J. C. FARQUHAR.

BOOKCASE.

APPLICATION FILED AUG. 30, 1920.

1,379,091.

Patented May 24, 1921

4 SHEETS—SHEET 1.

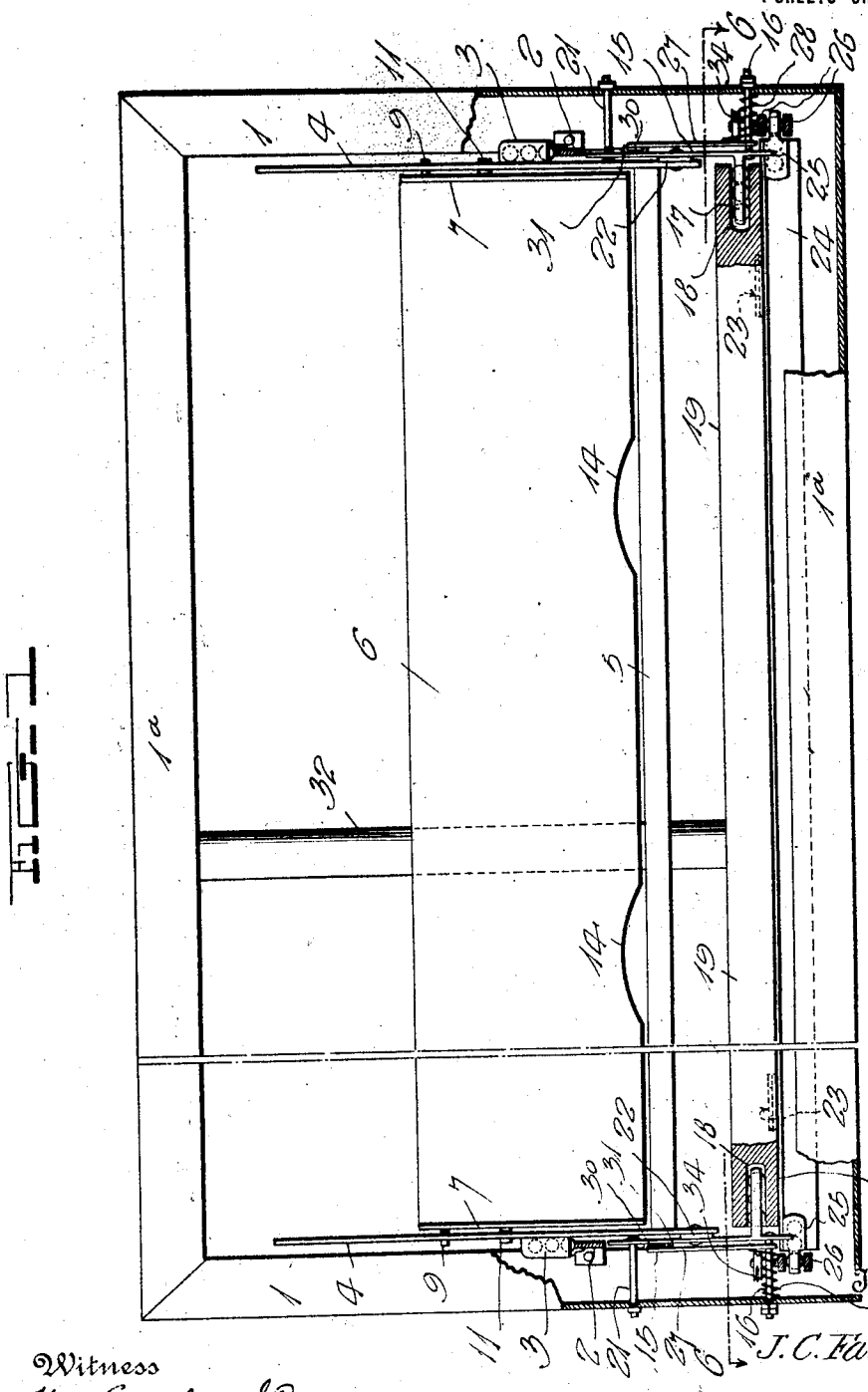


FIG. 1.

Witness
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4 SHEETS—SHEET 2.

