

Dec. 28, 1965

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3,226,154

SUSPENDED SEATING FOR TABLES

Filed June 29, 1964

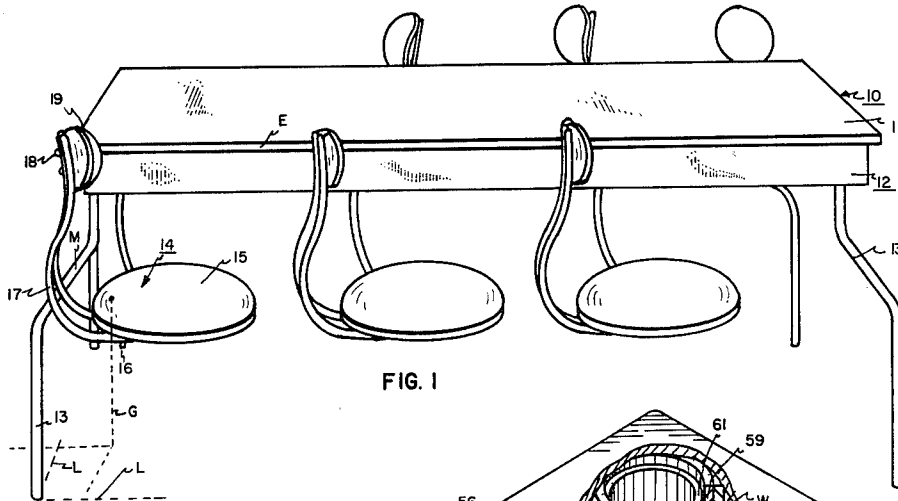


FIG. 1

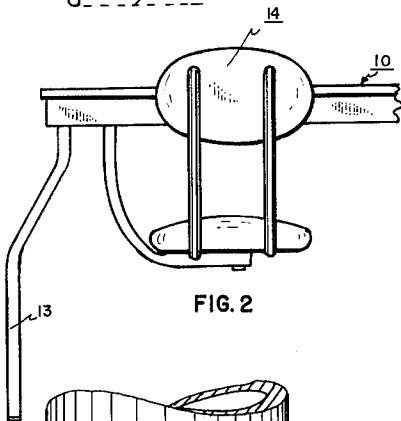


FIG. 2

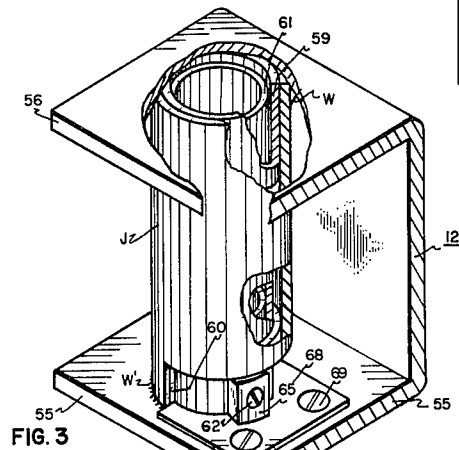


FIG. 3

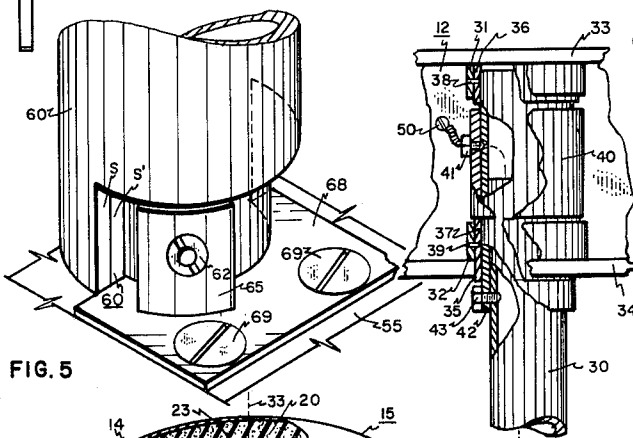


FIG. 4

FIG. 5

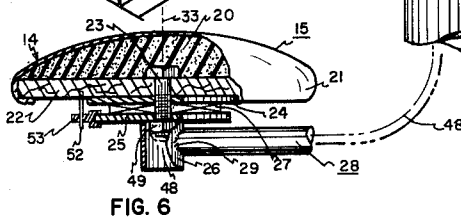


FIG. 6

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3,226,154
SUSPENDED SEATING FOR TABLES
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Filed June 29, 1964, Ser. No. 378,506
9 Claims. (Cl. 297-142)

The present invention relates to integrated table and seat constructions and, more particularly, to suspended seating for tables incorporating novel channel constructions, the latter being provided for inexpensive and yet highly reliable journaling means to accommodate the suspended seating provided the table.

