J. R. WERNER.

HINGE.

APPLICATION FILED OCT. 28, 1919.

1,341,690. **Patented June 1, 1920.**

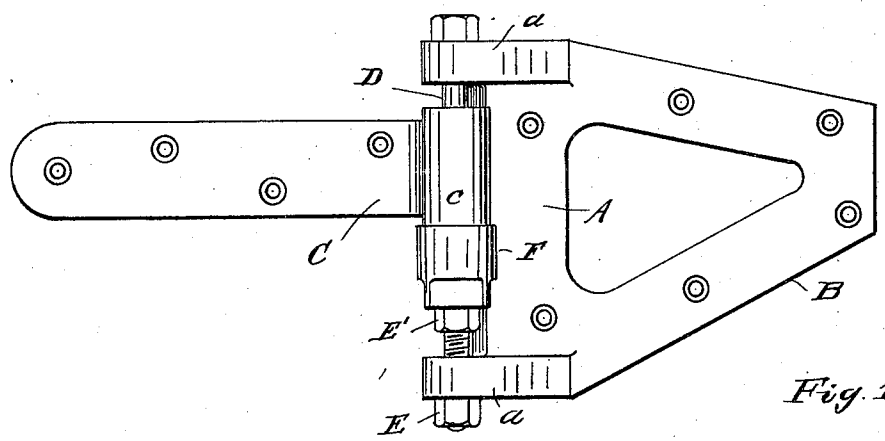

Fig. 1.

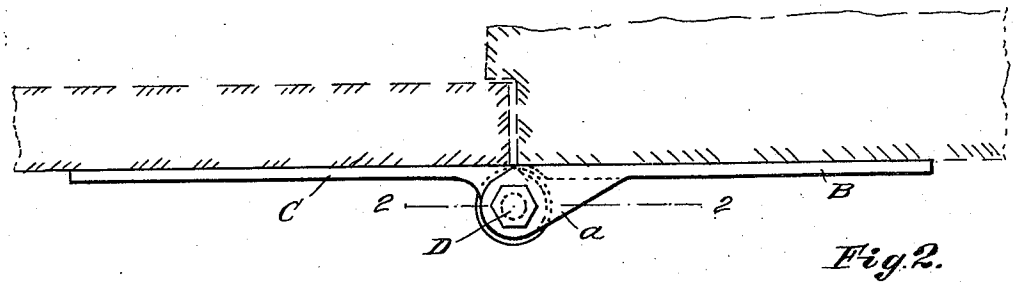

Fig. 2.

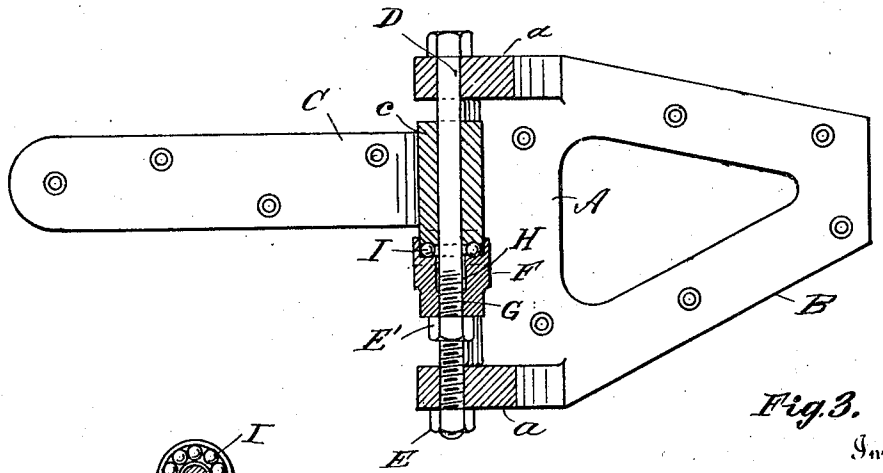

Fig. 3.

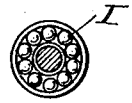

Fig. 4.

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UNITED STATES PATENT OFFICE.

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HINGE.

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To all whom it may concern:

Be it known that I, JOSEPH R. WERNER, a citizen of the United States, residing at Granite City, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Hinges, of which the following is a specification.

This invention relates to certain new and useful improvements in hinges, the peculiarities of which will be hereinafter described and claimed.

The main object of my invention is to provide a hinge capable of axial adjustment of one member with regard to the other hinge member, whereby the door or other piece carried by one member may be raised or lowered, or otherwise varied in its desired position.

