Aug. 22, 1961 M. BOBRICK 2,997,321

TOUCH LATCH FOR CEILING LIGHT FIXTURES

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FIG. 1.

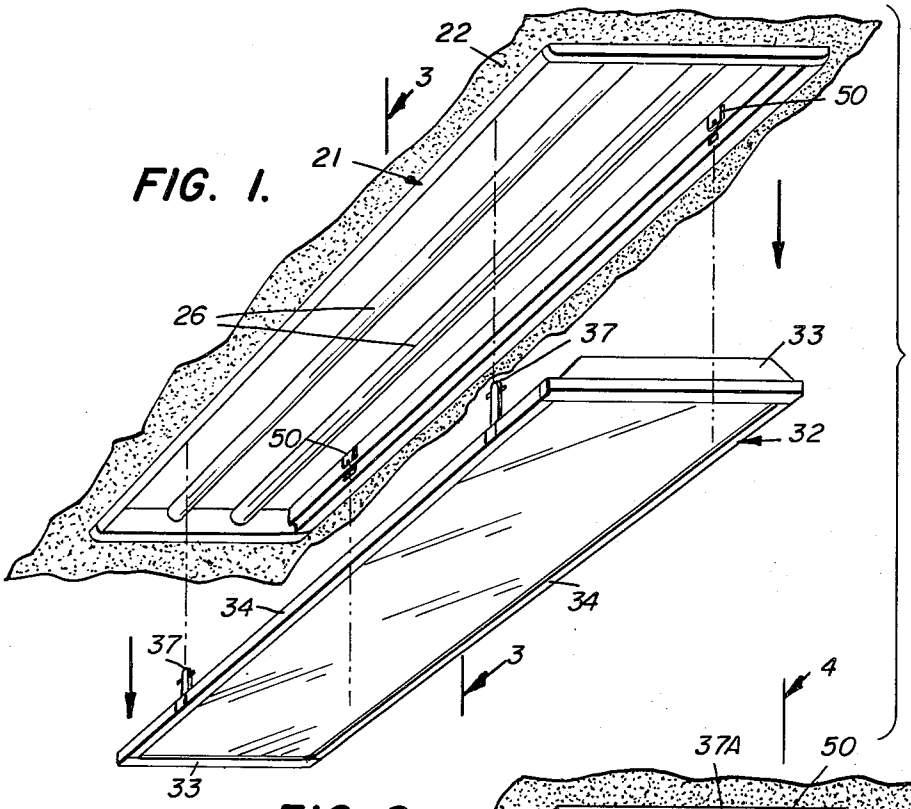
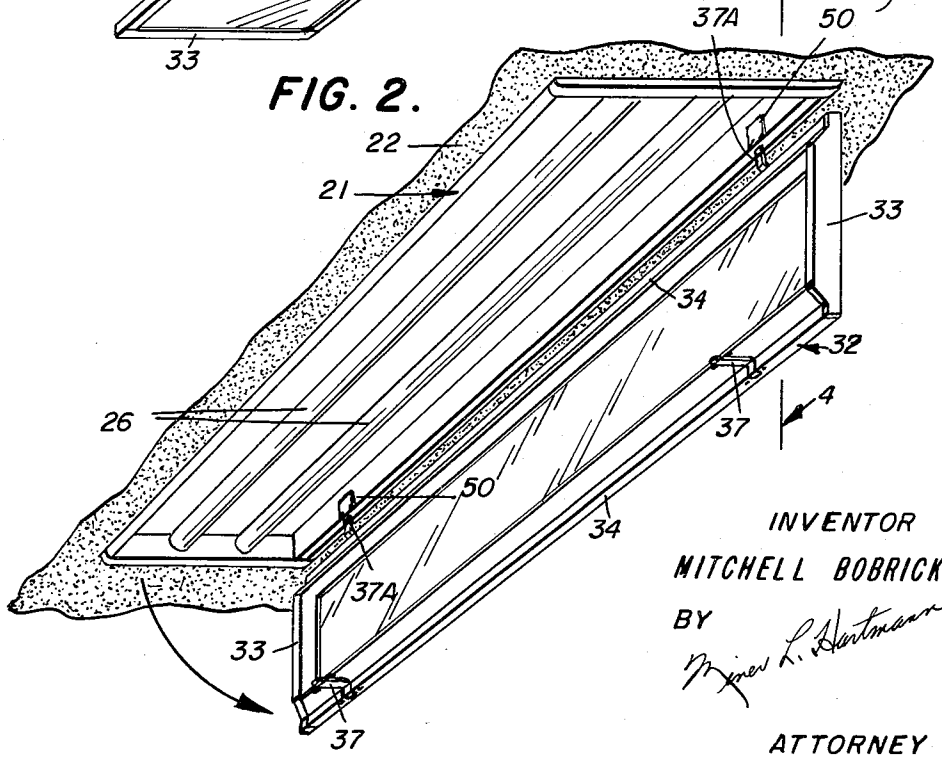


