May 20, 1930. E. E. LEU 1,759,486

DISPLAY BOARD

Filed May 27, 1929 2 Sheets-Sheet 1

Fig. 1.

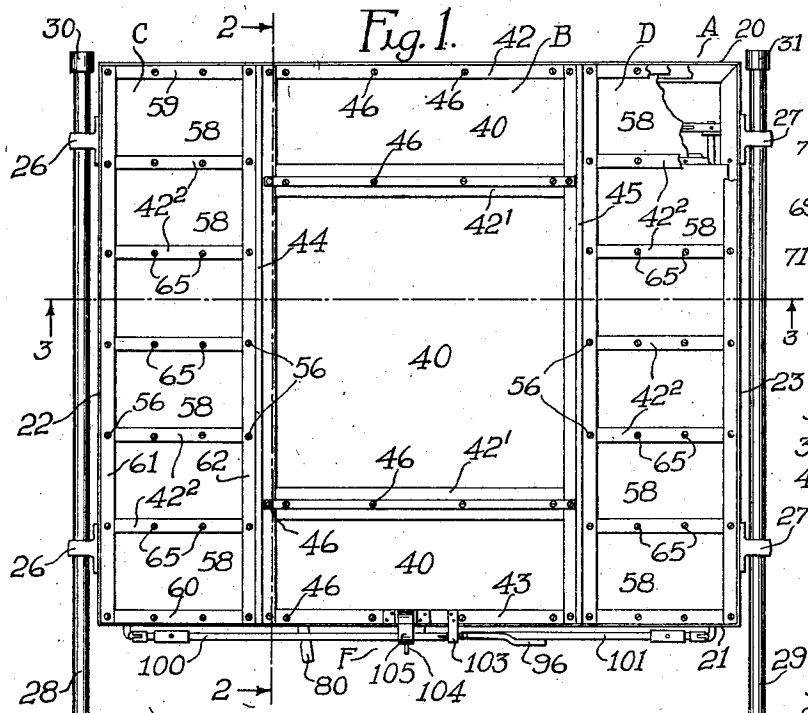


Fig. 2.

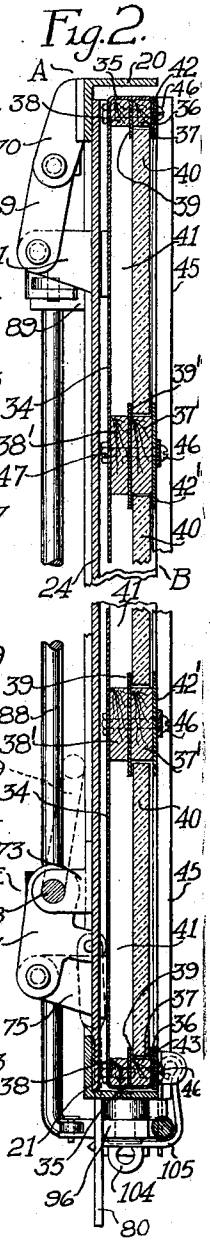


Fig. 3.

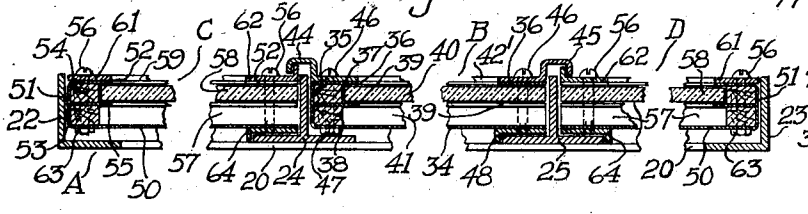


Fig. 4.

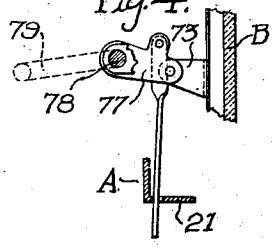
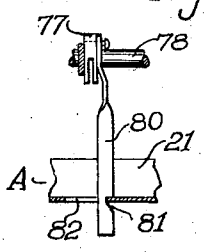


Fig. 5.



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Fig. 6.

