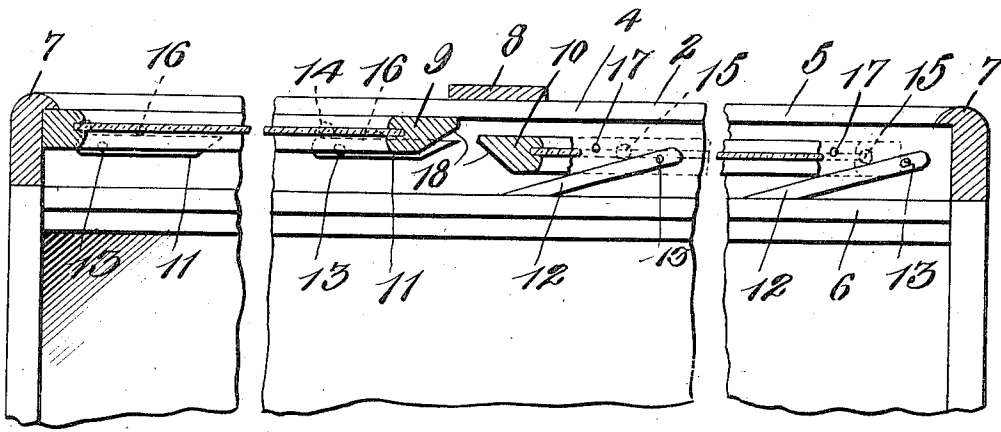
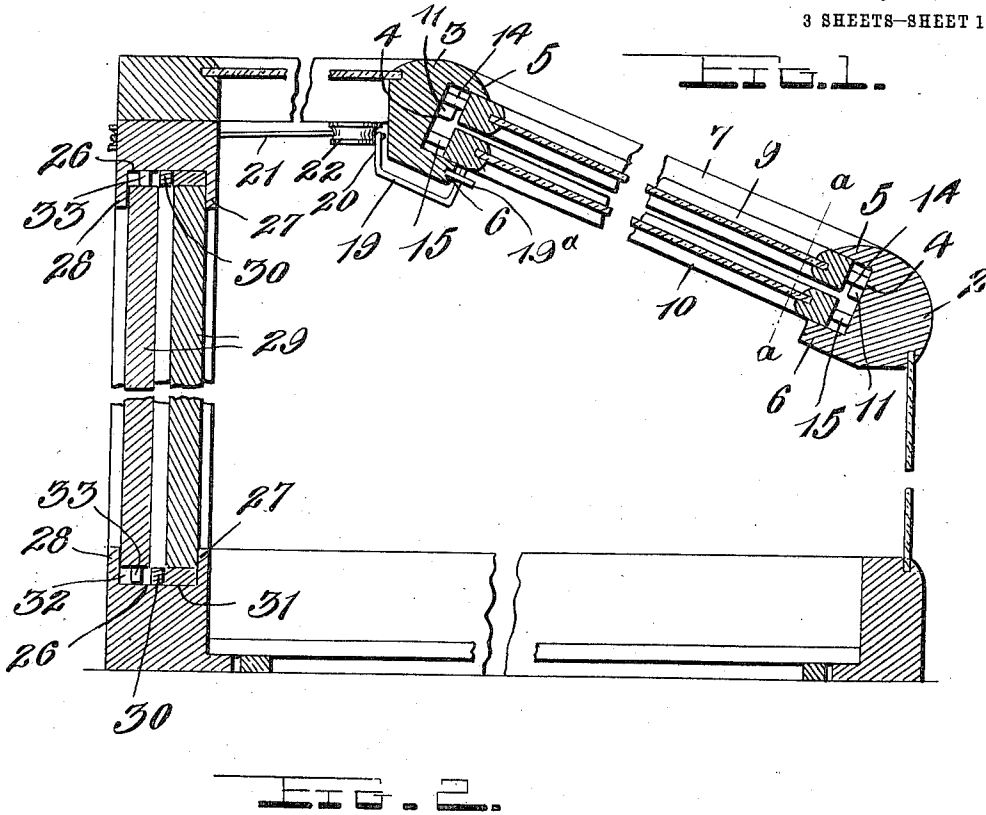


R. L. PRICE & G. A. DELAPLAIN.
 SLIDING DOORS FOR SHOW CASES.
 APPLICATION FILED APR. 4, 1911.

1,032,702.

Patented July 16, 1912.