FIG. 2.

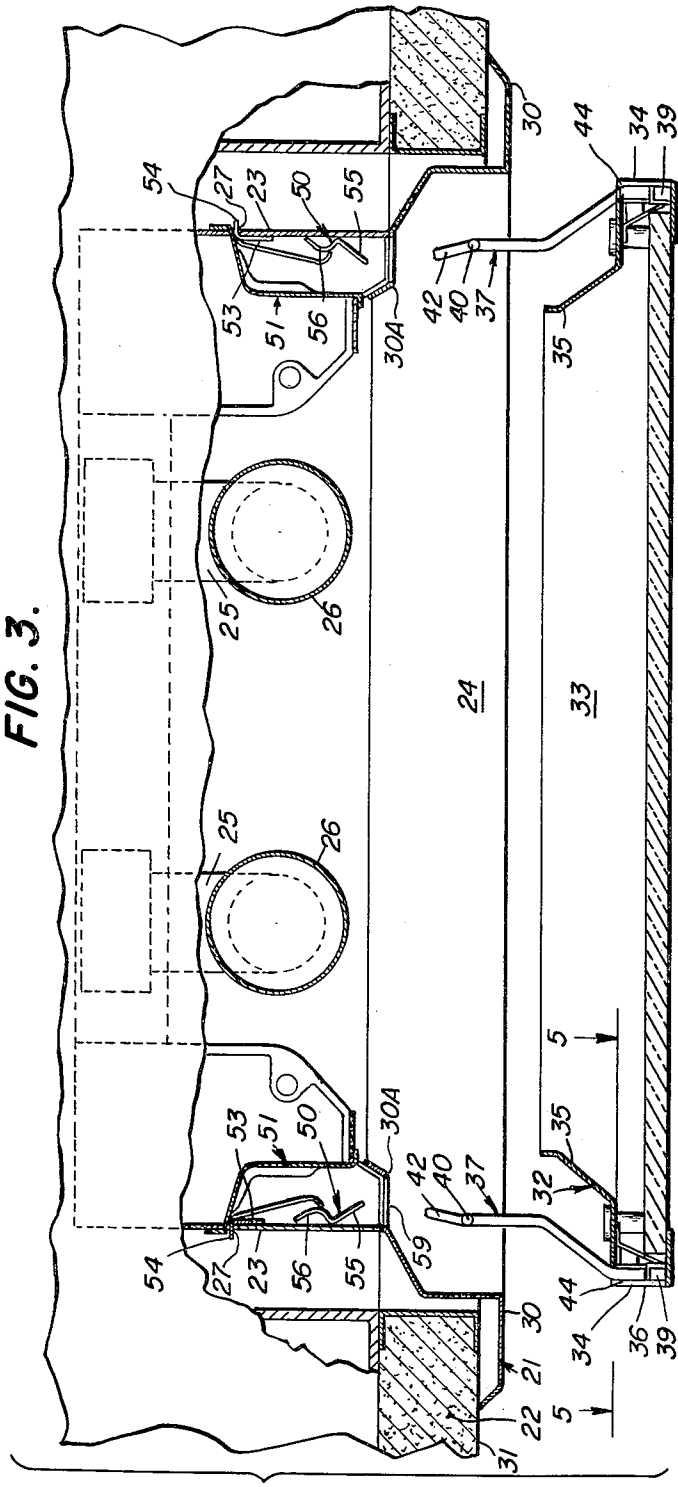


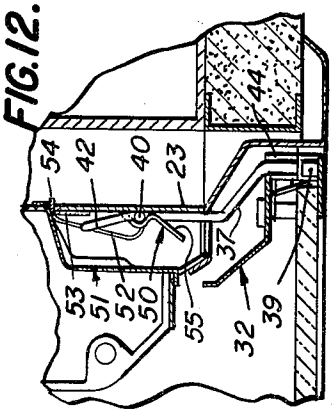
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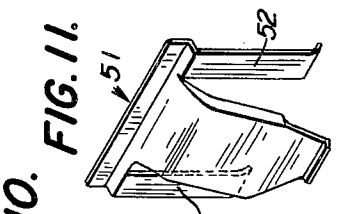
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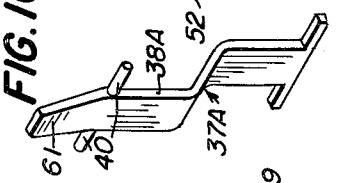
TOUCH LATCH FOR CEILING LIGHT FIXTURES

