

Sept. 6, 1960

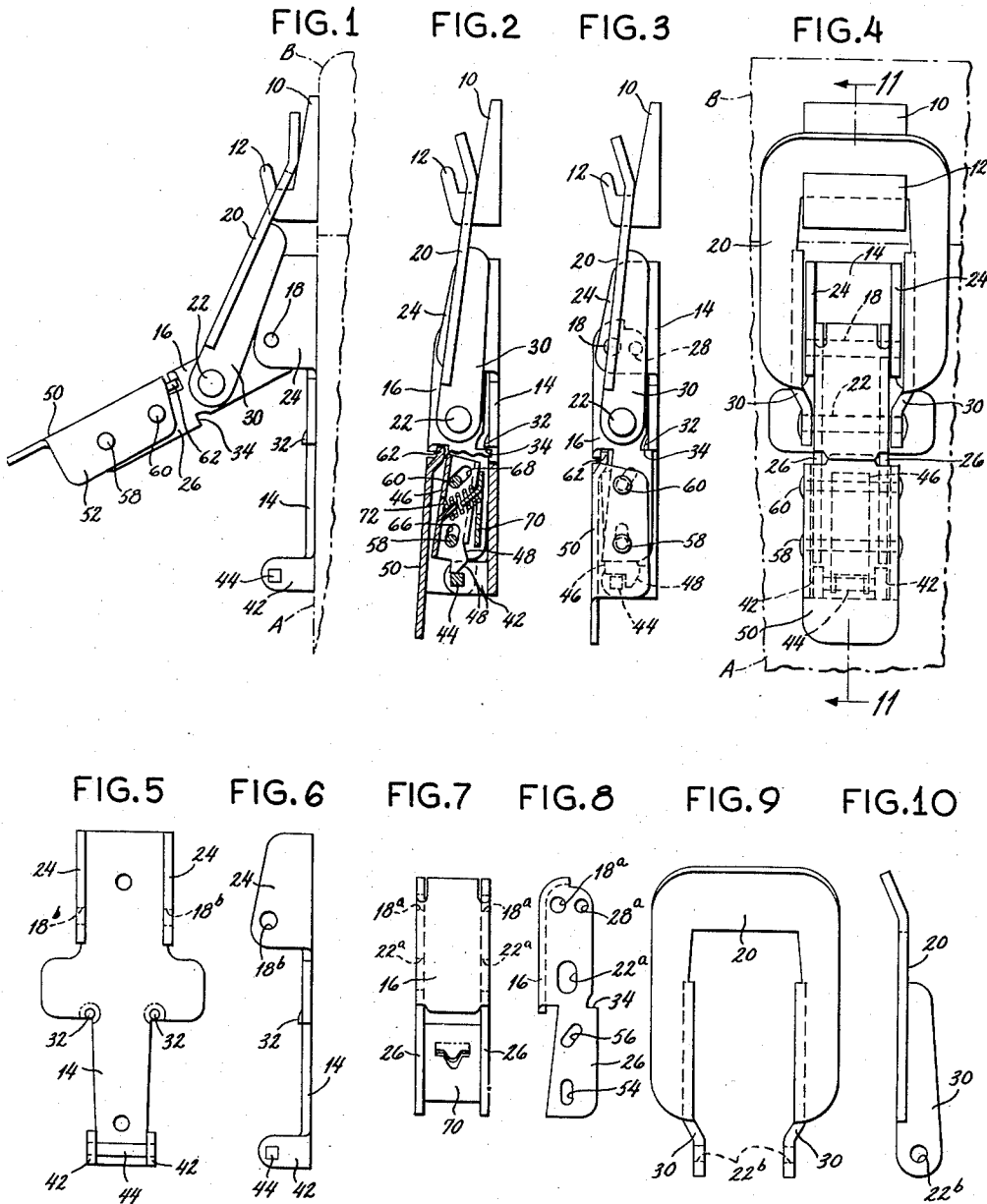
G. E. SWANSON

2,951,722

CATCH FOR A PACKING CASE OR THE LIKE

Filed July 31, 1958

2 Sheets-Sheet 1



INVENTOR
GUNNAR E. SWANSON
BY *Teller & McCormick*
ATTORNEYS

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FIG. 11

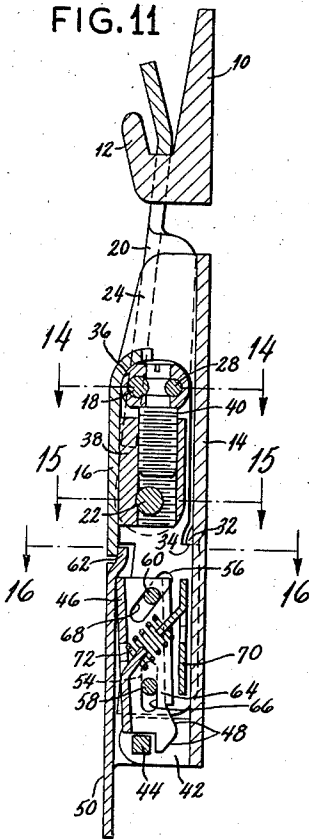


FIG. 12

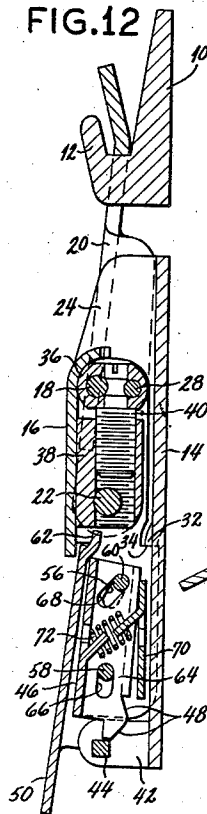


FIG. 13

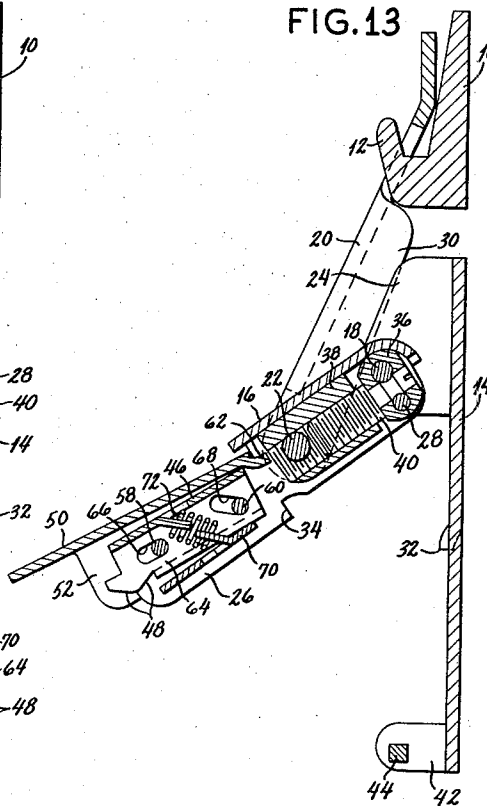


FIG. 14

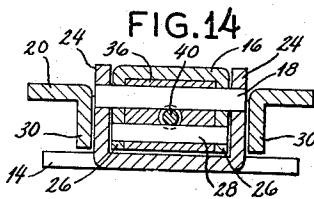


FIG. 15

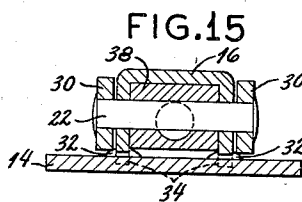
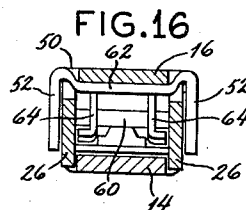


FIG. 16



INVENTOR
GUNNAR E. SWANSON

BY *Teller & McCormick*

ATTORNEYS

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CATCH FOR A PACKING CASE OR THE LIKE

Gunnar E. Swanson, Middletown, Conn., assignor to The Nielsen Hardware Corporation, Hartford, Conn., a corporation of Connecticut

