July 24, 1956 C. F. CARAMELLI 2,755,842

CENTER-CONTROLLED MOVABLE SEAT CONSTRUCTION

Filed Dec. 8, 1951

2 Sheets-Sheet 1

FIG. 1.

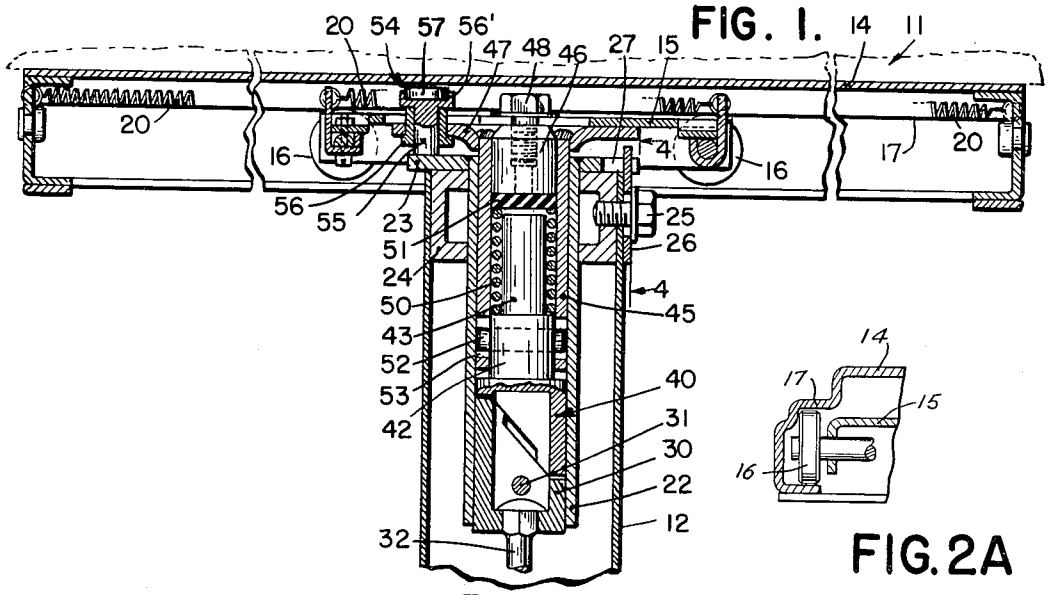


FIG. 2A

FIG. 2.

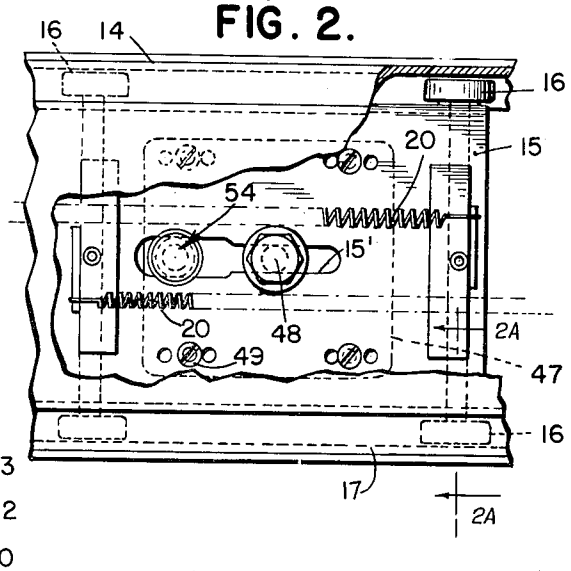


FIG. 3.

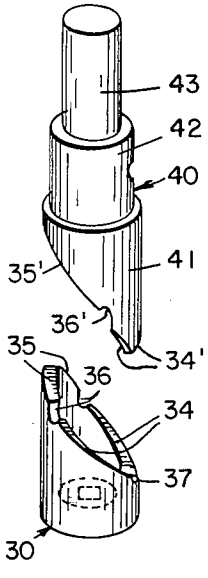
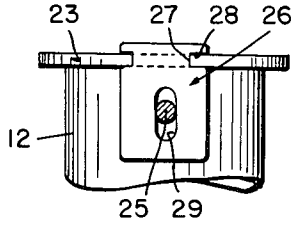


FIG. 4.



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FIG. 5.

