Jan. 12, 1960 W. P. JENKINS 2,920,914

DEAD-LOCKING JAMB BOLT

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Fig. 1.

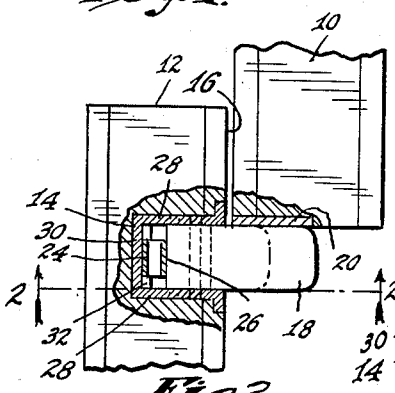


Fig. 4.

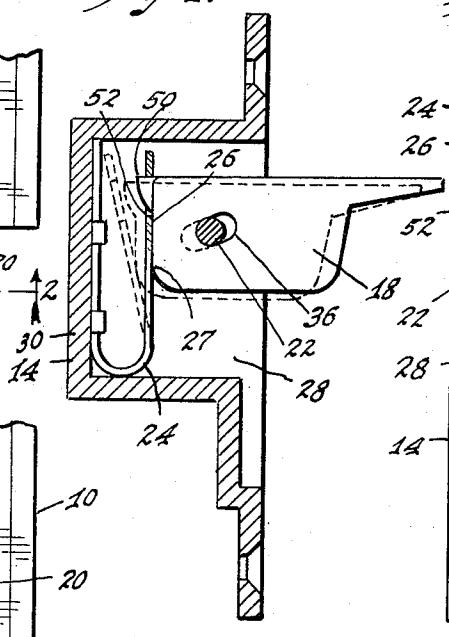


Fig. 5.

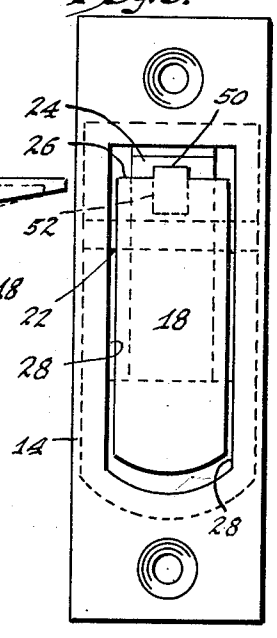


Fig. 2.

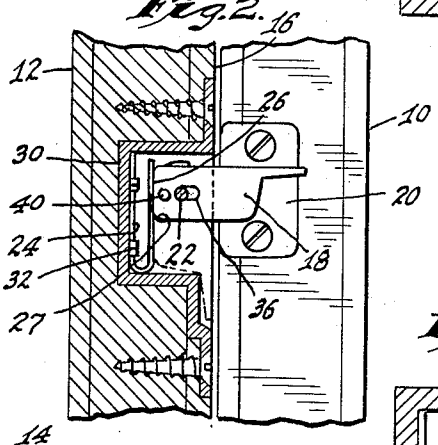


Fig. 3.

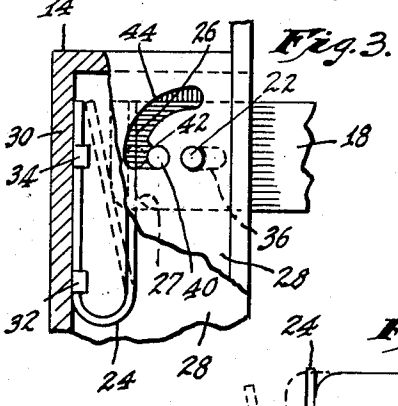


Fig. 6.

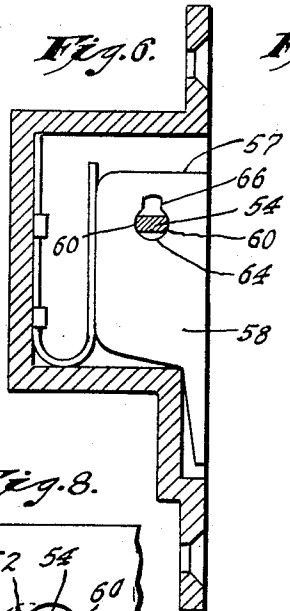


Fig. 7.

