Dec. 24, 1963 H. ERHARD 3,115,229

HANDLE CONSTRUCTIONS

Filed Dec. 6, 1961 2 Sheets-Sheet 1

Fig.1

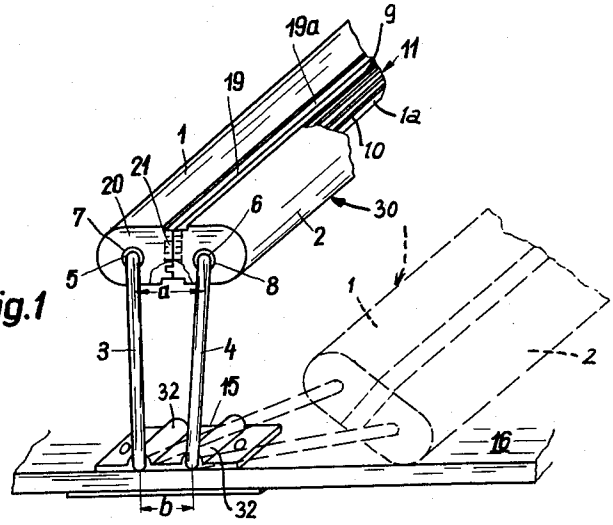


Fig.2

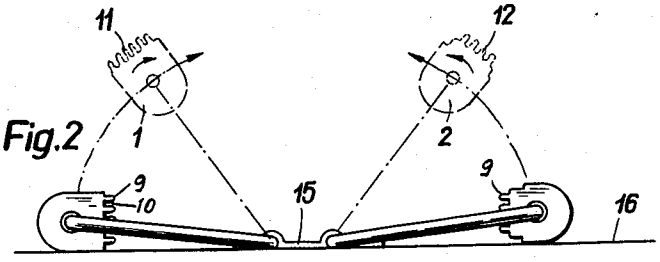


Fig.3

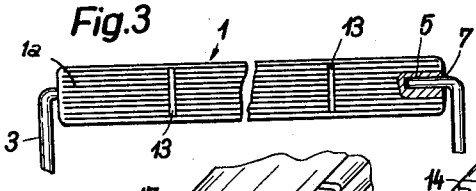


Fig.4

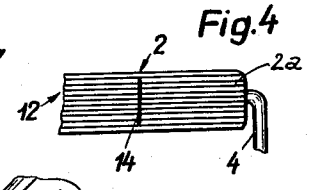


Fig.5

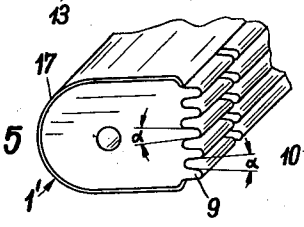
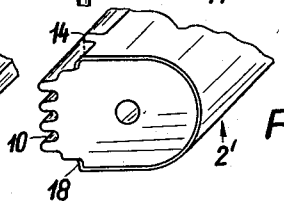


