

June 28, 1938.

J. JACKLE

2,122,034

HINGE

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Fig. 3.

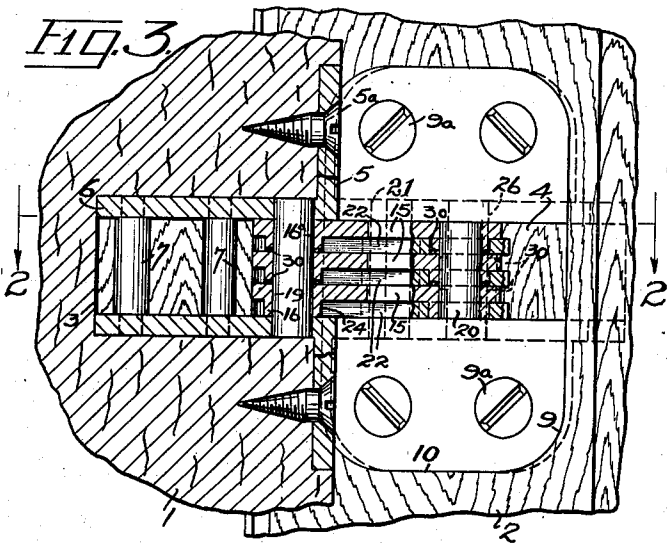


Fig. 4.

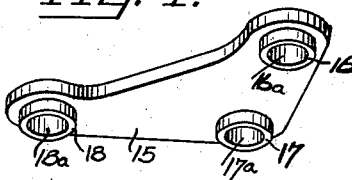


Fig. 5.

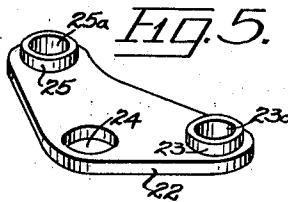


Fig. 2.

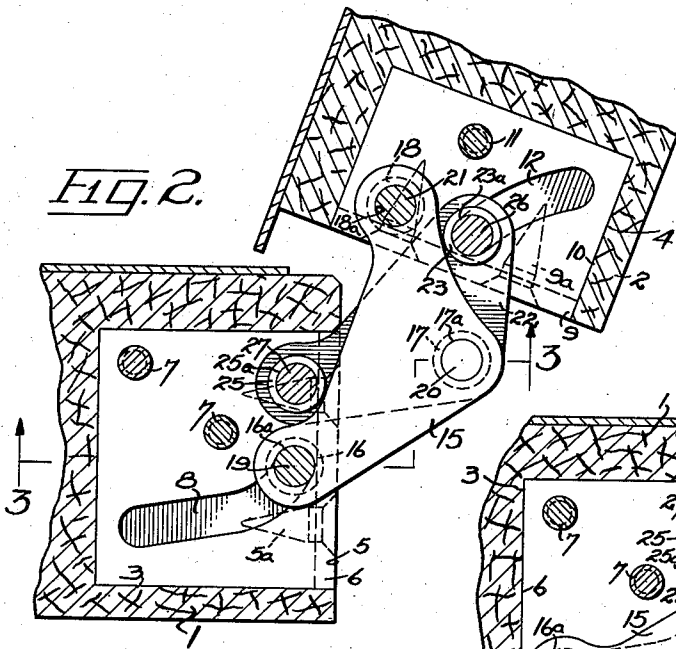
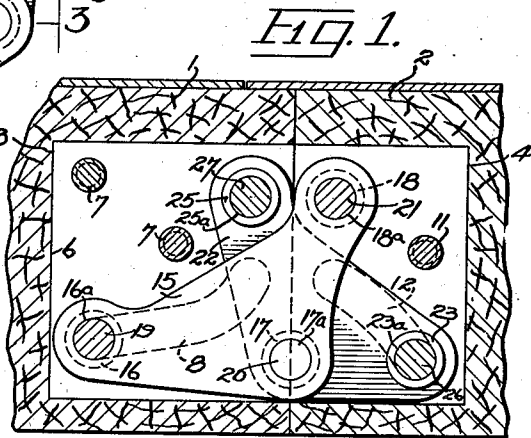


Fig. 1.



