June 18, 1946. G. V. JAKEWAY 2,402,407

HARDWARE ARTICLE

Filed Oct. 2, 1944

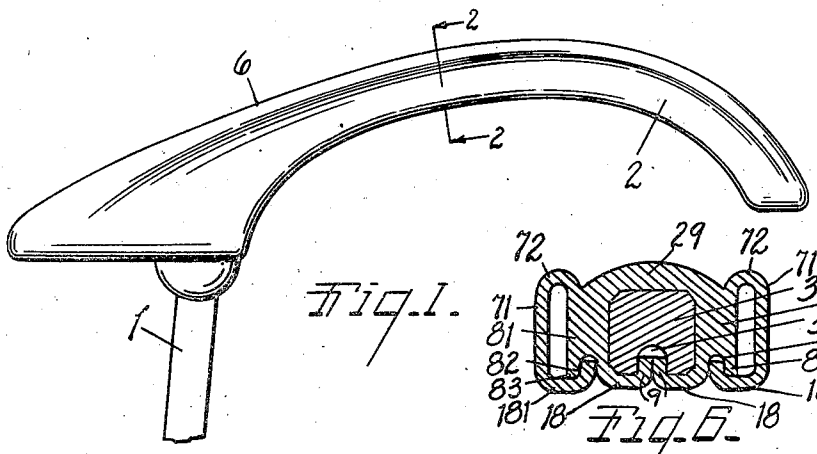


Fig. 1.

Fig. 6.

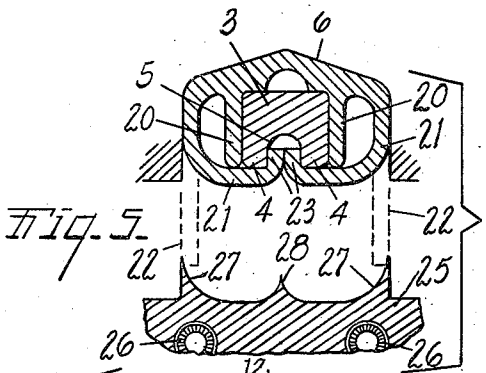


Fig. 5.

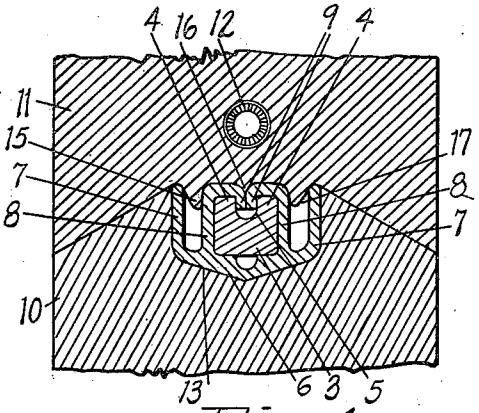


Fig. 4.

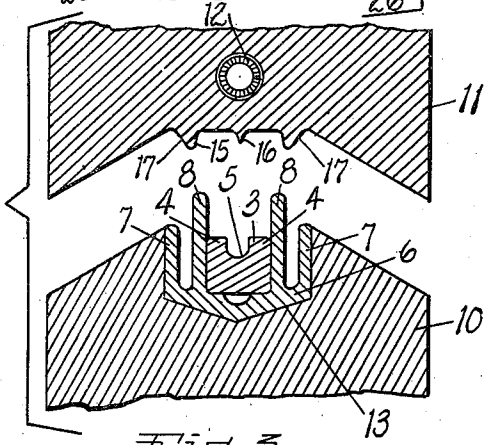


Fig. 3.

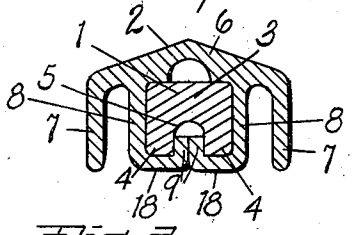


Fig. 2.

INVENTOR.
Gerald V. Jakeway
BY
Earl O. Chappell
ATTORNEYS.