3 SHEETS—SHEET 1.



Witnesses

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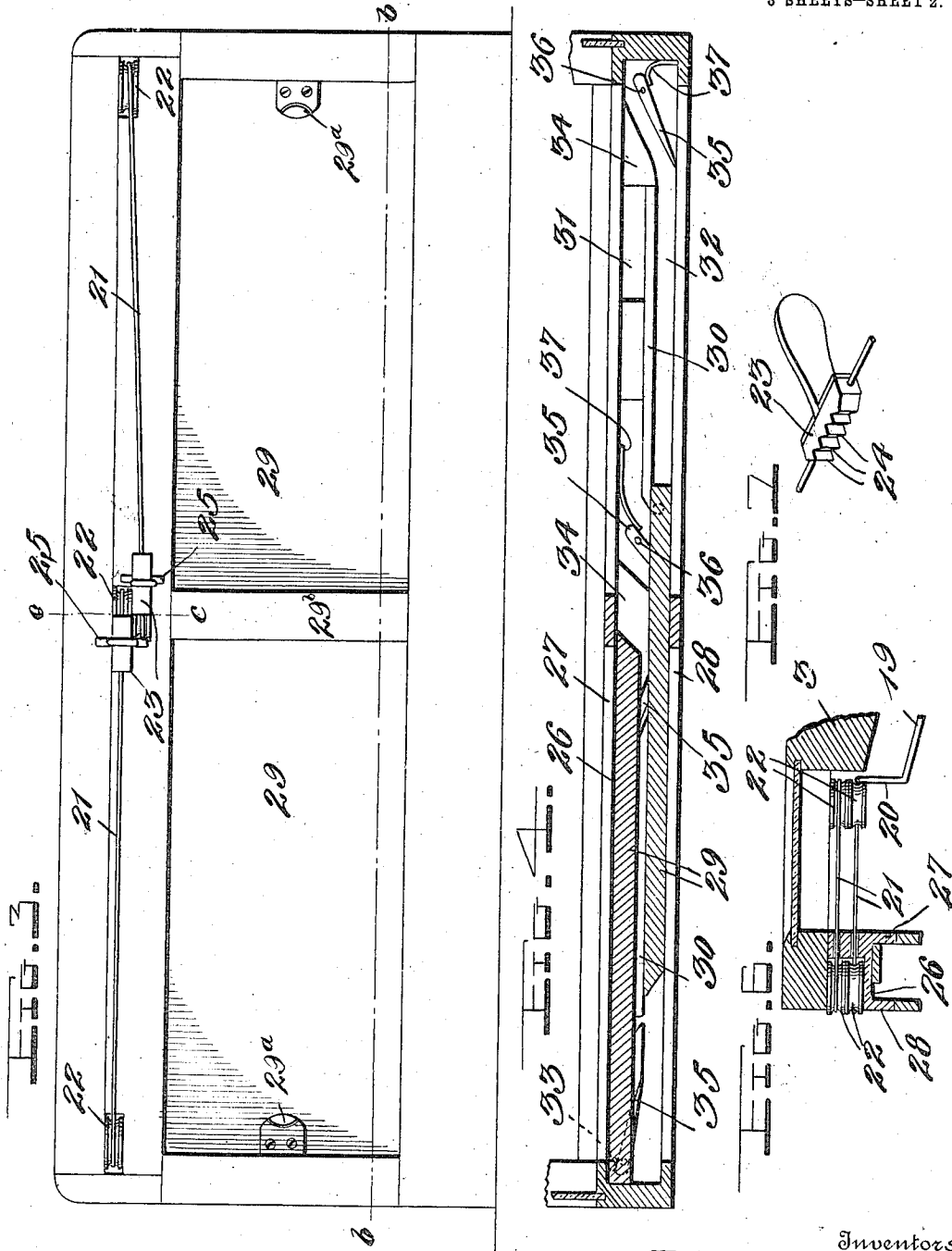
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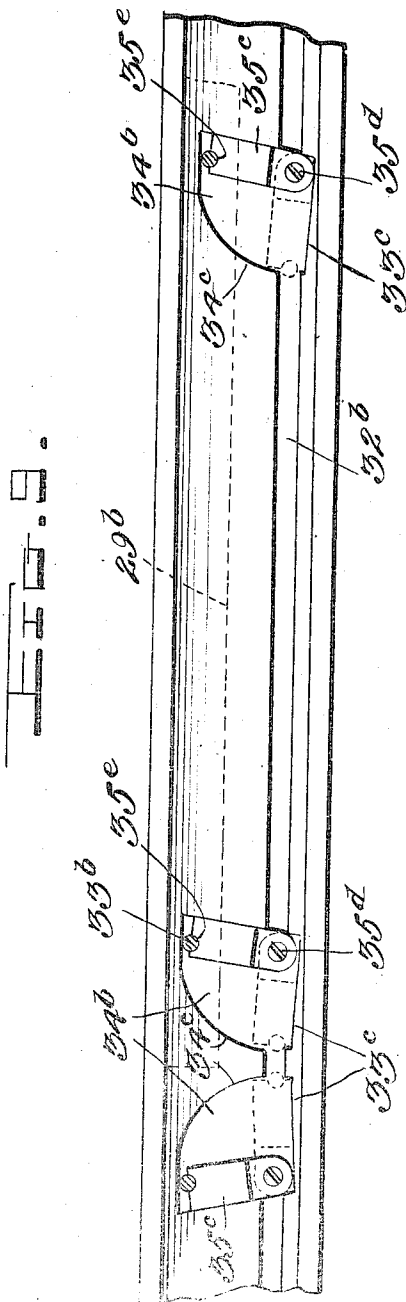
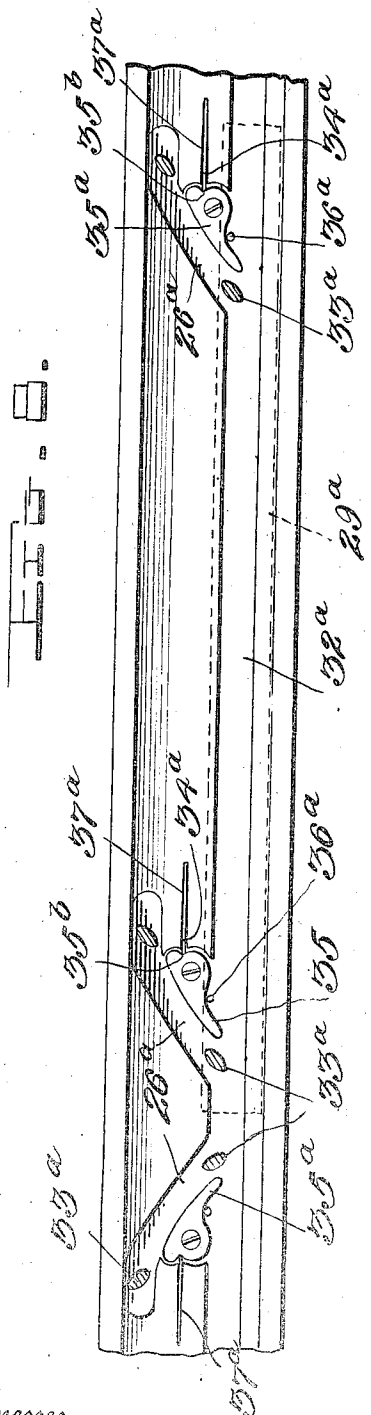
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE

