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Coffey et al.

[11] **3,892,309**

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[54] **REPLACEABLE CURRENCY OR BILL HOLDER FOR A TILL TRAY**

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[52] **U.S. Cl.** **206/74;** 211/51; 220/93; 235/22

[51] **Int. Cl.** **B65d 1/34;** B65d 25/10

[58] **Field of Search** ..... 206/74, 0.81, 0.84; 220/31 S, 93, 24.3; 312/390, 71, 61; 211/51; 235/22

[56] **References Cited**

UNITED STATES PATENTS

1,840,485	1/1932	Butler	220/93
2,594,653	4/1952	Jertson	206/74
2,728,520	12/1955	Moyle	206/74
2,985,334	5/1961	Slater	220/31 S
3,163,293	12/1964	Poskin	206/74
3,246,792	4/1966	Brackmann et al.	220/31 S
3,621,115	11/1971	Kolster et al.	220/24.3

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[57] **ABSTRACT**

A replaceable currency or bill holder for a till tray. The holder includes a bracket for detachably securing the bill holder in the tray and a bill lever which is pivotally joined to the bracket. The bracket has a leaf spring which cooperates with a camming surface on the pivoted end of the bill lever to resiliently urge the free end of the bill lever into contact with the bills in the tray to resiliently compress and retain them therein.

