# United States Patent [19]

**Walker**

[11] **3,805,327**

[45] **Apr. 23, 1974**


[54] **HINGE STRUCTURE**


[75] Inventor: **Robert Walker,** St. Charles, Ill.

[73] Assignee: **Robert Manufacturing Company,** Wheaton, Ill.



[22] Filed: **Mar. 20, 1972**

[21] Appl. No.: **236,466**

[52] **U.S. Cl.** ..... **16/159,** 16/171

[51] **Int. Cl.** ..... **E05d 5/02**

[58] **Field of Search** ..... 16/150, 159, 171; 24/208 A, 213, 216, 217, 214; 220/31 SR



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*Primary Examiner*—Bobby R. Gay

*Assistant Examiner*—Doris C. Troutman



[57] **ABSTRACT**

A hinge structure fabricated from plastic material and comprised of two stem-like parts detachably hinged together and arranged to be mounted in and secured to related parts easily and quickly.


**3 Claims, 5 Drawing Figures**

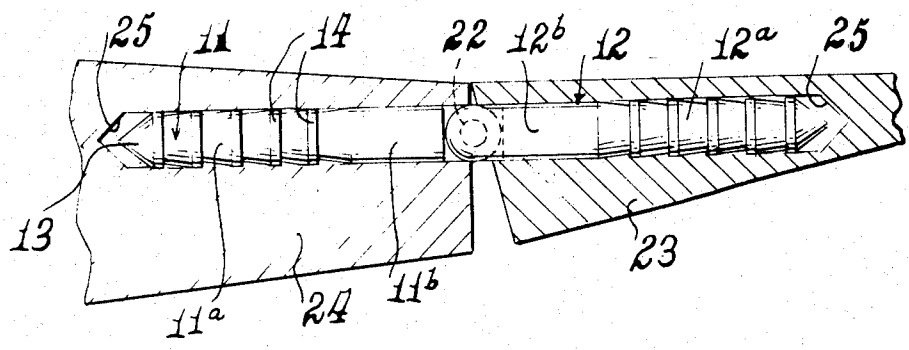


Fig. 1.

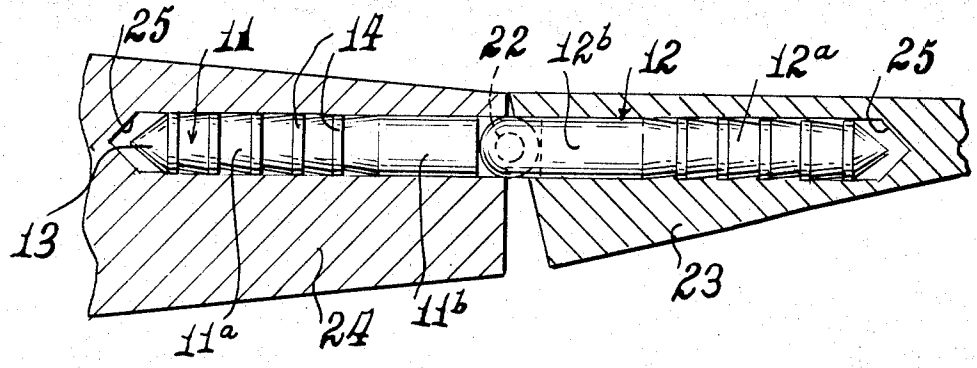



Fig. 2.

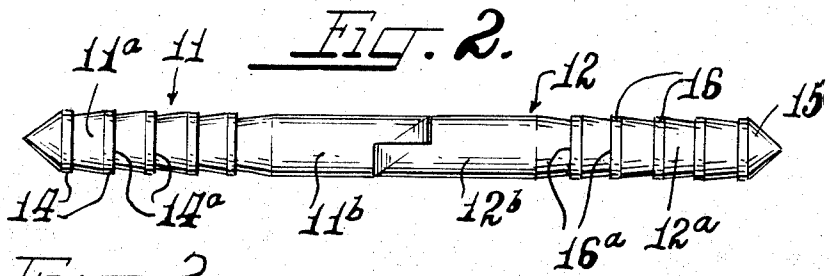



Fig. 3.

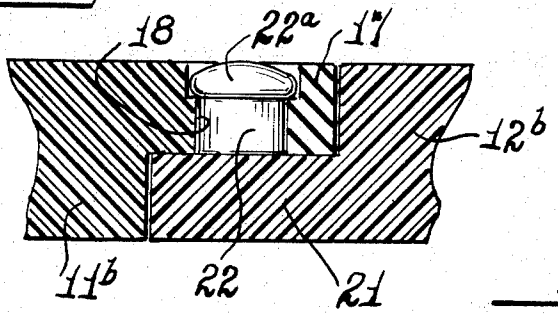



Fig. 4.

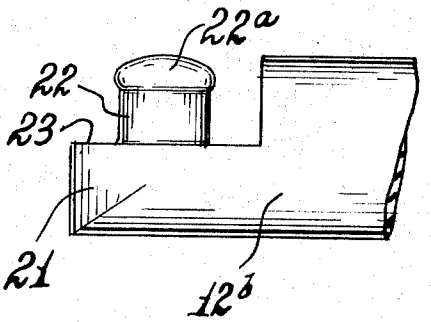
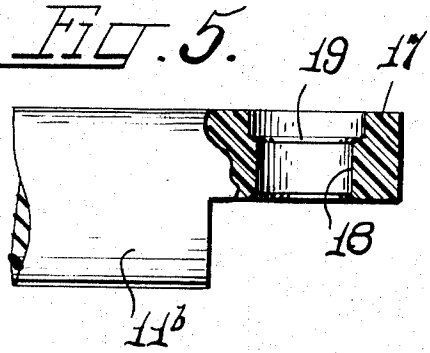



Fig. 5.



