Oct. 13, 1942. E. J. KLASSEN 2,298,790

DISPLAY CASE

Filed July 29, 1940 5 Sheets-Sheet 1

Fig. 1.

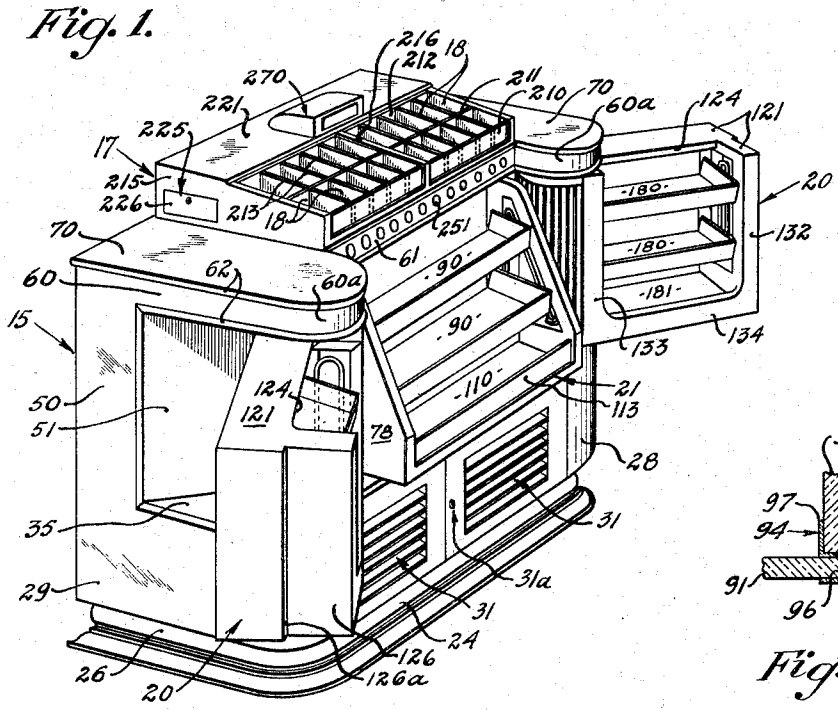


Fig. 12.

Fig. 11.

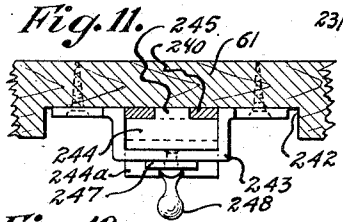
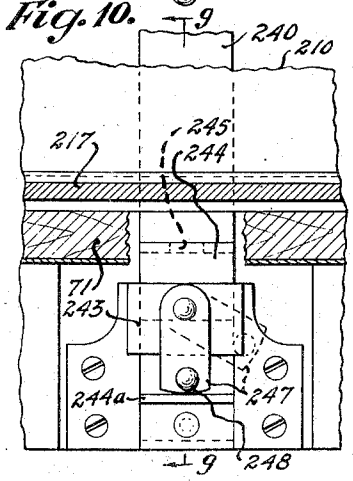


Fig. 10.



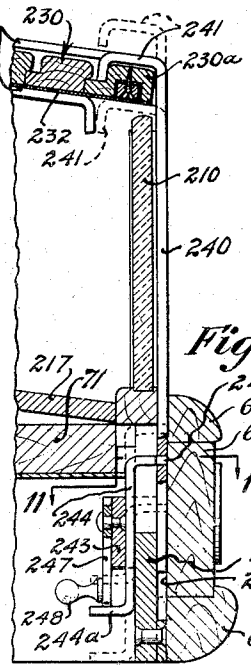


Fig. 9.

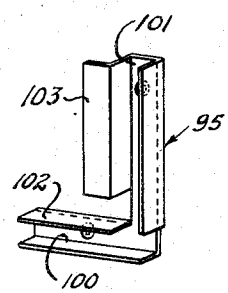


Fig. 13.

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DISPLAY CASE

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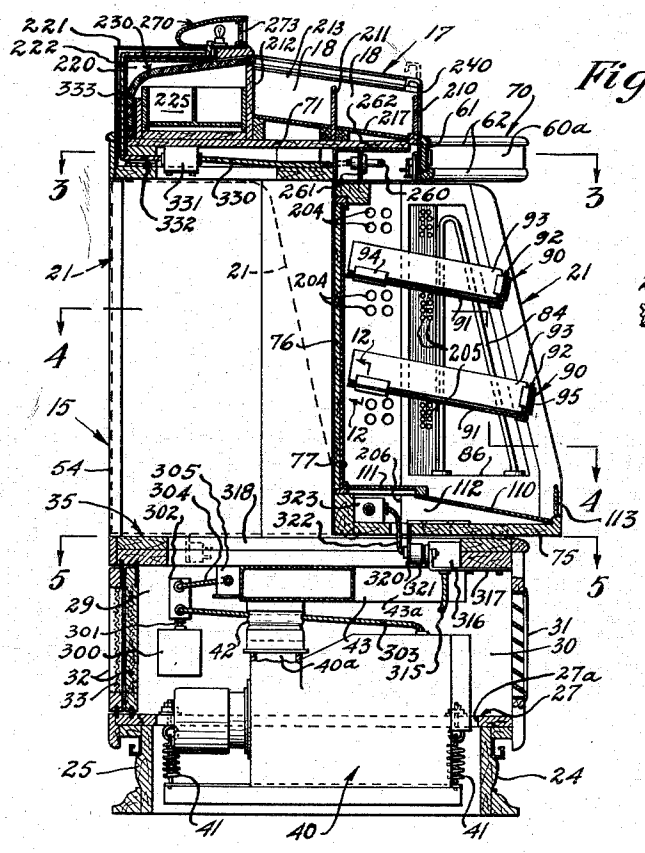


Fig. 2.

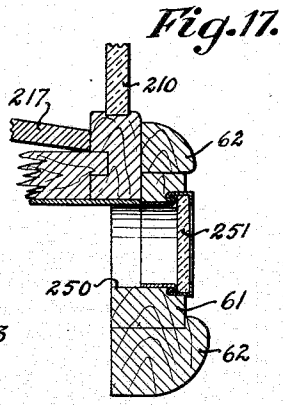


Fig. 17.

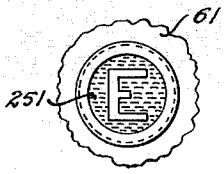


Fig. 18.

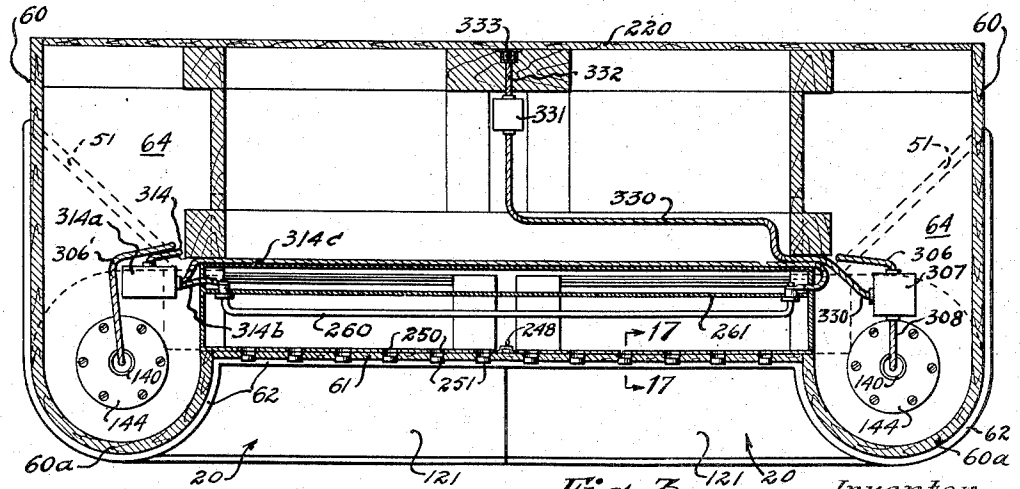


Fig. 3.

