

[54] **THEFT-DETERRENT  
MERCHANDISING DISPLAY  
APPARATUS**

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[58] **Field of Search**.....211/4, 133, 90, 128, 134;  
206/76; 248/116

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[57] **ABSTRACT**

A theft-deterrent apparatus/system for displaying, merchandising and selling articles relative to a holding or "framelike" structure having a series of movable or slidable panels which retain the articles therebetween. Customers may readily view and/or handle the article but cannot remove it from the apparatus/system. A customer interested in purchasing or more closely examining (or inspecting) an article informs the salesman who can disengage or remove theft-deterrent (lock, key, handle or pull pin) stop(s) which permit the panels to freely move or slide apart thereby freeing the desired article. The articles may be displayed, in an exposed and/or enclosed condition in various affixed packages, on hooks, clips and shelves and/or displayed in packages comprising a shelf base with a transparent (pivotal and/or removable) cover affixed thereto as suits the particular theft-deterrent merchandising requirement/need.

**23 Claims, 37 Drawing Figures**

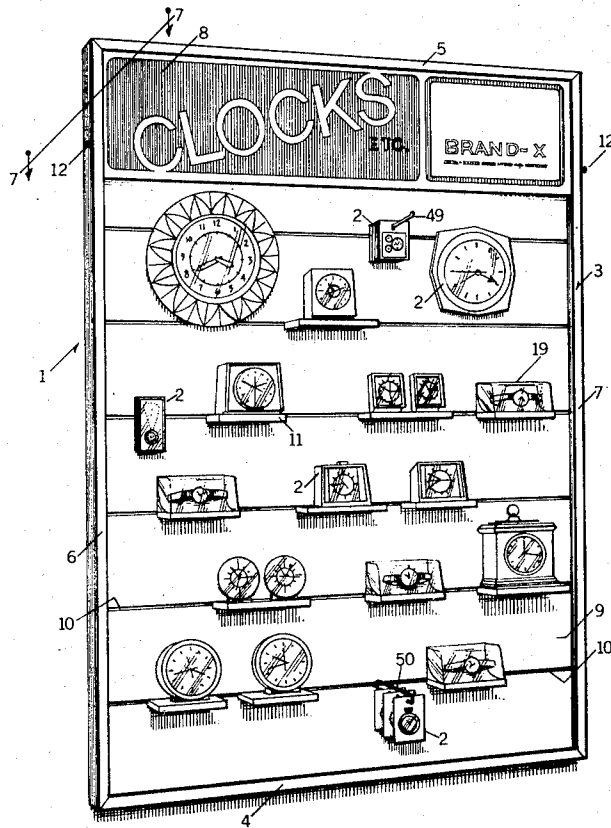
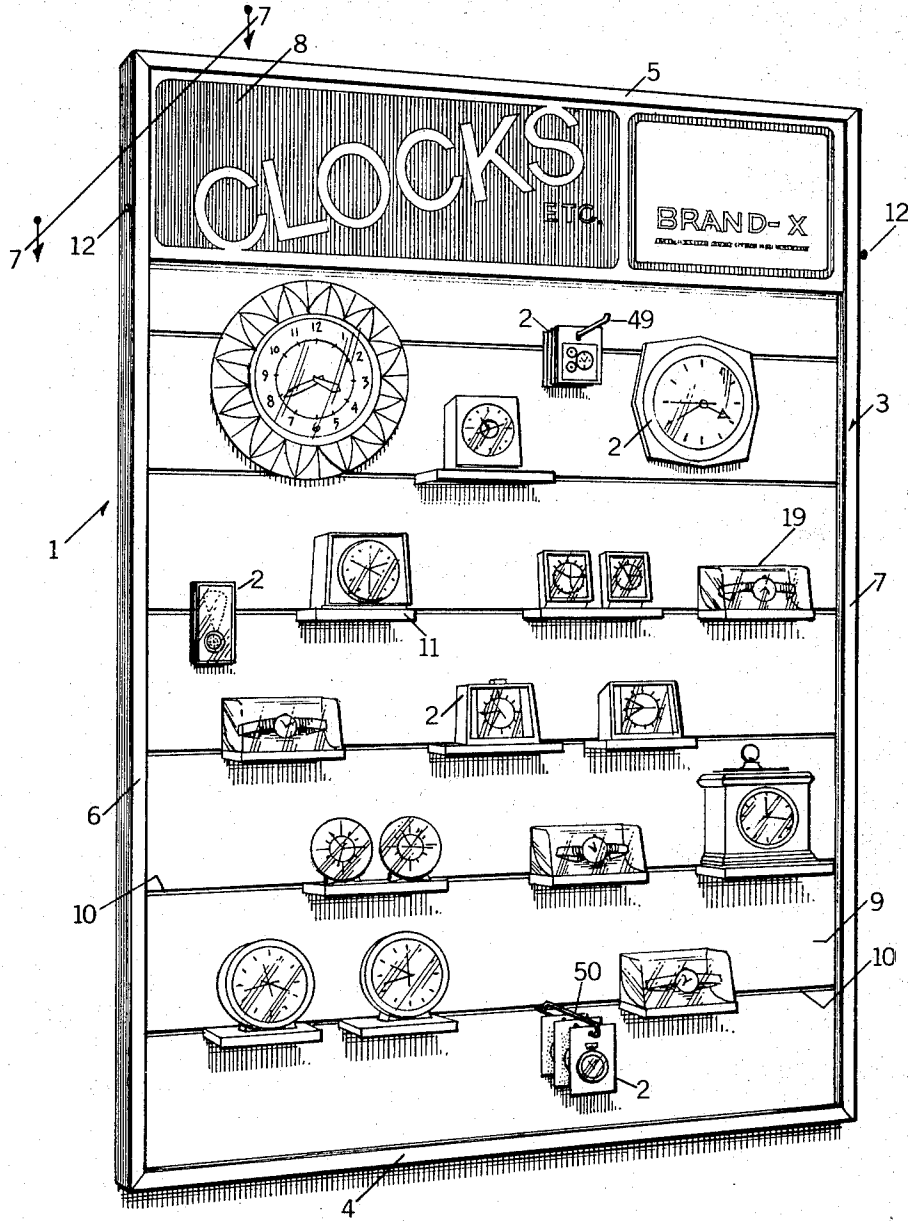
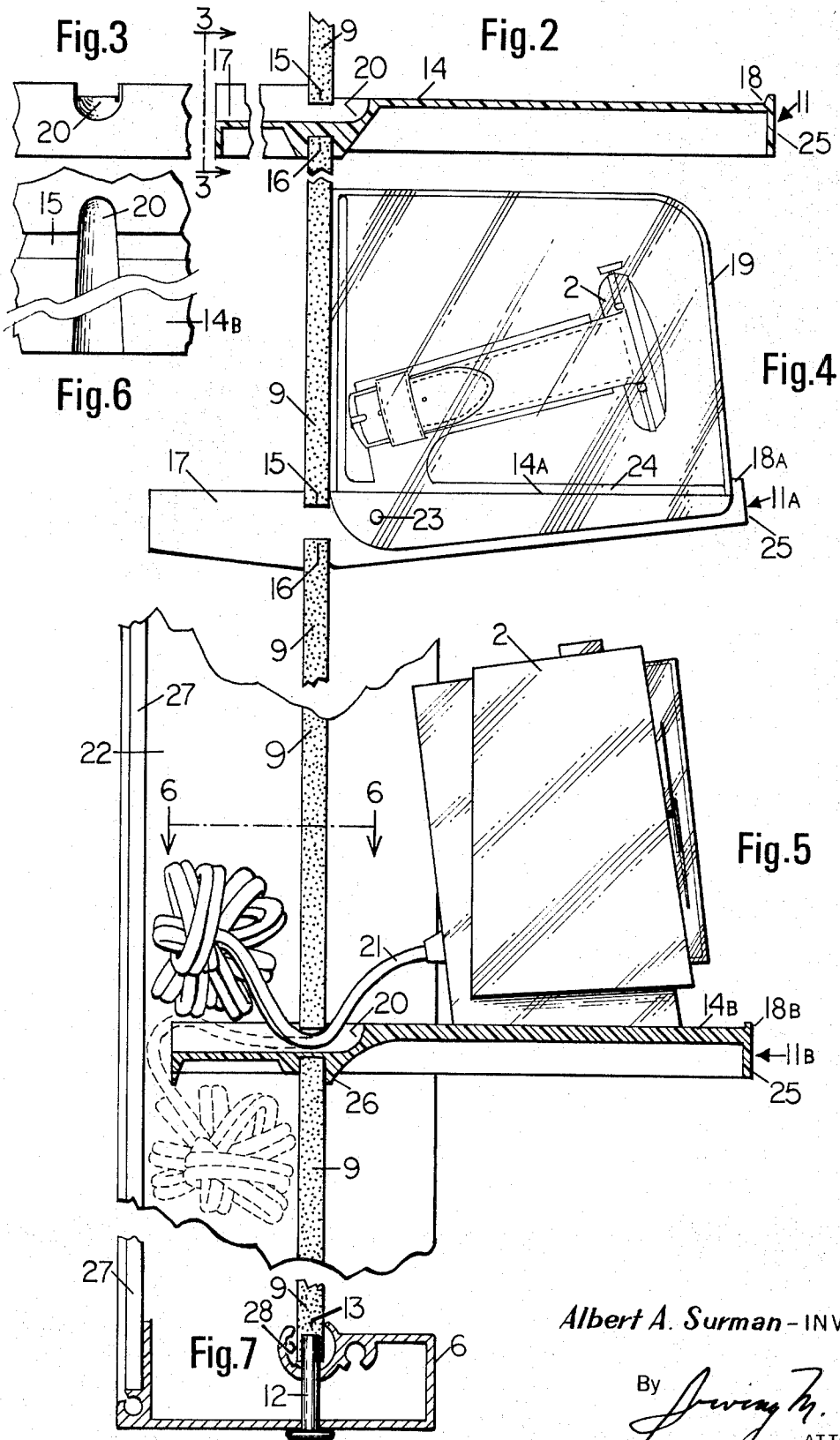


