April 11, 1967 G. RENNER ETAL 3,313,470

CARRYING HANDLE

Filed Jan. 4, 1965 2 Sheets-Sheet 1

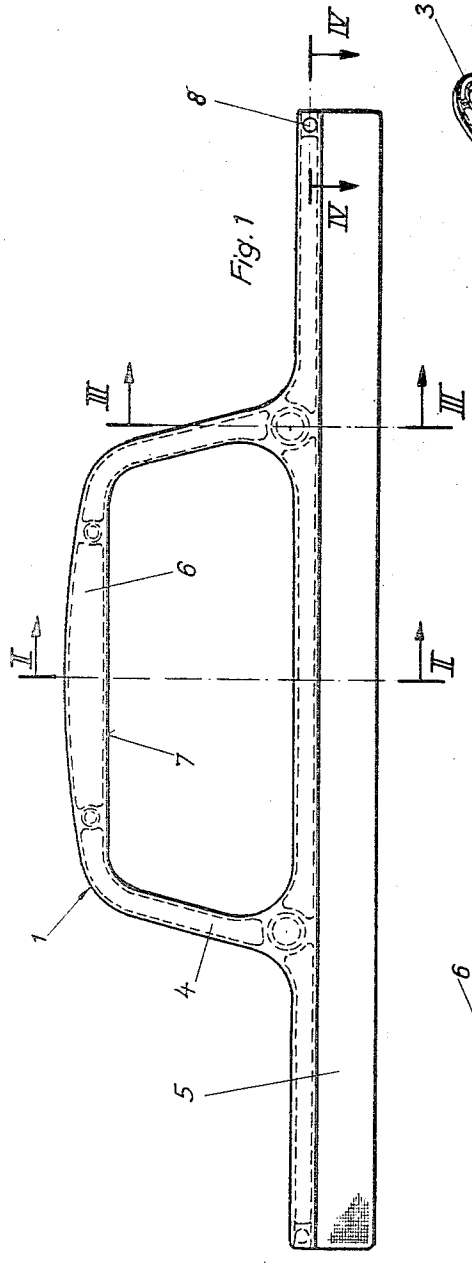


Fig. 1

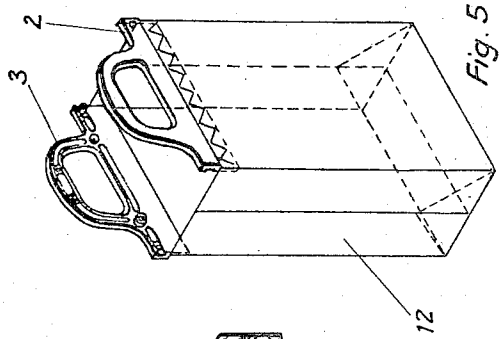


Fig. 5

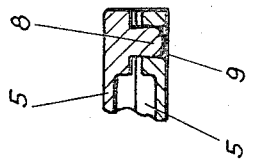


Fig. 4

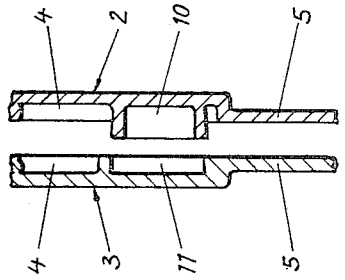


Fig. 3

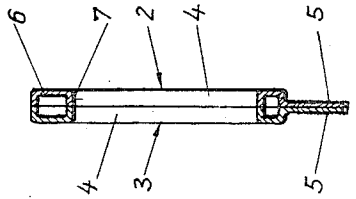


Fig. 2

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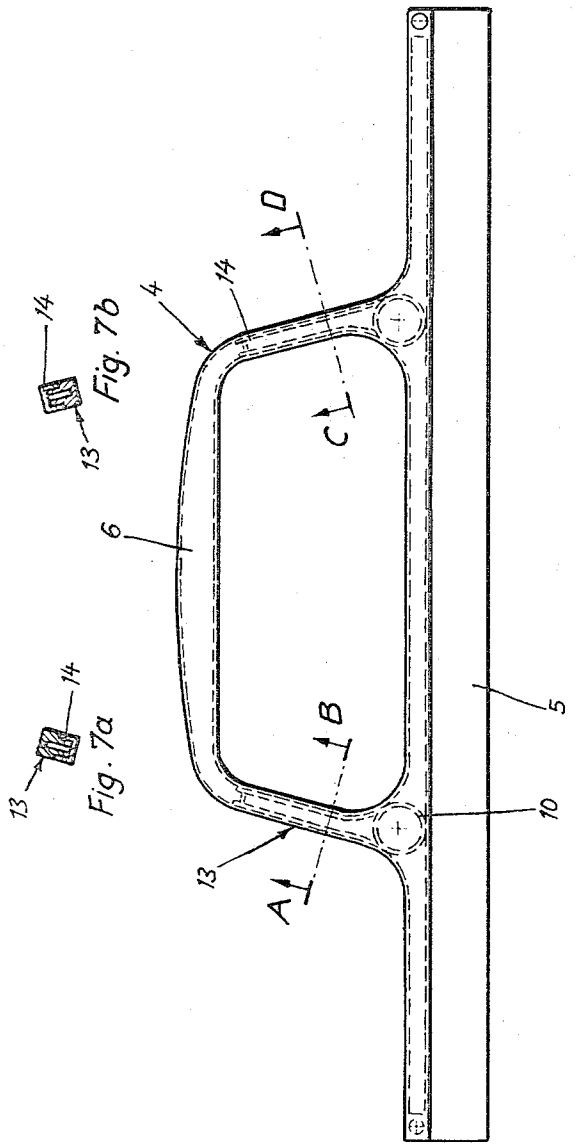


Fig. 6

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United States Patent Office 3,313,470 Patented Apr. 11, 1967

3,313,470

CARRYING HANDLE

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Filed Jan. 4, 1965, Ser. No. 422,986
2 Claims. (Cl. 229—54)

Known carrying handles of thermoplastic material for carrying bags, which are preferably made from thermoplastic sheeting, consist of two handle sections, which engage each other in use and comprise each a grip portion and a connecting bar for connection to the associated bag wall. Various embodiments of such carrying bags are known. The two handle sections of a carrying handle are generally easily detachably connected to each other, particularly by connecting elements similar to snap fasteners, so that these handle sections when superimposed can be further processed by being welded to the bag walls and may serve as a closure for the finished bag.

In a first known embodiment, the handle sections have the same thickness throughout. In this case, the handle sections are much thicker than the bag walls so that the carrying handle fully meets the requirements regarding stiffness and strength in normal use. However, the grip base area of the carrying handle is too small so that particularly with bags filled with heavy materials the handle sections press or even cut into the hand of the person carrying the bag.

To avoid this disadvantage, it is already known to give the actual grip portion of each handle section an L shape so that in this portion a cross-section taken through the entire carrying handle represents an inverted T. This provides for a sufficiently large grip base so that a forcing or cutting of the carrying handle into the hand is avoided even with heavily loaded bags.

