Aug. 7, 1934. B. CORSGREN 1,969,547

ADJUSTABLE SUPPORTING DEVICE

Filed April 24, 1933 2 Sheets-Sheet 1

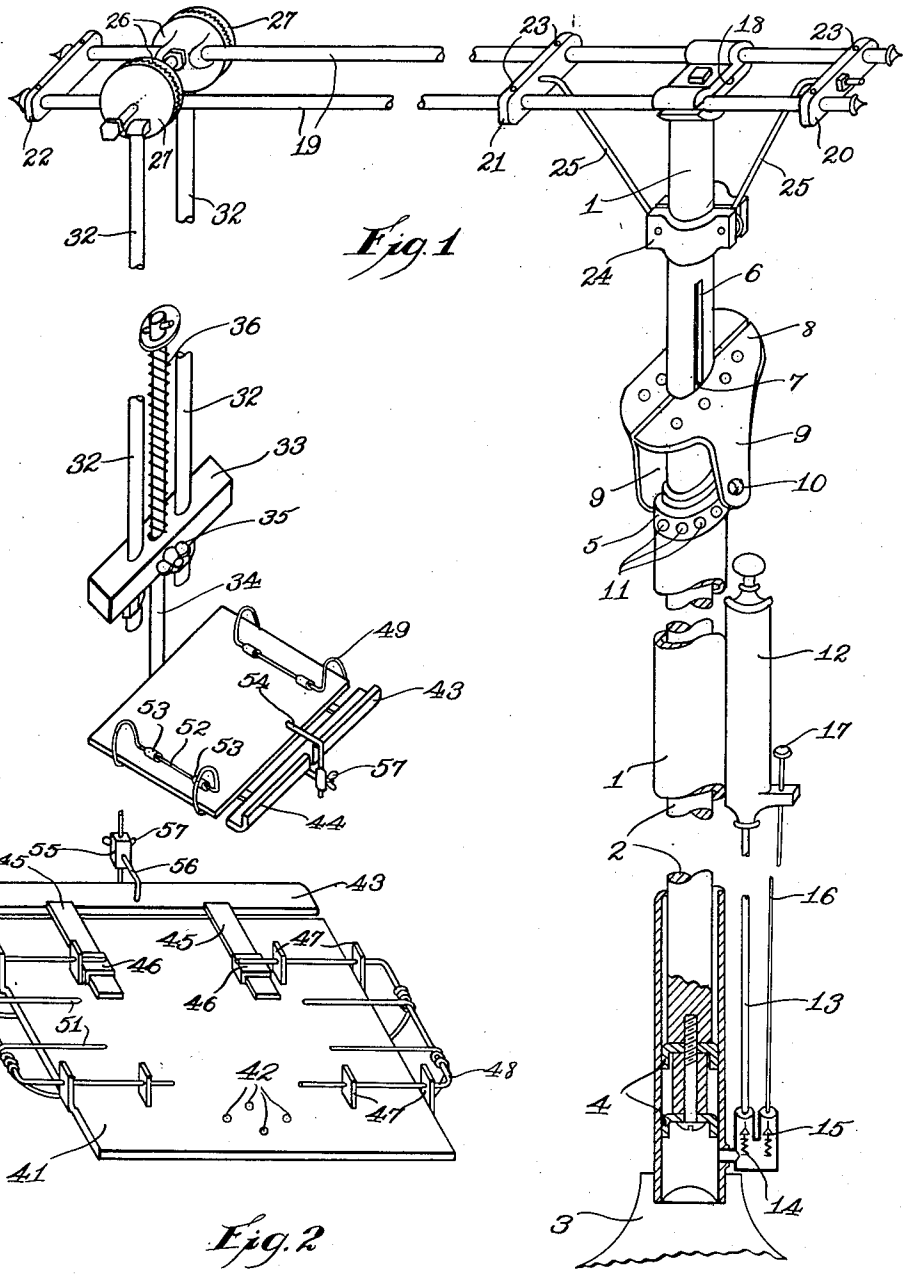


Fig. 1

Fig. 2

INVENTOR.

Bernhard Corsgren

BY Cornelius Zabriskie

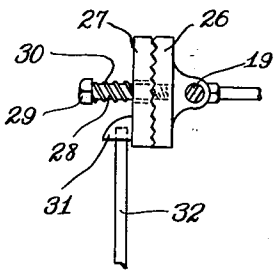
ATTORNEY.

