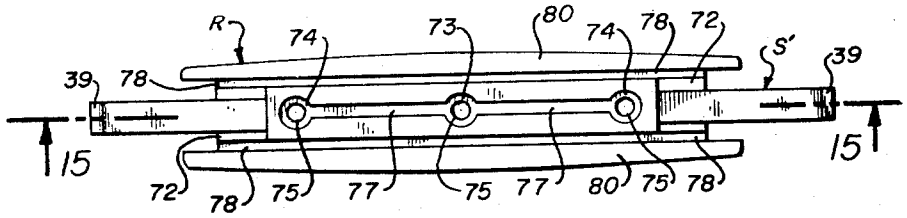


FIG. 14

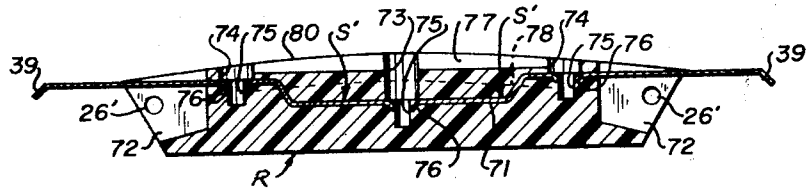


FIG. 15

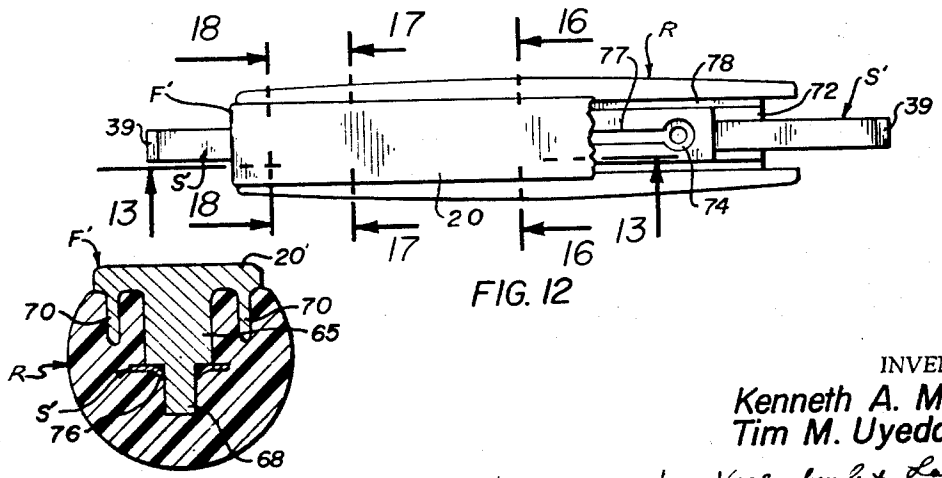


FIG. 12

FIG. 16

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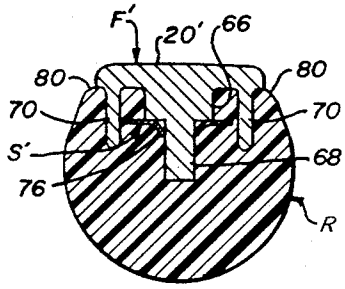