A further disadvantage is inherent in the embodiment of a carrying handle described first, if the handle sections are provided with protruding connecting elements, and in the embodiment described last, and resides in that it is impossible or extremely difficult to use these carrying handles in machines for an automatic manufacture of carrying handles because the portions which protrude laterally outwardly from the handle sections, namely, the female elements and the associated male elements of the snap fastener-like joints, and the flanges of the actual grip portions, do not enable a reliable, simple and quick feeding of the carrying handles from a magazine but result in a hooking of superimposed carrying handles with each other.

Another known carrying handle, which may be used for an automatic manufacture of carrying bags, is designed so that at least the grip portions of the two handle sections are so thick that a sufficiently large grip base is provided. Such a carrying handle, however, involves a disproportionately large expenditure of material, which result in a substantial increase in manufacturing costs in a mass-manufactured product.

It is an object of the invention to provide for carrying bags a carrying handle which has a relatively light weight, can be simply and inexpensively manufactured and may be used in the automtic manufacture of carrying bags.

According to the invention, this is achieved in that in a carrying handle of the kind described initially hereinbefore at least the grip portions of the handle sections are channel-shaped in cross-section and the open sides of the channel sections face each other. As a result, the two grip portions form a box section, which has no bulk-increasing, outwardly protruding portions and affords the large grip base required. The design according to the invention enables a good stacking of the carrying handles

in a magazine and a removal of the handles from the magazine by pushing, e.g., the lowermost carrying handle, both sections of which are detachably interconnected, out of the magazine in the automatic manufacture of carrying bags without a possibility of a hooking of the carrying handle with the next upper one.