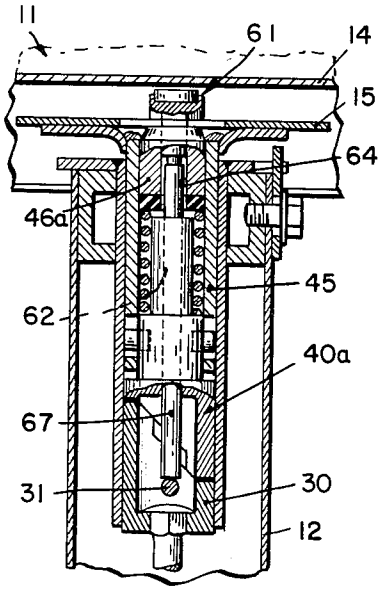


FIG. 6.

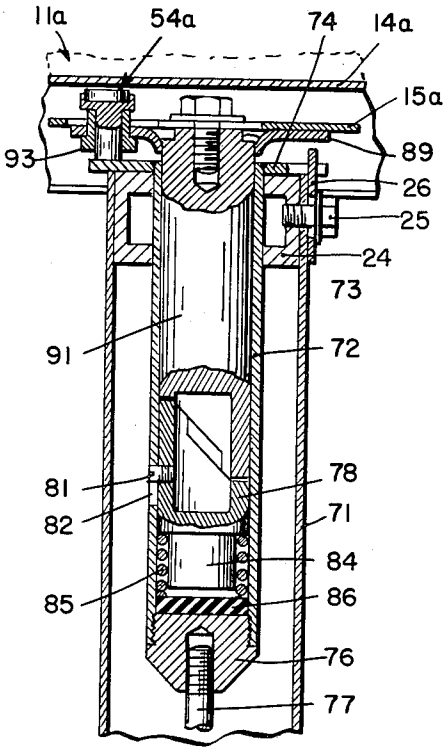
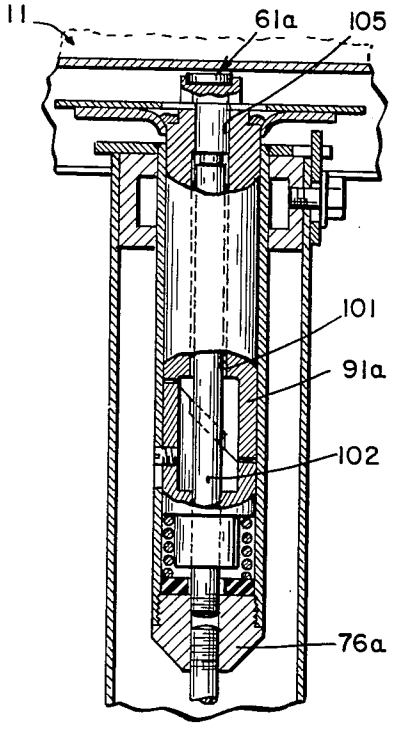


FIG. 7.



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CENTER-CONTROLLED MOVABLE SEAT CONSTRUCTION

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11 Claims. (Cl. 155—95)

This invention has to do with stools or seats commonly used at counters in restaurants and the like and particularly with such stools as have seats which are adjustable toward and away from the counter.

An object of this invention is to provide a novel construction for a counter stool which enables the seat portion of the stool to be readily adjusted in a horizontal plane and then held in adjusted position by means responsive to the weight of a person on the seat. Another object is to provide such a construction wherein the seat, when freed, automatically returns to a predetermined position.

A further object is to provide a seat-mounting construction embodying a pair of relatively movable plates, one of which is mounted on or supports the seat and the other of which is carried by a post or column, together with novel means supporting the seat plate for limited vertical movement and novel means for holding or braking plates to prevent relative movement therebetween when the plates are facing in a predetermined position.

Another object is to employ novel, simple means for returning a pivotally mounted seat to a predetermined position. In this connection it is an object to provide such a means which is durable and capable of taking abuse.

These and other objects will be apparent from the drawings and the following description.

Referring to the drawings:

Fig. 1 is a partial, central, vertical sectional view of apparatus embodying the invention;

Fig. 2 is a partial plan view, partly broken away, of the apparatus of Fig. 1;

Fig. 2A is a fragmentary sectional view on line 2A—2A of Fig. 2;

Fig. 3 is an exploded view of the cam portions of the apparatus;

Fig. 4 is a fragmentary elevational view on line 4—4 of Fig. 1; and

Figs. 5, 6, and 7 are partial sectional views showing alternate or modified forms of the invention.

