May 12, 1970 J. G. BALDWIN, SR 3,510,906

TAMPERPROOF HINGE

Filed Feb. 16, 1968

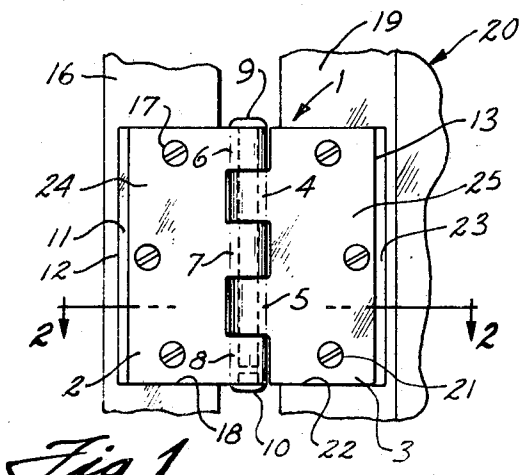


Fig. 1

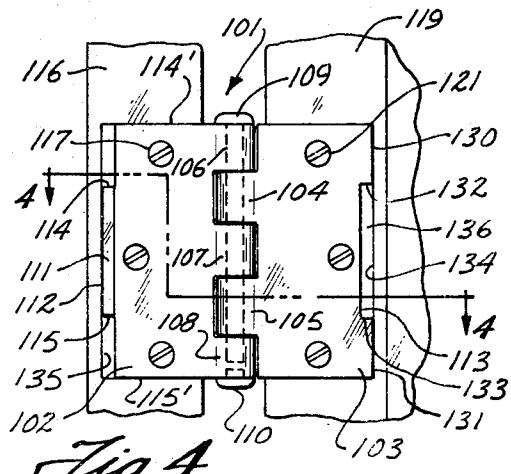


Fig. 4

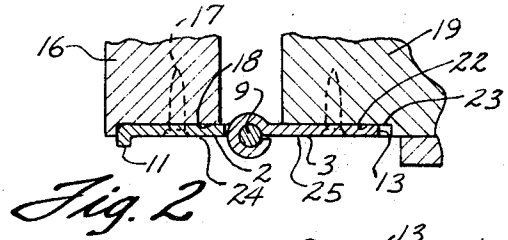


Fig. 2

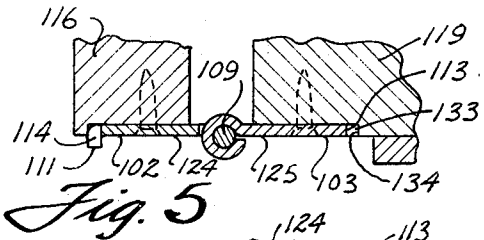


Fig. 5

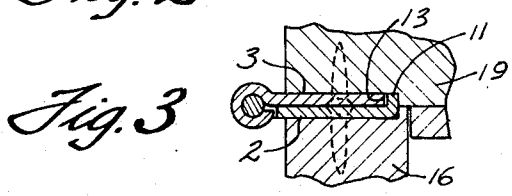


Fig. 3

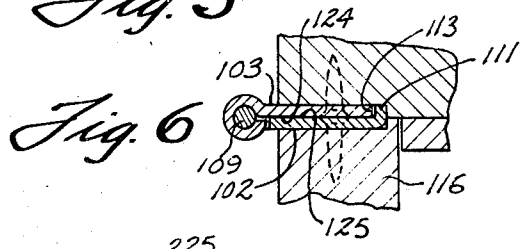


Fig. 6

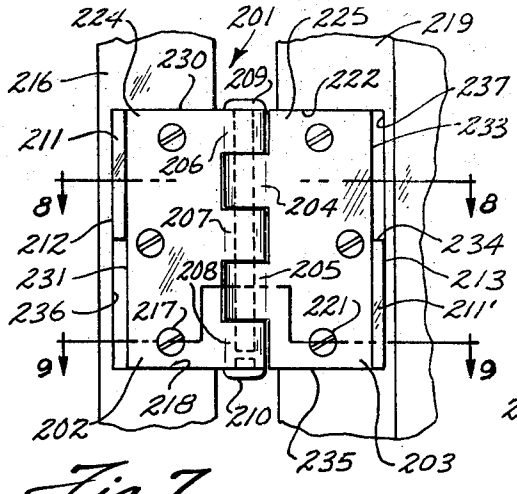


Fig. 7

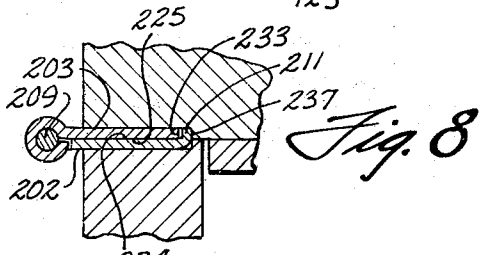


Fig. 8

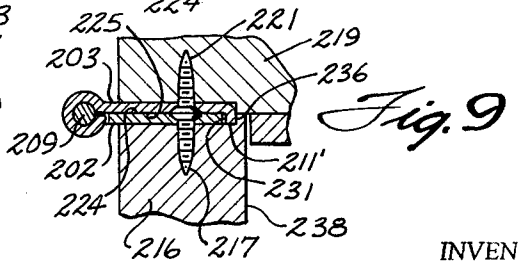


Fig. 9

INVENTOR

JAMES GRANVILLE BALDWIN, SR.

BY Arnold, Roylance, Kruger and Durkee ATTORNEYS

United States Patent Office 3,510,906
Patented May 12, 1970

3,510,906

TAMPERPROOF HINGE

James Granville Baldwin, Sr., 3605 S. Grady, Tampa, Fla. 33609

Filed Feb. 16, 1968, Ser. No. 705,990
Int. Cl. E05d 9/00
U.S. Cl. 16—128 4 Claims

ABSTRACT OF THE DISCLOSURE

A tamperproof hinge which prevents unauthorized removal of a closed door from its frame after the hinge pins have been withdrawn. At least one hinge plate has a side edge bent to form a lip that extends across the side edge of the other hinge plate when the door is closed. The lip forms an abutment which engages the side edge of the other hinge plate to prevent sliding the hinge plates relative to each other when they are in face-to-face relation and the door is closed.

This invention relates to tamperproof hinges and particularly to tamperproof hinges of the type in which a projection extends from one hinge plate and interengages with a portion of the other hinge plate to prevent unauthorized removal of a closed door merely by withdrawing the hinge pins.

There have been many attempts in the past to develop a fully effective tamperproof hinge which is also easy to install and inexpensive to manufacture. Those tamperproof hinges known in the past which are effective have, however, been quite expensive to manufacture, since the tamperproof features could not readily be incorported in a standard hinge by modifying the hinge. Thus, purchases of tamperproof hinges in the past have found the costs of these hinges to be prohibitive since they were specially made, and in addition, the prior tamperproof hinges were extremely difficult to install, since workmen were not familiar with the proper installation procedures for such hinges.

