

(No Model.)

W. DROESER.
SELF LEVELING MECHANISM.

No. 540,782.

Patented June 11, 1895.

FIG. 1.

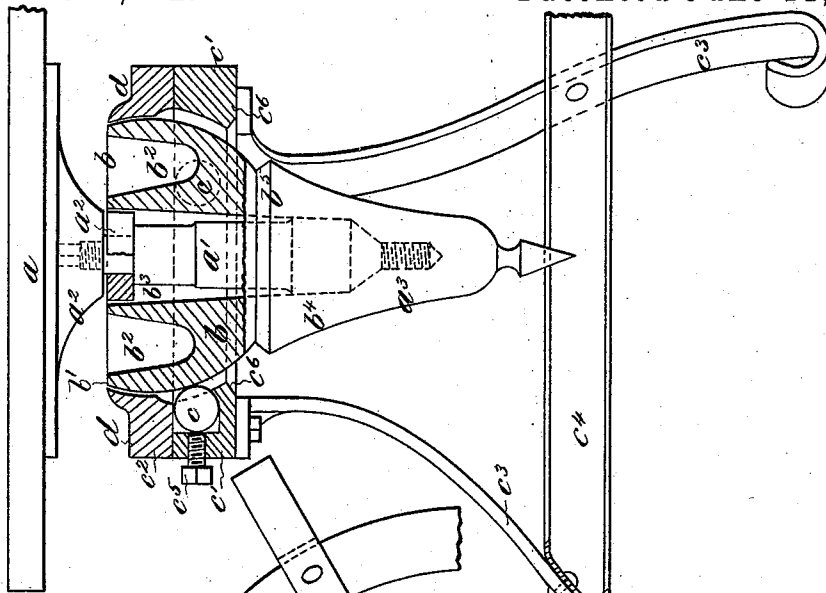


FIG. 3.

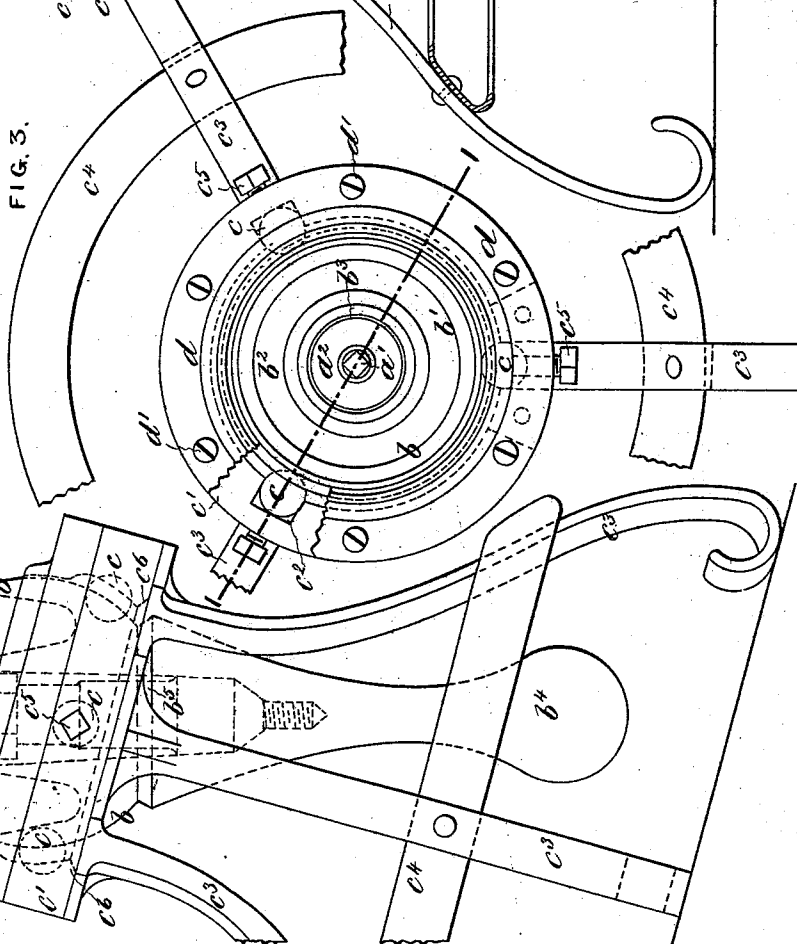
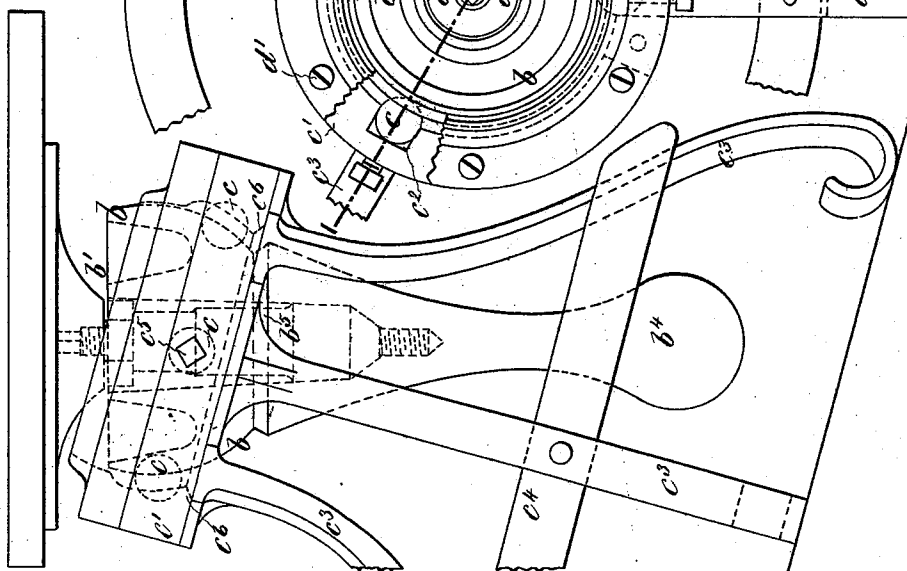


