Aug. 18, 1964 G. E. SWANSON 3,145,038

CATCH FOR A PACKING CASE OR THE LIKE

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FIG. 1

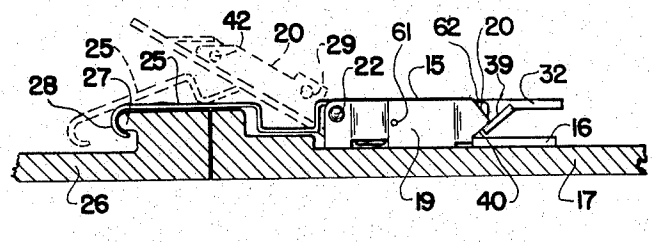


FIG. 2

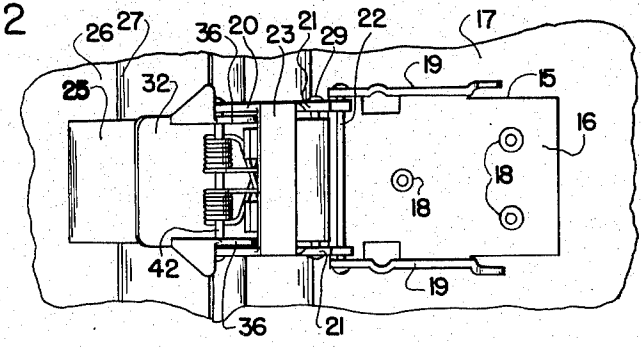
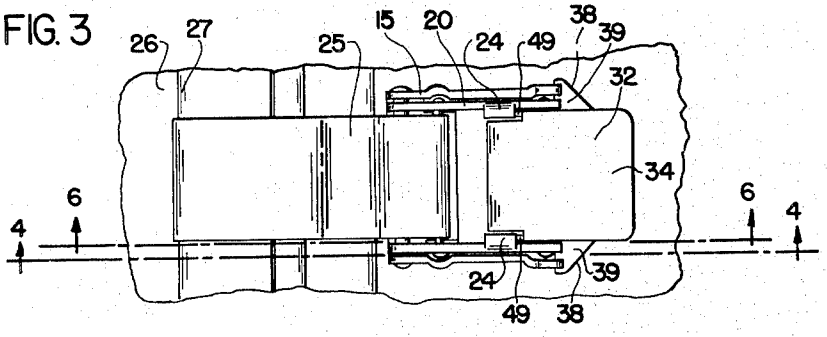


FIG. 3



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FIG.4

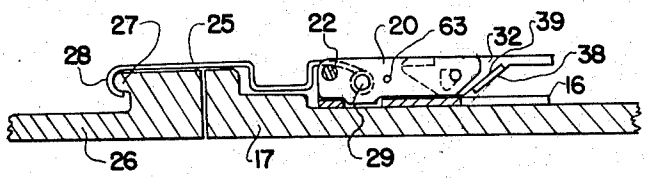


FIG.5

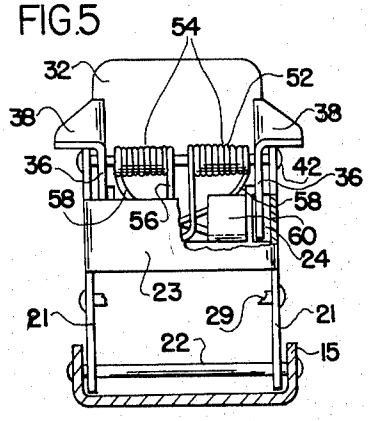


FIG.6

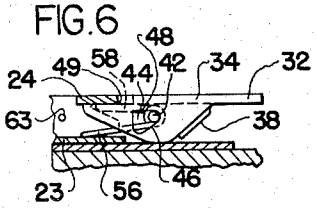


FIG.8

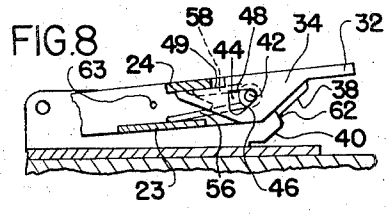


FIG.7

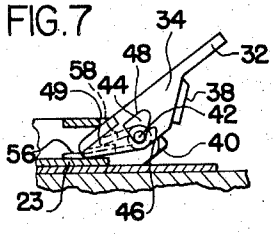
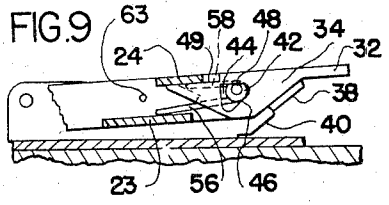


