United States Patent

[11] **3,584,915**

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[73] Assignee **The Vecta Group, Inc.**

[54] **BOOKRACK**
19 Claims, 10 Drawing Figs.

[52] **U.S. Cl.** **297/192**
[51] **Int. Cl.** **A47c 9/14**
[50] **Field of Search** ..... 297/192, 193; 211/11, 43, 181, 184; 248/303, 340, 305, 306, 310; 24/237, 236, 257, 261 WC, 261 SR, 3 K

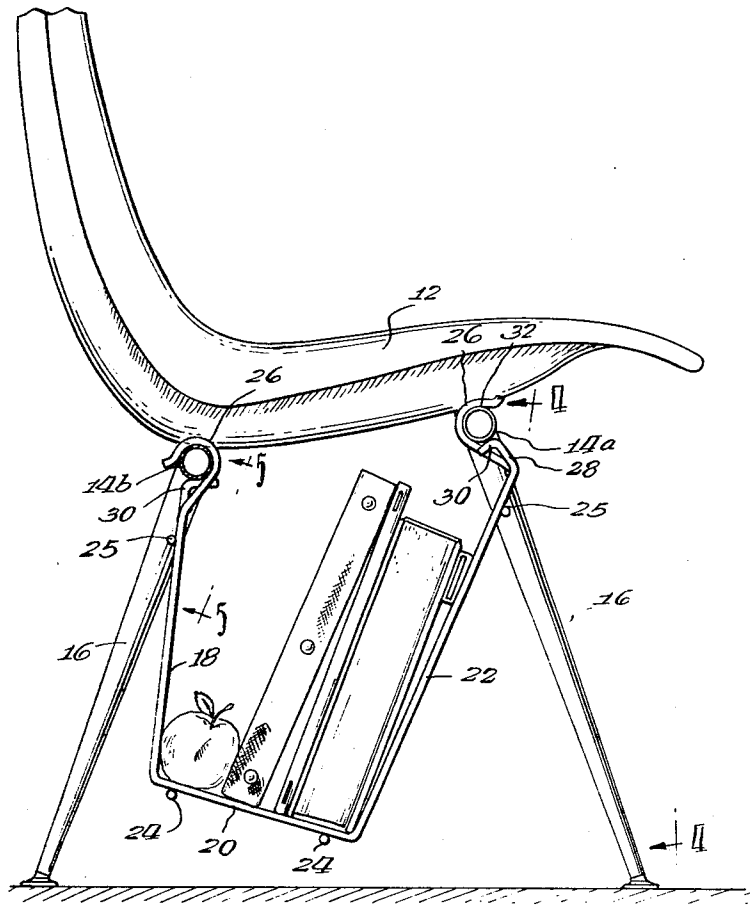
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ABSTRACT: A bookrack for use in combination with a seat having a rigid frame which includes bars extending across the underside of the seat at its front and rear. The bookrack has laterally spaced and generally parallel rods of springable rod stock, at least some of the rods having hooks at their forward and rearward ends engaging the front and rear frame bars. The rods are generally U-shaped to form book supporting means. At least some of the rods have resilient locking means formed integral therewith for engaging the frame bars to prevent the hooks from becoming disengaged from the frame bars. In one form of the invention, the hooks and the locking means are formed on alternate rods. In another form of the invention both the hook and the locking means are formed integral with and on the same rod.