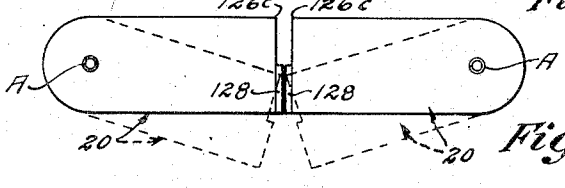


Fig. 23.

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DISPLAY CASE

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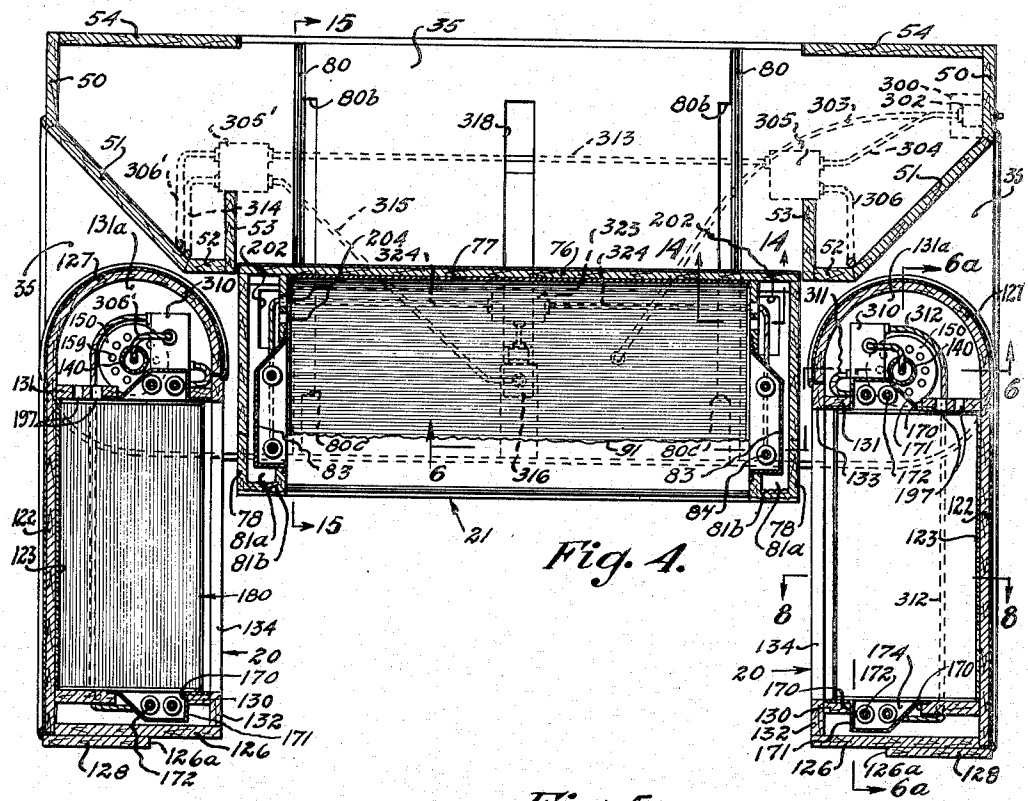


Fig. 4.

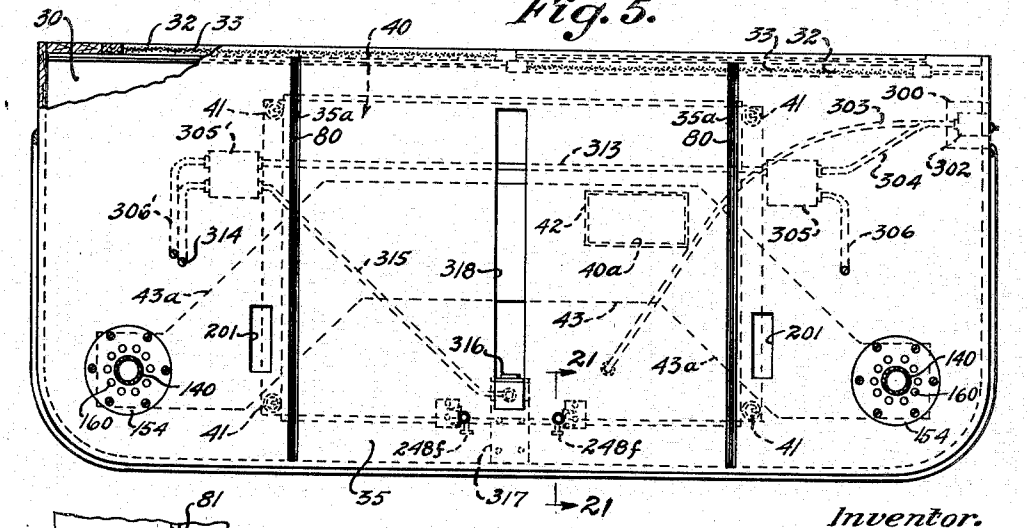


Fig. 5.

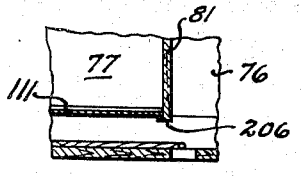


Fig. 14.

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DISPLAY CASE

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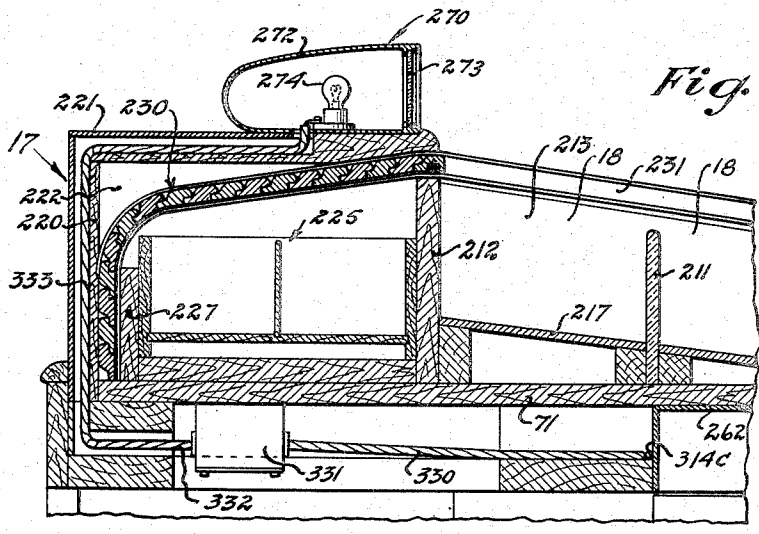


Fig. 19.

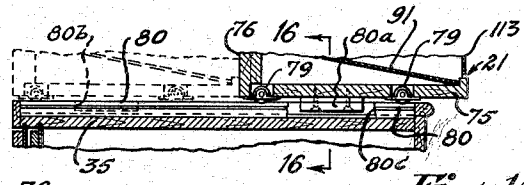


Fig. 15.

