

June 27, 1939.

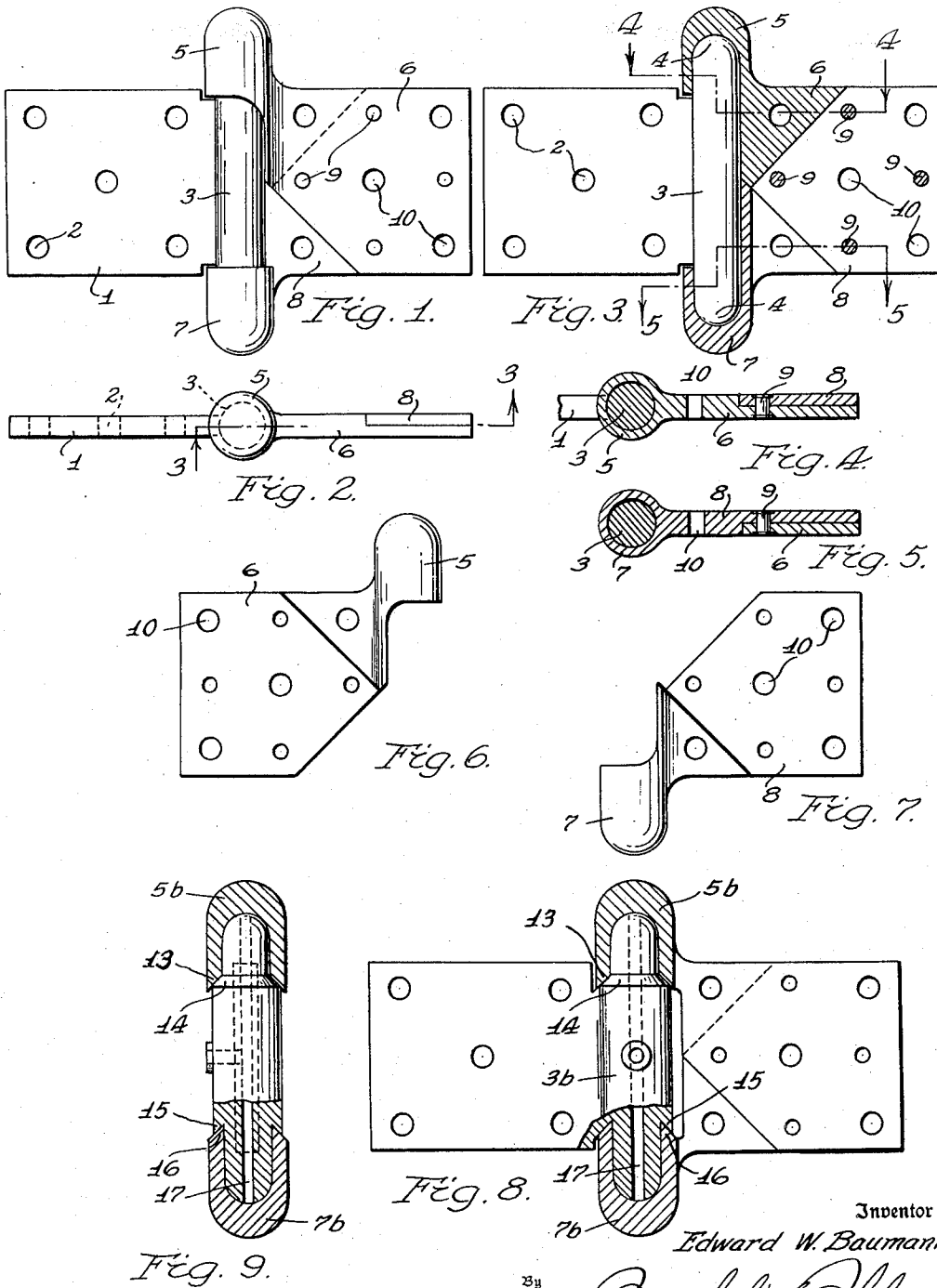
E. W. BAUMANN

2,164,047

HINGE

Filed March 17, 1937

2 Sheets-Sheet 1



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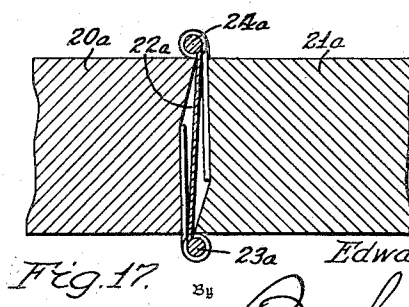
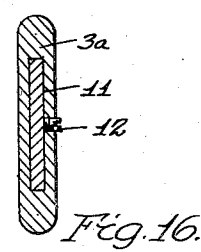
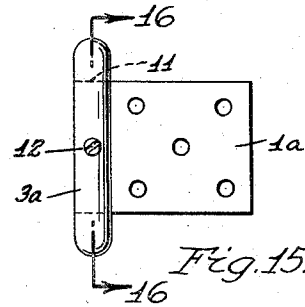
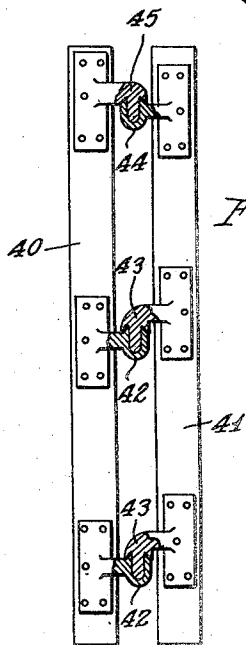
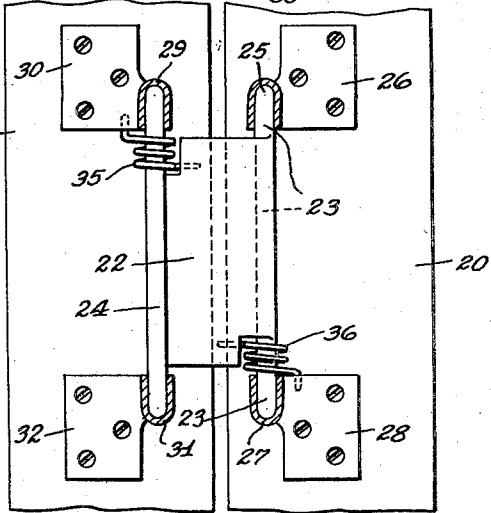