FIG. 1



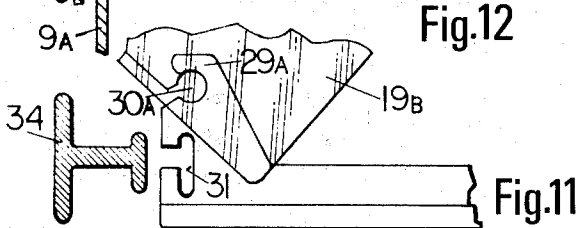
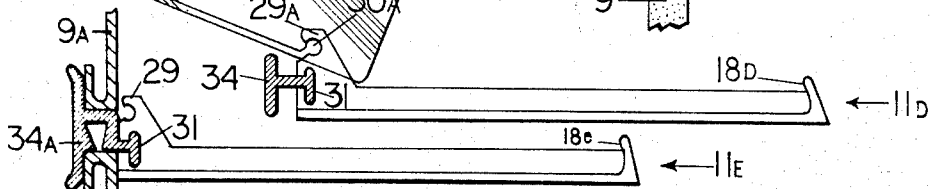
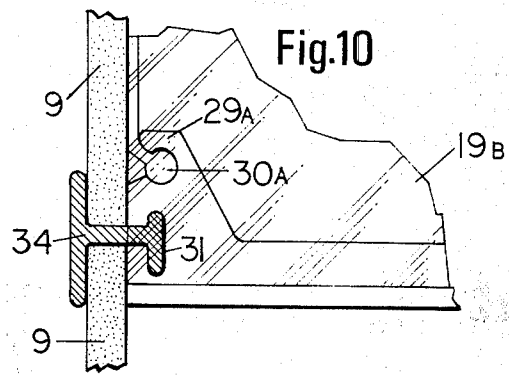
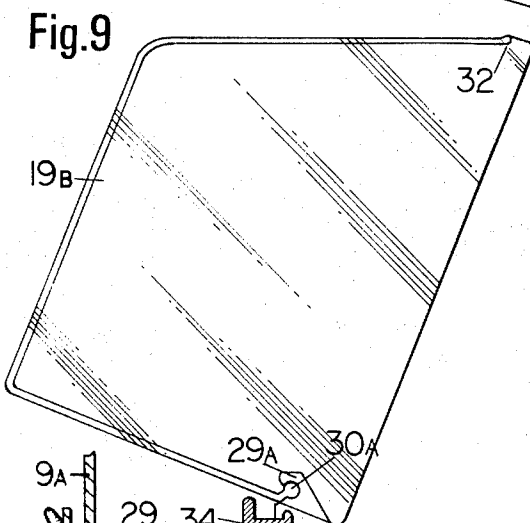
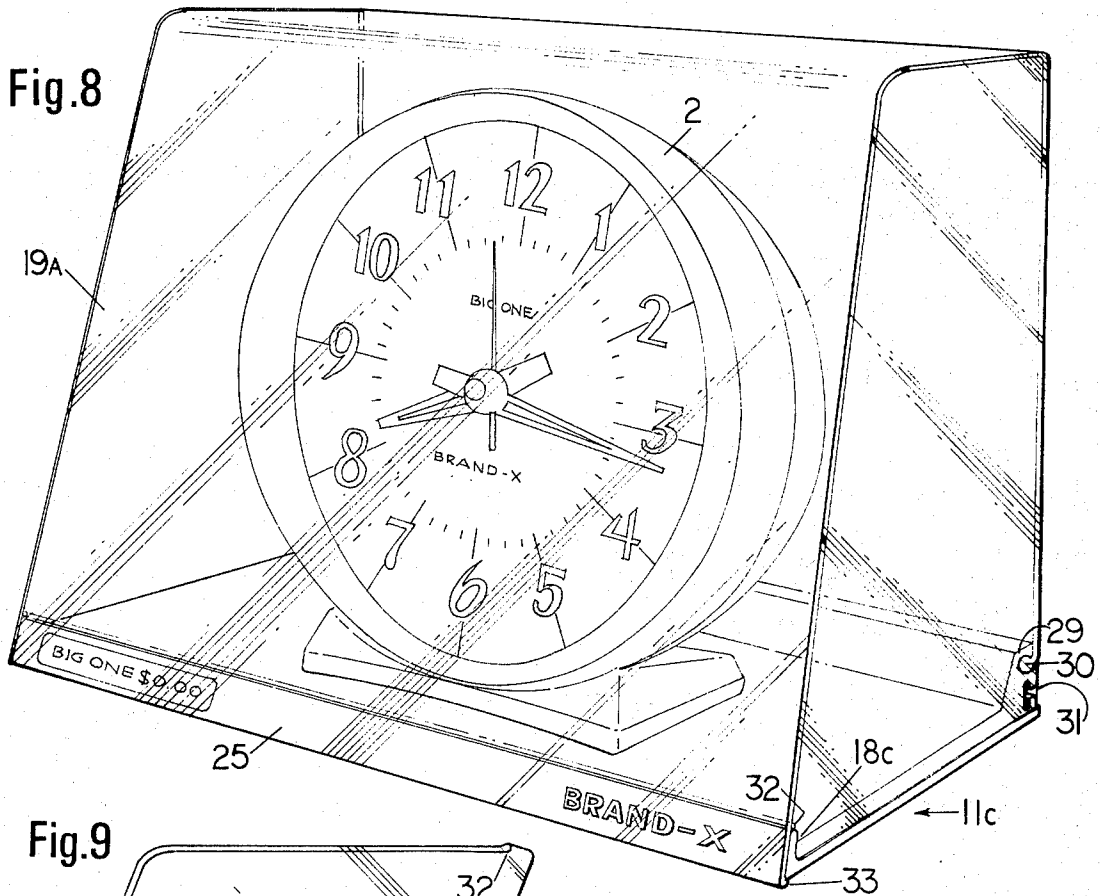
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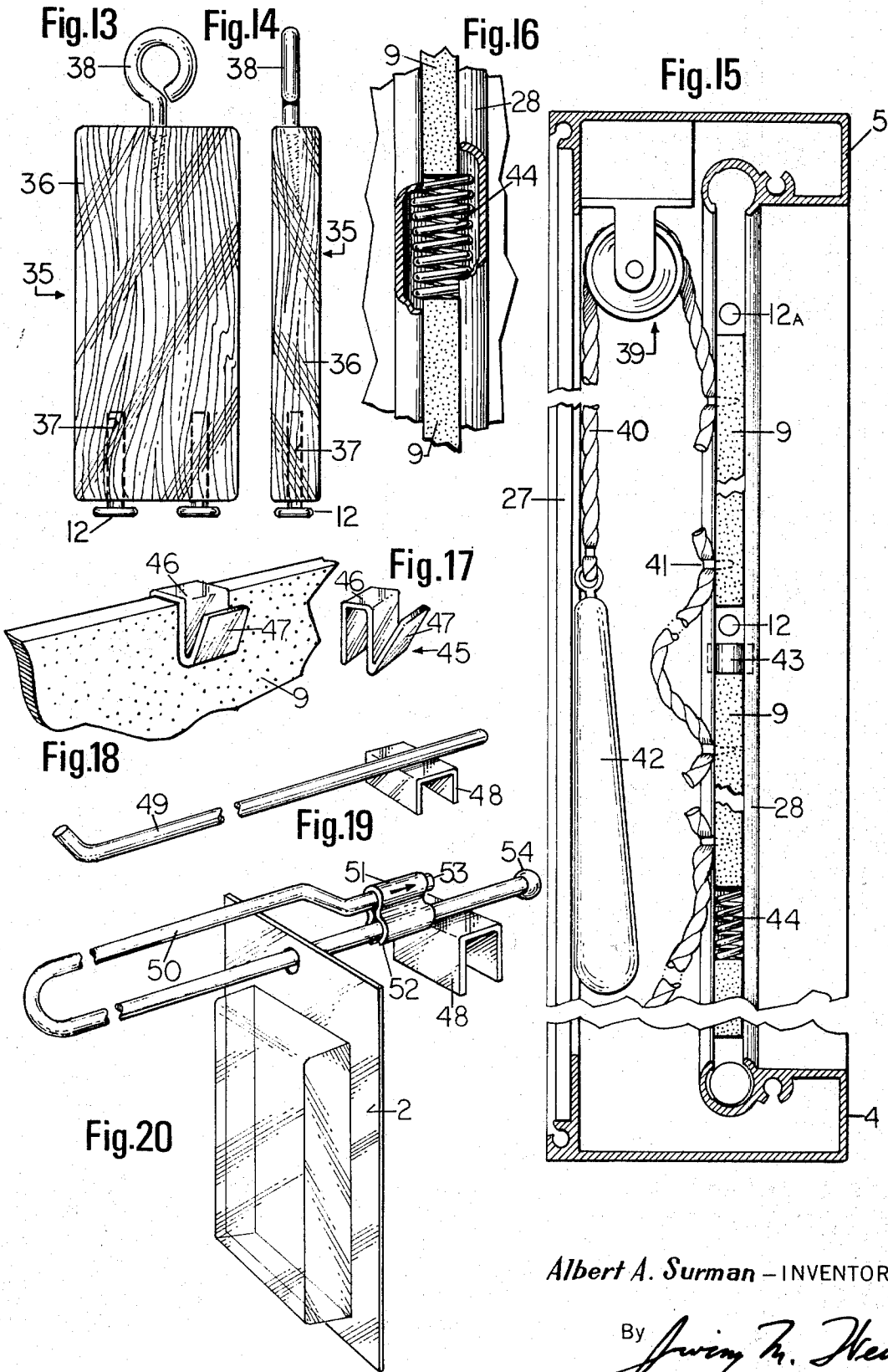