FIG. 17

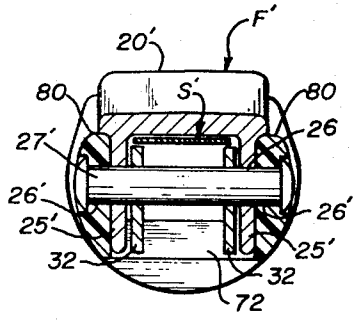


FIG. 18

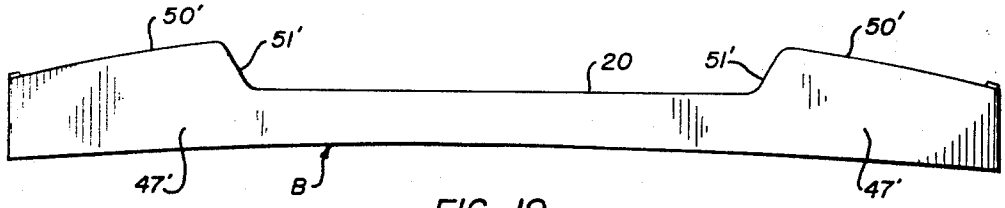


FIG. 19

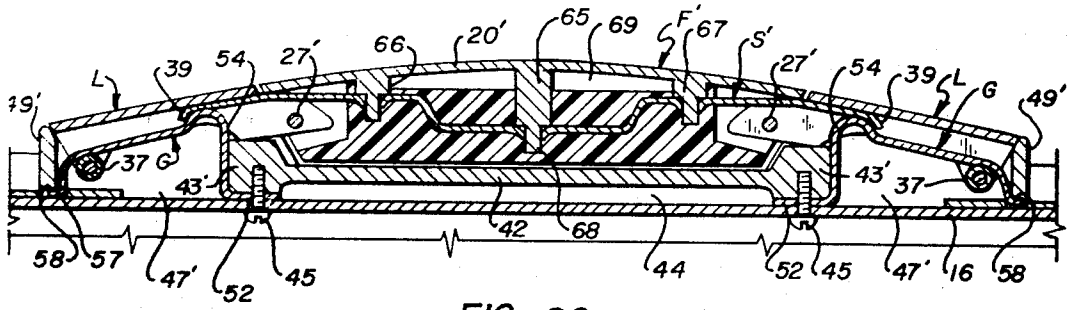


FIG. 20

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United States Patent Office

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RETRACTABLE HANDLES FOR LUGGAGE CASES

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Int. Cl. A45c *13/10, 13/22, 13/26*

U.S. Cl. 190—58 13 Claims

ABSTRACT OF THE DISCLOSURE

A luggage case handle secured to a base by a connective link at each end of the handle. The base, somewhat longer than the handle, includes a central, elongated saddle which receives the handle in a retracted position upon the base with the links being spread apart from each end of the handle and received by base abutments at each side of the saddle. Each link is pivoted to the handle and the outward end of each link is slidable in a guide in the abutment to which it is attached. Accordingly, when the handle is lifted from the base, the outward end of each link slides inwardly along its abutment and rotates downwardly from the end of the handle. A spring, exerting pressure at the pivotal connection of the handle and each link, is adapted to bias each link outwardly from the end of the handle to the position assumed by the link when the handle is retracted in the base saddle. This spring action thereby urges the handle to the retracted position whenever the handle is not being used.

This invention relates to handles for luggage cases, and more particularly to handle assemblies of the type which include a base mounted upon a luggage case and a handle grip connected to the base which is retractable against the base when not in use. Accordingly, the invention will be hereinafter referred to as a retractable handle for a luggage case.

An object of the invention is to provide a novel and improved retractable handle for a luggage case, wherein the handle is seated in a saddle portion of the base in a neat, compact manner when it is retracted.

Another object of the invention is to provide, in a novel and improved retractable handle for a luggage case which is secured to a base by a link at each end of the handle, with a simplified, resilient means between the handle and the links adapted to urge the links outwardly with respect to the handle, and to thereby urge the handle to a retracted position upon the base.

A further object of the invention is to provide, in a luggage case handle assembly, a saddle-shaped base adapted to hold a handle in its saddle socket, and to hold connective links extended from each side of the handle in side abutments when the handle lies upon the base in a retracted position, all to produce a compact, neat appearing structure when the handle is not being used.

A further object of the invention is to provide, in a luggage case handle which is link connected to a base, a novel and improved means for urging connective links outwardly from the ends of the handle, and to slidably hold the links in guides on the base in a manner which permits the handle to be snugly and neatly biased against the base in a normally retracted position whenever it is not in use.

A further object of the invention is to provide a novel and improved retractable handle for a luggage case which may be made in more than one form, each of which is effective in use.