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SHEET 1 OF 3

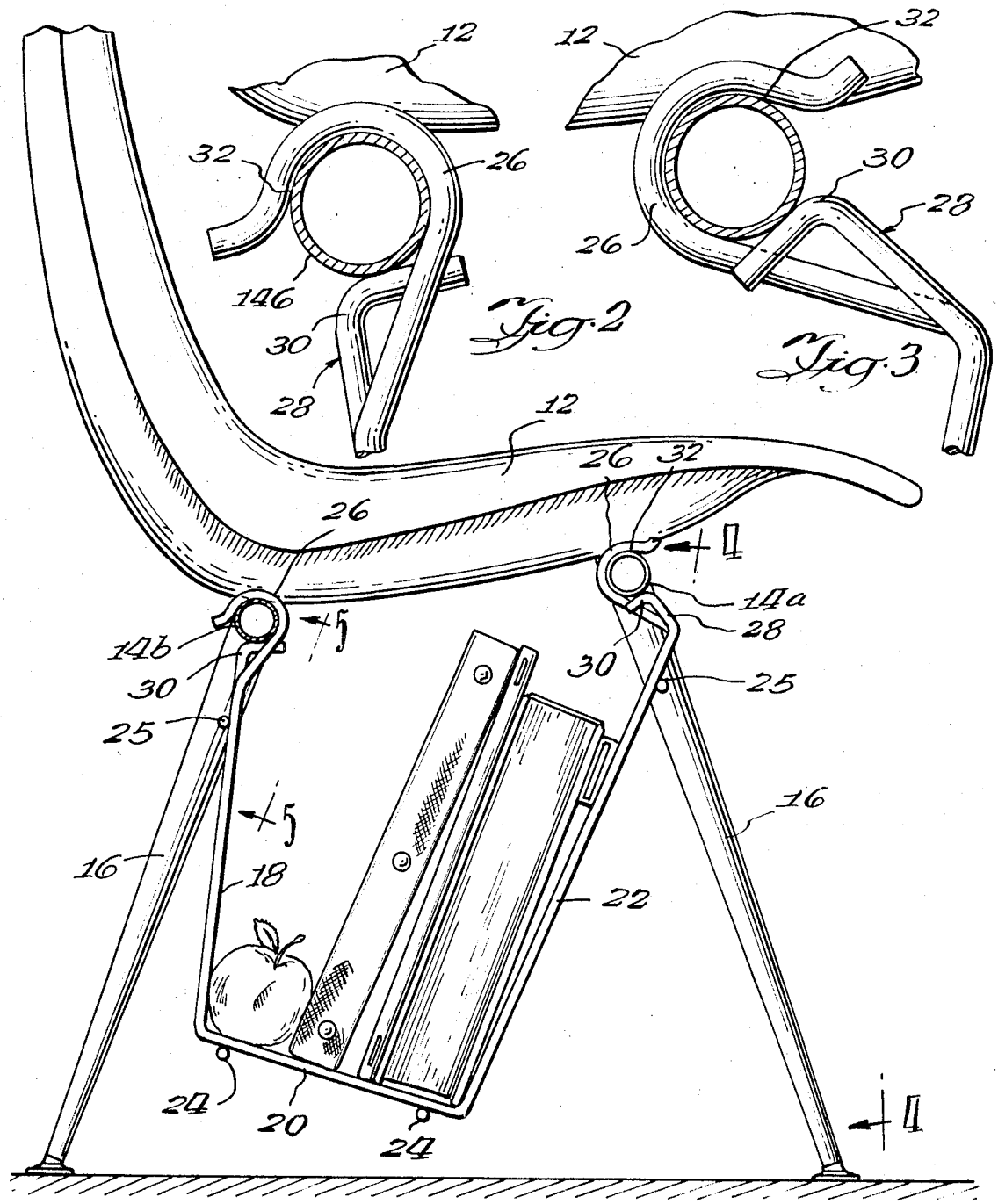


Fig. 1

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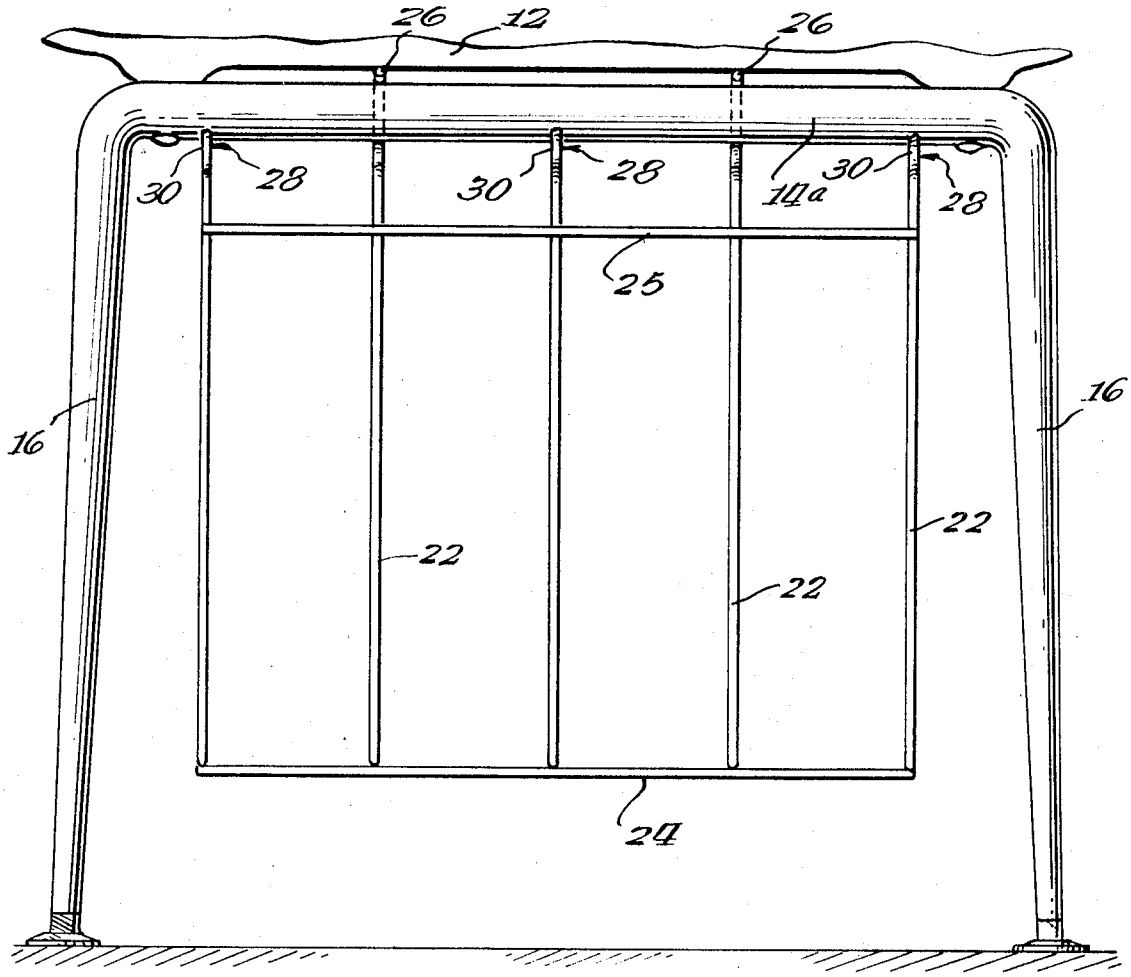

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Fig. 4

