May 30, 1944. E. C. DEAL 2,350,155

MECHANICAL ADJUSTER

Filed March 18, 1942

Fig. 1

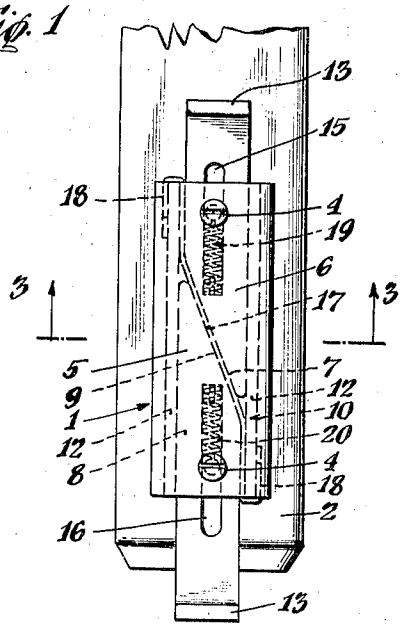


Fig. 2

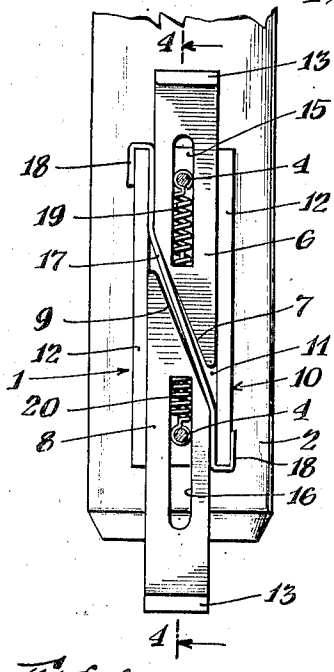


Fig. 3

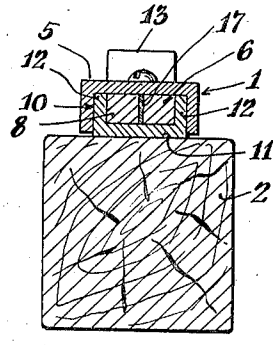
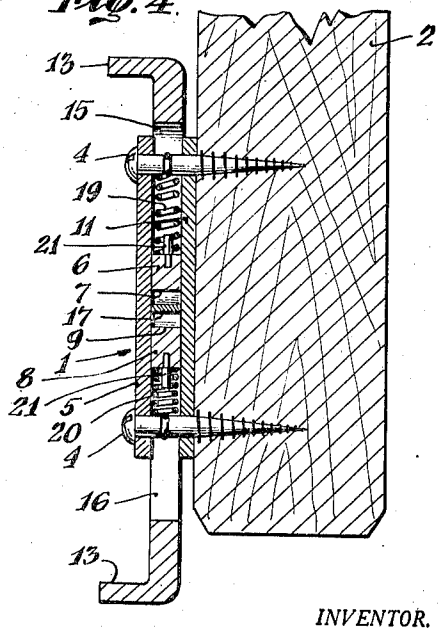


Fig. 4.



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UNITED STATES PATENT OFFICE

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MECHANICAL ADJUSTER

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Application March 18, 1942, Serial No. 435,247

7 Claims. (Cl. 45—139)

The present invention relates to mechanical adjusters and slide-lock devices of the general type illustrated in Reissue Patent No. 20,327, granted to me April 13, 1937.

It is difficult to have floors free from dips and bulges, and tables of all kinds tend to rock when placed on an uneven portion. Waiters commonly force a wedge or some other article under one leg to make it level. The handling of such articles by the waiter is unsanitary and the adjustment is not satisfactory because it frequently slips out. A satisfactory and simple means for lengthening one or more legs of a table is much desired. The slide-lock described herein may be utilized for various other purposes and in various devices, the above example being illustrative only. In the various uses, it is desirable that the slide members be readily adjustable to any desired position and that they be readily and securely locked in that position. Likewise, the device should permit the slide member to be unlocked and securely fixed in a different position without difficulty. The present invention is an improvement upon my patent identified above and attains certain additional objectives which will be described hereinafter.

An object of the present invention is to provide an improved slide-lock device.

Another object of the invention is to provide an improved slide-lock device which securely locks itself in any desired position and which can be readily unlocked and fixed in a different position.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawing, forming a part of the specification, wherein

Fig. 1 is a front view of an embodiment of the invention applied to the leg of a table for illustrative purposes;

Fig. 2 is a view of the device with the cover removed illustrating the inner parts thereof with the wedge members separated;

Fig. 3 is a sectional view along the line 3—3 of Fig. 1; and

Fig. 4 is a longitudinal sectional view along the line 4—4 of Fig. 2 with the cover included.