Fig.6



Inventor:
HERMANN ERHARD
BY
McGlew and Toren
ATTORNEYS

Dec. 24, 1963 H. ERHARD 3,115,229

HANDLE CONSTRUCTIONS

Filed Dec. 6, 1961 2 Sheets-Sheet 2

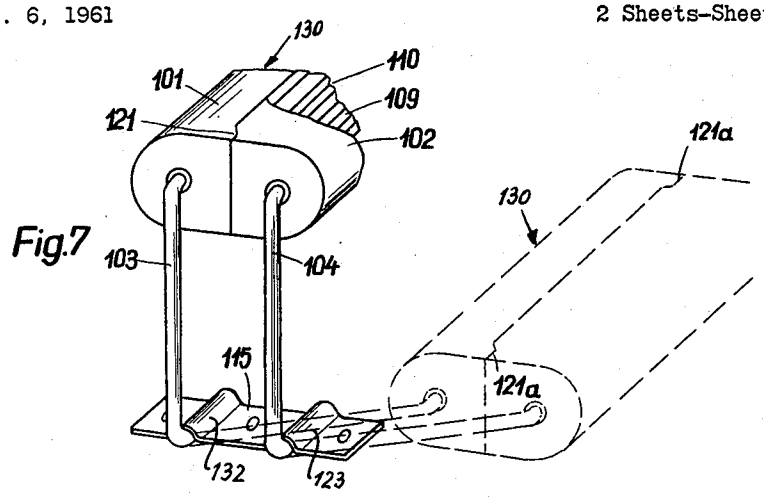


Fig.7

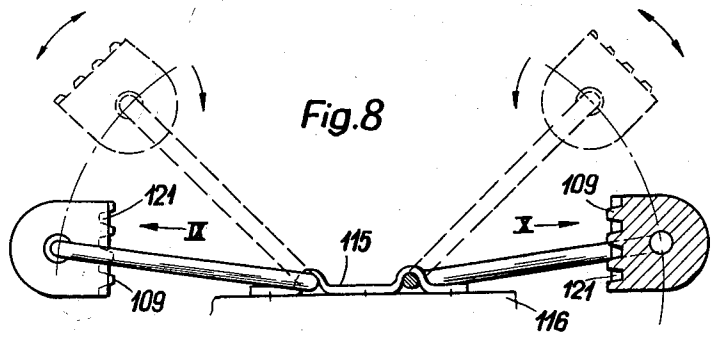


Fig.8

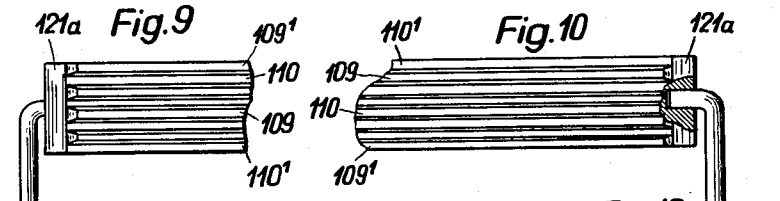


Fig.9

Fig.10

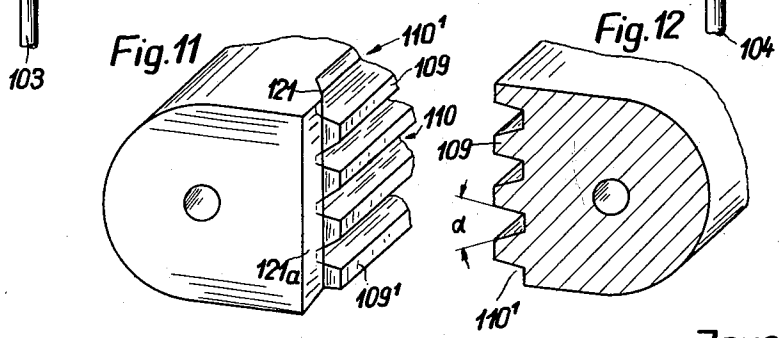


Fig.11

Fig.12

Inventor:
HERMANN ERHARD
BY
McGlew and Toren
ATTORNEYS

United States Patent Office 3,115,229 Patented Dec. 24, 1963

3,115,229

HANDLE CONSTRUCTIONS

Hermann Erhard, Landauer Strasse 3, Berlin-Wilmersdorf, Germany

Filed Dec. 6, 1961, Ser. No. 157,504
16 Claims. (Cl. 190—57)

This invention relates in general to handle constructions and in particular to a new and useful divided or split handle for suitcases, valises, briefcases, bags and the like, having two half-gripping members which have interengaging means.

Prior to the present invention, it has been known to provide handles including two gripping members which are independently pivotally mounted to permit the carrying of the article by two persons, each grasping a single handle element. In some instances, these handles have been made with their adjacent sides complementary or flat so that the two gripping elements may be held together by a person using one hand. A disadvantage of such constructions, however, is that the handle elements become easily separated and it is difficult for a person to hold them together to permit gripping thereof with the elements cooperating as a single handle element. In some instances, push-button fasteners have been provided for such handle elements to facilitate their being secured together when the article to which they are attached is not being carried by two persons. Such devices, however, are rather complicated and expensive.