More particularly describing the invention, reference numeral 11 generally indicates the lower portion of a seat and 12 a tubular supporting column, the lower end of which is normally mounted upon the floor. The seat-mounting construction includes a pair of plates, indicated by 14 and 15, which are mounted for relative horizontal movement by means of rollers 16 carried by plate 15 and running in the side portions 17 of the seat plate 14. The plates are preferably biased to a central position by means of springs 20, the springs being attached at one end to plate 15 and at the other to plate 14 in a manner to exert oppositely directed pulling forces upon the movable seat plate 14. Inasmuch as the construction of the plates themselves forms no part of the present invention, the above description of the plates need not be amplified.

Within the column 12 I provide a cylindrical housing

22 which carries an annular plate or flange 23 at its upper end, the latter extending over the top of the column 12. I also provide a bushing 24 at the upper end of the column between the housing 22 and the column. The bushing is held in place by means of a screw 25 and a retaining plate 26. The latter is curved laterally to fit the column and fits in a recess 27 in the flange 23, the plate being provided with recesses 28 in its lateral margins to fit the flange as shown in Fig. 4. The plate has a slot 29 to receive bolt 25. This construction serves to secure the bushing in place and also to hold the housing 22 against turning.

Within the lower end of the cylindrical housing I provide a stationary cam element 30 which is retained by a pin 31 mounted in the housing. I also provide a hold-down rod 32, the end of which is received in the element 30. This rod is normally secured at the lower end of the column in a base member or the like. Member 30 is cylindrical providing a cylinder-type cam which I preferably form to provide two pairs of helically disposed cam surfaces. The surfaces of one pair, indicated by 34, are offset axially of the other pair, indicated by 35. Also, the two surfaces of each pair are oppositely helically disposed. The individual cam surfaces are normal to the axis of the cam member along any radial line. Shoulders 36 are provided between the pairs of surfaces. Also, I preferably provide a recess 37 between surfaces 34. Above the cam element 30 I provide a movable cam member or pin 40, the lower end 41 of which is cylindrical and provides the cam surfaces 34' and 35' and shoulders 36' which correspond to the elements 34, 35 and 36 of member 30. This pin 40 has an intermediate portion 42 of reduced diameter and above this a further reduced section 43. The lower end of the movable cam pin is slidably and rotatably received in the cylindrical housing 22.

In the upper portion of the cylindrical housing 22 I provide a sleeve 45, the upper end of which is closed by plug 46. The sleeve carries a mounting bracket 47 upon which the plate 15 is mounted by means of screws 49. A compression spring 50 is provided around the upper portion 43 of the movable cam pin, and this serves to yieldably urge the movable cam pin and plate 15 away from each other. Preferably a pad 51 of rubber or other suitable material is used between the upper end of the cam pin 40 and the plug 46.

In order to prevent relative rotation of the sleeve 45 and the cam 40 I connect these parts by pin 52 which is mounted in the intermediate portion 42 of the pin. The ends of this pin are received in axially extending slots 53 in the sleeve. With the construction described it will be apparent that the two plates 14 and 15 and the sleeve 45 are mounted for limited vertical movement and are normally yieldably urged upwardly as a unit by the spring 50. Also, the plates 14 and 15 and sleeve 45 may be rotated with the result that the cam pin 40 will rotate relative to the stationary cam element 30 causing the entire seat structure to rise. The turning movement is limited by engagement of the shoulders 36—36' on the members 30 and 40. It will be apparent that, through the action of gravity, the seat will tend to return to its original or normal position in which it is shown.

As previously indicated, the two plates 14 and 15 are mounted for relative horizontal movement. It is a particular feature of the invention that I provide means for releasably braking or resisting relative movement of the plates so that sliding movement of the seat is prevented when desired. To accomplish this, I provide a brake button 54 having a shank 55 received in a bushing 56 mounted in the bracket 47. The upper end of the button is provided with a recess 56' to receive a rubber or

resilient element 57. The lower end of the button rests upon the plate 23.

The plate 15 has a slot 15' to accommodate the brake button and a screw 48, the slot permitting adjustment of the plate 15 on the bracket 47.

With the construction described, assuming the parts are in the position shown in Fig. 1, when the plates 14 and 15 are moved downwardly, as by someone sitting upon the seat 11, the button 54 remains stationary since it abuts plate 23, with the result that the resilient element 57 at the top thereof engages the under surface of plate 14 to hold the plates 14 and 15 against relative movement. However, if the seat is turned while still occupied, the seat-supporting structure, including plates 14 and 15, rises relative to plate 23 and the other stationary elements, due to the action of the cam means previously described, releasing button 54 from engagement with the plate 14, thereby freeing the plates for relative movement. When the seat-supporting structure is turned, and then occupied, pad 51 serves as a cushion between parts 40 and 46.

