

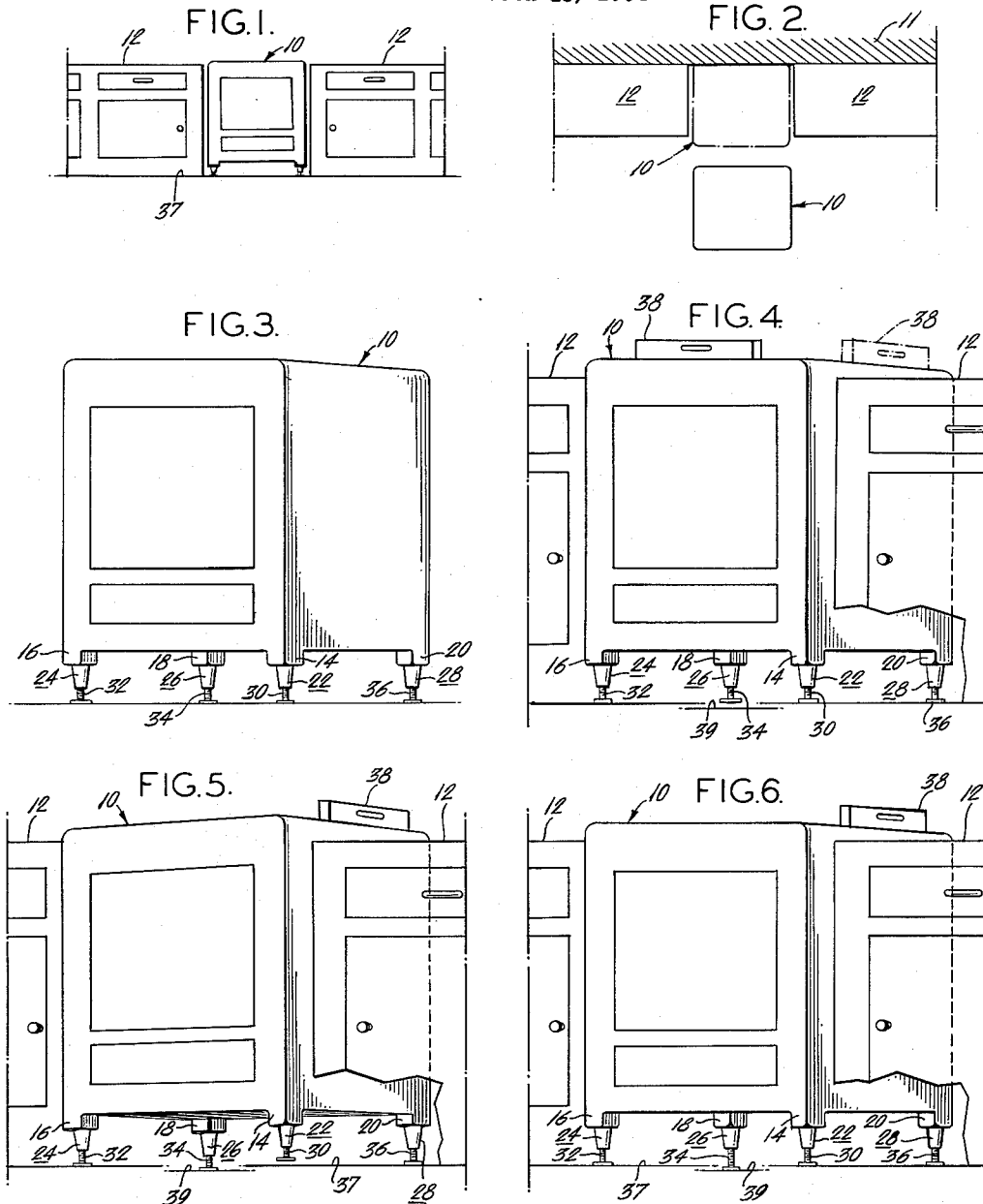
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C. R. NALLE

3,229,942

METHOD OF LEVELING APPLIANCE AND MACHINE CABINETS OR THE LIKE

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INVENTOR:
CHARLES R. NALLE

BY *Howdorn & Howdorn*

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3,229,942 METHOD OF LEVELING APPLIANCE AND MACHINE CABINETS OR THE LIKE

Charles R. Nalle, 1810 Rittenhouse Square,
Philadelphia, Pa.