FIG.9



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FIG. 10

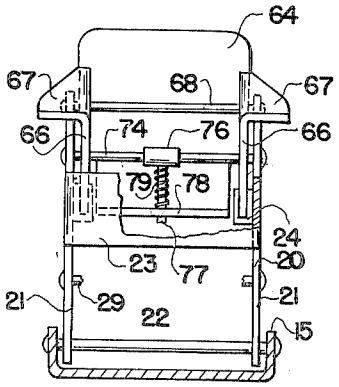


FIG. 11

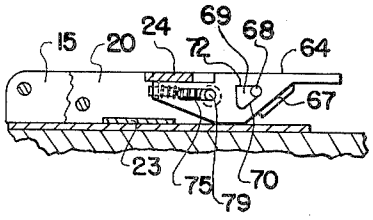


FIG. 12

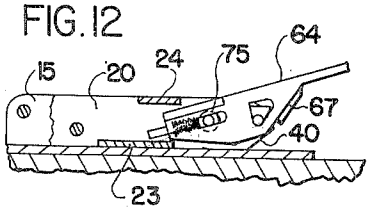


FIG. 13

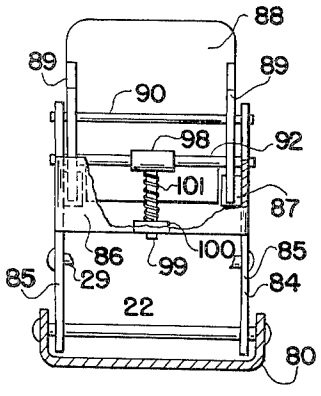


FIG. 14

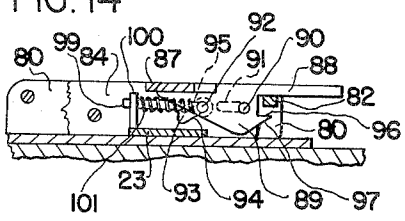
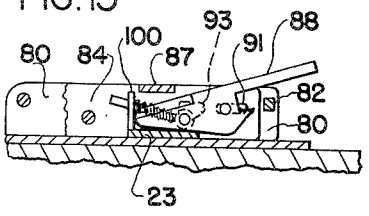


FIG. 15



United States Patent Office 3,145,038 Patented Aug. 18, 1964

3,145,038

CATCH FOR A PACKING CASE OR THE LIKE

Gunnar E. Swanson, Middletown, Conn. (% Nielsen Hardware Corp., 770 Wethersfield Ave., Hartford 6, Conn.)

Filed Oct. 19, 1962, Ser. No. 231,798
23 Claims. (Cl. 292—113)

This invention relates to a catch for use in releasably securing together two separable panels as for example the mating panels provided by the cover and main body of a packing case. More particularly, this invention relates to a catch adapted for attachment to one of said separable panels and including a hooked latch member or the like adapted to engage a strike attached to the other of said panels and which latch member is movable relative to the first panel by the action of the catch to exert or release a closing pressure on said strike.

One object of the present invention is to provide an improved catch of the foregoing type including a main lever movable about a fixed axis for moving said latch member between open and closed positions relative to the strike and which catch in the closed condition is resistant to accidental release by shock loads, vibrations or the like. In keeping with this object of the invention a more particular object is to provide a locking means for holding the main lever in the position corresponding to a closed position of the latch member and which locking means is highly resistant to release by normally encountered shock forces and the like while nevertheless being easily releasable by manual action.

Another object of this invention is to provide a control lever for a catch of the foregoing character which requires relatively simple manipulative movements to effect release and which may be easily operated by a gloved hand.

A further object of this invention is to provide a catch of the foregoing character wherein the locking means are released and set as a result of apparent and generally normal opening and closing movements of the main lever.

Another object of this invention is to provide a catch of the foregoing character which is relatively economical to manufacture and which has a relatively low profile so as to project only a small distance from the panel or other surface to which it is attached.

Another object of this invention is to provide in a catch of the foregoing character a control lever which is capable of moving a considerable distance relative to the main lever and through which ample force can be transmitted to the main lever to permit manual operation of the main lever by means of the control lever.

A still further object of the invention is to provide a catch of the foregoing character which is so constructed as to permit the easy application of a seal wire for sealing the catch in the closed position.

Other objects and advantages of the invention will be apparent from the following description and from the drawings forming a part thereof.

The drawings show preferred embodiments of the invention and such embodiments will be described, but it will be understood that various changes may be made from the constructions disclosed, and that the drawings and descriptions are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawings:

FIG. 1 is a side elevational view of a catch embodying the present invention, the full lines showing the catch in its closed condition and the broken lines showing the catch in its released position.

FIG. 2 is a top plan view of the catch of FIG. 1 with the same being shown in its released condition.

FIG. 3 is a view similar to FIG. 2 but with the catch being shown in its closed condition.

FIG. 4 is a longitudinal sectional view taken on the line 4—4 of FIG. 3.

FIG. 5 is an enlarged bottom view of the main lever and control lever of the catch of FIG. 1 with various parts being broken away to show more clearly other parts.

FIG. 6 is a fragmentary longitudinal sectional view taken on the line 6—6 of FIG. 3 and shows the control lever in its normal or locked position relative to the main lever with the main lever being shown in its closed position.

FIG. 7 is similar to FIG. 6 but shows the control lever moved to its unlocked position.

FIG. 8 is generally similar to FIG. 7 but shows the main lever moved to a partially released position.

FIG. 9 is generally similar to FIG. 8 but shows the main lever moved downwardly slightly from the FIG. 8 position.

FIG. 10 is a view generally similar to FIG. 5 but shows a catch construction comprising another embodiment of the invention.

FIG. 11 is a fragmentary longitudinal sectional view generally similar to FIG. 6 but showing the embodiment of FIG. 10.

FIG. 12 is generally similar to FIG. 11 but shows the control lever moved to its unlocked position.

FIG. 13 is a view generally similar to FIG. 5 but shows a catch construction comprising still another embodiment of the invention.

FIG. 14 is a fragmentary longitudinal sectional view generally similar to FIG. 6 but showing the embodiment of FIG. 13.

FIG. 15 is a view similar to FIG. 14 but shows the control lever moved to its unlocked position.

