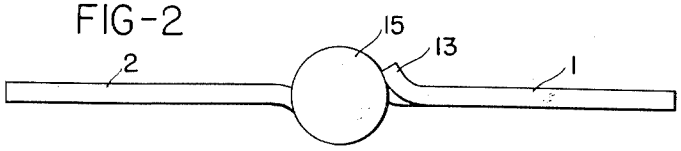
Oct. 4, 1955 A. L. HAGER ET AL 2,719,322

DOOR HINGE

Filed Jan. 6, 1955

FIG-2



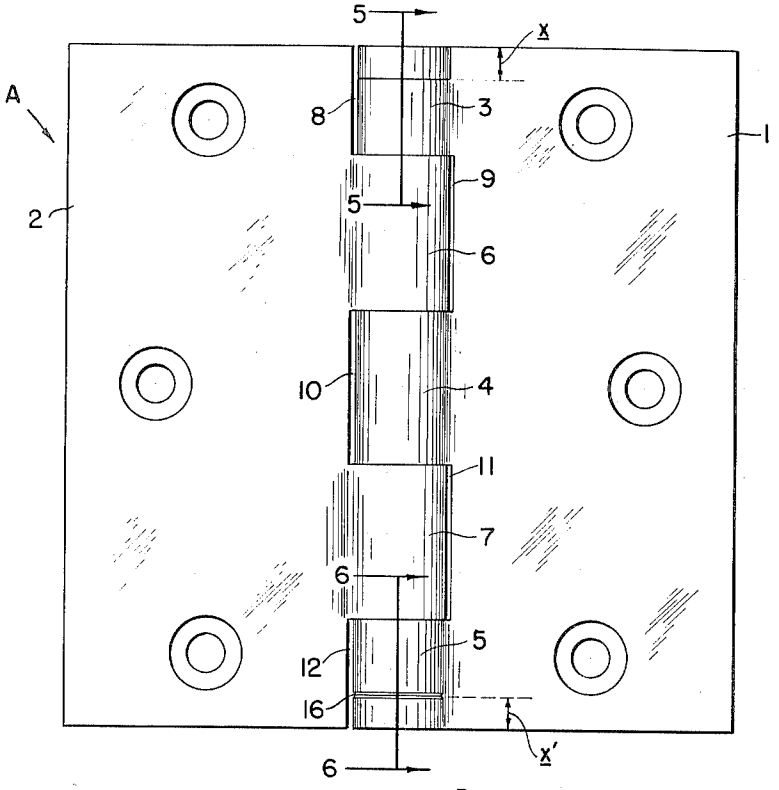


FIG-1

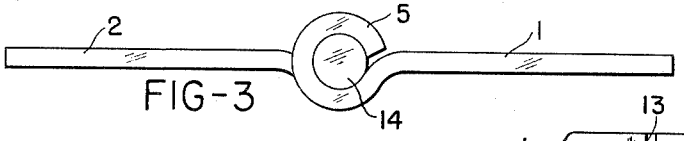


FIG-3

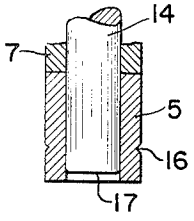
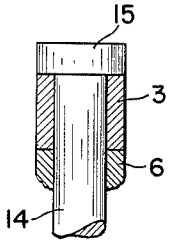


FIG-6

FIG-5



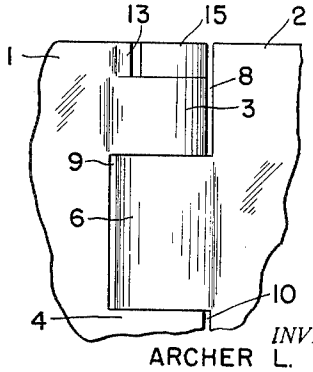


FIG-4

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DOOR HINGE

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Application January 6, 1955, Serial No. 480,104

2 Claims. (Cl. 16—169)

This invention relates in general to certain new and useful improvements in door hinges and, more particularly, to butt hinges having a non-rising hinge pin.

The conventional butt hinge comprises two hinge leaves or butts which are provided with axially aligned interfitting hinge eyes for removably receiving a hinge pin which must fit tightly enough to hold the butts securely together without rattle or vibration and, at the same time, must be sufficiently free to allow the butts to swing smoothly in relation to each other. As a result of frictional forces, however, the hinge pin tends to rise or work upwardly as the door swings to-and-fro so that, in time, the hinge pin might fall completely out of the hinge. As a matter of actual practice, the hinge pin probably would be tapped down again into properly seated position long before it came completely out, but the inconvenience and unsightliness involved is substantial and it is, therefore, highly desirable to overcome this problem in a simple efficient manner.

Another problem which has been encountered in the designing of butt hinges relates to the end conformation of the hinge pin. Heretofore, hinge pins have had ball-tops or steeple-type tops and have been matched by similarly shaped end plugs. Such design, however, is out of keeping with modern design trends in other items of hardware and it has become desirable to provide a hinge which is completely flush across the top and bottom. This type of hinge has a further functional advantage entirely apart from the matter of artistic appearance. Since the top of the hinge pin is flush, nothing such as a cord, wire, or coat hanger can be looped over it and suspended therefrom. This is particularly useful in hospitals and institutions where precautions are necessary to prevent the inmates from harming themselves. Most institutions of this type currently use so-called "precautionary" hinges which are specially constructed and ground off to eliminate upwardly protruding corners or projections. For such purposes, a hinge having a hinge pin which is flush across the top with the upper margins of the butts affords a completely satisfactory and extremely economical solution.

