Jan. 30, 1962 R. GOLDWATER ETAL 3,019,424

SHIFTABLE TABLE ASSEMBLY WITH MOVABLE CONTACT ARM ASSEMBLY

Filed Jan. 9, 1959 2 Sheets-Sheet 1

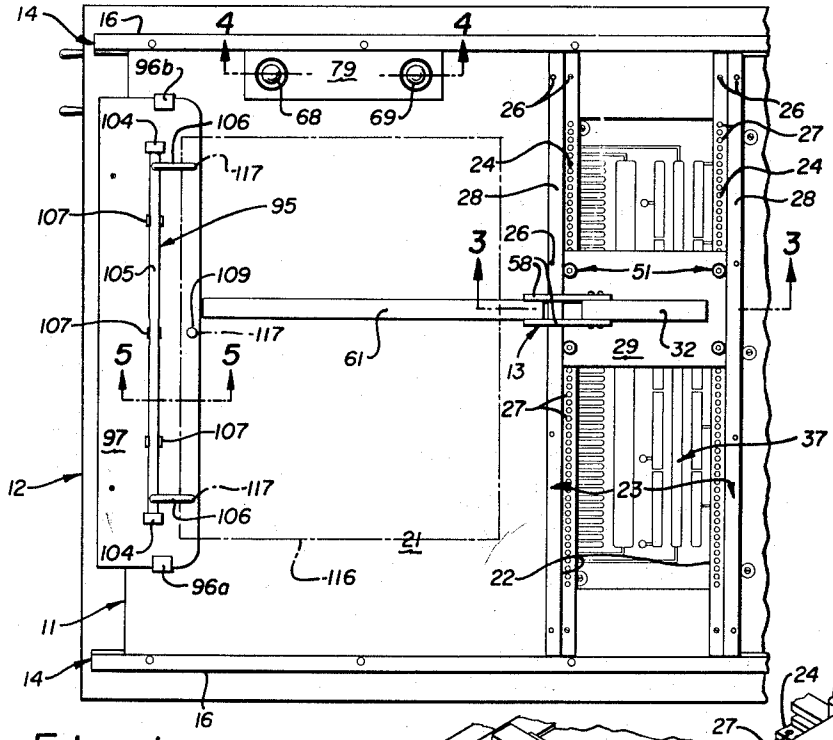


Fig. 1

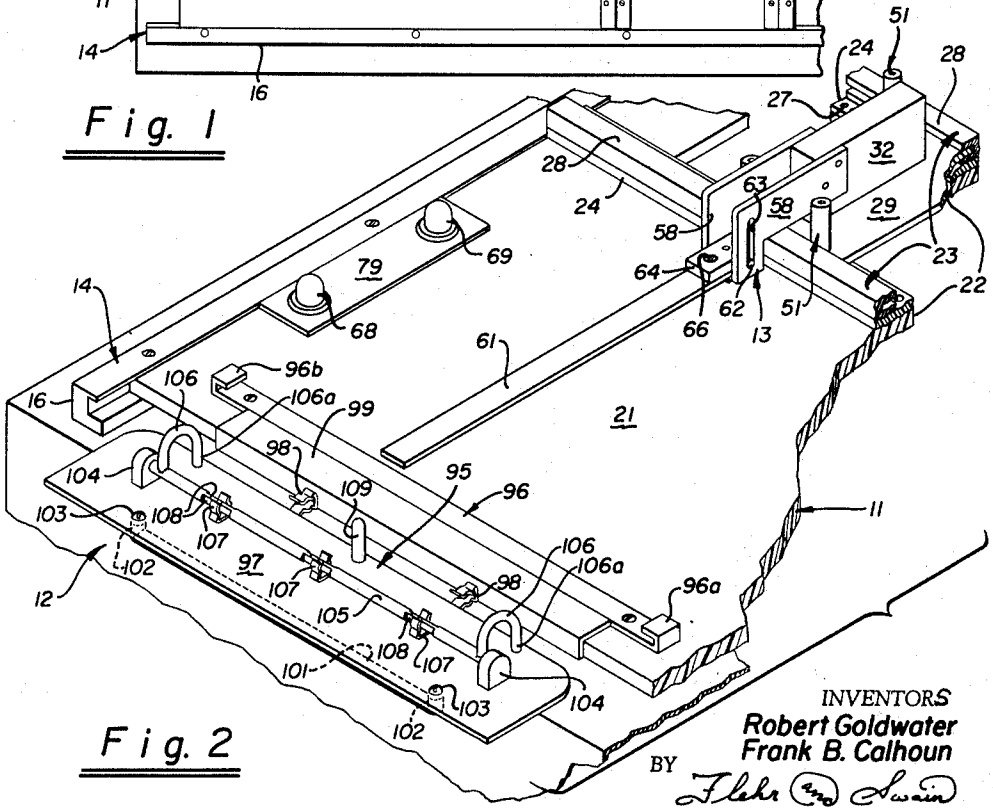


