

April 28, 1959

F. J. GROSS
SAFETY BUTT HINGE

2,883,699

Filed Nov. 8, 1954

2 Sheets-Sheet 1

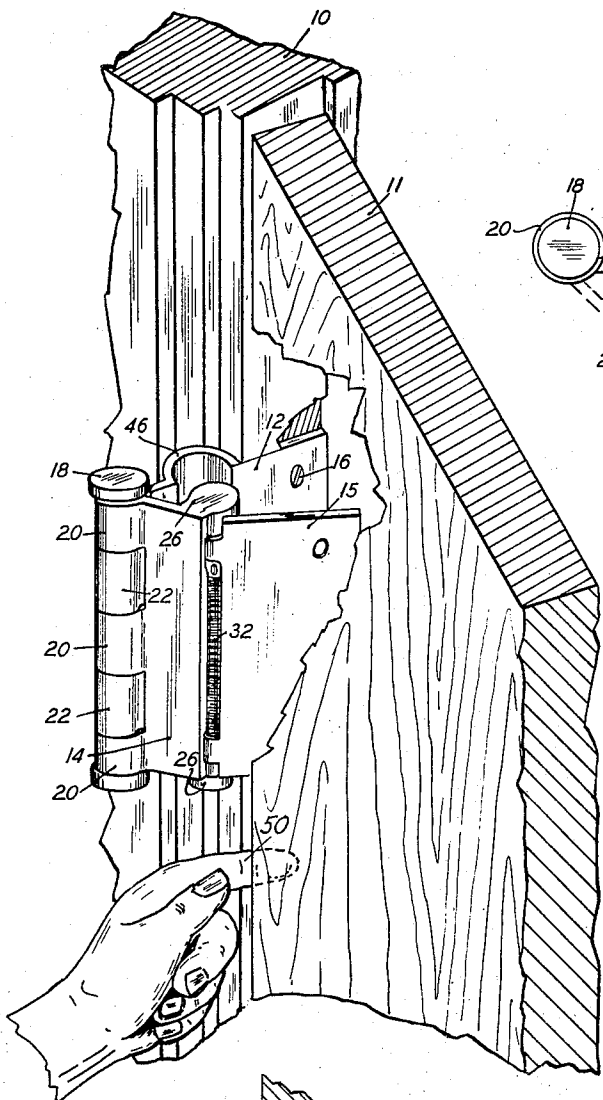


FIG. 1

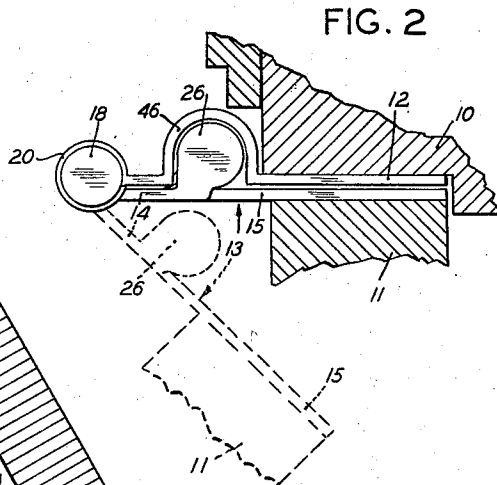


FIG. 2

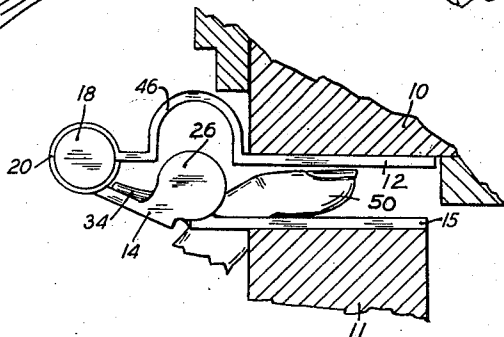


FIG. 3

INVENTOR.
FRANK J. GROSS

BY

Buckhorn and Cheston

ATTORNEYS

April 28, 1959

F. J. GROSS

2,883,699

SAFETY BUTT HINGE

Filed Nov. 8, 1954

2 Sheets-Sheet 2

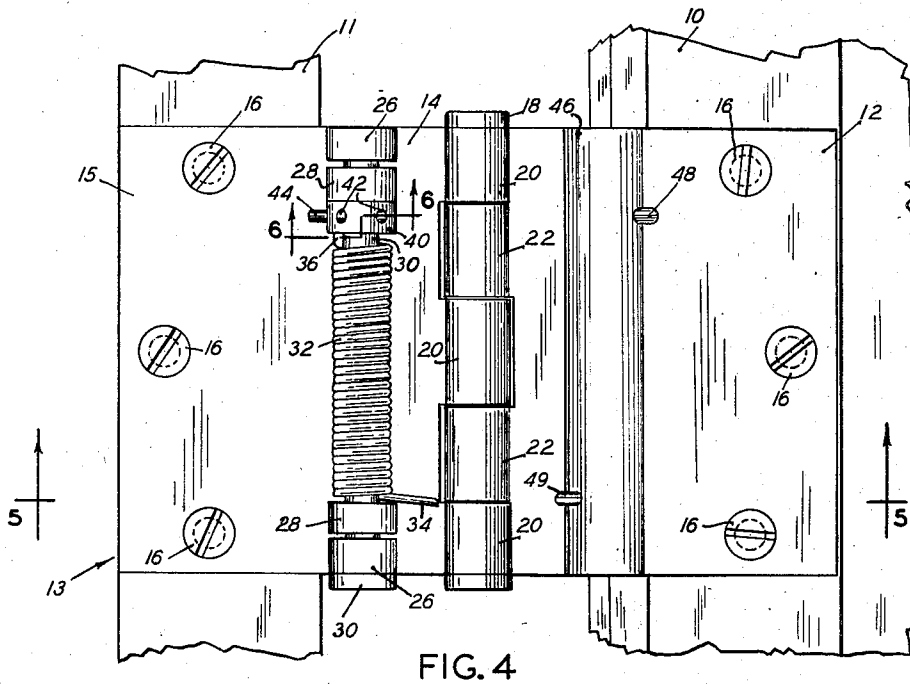


FIG. 4

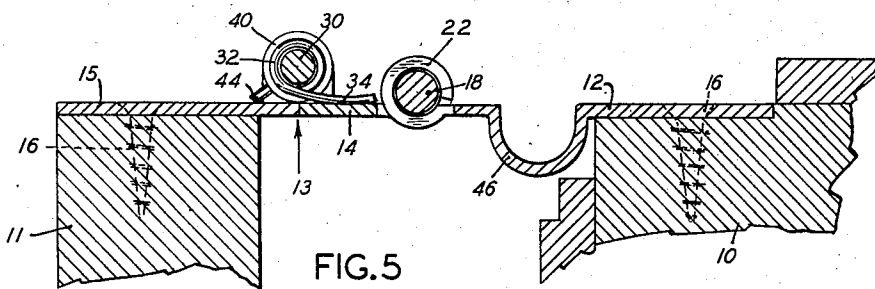


FIG. 5

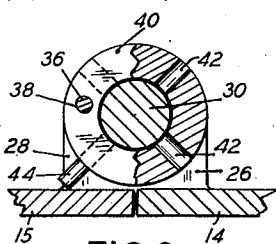


FIG. 6

INVENTOR.
FRANK J. GROSS

BY

Buckhorn and Cheston

ATTORNEYS

1

2,883,699

SAFETY BUTT HINGE

Frank J. Gross, Portland, Oreg.

Application November 8, 1954, Serial No. 467,414

1 Claim. (Cl. 16—163)

The present invention relates to hinges and more particularly to a new and improved butt hinge.

When a door hung on conventional butt hinges is open, the door butt is spaced from the jamb on which the hinge is mounted by a considerable distance. However, when the door is closed the door butt moves into a position closely adjacent, in fact, almost into contact with the jamb. Not infrequently a child or even an adult will place a hand or finger between the jamb and the butt of an open door and if the door is closed inadvertently the hand may be painfully crushed and seriously injured. It is a principal object of the present invention to provide a new and improved construction of butt hinges that will prevent such unfortunate results.

More particularly it is an object of the invention to provide a hinge that will automatically prevent the door butt from closing upon the jamb in the event a foreign object such as a finger or hand is encountered by the door as it is closed.

Another object is to provide a hinge of the type described that is of pleasing appearance and which may be manufactured at low cost.

