March 29, 1960 P. J. MARKS 2,930,074

HINGED DOOR CHECK

Filed June 13, 1958 2 Sheets-Sheet 1

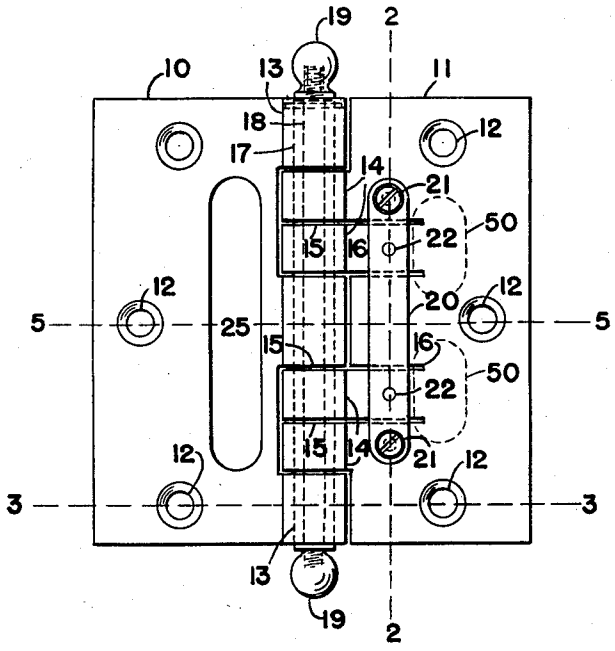


FIG. 1

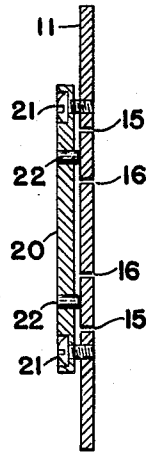


FIG. 2

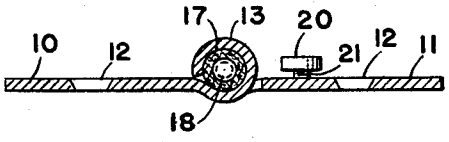


FIG. 3

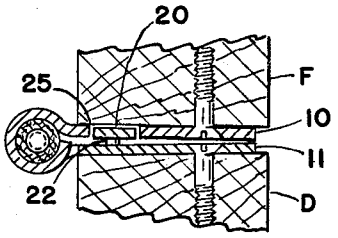


FIG. 5

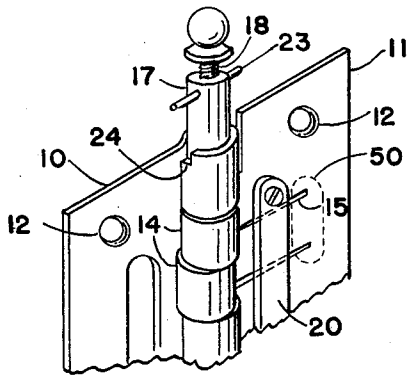


FIG. 4

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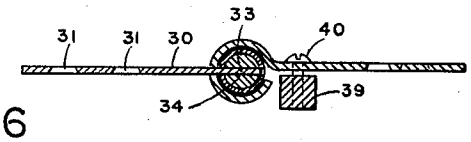


FIG. 6

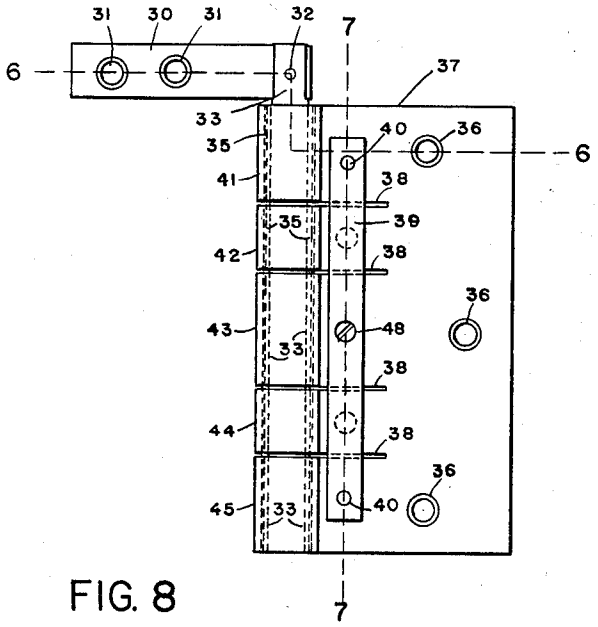


FIG. 8

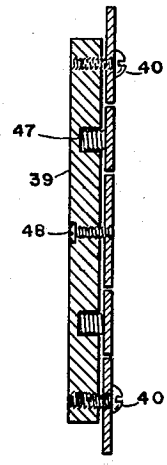


FIG. 7

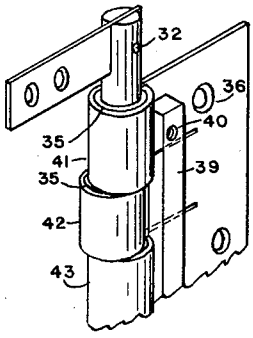


FIG. 9

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HINGED DOOR CHECK

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8 Claims. (Cl. 16—140)

This invention relates to an improved hinged device, and more particularly to an improved leaf hinged check device having adjustable means for frictionally holding a swinging member, such as a door, in any desired position.