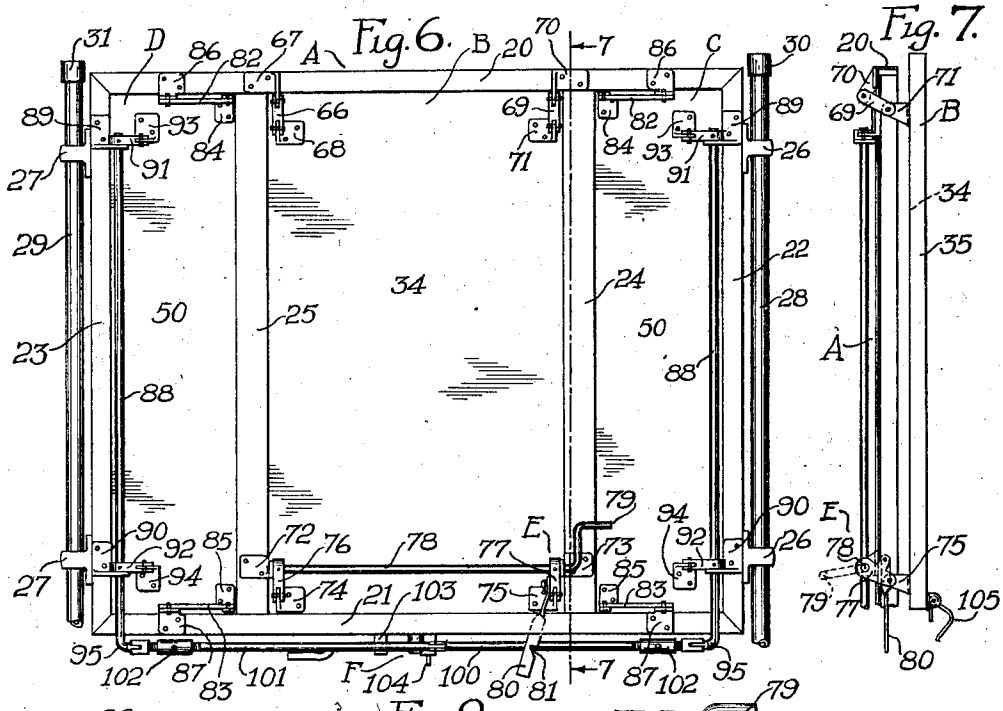


Fig. 7.

Fig. 8.

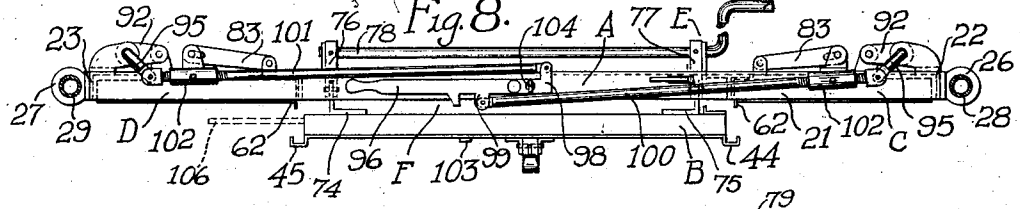


Fig. 9.

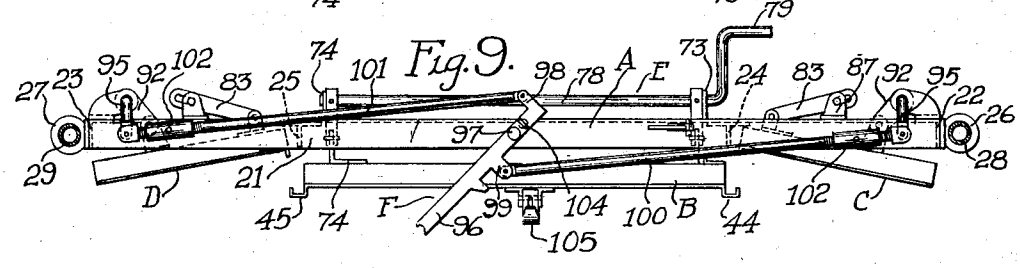
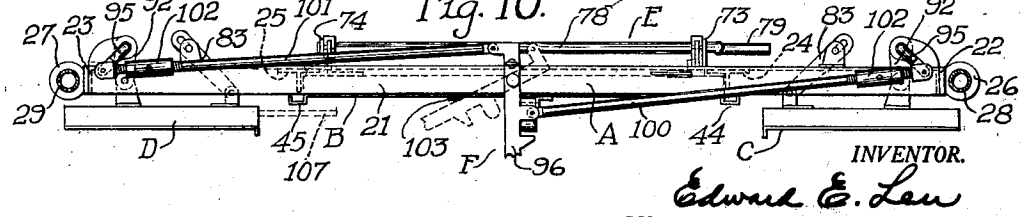