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5 Claims. (Cl. 292—247)

The invention relates to a catch for use on a packing case or the like having a main body and having a cover upwardly separable from said main body. A strike is provided which is adapted to be fixedly attached to said case cover, and a catch unit is provided which is adapted to be fixedly attached to said case body below the strike. The catch unit is of the type comprising a lever movable about a fixed axis and a yoke pivoted to said lever at a movable axis and engageable with the strike. The relationship of parts is such that said yoke when so engaged and said lever when in said forward position constitute toggle links movable respectively about the pivotal connection with the strike and about said fixed lever axis so that said movable yoke axis has an overcenter action with respect to said fixed lever axis upon movement of the lever to a rearward position.

One object of the invention is to provide means normally engaging the base and the lever for retaining said lever to prevent forward movement thereof from its rearward position, together with a manually engageable device serving upon forward movement to release said retaining means and also move the lever forwardly.

Other objects of the invention will be apparent from the following description and the claims.

The drawings show one embodiment of the invention and such embodiment will be described, but it will be understood that various changes may be made from the constructions disclosed, and that the drawings and description 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 view of a catch embodying the invention, said catch being shown in its position of initial engagement.

Fig. 2 is a side view similar to Fig. 1, but showing the catch in an intermediate position, a fragmentary portion at the bottom being shown in vertical central section.

Fig. 3 is a side view similar to Fig. 2, but showing the catch in its position of full engagement.

Fig. 4 is a front view of the catch as shown in Fig. 3.

Fig. 5 is a front view of the base separate from other parts.

Fig. 6 is a side view of the base as shown in Fig. 5.

Fig. 7 is a front view of the main lever separate from other parts.

Fig. 8 is a side view of the lever as shown in Fig. 7.

Fig. 9 is a front view of the yoke separate from other parts.

Fig. 10 is a side view of the yoke as shown in Fig. 9.

Fig. 11 is an enlarged vertical sectional view taken along the line 11—11 of Fig. 4.

Fig. 12 is a sectional view similar to Fig. 11, but showing the catch in a position preparatory to release.

Fig. 13 is a sectional view similar to Fig. 12, but showing the catch in position for disengagement.

Fig. 14 is a horizontal sectional view taken along the line 14—14 of Figs. 3 and 11.

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Fig. 15 is a horizontal sectional view taken along the lines 15—15 of Figs. 3 and 11.

Fig. 16 is horizontal sectional view taken along the lines 16—16 of Figs. 3 and 11.

A catch embodying the invention is adapted for use on a packing case or the like having a main body A and having a cover B upwardly separable from said main body. The catch includes a strike 10 adapted to be fixedly attached to said case cover B, said strike having a relatively fixed hook 12. The catch also includes a catch unit which has a base 14 adapted to be fixedly attached to said case body A below said strike 10. A main lever 16 is connected with the base 14 for movement about a horizontal transverse axis which is fixed against forward and rearward movement relatively to the bases, such an axis being provided by a pivot pin 18. A yoke 20 is pivoted to said lever 16 for movement about a movable horizontal transverse axis at a pivot pin 22 spaced from said lever axis 18. The yoke 20 is pivotally engageable at its upper end with the hook 12 of said strike 10 when said lever 16 is in a forward position as shown in Fig. 1. Said yoke 20 when pivotally engaged with the hook of said strike and said lever 16 when in said forward position constitute toggle links movable respectively about the pivotal connection of the yoke with the strike 10 and about said lever axis at 18 so that said movable yoke axis at 22 has an overcenter action with respect to said lever axis at 18 upon movement of the yoke 20 and the lever 16 to rearward cover holding positions as shown in Fig. 3.

The base 14 is shown as having two parallel forwardly projecting wings 24, 24 having holes 18^b, 18^b therein for the pivot pin 18. The lever 16 is shown as having two rearwardly projecting wings 26, 26 located between the base wings 24, 24 and having holes 18^a, 18^a for said pivot pin 18 and also having holes 28^a, 28^a for another pin 28 to be described. In addition the wings 24, 24 have holes 22^a, 22^a for the pivot pin 22. The last said holes 22^a, 22^a are vertically elongated to permit vertical adjustment of said pin 22. The yoke 20 is shown as having two rearwardly projecting wings 30, 30 having holes 22^b, 22^b for the pivot pin 22.

