April 18, 1933. E. BOMMER 1,904,120

DOOR HINGE

Filed Dec. 8, 1930

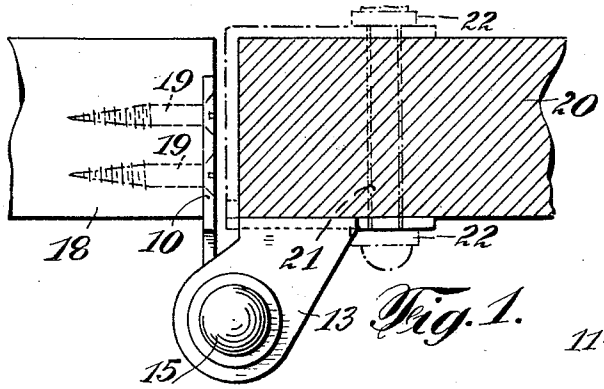


Fig. 1.

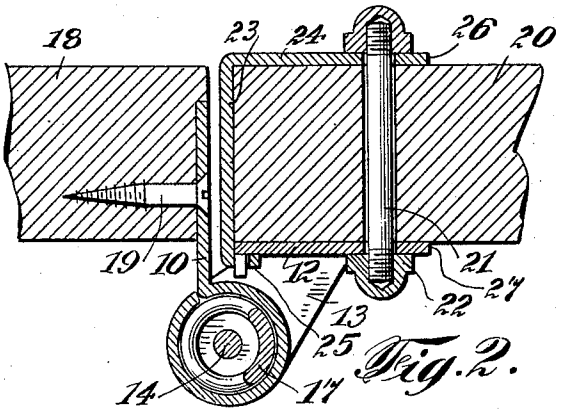


Fig. 2.

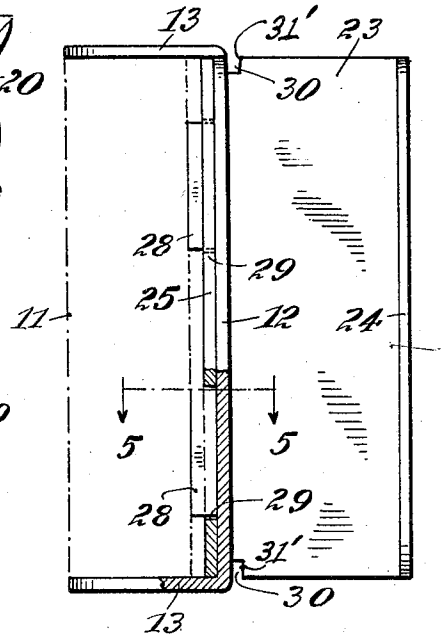


Fig. 4.

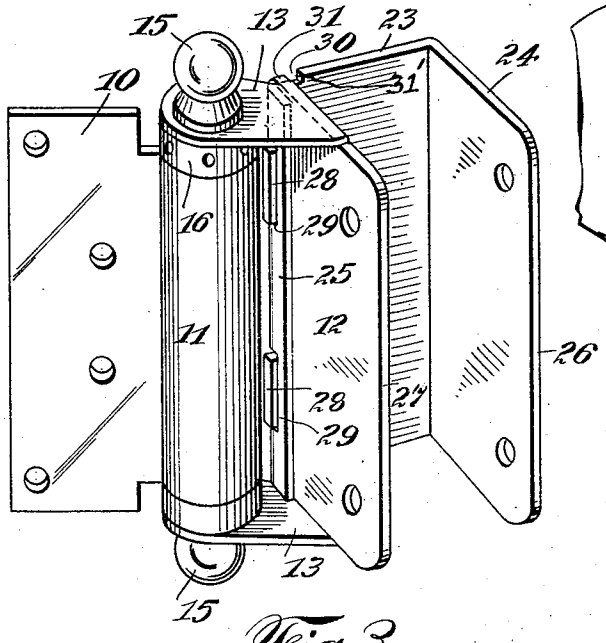


Fig. 3.

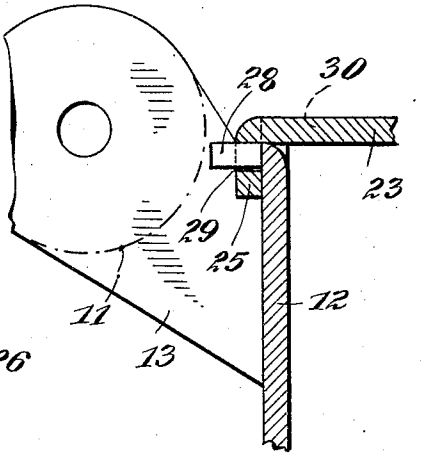


Fig. 5.