Fig. 10.



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UNITED STATES PATENT OFFICE

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DISPLAY BOARD

Application filed May 27, 1929. Serial No. 366,195.

The present invention relates to display boards and more particularly to display boards of the type wherein movable dislpay sections are pivotally mounted so as to be readily shifted for the withdrawal and insertion of advertising and display matter in the form of cards, posters, display sheets and the like.

One object of the invention is to produce a durable weather-proof structure which may be positioned and used out-of-doors as well as indoors.

Another object is to so mount the movable display sections that they may be easily shifted from their receiving or open positions to the display or closed positions and vice versa.

Another object is to position the parts in such relation to each other that when all sections are in display position they may be readily locked in place by the application of a lock at a single point.

Another object is to so construct the different parts of each display section and each pocket wherein display matter is located that the board may be opened up for changing the display matter in all kinds of weather without serious injury to the cards or other display matter within the various pockets.

Other objects are to make the entire structure as well as each of its parts rugged and durable, to simplify the structure as much as possible, and to design it so that it can be economically manufactured, installed, and maintained.

In attaining these objects, I preferably employ a main frame having three panels and pivotally secure to the frame three display sections which normally rest in the panels respectively but which may be moved outward from the frame for the purpose of inserting the display matter. These display sections must be returned to their display positions in a certain order to provide a simple locking arrangement. The preferred order is that the outer sections be returned first and then the central section be moved down upon the outer sections so as to lock them while the central section is in turn locked by locking means of any desired sort. In order to bring about proper movement of the outer sections I preferably provide a central lever and suitable connections so that a shifting of the lever to and fro will move the outer sections to and fro between their opened and closed positions. The mounting of the outer sections is also such that the outer edge of each section will move from its normal position in advance of the inner edge. This is for clearance purposes. I also provide an interfering lug on the central section which gets in the way of the central lever to prevent its operation whenever an attempt is made to return the sections to their normal positions in the wrong order. There are also other details which have to do with rendering the entire structure water-proof and efficient in service.

The various objects, features, and advantages of the invention will be more fully understood upon reference to the following detailed description taken in connection with the accompanying drawings and the scope of the invention will be particularly pointed out in the appended claims.

In said drawings, Fig. 1 is a front elevation of a display board constructed in accordance with the present invention; Fig. 2 is a vertical section through the same taken on a plane indicated by the line 2—2 of Fig. 1; Fig. 3 is a horizontal fragmentary section upon a somewhat enlarged scale taken on a plane indicated by the line 3—3 of Fig. 1; Fig. 4 is a partial sectional view illustrating the catch bar for holding the central display section in its open position; Fig. 5 is a similar view of the same bar construction taken at right angles to Fig. 4; Fig. 6 is a rear elevation of the entire display board; Fig. 7 is a vertical section of the same taken on a plane indicated by the line 7—7 of Fig. 6; and Figs. 8, 9, and 10 are underneath plan views illustrating the central lever and connecting mechanism for operating the display sections, Fig. 8 illustrating the parts when the central section has been moved to its open position, Fig. 9 the parts at the time the outer sections are partly opened, and Fig. 10 the parts when the outer sections are in final open position and the central section

has been restored to its closed position. Throughout these views like characters refer to like parts.

Referring to the drawings in detail, A designates the main frame, B the central display section, C the left-hand display section, D the right-hand display section, E the crank mechanism for operating the central section, and F the lever mechanism for operating the outer sections.