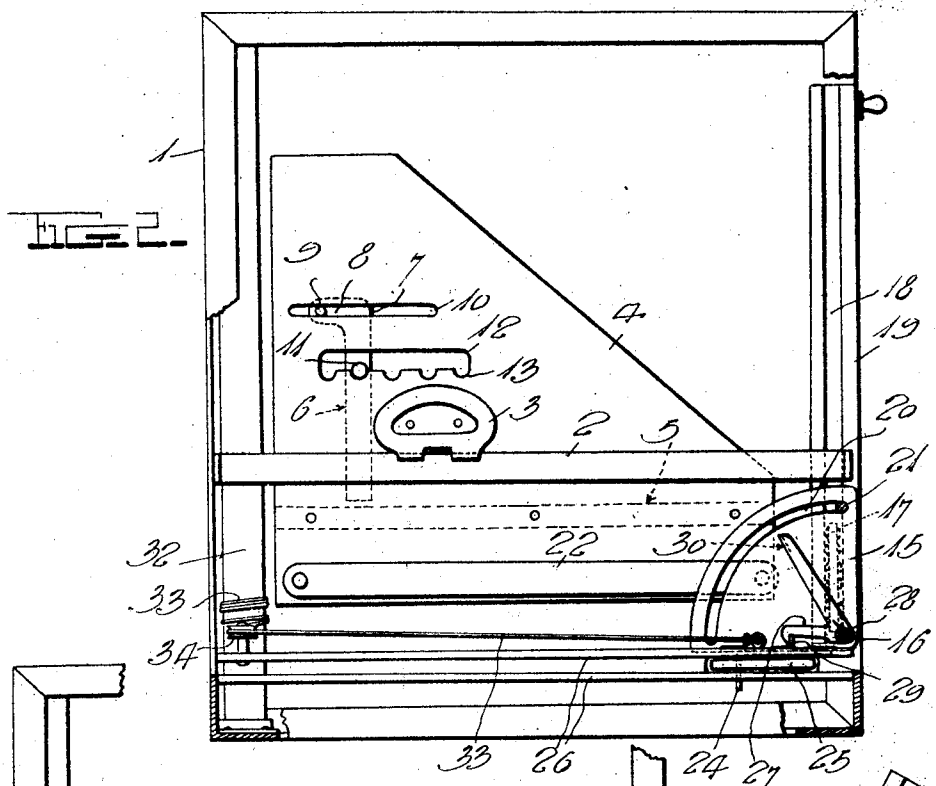


FIG. 2.

