May 28, 1968 W. M. AIKEN, SR 3,385,639

EQUALIZER ARRANGEMENT FOR TABLE EXTENSION SLIDE MECHANISM

Filed Oct. 11, 1966 2 Sheets-Sheet 1

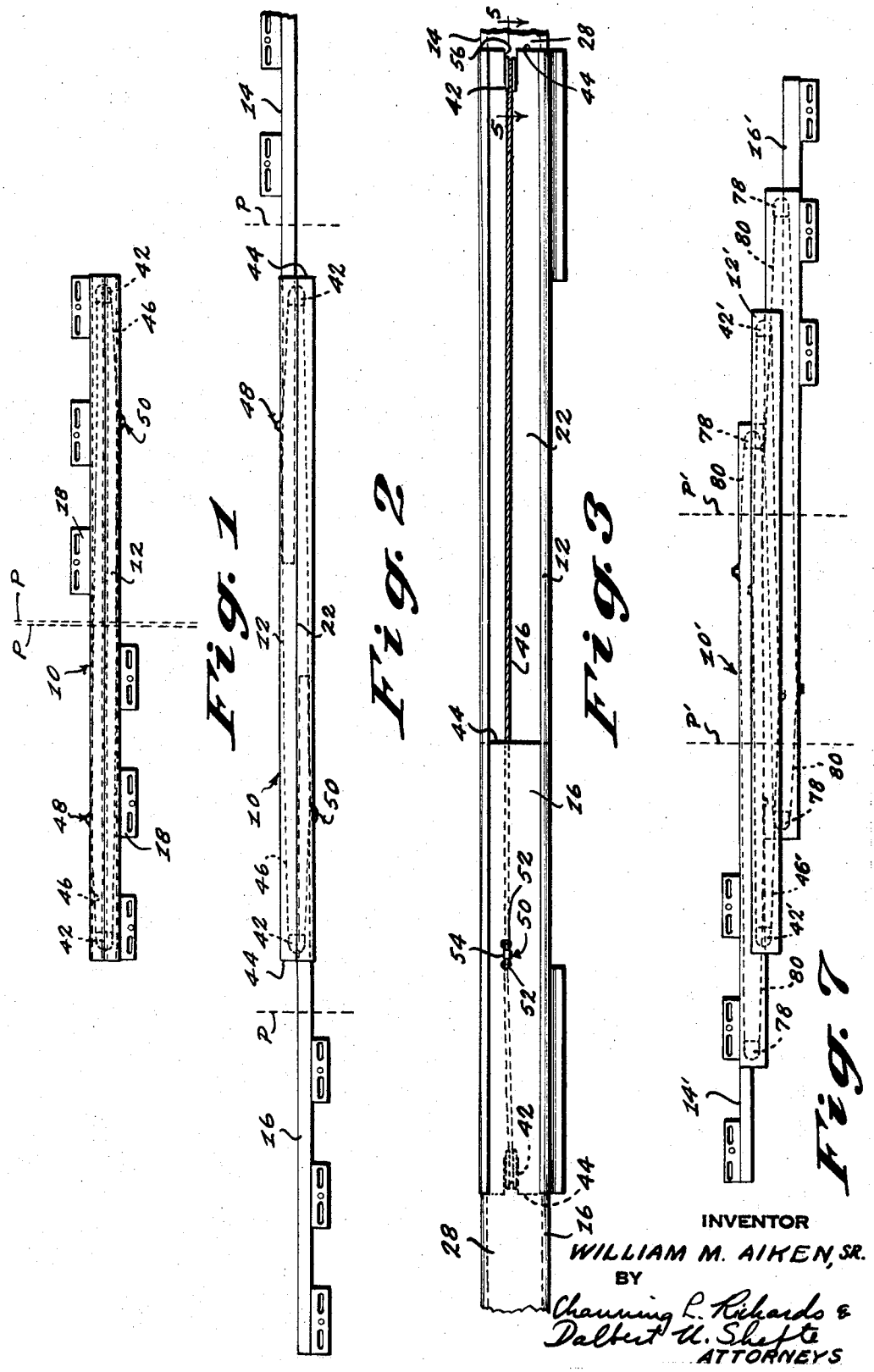


Fig. 1

Fig. 2

Fig. 3

Fig. 4

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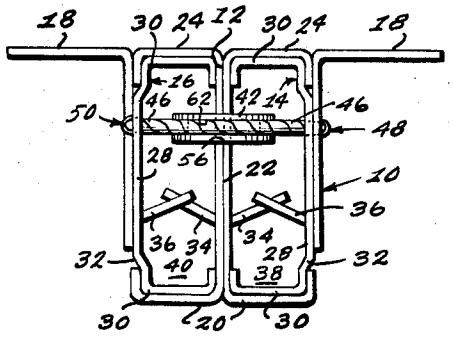


Fig. 4

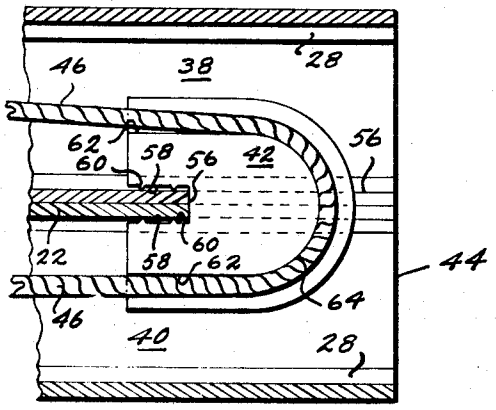


Fig. 5

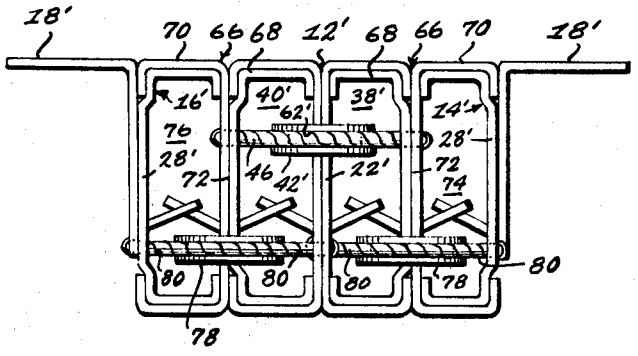


Fig. 6

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EQUALIZER ARRANGEMENT FOR TABLE EXTENSION SLIDE MECHANISM

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7 Claims. (Cl. 308—3.6)

ABSTRACT OF THE DISCLOSURE

An equalizer arrangement for use with a table extension slide mechanism comprising spaced non-rotatable guide means mounted in lengthwise slots formed in the center wall of the central slide mechanism, and cable means extending around the guide members for extension within lengthwise channels of the slide mechanism to a connection with the side walls of oppositely moving slide members for equalizing the extension and retraction thereof.

This invention relates generally to table extension slide mechanisms for association with primary table leaves to allow spacing thereof for accommodating at least one intermediate extra leaf, and more particularly to an improved arrangement for equalizing the oppositely directed movements of the extension members of the slide mechanism that is simple in construction and compactly disposed within the confines of the mechanism and that is concealed from view so as not to provide an unsightly appearance and so as to be protected from entanglement and damage during shipping and use.

Equalizer arrangements are provided in extension tables to coordinate the movement of oppositely moving slide members so that the two primary table leaves attached to these slide members can be moved simultaneously by handling only one of the leaves. Generally, heretofore known equalizer arrangements consist of relatively complex constructions including rotating parts such as pulleys or gears that must be journaled in the slide mechanism; and these arrangements also are frequently mounted exteriorly of the slide mechanism which requires additional attachment structure as well as providing an unsightly appearance when the primary leaves are separated to receive the intermediate leaves therebetween. Also, these exterior arrangements frequently include exposed cables or the like which are susceptible to being damaged during shipping and use, and which may become entangled with each other or with other elements so as to hinder the handling thereof.

The present invention provides an improved equalizer arrangement which operates in a smooth, easy fashion without requiring rotating parts or complex interrelated components, and which can be readily mounted in existing slide structures so as to be substantially entirely concealed, even when the primary table leaves are separated. In addition, the present invention provides an equalizer arrangement that realizes these advantages while also being uniquely adapted for use with slide mechanisms having a plurality of slide members assembled for cumulative extension.

