Nov. 23, 1954 J. A. CASTRICONE 2,695,147

EQUALIZING MECHANISM

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Fig. 1.

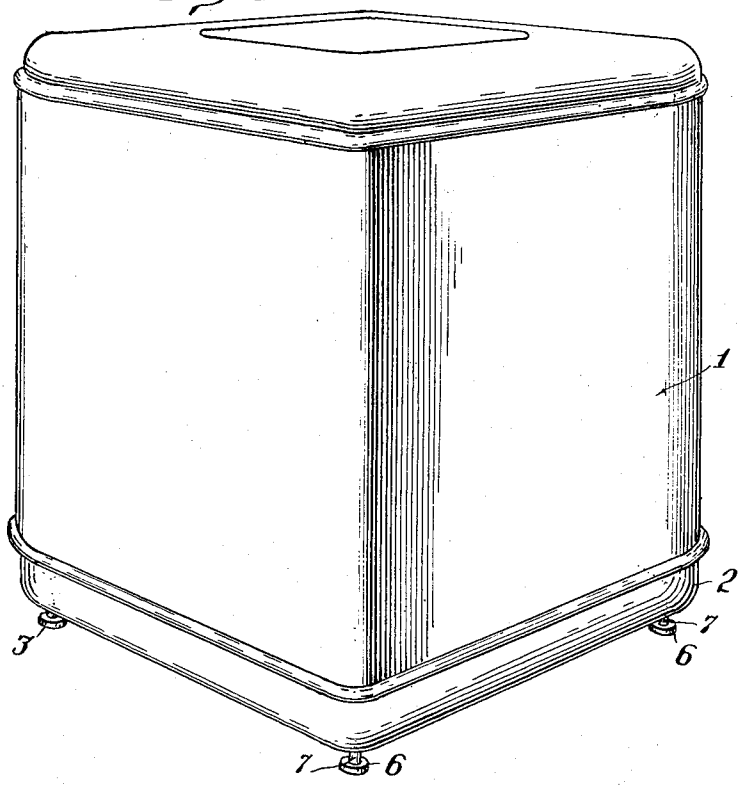
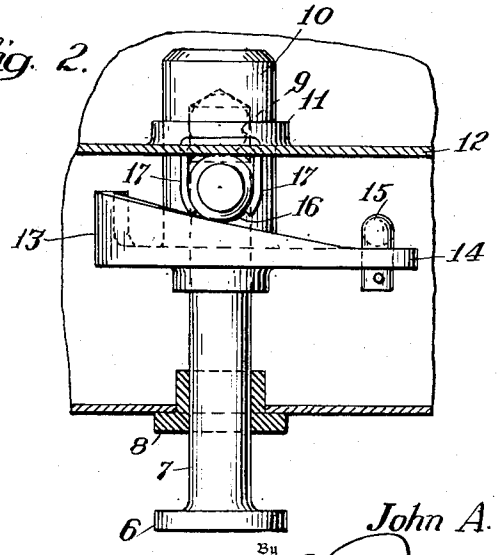


Fig. 2.



Inventor

John A. Castricone

By J. Preston Thrasher

Attorney

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Fig. 3.