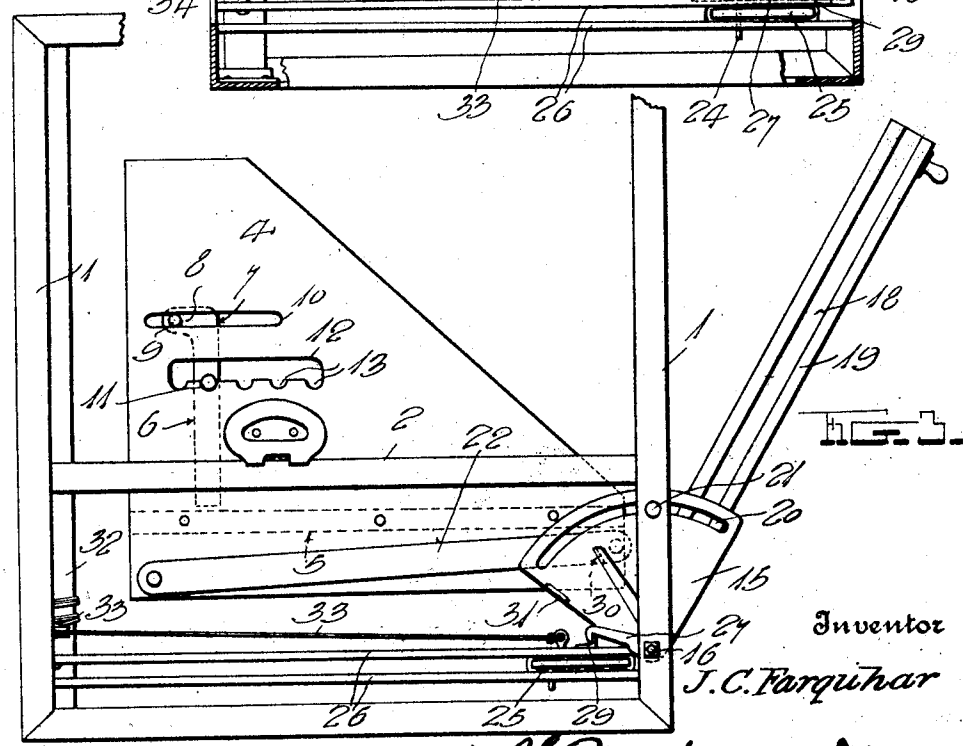


FIG. 1.

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4 SHEETS—SHEET 3.

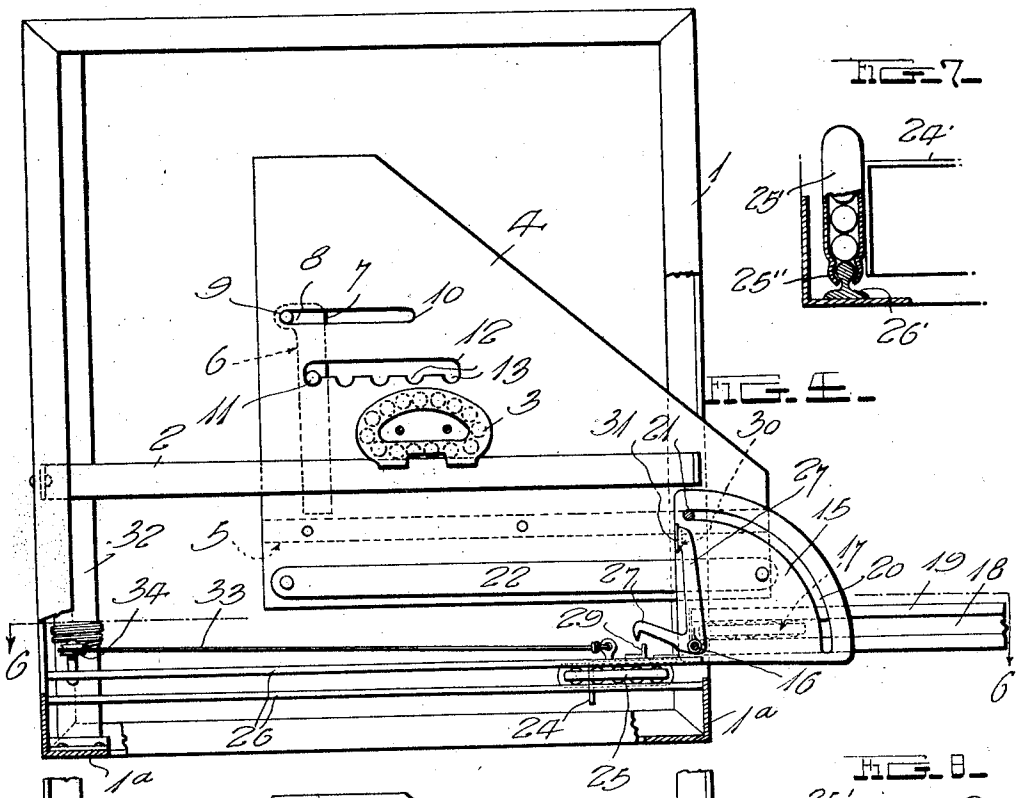
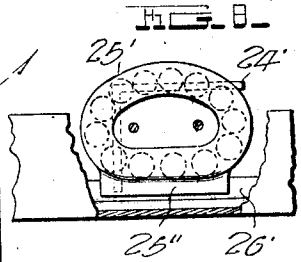


FIG. 7.

FIG. 8.



