Nov. 25, 1930. H. H. RAYMOND 1,782,582

HINGE

Filed May 5, 1928

Fig. 1.

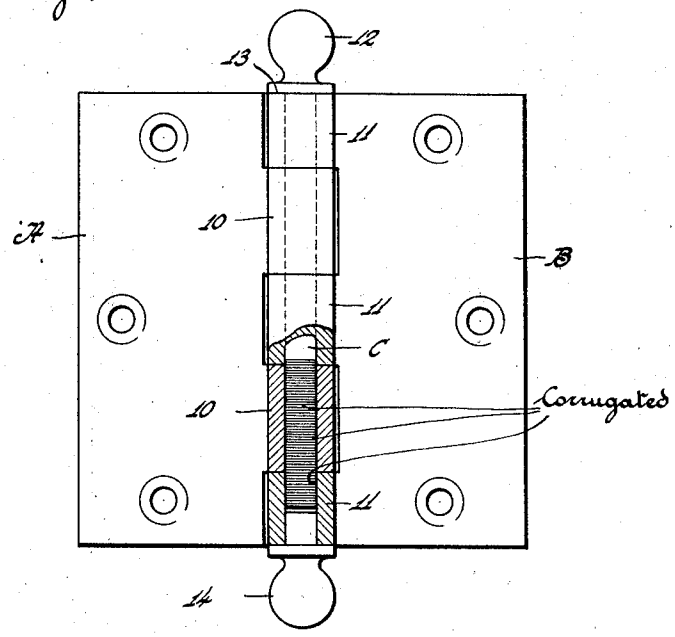


Fig. 3.

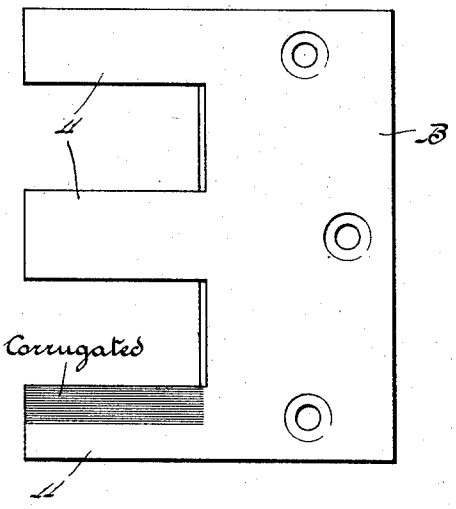
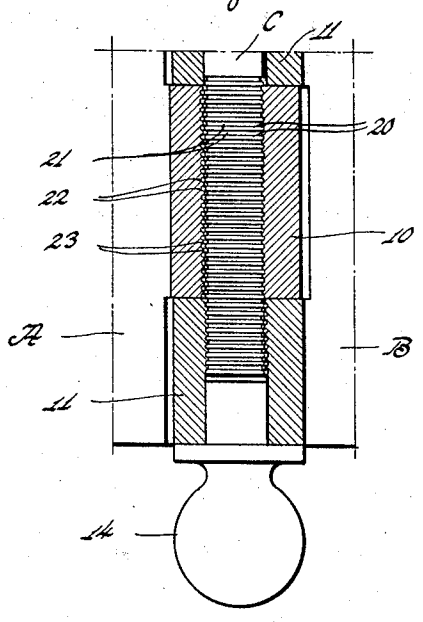


Fig. 2.



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UNITED STATES PATENT OFFICE

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HINGE

Application filed May 5, 1928. Serial No. 275,376.

The present invention relates to a hinge or butt of the type having a pair of leaves with interfitting knuckles and a loose or removable pin extending through the knuckles for pivotally connecting the leaves together. It has been found, in hinges of this sort, that there is a tendency for the pin to creep or work upwardly, and various expedients have been proposed to guard against such creeping tendency and accidental displacement of the pin, but so far as I am aware, these various proposed expedients have either been not entirely practical and successful, or they have materially added to the cost of the hinge.