16 Claims, 4 Drawing Figures

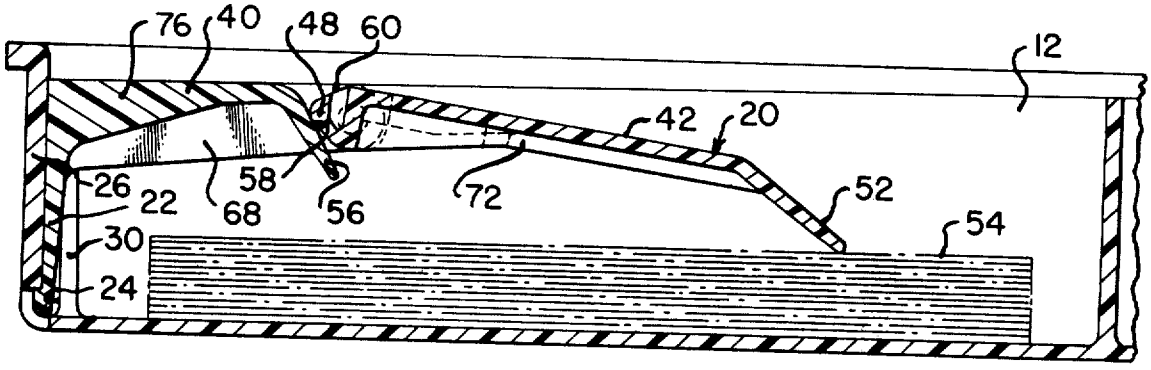


FIG. 1

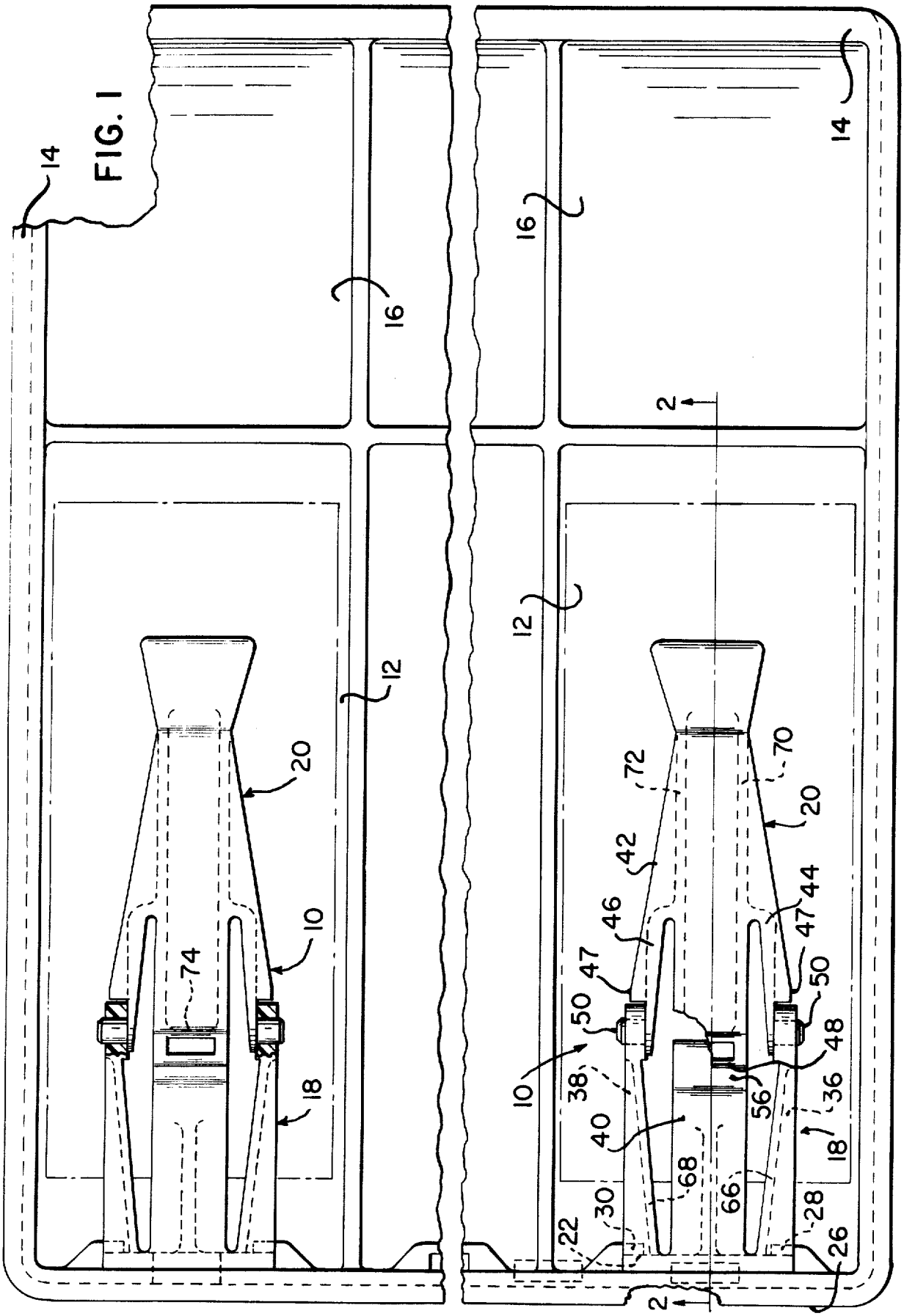

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FIG. 2

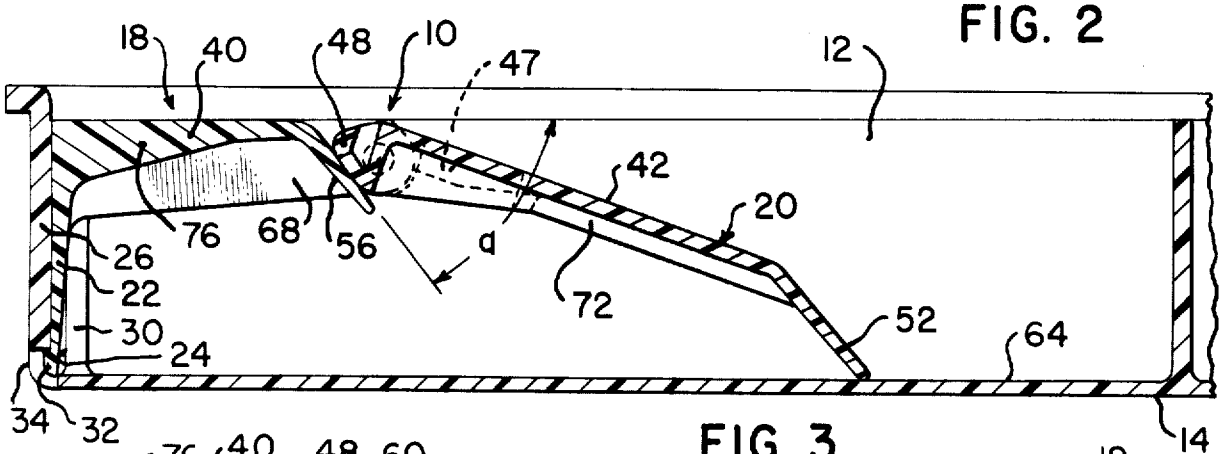
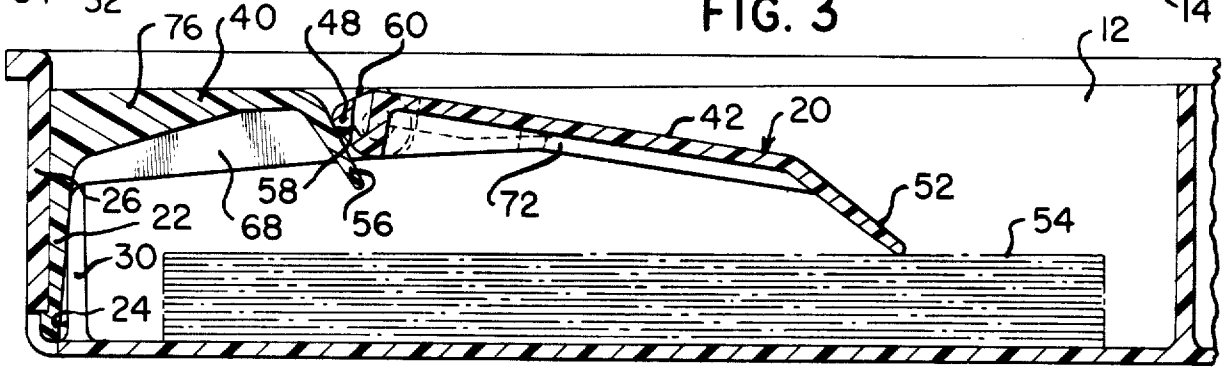