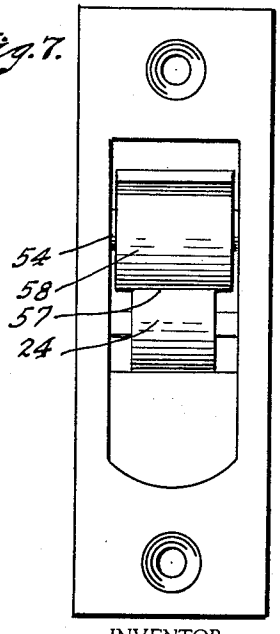
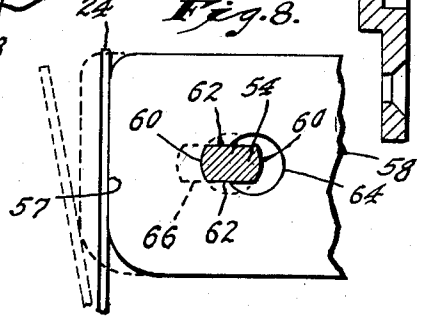


Fig. 8.



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DEAD-LOCKING JAMB BOLT

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8 Claims. (Cl. 292—67)

This invention relates to a jamb bolt which, when in projected position, is locked against retraction until released by proper manual operation.

Jamb bolts are used to block opening movement of sliding panels, such as door or window panels, especially where there are a plurality of such panels which slide past each other on adjacent parallel tracks in an exterior wall. Commonly, the jamb bolt consists of a bolt pivotally mounted in a housing countersunk in the face of a panel or jamb, and arranged to tilt between a retracted or flush position in which it presents no obstruction to movement of the adjacent panel, and a projected or erect operative position in which it blocks movement of the adjacent panel from closed position.

The bolt is commonly biased to its two positions, as by an over-center spring. It is thus only yieldingly held against retraction, and it may be forced to its retracted position by means of a blade-like instrument inserted through the necessary clearance space along the face of the locked panel. If the spring is made heavier to resist such forcing, the bolt is more difficult to operate in its intended manner, and is objectionable (especially to women) for this reason.

It is the object of this invention to provide means to dead-lock jamb bolts against such forcing or unauthorized operation. It is a further object to thereby permit the use of lighter springs and provide easier operation. It is a further object of the invention to provide means which will lock the jamb bolts in erect position, to prevent forcing, but which will be readily released upon proper manual operation. It is a further object of the invention to provide a jamb bolt which has both pivotal movement and movement generally longitudinally of itself, and to provide locking means which engages when the bolt is pivoted to projected position and which is released by longitudinal displacement movement, and which upon such release, permits the bolt to be freely pivoted to retracted position.

In accordance with the invention, a jamb bolt of generally conventional size and configuration is mounted in a housing both for pivotal movement between depressed and erect positions, and in addition is arranged to have limited radial displacement motion, preferably motion longitudinally of itself with respect to its housing. Conveniently, the bolt is provided with a pair of end and bottom faces extending tangentially with respect to the pivot axis, against which a leaf spring bears to form an over-center relationship and tending to hold the bolt in its retracted and operating positions. Such spring desirably underlies the bolt and tends to move it in a displacement direction to take up its lost motion, especially when the bolt is in erect position. To provide for dead-locking the bolt in erect position, interlocking means are provided, which engage as the bolt is moved from retracted to erect position, and which can be disengaged only by movement of the bolt longitudinally of itself when in erect position. Accordingly, the bolt may be retracted by pushing it inward and then pivoting to depressed position. Since

the necessary inward movement cannot be effected with a blade instrument inserted through a clearance space, the bolt is effectively dead-locked against tampering from the exterior side of the panel with which it is used.