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The present invention relates to a method of leveling articles, such as appliance and machine cabinets or the like, and more specifically to such a method for leveling an article having individually adjustable leveling legs. The article to be leveled employs levelers with extendible legs, which preferably hold their position after adjustment, such as disclosed in United States Patent No. 2,666,334 of Charles R. Nalle, issued Jan. 19, 1954, entitled Threaded Article and Support Therefor. The present invention has for an object the providing of a method whereby an article can be easily leveled when placed in the desired operating location against a wall, between other articles, cabinets, machines or the like.

Methods of leveling articles, such as household and office furniture and appliance and machine cabinets, are desirable since floors are generally not perfectly level. The method of leveling such articles generally employed is a trial and error process which is time consuming and frequently the person leveling the article becomes impatient and quits before the article is level. Moreover, most of these methods do not involve a systematic approach whereby the article is assured to be level after a few steps have been performed. Also, the systematic method of the present invention is performed without the use of complicated devices or equipment.

In accordance with the present invention, a leveling method is provided which permits an article to be leveled in an environment wherein the rear of a generally rectangular shaped article is inaccessible from the sides or rear to adjust the height of the article. Each of the bottom corners of the article has attached thereto an adjustable leveler which has an extendible leg capable of being extended and retracted to raise or lower the distance of the article from the floor, such as disclosed in United States Patent No. 2,499,277 of Charles R. Nalle, issued Feb. 28, 1950, entitled Caster Structure.

In accordance with the present invention, the first step in the series of steps to level the article is to adjust all of the extendible legs of the levelers to minimum extension from the leveler. The article to be leveled is next placed in the desired operating position which for purposes of illustration, is considered to be an environment wherein the back portion of the article is inaccessible.

The leveling of the article from side to side in the front should be performed as the next step in the sequence of steps to level the article in the desired operating location. An ordinary spirit level can be employed in determining whether the article is level and which sides of the article need adjusting if the article is not level.

The next important step in the sequence of steps is the diagonal leg adjustment to adjust, if needed, either rear leveler, so that all the extendible legs are touching the floor when the front extendible legs, which leveled the front of the article, are in contact with the floor. Assuming that one of the rear extendible legs of one of the rear levelers is not touching the floor when the front levelers are contacting the floor, the diagonal leg adjustment is made by resting the article on its rear legs, thus raising one of the front legs off the floor, that is, the front leg which is diagonally opposite the rear leg that was not touching the floor will be off the floor. The extendible front leg which is not in contact with the floor should be extended to contact the floor and the number of turns

and fractional turns taken in extending the leg should be noted. The last mentioned extendible front leg should be retracted to its position prior to the last mentioned extension by retracting the extendible leg the number of turns and fractional turns taken in making the last mentioned extension of the leg. The article should now be moved out from its operating position until the rear levelers are accessible. The extendible rear leg, which is diagonally opposite the last mentioned extendible front leg that was extended and retracted, should be extended the number of turns and fractional turns the diagonally opposite front leg was extended. By this step, the article to be leveled will be stabilized so that all extendible legs will be in contact with the floor when the article is placed in the operating location.

The leveling of the article from front to back is the next and final step in the sequence of steps in leveling the article. Since one or both of the extendible front legs are at or near minimum extension, in order to assure that the rear of the article is equal to or greater in height than the front of the article, the rear extendible legs should be extended equal numbers of turns to assure that the rear of the article is higher than the front. The article to be leveled should now be replaced in the desired operating location. In this position the front levelers should be extended equal numbers of turns until the article is level from front to back.

By this method, the article will be level in its desired operating location.

For a better understanding of the present invention reference is made to the following drawings in which:

FIG. 1 is a front elevational view of the article to be leveled and other articles between which the article to be leveled is desired to be positioned;

FIG. 2 is a plan view of the article to be leveled before being placed in a desired operating location indicated by the dashed lines between the other articles and near a wall;

FIG. 3 is a perspective view at the base level of the article to be leveled showing the levelers with extendible legs attached to each leg of the article;

FIG. 4 is a perspective view at the base level of the article to be leveled when the article is in the desired operating location showing the left rear leg not touching the floor and a spirit level shown in solid and dashed lines is located on top of the article;

FIG. 5 is a perspective view at the base level of the article to be leveled when the front right leg is not touching the floor and a spirit level is shown on top of the article; and

FIG. 6 is a perspective view at the base level of the article to be leveled when all the legs of the article are touching the floor and a spirit level is placed on the article.