Fig. 2

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Fig. 3

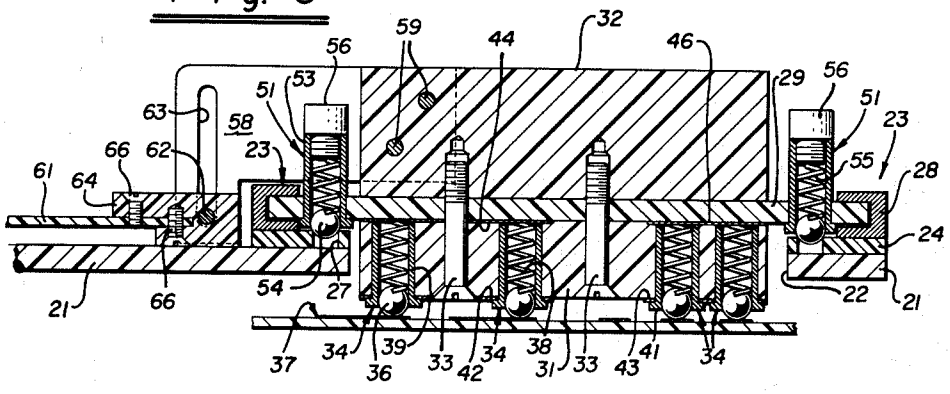


Fig. 4

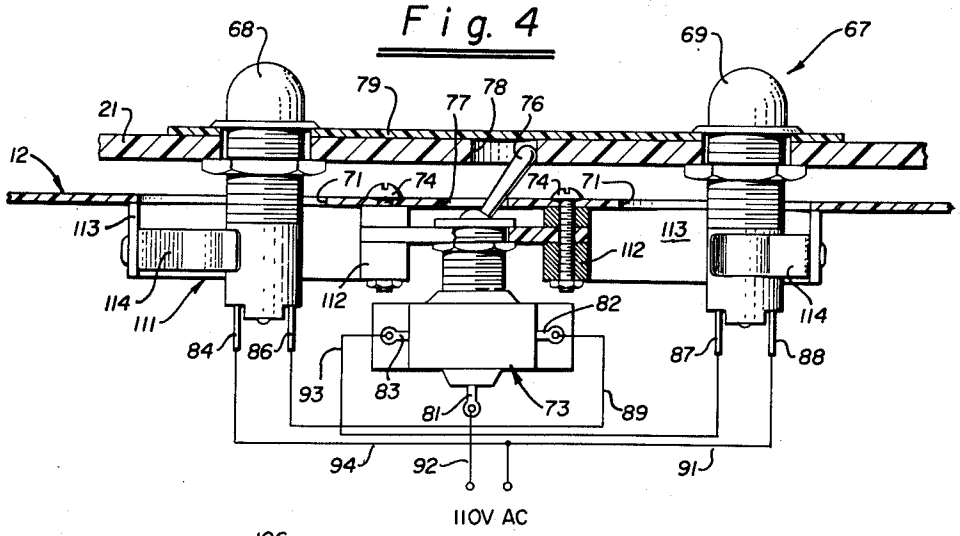
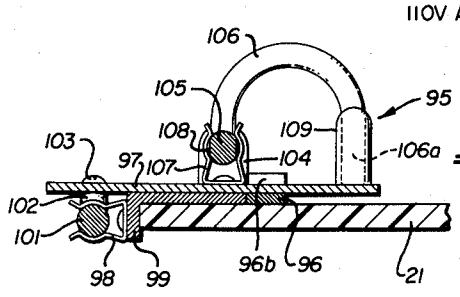


