June 1, 1943. J. P. DOMAN 2,320,772

HINGE

Filed Nov. 10, 1941 2 Sheets-Sheet 1

Fig. 1.

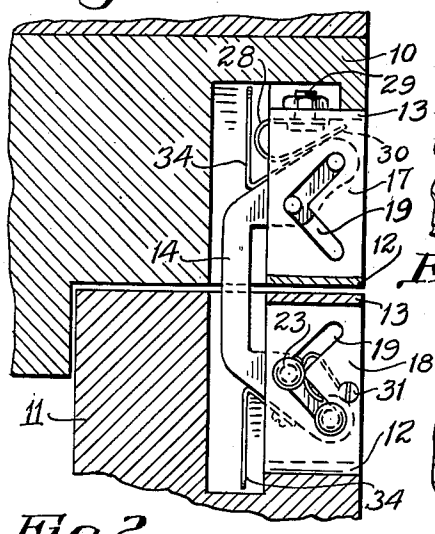


Fig. 3.

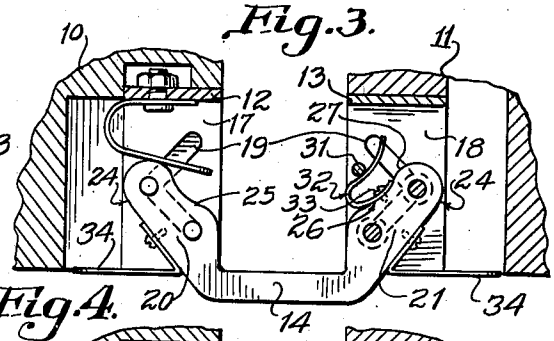


Fig. 4.

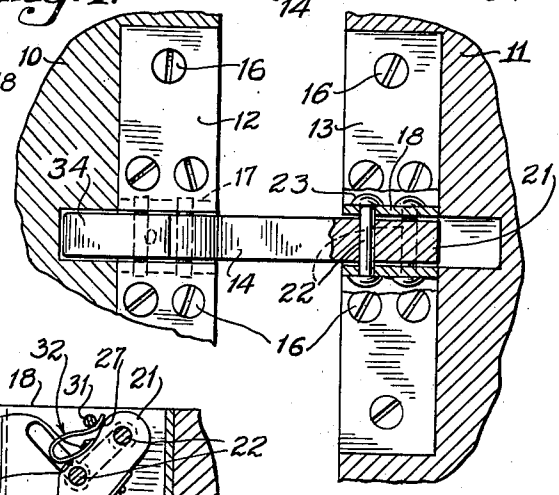


Fig. 2.

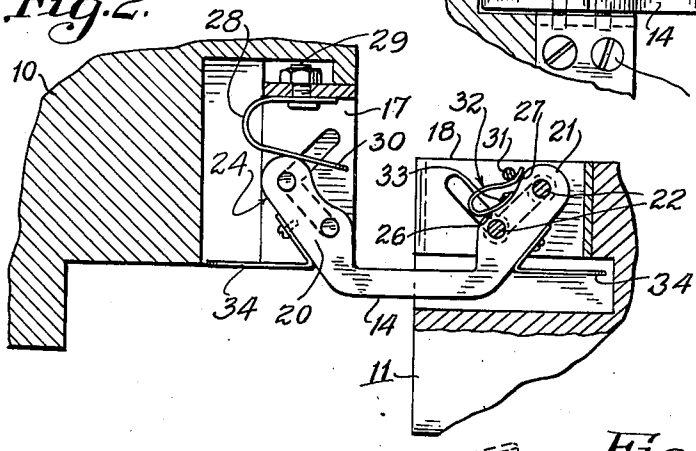
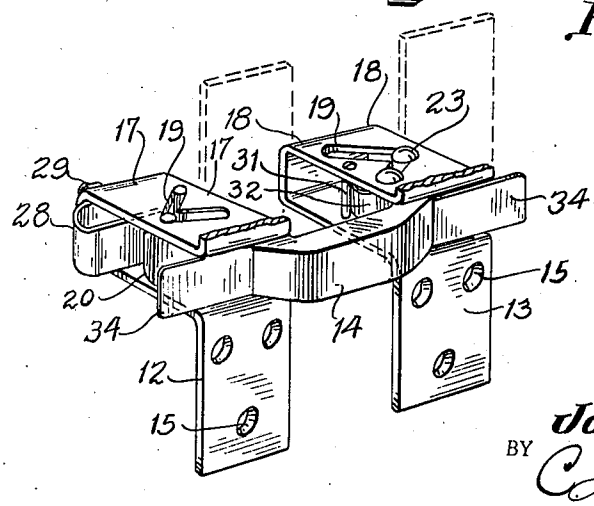


Fig. 5.