A further object of the invention is to provide a novel and improved handle for luggage cases in which, in one form, resilient means such as a spring not only urges the handle to a retracted position, but also holds separate parts of the handle together.

Further objects of the invention are to provide a luggage case handle assembly which is a neat appearing, low cost, rugged and durable structure.

With the foregoing and other objects in view, all of which more fully hereinafter appear, our present invention comprises certain constructions, combinations and arrangements of parts and elements as hereinafter described, defined in the appended claims, and illustrated in preferred embodiment by the accompanying drawings, in which:

FIG. 1 is a side elevation of the upper portion of a luggage case having an improved handle assembly of this invention mounted thereon, with the handle being in an upstanding, extended position;

FIG. 2 is a plan view of the central portion, on an enlarged scale, of the case and of the handle assembly shown in FIG. 1;

FIG. 3 is a fragmentary longitudinal section of the handle assembly and a portion of the case, taken along line **3—3** of FIG. 2;

FIG. 4 is a longitudinal section similar to FIG. 3, but showing the handle in its normal, retracted position upon the base;

FIG. 5 is a top plan view of the base of the assembly;

FIG. 6 is a central, transverse section taken along line **6—6** of FIG. 4;

FIG. 7 is a transverse section of the handle taken along line **7—7** of FIG. 3;

FIG. 8 is a transverse section of the handle taken along line **8—8** of FIG. 3;

FIG. 9 is a transverse section taken along line **9—9** of FIG. 4;

FIG. 10 is a bottom plan view of the frame member per se of the handle as taken substantially from the indicated line **10—10** of FIG. 3;

FIG. 11 is an isometric, exploded view of the components of one end of the handle assembly, showing also a portion of the handle and a portion of the central portion of the base;

FIG. 12 is a top plan view of an alternative form of handle, prior to attachment to a pair of links which cooperate with the handle to retract the same;

FIG. 13 is a longitudinal section of a top frame of the handle, taken from the position of line **13—13** of FIG. 12;

FIG. 14 is a top plan view of a handle grip and spring assembly;

FIG. 15 is a central longitudinal section of the handle grip and spring assembly taken along line **15—15** of FIG. 14;

FIG. 16 is an enlarged transverse section, taken along line **16—16** of FIG. 12, at the midpoint of the handle;

FIG. 17 is an enlarged transverse section, taken along line **17—17** of FIG. 12;

FIG. 18 is an enlarged transverse section, taken along line **18—18** of FIG. 12, at the position of a pivot pin by which a link is pivoted to the handle;

FIG. 19 is a side elevation of an alternative base for the handle; and

FIG. 20 is a longitudinal section similar to FIG. 4 but showing the alternative handle in assembled condition and also assembled with the links and the alternative base.

Referring more particularly to FIGS. 1 and 2 of the drawings, the improved handle assembly includes the handle H, which is affixed to a base B by links L. This elongated, comparatively narrow assembly, symmetrical about both longitudinal and transverse central reference planes, is adapted to be mounted upon any type of a luggage case, but for illustrative purposes is shown as mounted on a luggage case of the general form which has a

groove or recess **15** extending longitudinally across the top of the case. Such a recess, usually at the center of the case, is formed between frame strips **16** and **17** at each side of the recess, which are attached to the opposing body shells **18** and **19** of the case. As in the Willard G. Axtell U.S. Patent 2,950,793, the floor of the recess **15** is provided by one frame strip and separable from the other to form the parting line between the two shells where the case opens. The recess **15** may be approximately an inch wide and approximately one-half inch deep. Accordingly, it is easy to proportion the comparatively narrow handle assembly to fit and be mounted upon the floor of the recess **15** between the frame strips **16** and **17**.

The links L interconnecting the handle H and base B are pivotally connected to the ends of the handle and are resiliently biased to rotate outwardly from each end of the handle to pull the handle downwardly and against the base. As in FIGS. 3 and 4, the base is formed with a central, saddle-like seat **20** to receive the handle, and with an abutment A at each end of this saddle and containing a guide strip G to slideably hold the outward end of the respective link L. Such guide strips permit the links to move inwardly and downwardly from the handle when the handle is lifted away from the saddle, and to move outwardly from the handle when the handle is returned to the saddle, as will be hereinafter described.

