United States Patent

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[54] **CHAIR CONTROL**
1 Claim, 5 Drawing Figs.

[52] **U.S. Cl.** **248/381,** 248/384, 248/402
[51] **Int. Cl.** **A47c 3/026**
[50] **Field of Search** 248/381, 402, 382, 384, 378, 372; 297/302, 303, 305, 326

[56] **References Cited**

UNITED STATES PATENTS

2,689,599	9/1954	Mauser	248/382
3,185,430	5/1954	Bernard	248/381
3,206,153	9/1965	Burke	248/381
3,220,688	11/1965	Baermann	248/384
3,220,689	11/1965	Baermann	248/402
3,516,636	6/1970	Burke	248/381

FOREIGN PATENTS

518,340	2/1931	Germany	248/381
185,562	3/1937	Switzerland	248/372
328,370	4/1958	Switzerland	248/378

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ABSTRACT: A chair control for a tilting chair having a simplified construction. The chair control has a control tube which is telescopically mounted in the tubular chair post of the chair. The control tube has a fixed control frame mounted on the top thereof and a tiltable frame pivotally mounted on the control frame. The tiltable frame is attachable to the underside of the chair seat. Spring biasing means is mounted within the control tube and operatively connected to the tiltable frame to yieldably resist pivotal movement of the tiltable frame under a backward tilt force applied by the occupant of the chair.

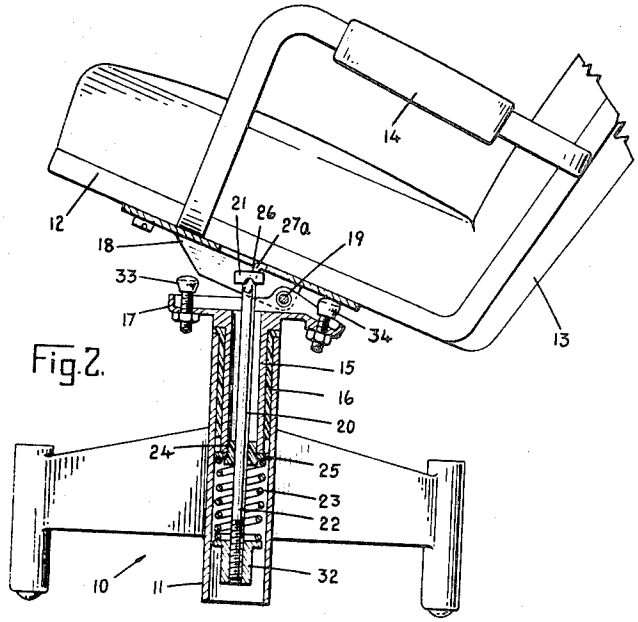


Fig. 2.

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SHEET 1 OF 2

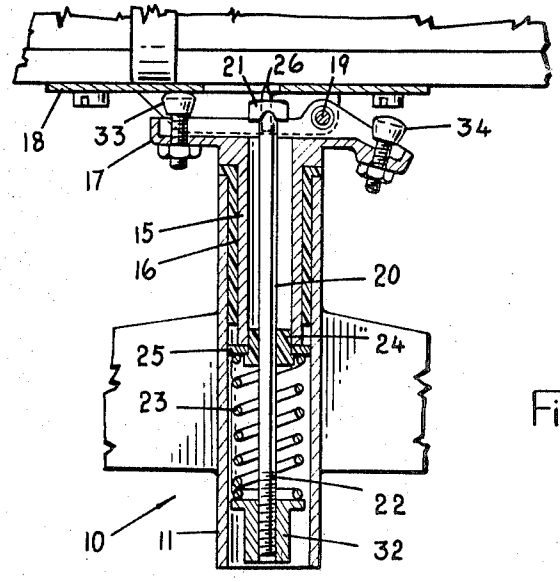


Fig.1.