The main frame A is preferably a rectangular frame made up of angle irons riveted or otherwise secured together. Thus, the upper angle bar 20 is joined to the lower angle bar 21 by similar end bars 22 and 23. These bars are arranged with flanges in a common plane and outstanding flanges. The flanges which lie in the common plane constitute backing members for the sections to abut against when the sections are in closed position in the frame. The outstanding flanges constitute inclosing walls for the pockets or panels occupied by the display sections. The entire space included within these outer members of the frame A is divided into a plurality of panels. In the embodiment shown, there are three panels, a central panel for the central display section B, a left-hand panel for the display section C, and a right-hand panel for the display section D. The division is made by employing other angle bars, preferably the T-bars 24 and 25, and connecting them at their ends to the bars 20 and 21. The head of the T of each T-bar lies in the same plane as the backing members of the outer angle bars and the vertical stem of the T of the T-bar is outstanding from this plane and cooperates with the outstanding flanges of the other bars to provide the panels heretofore mentioned. As clearly shown, the outstanding webs and flanges of the several bars extend far enough to provide a well-walled inclosure for the display sections.

The paneled frame A may be supported in any desired way. In many instances it may be desirable to attach the frame to the wall of a building either within the building or outside of it. In other instances the frame will be supported upon posts or like independent supports. In the embodiment shown, the latter way of supporting the frame is employed. Thus, the end bars 22 and 23 are provided with brackets 26 and 27 which are secured to the bars and apertured for the passage of the tubular posts 28 and 29, respectively. The latter are preferably pipes of suitable size provided with caps 30 and 31 and suitably positioned in holes formed in the ground surrounded by masses of concrete 32 and 33.

The central display section B is built upon and out of a main plate 34 which has three of its edges, the upper, lower and left-hand shaped into a channel for holding the parts of the structure. As illustrated in Figs. 2 and 3, the channel thus formed has an outstanding web 35 and an upper in-turned flange 36. Within this channel on the three edges of the plate 34 are wooden strips 37 and 38 and an intervening metal strip 39. On the right-hand side of the plate 34 there are no strips 37 and 38 and nothing corresponding to the outstanding web or flange 35 on the other sides. This portion of the plate 34 is either cut out on this side so as to remove the material for this web while leaving the flange 36, or the latter is replaced by a separate strip, as may be desired. By these omissions on the right-hand side, the display section B is provided with openings, one for the insertion of the glass 40 into its final position between the strips 36 and 39, and the other for access to the space 41 between the glass 40 and the back plate 34, provided for holding cards, posters and like advertising or display matter. Above the flange 36 all the way around the section are covering pieces in the form of flat strips 42 and 43 at the top and bottom of the section and overhanging channel strips 44 and 45 at the right and left-hand edges respectively. These latter strips each have a flat portion by which they are secured to the section above the strip 36, and an overhanging channel portion which cooperates with strips on the adjacent sections B and C to form water-tight joints between the three sections when they are all in their closed positions.

The central section may be formed with one large display space 41 below one large pane of glass 40 or it may be divided up into smaller areas each having its own glass 40 and associated space 41. When divided up, partitions are built upon the plate 34. These obviously may divide the large area into many or few smaller areas, as desired. As illustrative, I have divided the whole into three, providing a relatively large central area and two upper and lower smaller areas. The partitions used for these divisions are of the same general construction as the peripheral wall of the section. Such construction is illustrated clearly in Fig. 2 where the plate 34 has associated with it, the wooden strips 37′ and 38′, the intervening metal strip 39′ and the top strip 42′. The parts which go to make up the peripheral structure and the structure of the partitions are held together by screws 46 located at intervals along the various covering strips. In some instances, as shown at the left in Fig. 3, a retaining nut 47 is used upon the end of the screw to secure the parts together and in other instances, as shown at the right in Fig. 3, the screw itself is threaded into a threaded opening in some part of the construction. Thus, in the case of the screw at the right of section B in Fig. 3, the threaded opening for the screw is tapped in an extra flanged

strip 48 which is provided at the open edge of the section to cause the section to more closely fit about the edges of the T-bar 25 to render that portion of the structure weather-proof. At the left the nut 47 suffices and no strip 48 is required because the plate 34 is bent into channel form and water cannot possibly get through to the space 41.

