

T. C. LUCE.
SELF ADJUSTING CASTER.
APPLICATION FILED APR. 9, 1909.

941,082.

Patented Nov. 23, 1909.

Fig. 1.

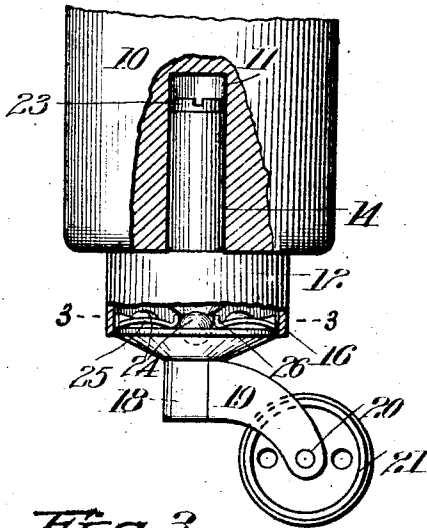


Fig. 2.

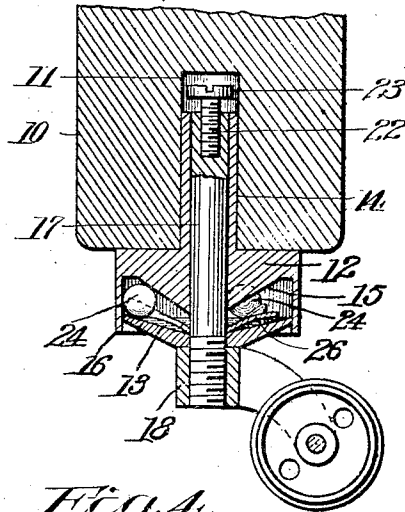


Fig. 3.

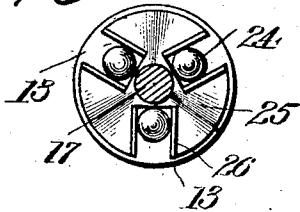
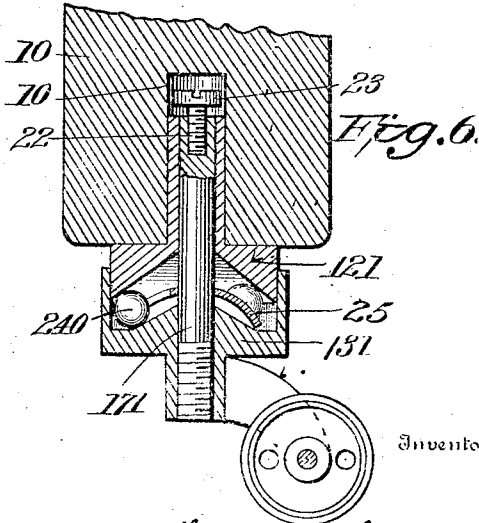
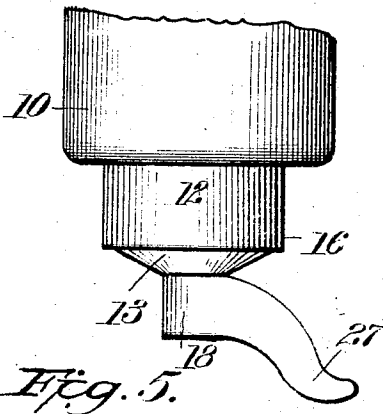
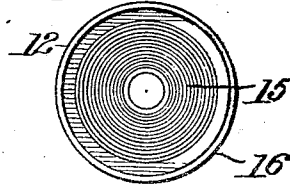


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

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SELF-ADJUSTING CASTER.

941,082.

Specification of Letters Patent.

Patented Nov. 23, 1909.

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To all whom it may concern:

Be it known that I, THOMAS C. LUCE, a citizen of the United States, residing at Dalton, county of Berkshire, State of Massachusetts, have invented an Improvement in Self-Adjusting Casters, of which the following is a specification.

This invention relates to means for automatically varying the length of an article such as a table leg or a chair leg, or any other article which it is desired shall automatically accommodate itself to varying distances.

The invention has particular reference to means for enabling a table or chair, or other article of furniture having a plurality of legs, to be supported by a floor so that no space shall exist between the bottom of either leg and the floor, such as often occurs when the floor is uneven.

While the invention is especially designed as a caster, that is, a foot piece for a table or chair leg which has a rolling bearing on the floor, yet I do not limit myself to an article or attachment when constructed as a caster, since it is equally applicable for use without a roller or wheel to bear on the floor.

The invention may also be embodied in other devices than furniture leg or foot pieces, as will be readily understood from the following description.

The object of the invention may be stated to be the provision of a device which may be used as an attachment to another article which may be a table or chair leg or desk, to support the same, and which will automatically accommodate itself to any unevenness that may exist within certain limits in the floor.

To these ends the invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

Of the accompanying drawings:—Figure 1 is a side elevation of my invention embodied in the form of a caster, the same being attached to the lower end of a table leg, the latter being partly in section. Fig. 2 is a sectional view similar to Fig. 1, and with the parts in a different automatically assumed position. Fig. 3 represents a section on line 3—3 of Fig. 1. Fig. 4 is an under-plan view of the device above the line 3—3 of Fig. 1. Fig. 5 is a view similar to a

portion of Fig. 1, but illustrating the device as a leg support having no roller or wheel. Fig. 6 is a view similar to Fig. 2, but illustrating a modification hereinafter described.