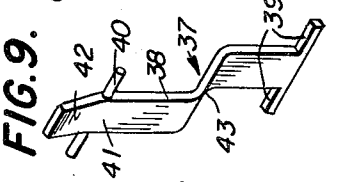
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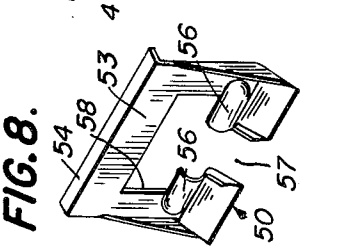












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FIG. 4.

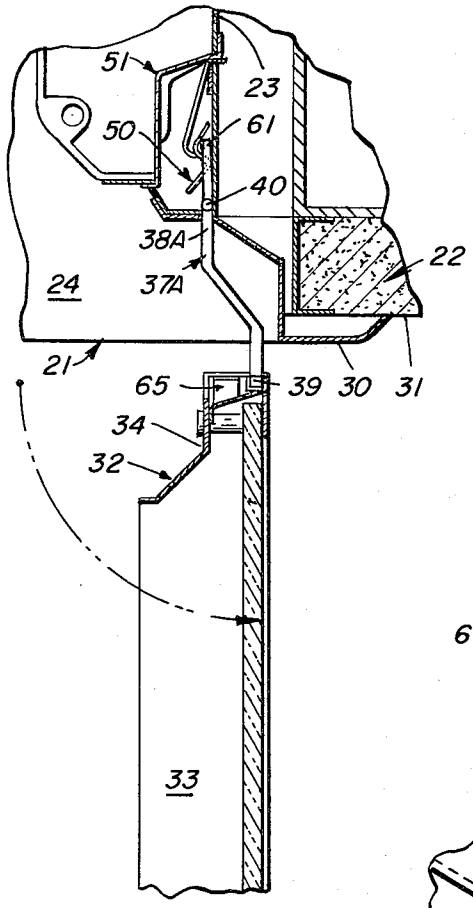


FIG. 5.

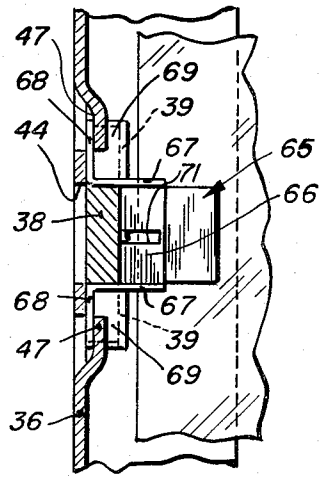


FIG. 6.