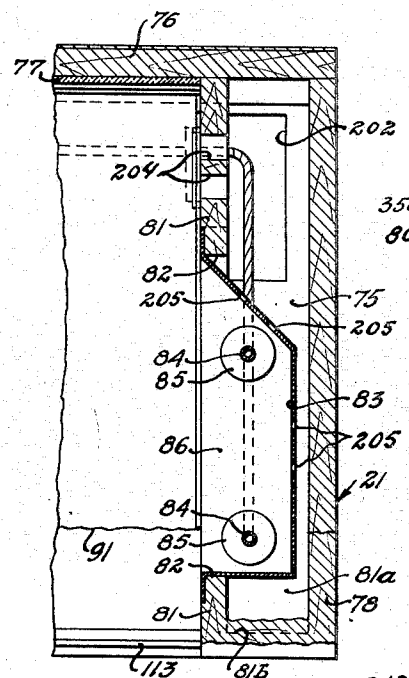


Fig. 20.

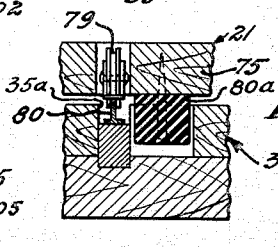
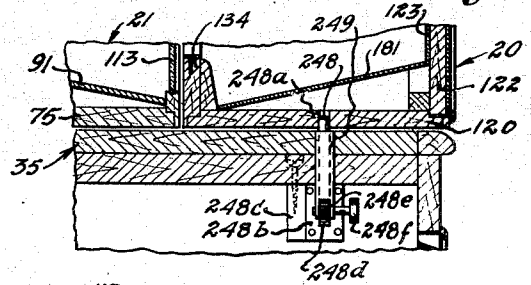


Fig. 16.

Fig. 21.



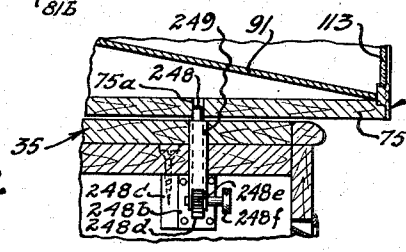


Fig. 22.

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DISPLAY CASE

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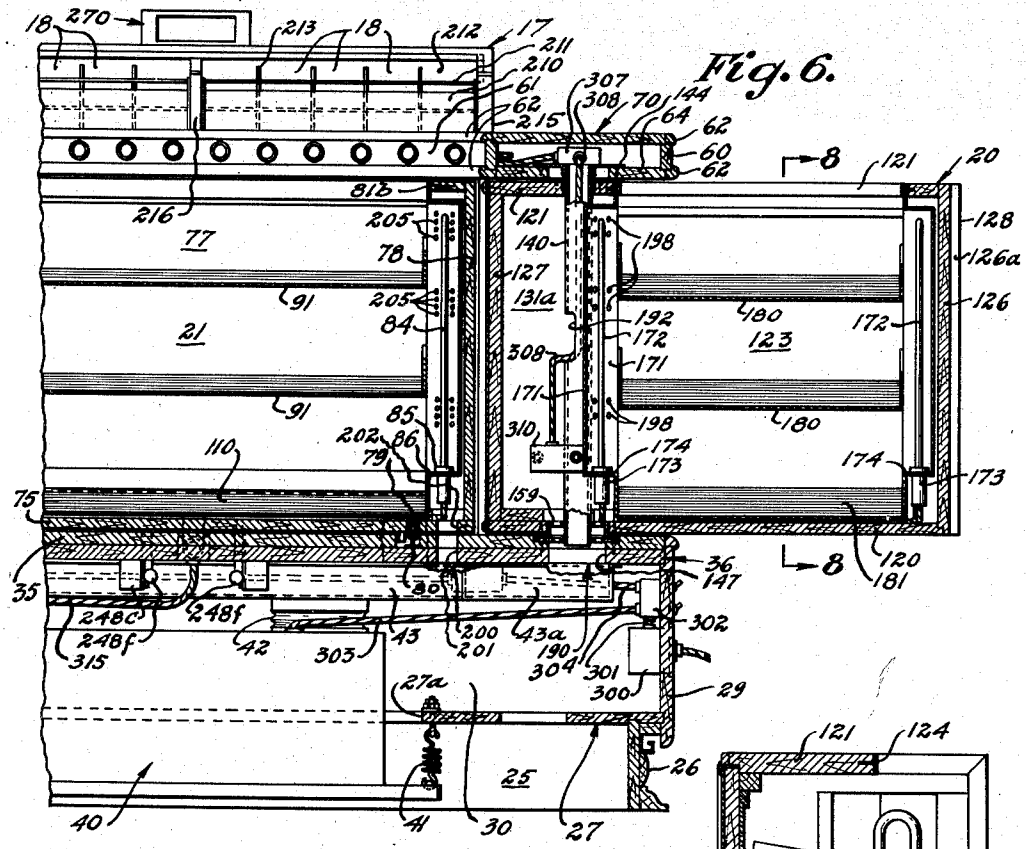


Fig. 6.

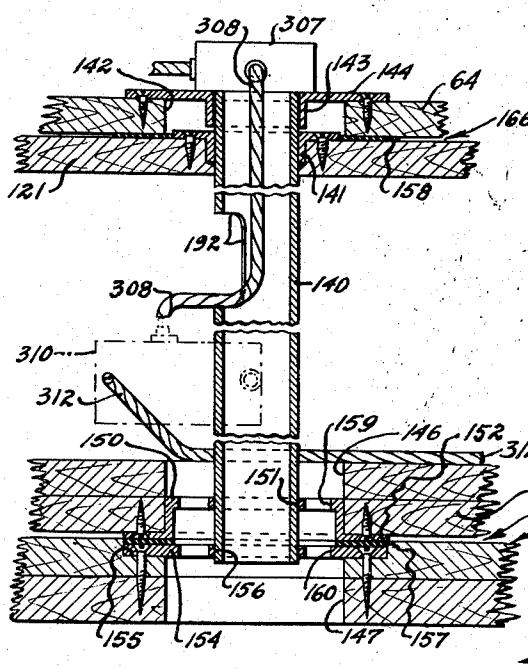


Fig. 7.

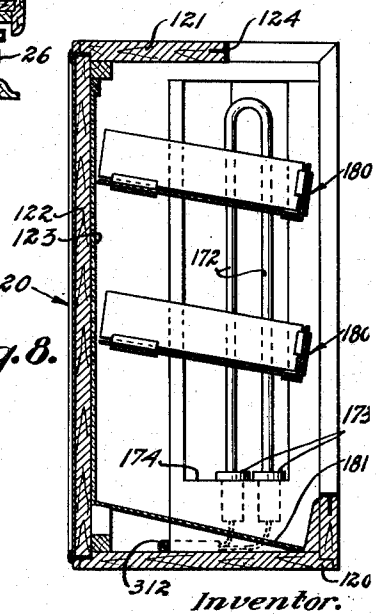


Fig. 8.

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Patented Oct. 13, 1942

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UNITED STATES PATENT OFFICE

2,298,790

DISPLAY CASE

Edward J. Klassen, Los Angeles, Calif., assignor to The Klassen Company, Los Angeles, Calif., a corporation of California

Application July 29, 1940, Serial No. 348,160

18 Claims. (Cl. 62—89.5)

This invention relates generally to display cases, particularly open front display cases for perishable food such as candies and the like, and to refrigeration provisions in connection with display case construction. Certain features of invention are disclosed in the manner in which the refrigeration features are incorporated in the display case construction, though in broader aspects the invention is not limited to such refrigeration features. The invention also contemplates the use in the display case of certain electrical illuminating devices, and, in certain aspects, invention is presented in the manner in which the electrical illuminating features are incorporated in the display case construction.

