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HINGE WITH NONRISING HINGE PIN

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

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This invention is concerned generally with the art of hinges for supporting doors and the like, and more particularly with a loose-pin hinge having a nonrising pin.

Insofar as the pins are concerned, hinges fall into two general classifications: tight-pin hinges and loose-pin hinges. In the former, the pins are permanently associated with the hinge leaves and cannot come loose therefrom. Such hinges usually are utilized in small sizes, such as for cabinet work and the like. However, it is common practice to use loose-pin hinges in connection with the mounting of doors and the like. In such hinges, the pins are removable. Desirably, the pins are not so loose that they will come out of their own accord. More particularly, certain loose-pin hinges are held in place only by gravity, and constant pivoting of the hinge leaves about the pins of such hinges causes the pins to work upwardly, resulting in an inelegant appearance and sometimes in total failure of the hinge.

Various structures have been devised for preventing the rising of pins in loose-pin hinges. By and large, such structures have not been entirely successful in holding the pins properly in place. Others have rendered fabrication or assembly unduly difficult, and it often has been necessary that the head be gripped by a pair of pliers for removal. Such gripping by pliers generally results in scarification of the head of the pin, having an unsightly appearance. In other hinge construction, the method of removal has not been immediately apparent to the average householder, and often has required the use of special tools.

Accordingly, it is an object of this invention to provide an improved loose-pin hinge having a nonrising hinge pin.

More particularly, it is an object of this invention to provide a loose-pin hinge having a nonrising hinge pin wherein at least one of the hinge knuckles is of resilient construction, and a corresponding section of the pin is knurled to provide an enlarged diameter, whereby the resilient hinge knuckle resiliently grips the enlarged pin section frictionally to hold the pin in place.

It is a further object of this invention to provide a nonrising hinge pin having a circumferential recess or shoulder beneath the head thereof, imparting an ornamental appearance to the head, and providing access space for a screwdriver or the like for raising the pin without leaving visible marks thereon.

Other and further objects and advantages of the present invention will be apparent from the following description when taken in connection with the accompanying drawings wherein:

Fig. 1 is a perspective view of the hinge as secured to a door and door jamb, for example;

Fig. 2 is a plan view of the hinge in open position;

Fig. 3 is a longitudinal sectional view taken along the line 3—3 in Fig. 1;

Fig. 4 is a horizontal sectional view taken along the line 4—4 in Fig. 2;

Fig. 5 is an enlarged fragmentary sectional view corresponding to Fig. 4 and showing the knurling on the hinge pin; and

Fig. 6 is a perspective view of the hinge pin.

Referring now in greater particularity to the drawings, there is shown a hinge generally designated by the numeral 10, and including a left-hand leaf 12 and a right-hand leaf 14. By way of example, the left-hand leaf is secured to a door 16, and the right-hand leaf, to a door jamb 18, the hinge preferably being recessed into these parts.

The left-hand leaf 12 is provided with three rolled over knuckles 20, 22, and 24, respectively at the top, at an intermediate position, and at the bottom of the hinge. The right-hand leaf 14 is provided with two rolled over knuckles 26 and 28 fitting in the spaces between the knuckles on the left-hand leaf. The hinge leaves are pivotally secured together by a hinge pin identified generally by the numeral 30.

The hinge pin is provided with a tip or head 32 of novel configuration. The tip is of the type generally known as a button tip, but is provided with an undercut, recess, or shoulder 34 at the lower portion thereof, whereby to provide space for the insertion of a screwdriver tip 36 or the like, whereby to force the head up to raise the pin. A shank 38 extends from the head 32, and substantially immediately below the underface of the head, the shank is knurled, as at 40, thereby providing a section of increased diameter. The opposite extremity of the shank 38 is slightly tapered, as at 42, in accordance with conventional practice, whereby to facilitate insertion of the pin into the hinge knuckles.

As will be understood, the hinge knuckles form a barrel of predetermined internal diameter, and the hinge pin 30 is received therein with a sufficiently loose fit to allow ready pivoting of the hinge leaves. The upper knuckle 20 is provided with a tapered internal configuration 44 for facilitating insertion of the pin. The hinge is made of resilient material, preferably #1 temper steel, and preferably brass plated, although it is contemplated that other materials, such as brass or bronze of suitable resiliency, might be used. The knurling 40 increases the diameter of the shank 38 sufficiently that this part of the shank is wedged in place in the upper knuckle 20.

The spring nature of the steel or the like from which the hinge is made imparts sufficient resiliency to the pin knuckle that this knuckle resiliently grips the knurled section of the shank. However, a screwdriver tip 36 can be inserted adjacent the shoulder 34, as shown in Fig. 2, for readily raising the pin, and without any possibility of scratching or scarring the pin in a position where such marks would show.

The bottom of the hinge is closed by the usual nib 50, preferably having a shoulder 48 similar to the shoulder 34. The nib has a short shank 52 of sufficient diameter to wedge in place in the bottom knuckle 24. It will be understood, no rotative forces are imparted to the nib 50, and hence there is no tendency for the nib to work out of the hinge and knurling, therefore, is unnecessary.

Thus, it will be seen that the pin is held tightly and resiliently in position by the coaction of the spring steel knuckle and the enlarged knurled shank section. This resilient force can be overcome by insertion of a screwdriver tip, for example, adjacent the shoulder 34, whereby the pin can be raised for removal in order to separate the two leaves of the hinge. However, the resilient gripping force of the knuckle on the pin is sufficient to hold the pin against accidental rising.

Various changes in structure will no doubt occur to those skilled in the art, and are to be understood as
forming a part of this invention insofar as they fall within the spirit and scope of the appended claim.

The invention is claimed as follows:

A hinge construction comprising a pair of leaves having axially offset knuckles interfitting the bores thereof aligned, an end knuckle being curled from the material of the hinge leaf presenting a free longitudinal edge and rendering the knuckle resiliently expandable, a hinge pin including a head disposed adjacent and overlying the end of said end knuckle and a shank axially inserted through the bores of said knuckles, said shank having a knurled enlargement adjacent the head of a diameter greater than the normal diameter of the bore in said end knuckle and receivethen to expand the said end knuckle for resiliently retaining the hinge pin in the bore of said end knuckle with the remainder of said shank fitting loosely in all of the bores below the said knurled enlargement, the outer end of said end knuckle having an internally relieved portion to facilitate guiding of the hinge pin and the force fitting of the knurled enlargement therein, said head having an internal peripheral shoulder adjacent and projecting toward said knurled enlargement and adapted to seat on the said end knuckle overlying said relieved portion to leave a peripheral recess between the outer periphery of the head and the said end knuckle for receiving a tool facilitating removal of the hinge pin.

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