Latch Construction of FIGS. 1 to 9

In accordance with the present invention there is provided a catch having a body adapted for attachment to one of two separable panels or the like and including a main lever pivotally secured to the body for movement about a fixed axis between first and second positions for the purpose of moving an associated latch member or the like into and out of closing relation with a strike fixed to the other separable panel. Carried by the main lever is a control lever which is engageable by the fingers and/or thumb of a user for the purpose of moving the main lever between its first and second position. The control lever is movable both longitudinally and angularly relative to the main lever and includes at least one generally longitudinally extending stop surface which engages a corresponding stop surface on the body of the catch to hold the main lever in the position corresponding to the closed condition of the latch member. Biasing means are provided between the control member and the main lever for biasing the control lever toward its locked relationship with the body member, and means are further provided between the main lever and the control lever for moving the control lever longitudinally of the main lever and out of locked relationship with the body member as a result of a manual force applied to the control lever in the direction corresponding to movement of the main lever toward the position corresponding to an open condition of latch member.

One latch construction embodying the invention is shown in FIGS. 1 to 9, inclusive. Referring to these figures the illustrated catch includes a body member 15 having a generally flat base portion 16 adapted for attachment to a panel 17 as by a plurality of rivets 18, 18.

Also included on the body member **15** are two longitudinally extending and laterally spaced side flanges **19, 19** which are integral with the base portion **16**.

Located between the body side flanges **19, 19** is a main lever **20** having two laterally spaced side flanges **21, 21** which are received between the body side flanges **19, 19** and which are pivotally secured at their forward ends to the forward ends of the body side flanges **19, 19** by a transverse pivot pin **22**. The pivot pin **22** therefore defines a fixed transverse axis about which the main lever is movable between first and second positions relative to the body member. FIG. 3 and the solid lines of FIG. 1 show the main lever in its second or closed position relative to the body while FIG. 2 and the broken lines of FIG. 1 show the main lever in its first or released position. The main lever **20** also includes a transverse web **23** which extends between and is integral with the bottom edge portions of the two side flanges **21, 21**. Along their upper edge portions the side flanges **21, 21** of the main lever are provided with two short tabs **24, 24** which project inwardly toward one another from the associated flanges.

Associated with the main lever **20** is a latch member **25** having a forward portion adapted to engage a strike on the associated panel **26**. In the illustrated case the strike is integral with the panel **26** and constitutes a forwardly extending bead **27**, the forward portion of the latch member **25** being provided with a hook **28** adapted to engage the bead **27** as shown in FIG. 1. The rear end portion of the latch member **25** is pivotally connected to the main lever by a transverse pivot pin **29** which is located rearwardly of the first pivot pin **22**. From FIG. 1 it will therefore be obvious that as the main lever **20** is moved from its first or broken line position to its second or full line position the latch member **25** will be brought into engagement with the bead or strike **27** on the panel **26** so as to exert closing pressure between the two panels **26** and **17**. From FIG. 4 it will also be noted that the pivot pin **29** is so located relative to the bead **27** and to the pivot pin **22** that as the main lever is moved to its second position the pivot pin **29** passes over center or beyond the line drawn between the bead **27** and the pin **22** so that when the main lever is in its second position it is normally retained in such position by the closing pressure and the over center position of the pivot pin **29**.

Even though the main lever is normally maintained in its second position by the over center action, shock loads, vibrations or the like may accidentally cause the main lever to move to its first or released position. To guard against this occurrence, the main lever has associated therewith a control lever **32** which is movable longitudinally and angularly relative to the main lever. When the main lever is in its second or closed position the control lever **32** normally occupies the position shown in FIGS. 1, 3 and 4. The lever **32** comprises a generally flat top portion **34** and two laterally spaced side flanges **36, 36** which are located between the side flanges **21, 21** of the main lever and which extend inwardly from the top portion **32** toward the base portion **16** of the body member when the main lever is in the second or closed position. The rear portions of the two side flanges **36, 36** are bent laterally outwardly to define two laterally outwardly extending and longitudinally inclined ears **38, 38**. The two ears **38, 38** in turn define two inclined stop surfaces **39, 39** which engage two correspondingly inclined stop surfaces **40, 40** on the rear end portions of the body side flanges **19, 19**. Due to their inclined nature the surfaces **39, 39** and **40, 40** extend some distance longitudinally or in the direction toward and away from the pivot pin **22**, and as best shown in FIG. 3, when the control lever **32** is in its normal or locked position and the main lever is in its second or closed position the surfaces **39, 39** longitudinally overlap the surfaces **40, 40** and thereby in cooperation with the slot and pin connection between the control lever and the main lever as hereinafter described restrain the main lever against movement to its first or released position.

The control lever **32** is secured to the main lever **20** by a transverse pivot pin **42** carried by the rear end portions of the main lever side flanges **21, 21**. This pivot pin **42** passes through enlarged openings **44, 44** in the side flanges **36, 36** of the control lever which openings loosely receive the pivot pin so as to permit the control lever to move some distance longitudinally as well as angularly relative to the main lever. The openings **44, 44** may take various different shapes but preferably, and as shown, are triangular or some other shape so that each opening includes a rear edge **46** inclined substantially in the same direction as the associated ear **38** so as to be substantially parallel thereto, and an upper horizontal edge **48**. The control lever is therefore movable angularly relative to the main lever as by moving angulary about the axis of the pivot pin **42** and is also movable longitudinally of the main lever as by sliding movement of the edges **46, 46** or **48, 48** relative to the pivot pin. When the control lever is in its normal position the pin **42** is located rearwardly in the openings **44, 44**, as shown in FIG. 6, so as to engage the notch defined in each opening by the intersection of the surfaces **46** and **48** and the angular position of the control lever is also such that the tabs **24, 24** on the main lever engage the stop surfaces **49, 49** provided on the forward portions of the control lever side flanges **36, 36**. In this position of the control lever the main lever is therefore effectively locked in its closed position and the arrangement of the parts is such as to resist opening movements of the main lever as a result of shock loads, an opening force on the main lever being transmitted by the pin **42** to the control lever through the walls of the openings **44, 44** and in turn resisted by the engagement of the ears **38, 38** with the surfaces **40, 40**.