The left-hand display section C is built up in the same manner as the section B. There is a back plate 50 which is turned up at its outer edges on three sides to form a channel having a web 51 and a flange 52. Wooden strips 53 and 54, with an intervening metal strip 55, are located within the channel and the parts are held together by screws 56. This structure extends, as stated, around three edges of the plate 50 and its fourth, or inner, edge is open for the insertion of display matter within the space 57 below the glass 58. As in the previous case, the flanges 52 are covered by strips 59 at the top, 60 at the bottom, 61 on the left-hand side and 62 on the right-hand side. The screws 56 passing down through all of the associated members, and, along the three sides of the section, are held in place by nuts 63. Along the fourth side, where the section is open for the insertion of the advertising matter, the plate 62 has an up-turned flange which fits snugly into the channel of the strip 44 on the adjacent section B. The opposite side of this open structure is provided with a plate 64 which is tapped at suitable intervals for the screws 56, this plate being used instead of the nuts 63. The plate 64 is flanged so as to fit tightly about the T-bar 24 for the purpose of making the structure weather-proof, as before explained in connection with a similar bar 48. With this structure it will be seen that the channel bar 44 of section B will overhang the strip 62 of section C and hold it closed until the section B is moved out of the way.

The right-hand section D is similar in construction to the left-hand section C, just described. For this reason it will be unnecessary to set forth its construction in detail. It has the same parts but they are arranged oppositely to section C. In other words, the open edge of both sections C and D is toward the central section B. On section D the same reference characters are shown as upon section C.

The display areas of sections C and D, the outside sections, may be divided up or left without division as desired. In the embodiment illustrated, I have divided the area of each section into six smaller areas. These are separated by partitions of the same construction as those shown and described in connection with the central section B. Because of this identity of construction it will, therefore, be unnecessary to repeat the description. It will suffice to point out that the top plates of these sections designated 42^2 correspond to the covering plates 42′ of section B. Beneath each of the covering strips 42^2 the structure is the same as that shown in Fig. 2 beneath the covering strip 42′. The screws passing through the structure of strips 42′ are designated 65.

The mountings of the display sections may now be considered. The first of these to be taken up is the central section B. At its upper end it is secured to its frame A by two link hinges. The link 66 is pivotally connected at its opposite ends to upstanding lugs of brackets 67 and 68, the former secured to the frame A and the latter to the section B. Likewise, the link 69 is pivotally secured to the upstanding links of brackets 70 and 71, the former secured to the frame A and the latter to the section B. These links both move in vertical planes and when the section is in its closed position, resting in the panel of the frame A, the connection of each link to the panel is below its connection to the main frame. As a result of this arrangement a movement of the section B outward from the frame A causes the section B to rise at the same time it moves outward as illustrated in Fig. 7.

The lower portion of the section B is connected to the frame A in a somewhat similar way by the mechanism E. There are upper brackets 72, 73, secured respectively to the frame members 25 and 24, and lower brackets 74 and 75, connected to the lower portion of the section B. In the case of these lower connections, the upstanding lugs upon the brackets are not connected by independent links as in the case of the links 66 and 69, but they are connected by arms 76 and 77 which are pivoted at their lower ends to the lower brackets 74 and 75, respectively, and at their upper ends are fixed to a crank shaft 78 which is journaled in the upstanding lugs of the brackets 72 and 73. The members 76 and 77, being fixed to the shaft 78, must move with it. In a way these two members are links but do not have independent movement. Both have a common pivot in the shaft 78. One end of the crank shaft 78 is provided with a hand crank 79. When the section B is in normal display position, the crank 79 extends upward near the back of the main frame A and the crank arms 76 and 77 extend downward. When it is desired to rock the section B about its pivotal connections, it is only necessary to pull on the crank 79 and draw it outward away from the back of the structure into a position extending outward there-from, as indicated in Fig. 7. When this is done, the crank arms 76 and 77 force the section B outward and upward, and, at the same time, the upper end of the section moves in a similar manner upon the links 66 and 69. To restore the section to its normal

position it is only necessary to turn the crank 70 back to its normal position.