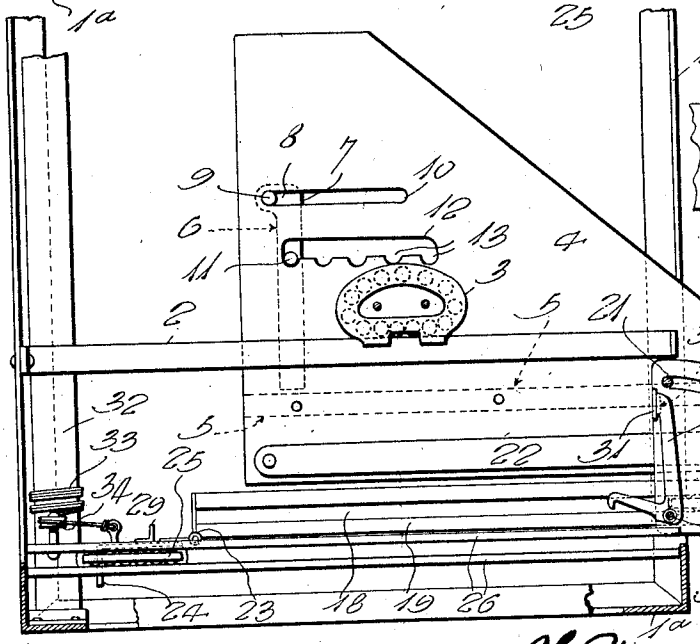


FIG. 5.

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4 SHEETS—SHEET 4.