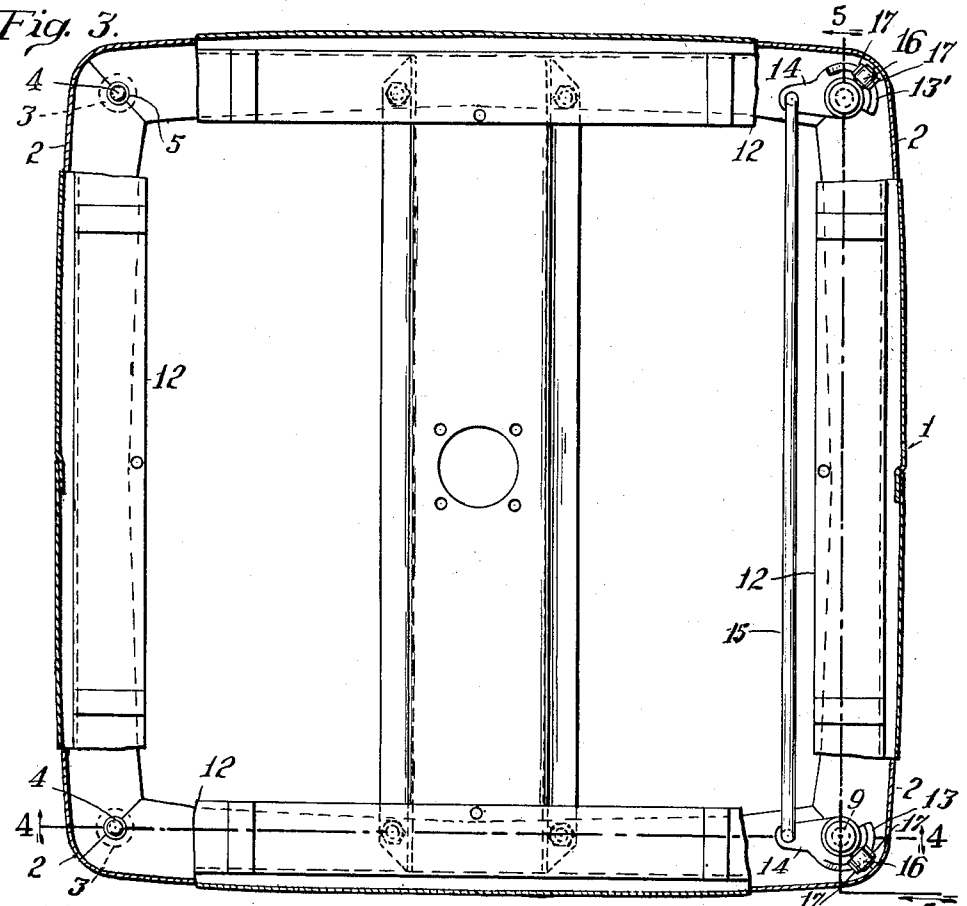


Fig. 4.

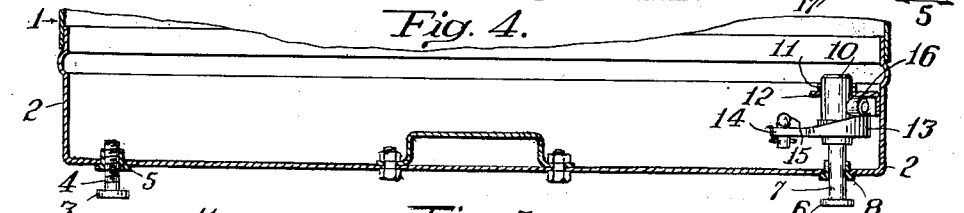
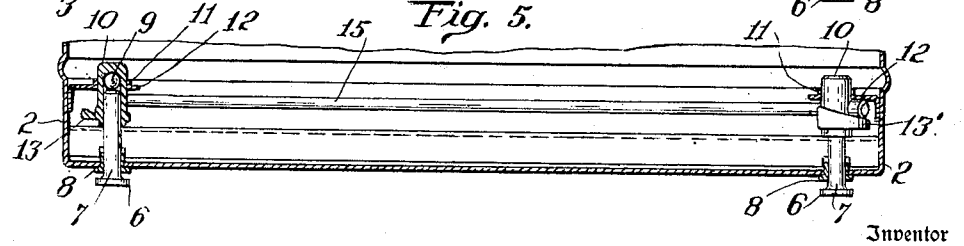


Fig. 5.



Inventor

John A. Castricone

By

J. Preston Smucker

Attorney

United States Patent Office

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EQUALIZING MECHANISM

John A. Castricone, Peoria, Ill., assignor to Altorfer Bros. Company, Peoria, Ill., a corporation of Illinois

Application December 6, 1950, Serial No. 199,517

7 Claims. (Cl. 248—2)

This invention relates to improvements in equalizing mechanism adapted especially for uniformly supporting different devices, such as clothes washing machines.

Where a machine or other device is supported at four or more points, such as the corners thereof, difficulties have been encountered in obtaining a uniform support for such device, except where it is supported on a floor that is perfectly level. Any warping or sloping of the floor will leave the device insecurely supported.

It has been customary to provide clothes washing machines with supports at the four corners thereof adapted to rest directly on the floor. Frequently, such machines are used in basements of private homes, mounted on concrete floors that often slope in one direction or another. It is difficult to obtain a level positioning of the machine on such a floor with feet that are used as the supporting means for the machine. The same principle applies to any other types of machines that must be supported at four or more points.

One object of this invention is to improve the construction of supports for devices, whereby an effective support thereof may be obtained automatically without individual adjustment of the different points of support.

A further object of the invention is to improve the construction of the supports for devices, whereby the several supports will tend to equalize each other to accommodate for irregularities in the surface on which the device is mounted.