The base 14 has forwardly projecting teeth 32, 32 and the wings 26, 26 of the lever 16 have notches 34, 34 into which the teeth fit when the catch is in fully engaged position as shown in Fig. 3. The teeth and the notches are adapted to carry a portion of the vertical stress and to thus avoid undue stress on the pins 18 and 28.

As shown, means is provided on the lever 16 for enabling said yoke axis at 22 to be moved vertically to vary the distance between said base and said strike when said yoke and said lever are in their said cover holding positions as shown in Figs. 3 and 11. Preferably a manually operable device is included in the last said means for positively varying the position of said yoke axis. It is thus possible to make correction for minor inaccuracies in the location of the base 14 and of the strike 10 on the body A and on the cover B. Within reasonable limits, the stated adjustment makes it possible, notwithstanding such inaccuracies, for the cover to be always firmly pressed downwardly against the body when the yoke and lever are moved to their fully cover holding positions.

The before-described means for enabling said yoke axis to be moved vertically to vary the distance between said base and said strike is not herein claimed as a part of the present invention. The last said means is set forth and claimed in my copending application Serial No. 848,587, filed October 26, 1959, entitled "Catch for a Packing Case or the Like," the said application being a division of this present application.

As best shown in Figs. 11, 14 and 15, a block 36 is interposed between the wings 26, 26 of the lever 16, this

block being apertured to receive and fit the pivot pin 18 and also the pin 28. Also interposed between said lever wings 26, 26 and below the block 36 is a second block 38 apertured to receive and fit the pivot pin 22. The block 38 has a vertical threaded hole into which fits a vertical screw 40. The upper portion of the screw 40 extends through a vertical hole in the block 36. The screw 40 has an annular groove through which the two pins 18 and 28 extend, said pins preventing bodily vertical movement of said screw. By means of a slot in its upper end, the screw 40 may be turned to vertically adjust the block 38 and the pivot pin 22 relatively to the pivot pin 18. The vertical adjustment of the pin 22 relatively to the lever 16 is permitted by the vertical elongation of the holes 22^a, 22^a. The yoke 20 is vertically adjusted with the pin 22 and the yoke axis is therefore moved or adjusted with respect to the lever axis.

A manually movable releasable latch device is provided which normally engages the base 14 and the lever 16 for preventing movement of said lever forwardly from its rear position. Said latch device comprises an abutment in fixed position on the base and also comprises a latch carried by the movable lever and normally in engagement with the abutment to retain the lever in rearward position, said latch being manually movable relatively to the lever and out of engagement with said abutment.

As shown the base 14 has two forwardly projecting wings 42, 42 near its bottom and a transverse pin 44 is secured to said wings. The pin 44 constitutes the before-mentioned abutment on the base, this abutment having a rearwardly exposed face. The relatively movable latch on the lever is shown at 46, this latch being spring pressed downwardly and manually movable upwardly. The latch preferably comprises two transversely spaced active portions and said active portions have inclined cam faces 48 which enable the latch to automatically move upwardly, as shown in Fig. 2, when the lever 16 is moved rearwardly from the position shown in Fig. 1 to the position shown in Figs. 3 and 11. At the last said position the latch 46 snaps downwardly behind the abutment 44.