The aim of the present invention is to provide, in a hinge of this sort, an improved and simple arrangement for holding the pin in proper position within the knuckles. My improved arrangement is extremely simple, the means for preventing the pin from creeping upwardly adds practically nothing to the cost of the hinge, and the arrangement is entirely effective and successful in operation.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawings, wherein I have shown, for illustrative purposes, one of the embodiments which the present invention may take:

Figure 1 is a front view of the butt with portions of some of the knuckles broken away for the purpose of illustration;

Fig. 2 is an enlarged detail view of the lower end of the pin located within the knuckles, the latter being shown in section; and

Fig. 3 shows the blank from which the leaf B is formed.

Referring to the drawings in detail, A and B, respectively, designate the leaves of the butt. The leaf A has between its ends a pair of knuckles 10, 10, and the leaf B has knuckles 11 between which the knuckles 10 are interposed. The letter C designates the pin or pintle for connecting the leaves together. This pin has, as is usual in hinges of this sort, an integral ball tip 12 and a shoulder 13 adapted to engage on and be flush with the upper end of the uppermost knuckle 11. The pintle is adapted to extend down into the bore of the lowermost knuckle 11. Driven into the lower end of this knuckle is a ball tip 14 so as to give the necessary finished appearance.

In accordance with the present invention, and for the purpose of preventing the pin from rising or creeping upwardly, the pin is provided with relatively fine circumferential corrugations and a suitable number of bores of knuckles are provided with complementary corrugations. In the present illustrative disclosure, the lowermost knuckle 11 and the lowermost knuckle 10 are shown as having their bores provided with circumferentially extending corrugations and that portion of the pin which engages in these knuckles is shown as having circumferential corrugations complementary to the corrugations of the knuckles. Obviously, the length of the corrugated portion of the pin and the number of knuckles which are corrugated may be varied to suit requirements. By corrugating the pin, the same is provided with a plurality of circumferential ribs 20 between which are circumferential or annular grooves 21. The grooves formed by corrugating the bores of the knuckles are designated by the numeral 22, and the ribs by the numeral 23.

The corrugations in the pin may be formed by rolling the same therein, an operation which may be carried out at practically negligible cost. Each of the leaves is formed by stamping out from a sheet of metal a blank having a body portion and tabs adapted to form the knuckles. Figure 3 shows a blank from which the leaf B is formed. The corrugations are formed in the lowermost knuckle 11 by rolling or stamping such corrugations therein before the tab is curled into knuckle form. The corrugations in the knuckle 10 are formed in like manner.

The parts may be assembled by bringing the

knuckles into alignment and then slipping the pin downwardly into place. The diameter of the hinge pin, the diameter of the bore of the knuckles, and the size of the corrugations are so proportioned that the pin may be inserted or withdrawn easily with the fingers. When mounted on a door, however, there is a horizontal component of force tending to pull the leaves apart due to the weight of the door. This displaces the knuckles slightly from their true alignment so that the corrugations on the pin are brought into engagement with the corrugations in the bores of the knuckles, locking the two together and preventing the pin from creeping upwardly. Thus, the pin is non-rising, and the shoulder 13 is always maintained in engagement with the upper end of the knuckle 11. Practical experience has proved that, by corrugating the pin and one or more of the knuckles, as described, the pin is positively and effectively prevented from creeping, and this result is obtained in an extremely simple manner and at practically negligible cost.

As many changes could be made in the above construction and many apparently widely different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description, or shown in the accompanying drawing, shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. A hinge having a pair of leaves with interfitting knuckles, a removable pin engaging in said knuckles, and complementary corrugations on the pin and a knuckle, the greatest diameter of the corrugations of said pin being less than the smallest internal diameter of the complementary corrugations on said knuckle.

2. A hinge having a pair of leaves provided with aligned knuckles, and a removable pin engaging in said knuckles, said pin having a plurality of circumferential grooves, one, at least, of said knuckles having a bore provided with a plurality of circumferential ribs adapted to engage in said grooves, said pin between said circumferential grooves being of a smaller diameter than the internal diameter of said ribs whereby said pin may be removed longitudinally.

3. A hinge having a pair of leaves with interfitting knuckles, and a removable pin engaging in said knuckles and having a plurality of circumferential ribs, the lowermost of said knuckles having circumferential grooves complementary to said ribs, the smallest internal diameter of said lowermost knuckles being greater than the diameter of said circumferential ribs on said pin.

HORACE H. RAYMOND.