Referring again to the drawing illustrating a preferred embodiment of the invention, there is shown an adjuster 1 secured to the leg 2 of a table by means of screws 4. The function of the device on the table leg is to increase the length of the leg to compensate for any unevenness in the floor on which the table is placed. The adjustment for varying the length of the leg should be easy to make and should be sufficiently strong to resist substantial weights placed on the table and also to resist any rough usage to which the device may be subjected.

The interior of the mechanism which accomplishes these results is shown more particularly in Fig. 2, where the cover 5 has been removed from the device. A wedge member 8 having a wedge surface 9 at its upper end projects downwardly below the lower end of the table leg 2 to increase the length thereof. A second wedge member 6 has a wedge surface 7 at the lower end thereof adjacent the wedge surface 9. These two wedge members 6 and 8 may be retained in alignment by any suitable means, for example by a channel member 10 having a bottom 11 and sides 12. Thus the wedge members are slidably retained in position for movement longitudinally in the channel member or guideway 10.

Any suitable means may be provided for securing the channel member 10 to the leg of the table or to any other device or article to which the adjuster is to be applied. As illustrated in the present embodiment, the wedge members 6 and 8 are provided with slots 15 and 16 adapted to permit the screws 4 to pass therethrough. Suitable apertures in the bottom of the channel member 10 permit the screws to pass through it also and to be attached to the leg of the table or to a part of any other device illustrated in the drawing. The slots 15 and 16 permit the wedge members 6 and 8 to be moved with the screws 4 remaining in position.

In order to slidably lock the wedge members 6 and 8 in position, there is provided a thin strip of flexible material 17 which extends between the wedge surfaces 7 and 9 and along the opposite sides of the channel member 10, with the ends 18 thereof bent around the diagonally disposed corners of the channel member to secure the strip in position. Preferably the hooked ends 18 of the strip are welded or soldered in addition to being bent around the sides of the channel member so that they will be securely fixed in position. It will be understood that the ends of the strip may be secured to

the channel member or to the fixture on which the device is mounted in any other desired manner and that they may be secured at points intermediate the ends of the channel. The ends of the strip may be fixed in position relative to the wedge members at points beyond the extremities of the wedge surfaces 7 and 9 in any desired manner to permit adjustment as will be explained hereinafter. It will be understood also that the flexible strip may be a wire, cable, cord or the like.

A pair of springs 19 and 20 are provided in the slots 15 and 16 intermediate the screws 4 and the ends of the slots nearest the wedge surfaces. These springs urge the wedge members toward each other to force the wedge surfaces thereof into contact with the flexible strip 17 passing therebetween. A difficulty encountered with the spring illustrated in my prior patent is that persons, who do not understand the principle of the device, are inclined to pull the wedge members apart by pulling on both wedge members instead of on one alone. This places an unnecessary strain on the tension spring which may cause it to give way, thereby impairing the further use of the device. By having compression springs 19 and 20 in the slots 15 and 16, the difficulty is minimized as the springs are supported about their periphery by the sides of the slots and by the top and bottom of the casing. Thus supported on all sides by the housing, the springs will withstand extraordinary strains without impairment in any way. At the same time, the springs are effective in their locking function as the greater the pressure thereon, the more effective the locking action. Preferably each of the springs 19 and 20 is fastened at one end thereof to the screws 4 and its other end fits over a projection or pin 21; this assists in maintaining the springs in desired position.

When weight is applied to the table so that there is a pressure upward on the wedge member 8, the flexible strip 17 is tightly clamped between the two wedge surfaces 7 and 9. The more weight that is applied to the table, the tighter the strip will be clamped in position as a result of the clamping effect and of the friction contact between the sides of the wedges and the sides of the channel. The spring 19 on the upper wedge member 6 is sufficiently strong to keep the wedge surface 7 thereof in contact with the strip so that the interlocking mechanism becomes effective immediately upon pressure being applied to force the wedge member 8 upwardly. However, when pressure is applied to move the wedge member 8 downwardly to lengthen the leg of the table, the wedge surfaces are pulled apart slightly. The pulling apart of the wedge surfaces releases the clamping action on the strip 17 and permits a slidable adjustment of the member 8. By raising the wedge member 6, the clamping action on the strip 17 is also released and the spring 19 will cause the wedge member 8 to follow up into the adjusted position. It will be seen, therefore, that any pressure tending to force the wedge members toward each other securely locks the device in position and any pressure tending to pull the wedge members apart, however slight, unlocks the members, permitting ready adjustment thereof. The limit of the adjustment is determined by the length of the flexible strip 17 and by the length of the slots 15 and 16. For convenience in making the adjustment, the outer ends of the wedge member 6 and 8 may be flanged as indicated at 13. The parts of the improved slide-locking device have been shown somewhat thicker than necessary in an actual device.