Fig. 5



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SHIFTABLE TABLE ASSEMBLY WITH MOVABLE CONTACT ARM ASSEMBLY

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This invention relates very generally to a shiftable table assembly with a movable contact arm assembly and more particularly to such an assembly for use with a store ordering apparatus.

In our copending application Serial No. 653,898, filed on April 19, 1957, entitled "Store Ordering System and Apparatus," now Patent No. 2,980,758, there is disclosed therein a shiftable table assembly with a movable contact arm assembly. However, it has been found that there is a need for a contact arm assembly which tracks more positively and for page retaining means on the table for more easily inserting and removing pages.

In general, it is an object of the present invention to provide a shiftable table assembly with a movable contact arm assembly in which the contact arm assembly tracks more positively.

Another object of the invention is to provide an assembly of the above character in which pages can be more easily inserted and removed.

Another object of the invention is to provide an assembly of the above character in which a varying quantity of pages may be utilized.

Another object of the invention is to provide an assembly of the above character in which a visual indication is given of the positions to which the table is shifted.

Another object of the invention is to provide an assembly of the character in which the visual means is automatically actuated upon shifting of the table.

Additional objects and features of the invention will appear from the following description in which the preferred embodiment has been set forth in detail in conjunction with the accompanying drawings.

Referring to the drawings:

FIGURE 1 is a plan view of a portion of our store ordering apparatus showing our shiftable table assembly with the movable contact arm assembly.

FIGURE 2 is a perspective view of the assembly shown in FIGURE 1 with certain parts broken away.

FIGURE 3 is an enlarged cross-sectional view of the contact arm assembly taken along the line 3—3 of FIG. 1.

FIGURE 4 is a cross-sectional view of a portion of the shifting table, taken along the line 4—4 of FIG. 1, showing the visual indicating means and circuit means for operating the same.

FIGURE 5 is a cross-sectional view of the page holder means taken along the line 5—5 of FIG. 1.

As shown in the drawing, the shiftable table assembly with a movable contact arm assembly consists of a shiftable table 11 which is slidably mounted on a rectangular framework 12. A contact arm assembly 13 is mounted on the shiftable table.

Guide means 14 for guiding the movement of the shiftable table 11 is mounted on the framework 12. The guide means consist of a pair of spaced apart U-shaped channels 16 mounted on the framework and extending longitudinally of the framework adjacent the forward and rear side edges thereof. Table 11 slides within channels 16.

The table 11 consists of a rectangular member 21 of a suitable insulating material which is provided with a rectangular opening 22. The member 21 is adapted to slide in the groove of channel 16.

Guide means 23 is mounted on opposite sides of the

opening 22 and serves to guide the path of movement of the contact arm assembly 13. The guide means consists of a pair of spaced apart members 24 which are fixed to the rectangular member 21 by a suitable means such as screws 26. The members 24 are provided with a plurality of evenly spaced holes 27 which are in horizontal and vertical alignment for a purpose hereinafter described. U-shaped channel members 28 are mounted on the members 24 and slidably accommodate a rectangular plate 29 of insulating material which is a part of the contact arm assembly. A pair of blocks 31 and 32 are secured to the plate 29 by suitable means such as screws 33 which extend through the lower block 31 through the plate 29 and into the upper block 32.