Accordingly, a principal object of the present invention is to provide a new and improved seating and table construction wherein the seats, preferably pivotal, are suspended from and journaled to the table in a unique manner.

A further object of the invention is to provide improved journaling means for journaling suspended seating to tables.

An additional object of the invention is to provide an improved table and suspended seating construction wherein inadvertent tipping of the table, due to an unbalanced seating arrangement, is avoided.

An additional object is to provide journaling means for suspended seats wherein the former are ideally suited to channel constructions supporting table tops.

An additional object is to provide limit stop means so as to preclude inadvertent damage to the seating due to forced contact thereby with the table top of the construction.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings in which:

FIGURE 1 is a frontal, perspective view of the table and suspended seating construction according to one form of the present invention.

FIGURE 2 is a view of the left-hand side of FIGURE 1, is shown in fragmentary view, and illustrates the manner in which the seating may be disposed to be in withdrawn condition, for seating, or pressed against the table in a closed condition.

FIGURE 3 is an enlarged perspective view, cut away in section for convenience of illustration, of a second modification of journaling which may be employed in connection with journaling the suspension arms of the seats to the side structure of the table construction.

FIGURE 4 is a vertical section in reduced scale of the structure of FIGURE 3, indicating the various components thereof.

FIGURE 5 is an enlarged, fragmentary detail of the lower portion of the journaling structure of FIGURE 3, indicating the bearing cooperation of the rotationally displaceable bearing member and its supporting bearing plate.

FIGURE 6 is an enlarged fragmentary view, partially sectioned for convenience of illustration, of a representative seating which may be used in the invention, with the pivotal supporting arms supporting the same.

In FIGURE 1 table 10 includes table top 11 affixed to and supported by side channel members 12 by conventional means. Secured to side channel members 12 at the corner junctures are plural legs 13, each having off-set medial portions M. Plural seats 14 each include a respective seat member 15. Secured to seat member 15 by attachments 16 are plural side supports 17, mounted by conventional screws 18 to back rest 19. The individual

seat members 15, see FIGURE 6, are composite members having a cushioning layer of resilient material such as foam rubber 20, a covering 21, and a rigid base support 22. Attachments 23 pivotally secure together base support plate 24, fixedly secured to base support 22, and flange 25 which is secured to collar 26 and backs thrust bearing 27 disposed between plate 24 and flange 25. Thus, it will be noted that the thrust bearing 27 permits the pivotal movement of seat member 15 about the axis of bolt attachment means 23. Suspension arm 28 is welded at 29 to collar 26, and the upper extremity 30 of extension arm 28 is pinned by screws 43 to journal sleeve 42. Now the channel members 12 in FIGURES 1, 3, and 6 are ideally suited, and in a unique manner, for uniquely journaling the seats to the table 10. In FIGURE 6 external rings 31 and 32 are welded or otherwise rigidly affixed to the upper and lower flanges 33 and 34 of side channel members 12. At least one aperture is provided in the lowermost flange 34 and is designated 35 in the drawings. A counter-bore or aperture may also be included in the upper flange 33 of channel member 12, if desired. Rings 31 and 32 may either be suitably disposed in these apertures or may be welded, as shown, exteriorly thereto as to the lower flange. In any event, it is preferable to include bronze bushings 36 and 37 which are preferably pinned to or pressed into the rings 31 and 32. Suitable pin means 38 and 39 may be supplied as needed for these bronze bushings. A rotatable hinge knuckle taking the form of a circular hinge knuckle 40 is pinned by hollow screw 41 to journal sleeve 42. Journal sleeve 42 itself is keyed by screw 43 to the upper extremity 30 of suspension arm 28. The weight of the seat 15, and the weight of the person sitting thereon, is carried by the circular collar or knuckle 40 and cap screw 41 and, it follows, by the bearing surfaces of the lower edge of collar 40 and the upper edge of bushing insert 37.

In operation relative to the FIGURE 6 construction, it will be noted that the seat is free to pivot about axis 33 of attachments 23. Correspondingly, the side channel members of the table are unique in serving to support the table top, to provide attachment of the legs 13 thereto, and also to provide suitable journaling of the suspension arms 28 of each of the seats.