For manually moving the latch 46 upwardly there is provided a finger piece 50 which is carried by the lever 16 and which is spaced forwardly from the base 14 to provide finger space behind it. Said finger piece has rearwardly projecting wings 52, 52 at the sides thereof, said wings 52, 52 being at the outer sides of the wings 26, 26 on the lever 16. Said lever wings 26, 26 have slots 54 which are vertical and slots 56 which are inclined upwardly and rearwardly. Transverse pins 58 and 60 extend through and fit holes in the wings 52, 52 of the finger piece and also through said slots 54 and 56 in the wings 26, 26 of the lever. The pins 58 and 60 are at the lower ends of the slots 54 and 56 and the finger piece 50 therefore cannot move downwardly beyond the position shown in Fig. 3. When the latch 46 is in its engaged position as shown in Fig. 11, the front wall of the finger piece 50 registers with the front wall of the lever 46. Said finger piece has an offset upward extension 62 which fits behind and engages the rear face of said front wall of the lever 16. The extension 62 has an upwardly and rearwardly inclined front face and this cooperates with the adjacent front portion of the lever 16 to prevent vertical movement of the finger piece.

The latch 46 is U-shaped in horizontal plan, as shown in Fig. 16, said latch having wings 64, 64. The latch is located between the wings 26, 26 of the lever and the active portions of said latch are at the lower ends of said latch wings 64, 64. Said wings of the latch have vertical slots 66 through which the pin 58 extends and said wings have upwardly and rearwardly inclined slots 68 through which the pin 60 extends. A transverse normally vertical plate 70 is secured to the wings 26, 26 of the lever near the rear thereof and behind the latch 46.

A compression coil spring 72 is interposed between the plate 70 and the front wall of the latch 46. The spring fits a tab bent forwardly from the plate 70 and a tab bent rearwardly from the front wall of the latch. Said spring 72 biases the latch 46 to its engaged position as shown in Figs. 3 and 11. Downward movement of the latch relatively to the finger piece 50 is limited by the engagement of the upper ends of the slots 66 and 68 with the pins 58 and 60. When the upper ends of said slots 66 and 68 engage the pins 58 and 60, the spring 72 also biases the finger piece 50 downwardly. Downward movement of the finger piece is limited by the engagement of the pins 58 and 60 with the lower ends of the slots 54 and 56 in the wings 26, 26 of the lever.

When the catch is moved from the Fig. 1 position to the Fig. 3 position, the catch 46 engages the abutment 44 as shown in Fig. 2 and is cammed upwardly. The latch moves upwardly in opposition to the spring 72 and independently of the finger piece 50. In the Fig. 3 position the spring 72 has moved the latch so that its active portions are behind the abutment 44 to prevent forward movement of the lever.

When the catch is to be disengaged, the inclined face on the extension 62 of the finger piece and the inclination of the slots 56 in the lever wings cooperate to prevent the finger piece 50 from moving vertically upwardly. Said inclined face and slots cause the finger piece to have combined upward and rearward swinging movement about the pin 58 when substantially forward pressure is applied manually to the lower end of said finger piece. When such pressure is applied, the finger piece is moved from the Fig. 11 position to the Fig. 12 position and it carries the latch 46 with it, the latch being thus moved out of its engaging relationship with the abutment 44. As soon as the Fig. 12 position has been reached, the forward pressure on the lower end of the finger piece is continued, and motion is continued to the Fig. 13 position which is such that the yoke 20 can be disengaged from the strike 10. It will be seen that substantially forward manual pressure applied to the lower end of the finger piece 50 serves not only to move the latch 46 upwardly for releasing the lever 16 but also to move said lever forwardly.

It will be observed, particularly from Fig. 11, that the combined center of gravity of the latch 46 and of the finger piece 50 is above the axis of the pin 56. Therefore, any shock that would tend to move the lever 16 forwardly and which would thus tend to release the catch, would also tend to move the latch and finger piece forwardly and downwardly so that they remain in the positions shown in Fig. 11. With the parts in the Fig. 11 position, the lever 16 is locked against forward movement.