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Fig. 3



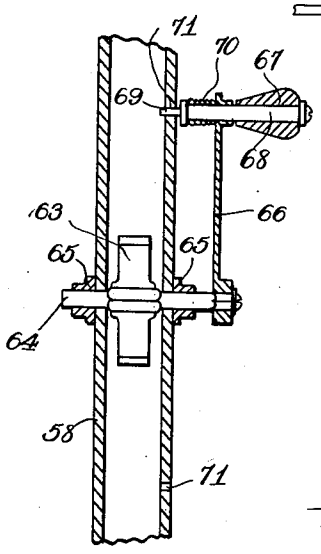


Fig. 7

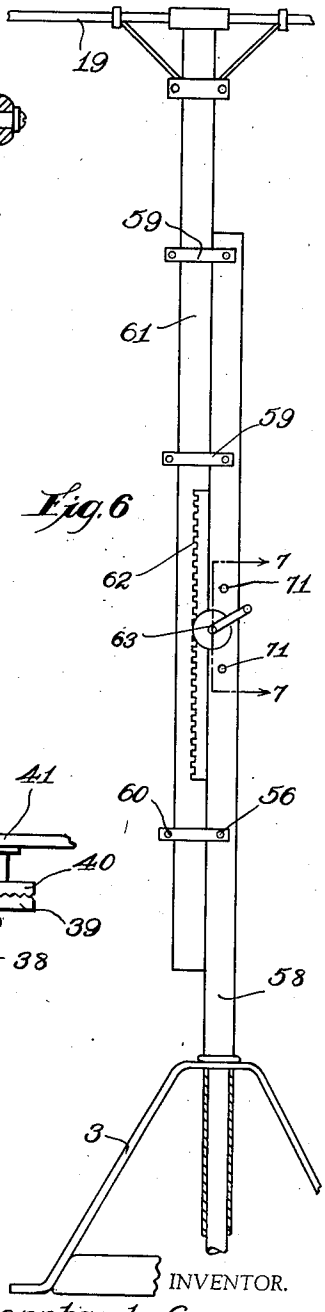
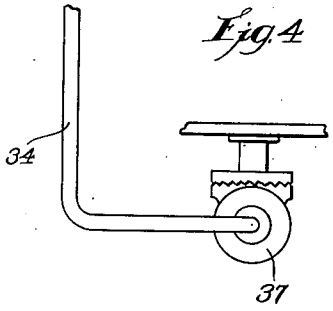


Fig. 6

Fig. 4



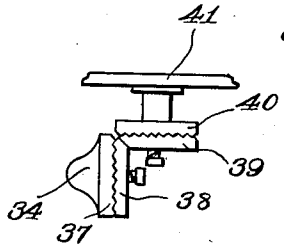


Fig. 5

INVENTOR.
Bernhard Corsgren
BY
Cornelius Zabriskie
ATTORNEY.

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UNITED STATES PATENT OFFICE

1,969,547

ADJUSTABLE SUPPORTING DEVICE

Bernhard Corsgren, Bronx, N. Y.

Application April 24, 1933, Serial No. 667,662

2 Claims. (Cl. 45—60)

This invention is a supporting device of adjustable character and constitutes more particularly certain important improvements upon the subject matter of my prior patent, No. 1,590,726, issued June 29, 1926 "Adjustable supporting devices". The device of said prior patent is in the main satisfactory for the carrying out of its intended purposes, but is open to certain objections which it is the object of the present invention to overcome and eliminate.

One important advance made by the present invention is the provision of means whereby the device may be vertically adjusted without necessitating the application of manual force for bodily lifting said device.

Another feature of the present invention resides in the improvement of the mechanism to render it more rigid, so that the supporting table will not tremble or vibrate when articles are resting thereon. This vibration is particularly annoying if a person is reading a book resting upon the support. By the present invention all tendency to vibrate is entirely eliminated.

Another object of the invention is to facilitate the vertical adjustment of the supporting table with reference to the standard by which it is carried. For this purpose I counterbalance the weight of the table with a spring to such extent as to render the said adjustment unusually easy.

A further feature of the present invention has to do with the structure of the supporting table which in accordance with this invention is made readily adjustable in various directions with adjustable book holders and supports to maintain a book or other article in proper position upon the supporting table.

Features of the invention, other than those adverted to, will be apparent from the hereinafter detailed description and claims, when read in conjunction with the accompanying drawings.

The accompanying drawings illustrate different practical embodiments of the invention, but the constructions therein shown are to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 is a perspective view showing one form of the present invention with certain parts broken away or foreshortened in the interest of clearness and certain parts shown in section.

Figure 2 is an underneath perspective view of the supporting table detached from the apparatus.

Figure 3 is an edge elevation of one of the adjustment devices shown in Figure 1.

Figure 4 is a side elevation showing the manner in which a table is adjustably supported.

Figure 5 is a front elevation of the parts shown in Figure 4.

Figure 6 is an elevation showing a modified form of construction.

Figure 7 is a section on the line 7—7 of Figure 6.