Referring now to Fig. 5, I show a modified form of the invention. In this figure like numbers have been used to indicate parts which correspond to parts previously described in Figs. 1–4. The chief difference between this form of the invention and the one previously described is that I mount the brake button, here indicated by 61, on the axis of rotation of the seat plates. To accomplish this, I provide a central bore 62 through the movable cam pin 40*a* and likewise a central bore 64 through plug 46*a* in the upper end of the sleeve 45. The bores slidably receive a rod 67 which rests upon the pin 31. The brake button 61 is mounted for axial movement in the bore 64.

With the construction described, when the seat plates 14 and 15 and connected parts move downwardly, the brake button 61, which rests upon the upper end of rod 67, remains in place with the result that it engages the under surface of plate 14 to prevent any relative lateral movement of plates 14 and 15. However, this is only true when the plates are in the position shown, since, if they are rotated, they rise and render the brake plug ineffective.

In Figs. 6 and 7, I show a modified form of the invention. Referring first to Fig. 6, 71 indicates the column or supporting post in which is mounted a cylindrical housing 72 by the same means as housing 22 of Fig. 1 is supported. The housing carries an annular plate 74. The lower end of the housing 72 is closed by a threaded plug 76 into which is threaded the hold-down rod 77.

Within the housing 72 is a lower cam element 78 having cam surfaces at its upper end similar to the surfaces at the upper end of cam element 30. The member 78 is locked against rotation by means of a screw 81 therein which is received in a slot 82 in the housing. The member 78 has a reduced lower end portion 84 which is surrounded by a spring 85 serving to yieldably urge member 78 upwardly. A pad 86 of rubber or other suitable material is positioned below the lower end of the member 78.

The plate 15*a* of the seat structure is carried on a bracket 89 secured to the upper end of a mounting pin 91 which is rotatably and slidably received in housing 72. The lower end of pin 91 provides cam surfaces similar to those at the lower end of member 40. The bracket 89 supports a bushing 93 in which is mounted a brake button 54*a*.

It will be apparent that, with the parts in the position shown, when weight is imposed upon the seat plate 14*a* as by someone sitting upon the seat 11*a* thereabove that the two plates 14*a* and 15*a* and pin 91 move downwardly against the force of spring 85. Since the brake button 54*a* rests upon the annular plate 74, the plate 14*a* then contacts the upper end of the brake button to prevent relative movement of the plates 14*a* and 15*a*. With this construction, also it will be apparent that rotation of the seat plates and mounting pin 91 will serve to rotate the

engaging cam surfaces on members 78 and 91 raising the seat plates and member 91 so that when the parts are released, gravity will effect the return of the seat rotatively to normal position. When the seat plates are turned, the brake button is ineffective and an occupant can adjust the seat.

In Fig. 7 I show a form of the invention which is similar to that of Fig. 6 except that the brake button, here indicated by 61*a*, is mounted on the axis of rotation of the seat structure. In this form of the invention the mounting pin, here indicated by 91*a*, is centrally bored at 101 to slidably receive a rod 102, the lower end of which is threadedly secured in the plug 76*a*. A brake button 61*a* is slidably received in the bore 105 at the upper end of the pin 91*a*. In operation, when a load depresses the pin 91*a*, the brake button is held up by rod 102 with the result that the upper plate abuts the brake button. If the seat plates are turned, the brake becomes ineffective as in the other forms of the invention.

Although the invention has been particularly shown and described, it is contemplated that various changes and modifications can be made without departing from the scope thereof as indicated by the following claims.

I claim:

1. In a seat-mounting construction, a vertical tubular column adapted to be supported on a floor, an upright cylindrical housing supported in the upper end portion of said column, a seat-supporting assembly including depending means rotatably and slidably receivable in said housing, a cam member mounted in said housing below said depending means, a connection between said housing and said cam member preventing relative rotation thereof, said cam member and said depending means having engaging corresponding cam surfaces so disposed as to cause said depending means to rise upon turning movement thereof, said depending means having telescoping parts, and a spring operatively positioned between the telescoping parts of said depending means yieldably urging the same apart.

2. In a seat-mounting construction, a vertical tubular column adapted to be supported on a floor, an upright cylindrical housing supported in the upper end portion of said column, a stationary cam member mounted in the lower end of said housing, a movable cam pin mounted for rotation and for vertical movement in said housing above said cam member, the upper end of said cam member and the lower end of said cam pin having engaging corresponding cam surfaces so disposed as to cause said cam pin to rise upon partial rotation thereof, a sleeve slidably mounted in the upper portion of said housing, a spring between said sleeve and said cam pin yieldably urging said sleeve upwardly and said pin downwardly, interengaging means on said sleeve and cam pin preventing relative rotation thereof, and a seat-supporting assembly carried by said sleeve.