At the time the section B is in open position, it may be held in that position by a catch bar 80 having a notch 81. The bar 80 passes through an opening 82 in the horizontal flange of the frame member 21, and the bar may be moved so as to bring the shoulder of the notch into engagement with adjacent portion of the flange. The upper end of the bar 80 is pivotally connected to the crank arm 77 at a point intermediate of its length and the arrangement is such that the notch 81 will be in holding position when the crank arm 77 is in a position approaching the horizontal which is the position corresponding to the open position of the section B. It will be seen that by merely releasing the bar 80 from its holding position, the weight of the section B will cause it to move downward and toward its normal or closed position. This movement may be restrained by holding the crank 70 or the crank may be turned to assist in the movement. When the section B is in its normal display position it fits closely within the central panel of the frame formed by the flanges of the frame members which go to make up the central panel.

Passing now to a consideration of the mountings of the outer sections C and D, it will be seen that they have similar link hinges and crank shaft connections. Thus, the section C has links 82, and 83 which are connected at their inner ends to the upstanding lugs of brackets 84 and 85 connected to the section. At their outer ends the links 82 and 83 are connected to similar lugs upon brackets 86 and 87 secured, respectively, to the frame members 20 and 21. The links 82 and 83 differ from the links 66 and 69 in that the connection with the brackets 86 and 87 upon the main frame is in each case a pin and slot connection. This allows a little play which enables the inner edge of the section to remain practically unmoved while the outer edge is being shifted from its normal position. The crank shaft connection includes the shaft 88 journaled in upstanding lugs of brackets 89 and 90 secured to the frame member 22 near its opposite ends. The crank shaft carries crank arms 91 and 92 which are fixed to the shaft and pivotally connected to the upstanding lugs of brackets 93 and 94 secured to the section C at points inward of the shaft when the parts are in normal position. The outer end of the shaft 88 is turned abruptly to provide a crank arm 95. When the crank arm 95 is in the position illustrated in Fig. 8, the section C rests in its panel in the main frame. As soon as the crank arm is moved outward a little bit, the outer edge of the section is moved forward, as indicated in Fig. 9. It is during this early movement that the slots in the links 82 and 83 come into play. As the outer edge of the section moves forward, the inner edge moves more or less in the plane of the main frame and thus moves the links so as to shift the pins in the slots. The new position is that illustrated in Fig. 9. Further movement of the crank arm 95, illustrated in Fig. 10, causes the inner edge of the section C to move outward so as to bring the section entirely clear of the main frame.

Section D is mounted similarly to section C and has corresponding parts which bear corresponding reference characters. It will be noted, however, that what is at the right when viewing section C is at the left when viewing section D. In other words, the parts are reversely positioned. However, this need not require separate detailed description of the link hinges and crank shaft connections of section D.

For the purpose of rocking the outer sections C and D at the same time, and giving them a like movement in opposite directions, I provide the connecting and actuating mechanism F which includes a central hand lever 96 which is pivoted at the point 97 to the horizontal flange of the frame member 21. Outward from the pivot point 97, and upon short extensions 98 and 99, are pivotally connected the inner ends of rods 100 and 101 which are connected at their outer ends to the cranks 95 of sections C and D, respectively. Each connecting rod 100 and 101 is provided with an adjustable sleeve 102 having threaded engagement with sections of the rod. By turning this sleeve the sections may be drawn together or moved apart so as to adjust the length of the rod in each case.

Normally the hand lever 96 lies close to the under side of the frame member 21. At such time, the projections 98 and 99 hold the connecting rods 100 and 101 clear of other parts, as illustrated in Fig. 8. By pulling upon the free end of the hand lever 96, the rods 100 and 101 may be moved outwardly and the cranks operated in the manner heretofore explained. The intermediate position of the parts is shown in Fig. 9. The fully open position of the outer sections and the corresponding position of the actuating parts are shown in Fig. 10. By reason of the interlocking of channel members 44 and 45 upon section B, with the flanges of strips 62 upon the sections C and D, it will be seen that the mechanism F cannot be operated to open the outer sections as long as the central section B is in closed position, and the locking members 44 and 45 overlap the members 62 of the outer sections. Consequently, the first step in opening the sections of the board is to move the central section B outward, as before explained, to the position illustrated in Fig. 8. Then the lever 96 of mechanism F may be actuated to open the outer sections of C and D as explained. For the purpose of obtain-

ing access to the section B it is only necessary to move this section outward into the position illustrated in Fig. 8. At that time the openings for receiving the display matter are exposed and available to the attendant who is replacing the material. After the sections C and D are moved out into open position, then the central section is preferably restored to its normal position, or a position approaching normal, as illustrated in Fig. 10. Then the inner edges of the sections C and D are left clear for the withdrawal and insertion of display matter in those sections.