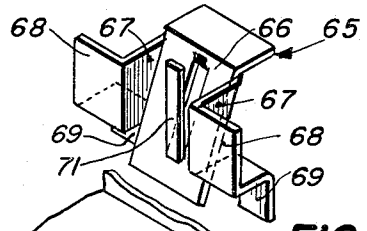


FIG. 7.

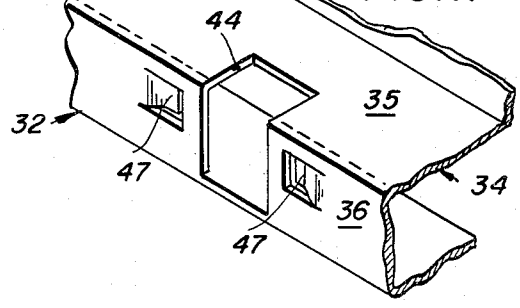
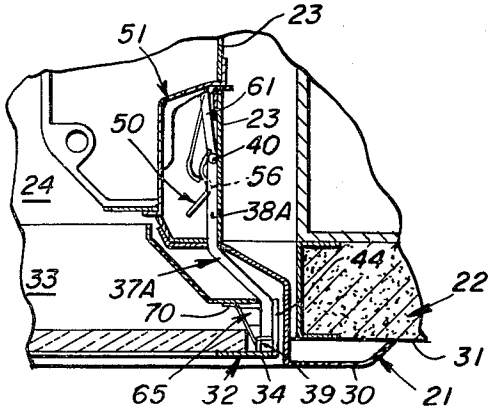


FIG. 13.



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FIG. 10 A.

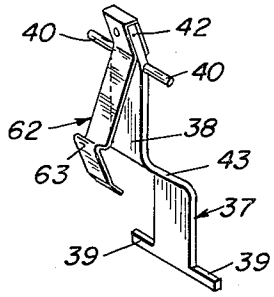
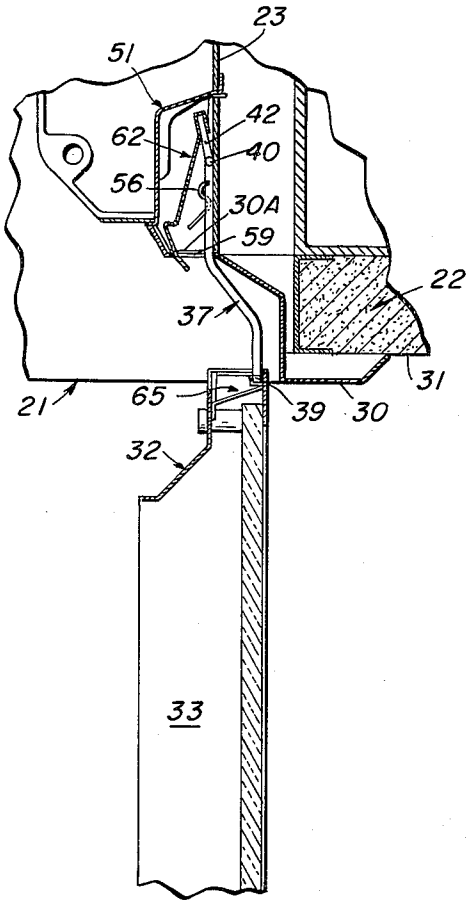


FIG. 14.



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TOUCH LATCH FOR CEILING LIGHT FIXTURES

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Filed Feb. 1, 1960, Ser. No. 5,786
4 Claims. (Cl. 292—91)

This invention relates to latching and hinging means for the lens or diffuser frame of a ceiling light fixture and particularly of a flush mounted ceiling light fixture.