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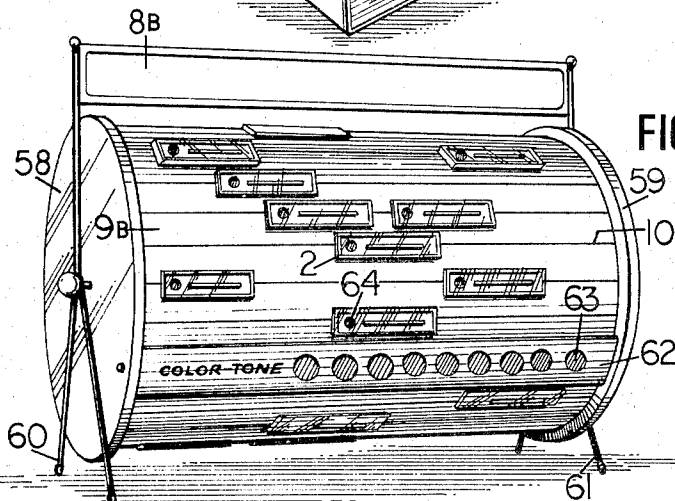
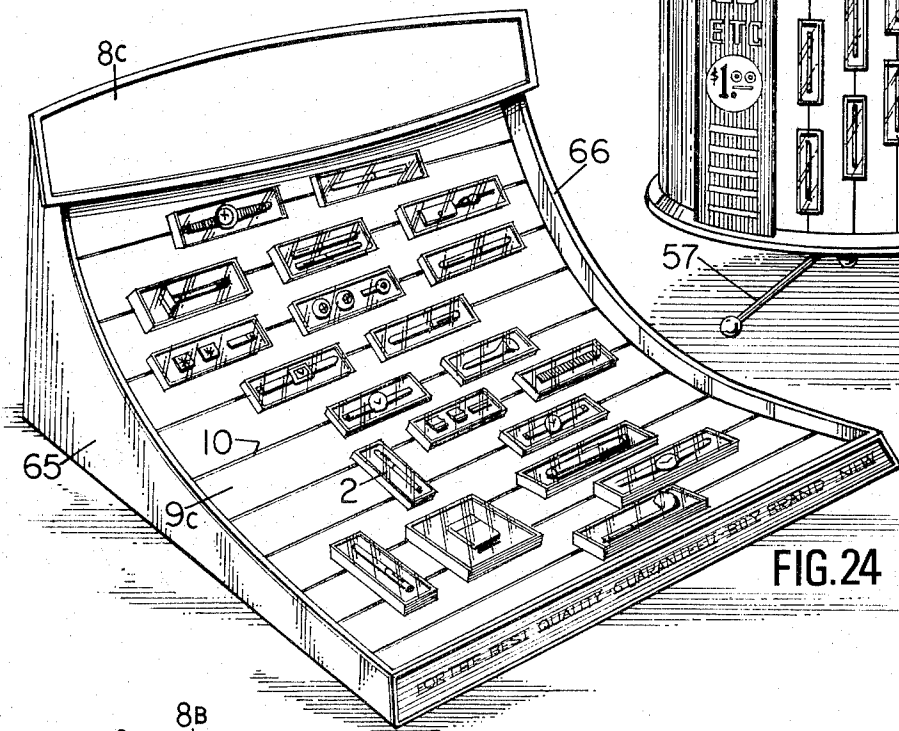
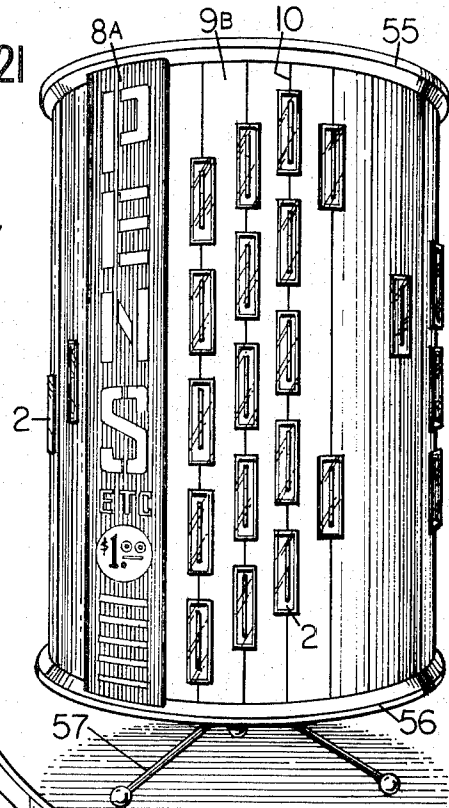
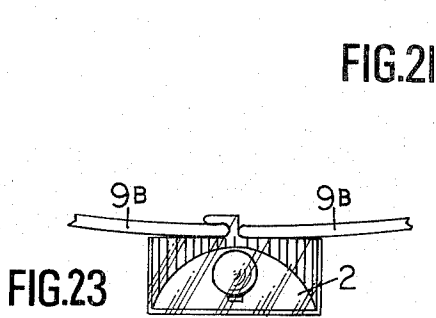
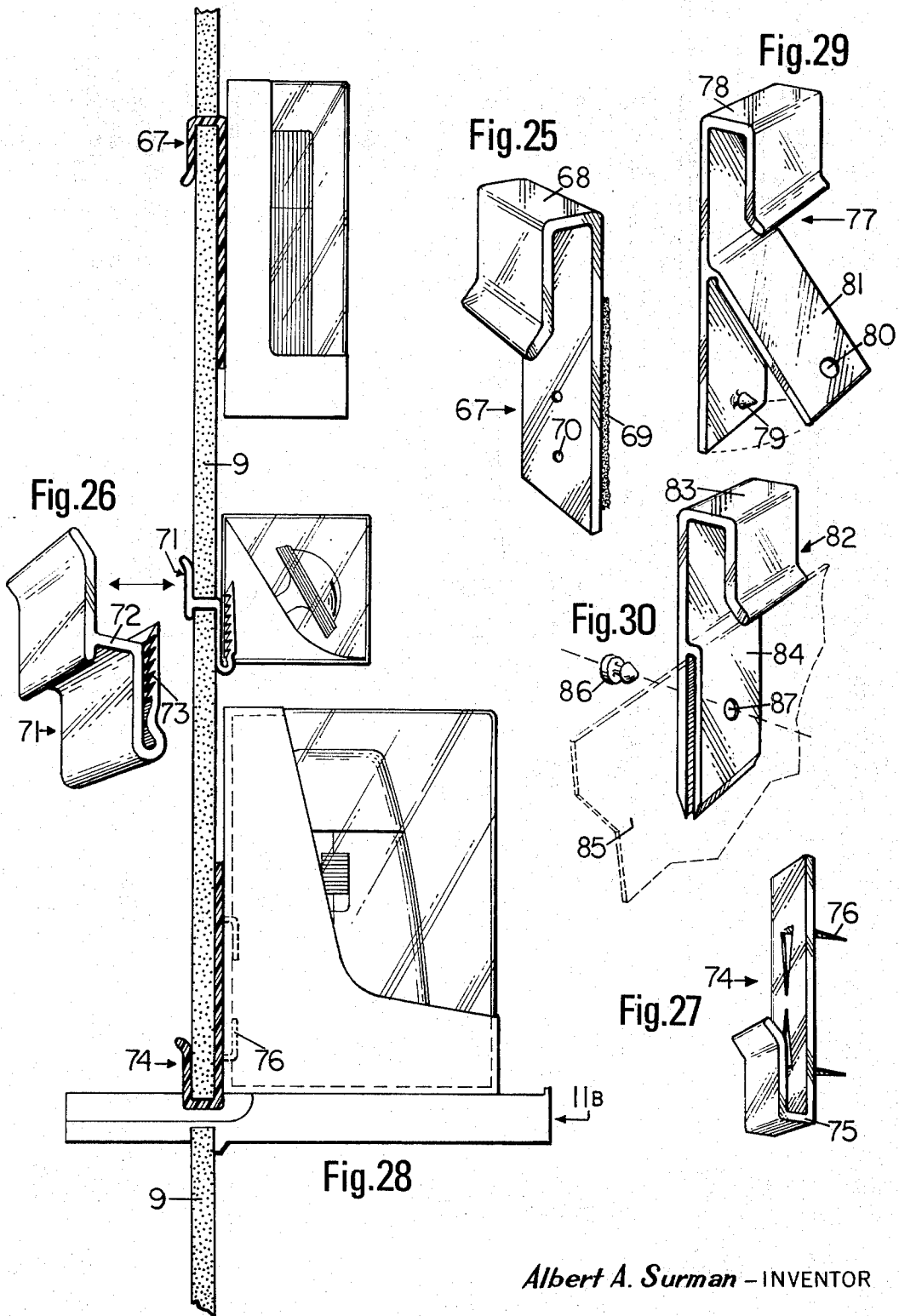