INVENTOR
Emil Bommer
BY
C. F. Goepel
his ATTORNEY

Patented Apr. 18, 1933

1,904,120

UNITED STATES PATENT OFFICE

EMIL BOMMER, OF BROOKLYN, NEW YORK

DOOR HINGE

Application filed December 8, 1930. Serial No. 500,679.

This invention relates to hinges and more particularly to an improved hinge for supporting a swinging door to a stile.

An object of the invention is to provide a door hinge having an adjustably connected ornamental member, fashioned and arranged with a portion which is adapted to serve in the capacity of a reinforcement between the hinge ears in order to maintain the hinge ears in proper spaced relation so that there will be no binding action upon the hinge barrel.

For the proper support of the door to the stile, it is well recognized that the construction of the hinge should be such that the regions where the door leaf and stile leaf are secured respectively to the door and stile should be as close as possible to the hinge barrel. Thereby, through the hinge barrel, the weight of the door is imposed on the stile at a region close to the door itself. In carrying out my invention, full recognition is given to this principle in the support of the door upon the stile; and in this regard my invention has for an object to provide an adjustably connected ornamental member which, while serving to prevent binding action upon the hinge barrel as aforesaid, is associated with the stile leaf in the capacity of an auxiliary reinforcing means therefor, the nature of the association being such that the main reinforcement centers at the region where it is most effective, that is to say, along the lines of strain through the hinge barrel and hinge ears to where the weight of the door is supported by the stile leaf upon the stile.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawing wherein is shown a single embodiment of the invention.

In the drawing, wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 represents a top plan view showing fragmentary portions of a door and stile connected by a hinge, the stile being in section, and my improvements being shown in association with the stile leaf in dot-dash lines;

Fig. 2 represents a horizontal cross section, showing my improved hinge supporting the door on the stile;

Fig. 3 is a perspective view of a hinge made in accordance with the invention;

Fig. 4 represents an elevational view, partly in section, with the barrel and door leaf removed and looking toward the outer face of the stile leaf; and

Fig. 5 is a cross section on an enlarged scale, taken on the line 5—5 of Fig. 4.

In carrying my invention into effect any suitable or approved door hinge may be employed, that shown by way of example comprising a door leaf 10 furnished with a barrel 11 and a stile leaf 12 formed with projecting ears 13 disposed at opposite ends of the barrel and connected therewith by a hinge pin 14 the opposite ends of which are furnished with thumb pieces 15, there being suitably provided in well-known manner between the upper end of the barrel and the upper ear 13 a suitable adjusting member 16 by means of which to adjust and tension the spring 17 within the barrel. The leaf 10 is secured to the door 18 by screws 19 or equivalent means, while the leaf 12 may be secured to the stile 20 by bolt and nut structures as 21 and 22 or any equivalent means. Through these parts, all old and well known, the weight of the door 18 is transmitted to the stile 20, the leaf 10 providing a support for the door and the leaf 12 being supported directly to the stile.

My invention, in its preferred embodiment, comprises an ornamental auxiliary member in adjustable association with the stile leaf 12. This auxiliary member is comprised of a plate 23 which is produced along its opposite longitudinal edges with the flanges 24 and 25, such flanges being at right angles to the plate. The plate 23 is adapted to be placed against the outer edges of the stile 20 and stile leaf 12, with the flange 24 overlying the face of the stile remote from the leaf 12, while the flange 25 overlaps the outer face of the said leaf 12. The flange 24 is of greater width from the plate 23 than

the flange 25, its extent in this regard preferably being such that its free end 26 will terminate substantially even with the free end 27 of the leaf 12.

According to an important feature of my improvements, the inner flange 25, which overlaps the leaf 12, constitutes spacing or bracing means interposed between the two hinge ears 13, this flange being of such length that its opposite ends will have intimate engagement with the inner faces of said hinge ears. Under this arrangement, the hinge ears are braced and held apart in their proper relative positions against in-bending towards each other so as to induce a binding action upon the hinge barrel when the thumb pieces 15 are turned tightly against the outer faces of the hinge ears, or when the hinge pin and other parts of the assembly are subjected to excessive strains because of improper swinging or jolting of the door.

According to another important feature of my invention, the ornamental auxiliary member is adjustable relatively with respect to the stile leaf 12. In carrying out this adjustment, the stile leaf 12 may be formed with spaced-apart outwardly projecting key strips 28 which slidably fit in corresponding openings or slots 29 provided for the purpose transversely through the flange 25. The edge plate 23 may be provided at its opposite ends adjacent the flange 25 with notches 30 wherein are slidably received outward projections 31 formed on the stile leaf 12, it being noted that the projections 31 lie in a plane at right angles to the key strips 28. The key strips 28 and projections 31 serve as guiding means for maintaining the ornamental auxiliary member in association with the stile leaf for relative adjustment with respect thereto whereby to adjust the space between the stile leaf 12 and flange 24 to the precise thickness of the stile. When the leaf 12 in conjunction with the ornamental auxiliary member has been applied to and adjusted on the stile, the bolt means 21 by which the leaf 12 is secured to the stile may also be employed for securing the flange 24 to the stile so that the stile leaf and its ornamental auxiliary member will together be secured to the stile.