Nevertheless, applicant has devised a fully effective tamperproof hinge which can readilly be formed from an existing hinge, by modifying the hinge plates and, correspondingly, is quite inexpensive.

A significant feature of applicant's invention is that the tamperproof characteristic of the hinge is attained by deforming one side edge of one hinge plate to provide a lip that projects toward the other hinge plate, and cutting or recessing the other hinge plate so the lip projects across a side edge of this other hinge plate when the plates are in face-to-face relation with each other. The lip then engages the side edge which it extends across when unauthorized removal of a door equipped with the hinge is attempted.

Correspondingly, an object of this invention is a tamperproof hinge of unique construction.

Another object is a tamperproof hinge in which at least the side edge of one of the hinge plates is bent at a 90° angle to the body of the plate so it engages over a side edge of the other hinge plate when the plates are in face-to-face relation.

Another object in a tamperproof hinge in which one side edge of one hinge plate is bent at 90° to the body of the hinge plate and the side edge of the other hinge plate has a recess therein along its side edge into which the lip extends.

A further object is a hinge of the tamperproof type in which a lip projects from the side edges of each plate, one of the lips being formed on the upper portion of one plate and the other lip being formed on the lower portion

of the other plate so the respective lips extend across the side edges of the respective plates.

A further and most significant object is a hinge in accordance with the above-mentioned objects which is inexpensive to manufactre, is easy to install, and is fully effective.