# HINGE STRUCTURE

The invention relates to improvements in hinges and is particularly concerned with a hinge structure fabricated wholly from plastic material, such as glass filled mylon, in two complemental parts each of which has novel means for securing it to a piece of material. The hinge illustrated is designed for use in model making, but can be utilized fully in connection with other products.

It is therefore an object of this invention to provide a hinge structure of the character referred to.

Another object is to provide a hinge structure that is easy to install securely.

Another object is to provide a hinge structure comprised of two pieces having a snap-fit connection.

Another object is to provide a hinge structure that can be molded and which is easily assembled.

Another object is to provide a hinge structure which is not expensive or difficult to manufacture and one that can be mounted easily and quickly and is very efficient in use.

Other objects and advantages of the invention will become apparent with reference to the following description and accompanying drawing

In the drawings:

FIG. 1, is an enlarged elevational view of the hinge, showing it mounted.

FIG. 2 is another elevational view of the hinge, viewed on a plane 90° from the plane of the FIG. 1 illustration.

FIG. 3 is an enlarged detail central sectional view of the hingedly connected ends of the hinge elements.

FIG. 4 is an enlarged elevational view of the hingedly connected end of one of the elements.

FIG. 5 is an enlarged elevational view of the hingedly connected end of the other element, showing it partly in section.

Referring to the exemplary disclosure of the invention as shown in the accompanying drawings, the hinge structure is comprised of two hinge elements **11** and **12.** Each of the elements is substantially rod-like in shape and the element **11** includes a stem portion **11***a* and a head portion **11***b*. The stem portion is preferably formed with a pointed end **13** and a series of circumferential ribs **14** spaced apart along its stem **11***a*.

Each of these ribs **14** defines an annular shoulder **14***a* facing the head portion **11***b*. The element **12** also includes a stem portion **12***a* and a head portion **12***b*. The stem portion **12***a* is preferably formed with a pointed end **15** and a series of circumferential ribs **16** spaced apart along said stem. Each of these ribs defines a shoulder **16***a* facing the head portion **12***b*.

The head portion **11***b* of the element **11,** which is best shown in FIGS. **3** and **5,** is circular in shape and has one-half of its diameter cut away to provide an end nose portion **17.** This nose portion has a transverse axial passage **18** formed on two diameters to provide an internal shoulder **19** therein.

The head portion **12b** of element **12,** which is best shown in FIGS. **3** and **4,** is also circular in shape and has one-half of its diameter cut away to provide an end



nose portion **21.** A stud **22** projects from the flat face **23** of the head portion **12***b*. This stud is so located on the head portion **12***b* that it will enter into the passage **18** in head portion **11***b* when the two head portions **11***b* and **12***b* are matched as shown in FIG. **3.**

It should be noted that the stud **22** includes an end portion **22***a* of enlarged diameter that is snap fitted through the smaller diameter of passage **18** and nests in the larger diameter behind the shoulder **19.** In this manner the hinge assembly is secured and the hinge elements **11** and **12** can be separated only upon the application of force between the opposed flat faces of the respective head portions and prying them apart.

The elements **11** and **12** may be best secured firmly to the parts they are to hingedly connect, such as the members **23,24** shown in FIG. **1,** by drilling a hole **25** in each member and then, after the application of glue or other adhesive to either the holes or onto the serrated stems **11**a and **12**a, inserting the stems into their respective holes and allowing same to set.

It should be apparent that the instant hinge, because of its stem-type mounting elements, can be mounted upon any type of article without requiring a flat mounting surface as is required by wing-type hinges.

Although I have described a preferred embodiment of the invention, in considerable detail, it will be understood that the description thereof is intended to be illustrative rather than restrictive, as details of the structure may be modified or changed without departing from the spirit or scope of the invention. Accordingly, I do not desire to be restricted to the exact construction described.

I claim:

**1.** A hinge comprising a straight rod-like element rounded at one end, a longitudinal flat portion at said rounded end reducing its thickness in one direction to one-half its diameter, a companion straight rod-like element rounded at one end, a longitudinal flat portion at said rounded end reducing its thickness in one direction to one-half its diameter, an integral stud upstanding from the flat surface of one of said flat portions, the other flat portion having a dual diameter aperture defining an internal shoulder therein to receive said stud thereinto when the two flattened surfaces are arranged face to face, said stud being slightly enlarged at its free end to frictionally engage behind the shoulder in the aperture to resist its withdrawal, and a plurality of spaced apart annular shoulders on substantially the remaining portion of each rod-like element, said annular shoulders facing the respective rounded ends to resist withdrawal of the elements from apertures in articles into which they are driven so as to hingedly connect said articles together.

**2.** The hinge recited in claim **1,** in which said elements are fabricated from resiliently compressible plastic material.

**3.** The hinge recited in claim **1,** in which longitudinally spaced circumferential ribs are provided on the surface of each rod-like element to define said annular shoulders.

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