

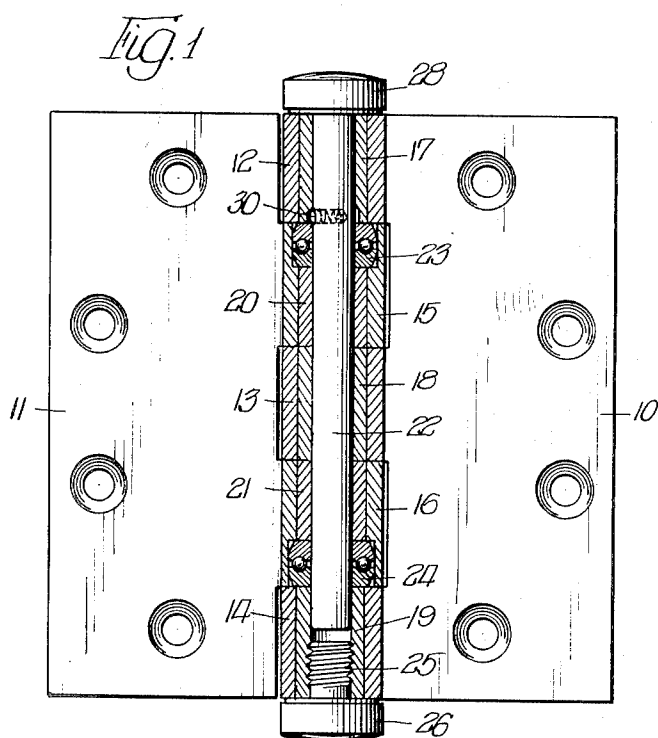
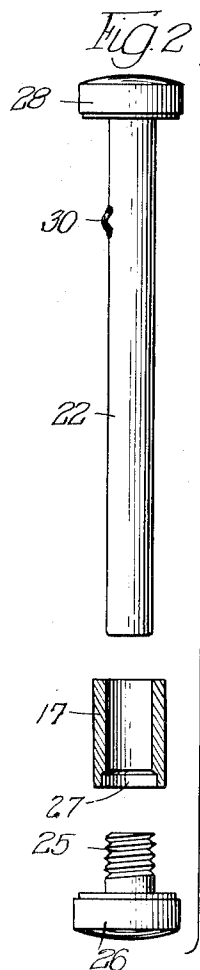
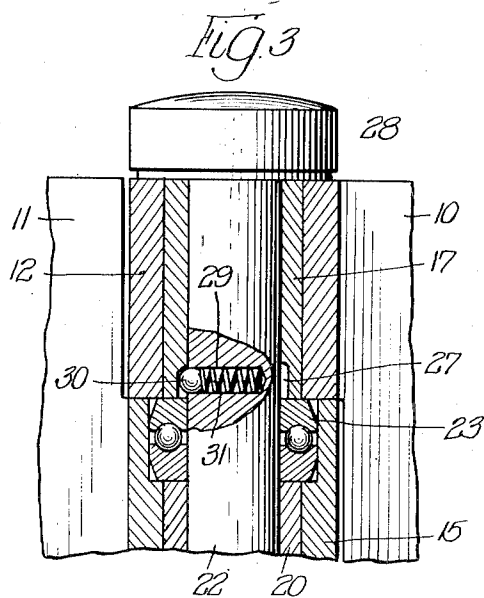
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HINGE

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HINGE

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This invention relates to hinges and is more particularly concerned with improvements in the type of hinge having a pair of leaves with aligned knuckles and a pivot bearing pin engaging the knuckles.

In hinges of the loose-leaf type in which the connecting pin is arranged to be readily removed, there is a tendency for the pin to work up, or rise, with repeated operation of the hinge. Any movement of the pin in its axial direction results in the effective bearing engagement between the pin and the knuckles being reduced. Also, the portion of the pin extending above the hinge presents an unsightly appearance. Various arrangements have been suggested for preventing the pin from rising while at the same time permitting it to be readily removed when desired. Most of these arrangements have been unsatisfactory, either because they increase the cost of the manufacture of the hinge too greatly, or because they do not work properly, frequently due to the failure of the carpenter or installer to properly assemble the pin in the knuckle.

It is a general object of the present invention to provide an improved hinge and pintle construction wherein the pintle is securely retained in non-rising but readily removable relation in the aligned bores of the knuckles by a simple retaining means which does not unduly increase the cost of the manufacture of the hinge.

It is a more specific object of the invention to provide a hinge of the loose-leaf type in which the removable pintle is provided with a spring-projected latch element and one of the knuckles is provided with a cooperating internal peripheral recess adapted to receive the projecting portion of the latch element when the pin is inserted in the knuckles in pivot forming relation therewith.