The handle H is an elongated, longitudinally and transversely symmetrical member, somewhat cigar-shaped in form. It combines a channel-like top frame F of rigid material, such as metal, with a cylindrical grip **21** of resilient material, such as a molded plastic. The web **22** of frame F forms the top surface of the handle and is smoothly arched and crowned to merge with the top of the base abutments when retracted, as illustrated in FIG. 4. This top surface of the web **22** may be chrome plated or otherwise finished to enhance the overall appearance of the finished unit. This channel-like frame F also includes flanges **23**, as in FIGS. 6 and 10, at the underside of the web which extend into the cylindrical grip **21** to facilitate securing the latter underneath the frame web **22**, as by an adhesive.

The central portions of the two longitudinal flanges **23** at the underside of the web are set inwardly from the longitudinal side edges of the web **22**, to provide a better embedment in the grip **21**, as shown in FIG. 6, but their end portions are closer to the edges of the web **22** and spaced further apart to provide room for a hinge pocket **24** in each end of the grip, as shown in FIGS. 3, 7 and 10. Each end of each flange **23** is formed with a downward, inward slope to provide a neat appearing construction and is enlarged as a head **25**, as in FIGS. 3 and 11, with bearing holes **26** therein to hold a hinge pin **27** for the connecting of a link L with the handle H. A short flange **28**, as in FIGS. 6 and 10, depends from the center of the central portion of the web **22** to extend into the top of the grip **21** to better interconnect the frame F to the grip **21**, as through a suitable adhesive. To complete the frame F, a post **29** depends from the center of the underside of the web **22** near each end to retain a spring S, as will be later described.

Each end of the handle H is pivotally connected to a link L. Each link L, of rigid metal, is formed as a U-shaped member whose web portion or back **30** is of the same width as the frame web **22**, and its top surface is desirably finished in the same manner as the top surface of the frame web. Side flanges **31** depend from back **30**, as in FIG. 11, and one end of each flange includes an extension **32**, which is inwardly spaced by an offset **33** to fit into handle pocket **24** between the flange heads **25**. Transversely aligned bearing holes **34**, in each pair of offsets, receive hinge pin **27** to effect a hinged connection of the link to the handle, as shown in FIGS. 3 and 4.

The arrangement of the bearing holes **26** and **34** in each end of the handle frame F and in each link L is such as to permit each link to swing outwardly from its end of the handle into alignment with the handle and with the inward end of the web **30** of each link L abutting against the adjacent end of the handle web **22** as a smooth, continuous surface, as in FIG. 4. When so positioned, the links are spread apart and are at the handle retracting position, as shown. To complete each link, the outward ends of the flanges **31**, opposite the extensions **32**, include transversely disposed bearing holes **35** through which a pin **36** extends to hold a roller **37** between the flanges for engagement with a guide strip G of the base B, as hereinafter described.

To complete the handle-link assembly, a leaf spring S is mounted within each pocket **24** at the underside of the web **22**, as in FIG. 3, to extend outwardly therefrom and to press against the underside of the web **30** of the adjacent link L. Each spring S is formed with a central hole **38**, as in FIG. 11, to fit it upon the post **29**, within the pocket. The fit with the post is sufficiently tight as to securely hold the spring against the underside of the web **22**. To effect such a fit, the post **29** is tapered to a maximum diameter at its base, at the underside of the web, and the hole **38** is preferably sized to require the spring to be pressed into position. Each end of the spring S includes a short offset bend **39** and **40**, respectively, the latter to flex the inner end away from the undersurface of the web **22** and bias the outstanding end of the spring upward. Accordingly, being positioned against the underside of the handle frame F, each spring S will urge the corresponding link to its outward, extended position, i.e., that which is assumed when the handle is retracted against the base.