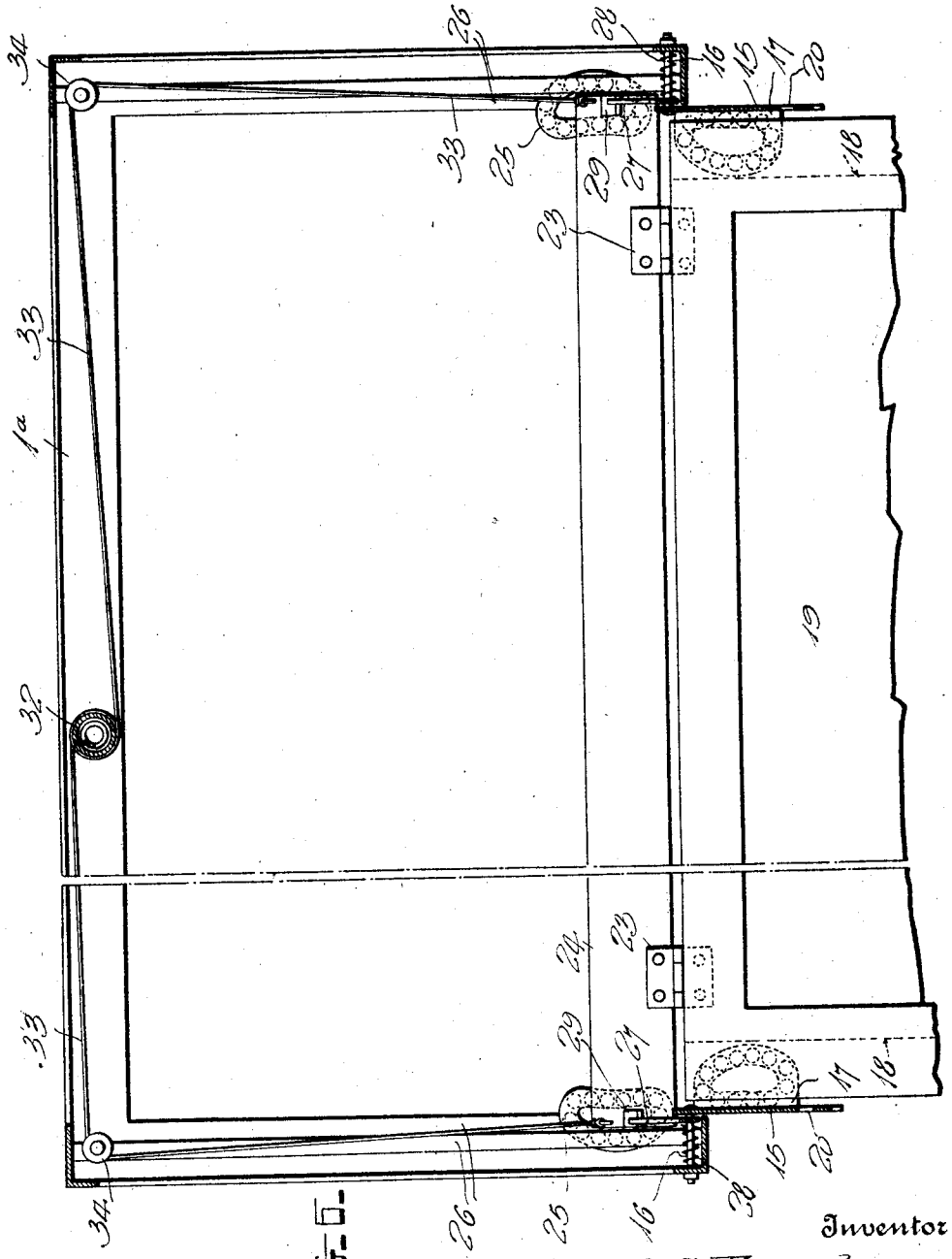


FIG. 6.

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UNITED STATES PATENT OFFICE.

JAMES C. FARQUHAR, OF ZANESVILLE, OHIO.

BOOKCASE.

1,379,091. Specification of Letters Patent. Patented May 24, 1921.

Application filed August 30, 1920. Serial No. 406,805.

To all whom it may concern:

Be it known that I, JAMES C. FARQUHAR, a citizen of the United States, residing at Zanesville, in the county of Muskingum and State of Ohio, have invented certain new and useful Improvements in Bookcases; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in book-cases and the present disclosure is directed to one of the sectional type, although it will be understood that the invention need not be restricted to use upon this particular form of case.

One object of the invention is to provide a book-case door which projects a book shelf forwardly when opened and is then slidable in the book-case while leaving the shelf in a projected position in which the books are readily accessible.

Another object of the invention is to provide novel means for mounting the door, for limiting its forward swinging, and for supporting said door while sliding it rearwardly into the book-case.

A further object is the provision of a novel arrangement of parts for holding the lower end of the door against rearward movement until said door is swung forwardly approximately to the proper position for sliding it in the case.

Yet another object is to provide a unique back for the book shelf which is adjustable according to the sizes of the books.

With the foregoing and minor objects in view, the invention resides in the novel construction and combination of parts hereinafter fully described and claimed, the descriptive matter being supplemented by the accompanying drawings.

Figure 1 is a front elevation of a book-case constructed in accordance with my invention, with the door in open position, parts being broken away and in section.

Fig. 2 is an end elevation partly broken away and in section showing the relation of parts when the door is closed.

Fig. 3 is a view similar to Fig. 2 but illustrating the relative positions of parts as the door swings forwardly.

Fig. 4 is a view similar to Fig. 3 illustrating the manner in which the door holding means is released and the book shelf projected when the door is swung forwardly to the maximum.

Fig. 5 is an end elevation partly in section showing the door opened and shifted rearwardly into the case, leaving the book shelf projected.

Fig. 6 is a horizontal sectional view taken substantially on line 6—6 of Fig. 4.

Figs. 7 and 8 are detail sectional views partly in elevation, showing a different manner of mounting the ends of the door-carrying carriage bar on tracks.

The book-case proper may be of any desired form, either of wood or metal, but is preferably built up upon an angle iron frame which includes two rectangular end frames 1 and longitudinal bars 1ª connecting them. Each end frame 1 includes a horizontal track 2 extending from the front to the back of the case and serving as a support for a shoe 3, the two shoes serving to support a pair of side cheeks 4 upon said tracks. The shoes 3 are preferably of ball bearing type as indicated in the drawings. The book shelf 5 extends between and is suitably secured to the cheeks 4 and I prefer to employ an adjustable back 6 for said shelf. The ends of the back 6 are shown provided with metal strips 7 whose upper ends are directed rearwardly as shown at 8 in the end elevations, said portions 8 being provided with outwardly extending pins 9 received in horizontal slots 10 with which the cheeks 4 are provided. A suitable distance below their rearwardly directed ends 8, the strips 7 are provided with other outwardly extending pins 11 which are spaced forwardly from the pins 9 and received in other slots 12 below the slots 10, the lower edges of said slots 12 being provided with spaced seats or notches 13 with which the pins 11 are engageable. The lower edge of the shelf back 6 by preference is cut away as shown at 14 so that said edge may be grasped with both hands and it will then be seen that forward movement of said edge around the pins 9 as pivots will free the pins 11 from the seats 13 previously receiving them, thereby allowing the shelf back to be adjusted forwardly or rearwardly as required. When the proper adjustment is attained, the pins 11 are again seated in certain of the seats 13 and since the shelf back is held in vertical position by contact of the books

therewith, said back will remain in the position at which it has been set.

