June 20, 1961 I. L. LOESCH 2,989,343

NESTABLE CHAIR

Filed June 8, 1959 2 Sheets-Sheet 1

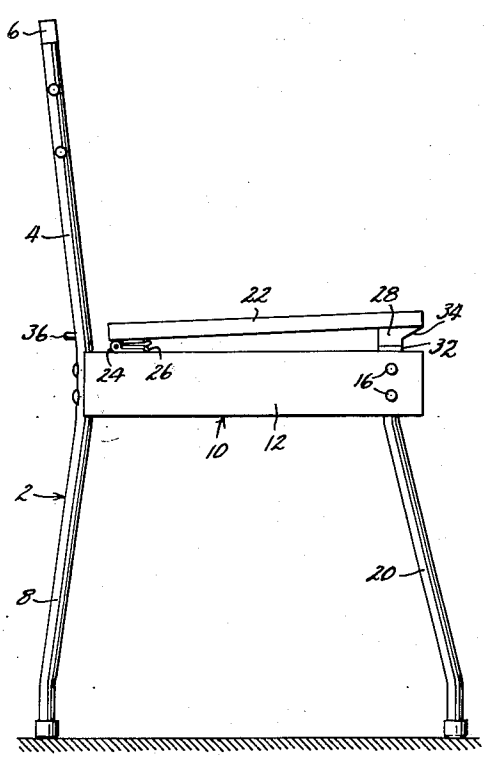


Fig. 1

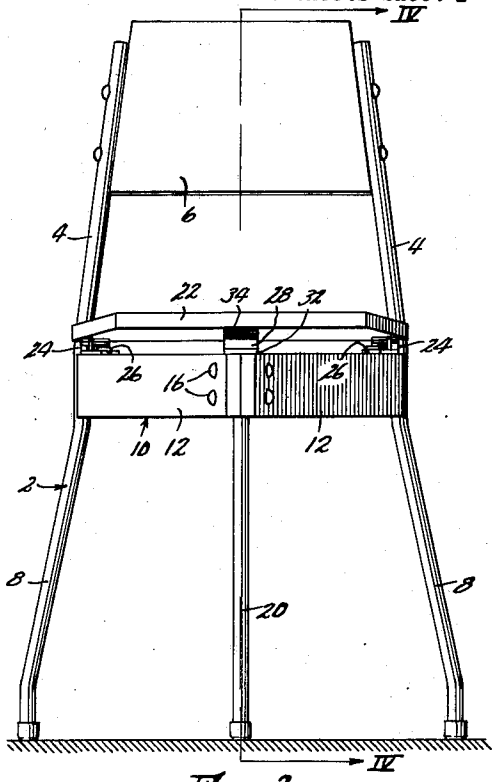


Fig. 2

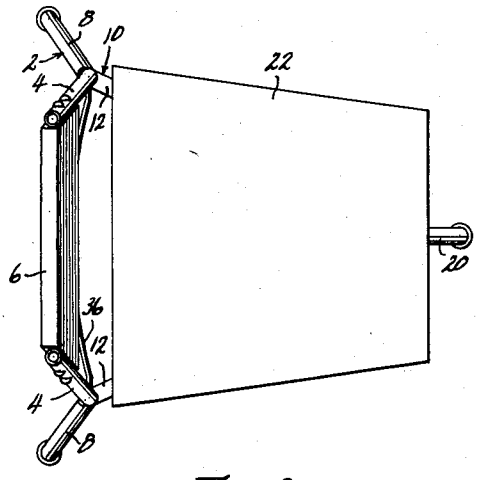


Fig. 3

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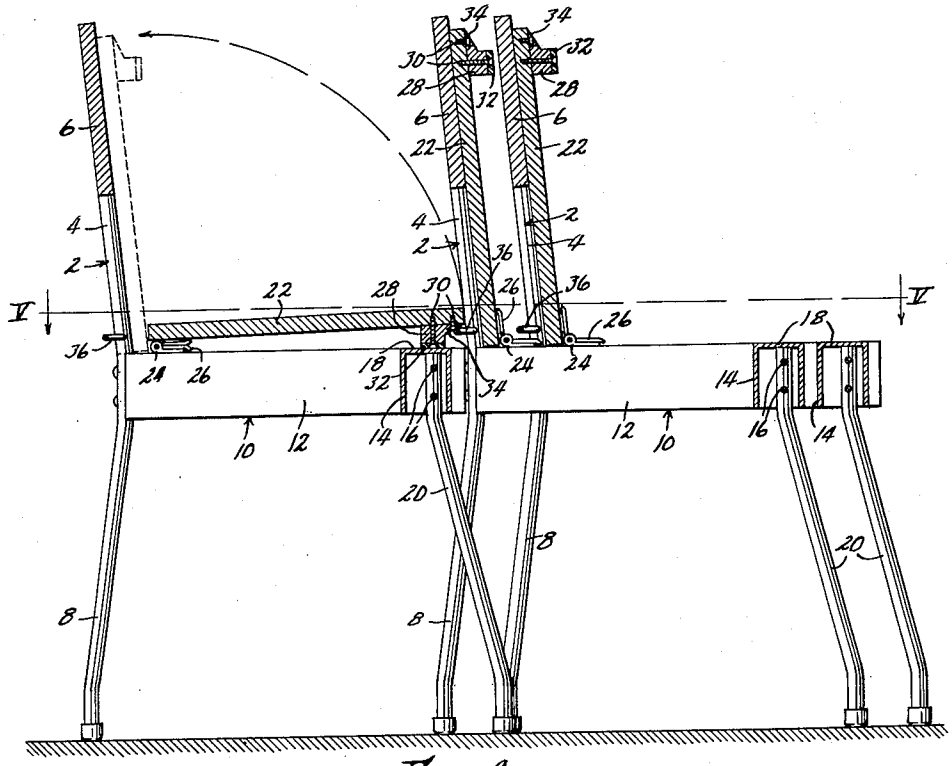


Fig. 4

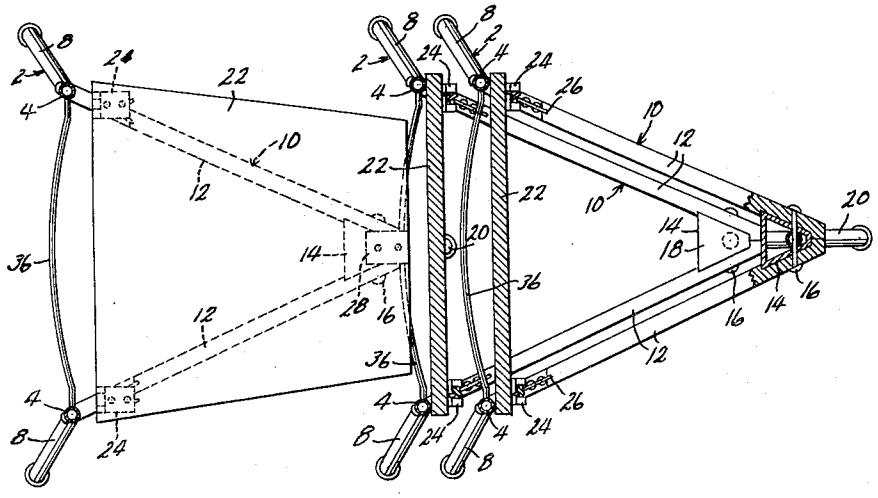


Fig. 5

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NESTABLE CHAIR

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5 Claims. (Cl. 155—2)

This invention relates to new and useful improvements in chairs, and has particular reference to chairs which may be nested together so as to occupy a minimum space, without necessity of folding the chair in the usual sense of the word.

An important object of the present invention is the provision of a chair which may be nested with other like chairs, by a relative horizontal movement between the chairs, whereby nesting is accomplished without lifting the chairs from the floor. This is a substantial contribution to ease and convenience of usage, in that it substantially reduces the amount of physical labor involved.

Another object is the provision of a chair of the character described which has only a single forward leg disposed in the transverse medial line of the chair. This arrangement provides minimum interference with the freedom of movement of his legs by a person sitting in the chair, and thus provides greater comfort.