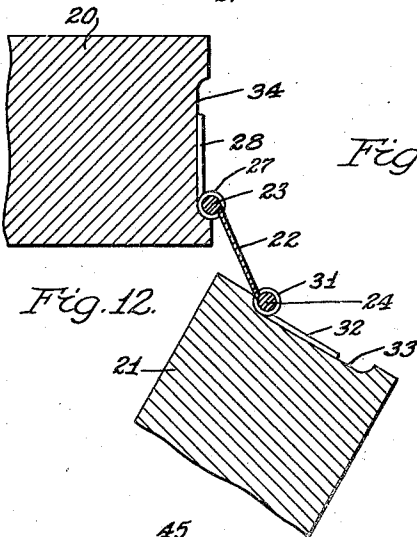
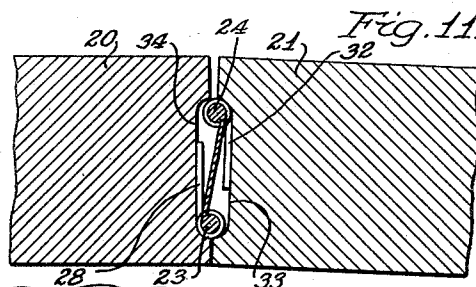
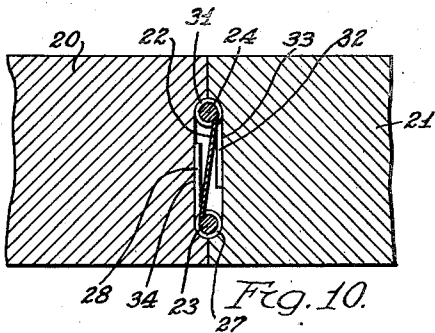
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2,164,047

HINGE

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2 Sheets-Sheet 2



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2,164,047

HINGE

Edward W. Baumann, Deming, N. Mex.