The saddle-like base B is provided with the elongated, concave, longitudinal seat **20**, formed by an upper flange **42** suitably shaped to form the seat, between a pair of end blocks **43**, the grip **21** of the handle resting upon the seat and the ends of the handle being at the inner faces of the blocks **43** and abutments A to permit the handle, when seated, to neatly fit into this saddle-like seat with the outwardly extended links merging into the abutments A, as illustrated in FIG. 4. The seat **20** is formed as an elongated portion having a transverse section similar to an inverted U, but with a concave top adapted to fit against the underside of the grip **21**. Sidewalls **44** depend from each side of the seat flange **42** to abut against the surface of a recess floor whereon the handle is mounted. Block **43** at each end of the seat projects into the abutment structure, the undersurface of the head being positioned above the floor level of seat **20** to rest upon components of the abutment, having a threaded socket to receive a mounting screw **45**, as will be further described. The base may be formed as a molded or cast member, as of die cast metal or a rigid, tough type of synthetic resin.

Each abutment A, as in FIGS. 3 and 4, has a pair of longitudinal sidewalls **47** held apart in spaced parallelism by a floor strap **48** at the inner end of the abutment and by a transverse end wall **49** at the outward end of the abutment. The bottom edge of each sidewall **47**, the bottom surface of the floor strap **48** and the bottom edge of the end wall **49** constitute a planar surface which rests upon a recess floor. The sidewalls **47** of each abutment are spaced apart sufficiently to receive a link L, and each sidewall is of sufficient length to hold its link when the links are in the spread apart, handle retracted position, heretofore described. When so positioned, with the handle retracted, the top edges **50** of the sidewall are outwardly and downwardly sloped to match the surface of web **30** of the extended link. At the same time, the inner edges **51** of the sidewalls are sloped to match the slope of the adjacent end of the flanges **23** of handle H when the handle is retracted into the saddle between the abutments.

A longitudinally extended, U-shaped guide strip G is mounted within each abutment to maintain the connection between the outer end of each link L and the abut-

ment. This strip, centered within the abutment, is sufficiently narrow to fit between the flanges **31** of the link and engage the roller **37**. As in FIG. 11, the inner end of guide strip G is formed as a flat pad **52** which is adapted to rest upon the floor strip **48** and to receive the seat block **43** upon it, as will be further described. Thence, the strip extends upwardly as an upright portion **53** alongside the outer end of the corresponding seat block **43** to an inner top arch **54**. Arch **54**, formed with the same inside radius as that of the roller **37**, is positioned to receive the roller of the corresponding link when the handle is in the extended or use position, away from the base, and with the links L being pulled inwardly and downwardly with respect to the handle, as illustrated in FIG. 3. The arch **54** covers an arc of approximately 135 degrees and merges into an outward, downwardly sloping reach **55** which substantially parallels the top edge **50** of each abutment side wall **47**, but below the same. Reach **55** of the strip merges with an outer end **56**, positioned adjacent to the abutment end wall **49**, where the strip terminates as a flange or hook **57** which fits into a notch **58** at the bottom of the abutment end wall **49**. As in FIG. 5, an inwardly extending flange **59** at the lower edge of each side wall **47** of the corresponding abutment A, adjacent end wall **49** thereof, centers the outward end of each guide strip G. When the handle H is retracted, with the links L spread outwardly, the roller **37** at the outer end of each link is at the outer end of guide strip G, at the juncture of reach **55** and outer end **56** thereof, as in FIG. 4. Thus, this juncture of the guide strip is so positioned as to place the top surface of the link web at the desired position, i.e. corresponding to the upper edges **50** of the abutment sidewalls, as illustrated in FIG. 4.