Referring first to Figures 1 to 5, inclusive, 1 and 2 designate two telescoping members collectively constituting a standard. The member 1 is tubular and is provided at its lower end with any suitable and appropriate form of base 3 adapted to rest on the floor to support the tubular section 1 in upstanding position. The member 2 constitutes in effect the piston and is provided at its lower end with a pair of leather washers 4 adapted it to function as a piston within the tubular section 1 which constitutes in effect a cylinder. The upper end of the section 1 is provided with a cap 5 constituting a bearing through which the plunger 2 operates and said plunger is formed therein with a keyway 6 into which extends projections 7 formed on a yoke 8. The yoke 8 has depending spring arms 9 having inwardly facing projections 10 adapted to cooperate with recesses 11 formed in the cap 5. The cap 5 is rigid with the section 1, while the yoke 8 is locked against rotation with respect to the plunger 2 and consequently as the plunger is rotated, the projection 10 is adapted to be sprung consecutively into oppositely disposed depressions 11 to lock the plunger in any desired position of rotation. The plunger may be elevated by means of an air pump 12 of any suitable and appropriate design, this pump being connected by a tube 13 to an inlet valve 14. A pressure relief valve 15 is adapted to be operated by a wire 16 provided with a finger piece 17, as shown in Figure 1.

Thus to elevate the plunger, the pump is operated to introduce air into the cylindrical lower portion of the section 1 through the normally spring closed valve 14. However, when it is desired to lower the plunger, the wire 16 may be operated to open the spring closed valve 15 to permit the exit of the desired amount of air. Thus, the plunger may be raised or lowered without the application of any appreciable labor or effort.

Secured to the upper end of the plunger 1 is a clamp 18 firmly gripping parallel bars 19. These bars are secured together by tie members 20, 21 and 22. Tie members 20 and 21 are spaced from the clamp 18 and are secured to the bars by means of pins 23. A clamp 24 embraces the

plunger below the clamp 18 and stay wires or brackets 25 connect the clamp 24 with the tie members 20 and 21, so as to rigidly mount the parallel bars 19 on the upper end of the plunger in a manner to preclude sagging of said bars with respect to the plunger.

Mounted for longitudinal adjustment on the bars 19 are oppositely disposed clutch members 26. These clutch members 26 have bosses on their adjacent faces which are provided therein with circular apertures through which the bars 19 extend, so that the clutch members 26 may be slid longitudinally on said bars. Each clutch member 26 forms a part of a clutch of the dog type. That is to say, each member 26 is in the form of a disk, one face of which is provided with radial serrations. With each of said disks is associated a complementary disk 27, the adjacent face of which is similarly serrated, as shown in Figure 3. The disk 26 has an axially disposed threaded shank 28 which passes loosely through a central perforation in the disk 27, and a nut 29 threads on to said shank. The spring 30 is interposed between the nut and the disk 27 and serves to force the complementary serrated faces together to preclude inadvertent relative rotation between the clutch members. However, the tension of the spring is such as to permit the parts to be manually rotated in order to obtain the desired adjustment, but the parts will retain the positions which they occupy until manually adjusted as stated.

On the outer face of each disk 27 is a boss 31 to which is affixed a depending rod 32. The two rods 32 which are associated with the two clutches, as stated, extend downwardly for a distance and are attached to a guide block 33. This guide block is perforated to receive the supporting bar 34 which is mounted for vertical adjustment through the block 33 and may be locked in any desired position by means of a thumb nut 35. A spring 36 counterbalances the bar and the parts supported thereby in a manner to make this adjustment easily accomplished.

The lower end of the supporting bar 34 is bent forwardly, as shown in Figures 4 and 5, and is provided at its inner end with a laterally extending clutch disk 37 rigid with said bar. This clutch disk 37 cooperates with a cooperating clutch disk 38. The clutch disk 38 is integral with a second clutch disk 39 positioned at right angular relation thereto and adapted to cooperate with another clutch disk 40 carried by and rigid with the table 41. The clutch disks 37 and 38 cooperate with one another in the same manner as the clutch disks 26 and 27, and the same is true of the clutch disks 39 and 40, the purpose being to provide for manual adjustment, but to preclude inadvertent movement.

As stated, the clutch disk 40 is rigid with and carried by the table 41. This table is preferably made of sheet metal such as aluminum, duralumin or the like, although it may be in practice made of any suitable material.