FIG. 2.



WITNESSES.

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SELF-LEVELING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 540,782, dated June 11, 1895.

Application filed May 23, 1894. Serial No. 512,194. (No model.)

To all whom it may concern:

Be it known that I, WILHELM DROESER, a subject of the King of Prussia, and a resident of London, England, have invented a certain new and Improved Method of and Means for Mounting Chair-Bottoms, Table-Tops, and the Like, of which the following is a specification.

This invention relates to an improved method of and means for mounting the sitting or supporting parts of chairs, tables and other articles of furniture and the like, with the object of causing the horizontal or approximately horizontal position of such parts (hereinafter intended to be comprehended where the words "chair bottom" alone occur) to be maintained, irrespective, within any required limit, of the position of the legs or supporting frame thereof, so that whether the latter be standing on an inclined floor or on a floor subject to alteration of position, such as the deck of a vessel at sea, the chair bottom will, nevertheless, maintain its horizontality.

To this end, the invention consists in supporting the chair bottom in the line of its center of gravity, by a spherical or parti-spherical ball, which, in turn, is supported in a normally horizontal plane below and adjacent to its central horizontal plane of greatest area, by ball-bearings contained in a rigid frame, supported by legs or a suitable framing, and, also, in causing the chair bottom to be maintained in stable equilibrium by the application of its own weight to the ball or to a depending extension thereof, at a point as much below its plane of support as is conveniently obtainable, with the object of bringing said center of gravity as much below the plane of support of the ball as is necessary to obtain a sufficient stability of the chair bottom. With such an arrangement, however, within the arranged limit, the normally horizontal plane of support afforded by the ball-bearings may oscillate or assume various inclined positions, such, for example, as would be caused by the pitching and rolling of a vessel at sea. Still, as such plane of support or its major part will always be below and on the opposite side of the parallel plane of greatest area of the ball to that on which the chair bottom is situated, both the ball and the attached chair bottom will be supported in stable equilibrium, by

reason of the application of its weight to the ball or depending extension thereof at a point below its plane of support, and the horizontality of the chair bottom will, consequently, be maintained.