For assembly of the handle and base, each abutment floor strap **48** and strip pad **53** have holes **61** and **62**, respectively, as in FIG. 11, in mutual registration and in registration with the seat block socket, as in FIGS. 3 and 4, to receive mounting screw **45** which is extended through a properly located hole in the luggage case recess floor, the pair of mounting screws **45**, one at each abutment, thus serving to effectively interengage the base components and also to mount the base upon the luggage case. The handle H is connected to the links L which are, in turn, connected to the base by the rollers being within the confines of each guide strip S. The biased retractive action is now manifest, the springs S tending to bias the links outwardly on the handle and the reaction of the rollers **37** against the guide strips G being upwardly with respect to the handle to move the handle downwardy with respect to the base and into its retracted position in the seat formed by the base.

In further accordance with this invention, alternative handle and base constructions may be employed together, as in FIGS. 12–20, or the alternative handle may be used with links L and the base previously described, while the alternative base may be used with links L and the handle previously described. As in FIGS. 12–15, a single spring S' may be used, which extends from opposite ends of the handle to engage links L in a manner similar to the previous construction. However, spring S' has a further function, that of mechanically attaching the alternative grip R to the alternative handle frame F' of FIG. 13 and obviate the use of an adhesive, thereby also simplifying the assembly of the handle. Thus, handle frame F' is provided, as before, with a web **20'** and heads **25'** having holes **26** for link pivot pins **27'**, of FIG. 20, and is formed of metal, as by die casting, or a relatively hard plastic, such as a suitable thermosetting resin. A laterally centered, longitudinally disposed series of posts **65**, **66** and **67** depend from web **20'** adjacent the center and ends, respectively, while a fixed pin **68** extends downwardly from each post. A central, depending rib **69** extends between the respective posts and is flanked on each side by a side rib **70**, in laterally spaced relation thereto and extending between heads **25'**, side ribs **70** being concave on the underside. As in FIGS. 14 and 15, spring S' is embedded during molding in the material of grip R, such as a vinyl resin or other suitable plastic, and is also provided with a central, downward offset **71** to insure that a sufficient amount of the plastic surrounds the spring along a greater proportion of its length, as will be evident from FIG. 16. Grip R is again generally cylindrical, but frame F' produces a flattened area along the top of the handle. Grip R is provided with a pair of pockets **72** at each end, to accommodate heads **25'** and also holes **26'** for link pivot pins **27'**. Grip R is further provided with a central socket **73** and a socket **74** adjacent each end, corresponding to the position of and adapted to receive posts **65**, **66** and **67**, respectively, while smaller extensions **75** of the sockets receive fixed pins **68**. Springs S' is provided with conical offsets **76** at the position of each socket extension **75**, which surround the socket extensions and may be split radially to provide two or more spring fingers. During molding, the offsets **76** locate the spring accurately. Grip R is also provided with a groove **77** connecting sockets **73** and **74**, to accommodate the center rib **69** of frame F', as well as a groove **78** at each side to accommodate side ribs **70** of the frame. Thus, frame F' will interfit with grip R. Furthermore, with spring S' embedded in grip R, each fixed pin **68** of frame F' will engage a conical offset **71** of the spring which, upon being pressed into the spring offset, as to the position of FIGS. 16 and 17, will securely grip the fixed pins **68** to lock the parts together. As will be evident, the inner edges of offsets **76** should have a diameter normally less than that of the fixed pins **68**, while a more effective locking action is obtained if the offsets are split radially.

The top surfaces **80** of the grip, outside each groove **78**, are longitudinally convex, as in FIG. 15, to fit the underside of web **20'** of frame F', while the bottom of each side groove **78**, as shown in dotted lines in FIG. 15, is convex to correspond with the underside of depending side ribs **70** of top frame F'. Also, holes **26'** in grip G may be countersunk to accommodate the riveted ends of pin **27'**, as in FIG. 18.