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SLIDING DOORS FOR SHOW-CASES.

1,032,702.

Specification of Letters Patent. Patented July 16, 1912.

Application filed April 4, 1911. Serial No. 618,861.

To all whom it may concern:

Be it known that we, ROBERT L. PRICE and GUY A. DELAPLAIN, citizens of the United States, residing at Collegeport, in the county of Matagorda and State of Texas, have invented certain new and useful Improvements in Sliding Doors for Show-Cases, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in sliding doors for show cases, vehicles and other structures, the object of the invention being to provide sliding doors and guides and operating devices therefor, whereby the doors may be operated in either direction, and whereby when either of the doors is opened it passes to the inner side of the other door; and when closed moves outwardly so as to lie in a common plane with the other door.

The invention consists in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings Figure 1 is a vertical transverse sectional view of a show case provided with sliding doors, and guiding and operating devices therefor, in accordance with our invention; Fig. 2 is a longitudinal sectional view of the same on the plane indicated by the line *a-a* of Fig. 1; Fig. 3 is a rear elevation of the same; Fig. 4 is a horizontal sectional view of the same on the plane indicated by the line *b-b* of Fig. 3; Fig. 5 is a detail perspective view of one of the switch bars; Fig. 6 is a detail sectional view on the plane indicated by the line *c-c* of Fig. 3; Fig. 7 is a detail perspective view of one of the handles; Fig. 8 is a detail sectional view showing a modified construction of our invention; and Fig. 9 is a similar view showing another modification.

While we herein show and describe our improved sliding doors as in use in a show case, we would have it understood that our improved doors and operating devices therefor may be employed as vehicle doors or as doors for other structures, and hence we do not limit ourselves in this particular or as to the structure in connection with which our improved doors are used.