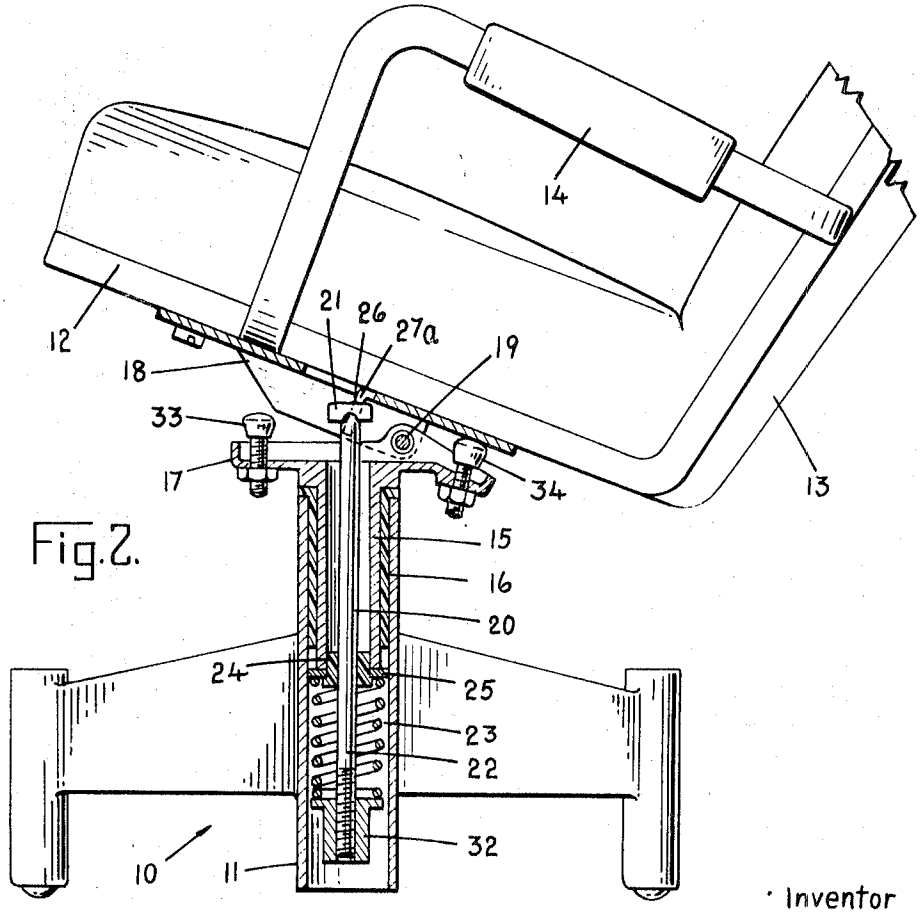


Fig.2.

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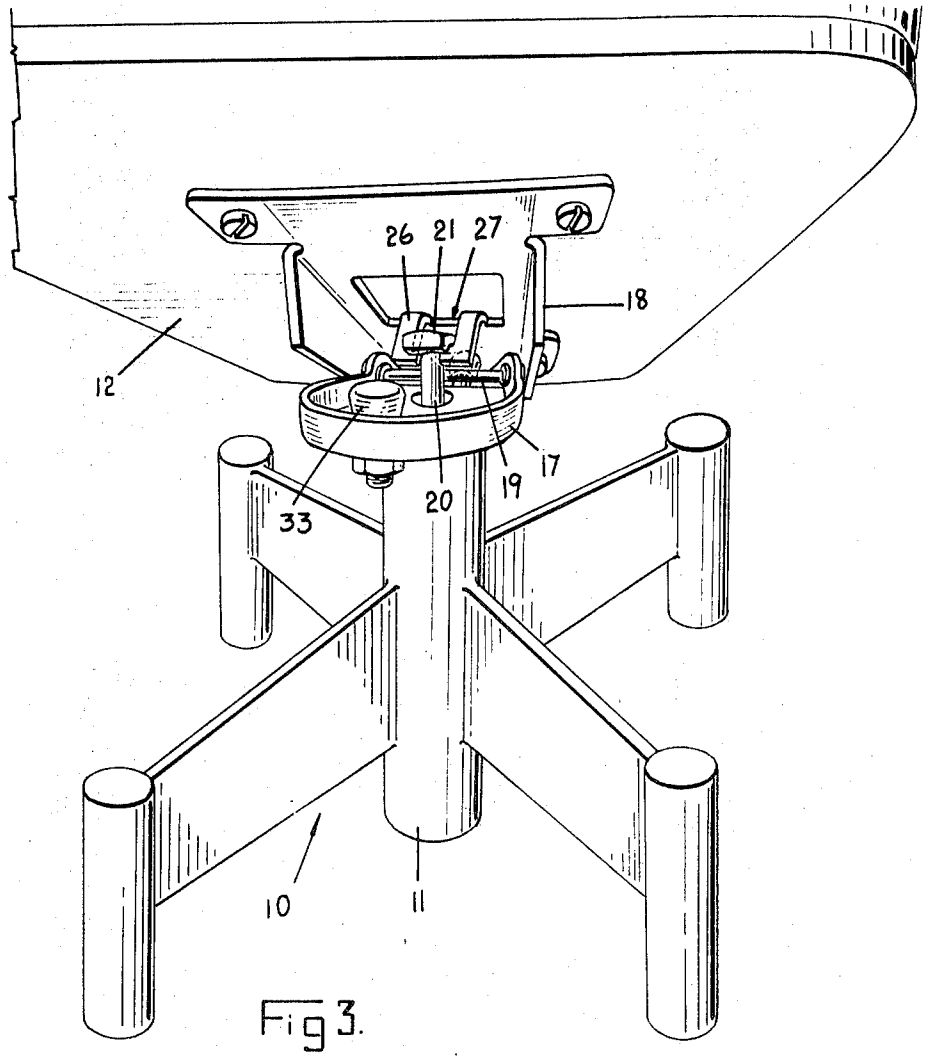


