To all whom it may concern:

Be it known that I, Levin Faust, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Knockdown Sectional Furniture, of which the following is a specification.

One of the objects of this invention is to provide means for connecting together the parts of an article of furniture or of a furniture section so that said parts may be conveniently separated in order that the article or section may be shipped or stored in compact form, and so that said parts may be readily assembled to form the complete article or section.

Another object of my invention is to provide means for uniting the sections of a sectional bookcase or other article of furniture.

A further object is to provide improved means for interlocking adjacent stacks or tiers of sections.

A further object is to provide improved means for causing the door of a bookcase section to move in and out without twisting or binding.

A further object is to provide improved means for removably supporting the door in the section.

The invention also relates to the other improvements in knockdown sectional furniture hereinafter set forth.

In the accompanying drawings, Figure 1 is a perspective view of a knockdown sectional bookcase consisting of a base, a book section and a top, and embodying the features of my invention. Figure 2 is a perspective view showing the under side of the top section. Figure 3 is a perspective view of the book section. Figure 4 is a similar view of the base section. Figure 5 is a fragmental vertical sectional view taken through the top section and the book section below it. Figure 6 is a cross section of the bottom of the book section. Figure 7 is a fragmental vertical section through one end and the bottom of a book section. Figure 8 is a section on line 8-8 of Figure 7. Figure 9 is a perspective view of a portion of the means for uniting two vertically aligned sections. Figure 10 is a vertical sectional view through the door. Figure 11 is a fragmental perspective view of the door and its supporting means. Figure 12 is a perspective view showing the construction of each end wall of the book section. Figure 13 is a sectional view illustrating the means for interlocking adjacent stacks. Figure 14 is a perspective view of one of the interlocking members.

In the embodiment selected for illustration, each book section 1 consists of two ends 2, a bottom 3 and a back 4. The joint between the ends and the bottom, in this instance, consists of the connection shown 65 in Figure 7. The lower edge of each end wall 2 is rabatted at 5, a groove 6 being formed in one wall of the rabbot and a downwardly-extending rib 7 being provided at the inner face of the end. In each end of the bottom 3 is formed a groove 8 to receive the rib 7, a rib 9 on said bottom entering the groove 6. The bottom is rabatted at 10 to provide between it and the end 2 a groove 11 for a purpose to appear hereinafter. The rib 7 is not semicylindrical in form, the lower side of said rib being curved on the arc of a circle of larger diameter than that upon which the upper side is formed, thus giving said rib the shape indicated in Figure 7. The groove 6 conforming to this shape, the end 2, the bottom 3 with said end leaning inward, inserting the rib 9 in the groove 8, and tilting the end 2 into an upright position, the rib 9 entering the groove 8 as the end reaches a vertical position. When the parts are thus interengaged, tilting of the end 2 outward past a vertical plane is prevented. The ends 2 are properly positioned upon the bottom 3 by means of a projecting portion 12 upon each end 2, adapted to lie within a notch 13 formed in each end of the bottom (Figure 8). The upper ends of the end walls 2 are tied together by a rod 14 having down-turned ends 15 adapted to lie in openings 16 formed in said ends.

The back 4 is mounted in vertical grooves 17 (Figure 12) formed in the inner faces of the ends 2, in a groove 18 (Figure 6) in the upper side of the bottom 3, and in a groove 19 in the bottom of the top section 20 and the lower side of each bottom 3. The connection between two vertically-aligned book sections comprises, in this instance, a tongue 21 formed upon the upper end of each end wall 2 and adapted to enter the groove 11.

In the ends of the top section 20 are formed
grooves 22 (Figs. 2 and 5) to receive the tongue 21 upon a book section. The body of the tie rod 14 lies within a groove 23 (Figs. 2 and 6) formed in the bottom of each book section and the top section. Every two adjacent sections of a stack are secured together, in this instance, by means comprising a stud 24 seated in an opening in the upper end of each end 2 of each book section and in each end of the base section. The stud 24 may be secured in place in any suitable way, as, for example, by means of a screw 25 seated in the section and passing through an opening in said stud. Each book section and the top section has in its lower side openings 26 to receive the studs 24 of a book section or the base section. The superposed section is secured to the section next below it by screws 27 or equivalent devices entering openings 28 in the studs of said last mentioned section.