In accordance with the present invention, there is provided a handle construction which includes two separate handle elements, each of which is pivotally mounted on a supporting arm which in turn is pivotally connected to the article to be carried. The invention includes a construction in which the handle elements each include cooperating side surfaces having complementary gears and recesses thereon defined in directions extending principally longitudinally along the length thereof. The handle elements may be moved together into intermeshing engagement when the elements are to be combined to function as a single handle which may be gripped by one person in one hand.

Accordingly, it is an object of this invention to provide an improved handle construction.

A further object of this invention is to provide a handle having two handle elements independently pivotally mounted for separate engagement and including intermeshing engageable portions for combining the elements into a single hand gripping unit.

A further object of the invention is to provide a handle having severable handle elements which may be separated for gripping by the adjacent hands of two persons, and which includes engagement means for interconnecting the elements by simply pressing the two members into each other and which may be released by pulling the two elements apart.

A further object of the invention is to provide complementary handle elements of a handle gripping unit having facing surfaces with interengaging gear portions defined along the longitudinal length thereof which provide a very large meshing surface to hold the two elements together.

A further object of the invention is to provide a handle construction which is simple in design, rugged in construction and economical to manufacture.

A further object of the invention is to provide a split handle construction which may be manufactured in a single manufacturing step, such as by injection molding or casting.

The various features of novelty which characterize the invention are pointed out with particularity in the claims

annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects obtained by its use, reference should be had to the accompanying drawings and descriptive matter in which there are illustrated and described preferred embodiments of the invention.

In the drawings:

FIG. 1 is a partial end perspective view of a handle constructed in accordance with the invention;

FIG. 2 is a side elevation of the handle indicated in FIG. 1 with the handle shown in a solid line detached position and in a dotted line carrying position;

FIG. 3 is a fragmentary side elevation of one of the gripping elements;

FIG. 4 is a fragmentary side elevation of the opposite complementary element;

FIGS. 5 and 6 are partial perspective end elevations of the handle members indicated in FIGS. 3 and 4, but shown on an enlarged scale;

FIG. 7 is a partial end perspective view of another embodiment of the invention;

FIG. 8 is an end elevation partly in section of the handle indicated in FIG. 7 with the elements shown in various separated positions;

FIG. 9 is a side elevation of one of the elements indicated in FIG. 8 taken in the direction of arrow IX;

FIG. 10 is a side elevation of one of the elements indicated in FIG. 8 taken in the direction of arrow X;

FIG. 11 is a partial end perspective view on an enlarged scale of the element indicated in FIG. 9; and

FIG. 12 is a partial end perspective view partially in section of the complementary handle member indicated in FIG. 10.

Referring to the drawings in particular, the invention embodied therein includes a combined or double handle member generally designated 30 which includes two handle elements or members 1 and 2, which are separately and independently rotatably mounted at the outer ends of holding means or supporting arms or straps 3 and 4, respectively. The opposite inner ends of the straps 3 and 4 are rotatable in laterally spaced bearing channels 32, 32 defined on a bracket member 15 which is secured to an article 16, such as a suitcase, which is adpated to be carried.

In accordance with the invention, as indicated in FIG. 1, the combined handle element 30 is formed when the individual handle elements 1 and 2 are arranged together with interengaging side wall portions 1*a*, 2*a*, respectively, arranged in meshing engagement along the juncture line indicated 19. In the embodiment indicated, the member 1 has, for example, five gear ridges 9 separated by four gear grooves or recesses 10. Correspondingly, the handle element 2 has a side face 2*a* with four gear ridges or projection portions 9 which fit into the recesses or grooves 10 of the element 1. As shown in FIG. 2, the gears are generally designated 11 for the element 1, and 12 for the element 2, and these are defined over the entire length of the side walls 1*a* and 2*a* formed on each of the elements 1 and 2. In some instances, however, it may be desirable that the side walls only include gear formations on a portion thereof.

The handle elements 1 and 2 are rotatably mounted on horizontal portions which extend through openings 5 and 6 defined on the ends of the elements 1 and 2. As indicated in FIG. 1, the openings 5 and 6 are enlarged as at 7 and 8 adjacent the ends of the elements. The mounting is such that the combined handle unit 30 may be pivoted from the solid line position indicated in FIG. 1 to either side of the pivot bearing 32, such as to the right side, as indicated in dotted lines in FIG. 1.