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Fig. 6.

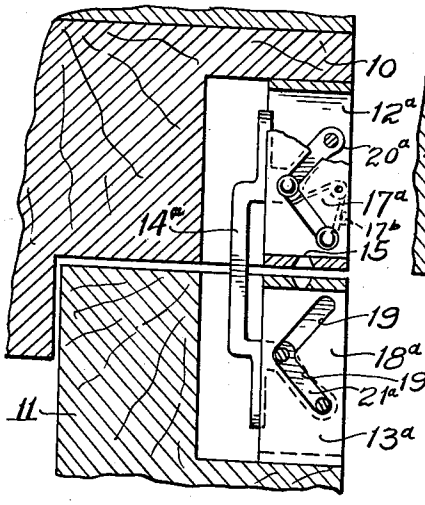


Fig. 8.

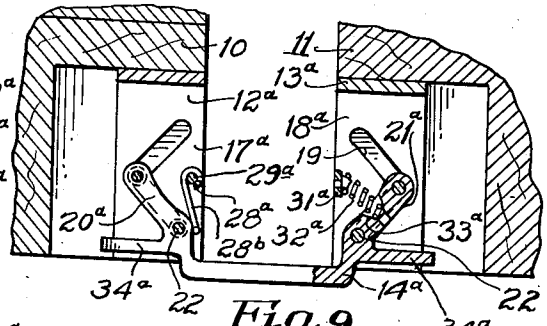


Fig. 9.

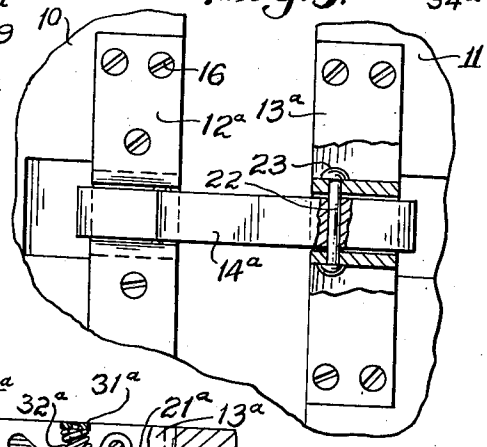


Fig. 7.

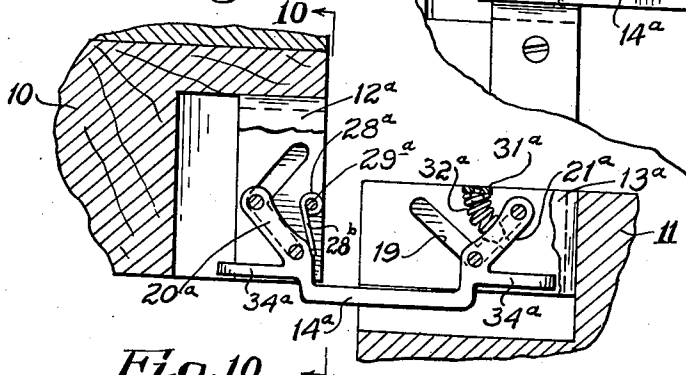


Fig. 10.

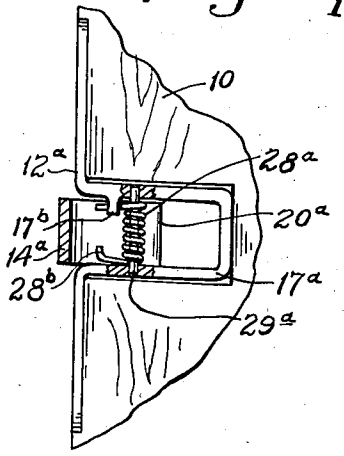
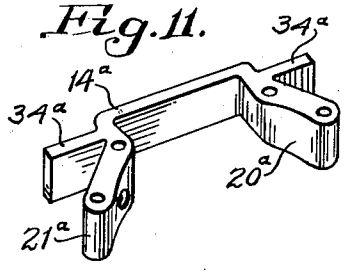


Fig. 11.