The invention claimed is:

1. In a catch for use on a packing case or the like having a main body and having a cover upwardly separable from said main body, the combination of a strike adapted to be fixedly attached to said case cover and having a relatively fixed hook, a base adapted to be fixedly attached to said case body below said strike, a lever connected with the base for movement about a relatively fixed horizontal transverse axis, a yoke pivoted to said lever for movement about a movable horizontal transverse axis spaced from said fixed axis which yoke is pivotally engageable at its upper end with the hook of said strike when said lever is in a forward position, said yoke when so engaged and said lever when in said forward position constituting toggle links movable respectively about the pivotal connection with the strike and about said fixed lever axis so that said movable yoke axis has an overcenter action with respect to said fixed lever axis upon movement of the lever to a rearward position, an abutment in fixed position on the base, a latch on the lever engageable with said abutment to prevent forward movement of said lever which latch is

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movable longitudinally of the lever and is spring biased into its abutment engaging position, a finger piece having a normal position on the lever and relatively movable forwardly from said position, and means dependent on relative forward movement of the finger piece for moving the latch longitudinally of the lever and out of engagement with the abutment so that forward pressure on the finger piece serves first to release the latch and then to move the lever forwardly.

2. In a catch for use on a packing case or the like having a main body and having a cover upwardly separable from said main body, the combination of a strike adapted to be fixedly attached to said case cover and having a relatively fixed hook, a base adapted to be fixedly attached to said case body below said strike, a lever connected with the base for movement about a relatively fixed horizontal transverse axis, a yoke pivoted to said lever for movement about a movable horizontal transverse axis spaced from said fixed axis which yoke is pivotally engageable at its upper end with the hook of said strike when said lever is in a forward position, said yoke when so engaged and said lever when in said forward position constituting toggle links movable respectively about the pivotal connection with the strike and about said fixed lever axis so that said movable yoke axis has an overcenter action with respect to said fixed lever axis upon movement of the lever to a rearward position, an abutment on the base having a rearwardly exposed face, a latch carried by the movable lever and normally in engagement with the abutment at said rearwardly exposed face so as to retain said lever in rearward position which latch is movable relatively upwardly to disengage the abutment, and a finger piece carried by the lever and movable upwardly relatively thereto which finger piece is connected with the latch to move it upwardly and out of engagement with the abutment, said finger piece projecting downwardly from the lever and being spaced forwardly from the base to provide finger space so that substantially forward finger pressure applied to said finger piece serves not only to release the lever but also to move it forwardly.

3. A catch as set forth in claim 2, wherein the upper portion of said finger piece has an upwardly and rearwardly inclined front face cooperating with a portion of the lever which inclined face constitutes guiding means for causing said upper portion of said finger piece to move rearwardly and then upwardly.

4. In a catch for use on a packing case or the like having a main body and having a cover upwardly sep-

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arable from said main body, the combination of a strike adapted to be fixedly attached to said case cover and having a relatively fixed hook, a base adapted to be fixedly attached to said case body below said strike, a lever connected with the base for movement about a relatively fixed horizontal transverse axis, a yoke pivoted to said lever for movement about a movable horizontal transverse axis spaced from said fixed axis which yoke is pivotally engageable at its upper end with the hook of said strike when said lever is in a forward position, said yoke when so engaged and said lever when in said forward position constituting toggle links movable respectively about the pivotal connection with the strike and about said fixed lever axis so that said movable yoke axis has an overcenter action with respect to said fixed lever axis upon movement of the lever to a rearward position, an abutment on the base having a rearwardly exposed face, a finger piece vertically movable on the lever and projecting downwardly therefrom, said finger piece being spaced from the base so that finger pressure applied thereto will move said finger piece upwardly and will move said lever forwardly, a vertically movable latch carried by the movable lever and spring biased downwardly toward a position for engagement with the abutment at said rearwardly exposed face, said latch having a cam face engageable with said abutment for moving said latch upwardly independently of the finger piece upon rearward movement of the lever, and means connecting said latch with said finger piece so that said latch is moved out of engagement with the abutment when said finger piece is moved upwardly.

5. A catch as set forth in claim 4, wherein two transverse vertically spaced pins are provided on said finger piece, wherein said lever has wings with vertically spaced slots therein through which said pins extend, the lower slot being vertical and the upper slot being inclined upwardly and rearwardly so that upon upward movement of said finger piece the upper portion thereof is moved rearwardly, and wherein the means for connecting said latch with said finger piece is constructed and arranged to move said latch upwardly and rearwardly.

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