Application March 17, 1937, Serial No. 131,434

3 Claims. (Cl. 16—128)

This invention relates to hinges designed for the support of gates and doors and for connecting various other elements for relative swinging movement.

The primary object of the present invention is to provide a hinge construction wherein the contacting relatively movable parts are protected from moisture, dust, grit etc., and wherein the relatively movable parts which support the major portion of the swinging weight are constructed to retain lubricants for a comparatively long period of time. Excessive wear and also undesirable squeaking noises are thus done away with.

Another object of the invention is to provide a hinge structure of the character referred to above which lends itself to use in conventional type door hinges, gate hinges, concealed type hinges and double acting hinges.

Another object of the invention is to provide a hinge in which the bracket supporting the spindle upon which another hinge part pivots is removable therefrom. The spindle and its supporting bracket are held in assembled relation by a set screw so that by removing the set screw a door or the like may be removed from its support without the necessity of removing the bracket securing elements or screws.

With the above and other ends in view the invention is more fully disclosed with reference to the accompanying drawings, in which

Figure 1 is an elevation of a hinge;

Fig. 2 is a top plan thereof;

Fig. 3 is a view, partly in section, taken on the line 3—3 of Fig. 2;

Figs. 4 and 5 are sections taken respectively on the lines 4—4 and 5—5 of Fig. 3;

Figs. 6 and 7 are details of two of the parts which form one of the hinge brackets;

Fig. 8 is an elevation, partly broken away and in section, illustrating a hinge having lubricating means;

Fig. 9 is a transverse section of the hinge shown in Fig. 8;

Figs. 10, 11 and 12 are sections of a concealed type hinge, each illustrating a different operative stage thereof;

Fig. 13 is an elevation of the concealed type hinge in a fully opened position;

Fig. 14 is a view, partly in elevation and partly in section, illustrating still another hinge structure;

Fig. 15 is an elevation of a hinge bracket;

Fig. 16 is a section taken on the line 16—16 of Fig. 15, and

Fig. 17 is a section illustrating a double acting hinge.

Like characters of reference are employed throughout to designate corresponding parts.

Referring first to Figs. 1 to 7, the numeral 1 designates a hinge part having apertures therein through which securing elements may be inserted. On one of the edges of the part 1 is formed a spindle 3, the upper and lower ends of which are semi-spherical as designated at 4. Received upon the upper end of the spindle 3 is a socket member 5 having a plate 6 formed integral therewith, and upon the lower end of the spindle is received a socket member 7 having a plate 8 integral therewith. The two plates 6 and 8 are secured together by fastening elements 9 and have apertures 10 through which attaching elements may be inserted.

In operation, with the two plates 6 and 8 secured to a door as a unit and the hinge part 1 secured to a door jamb, relative swinging movement may take place about the axis of the spindle 3. During such swinging movement the contacting surfaces of the socket members 5 and 7 and the semi-spherical ends 4 on the spindles are protected from water, dust, grit etc., due to their own shapes and interfitting relationship.

Ordinarily, with the two hinge parts secured to a door and door jamb respectively, in order to remove the door it is necessary to disconnect one of the hinge parts. In order to make this unnecessary the hinge part may be made separable from the spindle. As shown in Figs. 15 and 16, the spindle 3a has a slot 11 therein into which the end of the hinge part 1a fits snugly. A set screw 12 is mounted in the spindle 3a and engages the inserted end of the part 1a to retain it in the slot.

In Figs. 8 and 9 a hinge such as shown in Figs. 1 to 7 is shown with lubricating means and other structural features which adapt it for use out of doors where it is subject to varying weather conditions. As shown, the upper socket member 5b has a skirt formation 13 which encircles a tapered shoulder 14 on the spindle 3b. The spindle 3b also has a skirt formation 15 which encircles the upper bevelled end 16 of the lower socket member 7b. The two skirts 13 and 15 shed water and prevent it from seeping between the relatively movable contacting parts of the spindle and socket members. In addition, the spindle 3b is provided with a lubricating channel 17 through which lubricant may be forced to the relatively movable contacting parts.