Briefly described, the equalizer arrangement of the present invention includes a pair of spaced non-rotatable guide means fixed, respectively, to a central slide structure center wall portion within the lengthwise extent of existing channels formed in the slide mechanisms, and cable means extending around the guide members for extension within these channels to a connection with oppositely moving slide members for equalizing the extension and retraction thereof.

These and other features of the present invention are described in further detail below in connection with the accompanying drawings in which:

FIG. 1 is a plan view illustrating a table extension slide mechanism in its retracted position and including an equalizing arrangement embodying the present invention;

FIG. 2 is a plan view similar to FIG. 1 with the slide mechanism illustrated in its fully extended position;

FIG. 3 is an enlarged side elevation of the center portion of the slide mechanism shown in FIG. 2;

FIG. 4 is a right-hand end view corresponding to FIG. 2;

FIG. 5 is a detail view of one equalizer cable element and cable element guide member taken along line 5—5 in FIG. 3;

FIG. 6 is a right-hand end view of an alternate embodiment of the slide mechanism and equalizer arrangement according to the present invention; and

FIG. 7 is a plan view of the modified slide mechanism and equalizer arrangement shown in FIG. 6.

Referring now in detail to the drawings, the slide mechanism of the present invention is indicated generally by reference numeral **10** and includes a central slide structure **12** having two outer slide members **14, 16** telescopically assembled therewith so as to be capable of sliding extension and retraction in opposite directions with respect to the central slide structure **12**. In FIG. 1, the slide members **14, 16** are illustrated in their retracted position at which they lie within the central slide structure **12**, and the dotted lines P represent the juxtaposed edges of a pair of primary table leaves which are attached, respectively, to the slide members **14, 16** by a plurality of attaching brackets **18**. FIG. 2 illustrates the slide mechanism **10** in its fully extended position with slide members **14** and **16** extending outwardly from central slide structure **12** whereupon the edges P are separated to receive therebetween intermediate leaves (not shown).

FIG. 4 illustrates the telescoping relationship between the central slide structure **12** and slide members **14, 16,** which is of the same general character as that described in U.S. Patent No. 3,097,614, issued July 16, 1963. Central slide structure **12** includes a pair of generally U-shaped members **20** welded or otherwise secured in back-to-back relation to form a center wall portion **22** and a matched pair of flanges **24** extending at right angles to center wall portion **22**, flanges **24** having the ends thereof turned inwardly to parallel center wall portion **22** whereby the slide members **14** and **16** may be snugly, yet freely slidably, received by the central slide structure **12** as illustrated in FIG. 4. Slide members **14** and **16** have outer side walls **28** extending in spaced parallel relation to the center wall portion **22**, and inwardly extending flanges **30** formed in the same general manner as U-shaped members **20**; the outer side walls **28** having bends **32** formed therein to allow brackets **18** to be secured to the outer side walls **28** without interfering with the sliding movement of slide members **14, 16**. Cooperating stop elements **34, 36** are formed in the central slide structure **12** and the slide members **14, 16**, respectively, for determining the maximum extent of travel of the latter.

Looking at FIGS. 1, 2, and 4, it will be noted that there exists in slide mechanism **10** a pair of channels **38** and **40** which extend lengthwise at each side of center wall portion **22**. In the preferred embodiment of the present invention, these channels **38** and **40** are utilized to conceal and protect the arrangement for equalizing the opposite movement of slide members **14, 16**.

This equalizer arrangement includes a pair of spaced guide members **42** fixed to center wall portion **22** adjacent the end faces **44** thereof, and a cable element **46** extend-

ing within each of the channels 38, 40 and around each of guide members 42 to a first connection at 48 with slide members 14 and a second connection at 50 with slide element 16. In the preferred embodiment, cable element 46 is formed from two equal lengths of cable, each of which extends about a different guide member 42 and has its ends led through one of the apertures 52 formed in each of the outer side wall portions 28 of slide members 14, 16, respectively, and one end of each length is joined to the adjacent end of the other length by a metal band 54 which clamps the ends together as best seen in FIG. 3. It will be noted that no brackets or other external members need be secured to the slide mechanism 10 for attachment of the cable element 46, it only being necessary to drill two holes in the outer side wall 28 of each slide member 14, 16.