The ornamental appearance of the hinge is enhanced by the provision of the ornamental auxiliary member; and it is pointed out that the auxiliary member reinforces the stile leaf in such a way that the main reinforcement centers between the hinge ears in a place where the hinge ears are braced and at the region where the weight of the door is supported by the stile leaf upon the stile.

It is to be noted that in the construction and assembly herein described, the key strips terminate in close proximity to the barrel but without interfering with the turning thereof; also that the shoulders 31′, defining the outer ends of the notches 30, serve as stops for the projections 31 to limit movement of the auxiliary member toward the barrel at a locus where the flange 25 will fall short of engaging the barrel and thereby avoid any binding of the barrel by the flange 25. With the key strips 28 seated in the slots 29 and the projections 31 occupying the notches 30, the ornamental auxiliary member cannot be removed from the assembly until the hinge pin and barrel have first been removed, when space is provided for such relative angular movement of the auxiliary plate upon the key strips 28 as will permit the projections 31 to slip by the shoulders 31′ as the auxiliary plate is moved in a direction for withdrawing the slots 29 from the key strips 28. Under this arangement, it will be evident that the auxiliary member when once assembled in position becomes a permanent part of the hinge assembly so that it cannot be disconnected accidentally in packing, in transit, or lost by workmen.

It will be evident that the construction hereinbefore set forth is capable of a considerable range of change and modification without in any manner departing from the spirit of my invention and I accordingly do not wish to be understood as limiting myself to the specific details of construction hereinbefore set forth except as hereinafter claimed.

I claim:—

1. In a hinge of the character described, a pair of pivotally connected leaves, one including a hinge barrel and the second including hinge ears between which the barrel is disposed, a reinforcing member adjustably associated with the second leaf and comprising a plate formed along its opposite longitudinal edges with projecting flanges, one of which is disposed between the barrel and the second leaf and between said ears so as to provide bracing means between said ears, with the other flange disposed at the opposite side of said second leaf, both of said flanges being parallel with said second leaf.

2. In a hinge of the character described, a pair of pivotally connected leaves, one including a hinge barrel and the second including hinge ears between which the barrel is disposed, a reinforcing member for the second leaf and comprising a plate formed with projecting parallel flanges, one of which is disposed between the barrel and the second leaf and between said ears so as to provide bracing means between said ears, with the other flange disposed at the opposite side of said second leaf, and guide means between said second leaf and member to provide for the adjustment of the member relatively with respect to said second leaf.

3. In a hinge of the character described, a pair of pivotally connected leaves, one includ-

ing a hinge barrel and the second including hinge ears between which the barrel is disposed, a reinforcing member for the second leaf, consisting of a plate formed with a projecting flange disposed between the barrel and second leaf and between said ears so as to provide bracing means between said ears, and guide means between said second leaf and the flange comprising a key strip projecting from the second leaf toward the barrel and engaging a corresponding opening in the flange, said key strip and opening providing for the adjustment of the reinforcing member relatively with respect to said second flange.

4. In a hinge of the character described, a pair of pivotally connected leaves, one including a hinge barrel and the second including hinge ears between which the barrel is disposed, an auxiliary plate movably associated with the second leaf and having a flange disposed between the barrel and second leaf and between said hinge ears, and guide means between said second leaf and plate, comprising notches in the opposite ends of the plate adjacent said flange and projections on the leaf engaging said notches, the wall portions of said notches remote from said flange constituting stops for the projections to limit movement of the plate toward the barrel and to thereby prevent any binding action of said flange upon the barrel.

5. In a hinge of the character described, the combination of pivotally connected door and stile engaging leaves, including a hinge barrel on one leaf and hinge ears on the other leaf disposed at opposite ends of the barrel, an auxiliary member adjustably associated with the leaf having the hinge ears and a lateral flange on the auxiliary member disposed between the hinge ears and between the barrel and last-mentioned leaf, said flange overlapping a portion of said last-mentioned leaf.

6. In a hinge of the character described, the combination of pivotally connected door and stile engaging leaves, including a hinge barrel on one leaf and hinge ears on the other leaf disposed at opposite ends of the barrel, an auxiliary member extending across the outer edge of the leaf having the hinge ears, a lateral flange on the auxiliary member disposed between the hinge ears and overlapping the outer face of said last-mentioned leaf, and an adjustable connection between said last-mentioned leaf and said flange, comprising a key member projecting outwardly from said last-mentioned leaf toward the barrel, there being an opening in said flange for adjustably receiving said key member.

In testimony that I claim the foregoing as my invention, I have signed my name hereto.

EMIL BOMMER.