As shown in Fig. 2, the means for aligning the lowermost book section with the base section is a slight modification of the joint between two adjacent book sections. Instead of a long tongue 21 a shorter tongue 29 is provided to lie within the groove 11, and a stud 30 upon the base section is adapted to enter the groove 22. The door 31 of each book section is pivotally mounted to swing forward and upward into a horizontal plane, and is arranged to be pushed back into the upper part of the section. In the present construction, the ends of the door and the lower edges thereof are rabbeted at 32 (Figs. 1 and 10) to lie within a rabble 33 (Figs. 8 and 12) formed in the bottom and ends of the section. Upon the inner faces of the ends 2, and near the upper edges of said ends, are formed shoulders 34 upon which the door is adapted to slide when pushed rearwardly into the section.

The means for pivotally mounting the door and for causing it to move in a straight line comprises a shaft 35 the ends of which are pivotally mounted in bayonet slots 36 formed in the inner faces of the ends 2, the open ends of said slots facing forward so that said shaft may be withdrawn from its bushes in said slots by an upward and forward movement of the shaft. Upon the inner face of the door and near the upper edge thereof, are fixed two hooks 37 adapted to engage the shaft 35 for pivotally supporting the door upon said shaft. Upon each end of the shaft 35 is fixed a roller 38 around which is wrapped one or more times a cord or similar device 39, both ends of said cord being fixed to the door, as for example, at 40 and 41. In this instance, the roller 38 is preferably grooved as shown in Figs. 10 and 11. The inner face of the door has grooves 42 therein to accommodate the rollers 38. The books 27 form a stop for the outward movement of the door, the inward movement of the door being limited by the engagement of the rollers 38 with the stop 41. The bottom of each book section and the top section is recessed at 43 (Figs. 1, 2 and 6) to accommodate the upper end of the door. The door may be removed, when desired, by lifting the ends of the shaft 35 out of the slots 36.

In operation, the door, when raised to a horizontal position, may be pushed rearwardly into the section, the door sliding upon the shoulders or ways 34. As the door is pushed inwardly, the rollers 38 are compelled to rotate through the flexible connection between said rollers and the door, and being fixed upon the shaft, said rollers compel both ends of the door to move in or out at the same time and at the same speed. Movement of one end of the door ahead of the other end is thereby prevented, and binding of the door in the section obviated. Adjacent stacks of sections may be interlocked by the means shown in Figs. 13 and 14, said means comprising plates 44 located upon the outer sides of the ends 2 of the book sections. Each plate carries a hook 45 and a lug 46. The hook upon one end of the book section faces in a direction opposite to that in which the hook upon the other end of the section faces. Adjacent sections may, therefore, be interlocked by interengaging the hooks 45 as shown in Fig. 13. Such interengagement is attained by lowering one into position behind the other. The hooks or tongues 45 prevent separating movement in a horizontal plane in one direction, and the lugs 46 prevent horizontal movement in a direction at right angles to the first mentioned direction. Each device 44, 45, 46 may be an integral sheet metal stamping. Each book section may be quickly and easily set up by merely interengaging the ends 2 with the bottom 3, connecting said ends with the tie rod 14, slipping the back 4 into the grooves 17 and 18, and placing the ends of the shaft 35 in the pockets or slots 36. The tie rod 14 rigidly limits the ends 2 and the bottom 3, as the joints between said ends and bottom cannot open when the upper ends of said ends 2 are rigidly secured together. To connect two sections together it is only necessary to set one upon the other and pass the screws 27 through the studs 24.

I desire it to be understood that in the practical manufacture of the above described devices I do not regard myself as limited to the precise construction herein set forth, as such as many departures from said construction may be made within the scope of the invention.