FIG. 22

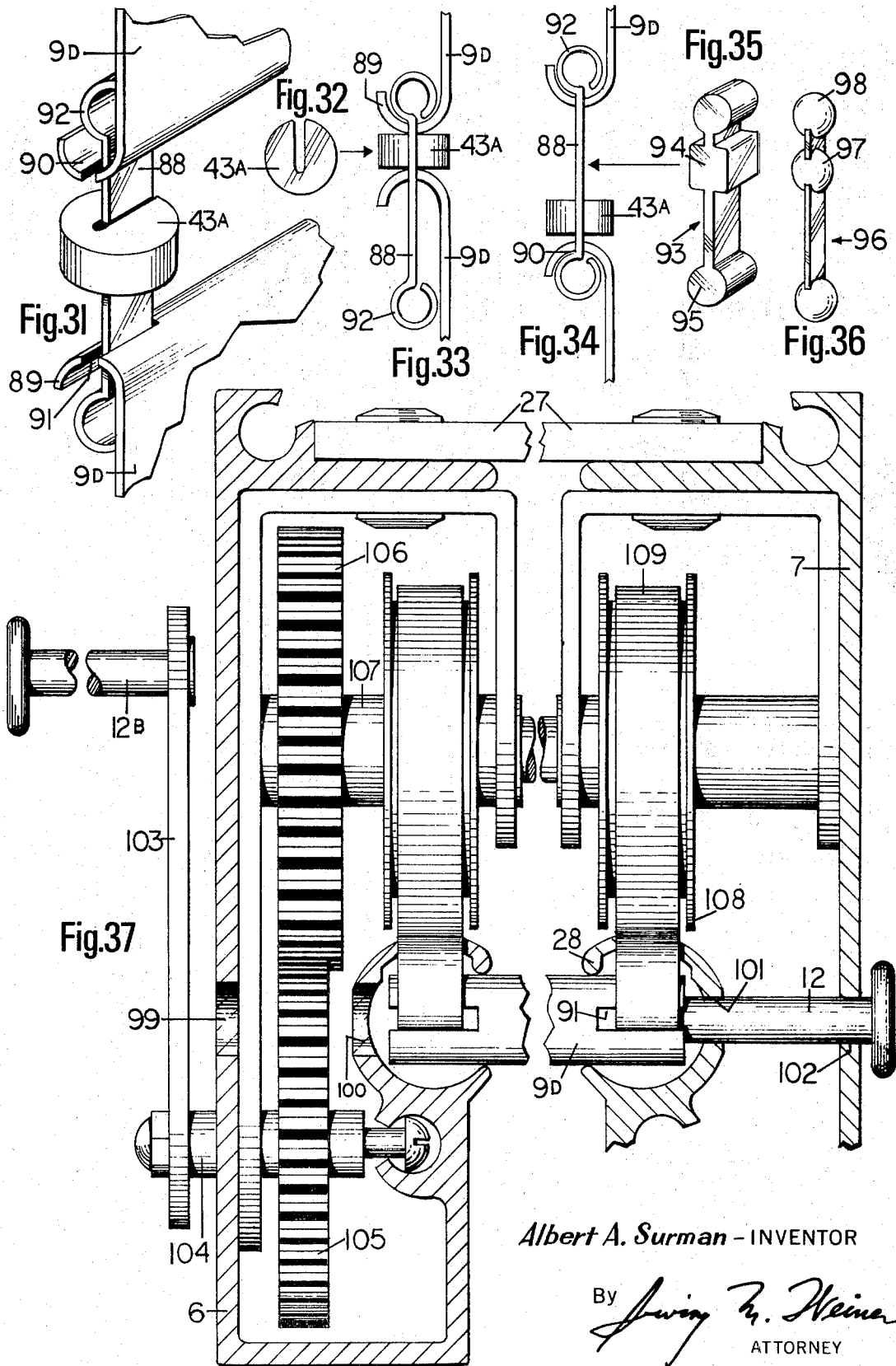
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## THEFT-DETERRENT MERCHANDISING DISPLAY APPARATUS

The present invention relates to an apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of the removable articles therefrom. In particular, the invention relates to an anti-theft display apparatus and a shelf device for supporting and displaying one or more articles.

### BACKGROUND OF THE INVENTION

There is an ever increasing need for relatively simple point of purchase display systems which permit large numbers of prospective purchasers to view the articles on sale, and yet prevent the theft of such articles. The visual display of articles on sale within the reach of potential customers increases sales as well as shoplifting. The merchandise in opaque boxes beneath sales counters and in back rooms reduces shoplifting, and at the same time reduces sales and increases the time and effort expended by sales personnel in securing the article which the customer desires to purchase.

Heretofore, various attempts to resolve these problems, such as those disclosed in U.S. Pats. Nos. 2,987,192 and 3,204,774, have failed to solve these problems and have various other attendant disadvantages. In particular, such prior art devices have been found somewhat suitable for specialized articles, such as pens, pencils and finger rings, but these prior devices are very complex, expensive, and are not readily adaptable to display a great variety of different articles having varying shapes and sizes. In contrast, the present invention solves all of the aforementioned problems very simply, efficiently and inexpensively.

### SUMMARY OF THE INVENTION

The present invention provides an apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of the plurality of removable articles therefrom. The apparatus includes at least one frame structure, and a plurality of first elements, such as slidable panels or slats, mounted within the frame structure and being selectively movable relative to the frame structure. The apparatus also includes first means, such as theft-guard pull pins, for selectively placing the plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, the movement of the first elements relative to the frame structure. The apparatus also includes second means, such as a special shelf device or product shelf with an associated key channel lock, for facilitating the positioning of the removable articles adjacent to at least one of the plurality of first elements, so that a predetermined article may be removed from the apparatus only when the first means has placed the plurality of first elements in the unlocked condition and the first element which is adjacent to the predetermined article has been moved sufficiently to permit the removal of the predetermined article from the apparatus.