If the connecting bars are provided with snap fastener-like connecting elements, as has been described hereinbefore, the invention provides that no portion of the interengaging connecting elements protrudes laterally beyond the planes which contain the respective base surface of the channel section. As a result, the connecting elements too cannot cause a hooking of individual carrying handles with each other.

The connecting bars may also be channel-shaped in cross-section in their upper portion protruding over the bag walls and in this case have also a high lateral stiffness.

In the manufacture of the carrying handles, the design according to the invention affords the additional advantage that all walls of the handle sections may have the same thickness so that there can be no distortion due to uneven cooling.

In a development of the invention explained hereinbefore or independently of these features of the invention, carrying handles of the kind described initially hereinbefore and having connecting bars provided with snap fastener-like connecting elements may have identical handle sections, in which the connecting elements are arranged so that a male element is provided on one side and a female element on the other side at points equally spaced from the vertical centre line of each handle section. In the previously known carrying handles of this kind, all male elements were provided on one handle section and all female elements for receiving the male elements were provided on the other handle section. This necessitated the use of two moulds in the manufacture, which increased the costs. The design according to the invention just described affords the advantage that a single mould is sufficient because both handle sections are identical. When one handle section is rotated through 180°, it can readily be connected to the other because the distances of the female and male elements from the vertical centre line of each handle section are equal.

In a further embodiment of the invention or, if desired, independently of the features of the invention described hereinbefore, the grip portions may also be provided with snap fastener-like connecting elements. This is essential for reliably ensuring a firm engagement of the actual grip portions during the manufacture and the subsequent use of the bags. In this case it is again desirable to provide each grip portion with a male element on one side and a female element on the other side at points which are equally spaced from the vertical centre line so that the handle sections may also be identically formed when the grip portions are provided with connecting elements.

Another improvement afforded by the invention and applicable also independently of the foregoing features resides in that the welding surfaces of the connecting bars are provided with a rib pattern or roughened. As only the outer parts are used to form the seam weld, the welding and cooling process may be much accelerated.

Further according to the invention, the flanges of the channel section of one side part of each grip portion may terminate in thin strips, which are designed for frictional engagement in the channel section of the opposite side part. In this design, the side parts of the grip portions are so interconnected that the coherence is particularly well ensured during the processing and use of the carrying handle but in this embodiment the top part of the grip portion may gape in the hand when heavy loads are

being carried so that a particularly wide grip base is afforded, which is formed by the base surfaces of the two channel sections.

The invention will be explained more fully hereinafter with reference to the drawing, which shows embodiments by way of example. In the drawing

FIG. 1 is a side elevation showing a carrying handle according to the invention,

FIGS. 2, 3 and 4 are sectional views taken on lines II—II, III—III and IV—IV, respectively, of FIG. 1, FIGS. 3 and 4 being drawn to an enlarged scale and FIG. 3 showing the two handle sections taken apart,

FIG. 5 is a perspective view showing a carrying bag with a carrying handle according to the invention in open condition,

FIG. 6 is a side elevation showing a second embodiment of a carrying handle according to the invention,

FIGS. 7*a* and *b* are sectional views taken on lines A–B and C–D of FIG. 6.

The carrying handle **1** consists in known manner of thermoplastic material. The two handle sections **2**, **3** of the handle are congruent. Each handle section comprises a grip portion **4** and a connecting bar **5** for welding the carrying handle to the rim of the bag.

According to the present invention, the grip portion **4** and that portion of the connecting bar **5** which is not intended to be welded to the rim of the bag have a channel section. The flanges of both handle sections **2**, **3** are directed towards each other. When the handle sections are superimposed, as is shown in FIG. 2, the two grip portions **4** and the two channel-shaped portions of the connecting bars **5** form box sections, which afford the above-mentioned essential advantages, particularly when the carrying bags are manufactured by machine. It may be mentioned that the grip portion **4** of the handle sections is designed so that its top part **6**, which is to be gripped by the hand, has a straight grip base **7**.

During the manufacture and in use, after the bag has been filled, the two handle sections **2**, **3** of the carrying handle **1** are detachably interconnected by male-female joints similar to snap fasteners. In the embodiment shown by way of example, the two handle sections are interconnected at six points, namely, at the ends of the connecting bars **5** by male-female connections according to FIG. 4 and at the junctions between the grip portions and the connecting bars by male-female joints according to FIG. 3. Two male-female joints are provided in the top part **6** of each grip portion **4** and are suitably designed like the joints shown in FIG. 3.