Fig 3.

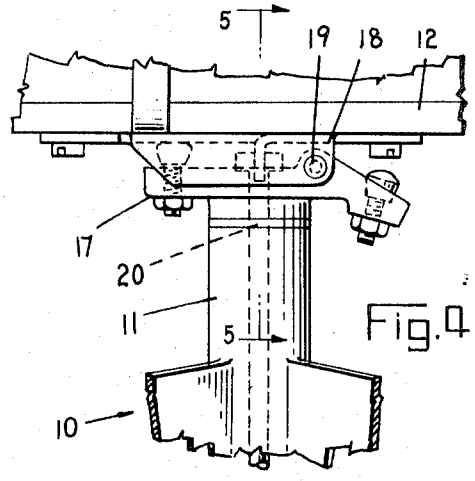


Fig.4

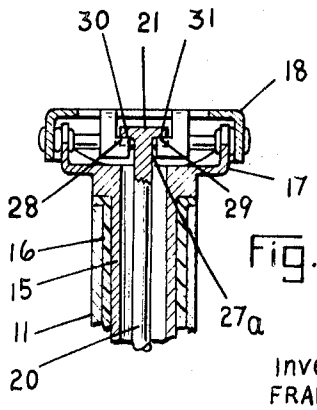


Fig.5.

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CHAIR CONTROL

Applicant's chair control provides a simplified construction which can be easily removed from the chair post and easily mounted therein and which is inexpensive to produce. This is accomplished in applicant's construction by mounting the chair seat on a tiltable frame which is pivotably mounted on a control tube, constructed in accordance with this invention, containing the biasing means that yieldably resists the tilting of the frame.

The control means of this invention comprises a control tube having upper and lower ends, said member being mountable in a chair post for rotation therein about its longitudinal axis, a fixed control frame mounted on the upper end of the control tube at about right angles to the said longitudinal axis; a tiltable frame pivotally mounted on the fixed control frame, said frame being attachable to the underside of a chair seat thereby permitting pivotal movement of the seat between a normal stop position and a tilt stop position; a substantially rigid connecting rod mounted in the control tube with its longitudinal axis substantially coaxial with the longitudinal axis of the control tube; said rod having at the end adjacent said tiltable frame means pivotally and detachably connecting said end to the tiltably frame; said rod having an extension on its other end projecting beyond the control tube, a centering member mounted on the lower end of the control tube adjacent to the lower end of the said last mentioned end and a bushing mounted on the lower end of the control tube through which said rod passes; the centering member being secured to the lower end of the control tube by a flange formed on the bushing, the centering member having a sliding fit with the inner wall of the tubular post and underlying the inner end of the bearing sleeve; and spring means mounted on said extension between said centering member and a retaining member mounted on said rod, whereby said spring yieldably resists pivotal movement of the control frame under a force applied by the occupant of the chair from the normal position to the tilt stop position. The chair control which has been briefly outlined will now be described in detail with reference to the accompanying drawings in which FIG. 1 is a vertical cross section through the center of the chair control.

FIG. 2 is a vertical cross section similar to FIG. 1 but with the chair tilted backwards.

FIG. 3 is a perspective view of the chair shown in FIG. 1 to further illustrate the tiltable frame.

FIG. 4 is a fragmentary side elevation of the chair and control shown in FIG. 1.