In one modification, the bolt is provided with a laterally extending pin which rides in a shaped slot at one or both sides of the housing. The slot has a radial keeper portion in which the pin is received when the bolt is erect, to lock the bolt against pivotal movement. The outer end of the radial portion of the slot connects with an arcuate portion which the pin may enter when the bolt is displaced longitudinally of itself, and in which the pin moves freely as the bolt is then pivoted to retracted position. The pin and the keeper portion of the slot are positioned to be urged to locking engagement by the bolt-biasing spring. In a second modification, the interlocking means is in the form of a tongue and groove respectively formed between the pivot pin and the wall of its bearing hole, which interlock under the influence of the spring but release and permit free pivotal movement of the bolt when the bolt is moved longitudinally of itself against the spring. In a third modification, the bolt and its associated spring are formed to interlock when the bolt lies in erect projected position, and to release when the bolt is first displaced longitudinally.

The accompanying drawing illustrates the invention. In such drawing:

Fig. 1 is a horizontal section showing the overlapping edges of a pair of sliding panels, with a jamb lock mounted in one and a striker plate in the other;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a side elevation, with parts broken away, of the embodiment of the invention shown in Fig. 1, and in which the dead-locking function is obtained by a pin and shaped-slot arrangement;

Fig. 4 is a longitudinal section of a jamb lock in which the dead-locking function is obtained by interengaging means between the bolt and its biasing spring;

Fig. 5 is a front elevation of the jamb lock of Fig. 4, with the bolt in retracted position;

Fig. 6 is a longitudinal section of a jamb lock in which the dead-locking function is obtained by tongue and groove interlocking between the pivot pin and the pivot hole;

Fig. 7 is a front elevation of the jamb lock of Fig. 6, with the bolt in erect position; and

Fig. 8 is a partial section similar to Fig. 6, on an enlarged scale.

Fig. 1 illustrates the use of jamb locks. A sliding panel 10 is movable edgewise of itself (downward in Fig. 1) with respect to a parallel panel 12, which may be either a fixed panel or one which is itself movable edgewise of itself. A jamb lock housing 14 is mounted in the face 16 of the panel 12, and has a bolt 18 which in operative position stands outward from the panel 12 in the path of, and preferably closely adjacent to, a strike plate 20 on the panel 10. The erect bolt 18 thus forms an obstruction preventing movement of the panel 10 in a direction of increased overlap of the panel 12. Assuming the panel 10 to be closed, and the panel 12 to be fixed, the erect bolt prevents opening of the panel 10. The bolt 18 is pivoted in the body 14, as on a pivot pin 22, and is yieldingly held in projected position by the top leaf of a U-shaped spring 24 bearing against its flat butt end 26. To release the bolt, it is pivoted about the pivot pin 22, to a vertical position flush within the body 14. During such movement of the bolt, the heel 27 of the bolt depresses the spring 24 until the heel moves over-center, and the spring then urges the bolt to retracted position. In such retracted position, as shown in dotted lines in Fig. 3, the spring bears against the bottom face of the bolt to hold the bolt retracted.

As is seen in Figs. 1–3, the bolt housing is a box-like structure with a mounting flange at its open side. Its side walls **28** support the pivot pin **22** for the bolt **18**, and its bottom wall **30** supports the bottom leg of the U-shaped leaf spring **24**. Conveniently, the housing **14** may be formed to provide a pair of side bosses **32** to center the spring **24** and with a pair of bosses **34** which interengage notches in the spring **24** to locate that spring in the housing.

In the embodiment of the invention shown in Figs. 2 and 3, the pivot-pin hole **36** in the bolt **18** is elongated in a direction generally longitudinally of the bolt **18**. When the bolt is in erect position, the spring **24** urges the bolt outward, to take up the lost motion permitted by the elongated pin hole **36**.

To provide for dead-locking the bolt in erect position, it is provided at one or both sides with a lock pin **40** positioned between the pivot pin hole **36** and the inner end **26** of the bolt **18**, and a shaped slot is formed in one (or each) side wall **28** of the housing to receive and cooperate with that pin **40**. The slot includes a keeper portion **42** which extends radially and downward from the axis of the pivot pin, and an arcuate portion **44** which joins the keeper portion **42** at its outer end and which extends generally in an arc about the axis of the pivot pin **22**. When the bolt is in erect position, as shown in full lines in Fig. 3, with its lost motion taken up by the pressure of the spring **24** against its end **26**, the lock pin **40** lies in the radial keeper portion **42** of the slot, and locks the bolt **18** against pivotal movement about the pin **22**.