A general object of the invention may be stated to be to provide a refrigerated and illuminated open display case for such perishable articles as chocolate candy bars and the like, which is exceptionally attractive in appearance, presents the articles on display in a manner to enhance sales appeal, preserves the articles against spoilage, is of sufficient capacity that it may be stocked with a relatively large quantity of articles without crowding, and yet which is comparatively compact in size.

The display case of the present invention comprises, in general, a main cabinet, a pair of wing-like swinging cases pivotally mounted within recesses at opposite end portions of the main cabinet, and adapted to be swung outwardly to display position, or inwardly to a closed position inside the main cabinet structure, together with a central case, mounted centrally within the cabinet, and adapted, after the swinging cases are moved outwardly to display position, to be moved in a forward direction to an accessible display position. These cases are all of open front construction, so that when moved to display position, the articles are presented in a position for convenient selection and removal by the customer. An air refrigerating system is mounted in the bottom of the cabinet, and supplies refrigerated air to both the swinging cases and the central case. This refrigerated air is constantly supplied to the swinging cases at their pivots, regardless of their position, and is supplied to the central case via apertures that come into register when the central case is pulled forwardly to display position.

A feature of the invention is the provision of conveniently operable locking means for effectively locking all the cases in closed position.

The invention itself, including various specific objects and accomplishments not preliminarily mentioned, will be best described with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a display case in accordance with the present invention, the swinging cases and central case being in open or display position;

Fig. 2 is a vertical transverse medial section taken through the cabinet of Fig. 1;

Fig. 3 is a horizontal section taken on line 3—3 of Fig. 2;

Fig. 4 is a horizontal section taken on line 4—4 of Fig. 2;

Fig. 5 is a horizontal section taken on line 5—5 of Fig. 2;

Fig. 6 is a view taken through the cabinet in accordance with broken line 6—6 of Fig. 4, the section through the swinging case, however, being taken in accordance with line 6a—6a of Fig. 4;

Fig. 7 is an enlarged detail of portions of Fig. 6;

Fig. 8 is a section taken on line 8—8 of Fig. 6;

Fig. 9 is an enlargement of a portion of Fig. 2, showing a locking device;

Fig. 10 is a rear view of the locking device of Fig. 9, Fig. 9 being a section in accordance with line 9—9 of Fig. 10;

Fig. 11 is a detail section taken on line 11—11 of Fig. 9;

Fig. 12 is a detail section of a shelf bracket, taken on line 12—12 of Fig. 2;

Fig. 13 is a perspective of another shelf bracket;

Fig. 14 is a detail section taken on line 14—14 of Fig. 4;

Fig. 15 is a section taken on line 15—15 of Fig. 4;

Fig. 16 is a section taken on line 16—16 of Fig. 15;

Fig. 17 is an enlarged detail of a portion of Fig. 2, but taken through one of the mirror disks;

Fig. 18 is an elevation of a mirror disk;

Fig. 19 is an enlarged detail taken from Fig. 2;

Fig. 20 is an enlarged detail taken from Fig. 4;

Fig. 21 is a section taken on line 21—21 of Fig. 5, showing a bolt for locking a swinging case in closed position;

Fig. 22 is a section similar to Fig. 21, but showing the central case in advanced or display position, and the same bolt used to hold said case in said position; and

Fig. 23 shows, somewhat diagrammatically, a plan view of two swinging cases, illustrating how their end formations are designed to afford clearance during opening and closing movement.

Fig. 1 of the drawings shows the display case of the present invention to comprise, generally, a substantially rectangular main cabinet 15, on the top of which, in the present illustrative embodiment, is preferably mounted a top structure 17 providing a multiplicity of small compartments 18 designed to be stocked with such articles as gum, mints, and the like. The ends of the cabinet 15 support swinging cases 20, adapted to be swung to a closed position such as indicated in Fig. 3, or outwardly to a display position such for instance as illustrated in Fig. 1. When the two swinging cases 20 are swung outwardly to such a position as is illustrated in Fig. 1, a central case 21 is exposed, which is adapted at such time to be pulled outwardly to and set in the display position illustrated in Fig. 1. This central display case 21 is moved rearwardly from its position of Figs. 1 and 2 to such a position as indicated in dotted lines in Fig. 2 before closing of the swinging cases 20.

As shown in Figs. 1 and 2, the cabinet is supported by a base comprising front and rear walls 24 and 25, respectively, and end walls 26. Mounted on the base is a horizontally disposed framework 27 (Figs. 2 and 6) from which rise front and end walls 28 and 29, respectively, defining the upper portion of a compartment 30. Front wall 28 of compartment 30 has ventilator doors 31 while the rearward side of compartment 30 is closed by sliding doors 32, arranged as indicated in Figs. 2 and 5, and provided with grilles 33 for dissipation of heat generated by the refrigeration unit.

Compartment 30 is closed at the top by a platform 35, mounted on front and end walls 28 and 29 for example in the manner indicated at 36 in Fig. 6.

An air refrigerating and blower combination 40 is mounted within compartment 30, being received within an opening 27*a* formed in framework 27 (see Fig. 6), and being hung from the latter by means of springs 41. This refrigeration and blower unit or combination 40 need not be illustrated or described in detail, being understood to embody any suitable or conventional type of refrigeration unit for refrigerating air, and also a motor driven blower unit for circulating the refrigerated air. The refrigerated air outlet 40*a* of this unit 40 is coupled by means of a flexible coupling 42 (see Figs. 2 and 6) to a distributing conduit 43 secured in any suitable manner to the underside of platform 35 and leading to certain points of distribution as later to be described. The spring suspension of the refrigerator unit insulates the cabinet from the vibrations occasioned by operation of the compressor which will be understood as forming a part of the refrigerator unit.

Rising from platform 35 at each end of the cabinet, flush with the aforementioned end walls 29, are end wall members 50, the latter extending from the rearward corners of the cabinet to points about a quarter of the distance or less toward the front of the cabinet, as indicated in Figs. 1 and 4. Arranged edge to edge and preferably at approximately 45° with end members 50 are vertical panels 51, and meeting the forward edges of said panels 51 are vertical wall members 52, which meet vertical, parallel partitions 53 extending inwardly or rearwardly from members 52, all as indicated in Fig. 4. At the rear of the cabinet are vertical panels 54 meeting the rearward edges of sides 50, also as indicated in Fig. 4. These members 50 to 54 all bottom on platform 35.

Flush with and mounted on top of each of end wall members 50 is a forwardly extending end strip 60, that merges at the front with a half-round or semi-circular front strip portion 60*a*, the latter meeting a central front strip 61, set back of the forward plane of the cabinet as defined by front section 28, all as will be clear from Figs. 1, 2, 3 and 6. Members 60, 60*a* and 61 are here shown as edged by moldings as indicated at 62. A horizontal platform or frame structure 64 at each end of the case is supported by the upper edges of members 51, 52, 53, and 54, and fits inside members 60, 60*a* at the lower margin thereof, for instance as indicated in Figs. 3 and 6. It will be evident that the portion of this platform forwardly and outwardly of the angular panel 51 presents a downwardly facing surface in opposition to the upwardly facing surface of the aforementioned platform 35, and the aforementioned swinging cases 20 are received and trunnioned in the recess formed between these surfaces, in a manner later to be more fully described.

Mounted on members 60, 60*a* are top members 70, and between members 70, on a platform 71 (see Fig. 2) slightly lower than the latter, is the top structure 17 containing the compartments 18. The top members 70 and the platform 71 may be furnished with any suitable bracing or supporting means, of the general nature indicated in Fig. 2.