Contact means 34 is carried by the lower block 31 and consists of four separate balls 36 of suitable conducting material which are urged into engagement with printed circuitry 37 carried by the framework 12 of a type described in our copending application Serial No. 653,898, filed on April 19, 1957, now Patent No. 2,980,758, by suitable means such as springs 38 mounted within sleeves 39 disposed in the block 31. The sleeves are provided with flanges 41 which engage strips of conducting material. As shown particularly in FIGURE 3, the two sleeves on the left hand side are connected electrically by a strip 42 which serves as a shunt whereas the two sleeves on the right hand side are connected by another strip 43 which also serves as a shunt. The upper ends of the sleeves are electrically connected in a similar manner by strips 44 and 46.

It will be noted that the springs in each of the sleeves also engage one of the strips 44 and 46 to ensure that a good electrical contact is made. It will be noted that the block 31 is positioned in such a manner with respect to the printed circuitry 37 that the balls 36 are always retained by the sleeves and always engage the printed circuitry immediately underlying the same.

Detent means 51 is mounted on the plate 29 for providing more positive tracking for the arm assembly 13 as hereinafter described. The detent means consists of a pair of detent assemblies mounted on each side of the plate. Each of the detent assemblies consists of a sleeve 53 which is mounted in the plate 29 and which carries a ball 54 which is yieldably urged downwardly by suitable means such as a spring 55. A cap screw 56 is mounted on the upper end of the sleeve to facilitate insertion and removal of the ball and spring in each of the detent assemblies. The detent assemblies on each side of the plate are in horizontal and vertical alignment and are adapted to engage the openings 27 provided in the members 24.

A pair of L shaped plates 58 are affixed to the upper block 32 by pins 59. The plates serve to carry a guide arm 61 which is pivotally connected to the plates 58 by suitable means such as the pin 62 which is loosely accommodated within vertical slots 63 provided in the plates. The pin 62 is secured to the guide arm 61 by a small block 64 which is secured to the arm 61 by suitable means such as screws 66.

As will be noted from FIGURES 1 and 2, the guide arm 61 extends substantially across the entire width of the rectangular member 21 which forms a part of the shifting table 11. The connection of the guide arm 61 to the plates 58 is such that it may be swung away from the table by pivoting it about the pin 62 and may be lifted from the table by raising the pin 62 in the slots 63.

Means 67 is provided on the shiftable table for indicating the position of the table and consists of a pair of lamps 68 and 69 which are of a type well known to those skilled in the art and which are mounted in the rectangular member 21 on the rear edge thereof. These lamps 68 and 69 extend downwardly through elongate openings 71 provided in the top wall of the framework

12. A single pole double throw toggle switch 73 is mounted beneath the top wall of the framework 12 by suitable means such as the bolts 74 in a position which is between the openings 71. The operating handle 76 of the switch 73 extends upwardly through an opening 77 in the top wall of the framework 12 and into an opening 78 in the rectangular member 21. The opening 78 is covered by a flat plate 79 which is held in place by the lamps 68 and 69.

The switch 73 is provided with three terminals 81, 82 and 83. Lamp 68 is provided with terminals 84 and 86 and lamp 69 is provided with terminals 87 and 88. Terminal 82 is connected to the terminal 36 by a conductor 89 and terminal 84 is connected to one side of a 110 volt supply by a conductor 94. Terminal 81 of the switch is connected to the other side of the 110 volt supply by conductor 92. Terminal 83 of the switch is connected to terminal 87 of the lamp 69 by conductor 93 and terminal 88 of the same lamp is connected to conductor 91 by conductor 94. From this circuit arrangement, it is readily apparent that as the toggle switch is moved from one position to the other and that either lamp 68 or 69 will be lit for a purpose hereinafter described.

Means 95 is also provided on the shifting table for retaining the order guide pages and consists of a retaining member 96 that is mounted on the rectangular member 21 and which is provided with U-shaped ends 96*a* and 96*b*. The retaining member 96 slidably accommodates a plate 97 which is adapted to slide into and out of the U-shaped ends 96*a* and 96*b* as shown particularly in FIGURE 2. The plate 97 is adapted to be held in place by a pair of clips 98 which are mounted on an L-shaped member 99, also mounted on the rectangular member 21. The clips 98 are adapted to releasably engage a rod 101 which lies in a plane parallel to the plane of the plate 97. The rod 101 is affixed to the plate 97 by suitable means such as posts 102 which are secured to the rod and mounted on the plate 97 by screws 103.