A pair of preferably segmental plates 15 are pivoted to the inner sides of the end frames 1 at their lower front corners, bolts 16 being shown for this purpose. These plates carry inwardly extending relatively flat shoes 17 which are slidably received in grooves 18 formed in the opposite vertical edges of the door 19 which closes substantially the entire front of the book-case. The plates 15 also serve as means for limiting the outward swinging of the door 19 and for this purpose I have shown them provided with arcuate slots 20 receiving suitable stop-pins 21 carried by the front bars of the frames 1. When the door is swung outwardly from the position shown in Fig. 2, the plates 15 swing also as shown clearly in Fig. 3 and when in the position of Fig. 4, the pins 21 limit the movement of said plates 15 thereby positioning the door horizontally so that it may be slid rearwardly into the case as shown in Fig. 5. To project the book shelf when the door is opened, I connect the cheeks 4 with the plates 15 by links 22. By comparing the several end elevations, it will be seen that whereas the side cheeks 4 and the book shelf 5 are forwardly projected when the plates 15 are swung forwardly upon opening of the door, said door may be shifted rearwardly into the book-case as in Fig. 5, while leaving the shelf in a projected position, making the books readily accessible.

In the preferred form of construction, the door 19 is hinged at 23 to a longitudinal carriage bar 24 operating within the lower portion of the case, the ends of said bar 24 being provided with appropriate shoes 25 running between tracks 26 which extend from front to rear of the end frames 1 as shown clearly in Figs. 1 to 6. This bar 24 supports the door when the latter is closed and also assists greatly in sliding said door into the case when it is hinged rearwardly. I prefer to employ some adequate means for holding the bar 24 against any rearward movement until the door 19 has been swung to a completely horizontal position as depicted in Fig. 4, and although such means might assume any appropriate form, I intend in most instances to mount L-shaped latches 27 on the bolts 16 which form the pivots of the plates 15, said latches being projected by appropriate springs 28 (see Fig. 6) into engagement with stops 29 carried by the bar 24, these stops being clearly shown in the several end elevations and in Fig. 6. The upper ends of the latches 27 are provided with lateral lugs 30 adapted to be struck by similar lugs 31 on the plates 15 when the latter are swung outwardly and downwardly to the position shown in Fig. 4. The latches are thus released to allow the bar 24 to move rearwardly thereby permitting the door 19 to be moved into the case, but as soon as the door is swung to any position other than the horizontal one shown in Fig. 4, the springs 28 instantly apply the latches 27 so as to hold the bar 24 and consequently the rear edge of the door 19, against any rearward movement whatsoever.

Although not essential, I prefer to equip the book-case with a spring roller 32 to wind cables 33 on said roller, and to connect said cables with the ends of the bar 24 as shown in Fig. 6, whereby the moment the latches 27 are released, the spring roller will exert its action to either move the door 19 rearwardly into the case or to assist during this operation. This spring roller 32 is preferably located at the center of the frame structure, adjacent its rear side as shown, and the cables 33 are trained around appropriate guides 34 at the rear corners of said frames.

When the door 19 is closed, the parts stand as shown in Fig. 2, the latches 27 then holding the bar 24 against rearward shifting. As the door is swung outwardly as indicated in Fig. 3, the links 22 pull upon the cheeks 4 thereby projecting the latter along the tracks 2 so that when the door reaches the horizontal position shown in Fig. 4, the books will be readily accessible. When this position of parts is reached, the latches 27 are automatically released from engagement with the stops 29 with the result that the door 19 is free to slide into the case upon the shoes 17 (see Fig. 5). This rearward sliding of the door may be effected totally by hand, totally by spring action, or jointly by both.

To close the case, the door 19 is pulled forwardly from the position depicted in Fig. 5 and is then swung upwardly, the latches 27 being applied by the springs 28 to engage with the stops 29, the moment this door starts on its upward swinging. As the door is now closed, the plates 15 are swung rearwardly thereby forcing upon the links 22 and returning the book shelf to its initial position.