Associated with the control lever **34** is a means for biasing the same to its normal position and for resisting its movement both angularly and longitudinally from such normal position. This means may take various forms and in the illustrated case comprises a biasing spring **52** which, as shown best in FIG. 5, surrounds the pivot pin **42** between the side flanges **36, 36** of the control lever. The spring **52** includes two coiled portion **54, 54** which are joined by a forwardly extending U-shaped portion **56** that engages the transverse web **23** of the main lever. On each end of the spring **52** is an arm **58** which extends generally forwardly and transversely of the control lever and which at its forwardmost end is received in a rearwardly opening U-shaped notch defined by a tab **60** bend downwardly and rearwardly from the forward edge of the control lever.

In operation the spring **52** serves both as a torsion spring and as a compression spring. When the control lever is in the normal position illustrated in FIG. 6 the U-shaped portion **56** of the spring bearing against the web **23** and the two arms **58, 58** bearing against the top portion **34** of the control lever tend to urge the control lever in the clockwise direction as viewed in FIG. 6 about the axis of the pin **42** and to thereby normally hold the stop surfaces **49, 49** of the control lever against the tabs **24, 24** of the main lever and to resist movement of the control lever about the axis of the pin **42** in the counterclockwise direction. In addition, the two arms **58, 58** of the spring **52** are held in a compressed state and press forwardly against the control lever tabs **60, 60** so as to normally hold the control lever in a longitudinally forward position relative to the main lever and to resist movement of the control lever rearwardly or to the right as viewed in FIG. 6.

The control lever **32** constitutes essentially a rearward extension of the main lever **20** and is movable with the main lever between its closed and released positions. The top portion **34** of the control lever is freely accessible to the thumb and/or fingers of a user and extends rearwardly beyond the rear end portions of the body member so that the rear portion thereof may easily be grasped by a user. Referring to FIG. 4, an upward or lifting

force is applied to the rear or right-hand end portion of the control lever 32 to move the main lever to its first or released position while a downward or lowering movement is applied to the control lever to move the main lever to its second or closed position. When the main lever is in the closed position as shown in FIG. 5, and before lifting force is applied to the control lever, the control lever by engagement of the ears 38, 38 with the stop surfaces 40, 40 on the body member prevents accidental movement of the main lever to its released position. As a lifting force is applied to the rear portion of the control lever, however, the main lever initially remains stationary and the control lever pivots angularly about the axis of the pivot pin 42. At the same time the lifting force applied to the control lever also causes the pin 42 to slide along the inclined surfaces 46, 46 of the openings 44, 44 in the side flanges of the control lever, and consequently causes the control lever to move longitudinally and rearwardly relative to the main lever. The surfaces 46, 46 and the pin 42 therefore act as a cam means for moving the control lever rearwardly in response to the lifting force. As shown in FIG. 7, the result of this rearward and angular movement of the control lever is that the locking ears 38, 38 are moved out of engagement or locked relationship with the stop surfaces 40, 40 on the body member. In this regard it should be noted that as the lifting force is applied to the rear end of the control lever the main lever initially remains in its closed position because of the over center force applied thereto by the latch member 25 and/or because of the engagement between the ears 38, 38 and the stop surfaces 40, 40 with the result that the lifting force is resisted to produce a reaction which rotates the control lever relative to the main lever and causes the surfaces 46, 46 to slide relative to the pin 42 against the face of the spring 52.

If after the control lever is moved to the position shown in FIG. 7 the lifting force is maintained thereon, the main lever will be swung to its fully released position, further pivotal movement of the control lever relative to the main lever and in the counterclockwise direction being prevented by engagement of the forward portion of the control lever with the web 23. If the lifting force is applied only momentarily to the control lever and released shortly after the control lever reaches the position of FIG. 7 the control lever will snap back to its normal position relative to the main lever, but after doing so the locking ears 38, 38 on the control lever will now engage the downwardly and rearwardly inclined surfaces 62, 62 on the rear end portions of the body flanges 19, 19 so as to no longer hold the main lever in a locked condition. Thereafter, a further lifting force may be applied to the rear end of the control lever to move it and the main lever to the released position of the main lever. This fact is of importance in that it allows release of the locking means by pressing down on the forward portion of the control lever rather than by lifting up on the rear portion thereof. That is, referring to FIG. 7, the control lever 32 may be moved to the illustrated position by pushing down on the forward or left-hand portion of the control lever rather than by lifting up on the rear or right-hand portion thereof. By pressing down on the control lever to bring the same to the position shown in FIG. 7 and by then releasing the pressure, the control lever will generally snap back to the position shown in FIG. 8. Thereafter the control lever may be raised from the position shown in FIG. 8 to the position corresponding to the released position of the main lever.