If desired, a chain, elongate cord or other flexible member 48 may be secured by nut 49 to the bolt attachment 23 and proceed upwardly through suspension arm 28 and outwardly of hollow cap screw 41, to be secured by a screw or other means 50 to a respective channel. This elongate connector 48 will be suitable for controlling the arcuate movement of the seat so that the sides of the seat do not contact the edge E of the table top 11 or other structure of the table. Were it otherwise, then damage through repeated using of the seats might well occur. Also, a depending finger 52 may be secured to the underside of base support 22 and engage a resilient stop 53 attached by any conventional means to flange 25. Such a stop will arrest the movement of seat 15 about its axis, thus serving to restrain movement of backrest 19 of the seat toward the table regardless of the extreme positions of the seat following rotational displacement of collar 40.

These two stops are very satisfactory, providing limit stop abutments for the seat about the axis of upper portion 30 of suspension arm 28 and also about the axes of attachments 23.

FIGURE 2 illustrates the positioning of seat 14 when pivoted for support of an individual person. FIGURE 1 shows that the table top edge and preferably vertical projection G of the center of gravity of the seat, taking into consideration the person sitting thereupon, are preferably disposed on or inside the projection lines L connecting the legs 13 at their contact points with the floor.

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This will insure that the table will not tip even through persons sitting only upon one side of the table. A similar effect can be obtained, of course, if the legs are included somewhat inwardly of the position shown but generally outwardly of the table top configuration, though maximum load to prevent tipping and torque factors will have to be considered. Off-set medial portions M of nominally vertical legs 13 preserve table support and accommodate the non-tipping feature.

In FIGURES 3-5 is illustrated another embodiment of the invention, showing the matter in which these suspension arms 28 may be journaled within suitable journaling structure operatively associated with the channel members 12. Aperture A is drilled into the lower flange 55 of channel member 12, and a cylindrical journal housing member J pressed therein and welded in place by circumferential welds W and W' and pinned at P to upper and lower bushings 59 and 60, the same receiving journal sleeve 61. Journal sleeve 61 includes plural apertures D for receiving counter-sunk screw 62 and positioning screw 63. The former secures a rotationally displaceable bearing member 65 which is secured by the screw 62 to fiber plate nut 67. A plurality of plate nuts may be secured to a mounting strip 68, spot-welded or otherwise affixed to the inner wall of the upper extremity of suspension arm 28 as shown in FIGURE 4. The additional screw 63 may be used if needed.

Preferably included in the construction is a bearing plate 68 which is secured by screws 69 to the lower flange 55 of channel member 12. It will be understood that an elongate connector 48 may likewise be used, as in the case of the journaling embodiment shown in FIGURE 6, but the same, this time, passing through the plate nut 67 and screw 62 to be secured by suitable means N to the inside surface of channel member 12.

In operation, the structure FIGURES 3 and 4 operates as follows. Height adjustment of the seat is secured through the vertical adjustment of suspension arm 28 within journal sleeve 61, the same being keyed in place by set screws 62, 63. The weight of the seat and the person sitting thereon is carried by bearing member 65. It will be seen that the latter rides in an arcuate slot or cut-out supplied by the 180-degree arcuate slot S disposed in cylindrical casing member 59, see FIGURE 5, and also by the cut-out portion S' of bushing segment 60. Preferably these are approximately 180 degrees in extent, see FIGURE 5. The plate 68 may be steel and the segment 65 may be of bronze or of "Oilite" material. Correspondingly, the segment 65 might be steel and the plate itself bronze or other suitably softened metal, having preferably a lubricated surface.

Accordingly, it will be seen that the invention supplies unique journaling means for a table which includes side channel members. The flanges of the side channel members are inwardly turned so as to provide a pleasing side member appearance, one which may remain aluminum or steel or have an exterior coating of Formica or other material easily affixed thereto.

The invention likewise supplies unique journaling of the suspension arms of the seating to the table at the channel sides, is to minimize cost of construction and maximize durable journaling qualities.

The invention likewise provides suspension seating wherein pivotal displacements of the seating is made not only at the center of the seating as seen in FIGURE 6, the left-hand side, but also at the axis of the respective suspension arm, so as to permit closed or open configurations as are respectively indicated in FIGURES 1 and 2. Further limit stops are provided the seating both at the seat proper, by virtue of resilient stop 53 and finger 52, and also by virtue of the elongate connector 48 which connects the seating to the frame work of the table. The suspension arms may be adjusted vertically as is indicated in FIGURE 4 to accommodate the size of various types of individuals.

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The term "table" as used herein shall be understood to refer not only to conventional "tables" but also to snack bars, desks, counters, benches, and similar structures.

While particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspects, and, therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of this invention.