A further object is to provide a safety butt hinge of the class described utilizing a safety spring with means for adjusting the tension of the spring.

Other objects and advantages will appear hereinafter.

In accordance with the illustrated embodiment, the hinge of the invention comprises a pair of leaves adapted to be secured one to the door and one to the jamb. One of the leaves consists of a pair of hinged portions that are urged by a spring to a normal position permitting normal opening and closing movement of the door. The portions are arranged, however, to "break" in the event a finger or hand is positioned between the door and jamb whereby the door cannot be fully closed.

For a more detailed description of the invention, reference is made to the drawings and the following explanation thereof.

In the drawings,

Fig. 1 is a fragmentary perspective view of a door frame or jamb and door suspended therefrom by a hinge of the invention and showing how it functions as a safety hinge;

Fig. 2 is a top plan view of the hinge with the jamb and door shown in horizontal section, the normal closed position of the hinge being shown in solid lines and the normal open position being shown in dotted lines;

Fig. 3 is a view similar to Fig. 2 but showing the action of the hinge when a finger is caught between the door and jamb;

Fig. 4 is a plan view of the open hinge;

Fig. 5 is a sectional view taken substantially along line 5—5 of Fig. 4; and

Fig. 6 is a sectional view taken substantially along line 6—6 of Fig. 4.

In the drawings, a door frame or jamb is indicated generally by the numeral 10 and the door by the numeral 11. Only a single hinge is illustrated in connection

2

therewith but it will be understood that two or more hinges of the invention will be used to support the door from the frame as is customary.