A further object is the provision of a chair of the character described having a seat frame which is open at the rear and which tapers forwardly, so as to be capable of entering the seat frame of another like chair from the rear. The seat supported by said frame is pivoted at its rearward edge, so that it may be raised to a vertical position just forwardly of the seat back when the chairs are nested.

A still further object is the provision of a chair of the class described wherein the seat is raised automatically to its vertical position when the chairs are nested. For this purpose, the seat is provided with spring means urging it to its raised position, and a latch securing it in its lowered or normal position. Said latch is released by engagement of cooperating parts of two chairs as they are moved into nesting relationship.

A further object is the provision of a chair of the class described with which other like chairs may be nested from either the front or the rear.

Other objects are simplicity and economy of construction, efficiency and dependability of operation, and adaptability of the chair for use in a wide variety of forms and styles.

With these objects in view, as well as other objects which will appear in the course of the specification, reference will be had to the drawing, wherein:

FIGS. 1, 2 and 3 are respectively a side elevational view, a front elevational view, and a top plan view of a nestable chair embodying the present invention,

FIG. 4 is a sectional view taken on line IV—IV of FIG. 2, showing a pair of chairs in fully nested relation and a third chair at the beginning of its insertion into nested relation with the other two, the seat of said third chair being shown in its normal lowered position in solid lines and in its raised position in dotted lines, and

FIG. 5 is a sectional view taken on line V—V of FIG. 4.

Like reference numerals apply to similar parts throughout the several views, and the numeral 2 applies generally to a back frame consisting of a pair of tubular uprights 4 and a planar back rest 6 secured between the upper ends thereof. The lower portions of said uprights form floor-engaging legs 8. A seat frame designated generally by the numeral 10 consists of a pair of arms 12 each secured at its rearward end to one of uprights 4. Said arms extend horizontally forwardly in converging relation, being secured at their forward ends to the opposite

sides of a generally triangular spacer box 14, as by rivets 16. Said spacer box is disposed in the apex of the space between the arms, and has a planar top wall 18 which is flush with the top edges of said arms. Also secured in spacer box 14 by rivets 16 is a front leg 20, which is disposed midway between rear legs 8, considered transversely of the chair. The spacer box, or at least the top wall 18 thereof, is formed of a ferrous metal having paramagnetic properties, that is, capable of being attracted by a magnet.

A substantially planar seat member 22 is supported by seat frame 10, being hinged at its rearward edge to the upper edge of each of arms 12, by means of a hinge 24. Said seat is movable between a normal lowered position in which it is disposed substantially horizontally immediately above frame 10, as shown in FIGS. 1, 2 and 3, and a raised position in which it is disposed substantially vertically adjacent back rest 6. A spring 26 is carried on the pintle of each of hinges 24, and has its end portions respectively engaging the lower surface of seat 22 and the upper surface of the associated arm 12. Said springs urge the seat at all times toward its raised position. A block 28 is secured as by screws 30 to the lower surface of seat 6. A permanent magnet 32 is secured to the lower surface of said block. When the seat is in its lowered position, magnet 32 engages top wall 18 of box 14 to support said seat, and the magnetic attraction between said magnet and wall 18 serves to hold said seat in its lowered position against the pressure of springs 26. The forward portion of block 28 is bevelled to present an upwardly and forwardly inclined cam surface 34. A cross-bar 36 extends horizontally between back frame uprights 4, just above the level of seat frame 10, and is rigidly fixed at its ends to said uprights. Said cross-bar is disposed at the vertical elevation of cam surface 34, when the seat is in its lowered position, and is bowed arcuately rearwardly for purposes which will presently be described.