The present invention also provides a shelf device for supporting and displaying one or more articles. The shelf device includes a shelf member, such as an open product shelf, which is disposed in a predetermined direction. The device also includes means, such as a

key channel lock member, for attaching the shelf member to one or more first elements which are disposed in a direction that is substantially transverse to the predetermined direction of the shelf member. The shelf device also includes means, such as an integral cover hinge, for pivotally securing a cover to the shelf member.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a first embodiment of an anti-theft display apparatus according to the present invention.

FIG. 2 shows a cross sectional elevational view of a first embodiment of the novel shelf device according to the present invention which may be employed with the apparatus illustrated in FIG. 1.

FIG. 3 depicts a back elevational view of the shelf device shown in FIG. 2 taken from the left side of FIG. 2 with the adjacent slats removed.

FIG. 4 represents a second embodiment of the novel product shelf device having a pivotally attached transparent cover for enclosing the article on the shelf which also may be used in conjunction with the apparatus illustrated in FIG. 1.

FIG. 5 illustrates an elevational view partly in section of a third embodiment of the novel product shelf device which may be used in conjunction with the apparatus shown in FIG. 1 and which has particular application for displaying items which may have an electrical line cord attached thereto requiring storage of the cord behind the movable slat members.

FIG. 6 depicts a partial top plan view of the groove in the product shelf taken along the line 6—6 of FIG. 5.

FIG. 7 shows a top plan view partially in section of the side member of the frame structure taken along the line 7—7 of FIG. 1.

FIG. 8 illustrates a perspective view of another embodiment of the novel combination shelf device-display package having a transparent pivotal cover.

FIG. 9 represents a side elevational view of the embodiment depicted in FIG. 8 showing the package base shelf, the novel key channel lock member for mounting the shelf on the slidable slat members, and the transparent cover pivoted to an open position.

FIG. 10 represents a partial enlarged view of the display package shown in FIGS. 8 and 9 for clearly depicting the shelf, transparent cover, and key channel lock member when the cover is in a closed position.

FIG. 11 shows an enlarged view of a portion of FIG. 9 with the key channel lock member removed from the back slot of the shelf.

FIG. 12 illustrates a modification of the shelf having the integral cover hinge, a modified key channel lock member, and a modification of the movable slat members all of which are particularly adapted for extrusion manufacture, injection molding or machining fabrication.

FIG. 13 illustrates a novel tool employed for lifting the slats of the apparatus shown in FIG. 1 and for storing the theft-guard pull pins.

FIG. 14 represents a side view of the tool shown in FIG. 13.

FIG. 15 illustrates a side elevational cross sectional view of a second embodiment of the display apparatus showing special features for facilitating the opening of the movable or slidable slat members.

FIG. 16 is a partial enlarged view of a section of FIG. 15 showing a spring member held in compression between the edges of adjacent slat members.

FIG. 17 is a perspective view of a novel clip employed for mounting various removable articles on the slat members.

FIG. 18 shows the clip of FIG. 17 mounted on a typical slat member.

FIG. 19 is a perspective view of a U-shaped clip which is welded to a hook for holding various removable articles.

FIG. 20 is another embodiment of the hook-clip arrangement shown in FIG. 19 which is particularly suited for displaying blister pack articles.

FIG. 21 illustrates another embodiment of the novel display apparatus according to the present invention wherein the slat members and/or the frame structure are constrained to move around a closed curved path.

FIG. 22 is the modification of the display apparatus depicted in FIG. 21 wherein the slat members are horizontally arranged and are constrained to move around a closed curved path.

FIG. 23 shows a fragmentary sectional view of two adjacent slat members with the removable article disposed therebetween which may be employed with the display apparatus of FIG. 21 or FIG. 22.

FIG. 24 is a perspective view of a further embodiment of the present invention wherein the slats are constrained to move along a concave curved path.

FIG. 25 shows a perspective view of an alternative form of clip having an adhesive strip or holes for rivets or staples for attaching the removable article thereto.

FIG. 26 shows another modification of a clip having a serrated portion for gripping the removable article or the box enclosing such article.

FIG. 27 is a perspective view of a further modification of the clip having push-in prongs.

FIG. 28 is a fragmentary side elevational view partly in section of the apparatus shown in FIGS. 1 or 15 illustrating the use of the clips depicted in FIGS. 25, 26 and 27.

FIG. 29 is a perspective view of a further modification of the clip having an integral snap thereon.

FIG. 30 is an alternative form of the clip shown in FIG. 29 having a separate snap-in rivet.

FIG. 31 is a fragmentary perspective view of modified slat members linked together by slidable connector elements.

FIG. 32 shows a top plan view of the capturing spacer.

FIG. 33 is a side elevational view of the embodiment shown in FIG. 31 represented in the closed position.

FIG. 34 is a side elevational view similar to FIG. 33 but shown in the open position.

FIG. 35 shows a modified connector element having an integral capture spacer.

FIG. 36 shows an alternative form of connector element having a spherical capture spacer and spherical ends.

FIG. 37 is a fragmentary top plan view partly in section of another embodiment of the display apparatus including special means for selectively raising or lowering the slat members.

#### DETAILED DESCRIPTION OF SOME PREFERRED EMBODIMENTS OF THE INVENTION

With reference to FIG. 1, there is shown a first embodiment of an anti-theft display apparatus for holding a plurality of removable articles 2 and for controlling the selective removability of predetermined ones of such removable articles 2 from the apparatus. The display apparatus 1 may have a frame structure 3 substantially in the shape of a rectangular parallelepiped for facilitating mounting on the wall or floor of a store.

The frame structure 3 includes a horizontally disposed bottom member 4 and a top member 5, and vertical side members 6 and 7. A sign 8 may be secured between the side members 6 and 7 and the top member 5. The sign 8 need not necessarily be slidable within the side members 6 and 7, but preferably should be arranged to be readily interchangeable with new signs when the need arises.

The display apparatus is provided with a plurality of first elements, such as substantially flat slat members 9, mounted within the frame structure 3 and being selectively movable or slidable within the side members 6 and 7. A gap 10 may be provided between the slidable slat members 9 for facilitating the holding or retaining of the removable articles 2 or their associated shelves or shelf devices 11.

The display apparatus also includes first means, such as theft-guard pull pins 12, for selectively placing the slat members 9 in a locked or an unlocked condition to permit or prevent, respectively, moving of slat members 9 relative to the frame structure 3. The theft-guard pull pins 12, which are also illustrated in FIG. 7, extend through the side frame member 6 or 7 and into the path of movement of the slidable slat members 9. If desired, the pull pin 12 can be arranged to fit within an aperture 13 provided in one of the slat members 9. The function of the theft-guard pull pins 12 will be described in detail hereinafter.

The display apparatus 1 includes second means, such as the shelf devices 11, for facilitating the positioning of the removable articles 2 adjacent to at least one of the slat members 9. Referring to FIG. 2, there is shown a shelf device 11 according to the present invention having a shelf member or portion 14 disposed in a predetermined direction which is perpendicular to the major surfaces of slat members 9. The shelf device 11 is provided with means, such as opposed slots 15 and 16, for attaching the shelf member 14 to one or more of the slat members 9. The major portion of the shelf device 11 consisting of the shelf member 14 is disposed in front of the slat members 9 for supporting or displaying a removable article, such as the time pieces 2 shown in the FIG. 1. The shelf device 11 may also include a portion 17 which is disposed behind the slat members 9. It should be understood that the shelf member 14 and/or the shelf portion 17 may extend for the full dimension between the side frame members 6 and 7, or for only a portion thereof as illustrated in FIG. 1. The length, width and thickness dimensions of shelf portion 14 need not coincide with the corresponding dimension of shelf portion 17. If desired, the front end of shelf portion 14 may be provided with a lip 18 which is useful in preventing the displayed article 2 from moving off the shelf portion 14 and is also useful as a retainer for the

end of the pivotal transparent covers 19 to be described hereinafter.

The shelf device 11 may be provided with one or more tapered or non-tapered grooves 20 which bridges the shelf portions 14 and 17 in the vicinity of the slots 15 and 16.

The groove 20 is also illustrated in FIG. 3 which shows a back end view of the device illustrated in FIG. 2 with the slats 9 removed. The purpose of the groove 20 is to facilitate the passage of an electrical line cord 21 (see FIG. 5) from the area in front of the slat members 9 to the storage area 22 in back of the slat members 9. The groove 20 may also be used for accommodating an anti-theft wire or ball chain cord (not shown) which may be attached to the back of the displayed article 2.