In the accompanying drawing on which like reference letters indicate corresponding parts, Figure 1 represents the front elevation or face view of a hinge embodying my invention; Fig. 2, a plan view of the same with its application to a door and jamb indicated by dashed lines; Fig. 3 a sectional elevation of the same on the line 2—2 of Fig. 2; and Fig. 4 a plan view of a ball bearing in the adjustable support for the pivoted member.

The letter A designates the fixed member of a hinge having lugs *a* and a wing extension B adapted for screws or bolts by means of holes therein, and preferably cut out at the center for reducing the weight. C designates the body of a pivoted member having a lug *c* interposed between the lugs *a*—*a* of the fixed member and connected to form a hinge, preferably by means of a pivot bolt D passing through the lugs of the two members as alined in operative position, and threaded at the bottom end by preference into the lower lug *a* of the fixed member which is likewise tapped to match the threads of the pivot bolt. A jam nut E on the bottom of said bolt, or other means, prevents the bolt from turning when jammed against the adjacent lug *a*. A tension is thus put on the pivot bolt that tends to avoid bending the bolt under the weight of the door or other device carried by the pivoted member C which may be extended to form a wing, strap or other extension having holes by which it may be secured to said door by screws or bolts. The weight of the door is carried by the pivoted member of two or more hinges, and when applied to a vertical door the lower end of the lug *c* takes the weight of the door upon a suitable bearing support, while the pivotal connection of the said lug with the smooth part of the pivot bolt, allows of rotative movement of the pivoted member and the door to which it is fastened. The lugs *a* of the fixed member are separated a relatively greater distance than the vertical length of the lug or eye *c* of the pivoted member, and a supporting piece is carried by the pivot bolt and is arranged to be adjustable thereon and provide a bearing to support the said eye *c* in any desired position up and down axially on said pivot bolt. This supporting piece is preferably in the form of a cylindrical piece F having its lower end squared or otherwise adapted to be engaged by a wrench, and having a central hole at its lower portion which is tapped as shown at G for mounting on the lower threaded portion of said pivot bolt. The supporting piece is also counterbored at H, and recessed at the top to form a race for a ball bearing I, or otherwise provided with means to reduce the friction between the lower end of the eye *c* and its supporting piece F. The bottom of said eye of the pivoted member is likewise provided with a ball race, either integral or separate as an independent piece, for operation with said balls I. This ball bearing is of special advantage with heavy doors, but other form of interposed bearing may be used. By means of the threaded connection G of the supporting piece upon the threaded pivot bolt, the supporting piece F may be adjusted up or down and thereby vary the located position of the pivot member and door. A jam nut E′, or other means mounted on or below the supporting piece F and engaging the pivot bolt, will prevent accidental turning of the supporting piece F under the rotative action of the pivot-member of the hinge. The counterbore of the said piece allows of adjusting the said piece upward and downward a certain distance without presenting the threaded portion of the pivot bolt to possible contact with the balls I. Any other manipulation of the means for varying the adjustment axially of the pivot member with regard to the fixed member of the hinge, may be employed, such as by shifting the pivot bolt up and down by means of its threaded connection with one or both of the lugs *a* of the fixed member. Thus when the supporting piece F

is raised till the upper end of the bolt threads is reached, the door can be raised yet more by loosening the nut E and turning the bolt upward in its threaded eye lug, and then tightening the nut again to clamp the bolt; or the nut E′ may be run down on the bolt and the supporting piece lowered, and then the pivot bolt be raised as just stated; the bolt threads are thus kept out of contact with the pivoted eye lug *c* whatever the vertical adjustment of the door, but the preferred adjustment is by means of the supporting piece F being varied in its adjusted position upon the said pivot bolt.

Thus it is evident that by the use of one or more hinges of my construction and design, a heavy door or other swinging piece, may be varied in height, for instance, relatively to the opening that it closes, and thus the door be readily re-adjusted to its best working condition without shifting the bolts or screws by which the two members are fastened to the door and jamb respectively.

I do not limit myself to the exact construction shown.

I claim:

1. A device of the character described comprising two hinge members, a pivot bolt passing through said members, means to prevent said bolt turning, a supporting piece adjustably mounted on said bolt and forming a movable bearing for one member, and means to prevent said supporting piece from turning.

2. A device of the character described comprising a pair of hinge members, a pivot bolt passing through said members and having threads engaging one member and a smooth portion forming a pivot bearing for the other member, and an adjustable supporting piece having threaded engagement by its lower end with said bolt and counterbored at its upper end, and balls interposed between said supporting piece and the hinge member pivoted on the smooth portion of said bolt, substantially as described.

In testimony whereof I have affixed my signature.

JOSEPH R. WERNER.