I claim:

1. A table and suspended seating construction including, in combination, a table top; spaced leg means fixedly disposed with respect to and depending from said table top for supporting said table top; plural, spaced suspension arms each having an upwardly directed vertical portion and an outwardly extending horizontal portion; plural journaling means fixedly disposed in spaced relationship underneath said table top and secured thereto for journaling said upwardly directed vertical portions of respective ones of said suspension arms to said table top; and plural seat means secured to said outwardly extending, horizontal portions of respective ones of said suspension arms, and wherein said construction includes said channel members secured to and beneath said table top, each of said channel members including a lower flange, and each of the lower flanges of said channel members being provided with spaced apertures, each of said journaling means comprising a cylindrical member secured to and axially extending above a respective one of said apertures, a cylindrical sleeve journaled within said cylindrical member, means for fixing the longitudinal disposition of said sleeve within said cylindrical member for journal movement therewith, and means for securing the upwardly directed vertical portion of a respective one of said suspension arms to said journal sleeve.

2. Structure according to claim 1 wherein said suspension arm and said journal sleeve are provided with mutually inter-cooperating means for selectively adjusting the vertical disposition of said suspension arm within said journal sleeve.

3. Structure according to claim 1 wherein said journal means includes a rotationally displaceable bearing member outwardly secured to said journal sleeve and a bearing plate fixedly secured to the upper surface of said lower flange of a respected one of said channel members for bearingly engaging and supporting said bearing member, said cylindrical member including a transverse wall slot for accommodating movement of said bearing member.

4. Structure according to claim 1 wherein said journal means includes a bearing collar affixed to said journal sleeve and disposed in bearing engagement with the upper edge of said cylindrical member.

5. Structure according to claim 1 wherein the floor contacting extremities of said leg means are positioned beyond the vertical projection of said table top and also beyond vertical projections of the centers of gravity of said plural seat means.

6. A table and suspended seating construction including, in combination, a table top; spaced leg means fixedly disposed with respect to and depending from said table top for supporting said table top; plural, spaced suspension arms each having an upwardly directed vertical portion and an outwardly extending horizontal portion; plural journaling means fixedly disposed in spaced relationship underneath said table top and secured thereto for journaling said upper portions of respective ones of said suspension arms to said table; and plural seat means secured to said outwardly extending horizontal portions of respective ones of said suspension arms, said construction also including plural, flexible, elongate connectors each respectively secured to said seat means and passing through re-

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spective ones of said suspension arms and said journal means to attach to a fixed point exterior to said journal means and fixedly disposed with respect to said table top, for limiting the pivotal movement of respective ones of said suspension arms.

7. A table and suspended seating construction including, in combination, a table top; means fixedly disposed with respect to and depending from said table top for supporting said table top; plural, spaced suspension arms each having an upwardly directed vertical portion and an outwardly extending horizontal portion, plural journaling means fixedly disposed in spaced relationship underneath said table top and secured thereto for journaling said upwardly directed vertical portions of respective ones of said suspension arms to said table top; and plural seat means secured to said outwardly extending, horizontal portions of respective ones of said suspension arms, and wherein said construction includes said channel members secured to and beneath said table top, each of said channel members including a lower flange, and each of the lower flanges of said channel members being provided with spaced apertures, each of said journaling means comprising a cylindrical member secured to and axially extending above a respective one of said apertures, a cylindrical sleeve journaled within said cylindrical member, means for fixing the longitudinal disposition of said sleeve within said cylindrical member for journal movement therewithin, and means for securing the upwardly directed vertical portion of a respective one of said suspension arms to said journal sleeve.

8. A table and suspended seating construction including, in combination, a table top; means fixedly disposed with respect to and depending from said table top for supporting said table top; plural, spaced suspension arms each having an upwardly directed vertical portion and an outwardly extending horizontal portion; plural journaling means fixedly disposed in spaced relationship underneath said table top and secured thereto for journaling said upper portions of respective ones of said suspension arms to said table; and plural seat means secured to said outwardly extending horizontal portions of respective ones of

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said suspension arms, said construction also including plural, flexible, elongate connectors each respectively secured to said seat means and passing through respective ones of said suspension arms and said journal means to attach to a fixed point exterior to said journal means and fixedly disposed with respect to said table top, for limiting the pivotal movement of respective ones of said suspension arms.

9. A table and suspended seating construction including, in combination, a table top; means fixedly disposed with respect to and depending from said table top for supporting said table top; plural, spaced suspension arms each having an upwardly directed vertical portion and an outwardly extending horizontal portion; plural journaling means fixedly disposed in spaced relationship underneath said table top and secured thereto for journaling said upper portions of respective ones of said suspension arms to said table; and plural seat means secured to said outwardly extending horizontal portions of respective ones of said suspension arms, said construction also including means for preventing said seat means to abuttingly engage said table top, said seat means including respective back means which would otherwise engage said table top.

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