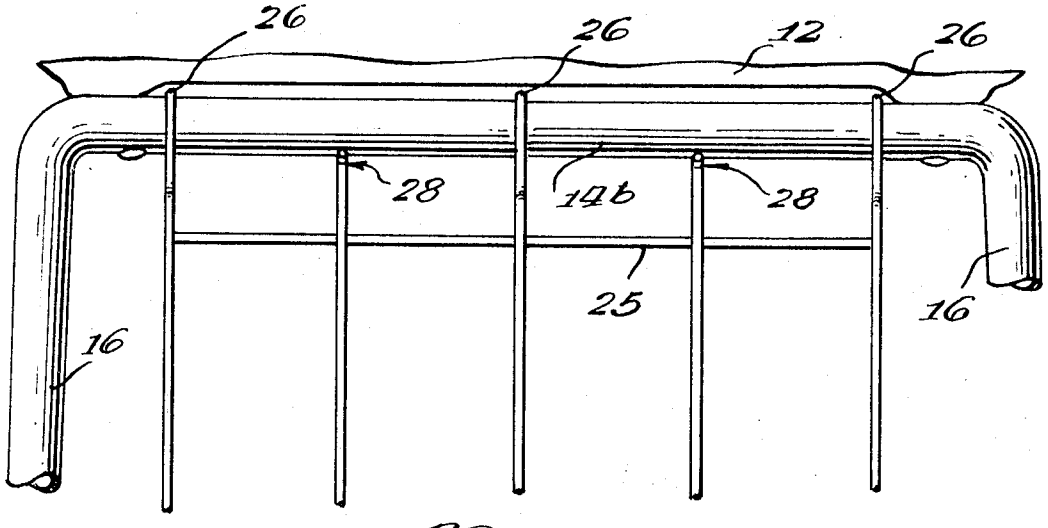

26
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12
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14b
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Fig. 5