One object of the invention is to provide a touch latch. Another object is to provide latching means for a ceiling light fixture which permits the diffuser frame to be installed or removed without the use of tools and without hand operations except those of pressing upon the frame margins and of holding the diffuser frame to prevent it from falling. Another object is to provide touch latch means for mounting a ceiling light fixture whereby the diffuser frame may be attached by merely pressing it into place and which may be completely detached or, alternatively, detached on one side with hinging on the other side, to provide access to the interior of the light fixture.

These and other objects are attained by my invention which will be understood from the following description, reference being made to the accompanying drawings in which

FIG. 1 is a perspective view showing a flush mounted ceiling light fixture and a diffuser frame equipped with my touch latch means, in disengaged position;

FIG. 2 is a perspective view of a flush mounted ceiling light fixture showing one side of the mounted diffuser frame equipped with touch latch means in detached position while the other side of the frame is hingedly supported by latch members of a slightly different form which remain latched (unless intentionally released) to provide a hinged mounting for one side of the diffuser frame.

FIG. 3 is a transverse sectional view taken on the line 3—3 of FIG. 1;

FIG. 4 is a transverse sectional view taken on the line 4—4 of FIG. 2;

FIG. 5 is a fragmentary cross-sectional view taken on the line 5—5 of FIG. 3;

FIG. 6 is a perspective view of the friction element which holds the latch operating member in operative alignment when disengaged from the latch;

FIG. 7 is a fragmentary perspective view of the diffuser frame showing the openings for mounting the friction element of FIG. 6 therein;

FIG. 8 is a perspective view of the strike member of the latch;

FIG. 9 is a perspective view showing the short latch operating member;

FIG. 10 is a perspective view showing a latch operating member with an elongated nose which, when used in place of a short operating member functions to prevent unlatching of the devices on one side of the diffuser frame;

FIG. 10A is a perspective view showing a short latch operating member equipped with a safety spring catch which when used on the latches on one side of the frame, provide unlatched but hinged support (manually releasable) for the frame.

FIG. 11 is a perspective view of the spring member of the latch assembly;

FIG. 12 is an enlarged fragmentary cross-sectional view showing the latch and the latch operating member in latched position;

FIG. 13 is an enlarged fragmentary cross-sectional view showing the latch and long latch operating member in restrained position due to the long nose, which prevents unlatching; and

FIG. 14 is an enlarged fragmentary cross-sectional view similar to FIG. 4 in which the safety spring catch attachment on a short nose operating member prevents unlatching.

Referring to the drawings, particularly FIG. 1, a ceiling light fixture **21** is shown in flush mounting on a ceiling **22**, the fixture being supported by any suitable supporting means, not shown, on the ceiling structural member. The light fixture is provided with side walls **23** and end walls **24** forming a housing, the said end walls supporting sockets **25** for fluorescent tubes **26**.

The lower margins of the side walls **23** and the end walls **24** of the fixture are provided with overlapping trim members **30** which press against the ceiling surface **31**, there being horizontal stop rims **30A** which limit the upward movement of the diffuser frame, the opening for the diffuser frame **32** being defined by said lower margins of side walls and end walls adjacent said trim members **30**.

The diffuser frame **32** consists of end pieces **33** and side pieces **34** which are joined at the ends to form a rectangular frame, this frame fitting into the opening defined by the lower margins of the side walls **23** and end walls **24**.

Usually there are four latching devices provided, each of which consists of a latch operating member **37** attached to the diffuser frame, a strike **50** and a spring member **51** for the strike, attached to the side walls **23** of the fixture, as will now be more particularly described.

The latch operating member **37** which is shown in detail in FIG. 9 consists of a bar **38** having a squared cross-supporting and hinging arm **39** attached at one end and a round latching pin **40** adjacent the upper end **41**, the arm and pin being parallel and at right angles to the latch member **37**. A short nose **42** extends from the bar beyond the latching cross pin **40**.

An opening **44** for the latch member **37** is provided in the side piece **34** of the diffuser frame **32**, this opening extending through the top member **35** of the channel side piece **32** and the opening also extending into the vertical member **36** of the channel side piece **32**, as shown particularly in FIG. 7.