In a preferred arrangement according to the invention,

in addition to the horizontal gears 11 and 12, the handle elements 1 and 2 are provided with intermeshing vertical gear and recess 14 and 13, indicated more clearly in FIGS. 3 to 6. In the embodiment shown, the element 1 is provided with recesses or gaps 13 which are substantially vertical and which are arranged in a position to mesh with projections or gears 14 formed on the element 2 when the two elements are moved together in the position indicated in FIG. 1.

The gear flanks of the horizontal and also of the vertical gearing may extend under a small flank angle indicated α in FIG. 5 for handle elements designated 1' and 2', which may advantageously vary within a magnitude of from 1 to 3°. In such a manner, the holding capacity of the grip members may be increased. It should be noted that the teeth may have parallel sides in the manner indicated in FIG. 1, for example. The holding capacity, of course, increases with the number of teeth or gears which are defined on the side face of the complementary elements 1 and 2.

In accordance with a further feature of the invention, the means for securing or maintaining the meshing engagement of the two handle elements 1 and 2 is improved by insuring that the distance *a* between the center lines of the bearings for each of the elements 1 and 2 is made somewhat larger than the distance *b* between the center lines of the bearings 32 of the bracket 15. In this manner, when the suitcase is carried by the combined handle 30, both elements 1 and 2 will have a tendency to maintain the meshing engagement between the gearings. The difference between the distances *a* and *b* advantageously should correspond about to the height of the teeth engaged.

The end faces 20 of the handle element 1 in the region of the horizontal gearing 11 are advantageously constructed in the form of a terminal abutment 21 against which the gears 12 of the member 2 abut on both ends and thereby block any possibility of longitudinal displacement of the handle elements relative to each other.

In those instances where the handle element has a coating or cover 17 such as leather or the like, then the handle elements 1 and 2 on both sides of their opposing faces 1*a* and 2*a* and along the juncture line 19 have a flat longitudinal recess 19*a* so that the line of juncture is somewhat countersunk relative to the surface of the handle member. The edge of the cover or coating 17 as indicated in FIGS. 5 and 6 is folded inwardly about the edge of the longitudinal recess 19*a* so as to be secure against tearing. The handle elements 1 and 2 are formed to extend with substantially flat top and bottom surfaces and curved outer surfaces in relation to the side faces 1*a* and 2*a* having the gears defined thereon.

In FIGS. 7–12, a somewhat modified arrangement is indicated, in which two handle elements 101 and 102 are pivotally mounted on stirrups or rods 103 and 104 which in turn are pivotally mounted in bearings 132 on a bracket member 115. In this embodiment, the element 101 is provided with an abutment 121 formed adjacent each end which terminates at a plane separating surface 121*a* which is parallel to the longitudinal axis of the element 101 as indicated in FIG. 11. Gear ridges 109 project about to half beyond the separating surface 121*a* and the tooth grooves 110 extend inwardly from the surface 121*a*. Each handle portion has the same number of gear ridges, for example, four, wherein the outer gear ridge 109' includes a face which aligns with or is flush with the face of the combined or composite handle 130 which is formed. The outer groove 110' is closed by a correspondingly fitting gear 109'. Thus, a composite handle 130 is formed which includes a flush upper and lower face with rounded ends to permit easy gripping by a person's hand.

Both handle elements in the embodiment indicated in FIGS. 7 to 12 are equal and may be injection molded in a mold from suitable plastic material, for example, or they may be cast.

In the embodiment of FIGS. 7 to 12, as in the embodiment of FIGS. 5 and 6, the flanks of the gears are somewhat inclined so that the teeth have a trapezoidal form. In this manner, the handle members can be more easily removed from the mold after their manufacture and further the holding capacity of the meshing gears is increased and improved. Since both handle members are identical in the FIG. 7–12 embodiment, only a single mold for the production of the handle members is required.