FIG. 4 shows a modified shelf device 11a having a different shape than the shelf device 11 shown in FIG. 2, and also including means, such as a pivot pin or screw 23, for pivotally securing a cover 19 to the shelf member 14a. The pivotal lid or cover member 19 may be entirely or partially transparent to facilitate viewing of the article 2 enclosed therein, and may be shaped and dimensioned to snap into cooperative retention with the lip 18a. It should be noted that FIGS. 2 and 4 are shown in the locked condition. That is, with the slat members 9 shown fitted within the slots 15 and 16, the shelf device 11 or 11a cannot be removed from the display apparatus and the cover 19 cannot be pivoted to an open position.

FIG. 4 shows the shelf device 11a provided with a velvet or felt insert 24, a product shelf which may be milled or extruded if desired, and an injection molded clear plastic cover 19. The front area 25 of the shelf device 11, 11a or 11b (FIG. 5) may be used for displaying product identity or price information which may be provided by the manufacturer of the article 2 to be sold.

FIG. 5 illustrates another embodiment of the shelf device 11b specially adapted for holding an article such as an electric clock or appliance. FIG. 5 shows the shelf portion 14b having a lip 18b and a stiffener portion 26 which aids in supporting the shelf device 11b in a rigid horizontal position. The electrical line cord 21 from the article or appliance 2 rests within the groove 20 and the remainder of the electrical line cord 21 is bunched and stored in the storage area 22 behind the slat members 9. The hidden storage area 22 is provided behind the slat members 9 and in front of the back member 27 of the frame structure 3. The solid line depiction of the line cord 21 shows the line cord resting above the shelf device 11b, and the phantom lined representation of the line cord 21 shows how the bunched line cord may be stored below the shelf device 11b. As an alternative to the groove 20, there may be provided a cylindrical cord hole (not shown) through the shelf device 11b and centered in the vicinity where the slat members 9 meet the shelf device 11b.

FIG. 6 shows a tapered configuration for the line cord groove 20 and the upper slot 15 with the slat member 9 removed.

FIG. 7 shows a fragmentary top plan view, partially in section, of an extruded form of the vertical side member 6 of the frame structure 3. The side member 6 and a portion 28 which provides a vertical side track or

slot within which the slat members 9 may move. The theft-guard pull pin 12 is adapted to pass through the outer portion of the side member 6, through the portion 28 and to the aperture 13 in one of slat members 9. As an alternative arrangement, the theft-guard pull pin may merely be disposed in the path of movement of the slat member 9 and above one of the edges of the slat member 9. The side member 6 as shown in FIG. 7 also supports one end of the back member 27 of the frame structure 3.

With reference to FIG. 8, there is shown another embodiment of the novel combination shelf device-display package having a transparent pivotal cover 19a which is pivotally secured to a shelf device 11c by way of a cover hinge 29 which is integral with the shelf device 11c. A transverse bead 30 on the back portion of the transparent cover 19a is pivotally inserted within the hinge 29. Beneath the hinge and pivotally mating bead arrangement, the shelf device 11c is provided with a key channel 31 which will be described in detail hereinafter. The front lower portion of the transparent cover 19a is provided with a pair of parallel transverse beads or lips 32 and 33 which mate with the lip 18c and the lower front edge of the shelf device 11c, respectively, for a snapped retention of the pivotal cover 19a with the shelf device 11c.

FIGS. 9, 10 and 11 relate to a modification of the combination shelf device and product package. The shelf device 11d is provided with a front lip 18d adapted to mate with a transverse bead 32 on the front lower portion of the transparent pivotal cover 19b. On the back side of the cover 19b, a transverse bead 30a is pivotally inserted in the integral hinge 29a of the shelf device 11d.

As shown best in FIG. 10, a key channel lock member 34 is inserted in the key channel 31 to facilitate the mounting of the product package to the slidable slats 9. FIG. 11 shows the transparent cover 19d in an open position with the key channel lock member 34 removed from the key channel 31.

With reference to FIG. 12, there is shown a modified shelf device 11e having a front lip 18e and an integral snap-in detent or hinge 29 to mate with the bead of a cover member (not shown). FIG. 12 shows a modified form of slat member 9a, and a modified form of key channel lock member 34a.

The operation of the various embodiments of the invention described hereinabove will now be explained in connection with the two views of the novel tool 35 shown in FIGS. 13 and 14. The embodiments as shown in FIGS. 1, 2, 4, 5, 7, 10 and 12 are all illustrated in an anti-theft or locked condition of the display apparatus 1. In this condition, the various articles 2 cannot be directly or readily removed from the apparatus without first removing the pull pins 12 which are not in full view of the potential customers. It should also be noted that in the same anti-theft or locked condition, the package cover 19, 19a or 19b cannot be pivoted to an open position to permit removal of the article 2 enclosed therein without first moving or raising the retaining back slat member 9 or 9a. In this condition the customer may closely examine and touch the various articles 2, but he cannot directly or readily remove such article by himself.

When the customer informs the salesman that he desires to purchase or more closely examine a particular removable article 2, the salesman removes or withdraws the theft-guard pull pins 12 from the side members 6 and 7 of the frame structure 3. Upon doing so, the display apparatus is now in an unlocked condition and the slat members 9 may be slid within the vertical side track or slot 28 in side members 6 and 7. To avoid loss or misplacement of the removed pull pins 12, the slat lifting tool 35 shown in FIGS. 13 and 14 is provided with a body member 36 having storage holes 37 to receive the pull pins 12 for temporary storage therein.

The opposite end of the body member 36 is provided with a portion in the form of an eyelet 38 adapted for insertion in the gap 10 (see FIG. 1) between the slat members 9. After the eyelet 38 has been inserted in the gap 10, the tool 35 may merely be lifted vertically to raise the slat members 9, or alternatively, the tool 35 may be rotated 90° and thereby lifting the slat members 9 by forcing the wide portion of the eyelet in the gap 10. When the slat members 9 have been raised a sufficient distance to permit removal of the desired article 2, the body member 36 of the tool 35 may be left interposed in the widened gap 10 so that the slat members 9 above the tool 35 will rest thereon until it is desired to place the apparatus back into its locked condition. Thus, the tool 35 serves the triple purpose of temporarily storing the pull pins 12, raising the desired slat members 9, and maintaining the slat members spaced apart until it is desired to have the apparatus revert to its locked condition.

FIGS. 15 and 16 show another embodiment of the present invention which is provided with third means including at least one rotatable pulley 39 secured to the top member 5 of the frame structure 3, an elongated member, such as a wire, chain or cord 40, being affixed to at least one of the slat members 9 by fasteners 41 and passing over the pulley 39, and a spring or counterweight 42 for facilitating movement of the slats 9 when desired. FIG. 15 also shows the back wall member 27 affixed to the top member 5 and the bottom member 4 of the frame structure 3. With reference to FIGS. 1, 7, 15 and 16, it should be noted that if desired the frame members 4, 5, 6 and 7 may have the same cross sectional configuration. FIG. 15 shows the portion 28 which provides the vertical slot or track within which the slat members 9 may slide. The slat members 9 may be provided with gap spacers 43 to provide the gap 10 shown in FIG. 1.

As shown in FIG. 15, the slot or side track may be provided with a plurality of pull pins 12, and if desired a permanent stop in the form of a stop or pull pin 12a near the top of the frame. The counterweight embodiment illustrated in FIG. 15 would operate essentially the same as the conventional sash weight window arrangement.

With reference to FIG. 15 and 16, there is shown a modification or another embodiment of the easy opening display apparatus which may be used as a separate embodiment or as an adjunct to the FIG. 15 counterweight arrangement. This modification entails the use of a resilient member, such as a spring 44, which is normally maintained compressed between the opposing edges of the slat members 9. FIG. 16 shows a cutaway

section of the portions 28 to make the spring member 44 more visible. Upon selective withdrawal of certain pull pins 12, the restoring force or urging of the spring member 44 will move the associated slats 9 along the vertical track or slot.

With reference to FIG. 17, there is illustrated a novel clip according to the present invention which is especially adapted for mounting removable articles, such as wall clocks, on the various slats of the display apparatus. The novel clip 45 has a U-shaped portion 46 for facilitating mounting on the slat member 9, and another portion 47 for facilitating connection to the article 2, such as a wall clock, to be displayed. FIG. 18 shows the novel clip 45 mounted on a typical slat member 9. It should be noted that with the use of the novel clip 45, the gap 10 between adjacent slat members 9 does not have to be very wide.