The hinge of the invention is illustrated as comprising a pair of leaves 12, 13, one of which, in this instance the leaf 12, is a single, substantially flat integral member, while the other leaf 13 consists of a pair of hingedly connected substantially flat portions 14, 15. The hinge is illustrated with the leaf 12 attached to the jamb and with the end portion 15 of the leaf 13 attached to the door butt by screws 16. It is to be understood, however, that this is merely illustrative and that hinge leaf 12 could be mounted on the door and the hinge leaf portion 15 on the door jamb.

As is best illustrated in Fig. 4, the leaf portion 14 is located intermediate the jamb leaf or plate 12 and the end portion or door plate 15 and is pivotally connected to the jamb plate by means of a pintle or hinge pin 18 which extends cooperatively through eyes 20 formed on an end of the intermediate leaf or plate 14 and eyes 22 formed on an end of the jamb plate 12. The opposite end of the intermediate plate 14 is formed with a pair of eyes or knuckles 26 one adjacent the top and the other adjacent the bottom of the plate and extending laterally outwardly from the inside surface thereof. The adjacent end of the door plate 15 is likewise formed with a pair of eyes or knuckles 28 spaced just inwardly of the knuckles 26. Extending through the knuckles is a pintle pin 30 which hingedly connects the plates 14, 15 for pivotal movement relative to one another about an axis parallel to the axis of the movement between the jamb plate 12 and plate 14.

As shown best in Figs. 2 and 5, the plates 14, 15 are generally flat and are so hinged as to be adapted for abutting engagement in the normal use of the hinge. Means are provided to yieldingly urge the plates 14, 15 into such abutting engagement or limit position. As illustrated such means consists of a coil spring 32 disposed about the pintle pin 30 between the eyes 28 and having one end 34 arranged to engage the inner surface of the intermediate plate 14. The other end 36 of the spring is engaged within a cooperative opening 38 formed in a collar 40 mounted on the pintle pin 30 for free rotation thereabout. The collar 40 is provided with a number of openings 42 in the periphery thereof in which a pin 44 may be inserted, and which pin is adapted to engage the inner surface of the door plate 15. By rotating the collar 40 about the pintle pin 30, the tension of the spring 32 may be adjusted as desired, and the pin 44 placed in the desired opening. The unwinding tendency of the spring 32 will hold the pin 44 in engagement with the door plate 15 and prevent removal of the pin and will at the same time yieldingly urge the leaf portions 14, 15 into abutting engagement as they are shown in Figs. 2 and 5. The strength of the spring 32 and the tension applied thereto are selected with regard to the weight of the door 11.

With particular reference to Fig. 2, the jamb leaf 12 is provided with an offset portion 46 for cooperatively receiving the eyes 26, 28 and spring 32 when the door and hinge are in their normal, closed position, and notches 48 and 49 may be provided to receive the pin 44 and spring end 34 when the door is closed.

The tension of the spring 32 is preferably adjusted so that in the ordinary opening and closing movements of the door, the door leaf portions 14, 15 will remain in abutting engagement as is indicated in Fig. 2. However, in the event that an object such as a finger indicated at 50 is caught between the door 11 and jamb 10 as the door is closed, the spring 32 will give under the opposing resistance permitting the door leaf 13 to "break" as shown in Figs. 1 and 3. As is clear in those views,

3

the spring 32 permits the door plate 15 and intermediate plate 14 to pivot relative to one another whereby the door butt is held away from the jamb 11 even though the door is swung to a position parallel to its usual closed position. As a consequence, the finger 50 will not be crushed, or pinched painfully as would occur if the hinge could not break.

Having illustrated and described a preferred embodiment of the invention, it should be apparent to those skilled in the art that the invention permits of modification in arrangement and detail. I claim as my invention all such modifications as come within the true spirit and scope of the appended claim.

I claim:

A butt hinge comprising a jamb plate including a flat mounting portion adapted to be secured to a jamb and a semi-circularly recessed portion adapted to be positioned adjacent a jamb when the hinge is mounted thereon, an extension plate pivoted along one edge thereof to said jamb plate on the side of said recessed portion opposite said mounting portion, and a flat door plate adapted for connection to a door in mounting of the hinge and pivotally connected to said extension plate along the edge of said extension plate opposite said first-

4

mentioned edge, said extension plate and door plate having interengaging pintle receiving knuckles extending from the surfaces thereof in position to fit within said recessed portion when said hinge is moved to door closing position, a pintle hingedly connecting said knuckles, said extension plate and door plate having portions co-operatively abutting each other to prevent pivotal movement of said door plate beyond a normal hinge position relative to said extension plate in the direction away from said jamb plate, and spring means yieldingly arranged between said extension plate and said door plate to urge such plates to normal hinge position.

References Cited in the file of this patent

UNITED STATES PATENTS

252,770	Howson	Jan. 24, 1882
822,279	Jones	June 5, 1906
900,501	Falkenrath	Oct. 6, 1908
1,474,418	Larson	Nov. 20, 1923
1,821,136	Bolakowski	Sept. 1, 1931
2,164,047	Baumann	June 27, 1939
2,177,826	Hansen	Oct. 31, 1939
2,497,266	Levane	Feb. 14, 1950