When the changes of the display matter have been made, then it is impossible to return the outer sections to their normal position while the central section remains closed. It is necessary to again open the central section before the outer sections can be restored to normal position. To prevent damage to the parts, a lug 103 is placed upon the section B in the path of travel of the lever 96. If an attempt is made to restore the outer sections while the central section is in closed position, then the lever 96 can be moved only until it engages the lug or stop 103. This is indicated by the dotted line position of lever 96 in Fig. 10. It is, therefore, impossible to restore the sections to normal position except in a given order, namely the outer sections first and then the central section; just as it is impossible to open the sections except in a given order, namely, the central section first followed by the outer sections.

When the sections are all in closed position the central section will lock the outer sections and by simply locking the outer section to the main frame the entire structure is closed against interference. To accomplish the locking of the central section to the main frame, I locate upon the lever 96 an eye-bolt 104 and position the same so that when the parts are in closed position the eye 104 will pass through an opening in a hasp 105 pivoted to the front of the section B at its lower edge. When the eye-bolt extends through the hasp a padlock may be slipped through the eye-bolt and the parts will then be secured against interference.

When open, the display sections are quite clear of the main frame and spaced some distance from it throughout the entire vertical length so that it is easy to insert and withdraw the display matter. This is clearly shown in Figs. 8 and 10, where the partially withdrawn display cards 106 and 107 are shown in dotted lines. In Fig. 8 the parts are positioned for attention to the central section B and in Fig. 10 for attention to the outer sections C and D.

Obviously, in carrying out my invention many minor additions and alterations may be made in the matter disclosed without departing from the spirit and scope of the invention. I therefore do not wish to be limited to the exact details shown but aim to cover by the terms of the appended claims all those additions and alterations which rightly come within the limits of my invention.

What I claim as new and desire to secure by a patent of the United States is:

1. A display board comprising three adjacent panels, a display section normally resting in each said panel, link hinges at the upper edge of the central section for connecting said section to its panel, pivotal means at the lower end of said central section for shifting the lower end of said section into and out of its normal position in its panel, link hinges connecting the outer sections to their panels respectively, pivotal means connected to each outer section for shifting the adjacent portion of said section forward out of its normal position in its panel, and connecting and operating means between the pivotal means on said outer sections for actuating said pivotal means to move said outer sections to and fro, toward each other to normal positions and from each other to open positions.

2. A display board comprising a plurality of adjacent panels, a display section normally resting in each said panel, pivoted members movable in vertical planes for connecting one of said sections to its panel, pivoted members movable in planes transverse to said vertical planes for connecting a second of said sections to its panel, and means carried by one of said sections for holding the other of said sections in its panel until said one section is removed from its panel.

3. A display board comprising a plurality of panels, a display section normally resting in each said panel, means pivotally connecting said sections to their respective panels whereby said sections may be rocked in intersecting planes to and fro between their normal positions and open positions outward from their respective panels, and means carried by one of said sections for engaging the other of said sections when the latter is in its normal position and for holding the same there as long as said one section remains in its panel.

4. A display board comprising a plurality of panels, a display section normally resting in each said panel, pivoted members movable in parallel planes connecting each said section to its said panel, and connecting and operating means acting between said sections to move said sections to and fro between said normal positions in said panels and open positions forward of said panels, toward each other into said normal positions and from each other into said open positions.

5. A display board comprising a frame having a plurality of panels, a display section normally resting in each said panel, pivoted members movable in parallel planes connecting each said section to its said panel, con-

necting and operating means acting between said sections to move said sections to and fro between said normal positions in said panels and open positions forward of said panels, toward each other into said normal positions and from each other into said open positions, and central pivoted means adapted to overlap portions of said sections to hold the same in their normal positions.

