J. H. WAY.

ADJUSTABLE HINGE.

APPLICATION FILED OCT. 27, 1916.

1,208,422. Patented Dec. 12, 1916.

FIG. III.

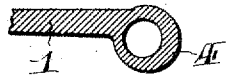


FIG. I.

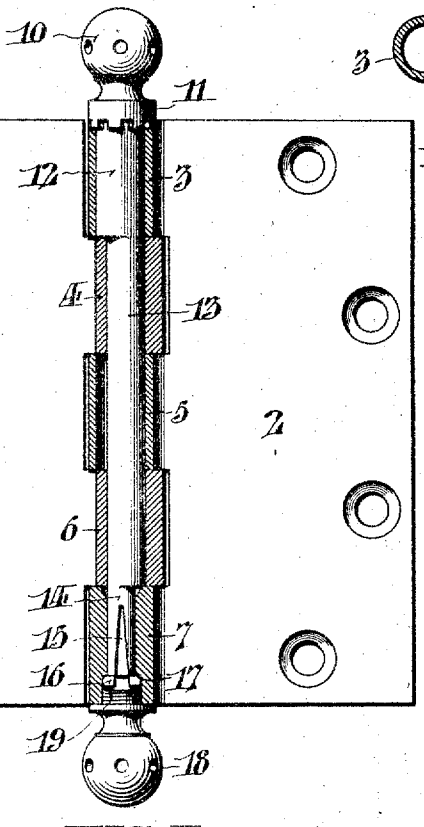
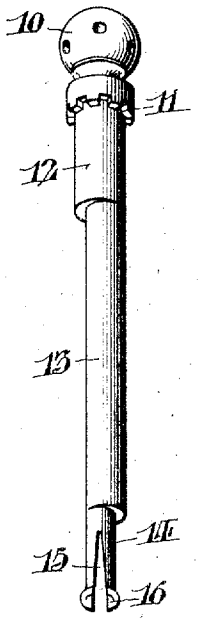


FIG. IV.



II

FIG. V.



II

FIG. VII.

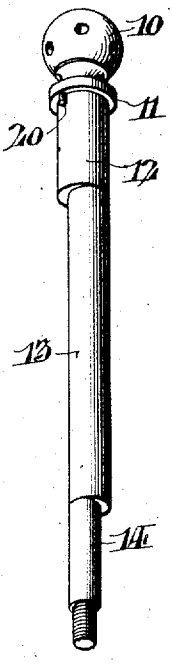


FIG. II.

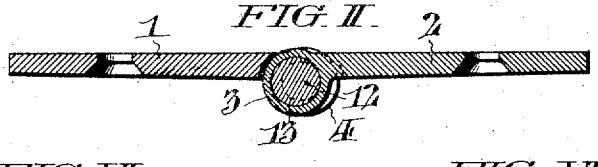


FIG. VI.

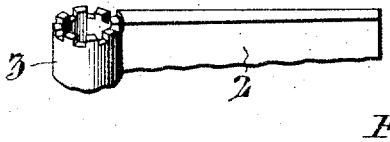


FIG. VIII.

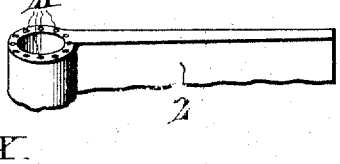
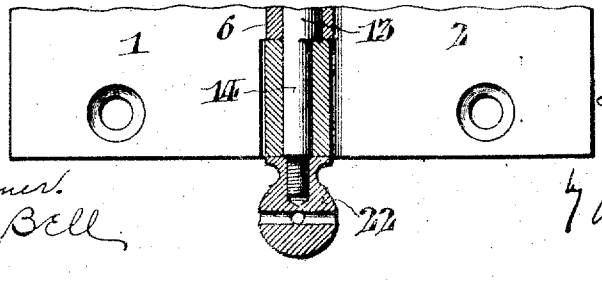


FIG. IX.



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UNITED STATES PATENT OFFICE.

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ADJUSTABLE HINGE.

1,208,422. Specification of Letters Patent. Patented Dec. 12, 1916.

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To all whom it may concern:

Be it known that I, JOHN HOWARD WAY, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Adjustable Hinges, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to a leaf hinge with capacity for lateral adjustment as between the leaves. In this way the hinged closure may be made to more accurately fit its opening with capacity for compensation from time to time for shrinkage or swelling of the parts. I secure the adjustability of my hinge by the employment of a pintle, successive portions of which are eccentric to each other in combination with means whereby the pintle may be rotated and firmly secured in any desired position.

It is important that the eccentricity of the pintle shall not render difficult or impossible the assembly of the hinge by the insertion of the pintle through the successive bored knuckles. I accomplish this end by reducing the radius of each successive portion of the pintle, by an amount equaling its eccentricity in relation to the preceding portion.

In the accompanying drawings, I have illustrated a hinge constructed in accordance with my invention, at the same time disclosing certain modifications which may be made without departing therefrom.

Figure I, is an elevation partly in section of a hinge embodying my invention. Fig. II, is a horizontal section along the line II, II, of Fig. I. Figs. III, and IV, are detail sectional views of the hinge leaves. Fig. V, is a perspective view of the pintle of the hinge shown in Fig. I. Fig. VII, is a similar view of an alternative form of pintle. Figs. VI, and VIII, are detailed views showing different means for securing the pintle against rotation. Fig. IX, is a partial view of the lower part of the hinge, showing an alternative method for securing the hinge cap.