The central case 21 is received in the space defined at the ends by the two parallel vertical walls 53 (Fig. 4), and at the bottom and top by platform 35 and the molding 62 at the lower edge of front strip 61. This case comprises a bottom 75, a back 76, preferably faced with a mirror 77 (Fig. 2), and ends 78 adapted to be received with working clearance between cabinet walls 53 (Fig. 4). Bottom 75 is equipped with rollers 79, riding on tracks 80 mounted on platform 35, so that the central case may be easily rolled between the full and dotted line positions illustrated in Fig. 2. As illustrated in Fig. 16, the tracks 80 are sunk within a groove 35*a* of platform 35, so that the upper edge of the track is just about flush with the upper plane of the platform. A rubber bumper 80*a* secured to the underside of case 21 and received in this same groove (Figs. 15 and 16) strikes end shoulders 80*b* and 80*c* to limit the forward and rearward movement of the case. Spaced a short distance inwardly of end walls 78 are vertical partitions 81, forming compartments 81*a* (Figs. 2, 4 and 20), and the forward edges of end walls 78 and of partitions 81 are preferably sloped rearwardly at somewhat of an angle, for instance, as indicated in Fig. 2. Strips 81*b* close compartments 81*a* at the top and front of the case (Fig. 4).

Each of partitions 81 is formed with an opening 82, in which is received a flanged, sheet metal receptacle 83 for an illuminant, such as the gaseous discharge tube indicated at 84. This tube as here illustrated is bent substantially into a hair-pin shape, and its two ends are furnished with suitable connectors 85 supported by and extending downwardly through the shelf 83 provided at the bottom of receptacle 83.

In the present embodiment of the invention, case 21 is furnished with two inclined, plate-glass shelves 90, each comprising a glass bottom plate 91, a glass forward strip 92, and glass end strips

93. These are mounted on partitions 81 by means of the special brackets 94 and 95, shown in detail in Figs. 12 and 13, respectively.

The bracket 94 is provided with a channel 96 for reception of the edge of bottom plate 91, and the edge strip 93 is confined in back of the flange 97 and rests on top of the portion 98 of channel 96 as appears in Fig. 12. The bracket 95 is provided with a channel 100 for the edge of bottom plate 91, a channel 101 for front strip 92, and the edge strip rests on flange 102 and is confined in back of flange 103, as will be readily understood from an inspection of Fig. 13.

Below the shelves is a deck comprising a forward sloping section 110 and a rearward horizontal section 111, the deck enclosing a space 112 above bottom 75 for the accommodation of certain members later to be mentioned. A vertical glass strip 113 is mounted at the forward edge of sloping deck section 110, and it will be understood that this deck, as well as the shelves 90, are intended to be stocked with the articles to be merchandised.

When the case 21 is in its normal outward or display position (Fig. 1), its lower portion projects somewhat beyond the front plane of the cabinet, as illustrated, so that the shelves 90 are presented in an advanced position, with the articles stocked thereon in position for convenient inspection and removal by the customer.

Each of the swinging cases 20 comprises a bottom wall 120 and a top wall 121, adapted to be received with working clearance between platforms 35 and 64 (Fig. 6), and a back 122, faced with a mirror 123. Top 121 is recessed or cut back, as indicated at 124, in order to better expose and display articles contained on the shelves of the case (see Fig. 1), but is of sufficient width to close the cabinet back to strip 61 when the cases are swung to closed position (Fig. 3). The outer or swinging end of the case is closed by an end wall 126, having an offset at 126*a*, while its rearward end is closed by a semi-circular wall 127, concentric with and of the same diameter as the semi-circular strip 60*a* of the cabinet. The offset at 126*a* is formed by the use of a flat strip of wood 128, extending from the outer corner of the case inwardly to or slightly past center, as illustrated in Fig. 4. When the swinging cases are in closed position (Fig. 23), the two end strips 128 are in closely abutting position, as shown. The dimension from the trunnion axis A to the inside corner 126*c* of the case is made to be approximately the same as the dimension from the trunnion axis to the outer surface of strip 128, which assures that the notched inner corner portion of the one case will clear the other case as it is swung open or closed, as will be clearly understood from an inspection of the full and dotted line positions of Fig. 23.

A vertical partition 130 is spaced just inside end wall 126, and extends from the top to the bottom of the case. A similar vertical partition 131 is spaced just forwardly of the center of semi-circular end 127 (see Fig. 4), providing a compartment 131*a* at the trunnioned end of the case through which refrigerated air is passed, as later to be described. Vertical strips 132 and 133 at the front face of the case close the spaces between the end walls 126 and 127 and the corresponding partitions 130 and 131, said strips 132 and 133 extending between a horizontal facing strip 134 at the bottom of the case and the top 121.

A steel trunnion tube 140 extends through the bottom and top walls 120 and 121 of each of the swinging cases, on an axis concentric with the centers of the semi-circular end walls 27 of the case. This tube has a press fit in a flanged sleeve 141 set into top 121, and is thus secured against rotation with reference to case 20. The upper end of tube 140 extends upwardly through an opening 142 formed in platform 64, and is rotatively received within a flanged sleeve 143, the flange 144 of which is secured to platform 64 as illustrated. The lower end portion of tube 140 extends downwardly through bottom 120 of case 20 by way of a bore 146 preferably of approximately twice the diameter of tube 140, and projects part way into a bore 147 extending through platform 35 as a continuation of bore 146. Tube 140 is supported at its lower end by an annulus 150, mounted inside bore 146 and provided with a bore 151 which receives tube 140 with sliding fit. This annulus 150 has an outwardly extending annular flange 152 which engages the underside of bottom wall 120 around bore 146, and is secured to said wall as indicated. A circular plate 154 is mounted in a countersink 155 formed in the upper side of platform 35 around bore 147, and has a central bore 156 which rotatively receives the end portion of tube 140. A gasket ring 157 is placed between flange 152 and ring member 154, being in the present instance received within countersink 155 in the manner clearly illustrated in Fig. 7. A gasket ring 158 is also used at the top, fitting between members 64 and 121, around the flanged sleeve member 141. A series of perforations 159 and 160 are formed in members 150 and 154, around tube 140, in order to allow circulation of refrigerated air, as later to be more fully described.

Thus tube 140, which is non-rotatably embraced by swinging case 20, is rotatably mounted in cabinet members 35 and 64. Inspection of Fig. 7 will reveal that the weight of the case is sustained by the gasketed ring 154, a suitable working clearance being provided between member 35 and the bottom 120 of case 20, as indicated at 165. The gasket 158 at the top assures a suitable working clearance between the top 121 of case 20 and cabinet member 64, as indicated at 166. The gasket ring 157 in the bottom prevents leakage of refrigerated air.

Each of the partitions 131 and 132 of swinging case 20 is formed with an opening 170, in which is received a flanged, sheet metal receptacle 171 for an illuminant, such as the gaseous discharge tube indicated at 172. This tube is here illustrated as bent substantially into a hairpin shape, and its two ends are furnished with suitable connectors 173 supported by and extending downwardly through the shelf 174 provided at the bottom of the receptacle 171.

In the present illustrative embodiment, each of the swinging cases 20 is provided with two inclined, plate-glass shelves 180, which may be of the same nature as the previously described shelves 90 contained within the central case 21. Below shelves 180 is an inclined deck 181.

The aforementioned refrigerated air distributing conduit 43 has branches 43*a* terminating in upwardly directed discharge apertures 190, which register with the bore 147 in platform 135. Refrigerated air leaving unit 40 under blower pressure is accordingly discharged via conduit 43 to this bore 147 extending through platform 35, and thence rises through perforations 160 in plate 154 into bore 146 in swinging case bottom 120, passing upwardly through perforations 159 in

annulus 150, to be introduced to the compartment 131a between semi-circular case end 127 and partition 131. Refrigerated air also rises through steel trunnion tube 140, and is discharged to compartment 131a via an aperture 192 formed in its side. The refrigerated air thus supplied to compartment 131a is discharged via perforations 197 in partition 131, said perforations being so positioned that the refrigerated air comes into contact with the articles stocked on shelves 180 and on deck 181. Perforations 198 are formed in the wall of receptacle 171, in close proximity to lighting tube 172, to provide for discharge of refrigerated air in a manner to cool the tubes.