To retract the bolt, it is first manually thrust inward against the bias of the spring **24**, such movement being permitted by the lost motion between the pivot pin **22** and its pivot hole **36**; and such movement carries the lock pin **40** to the arcuate portion **44** of the slot, to release the pin **40** from its locking position, and to permit the bolt **18** to be pivoted to retracted position. During such pivotal movement the lock pin **40** moves in the arcuate portion **44** of the shaped slot. The arcuate portion **44** of the keeper slot may lie in a true arc about the axis of the pivot pin **22**, in which case the bolt will be held in longitudinally displaced position with the pin **22** in the outer end of the elongated pin hole **36**. Alternatively, the arcuate slot **44** may be arranged as a helix about the pivot pin **22**, with its outer end closer to the pivot pin **22**. In such case, the bolt **18** will move longitudinally as it pivots, and in the fully retracted position of the bolt, the pin **22** will lie at the inner end of the elongated pivot hole **36**.

When the bolt **18** is again raised to erect position, the lock pin **40** travels along the arcuate portion **44** of the slot, and then moves into the radial portion of that slot under the influence of the spring **24**, to automatically lock the bolt in erect position.

In the modification shown in Figs. 4 and 5, dead-locking of the bolt **18** is effected by providing such bolt with a latch boss **50** on its butt end **26**, and forming a keeper slot **52** in the free leg of the leaf spring **24**. As in the previous modification, the pivot hole **36** for the pivot pin **22** is elongated to permit longitudinal lost motion movement of the bolt **18**. In Fig. 4, such elongation is in a direction at a slight angle to the longitudinal center line of the bolt **18**, so that when the bolt is in retracted position the slot **36** has a camming effect which, under the pressure of the biasing spring **24** tends to move the bolt **18** in a direction to take up its lost motion.

When the bolt **18** as shown in Fig. 4 is in erect position, as shown in full lines, the free leg of the spring **24** lies flat against the butt end **26** of the bolt **18**, with the latch boss **50** received in the keeper slot **52**, and this interengagement prevents pivotal movement of the bolt **18** toward retracted position. When it is desired

to retract the bolt, the bolt is thrust inward through the lost motion provided by its elongated pivot hole, and in such movement the heel **27** of its end face **26** depresses the free leg of the spring **24**, moving that leg angularly, as shown in dotted lines in Fig. 4, to carry its keeper slot **52** out of engagement with the latch boss **50**. The dead-lock is thus released by lengthwise displacement of the bolt **18**, and such bolt in its displaced position is free to be pivoted to its retracted position. In the retracted position, the free leg of the spring **24** presses against the lower face of the bolt **18** both to retain it in retracted position and to cooperate with the camming function of the angularly elongated pin hole **36** and move the bolt in a direction to take up its lost motion on the pivot pin **22**.

In a modification shown in Figs. 6–8, the dead-locking interengagement is effected between the fixed pivot pin **54** and the walls of the elongated pin hole in the jamb bolt **58**. The pivot pin is a generally cylindrical pin with concentric cylindrical top and bottom surfaces **60** but with its sides cut away to form flat side surfaces **62**. The side surfaces **62** may lie at an angle to each other, converging toward the bottom of the housing, but preferably are substantially parallel surfaces. The pivot pin hole is generally key-hole shaped, and has a main cylindrical portion **64** and a side slot portion **66** extending toward the butt end **57** of the bolt **58**. The slot **66** is of slightly greater width than the thickness between the two side faces **62** of the pivot pin **54**.

When the bolt **58** is in erect position as shown in full lines in Fig. 8, the slot **66** portion of the pin hole is aligned edgewise with the flattened pivot pin **54**, and the biasing spring **24** urges the bolt **58** outward to engage that slot with that pin. There is thus a tongue-and-groove interengagement between the fixed pivot pin **54** and the bolt **58**, which prevents pivotal movement of the bolt **58**. When it is desired to retract the bolt **58**, the bolt is first thrust inward, to move it longitudinally of itself, and release the pin **54** from the notch **66** and dispose the pin **54** in the cylinder portion **64** of the pin hole. The bolt **58** can then be freely pivoted to its retracted position.