Numerous other objects, features, and advantages of the hinge construction of this invention will become apparent with reference to the drawings, which form a part of this specification and in which:

FIG. 1 is an elevational view of a first embodiment of the tamperproof hinge of this invention showing the hinge plate secured respectively to a door and door frame;

FIG. 2 is a view in section taken along lines 2—2 of FIG. 1;

FIG. 3 is a view corresponding to FIG. 2 but showing the position of the hinge parts when the door is closed;

FIG. 4 is an elevational view showing a second embodiment of the hinge of this invention;

FIG. 5 is a sectional view taken along lines 5—5 of FIG. 4;

FIG. 6 is a view corresponding to FIG. 5 but showing the position of the hinge parts when the door is closed;

FIG. 7 is an elevational view of a third embodiment of the hinge of this invention;

FIG. 8 is a sectional view taken along lines 8—8 of FIG. 7 and showing the position of the hinge parts when the door is closed;

FIG. 9 is a sectional view taken along lines 9—9 of FIG. 7 and showing the position of the hinge parts when the door is closed.

Referring now to the drawings in detail and particularly to FIGS. 1–3, the first embodiment of the hinge of this invention will be described in detail.

Hinge **1** is comprised of a first hinge plate **2** and a second hinge plate **3**. Each hinge plate is formed from flat metal of uniform thickness. Hinge plate **3** has bosses **4** and **5** integrally formed along one side edge, the bosses being spaced apart to receive bosses **6–8** integrally formed along the side of plate **2**. Each of the bosses have aligned central openings of the same diameter which align with each other when the bosses are interdigitated to the position shown at FIG. 1 so a hinge pin **9** can be inserted through the openings to join the plates together for pivotal movement relative to each other. Customarily, a plug **10** is fitted into the opening in bottom boss **8** and is secured to the boss.

As will be apparent with reference to FIGS. 1–3, hinge plate **2** is slightly wider than hinge plate **3**. Projecting from hinge plate **2**, at a 90° angle to the body of the plate, is a lip **11** integrally formed from the material of the hinge plate and which extends along the entire side edge **12** of plate **1**. Plate **3** has a straight side edge **13** which extends the length of this plate.

Hinge plate **2** is secured to door **16** by screws **17**. Hinge plate **2** seats in a recess **18** formed in the side edge of the door. Hinge plate **3** is secured to door jamb **19** of door frame **20** by screws **21**. Hinge plate **3** seats in a recess **22** formed in door jamb **19**. As shown at FIG. 3, recess **22** of the door jamb is of the same width as recess **18** of the door. However, since hinge plate is is slightly narrower than hinge plate **2**, a slot **23** defined by side edge **13** and end edge of the recess **22** extends along the side edge of hinge plate **3**. When the door is closed, the lip on hinge plate **2** extends into this slot and across the side edge **13** of hinge plate **3**. With reference to FIG. 3, it will be apparent that any attempted removal of the door, after the door is closed, after hinge pin **9** is removed will be defeated by the engagement of lip **11** with the side edge **13** of hinge plate **3**. Thus, the lip positively

prevents separation of the hinge when the hinge plates are in the face-to-face relationship shown at FIG. 3, the door being closed when the plates are in this position. Hinge plate **2** is advantageously connected to the door rather than the door jamb so that attempted separation of the hinge plates by sliding is effectively resisted by the side edge of hinge plate **3**. It will be observed with reference to FIGS. 1 and 3 that the front surfaces **24** and **25** respectively of hinge plates **2** and **3** each lie in a plane which passes through the axis of hinge pin **9**. Thus, faces **24** and **25** are in closely adjacent face-to-face relation when door **16** is closed as shown at FIG. 3.

FIGS. 4–6 show a second embodiment of the tamper-proof hinge of this invention. As shown at FIGS. 4–6, hinge **101** is comprised of a first hinge plate **102** and a second hinge plate **103**. Hinge plate **103** has bosses **104** and **105** integrally formed along one side edge, the bosses being spaced apart to receive therebetween bosses **106–108** integrally formed along the side of plate **102**. A hinge pin **109** inserted through the opetnings of bosses **104–108**, when aligned, joins plates **102** and **103** together for pivotal movement relative to each other. The usual plug **110** is fitted into the opening in bottom boss **108** and is secured to the boss.