These objects may be accomplished according to one embodiment of the invention by the provision of supporting feet for a device of this character, which are movably connected with cam members so as to shift the positions thereof automatically to obtain a proper support of the device and an equalization of the movement of one of the feet to accommodate for a cariation in pressure on the other. It is preferred that the supports be connected together operatively so as to equalize each other in the supporting action of the respective feet for the device. Plungers may be used to form the respective feet of the machine, each of which is rotatably connected with a cam supported thereon and which serves to mount a corner of the device. A pair of cams at different corners of the device may be connected together whereby any pressure that is applied to one of the plungers will cause the cam to rotate toward the low side thereof, which in turn will cause movement of the other cam, thus obtaining an equalizing action in the supporting of the device, irrespective of irregularities in the floor surface on which it is mounted.

This embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of a clothes washing machine showing the invention applied thereto;

Fig. 2 is a side elevation of one of the supporting feet and its connected cam;

Fig. 3 is a horizontal sectional view through the base of the machine and showing the equalizing mechanism in top plan;

Fig. 4 is a cross section therethrough on the line 4—4 in Fig. 3; and

Fig. 5 is a similar view at right angles thereto on the line 5—5 in Fig. 3.

It will be recognized that the equalizing mechanism or supporting means of this invention may be used for many different types of devices that are adapted to be supported at four or more points. It is illustrated and described as applied to a clothes washing machine merely

as an example of one embodiment of the invention, which embodiment is shown in the accompanying drawings for the purpose of illustration.

The machine is constructed of a casing, generally designated by the numeral **1**, and supported upon the base **2**. The washing machine is of the type adapted to be supported at the four corners thereof, as will be evident from Figs. 1 and 3, at which points supporting feet may be provided, as hereinafter described. The mechanism for effecting the washing action is not illustrated or described in detail because this equalizing or supporting mechanism may be applied to any suitable form of clothes washing machine or other device for which it may be applicable.

In the embodiment illustrated, the machine is supported at one side by a pair of feet **3**, each of which is provided with a threaded shank **4** screw threaded into a ferrule **5** secured rigidly in the lower portion of the base **2** of the machine. These feet **3** may thereby be adjusted vertically by rotation in the ferrules **5** to obtain the proper height of adjustment of the base relative to the floor or other surface on which the device is adapted to be mounted.

At the opposite side of the base **2** are a pair of feet **6**, each of which has fixed rigidly thereto a plunger **7**. The plunger **7** is slidably mounted for up and down movement in a sleeve **8** fixed to the underside of the base **2**, as shown in Figs. 2 and 5.

The upper end of each plunger **7** is rounded substantially in a ball surface or has a ball-bearing **9** mounted thereon and interposed between the end of the plunger **7** and a head **10** that is rotatably supported on the plunger **7** to turn relative thereto. The head **10** is cup-shaped with the plunger **7** telescoped therein, as illustrated in Fig. 5, so that the head fits over the upper end of the plunger and is carried thereby. This head **10** in turn is journaled in a sleeve portion **11** formed on a shelf or flange **12** projecting inwardly of the base **2**. The head **10** may be formed as a casting or in other suitable manner, as desired.

A cam **13** is secured to the head **10** of one plunger **7**, and a corresponding cam **13'** is secured to the head **10** of the other plunger **7** at the corresponding side of the device. The cams **13** and **13'** are of graduated heights, each having an inclined face extending continuously from a low to a high side thereon, as will be apparent from Fig. 2. Each of the cams is provided with an arm **14** thereon, and the two cams may be connected together by a connecting rod **15**, as shown in Fig. 3. The cams **13** and **13'** should be fixed rigidly to the heads **10** and may be cast integral therewith, if desired.

Each of the cams **13** and **13'** has the sloping upper face thereof bearing against a roller **16** (Fig. 2), which is enclosed in a bearing guide **17** fixed to the shoulder or flange **12** to retain the roller in place in supporting relation between the upper face of the cam and the lower face of the shoulder or flange **12**.

It will be apparent from this description that a corner of the machine will be supported on one of the feet **6** through the parts described. The plunger **7** is fixed to a foot **6** and this plunger in turn supports the head **10** on the upper end thereof. The head **10** has a cam **13** or **13'** fixed thereto, which cam thereby is supported on the plunger **7**. The cam in turn supports the corner of the base **2** by the roller bearing **16** resting on the cam and interposed between the latter and the flange or shoulder **12**.

The plungers **7** and cams **13** and **13'** are free to rotate relative to each other. If any pressure is applied to one of the feet **6** more than is applied to the other foot **6**, the cam **13** or **13'** at the pressure corner will tend to rotate toward the low side thereof. This rotation will be transmitted through the connecting rod **15** to the other cam and cause rotation of the latter in a corresponding direction. Since the cams **13** and **13'** are turned with their high and low sides in opposite relation to each other, as for instance, right hand and left hand positions, rotation of one of the cams toward the low side will cause rotation of the other cam toward the high side. The movement of the first cam toward the low side would tend to shorten the plunger **7** relative to the base,

but the corresponding movement of the other cam would tend to lengthen the plunger 7 relative to the base. This produces an equalizing action that will automatically provide uniform support for the device on the floor, even though irregularities may occur in the surface on which the device is supported.