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HINGE

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6 Claims. (Cl. 16—166)

This invention relates to improvements in hinges, and refers particularly to hinges of the concealed type. This invention aims, among other things, to provide a hinge consisting of angle-shaped hinge plates which can be quickly and cheaply completed in a punch press, and links which can be just as readily fabricated also in a press, in addition to which only pins and washers are employed which are made in automatic machines, and subsequently the entire hinge assembled in a press. Thus I aim to provide a hinge in the manufacture and assembly of which only the quickest, cheapest and simplest operations are performed, and the more expensive forms of machining completely eliminated.

Another object of the invention is to provide a hinge wherein one pair of angle-shaped hinge plates is mounted upon a door frame and another pair of angle-shaped hinge plates upon a door, wherein two sets of spaced links are pivoted together, and wherein a pin extends through each set of links and its extremities travel in opposed slots formed in one pair of hinge plates as the door is opened and closed.

A further object of the invention is to provide such a hinge wherein a pivot pin is a tight fit through one set of links and bosses formed thereon, and one of the other set of links is mounted for pivotal movement upon each boss.

Yet another object of the invention is to provide such a hinge with means holding each set of links in parallel and spaced relation one with another throughout their entire length, to afford clearance between each adjacent pair of links of one set for movement of one link of the other set.

Having thus briefly and broadly stated some of the major objects and advantages of the invention I will now proceed to describe it in detail with the aid of the accompanying drawing in which:

Figure 1 illustrates a horizontal section through the hinge when closed.

Figure 2 is a horizontal section on the line 2—2 of Figure 3 showing the hinge when open.

Figure 3 is a vertical section on the line 3—3 of Figure 2.

Figure 4 is a perspective view of one of the links mounted for sliding movement between the hinge plates secured to the door frame.

Figure 5 is a perspective view showing one of the links mounted between the hinge plates secured to the door for sliding movement.

Referring to the drawing, 1 designates a door

frame and 2 denotes a door the edge faces of which are recessed at 3 and 4 respectively. Mounted as by screws 5a upon the door frame 1 are two angle-shaped hinge plates 5 having legs 6 which extend rearwardly in the recess 3, and which may be held in spaced relation as by dowels 7. Formed in the legs 6 are aligned slots 8. Similarly upon the door 2 two angle-shaped hinge plates 9 are secured as by screws 9a and have legs 10 which extend into the recess 4. These legs may be held in spaced relation by a dowel 11, and formed in the said legs are aligned slots 12.

It will be noted from the drawing that each opposed pair of slots 8 and 12 are differently curved in order to provide the desired path of movement for the door as the latter is opened and closed.

All the links 15 are identical and each has a plurality of bosses 16, 17 and 18 formed on one and the same side thereof. Through the links and their bosses 16, 17, and 18 openings 16a, 17a and 18a respectively are provided. Through the openings 16a a guide pin 19 extends, the extremities of which are slidable in the two aligned slots 8; through the openings 17a a pivot pin 20 extends; and through the openings 18a a retaining pin 21 is provided. The pin 20 is of substantially the same length as the sum total of the width of the links 15 and the bosses thereon through which that pin projects whereas the extremities of the pin 21 extend into the opposed legs 10. All the pins 19, 20 and 21 are a press fit through the links thereby holding the latter in correct spaced and parallel relation to one another.

A second set of links 22 is provided. Each link has bosses 23 and 25 on one and the same side thereof. Through the links and their bosses 23 and 25 openings 23a and 25a respectively are formed. Each link 22 is also provided with an opening 24 through which one of the bosses 17 extends so that each link 22 is pivoted on the boss 17 of one link 15. Through the openings 23a a guide pin 26 projects the ends of which are each slidable in one slot 12; and through the openings 25a a retaining pin 27 is arranged which is substantially the same length as the sum total of the thickness of all the links 22 and the depth of their bosses 25 plus the thickness of the legs 6 in which the extremities of the said pin 27 terminate. In this case too the pins 26 and 27 are a tight fit in the links 22 through which they extend thereby holding the several links in spaced and parallel relation.