A friction element **65** is provided in the channel side member **34** of the diffuser frame **32** adjacent the openings in the horizontal member **35** and in the vertical member **36**. The element **65** has a back plate **66** attached at **70** to the diffuser frame channel member **35**, and side walls **67** with side tabs **68** which engage pocket slots **47** in the channel vertical member **36**. A spring tab **71** is struck out from the back plate **66** to resiliently support the latch member **37**.

Extension tabs **69** extend below the slots **47** from the side tabs **68** which are somewhat loosely wrapped partly around the squared cross hinging arms **39**. The back plate **66** of the friction element **65** presses upon the square end **39** of the bar **38** or alternatively on the flat face of said bar (near the cross arms **39**) to frictionally hold said bar in either the correct vertical position to engage the strike **50**, or in position at right angles thereto, corresponding to the hinged down position. The latch operating member **37** is provided (when required) with an offset bend **43** so that the latching cross pin **40** will engage the strike **50** which is mounted in the side wall **23** of the ceiling fixture, entrance holes **59** for the latch operating bars being provided through the rim **30A**.

The strike **50**, shown particularly in FIG. 8, is shaped from sheet metal, there being a vertical body portion **53**, a top horizontal mounting flange **54** which engages in a slot **27** in the side wall **23**, a pair of sloping strike sur-

faces 55 each terminating at approximately half the vertical height of the body 53 in horizontal grooved detents 56, there being an opening 57 in said body between said detents 56 adapted to admit the latch operating bar 38. Above the detents 56, said opening 57 communicates with a wider opening 58 in the body portion 53, this being wide enough to allow free passage therethrough of the latching cross pin 40 when it is raised above the detents 56.

The spring member 51 for the strike 50 is generally shaped to fit over the strike, the legs 52 being arranged to press against the back faces of strike surfaces 55 and the detents 56. When the latching cross pin 40, carried by the bar 38 of the latching member 37 is pressed upwardly, the ends of the latching pin 40 are guided into the grooved detents by the strike surfaces 55. The diffuser frame 32 is then supported in proper place in the fixture opening by the four latches. (See FIG. 12.)

To release the latches, the diffuser frame is again pushed upwardly. This causes the latching pins 40 to be raised above the detents 56, and the bar 38 and the pins 40 pass through the opening 58, and release the diffuser frame 32.

In an alternative form of my invention, shown in FIGS. 2, 4, 10 and 13, the latches on one side only of the diffuser frame are arranged for releasing the frame as described above, while the latches on the opposed side are constructed so that these latches are not released by a further upward push, but instead hold the one side of the diffuser frame securely in latched position. In this form a long nose 61 on the latch bars 38A (see FIGS. 10 and 13) is used. The long nose 61 prevents the latch member 37A from being pushed upwardly far enough to release the latching cross pin 40 into the opening 58, and the cross pins 40 remain in the detents 56. The cross supporting arm 39 at the other end of the latch bar 37A then serves as a pivot engaging the underside of the top member 35 of the channel side piece 32 by which the diffuser frame may be hingedly supported to a full opening, as indicated in FIG. 4.

Instead of using a long nose 61 on the latch bars 38A in this alternative form of the invention, a spring catch 62 may be attached to the end of a short nose 42 on the latch operating bar 38, the spring being provided with a shoulder 63 which engages the edge of the entrance hole 59 in the horizontal rim portion 30A of the trim member 30. This prevents the withdrawal of the latch operating bars on the fixture side to which the diffuser frame is hinged, unless the end 64 of the spring catch is pressed inwardly to release the catch, after which the latch operating bar with the spring catch may be completely withdrawn, thus releasing the frame.

I prefer to use a pair of latches on the two opposite long sides of a fluorescent light fixture, but obviously one or a greater number than two may be used on each side.