It will be evident that the equalizing mechanism herein described may be used as well at the front as at the back of the machine, or at either lateral side thereof, and in fact may be used in any desired relation for supporting a machine or other device that is mounted on a surface at four or more points, as for instance at the corners thereof.

While the invention has been illustrated and described in one embodiment, it is recognized that variations and changes may be made therein without departing from the invention, except as specified in the claims.

I claim:

1. A supporting device comprising an upright plunger, a head telescoped over the upper end of the plunger and supported thereon for turning movement relative thereto, a cam carried by the head, journal means for supporting a device on the cam, said journal means including a roller resting on the cam, a clip embracing the roller and holding the same in a position on the cam, and a shoulder resting on the roller, said clip being secured to the shoulder and journaling the roller for turning movement relative thereto.

2. In a device supported at a plurality of points on a surface, upright supports at a pair of said points, a cam journaled on each of said supports for turning movement about an upright axis, each cam having a cam face thereon extending around the axis of the upright support and inclined lengthwise of the axis, roller means bearing against each cam face and a portion of said device whereby a portion of said device is supported on said cam face for turning movement of the cam relative thereto, said cams having the cam faces thereof inclined in opposite directions, and means connecting the cams together for turning movement in the same direction, whereby when one of the cam faces raises one point of support of the device relative to the surface the other cam face causes a lowering of the other point of support relative to the surface.

3. In a device supported at a plurality of points on a surface, upright supports at a pair of said points, a cam journaled on each of said supports for turning movement about an upright axis, each cam having a cam face thereon extending around the axis of the upright support and inclined lengthwise of the axis, means bearing against each cam face and an adjacent portion of the supported device whereby a portion of said device is supported on said cam face, said cams having the cam faces thereof inclined in opposite directions, and means connecting the cams together for turning movement in the same direction, whereby when one of the cam faces raises one point of support of the device relative to the surface the other cam face causes a lowering of the other point of support relative to the surface.

4. In a device supported at four points on a surface, upright plungers at a pair of said points, a head surrounding each of said plungers and supported thereby, said head being journaled thereon for turning movement about an upright axis and having a cam face extending around said axis externally of the head and inclined lengthwise of the axis, said cams having roller means bearing against each cam face and a portion of the device whereby a portion of said device is supported on said cam face for turning movement of the cam relative thereto, said cams having the cam faces thereof inclined in opposite directions, and means connecting the cams together for turning movement in the same direction, whereby when one of the cam faces raises one point of support of the device relative to the surface the other came face causes a lowering of the other point of support relative to the surface.

5. In a device supported at four points on a surface, upright plungers at a pair of said points, a head surrounding each of said plungers and supported thereby, said head being journaled thereon for turning movement about an upright axis and having a cam face extending around said axis externally of the head and inclined lengthwise of the axis, roller means bearing against each cam face and a portion of the device whereby a portion of said device is supported on said cam face for turning movement of the cam relative thereto, said cams having the cam faces thereof inclined in opposite directions, reciprocable link means connected at opposite ends directly with the cams and connecting the cams together for turning movement in the same direction, whereby when one of the cam faces raises one point of support of the device relative to the surface the other cam face causes a lowering of the other point of support relative to the surface.

6. In a device supported at four points on a surface, upright plungers at a pair of said points, a head surrounding each of said plungers and supported thereby, said head being journaled thereon for turning movement about an upirght axis and having a cam face extending around said axis externally of the head and inclined lengthwise of the axis, means bearing against each cam face and a portion of the device whereby a portion of said device is supported on said cam face for turning movement of the cam relative thereto, said cams having the cam faces thereof inclined in opposite directions, and means connecting the cams together for turning movement in the same direction, whereby when one of the cam faces raises one point of support of the device relative to the surface the other cam face causes a lowering of the other point of support relative to the surface.

7. In a device supported at four points on a surface, upright plungers at a pair of said points, a head surrounding each of said plungers and supported thereby, said head being journaled thereon for turning movement about an upright axis and having a cam face extending around said axis externally of the head and inclined lengthwise of the axis, means bearing against each cam face at a single point about the circumference thereof and a portion of the device whereby a portion of said device is supported on said cam face for turning movement of the cam relative thereto, said cams having the cam faces thereof inclined in opposite directions, and means connecting the cams together for turning movement in the same direction, whereby when one of the cam faces raises one point of support of the device relative to the surface the other cam face causes a lowering of the other point of support relative to the surface.

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