Fig. 9

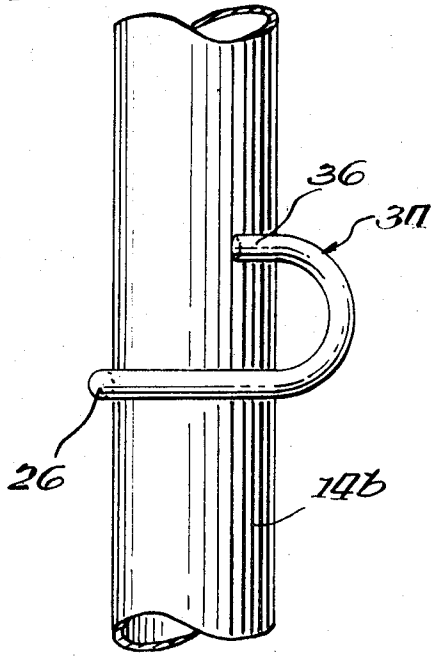


Fig. 6

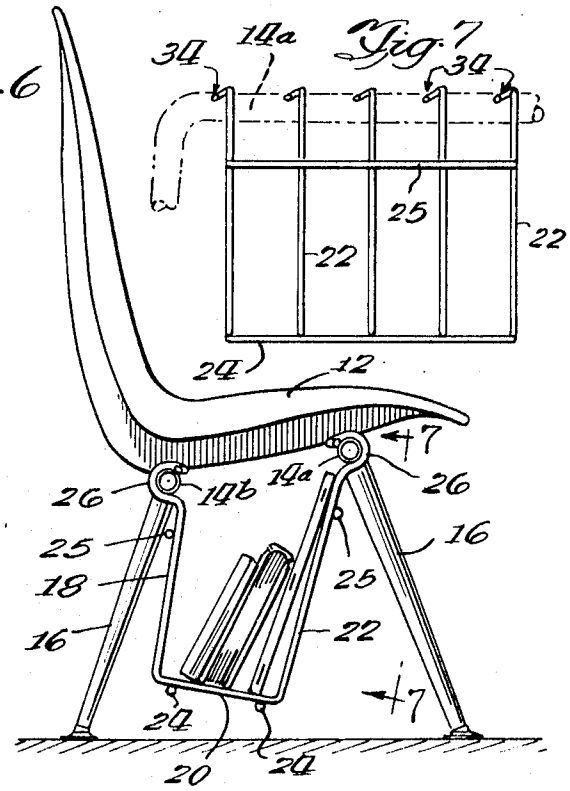


Fig. 6

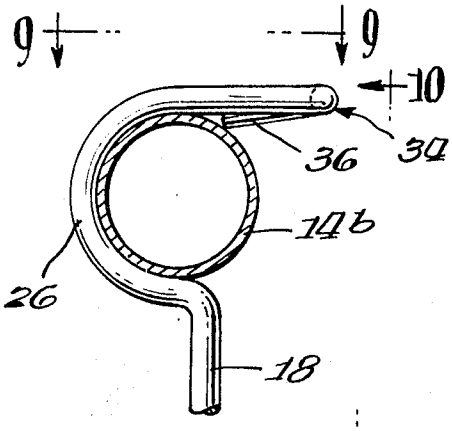


Fig. 8

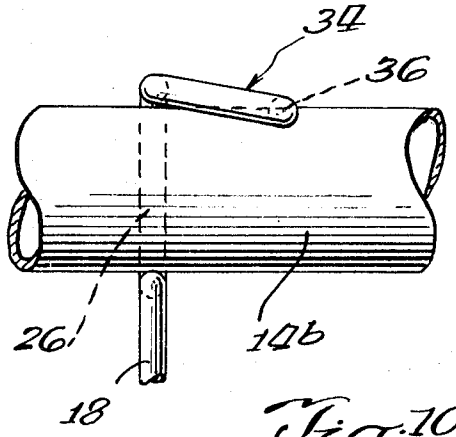


Fig. 10

BOOKRACK

SUMMARY OF THE INVENTION

The present invention relates to an underseat bookrack, and more particularly to a U-shaped bookrack for suspending below a chair seat of a chair having rigid frame bars extending across the underside of a seat at its front and rear.