While I have illustrated the use of my touch latch device as applied to the problem of removably supporting a diffuser frame in a troffer fluorescent light fixture, the latch may be used in other similar applications of closures where a mere push latches the parts, and a second push unlatches the separable parts, for example, in hinged cupboard doors.

The advantages of my invention will be understood from the above description. The touch latch device applied to both sides of the diffuser frame and of the corresponding fixture frame provides means of readily attaching or detaching the frame without any tools, merely by pressing the latches upwardly to latch, and then again pressing upwardly to release. Where it is desired to hinge the frame on one side, the touch latches may be provided on one side of the frame, to be attached and detached as described, while the opposite side is attached merely by pressing the latches into the strikes as before, but because of the use of a long nose of the strike, or of a spring catch attached to a short nose, these may not be unlatched by a second upward thrust, but remain latched until intentionally released. Hinging is then provided by the hinged attachment of the other end of the strike bar to the diffuser frame.

The objectives stated at the beginning have been attained.

I claim:

1. In a touch latch for use in holding a closure member in juxtaposed relation to a framed opening in a body member, a latch member and a latch operating bar, said latch member comprising a strike plate mounted on the inside frame surface of said body member, said strike plate being bifurcated by a T-shaped slot forming legs which are laterally spring biased against said inside frame surface, each of said strike plate legs being provided with a flared end portion and having a cross groove detent inwardly of said flared portion, the cap portion of said T-shaped slot being disposed inwardly from said groove detents; and said latch operating bar having one end attached to the closure member, said bar having a latching cross pin disposed near the unattached end thereof, the end portions of said cross pin being adapted to enter said flared ends of said legs to engage said groove detents when said juxtaposed members are initially pressed together, said cross pin being of length not greater than said cap portion of said T-shaped slot whereby when said members are pressed together a second time, said pin is pushed out of said detents of said strike plate, and said bar and pin pass through said T-shaped slot, whereby the members become unlatched.

2. In a touch latch for use in holding a closure member in juxtaposed relation to a framed opening in a body member, a latch member and a latch operating bar, said latch member comprising a strike plate mounted on the inside frame surface of said body member, said strike plate being bifurcated by a T-slot forming legs which are laterally spring biased against said inside frame surface, each of said strike plate legs being provided with a flared end portion, and having a cross groove detent inwardly of said flared portion, the cap portion of said T-shaped slot being disposed inwardly from said groove detents; and said latch operating bar having one end hingedly attached to the closure member, said bar having a latching cross pin disposed near the unattached end thereof, the end portions of said cross pin being adapted to enter said flared ends of said legs to engage said groove detents when said juxtaposed members are initially pressed together, said cross pin being of length not greater than said cap portion of said T-shaped slot whereby when said members are pressed together a second time, said pin is pushed out of said detents of said strike plate, and said bar and pin pass through said T-shaped slot, whereby the members become unlatched.

3. In a touch latch for use in holding a closure member in juxtaposed relation to a framed opening in a body member, a latch member and a latch operating bar, said latch member comprising a strike plate mounted on the inside frame surface of said body member, said strike plate being bifurcated by a T-slot forming legs which are laterally spring biased against said inside frame surface, each of said strike plate legs being provided with a flared end portion, and having a cross groove detent inwardly of said flared portion, the cap portion of said T-shaped slot being disposed inwardly from said groove detents; and said latch operating bar having one end hingedly attached to the closure member, said bar having a latching cross pin disposed near the unattached end thereof, the end portions of said cross pin being adapted to enter said flared ends of said legs to engage said groove detents when said juxtaposed members are initially pressed together, said end portion of said latch operating bar extending beyond said cross pin for a distance greater than the distance between said detents and said T-slot, whereby when said members are pressed together

a second time said cross pin cannot pass through said T-slot.

4. The touch latch defined in claim 2, in which the portion of said latch operating bar extending beyond said cross pin is provided with a manually releasable safety spring catch which engages said body member, whereby the members become unlatched on the second push only when said spring catch is released by hand.

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