Referring to FIGS. 1 and 2, an article 10 to be level is shown. The article can be an appliance or machine cabinet, desk, stove, refrigerator or any other similar type of article. For purposes of illustration the desired operating location of the article is in an environment wherein the article has its rear portion in close proximity to a wall 11 and each side of the back portion of the article is inaccessible, such as when the article is placed between cabinets 12, as shown in FIGS. 1 and 2.

The leveling method will be described in relation to an article having four legs, 14, 16, 18 and 20, positioned in a standard manner at each corner of the article, as shown in FIG. 3. At the bottom of each leg of article 10 there is provided, for purposes of illustrating the method of the present invention, an adjustable caster or leveler; leveler 22 on leg 14, leveler 24 on leg 16, leveler 26 on leg 18, and leveler 28 on leg 20, as disclosed in

United States Patent No. 2,499,277 cited above. The adjustable levelers on each leg of the article have extendible legs, 30, 32, 34 and 36 in levelers 22, 24, 26 and 28, respectively. The extendible legs are extended or retracted in order to provide a means for leveling the article of furniture. It is to be understood that the extendible legs could be provided with rollers or wheels for ease of moving the article.

The first step in the series of steps to level the article is to adjust each extendible leg of each leveler to a position of minimum extension of the leg from the leveler. When the extendible legs are at a position of minimum extension from the levelers, the base level of the article will be at minimum distance from the floor 37. Line 39 in FIGS. 4, 5 and 6 represents a departure from the general plane of the floor 37. The article to be leveled should next be placed in the desired operating position between cabinets 12 in close proximity to wall 11.

The leveling of the article from side to side in the front should be performed as the next step in the sequence of steps to level the article in the desired operating location. A spirit level 38 or any other type level may be placed on the article to be parallel to the front of the article, as shown in FIG. 4, to determine when the front of the article is level. The article should be positioned in a manner whereby it will be resting on the extendible front legs 30 and 32 as shown in FIG. 4. The position of the bubble in level 38 is observed, and if the bubble is to the left of center, the right extendible front leg 30 is extended downward to raise the right side of the article until the bubble is centered in the level. If the bubble is to the right of center, the left extendible front leg 32 is extended downward until the bubble is centered in the level. By this process the article will be leveled in the front from right side to left side.

The next step is to determine if both of the extendible rear legs are touching the floor when the extendible front legs are touching the floor. This determination is made by trying to rock the article back or resting the article on both extendible rear legs, 34 and 36, by applying an upward force at the front edges of the article. If both of the extendible rear legs were not touching the floor when the extendible front legs were touching the floor, one extendible front leg will be above the floor, such as shown in FIG. 5. This indicates that the article is not diagonally stable from front to back. More specifically, when the extendible front legs 30 and 32 are in contact with the floor 37, as shown in FIG. 4, the extendible rear leg 34 is above the floor 39, which represents a departure from the general plane of the floor. When the article to be leveled is rocked or rested onto the rear extendible legs, as in FIG. 5, the extendible front leg 30, which is diagonally opposite extendible leg 34, is raised off the floor.

The next important step in the sequence of steps is the diagonal leg adjustment to adjust the extendible rear leg, which was not contacting the floor as determined above, to contact the floor so that all of the extendible legs are contacting the floor when the extendible front legs are in contact with the floor. The determination of the amount the extendible rear leg 34 should be extended to stabilize the article in the operating position is made when the article is in the position shown in FIG. 5. When the article is in this position, the diagonally opposite extendible front leg 30 from extendible rear leg 34 is raised from the floor the corresponding amount that extendible rear leg 34 was off the floor when in the position shown in FIG. 4. When the article is in the position as shown in FIG. 5, extendible leg 30 is extended downward until it touches the floor, the number of turns and fractional turns that the extendible leg 30 was extended is to be noted. Then extendible leg 30 is next retracted to its original position before it was extended in the last mentioned adjustment of the extendible leg 30.

The article is next returned to the position as shown in FIG. 4 in which both front levelers are touching the

floor. While the article is in this position the level 38 is placed perpendicular to the front of the cabinet which also corresponds to being perpendicular to the wall 11, as shown by the level in dashed lines in FIG. 4. If the bubble is to the rear of center and the rear of the article, it indicates that the rear of the article is higher than the front of the article. However, if the bubble is to the front of center and front of the article, it indicates that the front of the article is higher than the rear of the article. Either of the last mentioned conditions which occur should be noted.

The article 10 is next moved out from its operating position until the extendible rear legs 34 and 36 are accessible. The extendible rear leg 34, which was off the floor when the article was in the position shown in FIG. 4, is extended the number of turns or fractional turns that were taken to extend the diagonally opposite extendible front leg 30 to touch the floor when the article was in the position shown in FIG. 5. After the last mentioned adjustment has been made, the article 10 will be stable by having all of the extendible legs contacting the floor when the article is replaced in the desired operating location.