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Patented June 1, 1943

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UNITED STATES PATENT OFFICE

2,320,772

HINGE

John P. Doman, Los Angeles, Calif.

Application November 10, 1941, Serial No. 418,620

7 Claims. (Cl. 16—164)

This invention relates to hinges and more especially to concealed hinges for use on doors and the like.

This application is for improvements over hinges shown and described in my prior application Serial No. 374,092 filed January 11, 1941 and my prior patents numbered 2,284,951 and 2,295,638.

An object of the invention is to provide a simple, practical, and inexpensive hinge construction.

Another object is to provide a concealed hinge for doors and the like, whereby the door may be swung through a full arc of 180 degrees.

A further object is to provide a concealed hinge having a link and stabilizing means therefor to prevent a wobbling effect otherwise occurring with the use of hinges of this type.

Other objects and advantages will appear and be brought out more fully in the following specification, reference being had to the accompanying drawings, wherein:

Fig. 1 is a top view of a hinge embodying my invention as seen in position in a door and jamb;

Fig. 2 is a similar view showing the door in partially opened position;

Fig. 3 is a similar view showing the door in fully opened position;

Fig. 4 is an elevation view of the hinge as seen in Fig. 3;

Fig. 5 is a perspective view of the hinge itself;

Fig. 6 is a view similar to Fig. 1 showing a modified form of my hinge invention;

Fig. 7 is a view similar to Fig. 2 showing the modified hinge;

Fig. 8 is a view similar to Fig. 3 of the modified hinge;

Fig. 9 is an elevation view of the hinge shown in Fig. 9;

Fig. 10 is a sectional view taken along the line 10—10 of Fig. 7; and

Fig. 11 is a perspective view of the link shown in Figs. 6 to 10.

Referring more particularly to the drawings, I show a door jamb 10 and a door 11 each suitably recessed to receive a hinge part. The hinge comprising my invention consists of bracket members 12 and 13 and a link 14, the brackets being provided with screw holes 15 for securing screws 16. Bracket 12 has a U-shaped portion 17, and bracket 13 has a U-shaped portion 18, each having paralleling side portions which are provided with slots 19 substantially right-angular as shown.

Link 14 has arms 20 and 21 formed at an angle of substantially 120 degrees with respect to the body of the link. Arms 20 and 21 are each bored to receive a pair of pins 22 which extend through slots 19 and have rivet heads or the like 23 outside of U-portions 17 and 18, sufficient clearance being provided to permit a slidable movement of the pins in the slots when the hinge is actuated.

Arms 20 and 21 each have a flat portion 24, and the arms have concave portions 25 and 26 respectively. Arm 21 has a contact surface portion 27. A strap spring 28 is secured in the U-shaped portion 17 of bracket 12 by a bolt 29, and has an end portion 30 adapted to press against the curved end portion of arm 20.

A pin 31 is secured across the U-shaped portion 18 of bracket 13, and a strap spring 32 bears against pin 31 and is secured as by a screw 33 to the concave portion 26 of arm 21. The angular shaped plate 34 is secured to each of arms 20 and 21 and these plates serve to fill the space required for the movement of link 14, and gives the hinge a trim appearance when the door is in the open position.

The operation of the invention as described should be clear from the foregoing description. Springs 28 and 32 serve to retain arms 20 and 21 in one or the other of the extreme positions in U-shaped portions 17 and 18 of the brackets, and prevent a wobbling or see-saw movement of the door when hung vertically, thus maintaining the door in true vertical position, and the upper and lower links 14 of a hinge pair parallel and aligned at all times.

In Figs. 6 to 11 I show a modified form of hinge comprising brackets 12*a* and 13*a* substantially similar to brackets 12 and 13. A similar link 14*a* is provided having arms 20*a* and 21*a* and extension portions 34*a* similar to plates 34. U-shaped portions 17*a* and 18*a* are provided with slots 19 and pins 22, having rivet heads 23, as in Figs. 1 to 5.