On the accompanying drawings, Figure 1 represents an elevation, partly in section on the line 1 1, Fig. 3, of a chair-bottom mounted in accordance with the invention. Fig. 2 represents an elevation showing the position on an inclined floor, certain of the parts shown in full lines in Fig. 1 being illustrated in this view in dotted lines. Fig. 3 represents a plan, the chair-bottom having been removed.

a, represents the chair bottom, table top or other sitting or supporting part of the article, the horizontality of which it is wished to maintain, and *b*, represents the said spherical or parti-spherical ball upon which the chair bottom is mounted and which constitutes its center of adjustment. It is only necessary that a central zone of the ball, sufficient to provide (say) for usual inclinations of the deck of a vessel at sea, should be spherical. Its top may be truncated, as at *b'*, and its upper part may also be hollowed, as at *b''*, to reduce the weight above its plane of support afforded by the ball-bearings *c*. It is preferably solid below such plane and formed with a depending extension *b⁴* to assist in the desired gravitating action, but is made hollow in the line of its axis, as at *b³*, to enable the chair bottom to be connected to and its weight applied to the ball or depending extension thereof at a point below its plane of support for the purpose aforesaid.

In Figs. 1 and 2, the ball is represented as formed with an axially hollowed depending extension, *b⁴*, and the weight of the chair bottom is represented as applied to said extension, well below the plane of support of the ball afforded by the ball-bearings *c*, by means of a standard *a'*, which is screwed to the under side of the chair bottom, is centered in the upper part of the recess, *b³*, by a loosely fitting collar, *a²*, and is screwed into the bottom of the recess, as at *a³*. The chair bottom may, however, be applied to the ball or depending extension thereof in any other equivalent manner which will enable it to depend upon the ball for its horizontality. The de-

pending extension b^4 may also be of any other suitable formation than those represented and may be formed integral with the ball, or may be adjustably applied thereto in any suitable manner.

c , represents the ball-bearings, which are applied to a rigid, normally horizontal, annular frame, c' , in a plane below that of the greatest area of the ball, b , either singly and equidistant in pockets, c^2 , as represented, or in adjacent series in a grooved annular frame. The frame, c' , is supported by legs, c^3 , which, at a lower part, may be braced together by an annular guard, c^4 , or it may be otherwise supported in any convenient manner.

The balls, c , are located in position by a removable cover-ring d , secured by screws, d' , and they may be set up or adjusted to the ball, b , by set-nuts, c^5 . The cover-ring, d , serves also to connect the ball, b , with the supporting frame, c' , c^3 , in such a manner as to enable the whole article to be lifted, and readily removed from place to place.

The chair bottom may be tilted in any direction by the inclination of the body of the user, within limits defined by an annular stop, b^5 , formed on the lower part of the ball, b , and adapted to co-act with an annular stop, c^6 , formed on the underside of the frame, c' . Such stops may also serve to define the limit of inclination of the floor, within which the ball and depending extension will maintain the desired stable equilibrium of the chair bottom or other article supported by the ball.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with the supporting bearing b recessed in the line of its vertical axis and made spherical at its central zone, a suitably supported rigid annular frame c' , and ball bearings c carried by said annular frame and co-operating with said supporting bearing b as described, of a chair bottom or the like provided with a standard a' which is secured into the bottom of the axial recess of the supporting bearing b below the plane of

support afforded by the ball bearings c , substantially as set forth.

2. The combination with the supporting bearing b recessed in the line of its vertical axis, having a spherical central zone and a depending extension b^4 having an annular stop b^5 , of a suitably supported rigid annular frame c' having an annular stop c^6 formed on its underside and adapted to coact with afore-said stop b^5 , ball bearings carried by said annular frame and co-operating with said supporting bearing as described and a chair bottom or the like provided with a standard a' having collar a^2 to center said standard in the axial recess of the supporting bearing b , substantially as set forth.

3. In combination; a chair bottom, table-top or other sitting or supporting part of an article of furniture or the like; a spherical bearing truncated at its top, hollowed at its upper part, formed or provided with a depending extension or gravity device, and recessed in the line of its center of gravity to a point below its plane of support; means for connecting the chair bottom, table-top or other part to be supported with the spherical bearing or depending extension thereof in the line of its center of gravity and below its plane of support; ball-bearings for supporting the spherical bearing in a plane adjacent to its horizontal plane of greatest area; a rigid annular frame supporting the ball-bearings; a depending leg-framing supporting the annular frame; and a cover-ring locating the ball-bearings in the annular frame, and connecting the spherical bearing to the supporting framing so as to permit of the lifting and removal of the whole upon lifting the top supported part, as set forth.

Signed at London, England, this 10th day of May, 1894.

W. DROESER.

Witnesses:

CHARLES AUBREY DAY,
ARTHUR ALEXANDER CROZIER.