One advantage of being able to release the control lever by pressing down on its forward portion is that when the latch is in the closed position shown in FIGS. 4 and 6 the rear portion thereof is located relatively close to the panel 17 so as to leave only a small amount of space between the control lever and the panel. This space is normally sufficient to permit a user to exert a lifting force on the control lever, with the finger or thumb of an ungloved hand, but the same space may not be sufficient to permit the convenient insertion of a gloved finger or thumb. Therefore, when the user's hands are gloved, or any other time, the latch may be opened by depressing and then releasing the forward portion of the control lever to bring the same to the position shown in FIG. 8. In this position the rear edge portion of the control lever is located considerably further from the panel 17 than it is when the catch is fully closed and the distance between the control lever and the panel is such that a gloved finger or thumb may be conveniently inserted under the rear portion of the control lever to apply a lifting force. Instead of following this exact procedure the same results may also be obtained by depressing the forward portion of the control lever to bring the same to about the position shown in FIG. 7, whereat the rear portion is raised from the panel, and then while holding the lever in this position inserting a thumb or finger under the rear portion and using it to apply a lifting force.

When the main lever is moved from its first or released position toward its second or closed position the main lever and the control lever will again be brought to the position shown in FIG. 8 whereat the ears 38, 38 engage the rearwardly and downwardly inclined surfaces 62, 62 of the body member. After this engagement occurs, further downward pressure on or near the rear or right-hand portion of the control lever will cause the ears 38, 38 to slide along the surfaces 62, 62 so as to cam the control lever 32 rearwardly relative to the main lever 20. During this camming movement of the control lever the horizontal surfaces 48, 48 of the openings 44, 44 in the side flanges 36, 36 of the control lever slide relative to the transverse pivot pin 42 and little or no angular movement of the control lever relative to the main lever occurs. Just as the ears 38, 38 pass over the apexes or extreme rear portions of the body member flanges as defined by the intersections of the inclined surfaces 40, 40 and 62, 62 the position of the transverse pin 42 in the openings 44, 44 is as shown in FIG. 9. After the control and main levers move downwardly beyond the position shown in FIG. 9 the control lever again moves forwardly relative to the main lever to the position shown in FIGS. 5 and 6 whereat the locking ears 38, 38 engage the inclined surfaces 40, 40 to hold the control lever and the main lever in a locked condition relative to the body member.

At this time it should also be noted that the construction of the latch is such as to permit the easy application of a seal wire when the main lever 20 is in its closed position. Referring to FIG. 1 a seal wire opening, such as shown at 61 is provided in each body side flange 19 at a point intermediate the ends thereof. Referring to FIGS. 6, 8 and 9 other openings, such as shown at 63, are provided in each of the main lever side flanges 21, 21 slightly forwardly of the tabs 24, 24. The location of the openings 61, 61 and 63, 63 is such that they register when the main lever is closed and is further such as to make the same readily accessible for the insertion of a seal wire.

Latch Construction of FIGS. 10, 11 and 12

Various different means may be employed for securing the control lever to the main lever and for biasing the same to its normal position, and FIGS. 10, 11 and 12 show a latch construction employing such a means different from the means employed in the construction of FIGS. 1 to 9. In these three figures the main lever 20, the body 15, and all other parts of the catch, except for the control lever, may be and are illustrated as being, similar to the corresponding parts shown in FIGS. 1 to 9, inclusive. Therefore, this discussion will be limited to the control lever, and in FIGS. 10, 11 and 12 the illustrated main lever and other parts have been given the same reference numerals as the corresponding parts shows in FIGS. 1 to 9.

Referring to FIGS. 10, 11 and 12, the control lever of the illustrated latch is indicated by the reference numeral **64** and is generally similar to the control lever **32** of FIGS. 1 to 9, it including two side flanges **66, 66** located between the side flanges **21, 21** of the main lever and it also including two laterally outwardly extending ears **67, 67** which cooperate with the inclined surfaces **40, 40** and **62, 62** of the body side flanges in the same manner as the ears **38, 38** of the lever 32.

The control lever **64** is secured to the main lever **20** by a first transverse pin **68** which is carried by and secured to the side flanges **21, 21** of the main lever and which pin passes through enlarged triangular openings **69, 69** in the side flanges **66, 66** of the control lever **64**. As shown in FIG. 11 each opening **69** includes a downwardly and forwardly inclined surface **70** generally parallel with the associated ear **67** and a generally horizontal surface **72**. From FIG. 11 it will be evident that the connection provided by the pin **68** and the opening **69** permits the control lever **64** to move angularly about the axis of the pin **68** and also rearwardly or to the right from the position shown in FIG. 11.

FIG. 11 illustrates the normal position of the control lever **64** in which position the control lever is so positioned longitudinally of the main lever that the transverse pin **68** engages the right hand end of the openings **69, 69** and is so positioned angularly relative to the main lever as to be substantially parallel thereto. The control lever is biased to this normal position by means including a second transverse pin **74** carried by and secured to the side flanges **21, 21** of the main lever and extending through longitudinally extending slots formed one in each of the control lever side flanges **66, 66**, one of said slots being shown at **75** in FIGS. 11 and 12. Rotatably secured to the pin **74** is a bushing **76** having fixed thereto a forwardly projecting guide arm **77** which passes through an opening formed in a flange **78** bent downwardly from the upper surface of the control lever **64** at the forward end of the latter. Received on the guide arm **77** is a helical compression spring **79** so as to urge the control lever forwardly relative to the transverse pin **74**, and therefore relative to the main lever **20** and to resist longtiudinal movement of the control lever in the opposite or rearward direction.