Refrigerated air is conveyed to central case 21 as follows: The branches 43a of refrigerated air distributing conduit 43 each having an upwardly opening aperture 200, in register with which is an aperture 201 in platform 35, said apertures being alined with the space between the end walls 78 and partitions 81 of central case 21. The bottom wall 75 of central case 21 has at each end an aperture 202, located between end wall 78 and partition 81, which comes into register with aperture 201 when case 21 is moved outwardly to display position. This aperture 202 thus opens upwardly into the compartment 81a, so that, when case 21 is pulled outwardly to its display position, refrigerated air is delivered from distributing conduit 43 via apertures 200, 201 and 202 to compartment 81a.

This refrigerated air is discharged from compartment 81a into the interior of case 21 by way of perforations 204 in partitions 81, the perforations being so positioned that the refrigerated air comes into contact with the articles stocked on shelves 90 and on deck 110. Perforations 205 are also formed in the walls of receptacles 83, in close proximity to lighting tubes 84, to provide for discharge of refrigerated air to cool said tubes.

An aperture 206 formed in partition 81 below deck section 111 (Fig. 14) allows circulation of refrigerated air from compartment 81a into the space 112 below the deck, to provide for cooling of a later described transformer which is installed in said space.

The aforementioned compartments 18 at the top of the cabinet are defined by a glass front-strip 210, a glass intermediate strip 211, and a back wall 212, together with a multiplicity of glass strips 213 disposed at right angles to strips 210 and 211 and wall 212. End walls 215 and an intermediate partition 216 extend upwardly from the aforementioned platform 71, and a sloping bottom 217 is supported above platform 71 in the manner best shown in Fig. 2. Front strip 210 is located immediately to the rear of the aforementioned strip 61 defining the front edge or margin of the cabinet between the top member 70, and the end members 215 of the compartment structure are disposed immediately adjacent the inner edges of members 70, as clearly appears in Fig. 1. The rearward compartment-defining wall 212 is located substantially forwardly of the rearward side of the cabinet, whereas the end walls 215 extend substantially to the back of the cabinet, joining with a back wall 220 that rises from the rearward edge of platform 71. A top 221 mounted on back 220 and on sides 215 extends forwardly as far as wall 212, and thus covers over a compartment 222 between walls 212 and 220. A cash drawer 225 is preferably installed in this compartment 222, its end 226 opening through one of the end walls 215, and the body of the drawer being guided between wall 212 and a wall 227 spaced a short distance forwardly of back wall 220, in the arrangement clearly appearing in Figs. 2 and 19.

A roll-top cover 230 is provided for compartment 18, and is movable within guideways 231 at the upper edges of side walls 215 between a retracted position, received within compartment 222 (Figs. 2 and 19), so as to expose the compartments 18, and a forward position covering over compartments 18, with its forward edge in line with the forward edge of front strip 210 (Fig. 9). This roll top 230 embodies bars or slats 230a, mounted in a usual manner on flexible cloth 232 (see Fig. 9). The cloth is secured to forward bar 230a in any suitable manner, though that clearly illustrated in Fig. 9 is simple and effective.

A locking device, shown best in Figs. 9, 10 and 11, is provided for locking top 230 in the last described position when the cabinet is to be closed. This locking device comprises a strap 240, having a hook end 241 at the top, adapted to engage over the front element or bar 230a of cover 230, in the manner clearly appearing in Fig. 9. This strap 240 extends downwardly in front of glass strip 210 and into a notch 242 formed in the rearward side of strip 61, being received within a loop strap 243 secured to strip 61 inside notch 242. A plate 244 has a tongue 245 engaging in an aperture in strap 240, at a point above strap 243, and extends downwardly inside strap 243 and is formed at its lower end with an outwardly bent toe 244a. A spacer block 246 is installed between strap 240 and plate 244, as shown best in Fig. 9. Pivotally mounted on straps 243 is an arm or catch 247, having a finger piece 248, the lower end of this arm or catch 247 being adapted to engage toe 245 of plate 244 when strap 240 is in locking position, as illustrated in Fig. 9. Strap 240 is thus secured against elevation, and roll top 230 is locked in closed position. To unlock roll top 230, arm 247 is moved from the full line to the dotted line position of Fig. 10, thus enabling strap 240 and plate 244 to be elevated to the upper dotted line position. At this time roll top 230 may be moved from the position indicated in Fig. 9 to that illustrated in Fig. 2. Strap 240 is then lowered to the extreme lower dotted line position, where it is out of the way and appears simply as a part of the ornamental trim of the cabinet.

It will be noted that the arm or catch 247 can be reached only by way of the interior of central cabinet 21. Accordingly, when the cases 21 and 20 are in closed position, and the cases 20 are locked closed, as hereafter to be described, it is impossible to manipulate the locking device for cover 230.

Suitable locking means for the two swinging cases 20 is shown in Fig. 21. A vertical bolt 248 mounted in a sleeve 249 in platform 35 is adapted to engage a hole 248a in the bottom wall 120 of case 20. The sleeve 249 is shown in Fig. 21 as having an integral flange 248b screwed to a mounting block 248c secured to the underside of platform 35. Bolt 248 is formed with a lower rack gear pinion 248d, which is engaged by a pinion 248e adapted to be turned by knob 248f. It will be obvious that rotation of knob 248f elevates or lowers bolt 248 into and from a position of locking engagement with the bottom wall 120 of case 20. The knob 248f is in a position where

it can be conveniently reached through one of the lower doors 31. Thus, to lock the entire case, the roll top cover for the compartments 18 is first locked in position as described above. Then, the central case 90 is moved rearwardly to closed position, and the swinging cases 20 then swung inwardly to closed position. The two locking bolts 248 for the two swinging cases are then elevated into locking engagement with the bottoms of the cases 20, after which the doors 31 are closed and locked as by means of any suitable or conventional type of lock indicated at 31a. Fig. 22 shows how the locking bolt 248 may be utilized to lock the central case 21 in advanced position, the bottom member 75 of the latter being provided with a hole 75a adapted to receive bolt 248 when in advanced position.

Strip 61 is preferably provided with a plurality of horizontally spaced bores 250, in which are mounted glass disks 251 with mirrored rear surfaces. Delineated on these mirror disks 251 are letters such as that illustrated in Fig. 18, within the outlines of which the silvering of the mirror is removed. For example, the letters on these disks may spell out such a word as "refrigerated." To the rear of strip 61 and disks 251 is a luminous tube 260, which may be a long gaseous electron discharge tube of conventional type, and in back of and above tube 260 are reflectors 261 and 262, as best illustrated in Fig. 2. The light from this illuminating tube 260 is visible through the transparent letters depicted on mirror disks 251.

Preferably, a display light or sign 270 is mounted on top wall 221. This light is here indicated as comprising a casing 272, having a glass plate 273 at the front, on which, if desired, may be any suitable sign device. Within casing 272 and in back of glass plate 273 is a lamp 274.

The various electrical components described hereinabove may be served with electrical current through any circuit arrangements desired; however, certain features of novelty and invention are presented in the particular manner in which electrical current is conveyed to various parts of the cabinet, and a description of these features will accordingly be given.