In certain instances, it is desirable to provide a means for reliably maintaining swinging members, such as doors, in a desired open position, or to provide a means for preventing their inadvertent slamming because of winds, drafts, or other causes.

As most existing door and frame constructions are adapted to employ conventional leaf type hinges, the primary object of this invention is to provide an improved hinged check device which is easily used in place of a conventional leaf hinge or installed in addition thereto.

Another object of this invention is to provide an improved leaf hinged check device having means inherent in the device itself for frictionally holding the device in a predetermined angular position.

Another object of this invention is to provide an improved leaf hinged check device having a means for adjusting the bearing friction between the moving parts of the hinge.

Another object of this invention is to provide an improven hinged check device having means for varying its frictional resistance when in position.

A still further object of this invention is to provide an improved frictionally adjustable leaf hinged check device which is adaptable to replace an existing hinge assembly.

A still further object of this invention is to provide an improved frictionally adjustable leaf hinged check device which can be easily installed on existing door frame assemblies.

A still further objection of this invention is to provide an improved frictionally adjustable leaf hinged check device which is simple in its construction, and reliable and effective in its operation.

Other objects, purposes, and characteristic features of this invention will be apparent from the accompanying drawings, the specifications, and the recital of the appended claims.

In the drawings:

Fig. 1 is a front view of one embodiment of the leaf hinged check device in assembled position;

Fig. 2 is a cross-sectional view of the leaf hinged check device taken at line 2—2;

Fig. 3 is a cross-sectional view of the leaf hinged check device taken at line 3—3;

Fig. 4 is a perspective view of a portion of the leaf hinged check device;

Fig. 5 is a cross-sectional view of Fig. 1 at line 5—5 of the leaf hinged check device in a closed position.

Fig. 6 is a cross-sectional view of a modified form of leaf hinged check device taken at line 6—6 of Fig. 8;

Fig. 7 is a cross-sectional view of the modified form of the leaf hinged check device taken at line 7—7 of Fig. 8;

Fig. 8 is a front view of the modified form of the leaf hinged check device;

Fig. 9 is a perspective view of a portion of the modified leaf hinged check device showing the misaligned position of the journal with the rod removed.

The embodiment of the invention shown in Figs. 1 through 4 is adaptable to replace the conventional leaf door hinge commonly in use. It comprises two generally rectangular flat leaves 10 and 11, which are adapted to be fastened to the door and frame respectively by means of screws inserted in the countersunk opening 12. The leaf 10 is provided with axially aligned bearings or journals 13 integrally formed therewith. The leaf 11 is provided with integrally formed and axially aligned journals 14. When in position, the journals 14 of the leaf 11 interengage and axially align with the journals 13 of the leaf 10.

Each of the journals 14 is transversely split by an elongated cut or slit 15 which extends into the flat portion of the leaf 11. The leaf 11 is also provided with two substantially parallel elongated slits 16 which extend into the flat portion of the leaf 11 on the same lines or planes as the edges of the journals 14. The elongated slits 15 and 16 provide flexibility and lateral deflectability to the intermediate portions of the journals 14. In accordance with the size of the hinged device, the flat portion of the leaf 11 may be formed with elliptical depressions 50 on its underside to render a greater flexibility to the journals 14.

Frictionally mounted in the journals 13 and 14 of the leaves 10 and 11 is a fibrous tubular rod or sleeve 17. The sleeve 17 engages and surrounds a rod or hinge pin 18. Connected to the upper end of the fiber sleeve 17 are pins 23 which rest in slots 24 formed in the outer edge of the journal 13 of the leaf 10, and are provided to prevent rotation of the rod or sleeve 17 relative to the journal 13. Each end of the hinge pin 18 is adaptable to threadably receive a retaining nut 19. The retaining nuts 19 may be knurled or otherwise configurated to permit easy assembly or disassembly.

An elongated pressure bar 20, which is substantially the same thickness as the leaf 10, is threadably and adjustably secured to the flat portion of the leaf 11 across the slits 15 and 16 and alongside the journals 14 by adjusting screws 21.