Patented June 18, 1946

2,402,407

UNITED STATES PATENT OFFICE

2,402,407

HARDWARE ARTICLE

Gerald V. Jakeway, Grand Rapids, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.

Application October 2, 1944, Serial No. 556,777

6 Claims. (Cl. 292—347)

1

This invention relates to improvements in hardware article.

The present invention is an adaptation of and in some respects an improvement upon my invention disclosed and claimed in my patent issued February 22, 1944, No. 2,342,402.

The main objects of the present invention are:

First, to provide a hardware article, such as a handle, drawer pull or the like, which, while of considerable lateral dimension, is relatively light in weight and may be formed of a relatively small amount of material.

Second, to provide an article of this character which has no exposed metal parts and may be economically produced.

Objects pertaining to details and economies of the invention will appear from the description to follow. The invention is defined in the claims. A structure which embodies the features of the invention is clearly illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary side elevation of a door handle embodying my invention, the spindle being partially broken away.

Fig. 2 is an enlarged transverse section taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary sectional view illustrating steps in the manufacture of the handle shown in Figs. 1 and 2.

Fig. 4 is a fragmentary section corresponding to Fig. 3 with the die members closed.

Fig. 5 is a fragmentary view illustrating a modified form or embodiment of the invention and steps in manufacture.

Fig. 6 is a cross sectional view of still another form or embodiment of the invention.

In the embodiment of the invention illustrated in Figs. 1 and 2, the numeral 1 represents the shell or spindle of an automobile door handle and 2 the handle. This handle comprises a metal handle bar or core 3 which is secured to the spindle 1, the core being longitudinally curved or shaped to the handle and having inwardly facing spaced flanges 4 forming an inwardly facing longitudinal groove 5. This core member is of rectangular section and is formed of bar stock, although it might be fabricated into a U cross section from sheet stock, as illustrated in my said patent.

The casing 6 is formed by molding thermoplastic material into proper longitudinal curve and of a cross section as shown in Fig. 3, the longitudinal curvature corresponding to that of the core or handle bar 3. The casing is formed with outer and inner pairs of flanges 7 and 8,

2

the flanges 8 being spaced to closely embrace the core or handle bar 3. The edges of the inner flanges 8 are folded around the inner edges of the flanges 4 of the core member, the extreme edges 9 being disposed between the flanges 4 or in the groove provided thereby (see Figs. 2 and 4). As molded the inner flanges 8 are of substantially greater width than the outer flanges 7 so that they may be heated sufficiently to plasticize them and to permit their being wrapped or folded around the flanges 4 and into the space between them. This is preferably accomplished by means of the die members 10 and 11, the die member 11 being provided with a heating unit 12.

The channel-like seat 13 of the die member 10 is suitably shaped to receive the casing in supporting relation to the flanges 7. The die member 11 is provided with longitudinal flanges 15 spaced to receive the projecting edges of the flanges 8 and with a central directing rib 16 for directing the edges of the flanges 8 inwardly into the space or channel between the flanges 4 of the core member. The flanges 15 are shaped on their outer sides at 17 to supportingly engage the edges of the outer flanges when the dies are fully closed (see Fig. 4). However, only the portions of the flanges 8 which are to be conformed or turned inwardly are heated, so the remainder of the casing is in no wise distorted. The inner edges of the flanges 7 are substantially flush with the inturned surfaces 18 of the inner flanges so that the inner parts of the handle are in substantially the same transverse plane.

My present invention enables the production of various forms of hardware of substantial transverse width with a relatively small amount of material, thereby minimizing cost and also enabling the production of hardware having a massive appearance with a minimum of material, at the same time producing a structure which is strong and rigid.