For the purposes of this specification, the show case 1 is shown as provided in its top with a pair of longitudinal bars 2, 3 which

are provided in their opposing sides with guide grooves 4, there being a flange 5, at the upper side of each guide groove, and a flange 6 at the lower side thereof. These bars 2, 3 are connected together at their ends, by bars 7, and at their centers by a cross bar 8. A pair of sliding doors 9, 10 operate and are slidably mounted in the guide grooves 4. The thickness of each sliding door is about equal to one half the width of each guide groove so that the said sliding doors may lie one upon the other, when they are both at the same end of the guide grooves, and the doors when both of them are closed, may lie in the same plane, and bear against the upper flanges 5 of the guide grooves.

In the bottoms of the guide grooves are switch bars 11, 12, which incline in opposite directions, and are disposed in opposite ends of the show case. These switch bars operate in connection with the doors 9, 10, respectively, each switch bar having a pivot 13 spaced from one end, and being adapted to bear at its opposite end on the base flange 6 of the guide groove in which it is disposed. These switch bars may be disposed either at an angle to the guide grooves or parallel therewith, according to the position of the doors. The door 9 is provided at opposite sides and near its ends with outwardly projecting tappets 14, to operate in connection with the switch bars 11. The door 10 has similar tappets 15 to operate in connection with the switch bars 12. Above each switch bar 11 is a stop pin 16, and above each switch bar 12 is a similar stop pin 17. These stop pins limit the upward movement of the free ends of the switch bars and serve in connection with the doors and their tappets to hold the switch bars in horizontal position, parallel with the guide grooves 4, when the doors are in closed position, and both disposed in the same plane. The tappets of the doors when the doors are in closed position, bear upon the switch bars at a point to one side of the pivots thereof, so that the weight of the doors turns the switch bars to a position parallel with the guide grooves and holds them in engagement with the stop pins 16, and hence it will be understood that the switch bars serve to support the doors and to close them against the upper or outer flanges 5 of the guide grooves, the doors being thus disposed end for end, slightly spaced.

apart, with the space between them covered by the cross bar 8, and both of the doors being in the same plane. Each of the doors is beveled on its under side at its inner end as at 18. By thus providing the doors with the beveled inner ends, each door may be moved toward the other, to open position, and as the door which is being opened is moved longitudinally toward the opposite end of the case, its tappets as soon as they pass over the centers of the pivot of the switch bars which support said door, cause the switch bars by reason of the weight of the moving door, to drop to an inclined position with respect to the guide grooves, and bear upon the bottom flanges 6 thereof, thus forming inclined planes to direct the door downward to the bottom of the guide grooves, the supporting tappets of the moving door when they have cleared and descended the inclined switch bars, bearing directly on the bottom flanges of the guide grooves, and permitting the moving door to lie parallel with and under the other door. To illustrate and referring particularly to Fig. 2, when the door 10 is in opened position its right hand tappet 15 will be under the left hand switch 12 so that the latter will be held elevated, parallel with the flange 6. Hence when the door 10 is moved to the right to close it its right hand tappet will merely move from under the left hand switch 12 and let the latter drop to inclined position, and as the said door nears the limit of its closing movement its right hand tappet 15 will slide up the right hand switch 12 at the same time that its left hand tappet will slide up the left hand switch and hence the door will be directed upwardly and also to the right and caused to bear against the upper and outer flanges 5 of the guide groove and to lie in a common plane with the other door.

Each door is provided on its under side near one end with an arm 19, which extends transversely under the bar 3, and is provided with an up-turned end 20. In connection with each door we provide an endless operating cord 21 which passes around guide pulleys 22, with which the frame of the top of the case is provided. These endless guide cords are sufficiently slack to compensate for the vertical movement of the doors between the upper and lower sides of the guide grooves, and each cord has on its outer lead, which extends on the rear side of the show case, a handle 23 by which it may be pulled in the required direction to open or close the door to which the cord is connected. Each handle 23 has on the inner side of its base or inner end, a series of teeth 24 any one of which may be engaged with a locking tooth 25 with which the show case is provided and which projects from the rear side thereof.

In practice, a suitable stop is provided to limit the movement of the doors when the

doors are opened and prevent the tappets near the outer ends of the doors from slipping beyond the extreme free ends of the switch bars near the center of the case and, hence, rendering the doors inoperative. Such a stop is shown at 19^a in Fig. 1 arranged medially of the bar 3, on the front side of said bar and in the path of the arms 19 connected to the doors. When either door is opened its arm 19 comes in engagement with the stop 19^a and limits such movement of the door.