An object of the invention is to provide such an underseat bookrack which is simple in construction and easy to install.

Another object of the invention is to provide a bookrack of the character described which is self-locking to maintain the bookrack in its suspended position under the chair seat.

A further object of this invention is to provide a bookrack of the character described which has laterally spaced generally parallel rods of springable rod stock, at least some of the rods having hooks at their rearward ends for engaging the rear frame bar, said rods extending from the rear hooks downwardly and thence forwardly to form book supporting body portions and thence upwardly, at least some of the rods having hooks at their forward ends engaging the front frame bar, and at least one of the rods having resilient locking means engaging one of the frame bars to prevent the hooks engaging the one frame bar from becoming disengaged.

Yet another object of this invention is to provide a bookrack as set forth in the preceding paragraph wherein the hooks are formed on alternate ones of said rods and the locking means are formed on the other of said rods, the locking means being resilient and in combination with the hooks forming mouth means into which the frame bars snap, past the locking means, to position the bookrack on the frame bars, the locking means being disposed over the center of the frame bars, at least partially closing the mount means, to self-lock the bookrack in position.

In an alternate form of the invention, the locking means are formed integral with the same rods on which the hooks are formed and, similarly, in combination with the hooks, form mouth means into which the frame bars snap, with the locking means being over the center of the frame bars, at least partially closing the mount means, to self-lock the bookrack in position.

Other objects and features of the invention will be apparent from the following detailed description taken in connection with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view, partly in section, of a chair to which is attached one form of the bookrack of this invention;

FIG. 2 is a fragmentary view, on an enlarged scale, of the bookrack attaching means shown in FIG. 1 attached to the rear frame bar under the chair seat;

FIG. 3 is a fragmentary view, on an enlarged scale, of the bookrack attaching means shown in FIG. 1 attached to the front frame bar under the chair seat;

FIG. 4 is a front elevational view taken generally in the direction of line 4–4 in FIG. 1, with the chair seat cutaway;

FIG. 5 is a fragmentary view taken generally in the direction of line 5–5 of FIG. 1;

FIG. 6 is a side elevational view, partially in section and on a reduced scale, of a chair to which is attached a bookrack embodying a modified form of the invention;

FIG. 7 is a front elevational view of the bookrack of FIG. 6, with the front frame bar of the chair shown in phantom;

FIG. 8 is a fragmentary view, on an enlarged scale, showing the bookrack attaching means on the rear frame bar of the chair of FIG. 6;

FIG. 9 is a top plan view of the attaching means of FIG. 8, taken generally in the direction of line 9–9 of FIG. 8; and

FIG. 10 is an elevational view of the attaching means shown in FIG. 8, taken generally along the line 10–10 of FIG. 8.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings in greater detail, a first form of the invention is shown in FIGS. 1 through 5 and a modified form of the invention is shown in FIGS. 6 through 10. Like parts are designated by the same numerals, where appropriate, in the several views. The bookrack of this invention is shown as particularly adapted for attachment to a chair having a seat 12 and rigid front and rear frame bars 14*a*, 14*b*, respectively, under the seat and to which the seat is attached. For illustration purposes only, the chair shown in the drawings includes a unitary molded seat and back structure of which the seat 12 is a part. In the chair shown, the front and rear frame bars 14*a*, 14*b* are part of front and rear leg assemblies which have forwardly and rearwardly diverging legs 16 formed integral with and depending from the ends of the front and rear frame bars 14*a*, 14*b*.