FIG. 3



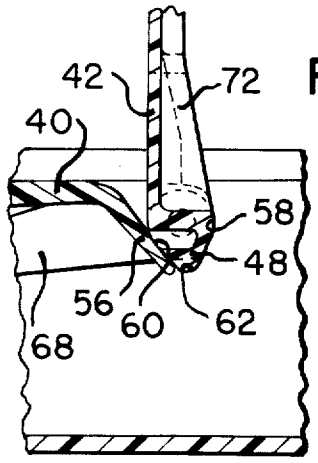


FIG. 4

REPLACEABLE CURRENCY OR BILL HOLDER FOR A TILL TRAY

BACKGROUND OF THE INVENTION

This invention relates to a replaceable currency or bill holder for a till tray.

The prior art tills are generally made of sheet metal with the individual bill or currency compartments and coin compartments thereof being made by welding various sheet metal sections therein to form the compartments. The associated bill holder for holding the currency is generally made of a relatively thick wire which is formed into the desired shape and dipped in plastic to coat the wire at the sections thereof which contact the bills. A spring placed in tension is used bias the bill holder to a position which compresses and retains the bills in the compartment.

One of the problems with this type of prior art till and bill holder is that it requires many welding operations to produce, and when in use, some of these weld spots break loose requiring replacement of the entire till; this is especially true when one of the weld spots breaks loose at a junction between the bill holder mounting means and the tray.

Accordingly, an object of this invention was to produce a low-cost till tray with a replaceable bill holder.

Another object was to design a tray and a bill holder which could be completed by injection molding of plastic material so as greatly reduce the initial manufacturing cost and facilitate the removal of broken bill holders without having to replace the entire till tray and bill holders therein.

SUMMARY OF THE INVENTION

This invention relates to a replaceable currency or bill holder for a till tray, and it includes a bracket means, for detachably securing the bill holder in a compartment of the tray, and a bill lever means. The lever means has a first end which is pivotally joined to the bracket means and a second end for contacting the bills in the compartment. The bracket means has a resilient means associated therewith, and the lever means has a camming means at a first end thereof to cooperate with the resilient means to resiliently urge the second end of the lever means into contact with the bills to resiliently compress and retain them in the compartment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a portion of a till tray having both bill and coin compartments therein, with the bill holder means of this invention being mounted in the compartments for bills or currency.

FIG. 2 is a sectional view, taken along the line 2—2 of FIG. 1, to show a bracket means for detachably mounting the bill holder means in a compartment, and a bill lever means which is pivotally joined to the bracket means.

FIG. 3 is a sectional view, similar to FIG. 2, and is used to show how a camming means on the bill lever means cooperates with a leaf spring on the bracket means to resiliently compress the bills in the compartment.