The rear side or frame of the show case is here shown as provided in the opposing sides of its bars with guide grooves 26, each of which has a flange 27 at its inner side and a flange 28 at its outer side. A pair of vertically disposed sliding doors 29, operate in these guide grooves 26. Each guide groove is provided in its bottom at a point midway between the sides thereof, with a guide flange 30 so that guide-ways 31, 32 are provided in the guide grooves at opposite sides thereof. The doors 29 are provided near their ends with tappets 33, to operate in the said guide ways. Fixed switch bars 34 are disposed in the bottoms of the guide grooves near the ends, and also near the centers thereof, at suitable points, and opposite the said fixed switch bars are movable switch bars 35, each of which is pivoted as at 36, and is provided with a spring 37 to normally hold it in open position away from the companion fixed switch bar so that the fixed and pivoted spring-pressed switch bars form inclined guide-ways near the ends and also near the centers of the guide grooves 26. When the doors 29 are in closed position, their tappets 33 are in contact with the outer ends of the pivoted spring pressed switch bars 35, so that the doors are held thereby against the flanges 27 of the guide grooves 26, hence the doors 29 when in closed position are both in the same plane, and in line with each other. When either of the doors is opened, its tappets run between certain of the fixed switch bars 34, and pivoted spring-pressed bars 35 so that the door is moved laterally as well as longitudinally, to first clear the other door, become disposed on the outer side thereof, and to then move longitudinally thereon. Hence when each door is started to be moved to open position, the coacting fixed switch bars 34 first cause the said door to move laterally so as to clear the other door, and as the door nears the limit of its movement when being closed, its tappets engage coacting spring-pressed pivoted switch bars 35 which move it laterally and dispose it in a common plane with the other door. Owing to the fact that when each door is in closed position, its tappets by coaction with the outer ends of the pivoted switch bars, keep the latter parallel with the guide grooves,

the doors are free to move in either direction.

The stops to limit the inward movement of the doors 29, when they are opened, are formed by the handles 29^a which, in Fig. 3, are shown on the rear sides of the doors. These handles, when the doors are opened to the required extent strike the cross bar 29^b which forms a portion of the rear side of the case. Any suitable form of stop may be provided to limit the opening movement of the doors and we would have it understood that we are not limited as to this particular.

In Fig. 8 we show another modified structure of our invention in which each of the switch bars 35^a is normally moved by a spring 37^a against a stop pin 36^a, the switch bar having its lower end spaced from the bottom of the groove 32^a. The spring 37^a is fixed at one end in a recess 34^a and its free end engages a notch 35^b with which the switch bar is provided. The tappets 33^a of the doors 29^a are substantially elliptical in shape and their axes are in line with the guide grooves 26^a.

In Fig. 9 we show another modified form of our invention in which the switch elements 35^c are bars which are pivotally mounted at their lower ends as at 35^b and provided, each at its free end, with a notch 35^c. Each of these bars or switch elements operates in a recess 34^b, the curved edge 34^c of which is concentric with the pivot 35^d and is spaced a slight distance from the free end of the switch element and normally the switch element is maintained in a slightly inclined position with respect to the bottom of the grooves 32^b by means of an inclined face 33^c. The tappets 33^b of the doors 29^b, when the doors are moved in one direction, engage the notches 35^c of the switch elements 35^c and the movement of the doors turns said switch elements on their pivots so that the switch elements co-act with the tappets of the doors to move the latter outwardly and dispose them both in the same plane.

While we have herein shown and described several modifications of our invention we would have it understood that other

changes may be made in the form, construction and proportion of the several parts without departing from the spirit of the invention and within the scope of the appended claims.

We claim:—

1. In combination with a sliding door and guides in which the door is longitudinally and also laterally movable, pivoted switches in the guides and the pivot axes of which are spaced from the ends of the switches, and tappets projecting from opposite sides of the door, spaced from the ends thereof and so disposed with reference to the switches that when the door is opened and at one side of the guides the tappets near the front end thereof will lie under and hold the corresponding switches in parallel position with respect to the sides of the guides, so that when the door is moved to closed position the last named switches will be first cleared by the last named tappets and permitted to move to inclined position, and the tappets of the door as it nears the limit of its closing movement will simultaneously ride up on the switches and move the door laterally and against the opposite side of the guides.

2. In combination with a sliding door and guides in which the door is longitudinally and laterally movable, pivotally mounted switches in the guides, said doors and switches having coacting means to cause the switches to be turned at the initial movement of the door when the latter is opened and near the final movement of the door when the latter is closed, to cause said switches, owing to the longitudinal movement of the door, to also move the latter laterally toward one side or the other of the guides, according to the direction in which the door is moved.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

ROBERT L. PRICE.
GUY A. DELAPLAIN.

Witnesses:

J. H. ADAMS,
W. H. BAUR.