I claim as my invention:

1. A dead-locking jamb bolt, comprising a box-like housing adapted to be flush-mounted in the face of a jamb, a bolt pivotally movable in said housing between an erect position in which it stands out from the jamb and a depressed position in which it lies within the box-like housing below the jamb face, said bolt also having limited movement longitudinally of itself when in erect position, locking means between said bolt and housing for locking said bolt in erect position, said locking means including interengaging parts respectively on said bolt and housing which interengage when said bolt is in erect position and is at one limit of its movement longitudinally of itself, said parts being disengaged by longitudinal movement of the erect bolt from said limit position, and means to bias said erect bolt toward said limit position and against disengaging movement.

2. A dead-locking jamb bolt according to claim 1 in which one of said bolt and housing carries a lock projection and the other carries a keeper slot, said projection and slot being aligned for interengagement when said bolt is in erect position and being urged to such interengagement by said biasing means.

3. A dead-locking jamb bolt, comprising a box-like housing adapted to be flush-mounted in the face of a jamb, a bolt pivotally movable in said housing between an erect position in which it stands out from the jamb and a depressed position in which it lies within the box-like housing below the jamb face, said bolt also having limited movement longitudinally of itself when in erect position, means to bias the bolt in one direction of such longitudinal movement, said bolt carrying a lateral lock projection and said housing being provided with a slot

for said projection, said slot having an outer arcuate portion permitting free movement of said projection during pivotal movement of the bolt, and having a radial keeper portion to receive the projection in bolt-locking engagement when the bolt is erect, said projection being moved radially upon longitudinal displacement of the bolt, said biasing means urging the bolt in a displacement direction to engage the projection in said radial portion, and said bolt being manually movable in a displacement direction to release the projection.

4. A dead-locking jamb bolt, comprising a box-like housing adapted to be flush-mounted in the face of a jamb, a bolt pivotally movable in said housing between an erect position in which it stands out from the jamb and a depressed position in which it lies within the box-like housing below the jamb face, said bolt also having limited movement longitudinally of itself when in erect position, means to bias the bolt in one direction of such longitudinal movement, said bolt having an end face in tangential relation to the pivot axis, and said biasing means comprising a yieldable leaf bearing against said end face when the bolt is erect, a latch boss on one of said face and leaf and a keeper slot in the other, the same being in locking engagement when said bolt is erect, said leaf being moved by longitudinal displacement of the bolt to release such locking engagement.

5. A dead-locking jamb bolt, comprising a housing, a bolt mounted for pivotal movement in said housing between depressed and erect positions and for limited longitudinal displacement when in erect position, locking means between said bolt and housing and including interengaging elements respectively on said bolt and housing which interengage to prevent pivotal movement of the bolt from erect position when the erect bolt is in a position of longitudinal displacement, and means to bias the bolt to said position of displacement.

6. A dead-locking jamb bolt as defined in claim 5 in which said displacement moves the bolt radially of its pivot axis, and said locking means comprises a tongue on one of said bolt and its pivot support and a tongue-receiving groove on the other, which tongue and groove interengage upon such radial displacement to lock the bolt in erect position.

7. A dead-locking jamb bolt as defined in claim 5 in which the bolt is mounted on a fixed pivot pin, the pin hole having a slot and the pin having a tongue to enter said slot when the bolt is erect.

8. A dead-locking jamb bolt for blocking movement of a sliding panel, comprising a housing adapted to be mounted in a support at the edge of the panel, a bolt mounted for pivotal movement in said housing on an axis parallel with the direction of movement of the panel, said bolt having a depressed position and being pivotally movable in a plane across the path of panel movement to an erect position blocking said movement, said bolt also having limited radial displacement movement in said plane when in erect position, locking means for said bolt including interengageable parts respectively on the housing and bolt which engage to prevent pivotal movement of the bolt from erect position when the erect bolt is in a position of displacement, and means to bias the bolt to said position of displacement.

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