FIG. 4 is a view similar to FIG. 2, showing only a portion thereof, and is used to show the bill lever means in a position which permits access to the associated compartment.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 is a plan view of a portion of a till tray having both bill and coin compartments therein, showing the bill holder means of this invention.

The bill holder means, designated generally as **10**, is shown in a currency or bill compartment **12** of a till tray **14** which also has coin compartments **16** therein. When in use, the tray may be mounted in a drawer to fit into a cabinet (not shown) of a cash register or the like, to slide into and out thereof as is conventionally done, or the till tray **14** may be molded in the shape of a cash register drawer and used as the drawer itself.

The bill holder means **10** is comprised of a bracket means **18** and a bill lever means **20** as shown in FIGS. **1** and **2**.

The bracket means **18** (FIGS. **1** and **2**) has a leg portion **22** which slidably fits into a vertically-aligned recess **24** formed in the end wall **26** of the tray **14**. The recess **24** is formed by two walls **28** and **30** which extend from the end wall **26**, are aligned with each other, and are substantially parallel to the end wall **26**. The walls **28** and **30** are tapered slightly to match the taper on leg portion **22**. The lower end of the leg portion **22** has a projection **32** (FIG. 2) which fits into a complementary notch **34** in the end wall **26** to detachably retain the bracket means **18** in the compartment **12**. When it is desired to remove a broken bill holder means **10** from the compartment, for example, a screwdriver may be inserted into the notch **34** (FIG. 2) to push the projection **32** out of the notch to permit the bracket means **18** to be withdrawn vertically upward (as viewed in FIG. **2**) to permit a new bill holder means **10** to be inserted in the compartment.

The bracket means **18** also has a pair of spaced parallel arms **36** and **38** extending at right angles to the leg portion **22** as shown in FIG. **1**. A resilient means, shown as a leaf spring **40**, is located between the arms **36** and **38** and also extends at a right angle from the leg portion **22**. The top surfaces of the arms **36** and **38** and the leaf spring **40** all lie in the same plane (as viewed in FIG. **2**) which plane lies below the top edge of the compartment **12** to permit the tray **14** to slide into a cabinet when used typically with a cash register or similar business machine. The free ends of the arms **36** and **38** have aligned apertures therein to receive the bill lever means **20**.

The bill lever means **20**, shown principally in FIGS. **1-3**, includes a bill lever **42** which is slotted at a first end to provide a pair of arms **44** and **46** and a camming portion **48** as shown in FIG. **1**. Each of the arms **44** and **46** has a rod **50** projecting outwardly therefrom, and these rods are axially aligned with each other and are rotatably received in the apertures in the arms **36** and **38** on the bracket means **18** to pivotally mount the bill lever means **20** thereon. To install the bill lever means **20**, the arms **44** and **46** are bent slightly towards each other and the arms **36** and **38** on the bracket means **18** are moved apart, slightly, to enable the rods **50** to be inserted in the associated apertures in the bracket means **18**, and all the arms are released thereafter to assume the positions shown.

The caming portion **48** of the bill lever means **20** cooperates with the leaf spring **40** of the bracket means **18** to enable the bill lever means **20** to be resiliently cammed to a first position in which the free end **52** of the bill lever **42** resiliently compresses a stack of cur-

rency or bills **54** in the compartment **12** as shown in FIG. **3**, and to a second position in which the bill lever **42** is moved out of the compartment to permit access thereto, as shown in FIG. **4**.

To accomplish the camming action of the bill lever means **20**, the leaf spring **40** has a segment **56** which is positioned at an angle *a* as shown in FIG. **2**. In the embodiment shown, which is drawn full size and designed to handle U.S.A. currency, *a* is 53° when the bracket means **18**, including the leaf spring **40**, is in the relaxed state. The included angle between the flat sides **58** and **60** of the camming portion **48**, as shown in FIG. **3**, is 70°. These flat sides are substantially perpendicular to radii which intersect at the longitudinal axis of the rods **50**, and are joined by a suitable radius **62** (FIG. **4**) to provide a continuous surface between the sides **58** and **60**.