From FIGS. 10 and 11 it will be obvious that in addition to the action of the spring **79** urging the control lever **64** to its forward position, the transverse pin **68** through engagement with the surfaces **70, 70** and **72, 72** of the openings **69, 69** will urge the control lever to its normal angular position as the control lever is moved to its forward position.

When a lifting force is applied to the rear end portion of the control lever, or when a depressing force is applied to the forward end portion of the control lever, the control lever is moved to an unlatched position relative to the body flanges, such position being shown in FIG. 12. As the control lever moves to this position the slot **75** moves rearwardly relative to the transverse pin **74** and the inclined surfaces **70, 70** of the openings **68, 68** slide relative to the first transverse pin **68** to bring the same to the positions shown in FIG. 12. After the control lever **64** is brought to the unlatched position shown in FIG. 12 the catch may be released and thereafter reclosed in the same manner as described above in connection with the latch of FIGS. 1 to 9.

Latch Construction of FIGS. 13, 14 and 15

FIGS. 13, 14 and 15 show still another embodiment of the invention, in which embodiment the control lever is secured to the main lever in a manner somewhat different from that shown in the previous two constructions and in which embodiment somewhat different means are employed for providing longitudinally extending coengaging latch or stop surfaces on the control lever and the body member.

Referring to FIGS. 13, 14 and 15, the body member of the illustrated catch is shown by the reference numeral **80**. This body member is generally similar to the body member **15** shown in FIGS. 1 to 9, except instead of being provided with inclined surfaces such as **40, 40** and **62, 62** on the rear end portions of the side flanges, a transverse bar **82** is provided which bar **82** is securely fixed to the rear end portion of the body and extends between the side flanges thereof.

The main lever of the latch is illustrated at **84** and similar to the main lever of FIGS. 1 to 9 includes two transversely spaced side flanges **85, 85**, a transverse web **86** and two short inwardly extending tabs **87, 87**. The control lever is illustrated at **88** and includes two laterally spaced side flanges **89, 89** which are located between the side flanges **85, 85** of the main lever.

The control lever **88** is secured to the main lever **84** by means of a first transverse pin **90** which is fixed to the side flanges **89, 89** of the control lever and which pin includes two laterally outwardly extending portions which portions are received in longitudinally extending slots formed in the side flanges of the main lever, one such slot being shown at **91** in FIGS. 14 and 15. Also provided is a second transverse pin **92** located forwardly of the first pin **90** and also fixed to the side flanges **89, 89** of the control lever. The second transverse pin **92, 92** includes laterally outwardly extending portions which portions are received in triangular shaped enlarged openings formed in the side flanges **85, 85** of the main lever, one such opening being shown at **93** in FIGS. 14 and 15. Each opening **93** includes a downwardly and forwardly inclined surface **94** and a generally horizontal surface **95**.

FIG. 14 shows the normal position of the control lever **88** relative to the main lever **84**. From this figure it will be observed that each side flange **89** of the control lever is formed to provide a forwardly extending notch which at least partially receives the transverse pin **82** and which includes a longitudinally extending surface **96** which is engageable with the bottom longitudinally extending surface of the bar **82** to prevent movement of the main lever **84** from its illustrated or closed position. On each side flange of the control member is a forwardly and downwardly inclined surface **97**.

The control lever **88** is urged to the normal position of FIG. 14 by a biasing means which includes a bushing **98** rotatably received on the second pin **92** and having fixed thereto a forwardly extending guide arm **99** which at its forward end passes through an opening in a tab **100** bent upwardly from the forward edge of the transverse web **23** of the main lever. Received on the guide arm is a helical compression spring **101** which is compressed between the bushing **98** and the tab **100** so as to urge the second transverse pin **92**, and therefore the control lever **88**, rearwardly relative to the main lever **84**. In addition to the spring **101** urging the control lever **88** rearwardly the action of the transverse pin **92** in the triangular openings **93, 93** and the movement of the pin **90** in the elongated slots **91, 91** causes the lever **88** to be also biased to its normal angular position relative to the main lever.

In operation, the control lever **88** is moved to an unlocked position relative to the transverse bar **82** by applying a lifting force to the rear end portion of the control lever **88** or by applying a depressing force to the forward portion thereof. Either force causes the rear end of the control lever to move upwardly and at the same time a resultant force is applied between the second transverse pin **92** and the inclined surfaces **94, 94** of the openings **93, 93** causing the pin **92** to move along the surfaces **94, 94** and therefore downwardly and forwardly relative to the main lever. As the pin **92** does move forwardly relative to the main lever the locking surface **96** also moves forwardly relative to the bar **82** so as to move forwardly beyond said latter to an unlatched

position. The unlatched position of the control lever 88 is shown in FIG. 15 from which figure it will be observed that the control lever is now unlocked relative to the bar 82 so as to free the main lever for movement to its open or released position. When the main lever is returned to its closed position the inclined surfaces 97, 97 on the control lever engage the bar 82 and cam the control lever 88, 88 forwardly relative to the main lever thereby allowing the bar 82 to again enter the notches formed on the rear end portions of the control lever side flanges 89, 89.

The invention claimed is:

1. In a catch for use in releasably securing together two separable panels or the like one of which includes a strike, the combination comprising a body adapted for attachment to the other of said panels, a main lever pivotally connected to said body for movement relative thereto about a fixed transverse axis between closed and released positions corresponding respectively to closed and released conditions of said catch, a member adapted to engage said strike and pivotally connected with said main lever, a control lever carried by the free end portion of said main lever and including a rear portion freely accessible to a user, coengaging locking means on said body and integral with said control lever for holding said main lever in its closed position relative to said body, said control lever being movable relative to said main lever between first and second positions at which positions said control lever is respectively locked and unlocked relative to said body when said main lever is in its closed position, biasing means between said main lever and said control lever for urging said control lever into its first position relative to said main lever, and means for moving said control lever to its second position relative to said main lever so as to unlock the same from said body in response to a force applied to said rear portion of said control lever and in the direction corresponding to movement of said main lever toward its released position.