In the embodiment of the invention shown in Fig. 5 the inner flanges 20 closely embrace the core member 3 and their edges are substantially flush with the edges of the core member flanges. The outer pair of flanges 21 are of a width indicated at 22 by dotted lines, these portions 22 being folded around the edges of the inner flanges 20 and inturned at 23 between the flanges 4. In the production of this structure the die member 25 is provided with a pair of heating coils 26 positioned to heat the surfaces 27 with which the extended portions 22 of the flanges 21 engage, the surfaces being shaped to turn the flange portions 22 inwardly and the central rib 28 directing them

into position between the flanges 4 of the core member. The die members illustrated may be actuated by the method described in my pending application Serial No. 426,309, filed Jan. 10, 1942.

In the embodiment of my invention shown in Fig. 6 the casing 29 is designed to embracingly receive the core member 3 and is provided with relatively thickened side walls 81 having inwardly facing channels 82 in their inner edges providing flanges 83 around which the side walls 71 are extended, the edges of the side walls disposed in the longitudinal grooves or channels. This structure is desirable for use in handles or the like of substantially greater width than the average handle and where a massive appearance is desired. The side walls 81 of the casing member 29 are upwardly curved at 72 to provide bead-like portions extending longitudinally of the handle. The inturned portions 181 of the side walls are preferably substantially flush with the inturned portions 18 of the side walls 81.

I have not illustrated the die for forming the handle in Fig. 6, as it is believed the structure will be understood from the disclosures of Figs. 3, 4 and 5. The structure is formed on heated dies, the heating elements being disposed so that the flange portions of the casing element are rendered sufficiently plastic to permit bending and turning their edges into the longitudinal channels 5 and 82, as shown in Fig. 6.

I have illustrated and described the invention in practical embodiments thereof. I have not attempted to illustrate or describe modifications and adaptations to other types of hardware, such as drawer pulls, remote controls, or the like, as it is believed this disclosure will enable those skilled in the art to embody or adapt the invention as may be desired.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a hardware article, the combination of a core member having spaced inwardly facing flanges, and a hollow casing member having laterally spaced inner and outer pairs of longitudinal flanges, the inner pair being spaced to receive the core member and closely embracing the sides thereof and being of greater width than the outer flanges and being extended around and their edges disposed between the flanges of the core member, the edges of the outer flanges being substantially flush with the infolded inner flanges and constituting side walls of the article.

2. In a hardware article, the combination of a core member having spaced inwardly facing flanges, and a hollow casing member having laterally spaced inner and outer pairs of longitudinal flanges, the inner pair being spaced to receive the core member and closely embracing the sides thereof, one of said pairs of flanges being of greater width than the other and being extended around the inner edges of the core member flanges and their edges disposed between the flanges of the core member.

3. In a hardware article, the combination of a core member having inwardly projecting spaced flanges, and a casing member having laterally spaced pairs of inner and outer flanges, the inner flanges being spaced to embracingly receive the core member, one pair of flanges being extended around the core member flanges and the edges thereof disposed between said core member flanges.

4. In a hardware article, the combination of a core member having inwardly projecting spaced flanges, and a casing member having laterally spaced pairs of inner and outer flanges, the inner flanges being spaced to receive and closely embrace the sides of the core member, their inner edges being substantially flush with the inner edges of the core member, the outer flanges being extended around the inner edges of the inner flanges and the flanges of said core member and the edges thereof disposed between said core member flanges.

5. In a hardware article, the combination of a core member having inwardly projecting spaced flanges, and a casing member having laterally spaced pairs of inner and outer flanges, the inner flanges being spaced to receive and closely embrace the sides of the core member, the outer flanges being extended around the inner edges of the inner flanges and the flanges of said core member and the edges thereof disposed between said core member flanges.

6. In a hardware article, the combination of a core member having inwardly projecting spaced flanges, and a casing member having laterally spaced pairs of inner and outer walls, the inner walls being spaced to receive and closely embrace the sides of the core member and having longitudinal grooves in their inner edges and having portions extending beyond said grooves extended around the inner edges of the core flanges and disposed between the core member flanges, the outer walls of said casing member being extended around the inner edges of the outer flanges of said grooves in said inner walls with their edges disposed in said grooves.

GERALD V. JAKEWAY.