I claim as my invention:

1. A knockdown furniture section comprising a bottom; two end walls each having at one end a double tongue-and-groove connection with said bottom adapted to permit of a pivotal movement between said end
walls and the bottom; and means for rigidly connecting the other ends of said end walls.

2. A knockdown furniture section comprising a bottom; two end walls each having at one end a double tongue-and-groove connection with said bottom adapted to permit of a pivotal movement between said end wall and the bottom, one tongue facing in one direction and the other tongue facing in another direction; and means for rigidly connecting the other ends of said end walls.

3. A joint for knockdown furniture comprising two parts each provided with a tongue and a groove, said tongues facing in directions at right angles with each other, one of said tongues being shaped to permit of a pivotal movement between said parts.

4. A joint for knockdown furniture comprising two parts each provided with a tongue and a groove, one of said tongues being adapted to serve as a pivot for one of said parts, the tongue on the other part being shaped to enter its groove during the pivotal movement of the first mentioned part.

5. A right-angle joint for knockdown furniture comprising a part having a groove in its upper side and a tongue below said groove upon its end; and a part having a tongue to enter said groove and a groove to receive the first mentioned tongue.

6. A right-angle joint for knockdown furniture comprising a part having a groove in its upper side and a tongue below said groove upon its end; and a part having a tongue to enter said groove and serve as a pivot for the last mentioned part, the latter having a groove to receive the first mentioned tongue, the latter being shaped to enter its groove during the pivotal movement of the second mentioned part.

7. A joint for knockdown furniture comprising a member having a tongue and a groove; a member also provided with a tongue and a groove; and a projection on one of said members adapted to enter a notch in the other member for preventing movement between said members in the direction of the length of said tongues.

8. In a bookcase, in combination, a case having two opposite walls, each wall having a bayonet slot therein, said slots opening outwardly; a shaft, the ends of which are rotatably mounted in said slots; and a door pivotally connected with said shaft, said door being removable from the bookcase by lifting the ends of said shaft out of said slots.

9. A bookcase comprising a stationary shaft, a door pivoted to swing upon said shaft and to be pushed into the bookcase, rollers fixed to said shaft, and cords fixed to said door, said cords being wound about said rollers.

10. A bookcase having a stationary shaft, a door pivoted on said shaft, horizontal ways in said bookcase for said door, rollers fixed on said shaft, and cords fixed to said door and wound about said rollers, said door being grooved to accommodate said rollers.

11. In a bookcase, in combination, a case having two opposite walls, each wall having a bayonet slot therein, said slots opening outwardly; horizontal ways on said walls above said slots; a shaft having its ends rotatably mounted in said slots; and a door pivoted to swing upon said shaft and a ranged to slide on said ways, said door being removable from the bookcase by lifting the ends of said shaft out of said slots.

12. In a bookcase, in combination, a case having two opposite walls, each wall having a bayonet slot therein, said slots opening outwardly; horizontal ways on said walls above said slots; a shaft having its ends rotatably mounted in said slots; a door having hooks thereon by which it is pivotally suspended from said shaft, said door being adapted to slide on said ways; rollers fixed on said shaft near the ends thereof; and cords fixed to said door and wound about said rollers, said door and shaft being removable from the bookcase by lifting the ends of said shaft out of said slots.

13. Means for interlocking tiers of furniture sections comprising two similar devices, each device comprising a securing plate provided with a tongue adapted to enter and engage with the tongue upon the companion plate, and a lug adapted to prevent separating movement of said tongues in one direction.

14. An integral sheet metal device for interlocking furniture sections consisting of a securing plate, and a tongue and a lug struck up from said plate, said device being adapted to interlock with a similar device upon an adjacent section.

15. In knockdown sectional furniture, in combination, a knockdown section comprising a bottom, two end walls separably connected to said bottom, and a tie rod releasably engaging the upper ends of said end walls, said rod securing said end walls together and spacing them apart; and a superposed section having a groove in its bottom receiving said tie rod, the latter preventing relative displacement of said sections in one direction.

Witnesses:

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WILLIAM JOHNSON.