2. The combination defined in claim 1 further characterized by said control lever having an exposed forward portion, said means for moving said control lever to its unlocked position being additionally responsive to a depressing force applied to said forward portion to effect movement of said control lever to its sunlocked position.

3. The combination defined in claim 1 further characterized by means for moving said control lever relative to said main lever and into locked relationship with said body as said main lever is moved toward its closed position.

4. The combination defined in claim 3 further characterized by said coengaging locking means on said body and integral with said control lever comprising respectively portions of said body and said control lever which same portions also comprise said means for moving said control lever relative to said main lever and into locked relationship with said body as said main lever is moved toward its closed position.

5. The combination defined in claim 1 further characterized by said locking means on said body and integral with said control lever comprising respectively portions of said body and said control lever which portions are so shaped as to define oppositely facing first surfaces which longitudinally overlap when said main lever is in its closed position and said control lever in its first position relative to said main lever and which surfaces are moved out of overlapped relationship when said control lever is in its second position relative to said main lever, said portions of said body and control lever being also so shaped as to define coengageable cam surfaces for moving said entire lever relative to said main lever so as to permit said first surfaces to return to longitudinally overlapped relationship as said main lever is moved toward its closed position.

6. In a catch for use in releasably securing together two separable panels or the like one of which includes a strike, the combination comprising a body adapted for attachment to the other of said panels, a main lever pivotally connected to said body for movement relative thereto about a fixed transverse axis between closed and released positions corresponding respectively to closed and released conditions of the catch, a member adapted to engage said strike and pivotally connected with said main lever, a control lever carried by the free end portion of said main lever and including a rear portion freely accessible to a user, said control lever being movable both angularly relative to said main lever between first and second angular positions and longitudinally of said main lever toward and away from said fixed axis, means on said body defining a first stop surface extending some distance longitudinally of said body, means on said control lever defining a second stop surface extending some distance longitudinally of said control lever and which second stop surface is movable into and out of longitudinally overlapped relationship with said first stop surface as a result of longitudinal movement of said control lever between locked and unlocked positions respectively relative to said main lever to prevent or permit movement of said main lever to its released position when said main lever is in its closed position, biasing means between said main lever and said control lever for urging said control lever longitudinally toward its locked position and also for urging the same angularly toward said first angular position, and means for moving said control lever longitudinally of said main lever toward said unlocked position in response to a force applied to said control lever tending to move the same angularly relative to said main lever toward said second angular position.

7. The combination defined in claim 6 further characterized by said control lever and said means for moving the same being so constructed and arranged that said rear portion of said control lever extends generally parallel to said panel when said main lever is in its closed position and said control lever is in its first angular position relative to said main lever and that said rear portion of said control lever is moved away from said panel as said control lever is moved angularly of said main lever toward said second angular position with the result that said rear control lever portion is moved away from said panel as the control lever is moved longitudinally to its unlocked position.

8. The combination defined in claim 7 further characterized by said control lever having an exposed forward portion, said means for moving said control lever longitudinally of said main lever being additionally responsive to a depressing force applied to said forward portion to effect movement of said control lever to its unlocked position.

9. The combination defined in claim 6 further characterized by coengageable means on said control lever and on said body for moving said control lever relative to said main lever to permit said stop surfaces to return to overlapped relationship as said main lever is returned toward its closed position by a closing force applied to said rear portion of said control lever.

10. The combination defined in claim 6 further characterized by said means for removing said control lever longitudinally including a pair of laterally spaced side flanges on said control lever, a pair of laterally spaced side flanges on said main lever, a transverse pin carried by and fixed to one of said pairs of flanges, the other pair of said flanges being provided with openings which receive portions of said transverse pin and which openings are considerably longer than said pin portions, said openings defining generally inclined cam surfaces which engage said pin and move said control lever longitudinally of said main lever as a force is applied to said control lever tending to move the same angularly relative to said main lever toward said second angular position.

11. In a catch for use in releasably securing together two separable panels or the like one of which includes a

strike, the combination comprising a body adapted for attachment to the other of said panels and including two laterally spaced side flanges defining at their rear ends two upwardly and rearwardly inclined end faces, a main lever pivotally secured at its forward end to said body for movement between closed and released positions relative to said body about a fixed transverse axis and having two laterally spaced side flanges received between said body flanges, a member adapted to engage said strike and pivotally connected with said main lever, a control lever located between the rear end portions of said main lever flanges, means connecting said control lever to said main lever for movement of said control lever longitudinally of said main lever toward and away from a normal longitudinal position and also angularly about a transverse pivot axis toward and away from a normal angular position, biasing means for urging said control lever longitudinally and angularly toward said normal positions relative to said main lever and for resisting movement of said control lever in the opposite directions, a pair of oppositely laterally extending inclined ears on said control lever which ears respectively engage said inclined end faces of said body flanges to restrain said main lever against movement from its closed position when said main lever is in its closed position and said control lever in its normal longitudinal and angular positions and means for moving said control lever longitudinally against the force of said biasing means to disengage said ears from said inclined end faces in response to movement of said control lever angularly away from said normal position.