Referring to Figs. 10 to 13, the numeral 20

designates a door jamb and 21 a door. A link 22 has spindles 23 and 24 at opposite sides thereof, the upper and lower ends of the spindles being semi-spherical. The upper end of the spindle 23 is received in a socket member 25 having an integral plate 26 attached to the edge of the door jamb 20, and the lower end of the spindle 23 is received in a socket member 27 having an integral plate 28 attached to the door jamb 20. The link 22 is thus attached to the door jamb 20 in such manner that it may swing about the axis of the spindle 23. The upper end of the spindle 24 is received in a socket member 29 having an integral plate 30 attached to the edge of the door 21 and the lower end of the spindle 24 is received in a socket member 31 having an integral plate 32 attached to the edge of the door 21. The link 22 is thus supported for swinging movement about the axis of the spindle 24.

The edge of the door jamb 20 is recessed at 34 for the reception of the hinge plates 26 and 28, and the edge of the door is recessed at 33 for the reception of the hinge parts 30 and 32. Furthermore, the link 22 extends tangentially to the spindles 23 and 24, as illustrated in Figs. 10, 11 and 12, with the result that the hinge permits the edge of the door to rest flush against the door jamb when closed. The hinge is, therefore, entirely concealed when the door is closed.

Concealment of the hinge is made possible by the provision of two axes of swinging movement, such as shown. However, in order to close the door after it has once been opened it is necessary that the link 22 be moved through the position shown in Fig. 11 to that shown in Fig. 10 and in the absence of means for causing such movement of the link an endwise movement as well as swinging movement must be imparted to the door as it is being closed. The invention, however, provides means for moving the link 22 inwardly, in order to permit closing of the door. This means comprises a spring 35 mounted upon the spindle 24 and engaging the plate 30 and link 22 in such manner as to normally urge the link to the position shown in Fig. 10. A similar spring 36 is mounted on the spindle 23 and engages the link 22 and the plate 28. The spring 36 functions to move the door and link to the relative position shown in Fig. 10.

Referring to Fig. 17, the hinge there shown is identical in structure to that shown in Figs. 10

to 13. In this view, the spindle 23a is disposed outwardly of the outside surface of the door jamb 20a and the door 21a, and the spindle 24a is disposed outwardly of their opposite outer surfaces. The two spindles are joined by a link 22a and are supported in socket members in the manner above described. The door 21a may, therefore, swing about the axis of either spindle and the hinge thus constitutes a double acting hinge.

In Fig. 14 the numerals 40 and 41 designate two relatively movable members. Secured to the member 40 are two spaced apart socket members 42 and secured to the member 41 are two spindles 43 having semi-spherical ends received in the socket members 42 respectively. Mounted upon the member 41 is a socket member 44 receiving a spindle 45 secured to the member 40. The two members 40 and 41 may hinge relatively about the axes of the socket members and spindles and may be separated by removing either the socket member 44 or the spindle 45.

Although specific embodiments of the invention have been illustrated and described it will be understood that various changes may be made within the scope of the appended claims without departing from the spirit of the invention, and such changes are contemplated.

What I claim is:

1. A hinge comprising a pair of relatively movable members, one of said members having a spindle, the other of said members being sectionally constructed of a pair of directly attached together plates, each of said plates having an integral socket member to receive opposite ends of said spindle.

2. A hinge comprising a pair of relatively movable members one of said members having a spindle and the other of said members comprising a pair of overlapping secured together plates, one of said plates having an upper socket to receive the upper end of the spindle and the other of said plates having a lower socket to receive the lower end of said spindle.

3. A hinge comprising, a pair of relatively movable members, one of said members having a spindle, the other of said members being sectionally constructed of a pair of overlapping recessed plates secured together, said plates each having an integral extended socket aligned to receive opposite end portions of said spindle.

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