The two handle sections are entirely identically designed so that each handle section has at one end an outwardly somewhat widening male element **8** and at its other end a correspondingly tapering female element **9** for receiving the male element **8** of the opposite handle section. Besides, each handle section has at the junction between the handle portion **4** and the connecting bar **5** a hollow male element **10**, which also widens outwardly, and at the other junction a female element **11**, which has a corresponding outward taper and serves for receiving the hollow male element **10** of the other handle section. A corresponding arrangement is provided in the top part **6** of the grip portion **4**. It is essential that the male elements on one side and the female elements on the other side are evenly spaced from the vertical centre line of the respective handle section so that the interengagement of the female and male elements is ensured when the handle sections are assembled.

As is shown in FIG. 1 on the left and in FIG. 2, the connecting portions **5** are provided with crossing ribs adjacent to the welded junction to be formed so that the welding and cooling process can be accelerated.

FIG. 5 shows a bag **12**, which consists of thermoplastic material and at its open charging end has two opposite handle sections, which combine to form the carrying handle according to the invention. The snap fastener-like joints constitute at the same time a bag closure.

In the embodiment of FIG. 6, the side parts **13** of the grip portions **4** are designed so that they are connected as by snap fasteners substantially throughout their length. For this purpose, the channel section of one grip portion is extended beyond the longitudinal centre plane of the carrying handle so that its channel flanges are offset adjacent to this centre plane and terminate in thin strips **14**. When the grip portions are assembled, these strips enter the free space of the channel section of the opposite side parts and frictionally engage the inside surfaces of these side parts (see FIG. 7). In this embodiment, the side parts of the grip portions are interconnected so as to ensure their coherence during the processing and use of the carrying handle and the grip portion top part **6** of this embodiment can gape in the hand when heavy loads are being carried so that a particularly wide grip base is afforded, which is constituted by the base surfaces of the two channel sections. The strips **14** may be urged under a certain initial stress against the inside surfaces of the opposite side part **13** by forming an angle with each other before the grip sections are assembled. In general, however, the more frictional connection of the two grip sections will be entirely sufficient. As is apparent from the drawing, the strips **14** may adjoin the hollow male elements **10** provided at the junctions between the grip portions **4** and the connecting bars **5**.

What is claimed is:

1. A carrying handle of thermoplastic material, suited to mass production methods and efficient stacking, for carrying bags which are preferably made from thermoplastic sheeting, said handle comprising two sections which detachably engage each other in use, each of said sections including a grip portion and connecting means adapted to connect said grip portion to an associated bag wall, said connecting means comprising a longitudinal connecting bar having an upper and lower portion, said lower portion being adapted to be welded to said associated bag wall, said upper portion being integrally connected at the central portion of its upper longitudinal edge to said grip portion, said grip portion and the upper portion of said connecting bars each being channel-shaped in cross-section with the open sides of the channel sections facing each other and forming box-like sections, a plurality of fastener-like connecting elements formed on said sections for detachably engaging said sections together, no portion of the engaged portions of said connecting elements protruding laterally beyond the planes which contain the respective base surface of a channel section, said plurality of fastener-like connecting elements formed on said sections in the upper portion of the connecting bars and two complementary projections and recesses formed integrally in the grip portions of the sections for detachably interconnecting the grip portions of the sections.

2. A carrying handle of thermoplastic material, suited to mass production methods and efficient stacking, for carrying bags which are preferably made from thermoplastic sheeting, said handle comprising two sections which detachably engage each other in use, each of said sections including a grip portion and connecting means adapted to connect said grip portion to an associated bag wall, said connecting means comprising a longitudinal connecting bar having an upper and lower portion, said lower portion being adapted to be welded to said associated bag wall, said upper portion being integrally connected at the central portion of its upper longitudinal edge to said grip portion, said grip portion and the upper portion of said connecting bars each being channel-shaped in cross-section with the open sides of the channel sections facing each other and forming box-like sections, a plurality of fastener-like connecting elements formed on said sections for detachably engaging said sections together, no portion of the engaged portions of said con-

necting elements protruding laterally beyond the planes which contain the respective base surface of a channel section, said plurality of fastener-like connecting elements formed in the upper portion of the connecting bars, and the channel flanges of a side part of each grip portion terminating in strips adapted for frictional engagement in the channel section of the opposite side part.

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