12. The combination defined in claim 11 further characterized by said means connecting said control lever to said main lever including a pair of laterally spaced side flanges on said control lever located adjacent said pair of side flanges on said main lever, a transverse pin carried by and fixed to one of said latter pairs of side flanges, and the other of said latter pairs of side flanges having triangular shaped openings therein which openings receive portions of said transverse pin and are considerably larger than said pin portions, each of said triangular shaped openings including one generally longitudinally extending surface and one surface inclined in substantially the same direction as the ears on said control lever.

13. The combination defined in claim 12 further characterized by said transverse pin being carried by and fixed to said main lever flanges, and said biasing means comprising a spring received on said transverse pin and including parts which engage said main lever and said central lever to exert a force between said main lever and said control lever tending to move the same about the axis of said pin and another force between said transverse pin and said control lever tending to move the control lever longitudinally of said main lever.

14. The combination defined in claim 12 further characterized by said transverse pin being carried by and fixed to said main lever flanges, and said biasing means comprising a spring received on said transverse pin and including two coil portions joined by a forwardly extending U-shaped portion which engages said main lever and two arms which extend forwardly and transversely from either end of the spring and which engage said control lever, said U-shaped portion and said arms being held in torsion between said main level and said control lever and said arms being held in compression between said control lever and said main lever and arranged to urge said control lever longitudinally of said main lever.

15. The combination defined in claim 12 further characterized by a second transverse pin carried by and fixed to said one pair of side flanges, the other of said pairs of side flanges being provided with elongated generally longitudinal slots which receive portions of said second pin, and said biasing means including a spring for urging said control lever longitudinally relative to said main lever.

16. In a catch for use in releasably securing together two separable panels or the like one of which includes a strike, the combination comprising a body adapted for attachment to the other of said panels and including two laterally spaced side flanges, a transverse bar carried by and extending between the rear end portions of said side flanges, a main lever pivotally secured at its forward end to said body for movement between closed and released position relative to said body about a fixed transverse axis and having two laterally spaced side flanges received between said body flanges, a member adapted to engage said strike and pivotally connected with said main lever a control lever located between the rear end portions of said main lever flanges, means connecting said control lever to said main lever for movement of said control lever longitudinally of said main lever toward and away from a normal longitudinal position and also angularly about a transverse pivot axis toward and away from a normal angular position, biasing means for urging said control lever longitudinally and angularly toward normal positions relative to said main lever and for resisting movement of said control lever in the opposite directions, means defining notches in the rear end portions of said control lever side flanges for receiving said transverse bar and defining generally longitudinally extending surfaces engageable with said bar to restrain said main lever against movement from its closed position when said main lever is in its closed position and said control lever is in its normal longitudinal and angular positions, and means for moving said control lever longitudinally against the force of said biasing means to remove said bar from said notches in response to movement of said control lever angularly away from said normal position.

17. In a catch for use in releasably securing together two separable panels or the like one of which includes a strike, the combination comprising a body adapted for attachment to the other of said panels and including two laterally spaced side flanges defining at their rear ends two inclined end faces, a main lever pivotally secured at its forward end to said body for movement between closed and released positions relative to said body about a fixed transverse axis and having two laterally spaced side flanges respectively adjacent said body flanges, a member adapted to engage said strike and pivotally connected with said main lever, a control lever located between the rear end portions of said main lever flanges and including a rear portion freely accessible to a user, said control lever also including a pair of laterally spaced side flanges disposed respectively adjacent said main lever side flanges, said control lever side flanges including two inclined surfaces engageable with said inclined end faces of said body, means connecting said control lever to said main lever for movement of said control lever between first and second positions relative to said main lever when said main lever is in its closed position, said control lever surfaces overlapping said two end faces of said body when said control lever is in its first position and being free of said two end faces when in its second position, biasing means between said main lever and said control lever for urging said control lever toward its first position relative to said main lever, means for moving said control lever to its second position in response to a force applied to the rear portion of said control lever and in the direction corresponding to movement of said main lever toward its released position.

18. The combination defined in claim 17 further characterized by said connecting means including a transverse pin carried by and extending between said main lever side flanges, and said control lever side flanges being provided with openings which receive portions of said transverse pin and which openings are considerably larger than said transverse pin portions and define inclined cam surfaces for cooperation with said pin portions.

19. The combination defined in claim 18 further characterized by said openings being triangular in shape.

20. The combination defined in claim 17 further characterized by said connecting means including a transverse pin carried by and extending between said control lever

side flanges, and said main lever being provided with openings which receive that portion of said transverse pin and which openings are considerably larger than said transverse pin portions and define inclined cam surfaces for cooperation with said pin portions.

21. The combination defined in claim 20 further characterized by said openings being triangular in shape.

22. The combination defined in claim 17 further characterized by each of said spaced side flanges and each of said body flanges having an opening therethrough, said openings in said main lever flanges being located forwardly of said control lever and said openings in said body flanges being arranged to register with said openings in said main lever flanges when said main lever is in its closed position to permit the application of a seal wire through said openings.

23. The combination defined in claim 17 further characterized by said control lever including a laterally outwardly extending ear on each of its side flanges and which two ears define said two inclined surfaces, and two additional inclined surfaces on the rear ends of said body side flanges which latter two surfaces are engageable with said ears so as to move said control lever relative to said main lever to permit said ears to return to overlapped relationship with respect to the first mentioned surfaces on said body flanges as said main lever is returned to its closed position.

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