It is, therefore, the primary object of the present invention to provide a butt hinge in which the top of the hinge pin is flush with the upper margins of the hinge butt.

It is another object of the present invention to provide a butt hinge in which the lowermost hinge eye is externally scored to provide the appearance of a flush end plug which matches the flush top-end of the hinge pin, while rendering the lower-end of the hinge pin readily accessible for convenient removal when necessary.

It is an additional object of the present invention to provide a butt hinge having extremely economical means for preventing the hinge pin from rising.

With the above and other objects in view, our invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings

Figure 1 is a front elevational view of a butt hinge constructed in accordance with and embodying the present invention;

Figures 2 and 3 are top and bottom plan views, respectively, of the butt hinge shown in Figure 1;

Figure 4 is a fragmentary rear elevational view of the butt hinge shown in Figure 1; and

Figures 5 and 6 are fragmentary sectional views taken along lines 5—5 and 6—6, respectively, of Figure 1.

Referring now in more detail and by reference characters to the drawings which illustrate a preferred embodiment of the present invention, A designates a butt hinge comprising two companion shaped butts or hinge leaves **1**, **2**, respectively provided with axially aligned endwise interfitted hinge eyes **3**, **4**, **5**, and **6**, **7**, of uniform internal and external diametral size. The uppermost hinge eye **3** is somewhat shorter than the space which it is intended to occupy, so that its upper end face is spaced downwardly or recessed from the upper margins of the hinge leaves **1**, **2**, by the distance *x*. As will be noted by reference to Figure 1, the spaces between the hinge eyes are somewhat deeper than the external diametral size thereof to form very narrow clearance slots **8**, **9**, **10**, **11**, **12**, when the hinge leaves **1**, **2**, are in assembled position. The hinge leaf **1**, however, is not cut away above the hinge eye **3**, but is flared out slightly in the provision of a sharp-edged ear **13**, all as best seen in Figure 2 and for purposes presently more fully appearing.

Removably mounted in and extending through the hinge eyes **3**, **4**, **5**, **6**, **7**, is a hinge pin **14**, having a cylindrical flat-topped head **15**, the outside diametral size of which is substantially equal to the outside diametral size of the hinge eye **3**. Thus, when the hinge pin **14** is driven down into seated position, the ear **13** bites slightly into the peripheral face of the head **15** and binds the hinge pin **14** securely in such seated position. The vertical height of the head **15** is equal to the distance *x* so that the flat top of the head **15** is substantially flush with the upper margins of the hinge leaves **1**, **2**. Furthermore, the length of the hinge pin **14** is such that its lower end face **17** is located very slightly upwardly from the bottom or end face of the lowermost hinge eye **5**, as best seen in Figure 6. This hinge eye **5** is, of course, open at its bottom end so that a punch, spike or similar hand tool can be inserted therein and the hinge pin **14** driven out. This is desirable and necessary by reason of the retentive engagement between the hinge pin head **15** and the ear **13** and also because the hinge pin head **15**, by virtue of its recessed or flush-topped relationship to the hinge leaves **1**, **2**, is relatively inaccessible. However, this is an advantageous feature for the further reason that conventional hinges are frequently marred or scratched when the ordinary type of hinge pin is removed by means of a pair of pliers or a screw driver blade. In conventional hinges, either the hinge pin head, the end plug, or both are usually damaged and rendered unsightly in the process of removing the hinge pin. In the present invention these difficulties are eliminated.

The lowermost hinge eye is provided around its external face with a narrow groove or scoring **16** which is located upwardly from the lower margins of the hinge leaves **1**, **2**, by a distance *x'* which is equal to the distance *x*. Thus, the hinge eye **5** very closely simulates the combined appearance of the hinge eye **3** and hinge pin head **15** and gives the appearance of a recessed or flush-bottomed end-plug to match the hinge pin head **15**. In fact, the groove **16** is correlated to the ear **13** and recessed hinge pin head **15** since the latter features necessitate an open bottomed hinge eye **5**, so that the hinge pin **14** can be driven out. Consequently, a conventional end-plug cannot be used and it is therefore necessary, in turn, to

employ the groove **16** in order that the hinge A may have the proper symmetry and balanced appearance.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the door hinge may be made and substituted for those herein shown and described without departing from the nature and principle of our invention.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A hinge comprising two companion-shaped hinge-leaves respectively provided with a series of axially aligned interfitting hinge eyes, the outermost hinge eye at one end of the series being substantially shorter in axial length than the other hinge eyes, thereby providing a recess midway of one transverse margin of the hinge when the hinge-leaves are extending into flatwise coplanar alignment, a hinge pin disposed within and extending through the hinge eyes for swingably connecting the hinge-leaves, said hinge pin having a head located within said recess, and a sharp-edged tongue on the hinge-leaf of which said outermost hinge eye is a part for pin-retentive engagement with the hinge pin head.

2. A hinge comprising two companion-shaped hinge-leaves respectively provided with a series of axially aligned interfitting hinge eyes, the outermost hinge eye at one end of the series being substantially shorter in axial length than the other hinge eyes, thereby providing a recess midway of one transverse margin of the hinge when the hinge-leaves are extending into flatwise coplanar alignment, a hinge pin disposed within and extending through the hinge eyes for swingably connecting the hinge-leaves, said hinge pin having a head located within said recess, the hinge eye at the other end of the series being scored upon its external face inwardly from its end face by a distance equal to the axial height of the hinge pin head, and a sharp-edged tongue on the hinge-leaf of which said outermost hinge eye is a part for pin-retentive engagement with the hinge pin head.

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