Referring to Fig. I, the hinge there shown is composed of a leaf 1, carrying the knuckles 4, and 6, and the leaf 2, carrying the knuckles 3, 5, and 7, of which 3, and 7, are the end knuckles of the hinge. The knuckles 3, and 5, are bored concentrically to the diameter of the largest portion of the pintle, after the manner of Fig. IV. The knuckle 7, is also bored concentrically with 3, and 5, but to the smaller diameter of the smallest portion of the pintle. The knuckles 4, and 6, are bored eccentrically to a diameter corresponding to that of the middle portion of the pintle, the eccentricity of the bore corresponding to the eccentricity of said middle portion of the pin. (See Fig. III.)

The pintle comprises a head 10, a toothed flange 11, a large upper portion 12, an eccentric middle portion 13, and a small terminal portion 14, which is concentric with the upper portion 12. The eccentric portion 13, is of less diameter than the upper portion 12, the reduction in diameter being sufficient to allow the entire eccentricity to be obtained without any part of the portion 13, projecting beyond the cylindrical plane which bounds the portion 12. Preferably this is accomplished by reducing the radius of the portion 13, as compared with the radius of the portion 12, by an amount equal to the eccentricity of the one to the other. Likewise, the reduced terminal portion 14, is sufficiently smaller in diameter as compared with the intermediate portion 13, to permit it to occupy a position concentric with the portion 12, and, therefore, eccentric to the portion 13, without, however, any portion of it projecting beyond the cylindrical bounding plane of portion 13.

The eccentricity of the bore of the knuckles 4, and 6, preferably corresponds to the eccentricity of the intermediate portion 13, of the pintle. Consequently, when the pintle is rotated a half turn from the position shown in Fig. I, the knuckles of both leaves will be, in alinement. When, however, the pintle is turned to the position shown in Fig. I, the knuckles 4, and 6, are thrown out from the knuckles 3, 5, and 7, as shown in said figure, the extent depending upon the eccentricity of the intermediate portion 13, of the pintle, as compared with its upper and lower portions.

The lower end of the pintle is split, as shown at 15, and provided with a terminal flange 16, which, is capable of engaging a corresponding shoulder 17, formed near the lower end of the bore of the knuckle 7, so that the expansive force of the split end of the pintle tends to constantly hold the entire pintle in its seated position.

The pintle is rotated by torsional force applied to its head 10, which may be provided with spanner holes to facilitate such rotation. In order to prevent unintentional

rotation, the lower edge of the collar 11, below the head of the pin, is toothed as shown, and at the same time the upper edge of the upper corner knuckle 3, is correspondingly toothed, as shown in Fig. VI, the length of the pin being such that when it is driven into its seat, as shown, the firm engagement of the parts described prevents further rotation until the pin has been partly raised from its seat as permitted by a force sufficient to overcome the hold of its split end upon the collar 17. A cap 18, is provided with a threaded portion 19, which may be screwed into the lower end of the corner knuckle 7, in order to complete the hinge.

In Fig. VII, I have shown an alternative method of effecting the engagement of the lower edge of the collar 11, with the upper edge of the knuckle 3, consisting of a pin 20, capable of being received within a succession of holes 21, cut in said upper edge of the knuckle 3, as shown in Fig. VIII. Likewise, this pintle is held in its seated position by an alternative method, consisting of the projecting threaded lower end fitting the cap 22, which is interiorly threaded to receive the same and which, therefore, becomes a nut capable when screwed up against the lower edge of the knuckle 7, of holding the pintle down to its seat.

In a small hinge it is possible to omit the special means for preventing undesired rotation of the pintle, which I have shown, and to substitute compression obtained by screwing the cap 22, firmly up against the lower edge of the knuckle 6, the shoulder immediately above the threaded portion at the end of the pintle, being sufficiently cut away to permit of this compression.

It will be understood that my invention is not limited to a hinge provided with a number of knuckles which I have shown in the illustration, nor confirmed to any particular number of successive eccentric portions of the pintle.

Having thus described my invention, I claim:

1. A hinge having a pintle provided with portions which are successively eccentric to each other, such portions being successively of reduced diameter to an extent permitting the eccentricity to be accomplished without any projection of an eccentric portion beyond the cylindrical plane which bounds the preceding portion.

2. A hinge having its end knuckles bored concentrically, and a pintle the upper and lower portions of which fit said end knuckles, and the intermediate portion of which is eccentric to said upper and lower portions.

3. A hinge having its end knuckles bored concentrically, intermediate knuckles bored eccentrically, and a pintle with a large upper portion and a small lower portion fitting the end knuckles, and an intermediate portion fitting the intermediate knuckles.

4. In an adjustable hinge, the combination of a pintle having portions which are eccentric in relation to other portions, a head whereby said pintle may be rotated, and means whereby said pintle when driven home to its seat, is held against rotation.

5. In an adjustable hinge, the combination of a pintle having portions which are eccentric in relation to other portions, a head whereby said pintle may be rotated, a toothed edge below the head, and a correspondingly toothed edge at the top of the upper end knuckle of the hinge.

6. In an adjustable hinge, the combination of a pintle having portions which are eccentric to other portions, means on said pintle, which are capable when said pintle is seated of interlocking with corresponding means on one of the knuckles of the hinge whereby the pintle is kept from rotation in said knuckles, the end of said pintle being split and provided with a terminal flange which engages one of the knuckles to hold the pintle seated.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this eighteenth day of October, 1916.

JOHN HOWARD WAY.

Witnesses:
JAMES H. BELL,
E. L. FULLERTON.