The faces of all the bosses 16, 17 and 18, and 23 and 25 which rest contiguous to the legs 6 and 10 of the hinge plates 5 and 9 respectively are of substantially the same thickness as the link 22 or 15 for which these bosses provide clearance. Thus one outer link of each set moves in contact with one aligned pair of legs 6 and 10 against which it is retained by the adjacent link 15 or 22 of the other set of links, thereby supporting that outer link against movement other than in one plane. However the spacing between adjacent links of the same set between which a link of the other set moves should be somewhat greater than the thickness of the latter link to permit freedom of movement for the said latter link and to prevent a binding condition between the links.

As it is obviously advantageous from a manufacturing standpoint to make all the bosses on all the links the same thickness I provide washers 30 around all the pins. One washer 30 rests against each boss 16, 17, 18, 23 and 25 which would otherwise bear against an adjacent link of the same set.

In the arrangement shown the length of the slots 8 and 12 controls the movement of the hinge though this length of movement may be controlled in other ways if desired.

While in the foregoing the preferred embodiment of the invention has been described and shown, it is understood that it is susceptible to such alterations and modifications as fall within the scope of the appended claims.

What I claim is:

1. A hinge comprising hinge plates having opposed legs in which aligned slots are formed, two sets of links arranged alternately one link of one set upon one link of the other set, bosses formed on one side of each link of one set upon each of which one link of the other set is pivoted, a pivot pin extending through all said links and said bosses, a guide pin extending through each set of links having its extremities slidable in two of the slots, and means holding each set of links in spaced and parallel relation throughout their entire length.

2. A hinge comprising two pair of angle-shaped hinge plates, said plates being arranged in opposed pairs, one pair adapted to be mounted upon a door frame and the other pair upon a door, one leg of each hinge plate being slotted, the slots in each pair of plates being opposite one another, two sets of links, all the links of each set being identical, a boss formed on one side of each link of one set upon which one link of the other set is pivoted, a pivot pin extending through all said

links and bosses, a guide pin extending through all the links of each set having its extremities slidable in one pair of opposite slots, and other bosses on said links contacting other links of the same set to hold each set of links in parallel and spaced relation to permit free movement of the links of one set between adjacent pairs of links of the other set.

3. In a hinge, the combination set forth in claim 2 wherein a washer is provided between each adjacent pair of bosses.

4. A hinge comprising two sets of hinge plates, one set of plates being adapted to be mounted upon a door frame and the other upon a door, each set of hinge plates having two opposite slots formed therein, two sets of links, a plurality of bosses upon one and the same side of each link of both sets, said bosses spacing the links of each set from one another, each link of one set being pivoted upon one boss of a link of the other set, a pivot pin extending through all the links and the pivot bosses, a guide pin extending through all the links of each set and through a boss on each link of its set, each pin having its extremities slidable in one opposite pair of slots, and a retaining pin extending through all the links of each set and through a boss on each link of its set, each retaining pin terminating at its extremities in one of the hinge plates.

5. A hinge comprising two hinge plates each having an opposed pair of legs in which slots are formed, two alternately arranged sets of links, a guide pin extending through each set and having its extremities slidable in the slots formed in one opposed pair of legs, means around said guide pins retaining the links in correct spaced relation, both sets of links being apertured for the passage of a pivot pin therethrough, each link of one set having a boss thereon upon which one link of the other set is pivoted, whereby the pivot pin is tight in one set of links and the links of the other set are freely rotatable around the bosses on the first set, a retaining pin through each set of links the extremities of which extend into the opposed pair of legs other than the pair in which the guide pin extending through that set of links is slidable, and means around each retaining pin holding the links through which it passes in spaced relation.

6. In a hinge, the combination set forth in claim 5, wherein each opposed pair of slots in which the guide pins travel is differently curved to provide the desired path of movement for the hinge.

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