The alternative base B', as in FIGS. 19 and 20, corresponds to the central portion of base B and abutments A of FIG. 4, being formed as a single part, with blocks **43'** being integral with side walls **47'** at each end of the saddle **20**. Links L and guide strip G are formed as described previously, except that front pad **52** of each guide strip G is held beneath block **43'** by screw **45**. Recess **20** is again saddle shaped, while top and inner edges **50'** and **51'**, respectively, outwardly from the saddle, have the same inclination as previously. Saddle flange **42** and side walls **44** are similar to those previously described, while hook **57** of guide strip G gain engages notch **58** at the underside of end wall **49'**. Other parts of FIG. 20 having the same reference numerals are similar to corresponding parts shown in FIG. 4.

As will be evident, the alternative handle and base, as shown in FIG. 20, operate in a manner similar to that described previously in connection with FIGS. 3 and 4. Thus, each extending end of spring S' will urge the corresponding link L to pivot outwardly about pin **27'** and bias the handle against base B', to retain the handle in the retracted position of FIG. 20. When the handle is lifted for use, against the pressure of spring S', each roller **37** will will move beneath guide strip G to arch **54**, in which the roller will be reecived in the same manner as in FIG. 3. After use, when the handle is released, each end of spring S' will again urge the corresponding link L outwardly, to produce a retraction of the handle to the position of FIG. 20.

We have now described our invention in considerable detail. However, it is obvious that others skilled in the art can build and devise alternate and equivalent constructions which are nevertheless within the spirit and scope of our invention.

What is claimed is:

1. A retractable handle for a luggage case comprising:
(a) a base adapted to be mounted upon a luggage case;
(b) a handle adapted to adjoin the base when retracted and to be lifted above the base when extended for use;
(c) a pair of links, each link being pivotally connected to an end of the handle and slideably connected to the corresponding end of the base to extend to an outward position from the end of the handle when the handle is retracted and to rotate downwardly and inwardly therefrom when the handle is lifted to its extended position; and
(d) resilient means at each said pivotal connection for urging the corresponding link to the aforesaid outwardly extended position from the handle and thereby bias the handle against the base.

2. In a handle as defined in claim 1, wherein:
said base is saddle-shaped with a central seating portion to receive the handle when it is retracted; and
an abutment outward from each end of the central portion is adapted to receive the outward end of a link.

3. In a handle as defined in claim 2, wherein:
the underside of said handle is transversely arcuate and formed of resilient material.

4. In a handle as defined in claim 1, including:
guide means at each end of the base which slidably engages the outward end of the corresponding link.

5. A handle as defined in claim 4, wherein:
a roller is connected to the outward end of each link; and
said guide means comprises a strip which engages said roller, said guide strip extending generally longitudinally to define the path of slidable movement of the outward end of the corresponding link.

6. In a handle as defined in claim 5, wherein:
said guide strip is formed with an upwardly arched portion at its inner end to receive said roller when the handle is extended.

7. In a handle as defined in claim 1, wherein:
said resilient means includes a leaf spring secured to each end of the handle and extending outwardly therefrom, with the extended portion of each spring contacting an undersurface of the adjacent link.

8. In a handle as defined in claim 1, wherein:
said handle and each link include a channel shaped member having a web forming the upper surface thereof, said webs of said members being substantially of the same width; and
each member having downturned, spaced apart flanges hinged together at correlated positions so as to permit the adjacent web positions to abut against each other in a common alignment when the links are at their outward, extended position.

9. In a handle as defined in claim 1, wherein:
said resilient means includes a leaf spring extending longitudinally through said handle and outwardly beyond the ends thereof for engagement with the corresponding link.

10. In a handle as defined in claim 9, wherein:
said handle includes an upper frame portion and a lower grip portion; and
said spring is embedded in one of said portions.

11. In a handle as defined in claim 10, wherein:
said upper frame portion is provided with depending posts;
said spring is embedded in said grip portion;
said grip portion is provided with sockets for receiving said posts; and
said spring is provided with means for engaging the lower ends of said posts.

12. In a handle as defined in claim 11, wherein:
said spring is provided with a series of generally conically formed offsets for gripping the lower ends of said posts.

13. In a handle as defined in claim 11, wherein:
said upper frame portion and said lower grip portion are provided with interfitting, ribs and grooves.

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