The pressure bar is provided with rivets or studs 22 which are adapted to engage the flexible surface of the leaf 11 between each pair of slits 15 and 16 respectively. The tightening of the adjusting screws 21 creates a tension on the outer sections of journals 14 and a pressure on the inner flexible portions of the journals 14 thereby, tending to cause a lateral flexing of the leaf 11 and an axial misalignment of the journals 14, which increases the frictional resistance of the hinge pin 18 and the sleeve 17 in the journal 14.

The leaf 10 has an elongated opening 25 adaptable to receive the pressure bar 20 when the hinge is in a closed position. This arrangement permits the surfaces of the leaves 10 and 11 to lay flat in relation to each other, thereby permitting a door D, for example, on which it is used, to be completely closed. Although Fig. 5 shows the door D and the door frame F not quite closed, it is apparent that the hinge leaves 10 and 11 are adapted to bear against each other in the closed position.

The modified form of the invention shown in Fig. 6 through 9 is intended to be used in addition to the existing hinges already provided in a door, although it may be used in place of existing hinges in light weight door and frame assembly.

In the modified embodiment of this invention a flat leaf 30 is adaptable to be secured to a door frame by screws inserted in the counter-sunk openings 31. The

inner end of the plate 30 is rigidly attached by a rivet 32 in a slot 34 which is provided in the upper end of a rod or hinge pin 33. The rod 33 is normally mounted in a plurality of axially aligned journals 41, 42, 43, 44, and 45, which are integrally formed in a leaf hinge member 37. Journals 41 and 45 are the outer journals, journals 42 and 44 are intermediate journals, and journal 43 is the center journal. Interposed between and frictionally engaging each of the journals 41 through 45 and the rod 33 is a plurality of brass or bronze bushings 35. However, the bushing 35 may be formed of a continuous tube which extends into and engages all the journals 41 through 45. The journal portions 41 through 45 and the bushings 35 are separated by elongated substantially parallel slits 38 which extend into the flat portion of the hinge leaf 37. The leaf 37 is adapted to be attached to a door by conventional screws inserted through the counter-sunk openings 36.

A pressure bar 39 provided with sockets 46 is attached to and positioned across the parallel slits 38 alongside the journals 41 through 45 by means of a threaded bolt 48. Interposed between the pressure bar 39 and the leaf 37 in the sockets 46 are coil springs 47, which resiliently bear against the flexible portion of the leaf 37, between each pair of intermediate and outer elongated slits 38. Inserted through the flat portion of the leaf 37 and threadably attached to the outer ends of the pressure bar 39, are adjusting bolts 40. The adjustable tightening of the threaded bolts 40 creates a tension on the outer journals 41 and 45 and exerts a pressure on journals 42 and 44 thereby tending to flex or misalign the journals 41 through 45, which causes the rod 33 to frictionally resist rotation in the journals 41 through 45 to a greater or lesser degree in accordance with the adjustment made.

Fig. 9 exemplifies the misaligned or flexed position of the journals 41, 42 and 43 with the bar 39 in a relatively tightly adjusted condition and the rod 33 removed from the journals.

Thus, I have provided an improved leaf hinge, and leaf hinged check device, one embodiment which is intended to replace the conventional leaf hinges now in operation, and the other embodiment is intended to supplement and be used in addition to the leaf hinges already installed where it seems undesirable to remove the present conventional type hinge.

It is apparent from the preceding description that a door provided with this invention can also be easily removed from its frame for repairs and the like. If the door is provided with the embodiment of the invention shown in Fig. 1, all that is necessary is the loosening of the screws 21 which are threaded in the leaf 11 thereby permitting the journals to realign with the result that the pin 18 can be easily removed. In the embodiment of the invention shown in Figs. 8 the screws 40 which are threaded in the leaf 37 are loosened thereby permitting the journals to realign with the result that the pin 33 can be easily removed.

Both embodiments of the invention provide an improved leaf hinged device having a frictional adjusting means which is simple and durable in construction and reliable in its operation.

While the invention has been illustrated in connection with a leaf hinged check device for a door, it can also be used for frictionally checking any swinging member.

While the invention has been described, then, in connection with the embodiments shown, it will be understood that it is capable of further modification, and this application is intended to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention, and including such departures from the present disclosure as come within known or customary practice in the art to which the invention pertains, and as fall within the scope of the invention or the limits of the appended claims.

What I claim is:

1. A hinge for hingedly connecting two parts, said hinge comprising a hinge pin, a member secured to said hinge pin for fastening the hinge to one of said parts, a leaf having a journal portion which is journaled on said hinge pin, and a fastening portion for fastening the hinge to the other of said parts, said leaf having at least one pair of parallel slits extending through its journal portion and part way into its fastening portion transversely of said hinge pin to provide a portion which is flexible transversely of said hinge pin, a bar secured to said fastening portion to extend transversely of said slits, and means carried by said bar for engaging said flexible portion to flex the same.