While the novel means for mounting the door is preferably used in connection with a projectile and retractable book shelf, it will be obvious that the shelf might in some instances be fixedly mounted within the case, under which circumstances, the plates 15 would not be linked to the shelf or parts movable bodily therewith.

In Figs. 7 and 8, I have indicated the door-carrying carriage bar at 24′ and instead of employing the shoes 25 and spaced tracks 26 above described, I employ a single undercut track 26′ at each end of the case, provide a ball bearing shoe 25′ resting on said track, and equip said shoe with a pair of curved flanges 25″ which embrace the

ball of the track so that the shoe is held against jumping therefrom. It is of course understood that the same construction is employed at each end of the carriage bar 24′ and it will be seen that when this arrangement is used, and a similar construction employed in connection with the tracks 2 and shoes 3, the case may be used to operate either horizontally or vertically as the case may require.

From the foregoing taken in connection with the accompanying drawings, it will be seen that although my invention is of comparatively simple and inexpensive nature, it will be highly efficient and in every way desirable, and since excellent results are obtained from the several details disclosed, said details may be followed if desired. I wish it understood however that within the scope of the invention as claimed, numerous changes may be made.

I claim:

1. The combination with a case of the character described having a forwardly swinging door; of plates pivoted to said case at opposite ends of said door and slidably supporting the latter to permit it to move into the case when swung to a horizontal position, a projectable and retractable shelf mounted in said case, and means connecting said shelf with said plates for projecting the former when the latter are swung forwardly by said door.

2. The combination with a case of the class described having a forwardly swinging door; of a pair of plates pivoted to said case at opposite ends of the door and having inwardly extending shoes, the ends of the door having longitudinal tracks slidably engaged with said shoes whereby said door may slide rearwardly into the case when swung to a horizontal position.

3. The combination with a case of the class described having a forwardly swinging door provided in its opposite ends with longitudinal grooves; of a pair of vertical plates pivoted to said case at opposite ends of said door, and relatively flat shoes extending inwardly from said plates and slidably received in said grooves.

4. The combination with a case having a forwardly swinging door; of a carriage bar movable forwardly and rearwardly in said case, hinges connecting said carriage bar with said door, and a pair of plates pivoted to the case at opposite ends of the door for limiting the outward swinging of the latter, said plates having means for slidable engagement with the door as the latter is moved rearwardly in said case.

5. The combination with a case having a door: of horizontal tracks extending from front to rear of said case at its ends, a carriage bar extending from end to end of said case and having shoes at its ends for sliding forwardly and rearwardly along said tracks, hinges connecting said carriage bar with said door, a pair of vertical plates pivoted to the ends of said case and having inwardly extending shoes slidably engaging the opposite ends of said door to coöperate with the aforesaid shoes and carriage bar in guiding the door rearwardly into the case, and means coöperable with said plates for limiting the outward swinging of said door.

6. A case having a door adapted to be swung outwardly and then shifted rearwardly into the case, and a movable latch for normally holding said door against rearward shifting, and means for automatically releasing said latch by swinging said door to a substantially horizontal position.

7. The combination with a case having an outwardly swinging door; of tracks extending from front to rear of the case at its ends, a carriage bar extending from end to end of said case and having its ends slidably engaged with said tracks, hinges connecting said carriage bar with said door, latches pivoted to the ends of the case for holding said carriage bar normally against sliding rearwardly, a pair of plates pivoted to said case and slidably engaged with said door for limiting the forward swinging of the latter, and spring means for normally applying said latches, said latches and plates having co-acting portions for releasing the former when the latter are swung outwardly to the maximum by outward swinging of the door.

8. The combination with a shelf having an upstanding back movable with respect thereto; of upstanding cheeks at the ends of said shelf and back and fixed with respect to the former, said cheeks having upper and lower horizontal slots, the lowermost of which is provided in its bottom with spaced seats, pins extending outwardly from the ends of said back and slidably received in the uppermost slots, and other pins spaced both horizontally and downwardly from the first named pins and adapted for reception in any of the aforesaid seats.

In testimony whereof I have hereunto set my hand.

JAMES C. FARQUHAR.