The inlet box is indicated at 300, against the right hand lower end wall 29. A cable 301 leads to switch box 302, mounted immediately above box 300. From switch box 302 a cable 303 leads to refrigeration and blower unit 40, and another cable 304 leads to a junction box 305 mounted on the underside of platform 35 within the right hand end portion of the cabinet. From box 305, a cable 306 leads upwardly, just inside the angle formed by wall members 51 and 52, to a point above frame 64, where it leads into a junction box 307 mounted on the latter. From box 307 one cable 308 extends downwardly inside the open end of pivot tube 140, and thence outside tube by way of aperture 192 to the compartment 131a of swinging case 20. Cable 308 connects to the primary side of a transformer 310 mounted within compartment 131a on the inner side of receptacle 171 as shown in Figs. 4 and 6. The secondary side of transformer 310 is connected by means of a cable 311 to the terminals of the lighting tube 172 mounted at the pivoted end of swinging case 20, and by means of a cable 312 passing below deck 181 to the lighting tube 172 mounted at the swinging end of said case.

A cable 313 leads from junction box 305 to a junction box 305' mounted symmetrically with box 305 but within the left hand end portion of the cabinet (Fig. 4), and a cable 306' is led upwardly from box 305' to a point above frame work 64, and then downwardly inside the upper end of the corresponding pivot tube 140 to supply electrical current to the lighting tubes in the swinging case 20 at the left hand end of the cabinet in a manner similar to that described in connection with right hand swinging case 20.

A cable 314 leading from junction box 305' is connected to the primary side of a high tension transformer 314a, the secondary side of which is connected by means of electrical connections 314b and 314c through the terminals of the aforementioned gaseous electron discharge tube 260, as clearly illustrated in Fig. 3.

A cable 315 leading from junction box 305' connects with a receptacle 316 mounted on a bracket 317 secured to platform 35, this receptacle being received within a central slot 318 extending through and across platform 35 (see Figs. 2, 4 and 5). Mounted on a bracket 320 hung from the bottom 75 of case 21 and received within the slot 318 in platform 35 is a plug 321 adapted to plug into receptacle 316 when case 21 is moved to its front or display position (Fig. 2). It will be understood that when case 21 is moved to its retracted position (dotted lines in Fig. 2), plug 321 becomes withdrawn from receptacle 316, and thus breaks the electrical circuit at that point. The transverse slot 318 in platform 35 accommodates the depending plug member 321 in all positions of case 21. A cable 322 leads from plug 321 to a transformer 323 mounted within compartment 112 of case 21 on case bottom 75 (Fig. 2). The secondary side of this transformer 323 is connected by cables 324 leading through compartment 112 and end compartments 81a to the terminals of illuminating tubes 84. Thus the illuminating tubes 84 are automatically connected in circuit by the operation of moving case 21 from the closed, dotted line position of Fig. 2 to the forward, full line position of said figure.

A cable 330 leads from junction box 307 (see Figs. 3 and 2) to a junction box 331 mounted on the underside of platform 71, and from there electrical connections 332 lead via a conduit 333 in back wall 220 and top 221 to lamp 274.

The cabinet as now described has a number of outstanding advantages. It is attractive in appearance, comparatively compact, and may be attractively stocked with a large quantity of the stock to be merchandised. The swinging cases 20 being swung outwardly to a proper angle and the central case 21 being pulled forwardly to its display position, the articles are presented for inspection by the purchaser in an advantageous and eye-arresting manner, increasing greatly their natural sales appeal. The various described illuminating devices, especially in conjunction with the mirrors back of them, illuminate the interior of the several display cases in an attractive manner, and the articles, while presented in open cases, are under constant refrigeration by discharge over and about them of refrigerated air. The various cases and compartments of the cabinet are adapted to be effectively closed and locked for the night. If conditions warrant, the refrigeration may be continued while the central and swinging cases are locked in closed position. Movement of the central case back to its rearward, closed position of course cuts off its direct supply of refrigerated air; however, refrigerated air is supplied to the swinging cases in all of their positions, and when the swinging cases are swung closed, their open

fronts are presented toward the open front of the central case, so that the refrigerated air circulated into the swinging cases finds its way into the central case.

I have now illustrated and described in some detail one illustrative embodiment of my invention; it will of course be understood, however, that various changes in design, structure and arrangement may be made without departing from the spirit and scope of the invention, and all such changes are to be understood as coming within the scope of the claims appended hereto.

I claim:

1. In a cabinet structure of the character described, the combination of a pair of opposed, vertically spaced, upper and lower stationary walls, a swinging case received between said walls, said case having top and bottom walls presented at relatively close spacing to said upper and lower walls, a vertical trunnion tube extending through the top and bottom walls of said case and supported within said upper and lower stationary walls, means for supplying refrigerated air to an end of said tube through the corresponding stationary wall, and said tube being perforated between the bottom and top walls of said case to permit discharge of said refrigerated air into said case.

2. In a cabinet structure of the character described, the combination of a pair of opposed, vertically spaced, upper and lower stationary walls, a swinging case received between said walls, said case having top and bottom walls presented at relatively close spacing to said upper and lower walls, a vertical trunnion tube extending through the top and bottom walls of said case and supported within said upper and lower stationary walls, one of said stationary walls having an inlet perforation for refrigerated air near but outside said tube, and the corresponding wall of the swinging case having a perforation in communication with said first mentioned perforation and leading to the interior of the case, and packing means surrounding said perforations and sealing against leakage of refrigerated air between the corresponding wall of the swinging case and the adjacent stationary wall.

3. In a cabinet structure of the character described, the combination of a pair of opposed, vertically spaced, upper and lower stationary walls, a swinging case received between said walls, said case having top and bottom walls presented at relatively close spacing to said upper and lower walls, tubular trunnion means extending through the top and bottom walls of said case and supported within said upper and lower stationary walls, said tubular trunnion means having an air circulation aperture opening within said swinging case, and a perforation for passage of refrigerated air extending through one of said stationary walls and communicating with the corresponding end of the tubular trunnion means.

4. In a cabinet structure of the character described, the combination of a pair of opposed, vertically spaced, upper and lower stationary walls, a swinging case received between said walls, said case having top and bottom walls presented at relatively close spacing to said upper and lower walls, tubular trunnion means extending through the top and bottom walls of said case and supported within said upper and lower stationary walls, one of said stationary walls having an inlet perforation for refrigerated air near but outside said tubular trunnion means, and the corresponding wall of the swinging case having a perforation in communication with said first mentioned perforation and leading to the interior of the case, and packing means surrounding said perforations and sealing against leakage of refrigerated air between the corresponding wall of the swinging case and the adjacent stationary wall.

5. In a cabinet structure of the character described, the combination of a cabinet having an upwardly facing, horizontal platform, supporting means on said cabinet spaced above said platform, a swinging case received between said platform and supporting means, a vertical trunnion tube extending through said case, said tube extending into said platform at the bottom, and projecting upwardly and being embraced by said supporting means at the top, a perforation extending through the bottom of said platform and communicating with the lower end of said tube, a refrigerated air conduit below said platform communicating with said perforation, and a perforation in said tube by way of which refrigerated air is discharged to the interior of said case.

6. In a cabinet structure of the character described, the combination of a cabinet having an upwardly facing, horizontal platform, supporting means on said cabinet spaced above said platform, a swinging case received between said platform and supporting means, a vertical trunnion tube extending through said case, said tube extending into said platform at the bottom, and projecting upwardly and being embraced by said supporting means at the top, a perforation extending through said platform, a perforation extending through the bottom of the swinging case, said perforation providing communication between said perforation in said platform and the interior of the swinging case, and packing means surrounding said perforations and preventing leakage of refrigerated air between the platform and the bottom of the swinging case.