Plate 97 is provided with a rod 105 which is rotatably carried in posts 104 mounted on the plate 97. A pair of U-shaped members 106 are mounted on opposite ends of the rod 105 and have free ends 106*a* which are adapted to engage the plate 97. The free ends of the U-shaped members 106 are yieldably urged into engagement with the plate 97 by suitable means such as the clips 107 mounted on the plate 97 that engage flats 108 provided on the rod 105. A central guide post 109 is mounted on the plate 97 midway between the U-shaped members 106.

Means 111 is provided for retaining the shiftable table in either of its two positions and consists of block-like supports 112 mounted on the table 21. A catch support 113 is secured to each block and carries a clamp 114 which is adapted to engage the base of the holders for one of the lamps 68 or 69.

Operation of our invention may now be briefly described as follows: Let it be assumed that order guide page 116 is to be inserted in the order guide page retaining means 95. The guide arm 61 is first uplifted and then the rod 105 is rotated to lift the free ends 106*a* from the plate 97. The order guide page 116 which is normally provided with three openings 117 is positioned so that the post 109 passes through the central opening in the order guide page. After the order guide page has been so positioned, additional order guide pages may be inserted in the same manner as desired. After all the order guide pages have been placed on the post 109, the rod 105 is again rotated so that the free ends 106*a* come into engagement with the other holes in the order guide pages. The clips 107 engaging the flats 108 serve to yieldably urge the free ends 106 into engagement with the plate 97.

It is readily apparent that if desired several order guide page retaining means 95 may be utilized. When such is the case, the order guide pages containing certain commodities can be retained on one of the means 95 whereas other pages containing other types of commodities can be placed on other means 95. The means 95 may be readily removed from the shifting table merely by pulling the order guide page retaining means to the left.

As described in our copending application Serial No. 653,898, filed April 19, 1957, the order guide pages are divided into two separate columns of commodities. One column generally underlies the light 68 whereas the other column underlies the light 69. The general operation of the shifting table is similar to that described in our above copending application, and for that reason will not be described in detail. As explained in our copending application, when the shifting table is in one position, the contact arm serves to shunt certain portions of the printed circuit 37, and when it is in the other position, it is adapted to shunt other segments or portions of the printed circuit.

When the shiftable table is in an extreme right position, it is held in that position by the clamp 114 which engages the base of the right-hand lamp 69. The left-hand light 68 is lit which indicates that segments of the printed circuit are being shunted which correspond to the left-hand column on the order guide page. When the shifting table is in the extreme left-hand position, the light 69 is lit which indicates that the segments of the printed circuit corresponding to the right-hand column of the order guide page are being shunted. The table is held in this position by the clamp 114 which engages the base of the left-hand lamp 68.

It is thus apparent that the lights 68 and 69 will be automatically lit merely by shifting the table to the right or the left because the operating handle 76 of the toggle switch is operated by the table as the table is shifted. Thus, when the table is in the right-hand position, the toggle switch 76 will be moved to the right to energize the left-hand lamp 68, whereas when the table is moved to the left, the operating handle 76 of the toggle switch will also be moved to the left to energize the right-hand lamp 69.

This feature of our invention is particularly important because it serves to prevent mistakes by having the shifting table in the wrong position for ordering from a certain column on the order guide page.

The four detent assemblies 51 on the plate 29 serve to cause positive tracking of the contact arm. As the contact arm is moved up and down or across the table, it is positively moved a step at a time because of the openings 27 engaged by the detent assemblies 51. At the same time, skewing or twisting of the contact arm within the guide means 23 is prevented. The contact arm 13 is always in exact alignment with the printed circuit 37 and with the corresponding line and column of the order guide page.