FIG. 19 shows a novel U-shaped clip 48 which is welded to a hook member 49 for use in holding various removable articles 2. The device shown in FIG. 19 is especially useful for holding blister pack articles which may be mounted on cards. If desired the U-shaped channel or clip 48 may be mounted on the upper side of the hook 49 for affixing to the lower edge of the slat member 9 above the hook 49. As an alternative, two U-shaped clips 48 can be welded to the hook 49 for mounting on the upper and lower edges of the adjacent slat members 9.

With reference to FIG. 20, there is shown another embodiment of the hook-clip arrangement wherein a U-shaped clip 48 is welded to an elongated member portion 50. A slider 51 having two tubular channels therein is adapted to slide on the double back portions of the elongated member portion 50. The opening 52 at the bottom of the slider 51 is adapted to pass over the weld holding the member 50 to the clip 48. The end 53 of the member 50 is adapted to abut against the major surface of the slat member 9. A ball 54 affixed to the longer end of the member 50 is adapted to prevent loss of the slider 51 when it is slid back too far. This embodiment is also especially adapted for the mounting and displaying of blister pack articles or products.

With reference to FIG. 21, there is shown another embodiment of the novel display apparatus having somewhat modified movable slat members 9b which are constrained to move within a closed curved path or track provided in a horizontally disposed top member 55 and a horizontally disposed bottom member 56. It is to be noted that in this embodiment, the slats 9b are arranged vertically to provide a substantially vertical gap 10 therebetween, and that the slat members 9b may be slightly arcuate or concave in cross section. This is best illustrated in FIG. 23. The display apparatus shown in FIG. 21 may be fixedly or rotatably mounted upon the leg members 57. A vertically disposed sign 8a may be fixedly or slidably secured between the top and bottom members 55 and 56. It is of course essential that there be relative motion between slat members 9b and the top members 55 and 56 to widen and close the gap 10. However, it is optional whether or not there be relative motion between leg members 57 and the bottom member 56 and the top member 55. It is also optional whether or not there be relative motion between the sign 8a and the members 55 and 56.

FIG. 22 illustrates another embodiment of the novel display apparatus according to the present invention wherein slat members 9b are disposed substantially horizontally and movable within enclosed curved paths or tracks in side members 58 and 59. The members 58 and 59 are mounted on leg stand members 60 and 61, respectively. A sign 8b may be fixedly mounted between the upper portions of stand members 60 and 61. If the removable articles are associated with various colors, such as various colored inks, the display apparatus may be provided with a color tone guide 62 which is connected between the side members 58 and 59. This guide 62 may be just for visual comparison between the color dots 63 on the guide 62 and the color dots 64 on the removable articles 2, or alternatively may be provided with apertures in the guide 62 which can be aligned with the associated color dots 64 on the removable articles 2 when the slats 9b have been appropriately rotated to a predetermined position.

FIG. 24 depicts another embodiment of the display apparatus wherein the slats 9c are substantially horizontally disposed and slidable within incomplete or partial curved paths or tracks provided in side members 65 and 66 of the apparatus. The slat members 9c may have a cross section which is slightly arcuate or concave.

The operation of the embodiments illustrated in FIGS. 21, 22, 23 and 24 is similar to the operation of the various embodiments of the invention described hereinabove in connection with the novel tool 35 illustrated in FIGS. 13 and 14.

FIG. 25 shows a clip 67 having a U-shaped portion 68 which is adapted to be disposed on or between the opposite edges of adjacent slat members 9, and means for attachment to one of the removable articles 2. The attachment means may take the form of an adhesive strip 69 or apertures 70 for connecting members, such as rivets or staples.

FIG. 26 shows a modified clip 71 having a portion 72 adapted to be disposed between the opposite edges of adjacent slat members 9, and a serrated gripping portion 73 for attachment to one of the removable articles 2.

FIG. 27 illustrates a modified clip 74 having a portion 75 adapted to be disposed on or between the opposite edges of adjacent slat members 9, and attachment means in the form of push-in prongs 76. FIG. 28 illustrates a partial side elevational view of the display apparatus showing exemplary uses of the novel clips 67, 71 and 74. These clips may be used by themselves to display the various removable articles 2, or maybe used in conjunction with the various novel shelf devices according to the invention, such as the shelf device 11b shown in the lower portion of FIG. 28.

FIG. 29 illustrates a novel one-piece snapped together clip 77 provided with a portion 78 which is adapted to be disposed between or on the opposite edges of adjacent slat members 9, and attaching means in the form of an integrally affixed rivet 79 to mate with an aperture 80 provided in a bendable member 81.

FIG. 30 shows a modified clip 82 having a portion 83 adapted to be disposed on or between opposite edges of adjacent first elements 9, and attaching means in the form of bendable portion 84 provided with an aperture 87 for the reception of a separate rivet 86. The benda-

ble portion 84 is adapted to be bent into contact with the card wall 85 of a box or other removable article 2 to be displayed. The snap-in rivet 86 may be inserted in the apertures 87 manually or by a convenient tool (not shown). It should also be noted that all of the clips illustrated in FIGS. 25, 26, 27, 28, 29 and 30 may be employed in the position as illustrated or equally as well in a reversed or upside down position.

FIGS. 31, 32, 33 and 34 illustrate another embodiment of the present invention including modified movable slat members 9d which are slidably connected together by a connector element 88. The modified slat members 9d have shoulders 89 including a portion 90 which is disposed substantially transverse to the major or front surface of the slat member 9d. The transverse portion 90 is provided with a slot 91 for slidable reception of the connector element 88.

The connector element 88 is provided with enlarged ends 92 for preventing slidable detachment from the slat members 9d. If desired, a spacer element or capturing spacer 43a may be disposed on the connector element 88 between adjacent slat members 9d. FIG. 33 shows the embodiment in the locked condition, and FIG. 34 shows the embodiment in the open or unlocked condition for removal of one of the articles 2. It should be noted how the enlarged ends 92 of the connector element 88 are shaped to mate with or fit within the shoulders 89 of the slat members 9d. The embodiment illustrated in FIGS. 31, 32, 33 and 34 is especially adapted for production by exclusion techniques. FIG. 35 shows a modified connector element 93 having an integral capture spacer 94 disposed between the enlarged ends or yoke heads 95.

FIG. 36 shows another modified connector element 96 having a spherical or ball capture spacer 97 disposed between the ball or spherical ends 98.

FIG. 37 illustrates another embodiment of the display apparatus emphasizing special means for selectively raising and lowering the slat members. The side frame members 6 and 7 are provided with apertures 99, 100, 101 and 102 for the reception of various anti-theft pull pins to be described hereinbelow. The slat members 9d are interconnected by suitable connector elements 88, 93 or 96 which permit the slat members 9d to slide relative to one another to vary the spacing of gap 10 between adjacent slat members 9d.

The novel raising and lowering means includes a crank member 103 which is affixed to a shaft 104 that is rotatably mounted in side frame member 6. A gear 105 is affixed to the rotatable shaft 104 and is adapted to mesh with a gear 106 affixed to a rotatable shaft 107.

The rotatable shaft 107 may be provided with one or more spools 108 which are adapted to receive in a wound fashion an elongated member, such as a metallic tape 109, which is connected at one end of one of the movable slat members 9d.

An anti-theft pull pin 12b also serves as the handle for the crank 103 when the apparatus is in an unlocked condition. When the crank 103 is rotated to a position where the pull pin 12b is aligned with the aperture 99 in the side frame member 6, the pull pin 12b may be moved into the apertures 99 and 100 to protrude within the path of movement of at least one of the slat members 9d. This serves the dual purpose of temporarily storing the crank handle pull pin 12b, and maintaining

the apparatus in a locked condition. The opposite side member 7 may be provided with an anti-theft pull pin 12 similar to the pull pin described in connection with the display apparatus of FIG. 1.

Although several preferred embodiments of the present invention have been disclosed in considerable detail hereinabove, it will be understood that the invention is not limited thereto, but may be employed in many other configurations, environments and applications. The various features of the invention may be employed in the combination disclosed, or separately, or other combinations. Many other variations and modifications thereof can be resorted to without departing from the scope of the invention as defined in the following claims.