The bookrack of the present invention is fabricated of springable steel rod stock. It comprises laterally spaced parallel rods 18, shown herein as five in number. These rods 18 extend downwardly from the rear frame bar 14*b* and thence forwardly to form book supporting body portions 20, and thence upwardly at 22 to the front frame bar 14*a* to form a U-shaped structure. A lower pair of laterally extending cross rods 24 connect the laterally spaced parallel rods and are secured to the underside of the book supporting body portions 20 at the intersections therewith as by means of welding. An upper pair of laterally extending cross rods 25 also connect the laterally spaced parallel rods and are secured to the outside of the portions 18 and 22 of the parallel rods.

In the form of the invention shown in FIGS. 1 through 5, each of the parallel rods has a hook portion 26 at one extremity thereof for engagement with one of the frame bars 14*a* or 14*b* and a locking means, generally designated 28, at the other extremity thereof for engaging the other frame bar. In the preferred embodiment of the invention, the hooks 26 and locking means 28 are formed on the ends of the rods in a manner such that the hooks and locking means alternate along the frame bars 14*a*, 14*b* as best illustrated in FIGS. 4 and 5. Of course, hooks could be formed on both ends of alternate rods and locking means formed on both ends of the remaining rods. However, when using an odd number of five rods, such as that shown in the drawings, a more balanced structure is provided by the construction shown.

Referring to FIG. 2, the locking means of the form of invention shown in FIGS. 1—5 is formed by bending one end of each of the rods inwardly generally at a right angle to the adjacent portion of the rods forming shoulders 30 which, in combination with the hooks 26, form a mouth means into which the front and rear frame bars 14*a*, 14*b* are snapped, past the shoulders 30, to positions shown best in FIGS. 2 and 3. It can be seen that the shoulders 30 are "over the center" of the frame bar in relation to the opposite side of the mouth means, which is defined by the portion of the hook 26 indicated at 32. The rod stock from which the bookrack is formed renders the locking means 28 resilient to permit the frame bars to snap past the shoulders 30 and self-lock the frame bars in position within the hooks 26. It can be seen that the distance between the shoulder 30 and the portion of the hooks 26 indicated at 32 is smaller than the diameter of the frame bars.

Referring to the form of the invention shown in FIGS. 7 through 10, the locking means shown therein is generally designated 34 and is formed integral with the rod stock on the same ends of the parallel rods as the hooks 26. The locking means 34 is formed by bending the outer extremity of the rods back upon themselves to form a locking finger 36 which abuts against the frame bar at its outer end in a similar manner as the shoulder 32 abuts the frame bar in the form of the invention shown in FIGS. 1—6. The rod stock renders the fingers 36 resilient and the outer ends of the fingers cooperate with the hooks 26 to form mouth means into which the frame bars snap, past the fingers 36, to self-lock the bookrack in position.

The fingers 36 also are disposed over the center of the frame bar, at least partially closing the mouth means, to lock the bookrack in position.

The foregoing detailed detailed description has been given for clearness of understanding only and no unnecessary limitations should be understood therefrom as some modification will be obvious to those skilled in the art.

I claim:

1. In combination with a chair having a seat and rigid frame bars extending across the underside of the seat at its front and rear, a removable bookrack comprising:

laterally spaced generally parallel rods of springable rod stock, at least some of said rods having hooks at their rearward ends engaging the rear frame bar, said rods extending from the rear hooks downwardly and thence forwardly to form book-supporting body portions, and thence upwardly, at least some of said rods having hooks at their forward ends engaging the front frame bar, and at least one of said rods having locking means engaging one of said frame bars and cooperating with the hooks engaging said one frame bar for preventing said last-mentioned hooks from becoming disengaged and for positively preventing said bookrack from being accidentally disconnected from said frame bars due to application of a downwardly directed external load thereto.

2. The bookrack of claim 1 wherein alternate ones of said rods, at least at the forward or rearward ends thereof, terminate in said hooks, and at least one of the remaining rods have said locking means thereon.

3. The bookrack of claim 2 wherein said one of the remaining rods is bent to form a shoulder which in combination with at least one of said hooks forms mouth means into which said one of said front or rear frame bars snaps, past said shoulder, to position the bookrack on the frame bar, said shoulder being positioned over the center of said one frame bar, at least partially closing said mouth means, to self-lock the bookrack in position.