It is a still more specific object of the invention to provide a hinge comprising a pair of leaves having cooperating knuckles extending along adjacent edges, self-lubricating bushings within the bores thereof which are aligned when the knuckles are arranged in interleaved relation, and a headed pin engaging in the bores, the pin having a spring-pressed locking pin seated in an aperture therein and adapted to project into an internal peripheral recess in the inner end of one of the bushings.

These and other objects and advantages of the invention will be apparent from a consideration of the hinge construction which is shown by way of illustration in the accompanying drawings, wherein:

Fig. 1 is a plan view of a hinge having incorporated therein the principal features of the invention, with the knuckle portions thereof being shown in section;

Fig. 2 is an exploded view of the hinge pintle and the retaining elements; and

Fig. 3 is an enlarged sectional detail view of the knuckle in which the pintle retaining mechanism is provided.

Referring to the drawings, there is illustrated a double-leaf loose pintle hinge which embodies the principal features of the invention. The illustrated hinge comprises two hinge leaves or plate members 10 and 11 which are generally rectangular and preferably formed of steel, bronze, aluminum or similar metal. The leaves 10 and

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11 have integral knuckles spaced along adjacent edges, the frame leaf 10 being provided with three knuckles 12, 13 and 14 and the center leaf 11 being provided with two knuckles 15 and 16.

5 The knuckles 12, 13, 14, 15 and 16 are provided with bushings 17, 18, 19, 20 and 21, respectively, all of which are preferably formed of self-lubricating metal and all of which have an internal diameter sufficient to receive in rotatable relation a connecting pivot pin or pintle 22.

10 The knuckles 15 and 16 are recessed at their outer ends to receive thrust bearings 23 and 24, the bushings 20 and 21 in these knuckles being shortened to accommodate the bearings. The bushing 19 in the end knuckle 14 receives the threaded shank portion 25 of the usual nib 26.

15 The bushing 17 in the end knuckle 12 is provided on its inner end with an internal axially extending peripheral groove or recess 27 which forms part of the pintle retaining means. The pintle 22 is provided at its outer end with a decorative head 28 and in inwardly spaced relation thereto the shaft of the pintle is provided with a pocket forming recess or bore 29 which extends in a direction normal to the longitudinal axis thereof and which is of a size to receive a small steel ball 30. The ball 30 is backed by a compression spring 31 seated in the recess 29 and is held in partially projecting position by peening over the edges of the aperture 29. The steel ball 30 is located so that when the pintle 22 is inserted and properly seated in operative position in the knuckles the ball 30 will extend into the recess 27 in the end of the bushing 17.

20 In operation the hinge leaves 10 and 11 are positioned with the knuckles 12, 13, 14 and 15, 16 in interleaved relation and with the bores of the bushings 17, 18, 19, 20 and 21 in alignment. Thereafter the pintle 22 is inserted in the aligned bores in the bushings and pushed axially inwardly until the ball bearing member 30 snaps into the recess 27 in the end bushing 17, thereby latching or locking the pin or pintle 22 in non-rising position relative to the hinge knuckles, with the pintle free to turn or rotate relative to the bushings without any tendency to bind.

40 While specific details of construction and particular materials have been referred to in describing the illustrated form of the device, it will be understood that variations in structure and materials are contemplated within the spirit of the invention.

What I claim is:

1. In a hinge, a pair of hinge leaves formed of sheet material, each of said leaves having a plurality of integral knuckles spaced along one edge thereof, bushings in said knuckles, said knuckles being arranged in interleaved relation with the bushings therein having aligned bores, and a headed pintle engaging in said bores, one of said bushings having an internal peripheral groove in its end which is spaced from the head of the pintle and which faces in the direction opposite the head of the pintle, and a spring-pressed locking member seated in an aperture in the pintle and projecting into the recess in said bushing.

2. In a hinge, a pair of hinge leaves formed of sheet material, each of said leaves having a plurality of integral knuckles spaced along one edge thereof, bushings in said knuckles, said knuckles being arranged in interleaved relation with the bushings therein having aligned bores, and a headed connecting pin engaging in said bores, one of said bushings having an internal peripheral recess in the end thereof which faces away from the head of the pin, and a spring-backed latch member seated in a transversely extending aperture in the pin and having a rounded head projecting into the recess in said bushing.

3. In a hinge, a pair of hinge leaves formed of sheet material, each of said leaves having a plurality of integral knuckles spaced along one edge thereof, self-lubricating bushings in said knuckles, said knuckles being arranged

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in interleaved relation with the bushings therein having aligned bores, and a headed connecting pin engaging in said bores, one of said bushings having an internal peripheral recess in the end thereof which faces away from the head of the pin, said connecting pin having a transversely extending bore aligned with said recess, a latch element in said bore, and means in said bore resiliently urging the outer portion of said latch element into said recess.

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