It will be realized that the gears may be corrugated, if this is desired.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the inventive principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. A combination handle for suitcases, valises and similar devices, including first and second complementary handle elements, first and second support members pivotally connected at their one ends to said handle elements, means for pivotaliy supporting said support members at their opposite ends, said handle elements having opposed faces with intermeshing gear portions defined along the longitudinal length thereof arranged for interengagement when said faces are aligned in parallel relationship, the gear portions being such that they will interengage when said faces are moved together in a single plane, said elements being pivotal with and rotatable about said supporting elements for orientation at which they may be joined together with the gears in meshing engagement and are movable to positions at which they may be separated for independent pivotal movement.

2. A handle according to claim 1, wherein said handle elements include complementary vertically disposed intermeshing portions.

3. A handle element according to claim 1, including means defined at each end of said elements for locking said elements against longitudinal displacement when they are in meshing engagement.

4. A handle according to claim 1, wherein said elements each include a recess adjacent the top and bottom thereof adjacent the line of juncture therebetween.

5. A handle according to claim 4, including a coating extending around said handle elements from the recess portion thereof at the top thereof to the recess portion thereof at the bottom thereof.

6. A handle according to claim 1, wherein said handle elements include substantially flush interengaging upper and lower surfaces.

7. A combination handle for bags, suitcases, and the like comprising first and second handle element holding means, means for pivotally mounting said first and second holding means at spaced locations on an article to be carried, a first and second handle element connected to respective ones of said first and second holding means at the ends thereof opposite to said pivotal mounting in a manner permitting rotatable movement of said first and second elements, said first and second elements each including a side face which may be pivoted to oppose a side face of the other of said elements, each of said first and second element side faces having longitudinally extending gearing defined thereon complementary to gearing defined on the opposite of said first and second elements, said first and second side faces adapted to be mated together with the gearing in meshing engagement when said side faces are aligned in parallel relationship to form a combined handle element for carrying by grasping with one hand as a unit, the gearing being such that there will be interengagement of said first and second elements when said side faces are moved together by movement in a common plane, said holding means being rotatable to permit separation of said handle elements for grasping of the separate handle elements for

carrying by two persons grasping in opposite directions.

8. A handle according to claim 7, wherein said means for mounting said holding means includes means rotatably supporting said holding means spaced closer together than the rotatable connection of said holding means to said handle element.

9. A handle according to claim 7, wherein said handle elements include a recess defined on the upper and lower faces thereof extending inwardly from the line of juncture of said elements.

10. A handle according to claim 7, wherein the gearing on said first and second elements is such that the top and bottom surfaces of said elements are flush when said elements are in meshing engagement.

11. A handle according to claim 10, wherein said means for mounting the individual holding means is spaced apart for each holding means by an amount substantially the same as the rotatable mounting for said holding means is spaced apart when said halves are in meshing engagement.

12. A twin handle for suitcases, valises, bags and the like, including first and second handle halves, each handle half having intermeshing gearing longitudinally defined on a face thereof complementary to the gearing defined on the other handle half, said gearing extending substantially perpendicular to its associated handle half face to permit interengagement when said handle halves faces are moved together in a single plane, and means rotatably supporting said handle halves permitting movement of said handle halves together with the gearing thereon in meshing engagement and permitting separation to form a detachable half unit of a handle.

13. A twin handle according to claim 12, wherein said halves each include substantially parallel, spaced, raised gear portions extending along the longitudinal length thereof and grooves defined between said gear portions of complementary configuration.

14. A handle according to claim 13, including at least one vertical gear projection defined on one of said halves, the other of said halves having a recess in alignment therewith when said gears are arranged in meshing engagement.

15. A handle according to claim 12, wherein said halves include separating surfaces defined on each end, said gear projection terminating short of said separating surfaces on each of said halves.

16. A twin handle according to claim 12, wherein the tooth flanks of said gearing are inclined relative to each other.

References Cited in the file of this patent

UNITED STATES PATENTS

2,033,879	Cichowicz	Mar. 10, 1936
2,306,099	Wiepert	Dec. 22, 1942
2,518,006	Henriksen	Aug. 8, 1950
2,565,823	Pool	Aug. 28, 1951
2,800,940	Riesebeck	July 30, 1957

FOREIGN PATENTS

462,958	Germany	July 20, 1928
53,507	Netherlands	Nov. 16, 1942