7. In a cabinet structure of the character described, the combination of a cabinet having an upwardly facing, horizontal platform, supporting means on said cabinet spaced above said platform, a swinging case received between said platform and supporting means, means pivotally mounting said swinging case between said platform and supporting means, a perforation for passage of refrigerated air extending through said platform near the pivot axis of said case, a perforation in the bottom of the swinging case adapted to receive refrigerated air from the platform perforation, and packing means surrounding said perforations and preventing leakage of refrigerated air between the platform and the bottom of the swinging case.

8. In a cabinet structure of the character described, the combination of a pair of opposed, vertically spaced, upper and lower stationary walls, a swinging case received between said walls, said case having top and bottom walls presented at relatively close spacing to said upper and lower walls, a vertical trunnion tube extending through and non-rotatably supported with relation to said top and bottom walls of said case, said tube projecting upwardly into said upper stationary wall and downwardly into said lower stationary wall, bearing means on said stationary walls rotatably supporting said tube, and means for conveying refrigerated air through one of said stationary walls and the adjacent wall of the swinging case around the exterior of said tube.

9. In a cabinet structure of the character de-

scribed, the combination of a pair of opposed, vertically spaced, upper and lower stationary walls, a swinging case received between said walls, said case having top and bottom walls presented at relatively close spacing to said upper and lower walls, a vertical trunnion tube extending through and non-rotatably supported with relation to said top and bottom walls of said case, said tube projecting upwardly into said upper stationary wall and downwardly into said lower stationary wall, bearing means on said stationary walls rotatably supporting said tube, and means for conveying refrigerated air through one of said stationary walls and to the corresponding end of said tube, said tube being perforated inside said swinging case.

10. In a cabinet structure of the character described, the combination of a cabinet, a swinging case including bottom, top, end, and back walls, said case being trunnioned in said cabinet near one of its ends, a vertical partition in said case near its trunnioned end, said partition forming a compartment at said trunnioned end of said case, means for conveying refrigerated air from said cabinet into said compartment, and said partition being perforated to permit discharge of refrigerated air into the interior of said case.

11. In a cabinet structure of the character described, the combination of a cabinet, a swinging case including bottom, top, end and back walls, said case being trunnioned in said cabinet near one of its ends, a vertical partition in said case near its trunnioned end, said partition forming a compartment at said trunnioned end of said cabinet, a refrigerated air passageway in the cabinet, an air passageway in said case along the trunnion axis of said case, said air passageway receiving refrigerated air from said air passageway in the cabinet, said air passageway in said case opening inside said compartment, and said partition being perforated to permit discharge of refrigerated air into the interior of said case.

12. In a cabinet structure, the combination of a cabinet having a recess for a horizontally movable case, a case horizontally movable in said recess between a rearward closed position and an advanced display position, a refrigerated air passageway in the lower portion of said cabinet having a discharge aperture and an aperture in the lower portion of said case adapted to register with said discharge aperture when said case is in its forward display position.

13. In a cabinet structure, the combination of a cabinet having a horizontal platform defining the bottom side of a horizontal recess, a case received within said recess and movable therein between a rearward closed position and an advanced display position, said case having ends, a bottom, a back, and a perforated vertical partition near one of said ends, a refrigerated air conduit within said cabinet below said platform, an aperture in said platform through which refrigerated air is discharged from said conduit, said aperture being alined with the compartment defined by said partition and the corresponding end of said case, and an aperture in the bottom of said case opening inside said compartment adapted and arranged to register with said platform aperture when said case is in its forward display position.

14. In a cabinet structure of the character described, the combination of a substantially rectangular cabinet, swinging, open-front display cases trunnioned at the forward corners of said cabinet and adapted to be swung between a closed position, substantially parallel with the front of the cabinet, and with their end portions in opposing relation, and open wing-like display positions, said cabinet structure having a central recess, a central open-front display case mounted in said central recess and movable between an inward closed position permitting said swinging cases to be swung to closed position, and an outer display position, and means for supplying refrigerated air to the interior of said swinging cases in all positions of said swinging cases, the open fronts of said swinging cases and said central case being presented toward one another when said cases are in closed position, whereby refrigerated air from the interior of said swinging cases circulates into the interior of said central case.

15. In a cabinet structure of the character described, the combination of a substantially rectangular cabinet having receses at its two forward corners, swinging, open-front display cases trunnioned within said recesses and adapted to be swung between closed positions, with their end portions in abutting relation, and open display positions, means for conveying refrigerated air to said swinging display cases along the trunnion axes of said cases, said cabinet structure having a central recess between and substantially vertically alined with said corner recesses, and a central, open-front display case mounted and guided within said central recess and movable between an inward position permitting said swinging cases to be swung to closed position, and an outer display position partially advanced beyond the front side of the cabinet, said swinging case and said central case each presenting a plurality of vertically spaced open shelves.

16. In a cabinet structure of the character described, the combination of a substantially rectangular cabinet having recesses at its two forward corners, swinging, open-front display cases trunnioned within said recesses and adapted to be swung between closed positions, with their end portions in abutting relation, and open display positions, said cabinet structure having a central recess between and substantially vertically alined with said corner recesses, a central, open-front display case mounted and guided within said central recess and movable between an inward position permitting said swinging cases to be swung to closed position, and an outer display position partially advanced beyond the front side of the cabinet, said swinging case and said central case each presenting a plurality of vertically spaced open shelves, and means for conveying refrigerated air to said swinging cases from the bottom along the trunnion axes thereof and to said central case through the bottom thereof.

17. In a cabinet structure of the character described, the combination of a substantially rectangular cabinet having a refrigeration unit compartment in the bottom and having recesses at its two forward corners, swinging, open-front display cases trunnioned within said recesses and adapted to be swung between closed positions, with their end portions in abutting relation, and open display positions, said cabinet structure having a central recess between and substantially vertically alined with said corner recesses, a central, open-front display case mounted and guided within said central recess and movable between an inward position permitting said swinging cases to be swung to closed position, and an outer display position partially advanced beyond the front side of the cabinet, said swinging case and said central case each presenting a plu-

rality of vertically spaced open shelves, a refrigeration unit in said refrigeration unit compartment for producing refrigerated air, means for conducting said refrigerated air from said unit to said swinging cases through the bottoms and along the trunnion axes thereof, and for conducting the refrigerated air to said central case through the bottom thereof.

18. In a cabinet structure of the character described, the combination of a substantially rectangular cabinet, a horizontal platform structure in the lower portion of said cabinet, a front section for the cabinet extending downwardly from said platform, end walls comprising end wall sections extending downwardly from said platform structure, an end wall section rising from said platform structure at each rearward corner of the cabinet but terminating a substantial distance short of the front side of the cabinet, an end strip extending from the upper end portion of said end wall section forwardly to the front side of the cabinet, a front strip joining said end strips, a top structure over said end and front strips, a central case receivable in said cabinet between said platform structure and said front strip, said case being movable between an inward, closed position and an advanced display position, walls abutting the forward edges of said end wall sections that rise from said platform structure, said last mentioned walls extending inwardly within the cabinet to form the inner walls of recesses at the forward corners of the cabinet, swinging, open-front display cases trunnioned within said recesses, a refrigeration unit for producing refrigerated air located in said structure below said horizontal platform structure, conduit means for leading said refrigerated air to positions below the trunnioned ends of said swinging cases and to a position adjacent said central case when the latter is in advanced position, air passages in said swinging cases along the trunnion axes thereof for conveying refrigerated air from said conduit means to the interior of the swinging cases in all positions of the latter, and an aperture in said central case registering with said conduit means when the central case is in advanced position for passing refrigerated air into said central cabinet.

EDWARD J. KLASSEN.