The use of the contact means 34 mounted on the block 31 of the contact arm is particularly advantageous in that it permits ready shifting of the contact arm without undue friction and without undue wear to the printed circuit. The balls 36 facilitate such movement, but at the same time serve to maintain excellent contact with the printed circuit segments engaged by the same.

The mounting of the guide arm 61 is such that it may be readily raised and lowered to permit insertion and removal of order guide pages. The pin and slot connection provided for the arm also makes it possible for the arm to accommodate various thicknesses and quantities of order guide pages.

It is apparent from the foregoing that we have provided a new and improved shiftable table assembly with a movable contact arm which is particularly advantageous for use with store ordering apparatus of the type described in our copending application Serial No. 653,898, filed April 19, 1957, now Patent No. 2,980,758. Its construction is such that positive tracking is obtained. The table and the movable contact arm may still be moved

readily and easily. The order guide page retaining means facilitates insertion and removal of order guide pages.

We claim:

1. In a shiftable table assembly with a movable contact arm for use on a store ordering apparatus of the type having a framework and with which order guide pages are utilized, guide means adapted to be mounted on the framework, a table member slidably mounted in said guide means for movement therein, means mounted on said table member for retaining order guide pages thereon, guide means mounted on the table member, and contact carrying means slidably mounted in said last named guide means for movement therein, said contact carrying means having a member adapted to overlie the order guide pages carried by the table member, and detent means carried by the contact carrying means and engaging said last named guide means for causing positive tracking of the contact carrying means as it is moved in said last named guide means.

2. A combination as in claim 1 wherein said last named guide means includes a plurality of recesses disposed longitudinally thereof, and wherein said detent means includes balls yieldably urged into engagement with the recesses.

3. A combination as in claim 1 where said means for retaining the order guide pages on said table member comprises a rod rotatably mounted on the table member, a pair of U-shaped members having one of their ends fixed to said rod, and means engaging said rod yieldably urging said rod in a direction so that the free ends of the U-shaped members are yieldably urged towards the table member.

4. In a shiftable table assembly with a movable contact arm for use on a store ordering apparatus of the type having a framework and with which order guide pages are utilized, guide means adapted to be mounted on the framework, a table member slidably mounted in said guide means for movement between first and second positions, means mounted on said table member for retaining order guide pages on said table member, contact carrying means slidably mounted on said table member for movement with respect thereto, and indicating means actuated by movement of the table member to indicate whether the table member is in the first or second position.

5. A combination as in claim 4 wherein said last named means comprises a pair of lamps, a switch adapted to be mounted on the framework, the switch having an operating handle, and means for securing the operating handle to the table member so that as the table member is moved between its first and second positions, the operating handle of the switch will be operated, means including a source of power connecting the switch to the lamps so that when the switch is in one position, one of the lamps is energized and when the switch is in the other the other lamp is energized.

6. A combination as in claim 4 wherein said means mounted on the table member for retaining order guide pages comprises a plate, a rod pivotally mounted on said plate, a pair of U-shaped members having one of their ends mounted on said rod, spring means for yieldably urging the free end of the U-shaped member into engagement with the plate, and means for releasably securing said plate to said table member.

7. A combination as in claim 4 together with means for releasably retaining said table member in said first and second positions.

8. In a shiftable table assembly with a movable contact arm for use in a store ordering apparatus of the type having a framework and with which order guide pages are utilized, guide means adapted to be mounted on the framework, a table member slidably mounted in said guide means, means mounted on said table member for retaining order guide pages on said table member, guide means mounted on the table member, and contact carrying means slidably mounted in said last named guide means for movement with respect thereto, said contact carrying means having a member adapted to overlie the order guide pages carried by the table member, said contact carrying means also including a plurality of contact means, said contact means comprising a ball of conducting material, and means yieldably urging said ball in one direction.

9. A combination as in claim 8 wherein said contact carrying means includes a plate slidably mounted in said last named guide means, a pair of detent assemblies mounted on opposite sides of the plate, said last named guide means including a plurality of recesses extending longitudinally thereof, each of said detent assemblies comprising a ball and means yieldably urging said ball into engagement with one of said recesses.

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