It will be seen in FIGS. 4 and 5 that when one chair, for example the left chair in FIG. 4, is moved forwardly into the back of another chair, as shown, the cross-bar 36 of the forward chair will engage the cam surface 36 of block 28 of the rearward chair, forcing the seat 6 of said rearward chair upwardly to break the engagement between magnet 32 and wall 18 of said rearward chair. The magnetic attraction is quite sufficient to hold the seat in its lowered position against the pressure of springs 26, but is insufficient to support the weight of the chair imposed on the connection by the tendency of cross-bar 36 of the forward chair to lift the rearward chair off of the floor. When the magnetic connection is broken, the seat 6 is elevated to its vertical position, as shown in dotted lines in FIG. 4, and the rearward chair may be pushed forwardly, the seat frame 10 thereof entering into the rearward portion of the seat frame of the forward chair, until the forward end of the seat frame of the rearward chair engages the rearward side of the spacer box 14 of the forward chair. The two chairs at the right in FIGS. 4 and 5 illustrate the maximum degree of nesting.

The structure as described is believed to possess several novel advantages. There is no necessity for lifting, folding or stacking the chairs to nest them, and this is a substantial labor-saving when handling large numbers of chairs. Also, there is no necessity for raising the seats manually, this operation being performed automatically. This also is a labor and time saving provision, and contributes greatly to convenience of usage. The use of a single front leg, besides providing greater leg freedom and comfort for the user as previously desscribed, also permits a greater degree of forward taper of the seat frame. This permits a greater degree of telescoping of the chairs, so that a greater number of chairs may be stored in the same amount of floor space, and also per-

mits the use of thicker, heavier seat frame arms **12** for better strength and durability. Cross-bar **36** reinforces the chair at a critical point, and serves to relieve hinges **24** from axial strain. The rearward bowing of the cross-bar prevents it from interfering with the comfort of the user, and the rearward projection thereof provides for earlier release of the magnetic latch of another chair being nested therein. This prevents possible interference between the seat of the rearward chair and back rest **6** of the forward chair, as the former is elevated by its springs.

While I have shown and described a specific embodiment of my invention, it will be readily apparent that many minor changes of structure and operation could be made within the purview of my invention. For example, while I show a magnetic latch normally securing the seat in its lowered position, a mechanical latch could be utilized if desired. The cooperating cam members illustrated as surface **34** and cross-bar **36** could take many different forms, and the style and design of the chair is obviously subject to wide variation. It is considered that these as well as other changes could be made without departing from the spirit of the invention as defined by the scope of the appended claims.

What I claim as new and desire to protect by Letters Patent is:

1. A nestable chair comprising a hollow seat frame open at its rearward end and including forwardly converging side arms, a front leg carried at the forward end of said seat frame, an upright fixed to the rearward end of each of said side arms, said uprights extending below said seat frame to form rear legs, a substantially planar seat member carried by said seat frame normally in a substantially horizontal position, said seat being hinged at its rearward edge to said frame whereby to be pivotally movable to a substantially vertical position extending upwardly from said frame, means yieldably urging said seat member toward its vertical position, and a latch securing said seat member releasably in its horizontal position against the pressure of said resilient means.

2. A nestable chair as recited in claim 1 wherein said latch comprises a magnet secured to said seat member

adjacent its forward edge and a paramagnetic member secured to the forward portion of said seat frame, said magnet being positioned to engage and be supported by said paramagnetic member when said seat is in its horizontal position.

3. A nestable chair as recited in claim 1 with the addition of a pair of operative members carried respectively by the frame of said chair and by said seat member and so disposed that when one chair is moved forwardly to project its seat frame into the seat frame of another like chair, the operative frame member of said forward chair will engage the operative seat member of said rearward chair to disengage the seat latch of said rearward chair.

4. A nestable chair as recited in claim 3 wherein the operative frame member is disposed at the rear of said chair and the operative seat member is disposed at the forward edge of said seat, whereby when two chairs are nested as described, the seat latch of the rearward chair will be disengaged during the initial portion of the nesting movement.

5. A nestable chair as recited in claim 2 with the addition of a cam member fixed to the lower surface of said seat adjacent its forward edge and having a lower surface inclined upwardly and forwardly, and a cross-bar extending between said uprights at the vertical elevation of said inclined cam surface, whereby when two such chairs are nested by pushing one forwardly into the rearward portion of the other, the cross-bar of the forward chair will engage the cam surface of the rearward chair and force the seat of said rearward chair upwardly to break the connection between the magnet and paramagnetic member of said rearward chair.

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