When the bill lever means **20** is in the position shown in FIG. **2**, the leaf spring **40** tends to rotate the bill lever **42** in a clockwise direction (as viewed in FIG. **2**) to resiliently urge the lower end **52** of the bill lever **42** into contact with the bottom **64** of the compartment **12**. As the stack of bills **54** (FIG. **3**) increases in height, the resilient force due to the cooperation between the leaf spring **40** and the camming portion **48** also increases. As the lever **42** is raised in a direction out of the compartment **12**, a dead center position is reached when the radius of curvature **62** contacts the segment **56** of the leaf spring **40**. When the bill lever **42** is pushed slightly in a counter clockwise direction (as viewed in FIG. **4**) beyond the dead center position, the leaf spring **40** resiliently cams or rotates the bill lever **42** to the position shown, in which side **60** contacts the segment **56** of the leaf spring **40** permitting access to the compartment **12**. The arms **44** and **46** have shoulders **47** (FIG. **1**) which are perpendicular to the plane of lever **42** and which abut against the top of arms **36** and **38** on the bracket means **18** when the bill lever **42** is moved to the position shown in FIG. **4**. The shoulders **47** cooperate with the arms **36** and **38** to dampen any oscillatory motion in the bill lever which may be present when it is cammed to the second position shown in FIG. **4**. After inserting bills in or withdrawing bills from the compartment **12**, the bill lever **42** is simply rotated in a clockwise direction (as viewed in FIG. **4**) beyond the dead center position, and the leaf spring **40** will then resiliently rotate the bill lever **42** in a clockwise direction to the position shown in FIG. **3**.

The bracket means **18** is made of a tough plastic material like acetal plastic, and the bill lever means **20** is made of a tough plastic material like nylon, which is manufactured by Dupont Corporation, although other comparable materials may be used. The bracket means **18** has reinforcing ribs like **66** and **68** on the arms **36** and **38**, respectively, on the undersides thereof. The underside of the bill lever means **20** also has reinforcing ribs like **70, 72, 74** (FIG. **1**) to provide stiffness to the bill lever **42** and to minimize the amount of plastic material used. The leaf spring **40** also has a reinforcing rib **76** on the underside thereof to add stiffness thereto. The bracket means **18**, the bill lever means **20** and the till tray **14** may be formed by conventional plastic molding techniques such as compression molding, ram injection molding or screw injection molding. When molded, the bracket means **18** and bill lever means **20** may be mounted within the tray, as already described, without any addition work or machining. By this construction a low-cost tray and bill holder means is provided, which construction provides for over a 50 percent reduction in the cost of fabrication when compared to the till tray described in the prior art.

What is claimed is:

1. A replaceable currency or bill holder for a till tray having at least one currency compartment having a recess in an end wall thereof, comprising:

bracket means for detachably securing said bill holder in said recess in said end wall of said compartment;

a bill lever means having a first end pivotally joined to said bracket means and a second end for contacting bills in said compartment;

said bracket means having a resilient means associated therewith; and

said bill lever means having means at said first end cooperating with said resilient means to resiliently urge said second end into contact with said bills to resiliently compress and retain them in said compartment.

2. The bill holder as claimed in claim **1** in which said means at said first end is a camming portion and said resilient means is a leaf spring.

3. The bill holder as claimed in claim **2** in which said bill lever means has a pair of axially aligned rods extending from opposed sides thereof;

and in which said bracket means has a pair of spaced parallel arms having axially aligned apertures therein to rotatably receive said rods and thereby pivotally mount said bill lever means on said bracket means.

4. The bill holder as claimed in claim **3** in which said leaf spring is located between said parallel arms to contact said camming portion of said bill lever means.

5. The bill holder as claimed in claim **4** in which said bill lever means has a pair of spaced, substantially parallel slots therein at said first end to form a pair of arm members with said camming portion being formed therebetween and with said pair of aligned rods extending from said pair of arm members.