FIG. 5 is a cross section on the line 5—5 FIG. 4.

The chair control of the present invention is shown as applied to a typical tilting chair having a chair base **10** which has a tubular chair post **11**, a chair seat **12** wit a chair back **13** and arm rest **14**.

The chair control comprises a control tube **15** which is rotatably journaled in the chair post **11** by means of a sleeve **16** which is preferably in the form of a nylon sleeve and which can be secured in the post; a fixed frame member **17** which is mounted on the top end of the control tube **15**; a tiltable frame **18** which is pivotally connected to the fixed frame member **17** by a pivot hinge **19**; and a biasing means which resists the backward tilting of the chair seat **12** and which comprises a substantially rigid connecting rod **20** which has its top end **21** connected to the fixed control frame **17** in the manner hereinafter described with reference to FIG. 3, the lower end **22** forming an extension on which is mounted a biasing spring **23**. It will be seen from FIGS. 1 and 2 that the connecting rod is journaled and centered in the control tube with its longitudinal axis substantially coaxial with the longitudinal axis of the control tube **15** by means of a bushing **24** which is carried on a centering washer **25**. In addition to centering the connecting rod, the centering washer underlies the lower end of the sleeve **16** to prevent the chair control column being withdrawn from the chair post **11** when and if the chair is lifted from the floor.

The connection between the connecting rod **20** and the tiltable frame will now be described. Referring first to the tiltable frame, it will be seen from the drawings that its central portion is stamped out and bent downwardly to form a bracket member **26** having a T-shaped slot **27** which has a downwardly opening extension **27***a* that faces the control tube **15** and registers substantially with the longitudinally axis thereof. The slot **27** is formed with convex shoulders **28, 29**. The upper end **21** of the connecting rod is in the form of a substantially wide head which has its underfaces **30, 31** concaved to receive the convex shoulders **28, 29**.

The spring **23** is held in position by means of an adjusting screw or nut **32**. It will be seen by this arrangement, the spring is captured between the centering washer **25** and the adjusting screw **32**. The fixed control frame **17** is also provided with adjustable stops **33, 34**, the adjustable stop **33** determines the position of the seat in its normal position when no one is seated in the chair and the stop **34** determines the amount of backward tilt which is to be permitted.

To assemble the chair control to a chair base, the control tube is inserted in the control tube **11** into which has previously been placed, the bearing sleeve **16**. The control rod with its centering washer **25**, bushing **24**, spring **23** and nut **32** are entered into the control tube through the bottom end thereof and the head **21** placed in the slot **27** with the faces **30, 31** seated on the shoulders **28, 29**. The nut **32** is then tightened to apply the necessary tension on the spring **23**. To dismantle the control, the reverse steps takes place.

What I claim is:

1. A chair control for a tilting chair having a chair seat, a chair base and a vertical tubular post supported by the base, comprising:

a. a control tube having upper and lower ends, said tube in a bearing sleeve securely mounted in said post, said tube being rotatable in the sleeve about its longitudinal axis;

b. a fixed control frame fixedly mounted on the upper end of the control tube at about right angles to the said longitudinal axis, said frame consisting of a substantially flat plate bordered by an upstanding flange;

c. a pivotal frame attachable to the underside of a chair seat permitting pivotal movement of the seat between a normal stop position; said pivotal frame having a pair of spaced apart downwardly projecting flanges which overlap the said upstanding flange and a slotted downwardly extending bracket attached centrally to the pivotally frame member;

d. a pivot pin pivotally connecting said flanges together at a point spaced horizontally from the vertical axis of the control tube;

e. a substantially rigid connecting rod mounted in the control tube with its longitudinal axis substantially coaxial with the longitudinal axis of the control tube;

f. said rod having a head on its upper end said rod being entered through said slot of the bracket with the head engaging the said bracket;

g. said rod having an extension on its other end projecting beyond the control tube, a bushing mounted on the lower end of the control tube through which said rod passes, a centering member mounted on the lower end of the control tube and secured thereto by a flange formed on the lower end of said bushing, said centering member having a sliding fit with the inner wall of the tubular post and underlying the inner end of the sleeve; and

h. spring means mounted on said extension between said centering member and a retaining member mounted on said rod, whereby said spring yieldably resists pivotal movement of the pivotal frame under a force applied by the occupant of the chair from the normal position to the tilt stop position.