6. A display board comprising a frame having a plurality of panels, a display section normally resting in each said panel, pivoted members movable in parallel planes connecting each said section to its said panel, connecting and operating means acting between said sections to move said sections to and fro between said normal positions in said panels and open positions forward of said panels, toward each other into said normal positions and from each other into said open positions, a central member for overlapping portions of said sections to hold the same in their normal positions, pivoted members movable in a plane or planes transverse to said parallel planes connecting said central member to said frame.

7. A display board comprising a frame having central and end panels, a display section normally resting in each of said end panels, pivoted members movable in parallel planes connecting each said end section to its said panel, connecting and operating means between said end sections to move the same toward and from each other, toward each other into said normal positions and from each other into open positions forward and outward of their respective panels, a central display section normally resting in said central panel, means on said central section to engage and hold said end sections in their panels while all sections are in their respective panels, and pivoted members movable in a plane transverse to said parallel planes connecting said central section to its panel, said engaging means being positioned so as to free said end sections when said central section is rocked on its said pivoted members into an open position before its panel.

8. In a display board, a frame including backing members lying in a plane, other members outstanding from said plane enclosing a panel space, a display section adapted to fill said space within said outstanding members and bear upon said backing members, a link hinge connecting said section to said frame with a lost motion, and cranks connecting said frame and section at other points, the rotation of said cranks cooperating with said link hinge to throw one edge of said section outward away from said plane before the other.

9. In a display board, a frame including backing members lying in a plane and outstanding members at right angles to said plane, the latter enclosing a panel space, a display section having length and breadth and depth corresponding to said space so as to fit within the same, a link hinge pivotally secured at one end to the inner edge of said section and extending outward therefrom and secured at its other end by a pin and slot connection to said frame, a crank shaft journaled in said frame outward of said pin and slot and having its axis extending in the same general direction as that of said pin, a crank arm fixed to said shaft and extending inward and pivoted at its inner free end to said section, and means for rocking said shaft, whereby the outer edge of said section moves outward from its normal position in said panel space more quickly than does the inner edge of said section.

10. In a display board, a frame, display sections pivotally secured to said frame for movement from closed positions against said frame into open positions spaced from said frame, cranks on said sections for actuating them, a central lever pivoted to said frame, rods connecting at their outer ends to said cranks and at their inner ends to said lever on opposite sides of its pivotal connection to said frame, a central member pivoted to said frame and operative to engage said display sections in closed position to hold them there, and means on said central member for preventing the operation of said lever to shift said sections to closed position whenever said central member is not in position to admit said sections beneath it for locking purposes.

11. A display board comprising a frame, three display sections pivoted to said frame for movement from closed positions against said frame into open positions spaced from said frame, said central section being operative to engage the other two sections to hold them in closed position, cranks on said outer sections for actuating them, a central lever pivoted to said frame, rods connecting at their outer ends to said cranks and at their inner ends to said lever on opposite sides of its pivotal connection to said frame, and means on said central section for interfering with said central lever to prevent its actuation to restore said outer sections to closed position unless said central section is away from said frame far enough to admit said outer sections for locking.

12. A display board comprising a central and two outer panels, a display section normally resting in each said panel, parallel link hinges for moving said outer sections on vertical axes forward from their respective panels and laterally away from said central panel, and parallel link hinges for moving said central section forward away from said central panel.

13. A display board comprising a central and two outer panels, a display section normally resting in each said panel, parallel

link hinges for moving said outer sections on vertical axes forward from their respective panels and laterally away from said central panel, parallel link hinges for moving said central section forward away from said central panel, and overlapping members on said central section for retaining said outer sections in normal position.

14. A display board comprising a plurality of panels, a display section normally resting in each said panel, parallel link hinges for moving one of said sections on vertical axes forward from its panel and laterally away from said other panel, parallel link hinges for moving the other of said sections on horizontal axes forward from its panel, and overlapping means on said latter section for retaining said first mentioned section in normal position.

In witness whereof, I hereunto subscribe my name this 25th day of May, A. D. 1929.

EDWARD E. LEU.