A coiled spring 28*a* is secured on a pin 29*a* which extends across U-shaped portion 17*a* which has a post extension 17*b*, which serves as an abutment for an end extension of a spring 28*a*. Spring 28*a* has its other end extension 28*b* bearing against arm 20*a*.

A coiled spring 32*a* is secured between a bar 31*a* which extends across U-shaped portion 18*a* and a recess 33*a* in arm 21*a*.

The operation of the invention as shown in Figs. 6 to 11 is substantially similar to that of Figs. 1 to 5, however, that of Figs. 6 to 11 is the preferred form of the invention. Springs

28*a* and 32*a* serve to retain arms 20*a* and 21*a* in either of the extreme positions and serve to prevent wobbling or see-saw movement of the door in substantially the same manner as springs 28 and 32.

Having described my invention, what I claim is:

1. A hinge as described comprising a pair of bracket members each having a U-shaped portion, the opposite sides of said portions each having a V-shaped pin guide slot, a link having angularly disposed end portions, a pair of bearing pins in each said end portion and extending into and being slidable in the said guide slots of one of said bracket U-shaped portions and a coiled spring adapted to engage an end of said link whereby to resiliently secure the pins of the adjacent end portion of the link in an extreme position in their respective slots.

2. A hinge as described comprising a pair of bracket members each having a U-shaped portion, the opposite sides of said portions each having a V-shaped pin guide slot, a link having angularly disposed end portions, a pair of bearing pins in each said end portion and extending into and being slidable in the said guide slots of one of said bracket U-shaped portions and a coiled spring adapted to engage a recess in an end portion of said link whereby to resiliently secure the pins of the adjacent end portion of the link in an extreme position in their respective slots.

3. A hinge as described comprising a pair of bracket members each having a U-shaped portion, the opposite sides of said portions each having a V-shaped pin guide slot, a link having angularly disposed end portions, a pair of bearing pins in each said end portion and extending into and being slidable in the said guide slot of one of said bracket U-shaped portions, a coiled spring secured in one of said U-portions and having a free end portion adapted to engage a side portion of one of said link end portions whereby to resiliently secure the pins of the adjacent end portion of the link in one of the extreme positions thereof in their respective slots.

4. A hinge as described comprising a pair of bracket members each having a U-shaped portion, the opposite sides of said portions each having a V-shaped pin guide slot, a link having angularly disposed end portions, a pair of bearing pins in each said end portion and extending into and being slidable in the said guide slots of one of said bracket U-shaped portions, a pin extending across the opening formed by said bracket U-portions, a coiled spring secured on said pin and adapted to engage one of said end portions whereby to resiliently secure the pins of the adjacent end portion of the link in one of the extreme positions thereof in their respective slots.

5. A hinge as described comprising a pair of bracket members each having a U-shaped portion, the opposite sides of said portions each having a V-shaped pin guide slot, a link having angularly disposed end portions, a pair of bearing pins in each said end portion and extending into and being slidable in the said guide slots of one of said bracket U-shaped portions and a pair of springs each adapted to engage one end of said link whereby to resiliently secure said pins in an extreme position in said slots.

6. A hinge as described comprising a pair of bracket members each having a U-shaped portion, the opposite sides of said portions each having a V-shaped pin guide slot, a link having angularly disposed end portions, a pair of bearing pins in each said end portion and extending into and being slidable in the said guide slots of one of said bracket U-shaped portions, a strap spring secured in one of said U-portions and having a free end portion adapted to engage an end and side portion of one of said link end portions whereby to resiliently secure the adjacent pins in one of the extreme positions thereof in their respective slots.

7. A hinge as described comprising a pair of bracket members each having a U-shaped portion, the opposite sides of said portions each having a V-shaped pin guide slot, a link having angularly disposed end portions, a pair of bearing pins in each said end portion and extending into and being slidable in the said guide slots of one of said bracket U-shaped portions, one of said end portions having a concave groove, an abutment pin extending across the opening formed by said bracket U-portions, a strap spring secured between said abutment pin and one of said link end portions adapted to engage the groove thereof whereby to resiliently secure the adjacent pins in either of the extreme positions thereof in their respective slots.

JOHN P. DOMAN.