The leveling of the article from front to back is the next and final step in the sequence of steps in leveling the article. If the bubble in the level shown in dashed lines, was noted to have been toward the front of the article when the article was in the position shown in FIG. 4, both extendible rear legs 34 and 36 should be extended an equal number of turns from their present positions. Legs 34 and 36 should be extended until it is thought that the rear of the article will be equal to or greater in height than the front of the article when the article is replaced in the operating location. However, if the bubble in the level shown in dashed lines, was toward the rear of the article, the last mentioned adjustment should not be performed.

The article should now be placed back in the desired operating location, as shown by the dashed lines in FIG. 2. With level 38 positioned as shown in FIG. 6, it will be noted that the bubble is toward the rear portion of center of the level and toward the rear of the article, since the above adjustments were made to assure this occurrence. The extendible front legs 30 and 32 should be extended equal numbers of turns until the bubble is centered in the level.

By this method, the article to be leveled will be leveled from its left to right sides and from front to rear. Thus an article can be leveled easily and simply under conditions where the floor on which the article is desired to be placed is not completely level, as is the usual situation.

It will be apparent to those skilled in the art that variations in the leveling method can be performed. The procedure of leveling the article from front to back can be performed last as a separate adjustment. After the diagonal rear leveler adjustment has been made so that the article is diagonally stable, the article can be replaced in the desired operating position. Then the level 38 for the first time would be placed on the article as shown in FIG. 6 and the determination of whether the front or rear of the article is higher would be made. If the bubble in the level was to the rear of center and toward the rear of the article, the extendible front legs would be extended equal numbers of turns until the bubble is centered. However, if the bubble was to the front of center and toward the front of the article, the article would be moved out from the operating position until the extendible rear legs were accessible. The extendible rear legs would be extended equal numbers of turns until it was certain that the rear of the article would be equal to or greater in height than the front when the article is replaced in the operating location. The article should thereafter be replaced in the operating location and the extendible front legs extended equal numbers of turns until the bubble in the level 38, positioned as shown in FIG. 6, is centered.

Other modifications of the leveling method and the

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steps described herein will occur to those skilled in the art. All such modifications are intended to be within the scope and spirit of the present invention as defined by the appended claims.

I claim:

1. A method of leveling an article which has a generally rectangular shaped base and which has adjustable levelers at the corners of said base, comprising:

adjusting all said levelers to a position of minimum extension from said article;

placing said article to be leveled in a desired location; adjusting the front levelers until the front of said article is level;

resting said article on its rear levelers and one front leveler so that the other front leveler is not in contact with the floor;

extending said front leveler which is not in contact with the floor until said front leveler contacts the floor;

returning said last mentioned front leveler to its position of extension prior to said last mentioned extension of said front leveler;

moving said article out from said desired location until said rear levelers are accessible;

extending the rear leveler, which is diagonally opposite said front leveler that was extended and retracted, the amount said diagonally opposite front leveler was extended;

extending said rear levelers equal amounts so that the rear portion of said article will be higher than the front portion when said article is replaced in said desired location;

replacing said article in said desired location and extending said front levelers equal amounts until said article is level from front to back, whereby said article will be level in said desired location.

2. A method of leveling an article which has a generally rectangular shaped base and which has adjustable levelers at the corners of said base, comprising:

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adjusting all said levelers to a position of minimum extension from said article;

placing said article to be leveled in a desired location; adjusting the front levelers until the front of said article is level;

resting said article on its rear levelers and one front leveler so that the other front leveler is not in contact with the floor;

extending said front leveler which is not in contact with the floor until said front leveler contacts the floor;

returning said last mentioned front leveler to its position of extension prior to said last mentioned extension of said front leveler;

moving said article out from said desired location until said rear levelers are accessible;

extending the rear leveler, which is diagonally opposite said front leveler that was extended and retracted, the amount said diagonally opposite front leveler was extended;

returning said article to said desired location; the rear of the article being lower than the front, moving said article out from said desired location until said rear levelers are accessible;

extending said rear levelers equal numbers of turns so that said rear of said article is higher than the front when relaced in said desired location;

replacing said article in said desired location and extending said front levelers equal numbers of turns until said article is level from front to back, whereby said article will be level in said desired location.

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FRANK B. SHERRY, *Primary Examiner*.