Similar reference characters indicate the same or similar parts in all of the views.

Referring first to the structures shown in Figs. 1 to 4, 10 denotes the lower end of a furniture leg, such as a table leg, but it is to be understood that this term is used for the purpose of illustration and not of limitation. The leg 10 is formed with a vertical bore 11 such as is commonly employed to receive the upper portion of an ordinary caster.

My improved attachment in the embodiment illustrated comprises upper and lower disks 12 and 13, the upper one being formed with a sleeve portion 14 which closely fits the bore 11 in the leg 10, the said disk having a cone-shaped face 15 and a rim or flange 16. The lower disk 13 is concave so as to form between its upper face and the lower face 15 of the disk 12 a concavo-convex space. The angle of concavity of the face of the disk relatively to the angle of the cone of the upper disk is such that the space between the opposing faces of the two disks gradually increases from the center to the periphery.

The disk 13 is secured to a stem 17 so as to rotate therewith, although this is not absolutely essential, that is, it is not essential that the stem 17 shall rotate. It is essential however that one of the disks shall be free to rotate relatively to the other for a reason hereinafter described. The disk 13 may be formed integral with or rigidly secured to a sleeve 18 which is screwed on or otherwise secured to the lower end of the stem, said sleeve having a pair of arms 19 and an axle 20 for a caster wheel 21 which may be of any ordinary or preferred form. To prevent the stem 17 from dropping out through the sleeve 14, and to prevent undue separation of the two disks, I illustrate a screw 22 fitting a threaded recess in the upper end of the stem 17, the head 23 of the screw being of a size sufficient to contact with the upper end of the sleeve 14 and serve as a stop to limit the lowermost position which the concave disk may assume away from the cone-faced disk 12.

The flange or rim 16 preferably extends down, to overlap the outer edge of the disk 13 when the latter is in its lowest position,

so as to produce a practically dust-tight joint, said rim also serving to prevent the escape of the locking balls.

The balls, preferably three in number, indicated at 24, are located in the concavo-convex space between the two disks. To keep the balls 24 in their proper positions relatively to each other, I employ a spacer which is illustrated as consisting of a plate 25 of substantially the shape of the face of the disk 13 on which it rests, said plate 25 having upturned flanges 26 forming three radial guide-ways for the balls 24, said guide-ways permitting the balls to move or roll radially of the spacer.

It will now be readily understood when the parts are in the position shown in Fig. 2, if the particular table or chair leg to which the device is applied, is over an uneven portion of the flooring which would not positively support the wheel, the said wheel and stem 17, and the lower disk will drop to the extent which may be permitted by the stop 23, or which may be permitted by the amount of depression of that particular portion of the flooring. This of course permits the balls 24 to roll inward and since the annular space between the faces of the two disks gradually contracts toward the center, the balls 26 roll inward as far as they may be free to move, and they immediately act to lock the parts with the disks just so far separated according to the distance which the lower disk has moved. No amount of pressure will force the balls outward unless something occurs to cause them to roll laterally. Any lateral movement of the leg 10 in any such direction as to cause the caster or wheel-arms 19 to swing around, will rotate the lower disk 13 so that the balls are rolled laterally or around the cone 15. Downward pressure of the cone exerted at the same time crowds the balls up the incline just so far as they may be pushed by the lower disk and they will remain at that point and oppose further upward movement unless the disk 13 is again rotated. If pushed upward too far and the caster-wheel 21 should be gradually moved to a position over a depression in the flooring, said wheel and the stem and the lower disk will again descend and the balls roll inward and lock the two disks apart.

As shown in Fig. 5, the caster-wheel may be omitted, and instead of arms 19, there may be provided a foot 27 extending laterally from the lower end of the stem 17 to

bear on the floor substantially as a caster wheel.

As shown in Fig. 6; instead of the lower disk being concave it may be convex or cone-shaped as indicated at 131, and the upper disk 121 may have a concave lower face. In this case the balls 240 would simply roll outward instead of inward when the stem 171 drops, and would be crowded inward instead of outward when there is a rotation of one disk relatively to the other and under pressure.

Having now described my invention, I claim:

1. A self-locking support comprising two members having opposing faces which are inclined at different angles to form a tapering space between them, one of said members being movable relatively to the other to vary the width of said space, and a rolling member in said space free to move in the direction in which said space tapers.

2. A self-locking support comprising two disks facing each other and having their faces at different angles to a plane transverse to the axis of the disks, and rolling members free to move in any direction between said faces.

3. A self-locking support comprising two disks facing each other and having their faces at different angles to a plane transverse to the axis of the disks, and rolling members free to move in any direction between said faces, means being provided for holding said rolling members spaced apart.

4. An automatic length adjuster for the purposes described, comprising a pair of concentrically mounted and relatively rotatable disks having a concavo-convex space between them, said space varying from the center outward, and rolling members mounted in said space and free to move toward and from the center.

5. A self-locking support comprising a pair of disks having their opposing faces formed to inclose a concavo-convex space which tapers radially, one of said disks being movable to widen or contract said space, and balls mounted in said space and free to move around the space or toward and from the center thereof.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS C. LUCE.

Witnesses:

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