I claim:

1. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:
  - at least one frame structure;
  - a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;
  - first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;
  - second means removably attached to said first elements for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus; and
  - said plurality of first elements mounted within said frame structure comprise substantially flat members which are adapted for translatory motion relative to said frame structure.
2. A shelf device for supporting and displaying one or more removable articles, comprising, in combination:
  - a shelf member disposed in a predetermined direction;
  - means for attaching said shelf member to one or more first elements which are disposed in a direction that is substantially transverse to said predetermined direction of said shelf member;
  - means for pivotally securing a cover to said shelf member;
  - said means for attaching said shelf member to one or more first elements comprises a key channel lock member having a first portion for attachment to said shelf member and a second portion which is adapted to be disposed on the side of said first elements remote from the major portion of said shelf member, said means for pivotally securing a cover to said shelf member includes an integral cover hinge forming a portion of said shelf member, and including a transparent pivotal cover affixed to said integral hinge for permitting the viewing of said article disposed on said shelf member and for

permitting said cover to pivot to an open position when desired.

3. An apparatus characterized substantially in accordance with claim 1, wherein said first means for selectively placing said plurality of first elements in a locked or an unlocked condition comprises pin members having their longitudinal axis disposed substantially transverse to the path of movement of said plurality of first elements mounted within said frame structure.

4. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

- at least one frame structure;

- a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;

- first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;

- second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus;

- each removable article is disposed within an enclosure at least a portion of which is formed from transparent material to permit observation of the article disposed therein;

- said first elements comprise slat members disposed within substantially vertical grooves in said frame structure; and said second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements includes an article shelf having notches which facilitate the mounting of said article shelf between adjacent slat members, and having means for pivotally affixing said enclosure to said article shelf, so that said enclosure is normally constrained to remain in a closed condition by the presence of at least one of said slat members and said enclosure is permitted to be pivoted to an open condition only when said first means has been placed in said unlocked condition to permit vertical movement of at least the slat member in back of said enclosure to be opened.

5. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

- at least one frame structure;

- a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;

- first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;

second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus;

at least one of said removable articles includes a package base having a transparent enclosure pivotally mounted thereon;

said first elements comprise locking slats which are adapted to translate within said frame structure; and

said second means comprises a key channel lock element for accommodating the opposing edges of two adjacent locking slats, and having a first predetermined portion adapted to be affixed to said package base near one major surface of said locking slats, and having a second predetermined portion adjacent the opposite major surface of said locking slats for preventing removal of said article while said first means remains in said locked position.

6. An apparatus characterized substantially in accordance with claim 5, wherein said key channel lock element is integral with said package base.

7. An apparatus characterized substantially in accordance with claim 5, wherein said key channel lock element constitutes a separate member which is removably secured to said package base.

8. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

- at least one frame structure;
- a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;
- first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;
- second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus;
- at least one of said removable articles has an elongated flexible member affixed thereto; and
- said second means includes at least one article shelf which is disposed substantially perpendicular to the major surfaces of said first elements;
- said article shelf including opposed grooves for accommodating the opposed edges of an adjacent pair of said first elements; and
- said article shelf also including a groove to accommodate said elongated flexible member when

said first elements are in a locked condition to permit the bulk of said elongated flexible member to be secured on one side of said first element while the article to which said elongated flexible member is affixed rests on the opposite side of said first element.

9. An apparatus characterized substantially in accordance with claim 1, wherein said first elements comprise slat members which are constrained to translate along a curved path relative to said frame structure.

10. An apparatus characterized substantially in accordance with claim 1, wherein said first elements comprise slat members which are constrained to translate around a closed curve path relative to said frame structure.

11. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

- at least one frame structure;
- a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;
- first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;
- second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus;
- said removable articles are mounted for display in front of one major surface of said first element; said frame structure including a top member; and
- third means mounted in back of said major surface of said first elements for moving at least one of said first elements;
- said third means including at least one rotatable pulley secured to said top member of said frame structure, an elongated member being affixed to at least one of said first elements and passing over said pulley, and a counter weight or spring for facilitating movement of said first elements when desired.

12. An apparatus characterized substantially in accordance with claim 1, wherein said second means comprises a clip having at least one portion for fitting about the edge of one of said first elements and a second portion to which one of said removable articles may be removably attached.

13. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

- at least one frame structure;
- a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;
- first means for selectively placing said plurality of first elements in a locked or in an unlocked condi-



tion to permit or to prevent, respectively, said movement relative to said frame structure;

second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus; and

said second means includes a substantially U-shaped portion which is affixed to an elongated hook portion upon which said removable article may be mounted; said substantially U-shaped portion being shaped to mate with an edge of one of said first elements.

14. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

at least one frame structure;

a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;

first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;

second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus; and

said second means includes a substantially U-shaped portion adapted to mate with an edge of said first elements, a second portion affixed to said substantially U-shaped portion and having at least two tubular channels therein, and a third elongated member portion which is adapted to slide within said second portion, to hold one of said removable articles, and which is shaped to double back to slidably pass within the other of said two tubular sections and present an end which abuts one of said first elements.

15. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

at least one frame structure;

a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;

first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;

second means for facilitating the positioning of said removable articles adjacent to at least one of said

plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus; and

a tool having one portion adapted for moving said first elements, and having another portion adapted for temporarily storing at least some of said first means.

16. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

at least one frame structure;

a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;

first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;

second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus; and

resilient means disposed between adjacent edges of at least some of said plurality of first elements whereby said resilient means are normally maintained in a compressed state when said first elements are in said locked condition, and when said first means places said first elements in an unlocked condition the normally compressed resilient means expands to separate said first elements to said unlocked condition.

17. An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

at least one frame structure;

a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;

first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;

second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus;



at least some of said first elements comprise slat members having shoulders formed at the opposite edges thereof including a portion which is disposed substantially transverse to the major surface of said slat member;

each said shoulder having at least one slot therein formed in a direction which is substantially transverse to the path of movement of said first element;

and a connector element slidably disposed within said slot in adjacent shoulders of adjacent first elements to permit said first elements to be moved apart from one another and closer to one another along said connector element; and

means for raising or lowering at least one of said first elements.

**18.** An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

at least one frame structure;

a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;

first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;

second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus;

said frame structure includes a side portion which is disposed substantially transverse to the major plane of said first elements and said side portion having an aperture therein;

said first elements being interconnected by third elements which permit adjacent first elements to slide relative to one another to vary the spacing between adjacent first elements;

and including means for selectively raising or lowering at least one of said first elements;

said raising and lowering means including a crank member affixed to a shaft rotatably mounted in said side portion of said frame structure, means for transmitting rotary motion imparted to said shaft to a second shaft within said frame structure, a spool mounted on said second shaft, and an elongated member wound around said spool and having one end of said elongated member connected to at least one of said movable first elements;

said first means comprising a pin member which is slidably connected to said crank and which serves as a handle for rotating said crank and which is adapted to slide within said aperture in said side portion of said frame structure to protrude within the path of movement of at least one of said first elements and thereby maintain said element in said locked condition.

**19.** An apparatus characterized substantially in accordance with claim **26**, wherein the front major surfaces of said first elements lie within a predetermined plane when said first elements are in said locked condition; and including second elements having their front major surfaces within said predetermined plane and being fixedly secured to said frame structure; and third means for movably connecting a first element to at least one of said second elements.

**20.** An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

at least one frame structure;

a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;

first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;

second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus;

the front major surfaces of said first elements lie within a predetermined plane when said first elements are in said locked condition; and including second elements having their front major surfaces within said predetermined plane and being fixedly secured to said frame structure;

third means for movably connecting a first element to at least one of said second elements; and

said third means comprises a pivotal connection between one of said first elements and one of said second elements.

**21.** An apparatus characterized substantially in accordance with claim **19**, wherein said third means is so shaped and arranged so as to permit said first element to be pushed substantially transverse to said predetermined plane and then translated parallel to said predetermined plane and relative to said second element.

**22.** An apparatus characterized substantially in accordance with claim **26**, including a shelf member disposed in a predetermined direction; means for attaching said shelf member to one or more of said first elements which are disposed in a direction that is substantially transverse to said predetermined direction of said shelf member; and means for pivotally securing a cover to said shelf member.

**23.** An apparatus for holding a plurality of removable articles and for controlling the selective removability of predetermined ones of said plurality of removable articles therefrom, comprising, in combination:

at least one frame structure;

a plurality of first elements mounted within said frame structure and being selectively movable relative to said frame structure;

first means for selectively placing said plurality of first elements in a locked or in an unlocked condition to permit or to prevent, respectively, said movement relative to said frame structure;  
second means for facilitating the positioning of said removable articles adjacent to at least one of said plurality of first elements, so that a predetermined article may be removed from said apparatus only when said first means has placed said plurality of first elements in said unlocked condition and the

first element which is adjacent to said predetermined article has been moved sufficiently to permit the removal of said predetermined article from said apparatus; and  
said second means includes a clip which is adapted to be disposed between the opposed edges of adjacent first elements, said clip being provided with means for attachment to one of said removable articles.

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