In the embodiment of FIGS. 4–6 hinge plate **102** is the same width as hinge plate **103**. Projecting from hinge plate **102** at a 90° angle to the body of the plate is a lip **111** integrally formed from the material of the hinge plate at side edge **112** of the plate. As is apparent with reference to FIG. 4, lip **111** has end edges **114** and **115** which are equidistantly spaced from the end edges **114'** and **115'** of hinge plate **102**. The length of lip **111** as measured between end **114** and **115** is one-half the length of side edge **112**. The distance from end edge **114** to end edge **114'** is equal to one-half the length of lip **111** and correspondingly, the distance from end edge **115** to end edge **115'** is equal to one-half the length of lip **111**.

Hinge plate **103** has a side edge comprised of edges **113**, **130** and **131**. Edge **113** forms the bottom edge of a recess **136** formed in the side of hinge plate **103**. The length of side edge **113** as measured between end edges **132** and **133** of the recess is slightly greater than the length of lip **111**.

Hinge plate **102** is secured to door **116** by screws **117**. Hinge plate **102** seats in a recess **118** formed in the side edge of the door. Hinge plate **103** is secured to door jamb **119** of door frame **120** by screws **121**. Hinge plate **103** seats in a recess **122** formed in door jamb **119**. As shown at FIGS. 4–6, recess **118** is the same width as recess **122**. Thus, edges **130** and **131** abut against edge **134** of recess **122**. Likewise, side edge **112** of hinge plate **102** abuts against edge **135** of recess **118**.

Edges **11***e*, **132**, **134**, and **133** define a slot into which lip **111** extends when door **116** is closed as shown at FIG. 6. The axis of hinge pin **109** lies in the plane of front faces **124** and **125** respectively of the hinge plates **102** and **103**. Thus, when the door is closed as shown at FIG. 6 faces **124** and **125** are in closely adjacent facing relationship to each other, and lip **111** extends into slot **136**.

With the door so closed, lip **111** extends across the side edge **113** of hinge plate **103**. Thus, in the attempted removal of the door, after the door is closed, by withdrawing hinge pin **109** will be defeated by engagement of lip **111** with the side edge **113** of hinge plate **103**. It will again be observed that hinge plate **102** is advantageously connected to the door rather than the door jamb so that attempted separation of the hinge plates by sliding is effectively resisted by the edge **113** of hinge plate **103**.

FIGS. 7–9 show a third embodiment of the tamper-proof hinge of this invention. Hinge **201** is comprised of a first hinge plate **202** and a second hinge plate **203**. Bosses **204** and **205** are formed integral with hinge plate **203**, and bosses **206–208** are formed integral with hinge plate **202**. These bosses receive a hinge pin **209** which joins the hinge plates together for pivotal movement about the axis of the hinge pin. The usual plug **210** projects into bottom boss **208** and is secured to the boss. Bent at an angle of 90° to the plane of plate **202** is a lip **211**. Lip **211** is located at side **212** of plate **202** and extends from top edge **230** of the plate downwardly a distance slightly less than one-half the length of the plate to terminate at an end edge **232**. The portion of hinge plate **202** immediately beneath lip **211** is cut away along a straight side edge **231** spaced from edge **212** by a distance slightly exceeding the thickness of lip **211**.

Hinge plate **203** has a lip **211'** formed at side edge **213**. Immediately above lip **211'** the hinge plate is cut away along side edge **233**. Lip **211** has a length as measured from end edge **234** of the lip to end edge **235** of the plate which is slightly less than one-half the length of the hinge plate. Thus, the side edge **233** has a length slightly greater than the length of lip **211**.

Hinge plate **202** seats in a recess **218** formed in the side edge of door **216** and is secured to the door with screws **217**. The recess is generally rectangular and has a side edge **236**.

Similarly, hinge plate **203** seats in rectangular recess **222** in door jamb **219** and is secured to the door jamb by screws **221**. The recess has a straight side edge **237**.

As shown at FIG. 8, the slot defined between side edge **233** of hinge plate **203** and side edge **237** of recess **222** receives lip **211** when door **216** is closed and front faces **224** and **225** of the respective hinge plates are in face to face relationship with each other. Similarly, lip **211'** is received in the slot **238** defined between side edge **236** of recess **218** and side edge **231** of hinge plate **202**.

With reference to FIG. 8, it will be apparent that any attempted removal of the door after the door is closed, by withdrawing hinge pin **209** will be defeated by the engagement of lip **211** with side edge **233** of hinge plate **203**. Thus, lip **211** positively prevents separation of the hinge when the hinge plates are in the face-to-face relationship shown at FIG. 8.