6. A replaceable currency or bill holder for a till tray having at least one currency compartment having a vertically aligned recess in an end wall thereof and a notch in said end wall, comprising:

bracket means for detachably securing said bill holder in said compartment;

a bill lever means having a first end pivotally joined to said bracket means and a second end for contacting bills in said compartment, said first end having a camming portion thereon;

said bracket means having a leaf spring associated therewith; and

said camming portion of said bill lever means cooperating with said leaf spring to resiliently urge said second end into contact with said bills to resiliently compress and retain them in said compartment;

said bill lever means having a pair of axially aligned rods extending from opposed sides thereof;

said bracket means having a pair of spaced parallel arms having axially aligned apertures therein to rotatably receive said rods and thereby pivotally mount said bill lever means on said bracket means;

said leaf spring being located between said parallel arms to contact said camming portion of said bill lever means;

said bill lever means having a pair of spaced, substantially parallel slots therein at said first end to form a pair of arm members with said camming portion being formed therebetween and with said pair of aligned rods extending from said pair of arm members;

said bracket means having a leg portion which is located substantially perpendicular to said pair of parallel arms; and

said leg portion also having a projection extending towards said end wall to fit into said notch in said end wall so as to detachably retain said leg portion in said compartment.

7. The bill holder as claimed in claim **6** in which said bracket means is made from a single piece of material like acetal plastic and has two slots therein to form said pair of spaced parallel arms and said leaf spring;

said leaf spring having a first segment which is substantially perpendicular to said leg portion, and a second segment joined to the first segment at an angle diverging away therefrom; and

said camming portion having first and second flat sides which converge towards each other to cooperate with said second segment of said leaf spring.

8. The bill holder as claimed in claim **7** in which said second segment of said leaf spring diverges away from the first segment thereof at an angle of substantially 127° and said first and second flat sides of said camming portion converge towards each other at an included angle of substantially 70°; said first and second flat sides being substantially perpendicular to radii which intersect at a point which lies on the longitudinal axis of said axially aligned apertures.

9. The bill holder as claimed in claim **8** in which said bill lever means is integrally formed of a single piece of material like nylon plastic and in which said arm members on said bill lever means have shoulders thereon to cooperate with said arms on said bracket means to dampen any oscillation of said bill lever means when said bill lever means is moved to a position out of said compartment to permit access thereto.

10. A replaceable currency or bill holder for a till tray having at least one currency compartment having a recess in an end wall thereof, comprising:

bracket means shaped for detachably securing said bill holder in said recess in said end wall of said compartment;

a bill lever means having a first end pivotally joined to said bracket means and a second end for contacting bills in said compartment;

said bracket means having a leaf spring connected thereto;

said bill lever means having a camming portion at said first end to cooperate with said leaf spring to resiliently cam said second end towards a first position whereby said second end resiliently compresses bills in said compartment to retain them therein when the bill lever means is moved beyond a dead center position towards said first position, and to resiliently cam said second end to a second position when moved beyond said dead center position towards said second position whereby said second end is moved out of contact with said bills permitting access to said compartment.

11. The combination of a till tray having at least one currency compartment therein and a bill holder for said compartment;

said till tray having an end wall in said compartment with a vertically aligned recess therein;

said bill holder comprising bracket means having a leg portion for detachably securing said bill holder in said recess;

a bill lever means having a first end pivotally joined to said bracket means and a second end for contacting bills in said compartment;

said bracket means having a resilient means associated therewith; and

said bill lever means having means at said first end cooperating with said resilient means to resiliently urge said second end into contact with said bills to resiliently compress and retain them in said comartment.

12. The combination as claimed in claim **11** in which said means at said first end is a camming portion and said resilient means is a leaf spring.

13. The combination as claimed in claim **12** in which each of said bracket means, bill lever means, and said till tray is integrally formed of a single piece of plastic material.

14. The combination as claimed in claim **13** in which said bracket means has a pair of spaced, substantially parallel slots therein to form a pair of parallel arms with said leaf spring being located therebetween and with said arms being perpendicular to said leg portion and having axially aligned apertures therein;

said bill lever means having a pair of substantially parallel slots therein at said first end to form a pair of arm members with said camming portion being formed therebetween and with each said arm member having a rod extending outwardly therefrom to be rotatably mounted in said aligned apertures.

15. The combination as claimed in claim **14** in which said leaf spring has a first segment which is substantially perpendicular to said leg portion and a second segment joined to said first segment at an angle diverging away therefrom; and

said camming portion has first and second flat sides which converge towards each other to cooperate with said segment of said leaf spring.

16. The combination as claimed in claim **15** in which said second segment of said leaf spring diverges away from said first segment thereof at an angle of substantially 127° and said first and second flat sides of said camming portion converge towards each other at an included angle of 70°; said first and second flat sides being substantially perpendicular to radii which intersect at a point which lies on the longitudinal axis of said aligned apertures.

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