2. A hinge for hingedly connecting two parts, said hinge comprising a hinge pin, a member secured to said hinge pin for fastening the hinge to one of said parts, a leaf having a journal portion which is journaled on said hinge pin and a fastening portion for fastening the hinge to the other of said parts, said leaf having at least one pair of parallel slits extending through its journal portion and part way into the fastening portion transversely of said hinge pin to provide a portion which is flexible transversely of said hinge pin, a bar secured to said fastening portion, means carried by said bar for engaging said flexible portion to flex the same, and means for adjustably varying the flexing pressure on said flexible portion.

3. A hinge for hingedly connecting two parts, said hinge comprising a hinge pin, a member secured to said hinge pin for fastening the hinge to one of said parts, a leaf having a journal portion which is journaled on said hinge pin and a fastening portion for fastening the hinge to the other of said parts, said leaf having two pairs of parallel slits extending part way into its fastening portion, at least one pair of said parallel slits extending also through one of its journal portions, a bar extending across said slits, means securing said bar to said fastening portion at its ends, and means carried by said bar intermediate its ends and engaging said fastening portion between at least one pair of slits to flex said one journal portion transversely of said hinge pin, said securing means being adjustable to vary the flexing pressure on said one journal portion.

4. A hinge for hingedly connecting two parts, comprising a hinge pin, a sleeve surrounding said hinge pin, a first leaf having a portion for fastening said hinge to one of said parts and having a plurality of axially-spaced integrally formed journals which are journaled on said sleeve, a second leaf having a portion for fastening the hinge to the other of said parts and having a plurality of axially-spaced integrally formed journals also journaled on said sleeve and interengaged with the journals of said first leaf, said sleeve extending into the journals of the first and second leaves for connecting the same together, said second leaf having a plurality of elongated slits extending through its journals and into the fastening portion of said second leaf to provide a portion which is flexible transversely of the axis of said hinge pin, means attached to said hinge pin for locking said pin against rotation relative to the journals of said first leaf, an elongated bar positioned across said slits and attached adjacent its ends to the fastening portion of said second leaf, and means interposed between said second leaf and said bar for engaging the flexible portion of said second leaf to flex said flexible portion of said second leaf.

5. A hinge for hingedly connecting two parts, comprising a hinge pin, a first leaf having a portion for fastening said hinge to one of said parts and having a journal portion journaled on said hinge pin, a second leaf having a portion for fastening said hinge to the other of said parts and having a journal portion also journaled on said hinge pin, said second leaf having a plurality of elongate parallel slits extending through its journal portion and into the fastening portion of said second leaf to provide a portion which is flexible transversely of the axis of

said hinge pin, an elongate pressure bar positioned across said slits and attached to the fastening portion of said second leaf, and means interposed between the second leaf and the bar for engaging the flexible portion of said second leaf to flex said flexible portion transversely of said hinge pin, said first leaf having an elongate slot formed in the fastening portion thereof, said slot being so positioned as to receive said bar when said hinge is closed.

6. A hinge device according to claim 5 wherein said second leaf has a portion of reduced thickness into which said slits extend.

7. A hinge for hingedly connecting two parts, comprising a leaf having a fastening portion for fastening the hinge to one of said parts and having a journal portion, said leaf having two pairs of parallel slits extending through its journal portion and part way into its fastening portion to form transversely flexible portions, said slits separating said journal portion into a center journal, a pair of intermediate journals at opposite ends of said center journal, and a pair of outer journals adjacent opposite ends of said intermeidate journals, a bushing drivably fit in each of said separate journals, a hinge pin extending through said bushing, a member secured to said hinge pin at one end thereof for fastening the hinge to the other of said parts, a bar secured to said fastening portion of said leaf, and means carried by said bar for engaging said flexible portions of said leaf to flex the same.

8. A hinge for hingedly connecting two parts, said hinge comprising a leaf having a journal portion and a fastening portion for fastening the hinge to one of said parts, said leaf having two pair of parallel slits extending through its journal portion and part way into its fastening portion, said slits dividing said journal portion into a center journal, a pair of intermediate journals at opposite ends of said center journal, and a pair of outer journals at opposite ends of said intermediate journals, a separate bushing drivably fit in each of said separate journals, a hinge pin extending into and frictionally engaging said bushings, a member secured to said hinge pin for fastening the hinge to the other of said parts, a bar extending across said slits and attached at its opposite ends to the fastening portion of said leaf adjacent said outer journals, means interposed between said bar and said fastening portion adjacent said intermediate journals to flex said intermediate journals transversely of the axis of said hinge pin, and means adjustably connecting said bar to said fastening portion adjacent said center journal for varying the flexing pressure on said intermediate journals.

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