With reference to FIG. 9, it will be observed that lip **211'** engages in the slot defined between side edge **231** of hinge plate **202** and side edge **236** of recess **218**. However, it will be noted that if door **216** is moved to the left lip **211'** will engage side edge **236** of the recess to prevent such movement. Since doors, such as door **216** are usually constructed from wood, the narrow strip between edge **236** of the recess and face **238** of the door could conceivably be broken away by prying on the door in an attempt to remove it. However, since lip **211** (FIG. 8) engages the side edge **233** of metal hinge plate **202**, removal of the door is thwarted.

The advantage of hinge **201** as shown at FIGS. 7–9 is that the hinge effectively prevents removal of door **216** when it is closed regardless of which hinge plate is connected to the door and which hinge plate is connected to the door jamb, since at least one metal edge will engage a lip to prevent sliding movement of the hinge plates relative to each other when the plates are in face-to-face relation as shown at FIG. 8.

Since the commonly available hinges have sufficient width that portions of the hinges can be cut away as shown at FIGS. 1–9 without impairing the strength of the hinges, all the modifications shown in the drawings can be readily made from a hinge which is commercially available. Thus, the several embodiments of hinges shown and described herein can be formed from existing hinges merely by shearing away desired areas of the hinges and by bending the required lip for a particular embodiment.

While several preferred embodiments of the tamper-proof hinge of this invention have been shown and described herein it is to be understood that the scope of the invention is not limited to the specific embodiments disclosed and described.

What is claimed is:

1. A tamperproof hinge comprising

first and second hinge plates separably connected by a removable hinge pin pivotally connecting the plates together along one side edge of the plates;

said first hinge plate comprising

a generally rectangular flat first body portion of uniform thickness and having first and second side edges,

means defining aligned hinge pin receiving openings along said first side edge of said body portion,

a lip integral with said body portion and extending from said second side edge of said body portion toward said second hinge plate at an angle of approximately 90° to the plane of the body portion, said lip having a thickness essentially the same as said body portion and a length substantially less than the length of said body portion;

said second hinge plate comprising

a generally rectangular flat second body portion of uniform thickness and of the same size as said first body portion, and having first and second side edges,

means defining aligned hinge pin receiving openings along said first side edge of said second body portion,

said second body portion having a recess at said second side edge, said recess presenting a bottom edge and an end edge, said bottom edge being parallel with and spaced inwardly of said second side edge by a distance approximating the thickness of said lip, said end edge connecting said bottom edge and said second side edge, and said bottom edge and recess having a length only slightly greater than the length of said lip;

said hinge pin connecting said plates for pivotal movement to a closed position in which

said body portions are in face-to-face abutting relation,

said lip projects into said recess and extends across said bottom edge, and

a side edge of said lip lies closely adjacent said end edge of said recess;

said lip and said recess cooperating, with said hinge in said closed position, to prevent unauthorized removal of a door secured to one hinge plate, from a door jamb secured to the other hinge plate, by removing said hinge pin.

2. A tamperproof hinge according to claim 1 wherein said lip is located centrally along the second side edge of said first body portion;

said recess is located centrally along said second side edge of said second body portion; and

said recess presents a second end edge facing toward said first mentioned end edge of said recess and spaced therefrom by a distance only slightly greater than the length of said lip.

3. A tamperproof hinge according to claim 2 wherein said lip and recess are each of a length approximately equal to one-half the length of one of said second side edges.

4. A tamperproof hinge according to claim 1 wherein said lip is offset toward and extends to one end edge of said first body and has a length approximately equal to one-half the length of one of said second side edges;

said recess is offset toward and terminates at that end edge of the second body which is adjacent said one end edge of the first body, said recess having a length approximately equal to one-half the length of one of said second side edges;

said first body includes a second L-shaped recess identical to said first mentioned recess and extending from said lip to the end edge of the first body opposite from said one end edge;

said second body includes a second lip identical to said first lip and extending along the second edge of said second body, from said recess to the opposite end edge of the second body;

whereby, said first and second body portions are identical, and with said hinge plates closed, said lip enters said recess and said second lip enters said second recess.

References Cited

UNITED STATES PATENTS

1,676,541	7/1928	Friedman	16—137
1,105,666	8/1914	Johnson	16—137
2,058,341	10/1936	Mink	16—128

BOBBY R. GAY, Primary Examiner

D. L. TROUTMAN, Assistant Examiner