In the operation of the device, the table may be held level and one can with his foot press down on the lower flange 13 until it touches the floor. This will pull the wedge members apart and the upper spring 19 will cause the upper wedge member 6 to follow the lower wedge member 8 down to the adjusted position. When the adjustment has been made, the upper wedge member is automatically in position to lock the lower wedge member against upward movement; hence, any weight placed on the table merely increases the locking action. If it is desired to shorten the table leg which has previously been lengthened, one can pull the upper member 6 upward by gripping the flange 13 thereof and in this way, the leg can be shortened to its normal length.

It will be seen that the present device provides an effective slide-locking mechanism which is fully capable of withstanding the rough usage to which it may be subjected. The springs, being supported laterally by the housing throughout their lengths, will withstand extraordinary strains, and since they operate on a compression principle, they are much stronger than a tension spring. The device is simple in construction and it may be readily manufactured at a low cost.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the scope and spirit of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. In a mechanical adjuster and the like, the combination of a housing, cooperating wedge members mounted in the housing having opposed wedge surfaces, each of said wedge members having a slot therein, a flexible member extending between said wedge surfaces and retained by the housing at points spaced longitudinally thereof sufficiently to permit longitudinal movement of the wedge members, means fixed to the housing and extending into said slots and a pair of compression springs mounted in said slots, respectively, and effective upon said means fixed to the housing and upon one end of each slot to urge said wedge members against said flexible member passing between the wedge surfaces.

2. In a mechanical adjuster and the like, the combination of a casing, cooperating wedge members mounted in the casing having opposed wedge surfaces, each of said wedge members having a slot therein, a flexible member of metal extending between said wedge surfaces and secured to the casing at points spaced from the wedge surfaces to permit longitudinal movement of the wedge members, and resilient compression means mounted in the slot of each of said wedge members and operatively connected to said casing and effective upon one end of each slot to urge said wedge members against said flexible member passing between the wedge surfaces.

3. In a mechanical adjuster and the like, the combination of a casing, cooperating wedge members mounted in the casing having opposed wedge surfaces, each of said wedge members having a recess therein, a flexible member extending between said wedge surfaces and secured in position at points spaced from the wedge surfaces to permit longitudinal movement of the wedge members, and resilient compression means

mounted in said recesses effective upon said casing and upon an end of each recess to urge said wedge members against said flexible member passing between the wedge surfaces.

4. In a mechanical adjuster and the like, the combination of a casing, cooperating wedge members adapted to slide along the casing and having opposed wedge surfaces, each of said members having a recess therein, a flexible metal member extending between said wedge surfaces and having portions fixed with respect to the casing at points spaced longitudinally thereof sufficiently to permit longitudinal movement of the wedge members along the casing, a pair of compression springs mounted in said recesses, respectively, each spring having one end effective upon an end of the recess, and means operatively connected to the other ends of said springs to render them effective to urge said wedge members toward said flexible member passing between said wedge members.

5. In a mechanical adjuster and the like, the combination of a casing, cooperating wedge members adapted to slide along the casing and having opposed wedge surfaces, a flexible metal member extending between said wedge surfaces and fixed with respect to the casing at points spaced longitudinally thereof sufficiently to permit longitudinal movement of the wedge members along the casing, a pair of compression springs, one end of each spring being effective upon said wedge members, respectively, means fixed with respect to the casing and effective upon the other ends of the compression springs to urge said wedge members toward said flexible member passing between said wedge members, and means for supporting the compression springs laterally thereof.

6. In a mechanical adjuster and the like, the combination of a casing, cooperating wedge members adapted to slide along the casing in a substantially vertical direction and having opposed wedge surfaces, a flexible member extending between said wedge surfaces and fixed with respect to the casing at points spaced longitudinally thereof sufficiently to permit longitudinal movement of the wedge members along the casing, resilient compression means operatively connected to the upper one of said wedge members, means effective upon said resilient compression means to force said wedge member toward said flexible member passing between said wedge members, and means for supporting said compression means laterally.

7. In a mechanical adjuster and the like, the combination of a casing, cooperating wedge members mounted in the casing having opposed wedge surfaces, said wedge members having longitudinal slots therein, members fixed with respect to the casing in said slots, springs in said slots held under compression by the fixed members in the slots to force the wedge members toward each other, said springs being supported laterally by the sides of the slots and by the casing and a flexible member extending between said wedge surfaces and fixed with respect to the casing at points spaced longitudinally from the wedge surfaces to permit adjustment of the wedge members.

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