It is perforated as indicated at 42 in Figure 2 for attachment of the clutch disk 40 which for the sake of clearness has been omitted from this figure. Said table 41 is preferably made flat or plane and at its forward edge is provided with an adjustable stop 43. The forward edge of which is upturned as at 44. To render it adjustable, the stop is provided with tongues 45 extending through keepers 46 on the table, so that the stop may be adjusted to vary the front to back dimension of the table. Tongues 47 may be secured to the table or stamped up from the stock thereof to support frames 48, which are longitudinally adjustable in the parts 47, and on these frames are mounted spring retainers 49 adapted to reach over the upper surface of the table and to engage with books, papers or other articles supported thereon. The spring retainers 49 are mounted on the frames 48 by means of a plurality of spring coils 50 wrapped about each frame and imparting resiliency to the retainers. Said retainers may be of any appropriate shape, but are preferably such that the lower ends of the retainers bear against the under side of the table as at 51, while the upper ends are arched over and provide transverse wires 52 on which I preferably mount rollers 53, so as to facilitate the engagement or disengagement of the retainers with the leaves of a book or with other papers. Inasmuch as the frames are adjustable transversely of the table and the stop at the forward edge of the table is adjustable in a front to rear direction, it will be apparent that the table is thereby adapted to books or articles of widely varying sizes.

I may, if desired, in addition to the retainers employ an additional manually adjustable retainer in the form of a finger 54 mounted for vertical adjustment in a block 55 supported on an arm 56 at the under side of the stop 43, as shown in Figures 1 and 2. The finger may be adjusted as to height to engage with the book or other article and may thereupon be secured in place by a thumb screw 57.

The structure of Figures 6 and 7 differs from the structure hereinbefore described merely in the type of standard employed. In the structure of the previous figures, the adjustment of the standard was accomplished pneumatically, whereas in the structure of these latter figures, the operation is purely mechanical. Thus, the base 3 serves to support a fixed section 58 provided thereon with a plurality of brackets 59 carrying rollers 60. These brackets and rollers embrace the movable section 61, corresponding to the plunger 2 of Figure 1. On the upper end of this section 61 are mounted the parallel bars as hereinbefore described. Section 61 is provided for a portion of its length with a rack 62 which meshes with a gear 63 carried by the section 58.

The structure is shown best in Figure 7. Here the gear 63 is shown as supported on a shaft 64 which is squared to receive said gear. The shaft is mounted in bearings 65 carried by the wall of the section 58, and on the outer end of said shaft is secured a crank 66 having a handle 67. The handle is secured to a spindle 68 provided at its end with a projection or key 69. The spring 70 embraces the spindle and normally forces it in a direction of the wall of the section 58 which is provided with perforations 71.

When it is desired to raise or lower the section 61, the handle 68 is grasped and pulled to release the key 69 from a perforation 71, and the crank is then operated to raise or lower the section 61 through cooperation of the gear 63 with the rack 62. When the parts are in substantially the desired position, the key is permitted to reengage with one of the perforations 71 to lock the parts in position.

With both forms of the device, as hereinbefore described, it is possible to raise or lower the supporting table within relatively wide limits either pneumatically or mechanically by operating the pump or by manual operation of the crank handle to adjust the standard which constitutes the primary support. For finer adjust-

ment, however, the supporting table may be raised or lowered through adjustment of the supporting bar 34 assisted by the counterbalancing spring 36 and after the table is in desired adjustment as to height, it may be locked in place by the thumb screw 35. The table may be moved toward or away from the person as he sits in the chair or reclines in bed by swinging the rods 32 on the clutches 27, while the inclination of the table may be adjusted through the clutch members 37 and 38. Similarly, the table may be twisted on a substantially vertical axis of the clutch members 39 and 40. In this way, the device is adjustable within wide limits and in practically all directions. Especial emphasis is laid upon the fact that two parallel bars 19 are provided to support in turn two parallel bars 32, in order that the table may be rigidly supported and twisting strains or resiliency in the connections eliminated.

With the device of the present invention, it is possible to support appreciable weights upon the table and where such weights are great or small, the table will be steady and free from vibration, so that books or magazines, for example, can be read in a thoroughly satisfactory manner.

The foregoing detailed description sets forth the invention in its preferred practical form, but the invention is to be understood as fully commensurate with the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In an assembly of the character described, a suitable standard, a pair of parallel bars carried by said standard and extending in parallel relation in a lateral direction, a pair of resilient clutches mounted on the respective bars for sliding movement thereon, a rod depending from each clutch, a guide block supported by said rods, a table, a supporting bar for said table, said supporting bar extending upwardly through the guide block and provided at its upper end with a head, a spring coiled about the supporting bar between the guide block and the head of the supporting bar to counterbalance the weight of the table, and means to lock the supporting bar in the desired adjusted relation with respect to the guide block.

2. In an assembly of the character described, a standard, a pair of parallel bars rigidly secured to said standard and to one another and extending in a lateral direction from the standard, a pair of resilient clutch members slidable on said bars, a pair of suspension rods depending from the respective clutch members and slidably and pivotally supported on said bars, a table, and means for suspending said table from said suspension rods, said means including a counterbalancing member to counterbalance the weight of the table and permit easy adjustment of the same with respect to said rods.

BERNHARD CORSGREN.