4. The bookrack of claim 1 wherein said locking means is resilient and in combination with said hooks forms mouth means into which one of said front or rear frame bars snaps, past said locking means, to position the bookrack on the frame bar.

5. The bookrack of claim 4 wherein said locking means is disposed over the center of said one frame bar, at least partially closing said mouth means, to self-lock the bookrack in position.

6. The bookrack of claim 1 wherein said locking means is formed integral with a rod which has one of said hooks formed thereon.

7. The bookrack of claim 6 wherein said locking means is resilient and in combination with said one rod forms mouth means into which one of said front or rear frame bars snaps, past said locking means, to position the bookrack on the frame bar.

8. The bookrack of claim 7 wherein said locking means is disposed over the center of said one frame bar, at least partially closing said mouth means, to self-lock the bookrack in position.

9. The bookrack of claim 8 wherein said locking means comprises a resilient locking finger formed on the end of said one rod by bending the rod back upon itself whereby the finger faces the hook on the rod.

10. The bookrack of claim 1 wherein at least one of said rods has locking means engaging said front frame bar and at least one of said rods has locking means disengaged said rear frame bar to prevent the hooks from becoming engaged.

11. In combination with a chair having a seat and first and second rigid frame members adjacent the underside of the seat, a removable bookrack mounted on said frame members and suspended therebelow, said bookrack comprising a substantially U-shaped and upwardly opening assembly having a base portion for supporting articles thereon and having first and second suspension portions connected to opposite edges of said base portion and extending upwardly therefrom, said first suspension portion having first self-locking means adjacent the upper end thereof, said first self-locking means being disposed in partial surrounding relationship to said first frame member, said second suspension portion having second self-locking means adjacent the upper end thereof, said second self-locking means being disposed in partial surrounding relationship to said second frame member, said first and second self-locking means each engaging said frame members at locations extending circumferentially through an angle in excess of 180° and being disposed to open in substantially opposite horizontal directions.

12. The combination according to claim 11, wherein said first self-locking means includes first hook means and separate lock means coacting with said first hook means, said lock means yieldably engaging said first frame member at a location spaced circumferentially from the first hook means to positively oppose accidental disconnection of said first hook means from said first frame member.

13. The combination according to claim 12, wherein said locking means contacts said first frame member at a location spaced from said first hook means longitudinally of said first frame member.

14. The combination according to claim 12, wherein said second self-locking means includes second hook means and second lock means coacting with said second hook means, said second lock means yieldably engaging said second frame member at a location spaced circumferentially from the second hook means.

15. The combination according to claim 12, wherein said lock means contacts said first frame member at a location which is substantially diametrically opposite the central part of said first hook means.

16. The combination according to claim 15, wherein said lock means contacts said first frame member at a location which is spaced longitudinally of said first frame member from the location where said first hook means contacts said first frame member.

17. The combination according to claim 14, wherein said suspension portions comprise plural, spaced and parallel rod means extending substantially vertically upwardly from said base portion, said hook means and said lock means being integral with the upper ends of alternate ones of said rod means.

18. The combination according to claim 15, wherein said lock means comprises a U-shaped projection integral with the free end of said first hook means, said projection being disposed in a plane substantially transverse to the plane of said first hook means.

19. In combination with a chair having a seat and first and second rigid frame members adjacent the underside of the seat, a removable bookrack mounted on said frame members and suspended therebelow, said bookrack comprising a substantially U-shaped and upwardly opening assembly having a substantially horizontal base portion for supporting articles thereon and first and second suspension portions connected to opposite edges of said base portion and extending substantially vertically upwardly therefrom, said first suspension portion including a first pair of elongated substantially parallel springable legs each having first hook means formed adjacent the upper free end thereof, said second suspension portion also including a pair of elongated substantially parallel springable legs each having second hook means formed adjacent the upper free end thereof, all of said legs extending primarily in the vertical direction and having a length greater than the width of said base portion as extending between said opposite edges, and said first and second hook means extending through an angle of at least approximately 180° and being disposed so as to open in substantially opposite horizontal directions.