3. A seat-mounting construction as set forth in claim 2 in which said interengaging means comprises a pin mounted transversely in said cam pin received in an axial slot provided in said sleeve.

4. A seat-mounting construction as set forth in claim 2 in which said interengaging means comprises a pin mounted transversely in said cam pin received in an axial slot provided in said sleeve, and a pad between said sleeve and said cam pin for cushioning downward movement of said sleeve relative to the cam pin.

5. In a seat-mounting construction, a vertical tubular column adapted to be supported on a floor, an upright cylindrical housing supported in the upper end portion of said column, a stationary cam member mounted in the lower end of said housing, a movable cam pin mounted for rotation and for vertical movement in said housing above said cam member, the upper end of said cam member and the lower end of said cam pin having engaging corresponding cam surfaces so disposed as to cause said

cam pin to rise upon partial rotation thereof, said pin having a reduced upper end portion, a sleeve slidably mounted in the upper portion of said housing and freely receiving the reduced upper end portion of said pin, a compression spring between said sleeve and said cam pin surrounding the reduced upper end portion of said pin yieldably urging said sleeve and pin apart, interengaging means on said sleeve and cam pin preventing relative rotation thereof, and a seat-supporting assembly carried by said sleeve.

6. In a seat-mounting construction, a vertical tubular column adapted to be supported on a floor, an upright cylindrical housing supported in the upper end portion of said column, a closure at the lower end of said housing, a cam element in said housing, means connecting said housing and cam element permitting limited axial movement of said cam element and preventing rotation thereof, a compression spring between said closure and said cam element, and a seat-supporting assembly including a depending mounting pin slidably and rotatably received in said housing in end-to-end abutting relation to said cam element, the upper end of sad cam element and the lower end of said mounting pin having engaging corresponding cam surfaces so disposed as to cause said mounting pin to rise upon partial rotation thereof.

7. In a seat-mounting structure, a vertical tubular column adapted to be supported on a floor, an upright cylindrical housing supported in the upper end of said column, a pair of horizontally disposed, superposed, relatively movable plates, depending means attached to the lower of said plates, said depending means being rotatably and slidably received in said housing, means limiting downward movement of said depending means, a spring interposed between said housing and said depending means normally holding said depending means spaced above its lowermost possible position, a brake button mounted in said depending means for relative movement vertically thereof, said brake button having an upper end portion normally adjacent the under surface of the upper plate, and means for preventing downward movement of said brake button upon downward movement of said depending means and plates whereby to permit said upper plate to engage said brake button.

8. Structure as defined in claim 7 in which the means for preventing downward movement of said brake button comprises a rod supported by said housing and extending centrally and independently of said depending means.

9. In a seat-mounting construction, a vertical tubular column adapted to be supported on a floor, an upright cylindrical housing supported in the upper end portion of said column, a seat-supporting assembly including depending means rotatably and slidably receivable in said housing, a cam member mounted in said housing below said depending means, a connection between said housing and said cam member preventing relative rotation thereof, said cam member and said depending means having engaging corresponding cam surfaces so disposed as to cause said depending means to rise upon turning movement thereof, spring means operatively positioned to yieldably elevate at least a portion of said seat-supporting assembly and effective to maintain said cam surface in engagement, and means permitting limited downward movement of at least said portion of said seat assembly without separating said depending means from said cam member.

10. In a seat-mounting construction, a vertical tubular column adapted to be supported on a floor, a pair of plates mounted one upon the other for relative horizontal movement, the uppermost of said plates being adapted to support a seat, depending means on the lowermost plate received in said column permitting limited rotative and vertical movement of the plates, yieldable means urging said plates upwardly, said depending means and said column providing interengaging cam means effective, upon rotative movement of said plates in either direction from a given position to raise said plates, and effective with gravity, in the absence of an opposing force, to return said plates rotatively to said given position, said plates being depressible independently of said cam means relative to said column upon the application of downward force thereon, and brake means carried by said column engageable by said uppermost of said plates only when said plates are in said given position and are depressed to prevent relative movement of the plates.

11. A construction as set forth in claim 10 in which a cushioning pad is provided for cushioning the plates when the plates are depressed and are not in said given position.

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