As best seen in FIG. 5, guide member 42 is mounted on center wall portion 22 by virtue of a first slot 56 formed lengthwise in center wall portion 22 and a cooperating slot 58 formed in the guide member 42, cooperating slot 58 including gripping ridges 60 which engage center wall portion 22 and position guide member 42 thereat when it is inserted in slot 56. This cooperating slot arrangement is an extremely simple mounting which positions the guide member 42 within the lengthwise extent of channels 38, 40 so that there is no projection of the guide member 42 beyond the end faces 44 of center wall portion 22 which would be unsightly and vulnerable to damage. The guide member 42 extends laterally across center wall portion 22 and includes a groove 62 formed therein (FIGS. 3, 4, and 5) which receives cable element 46, groove 62 including an arcuate portion 64 around which cable element 46 extends as it changes direction in traveling from channel 38 to channel 40. In the preferred embodiment, guide members 42 are composed of nylon which is self-lubricating and allows the cable element 46 to pass smoothly through the groove 62.

With the elements arranged in the above-described manner, the slide mechanism 10 illustrated in FIG. 1 may be expanded to its FIG. 2 position simply by grasping either one of the primary table leaves and pulling outwardly. As one of the slides 14, 16 is thus pulled away from central slide structure 12, the cable element 46 will exert a force on the other slide member causing it to move oppositely and equally with respect to the pulled slide member.

An alternate embodiment of the present invention is illustrated in FIGS. 6 and 7 in which elements corresponding to the elements of the above-described embodiment are conveniently identified by the same reference numeral with a prime symbol added thereto. The central slide structure 12' has a center wall portion 22' on either side of which are telescopically assembled therewith a pair of oppositely moving intermediate slide members 66, each of which is formed with a carried portion 68 telescopically assembled in central slide structure 12' and a carrier portion 70 which telescopically receives one of the outer slide members 14', 16'. The carried portion 68 and carrier portion 70 are structurally connected in back-to-back relationship to provide a center wall portion 72; and lengthwise channels 74, 76 extend along each side of each intermediate slide member center wall portion 72. With this construction, the outer slide members 14', 16' extend, respectively, in the same direction as the intermediate slide members 66 by which they are carried so as to increase cumulatively the extending reach of the slide mechanism 10' as seen in FIG. 7.

The equalizing arrangement for this modified embodiment includes a pair of spaced guide members 42' fixed to the central slide structure center wall portion 22', and a cable element 46' that extends around these guide members 42' to a connection with the center wall portion 72 of each of the intermediate slide members 66, the connections being identical to that described above. Additionally, a further pair of spaced guide members 78 are fixed on each intermediate slide member center wall portion 72 in the same manner as with guide members 42', and a pair of second cable elements 80, each of which is associated with a different intermediate slide member 66, extends within the channels extending along each side of the associate intermediate slide member 66 and around the guide members 78 mounted thereon to a first connection with the central slide structure center wall portion 22' and a second connection with the outer side walls 28' of slide members 14' and 16', respectively. Thus, looking at FIG. 7, the uppermost cable element 80 extends within channel 38' and channel 74 (FIG. 6), and is connected with outer side wall 28' of outer slide member 14' and with the center wall portion 22' of central slide structure 12'. The lowermost cable element 80 has a corresponding relationship with its associated slide components.

With this arrangement of elements in the alternate embodiment, one of the primary leaves (i.e., the left edge P' in FIG. 7) is pulled outwardly carrying attached outer slide member 14' with it. Movement of outer slide member 14' will exert a pulling force on adjacent cable element 80, which is in effect anchored at the center wall portion 22' of central slide structure 12', thereby causing the adjacent intermediate slide member 66 to slide with respect to central slide structure 12' a distance equal to one-half the distance traveled by outer slide member 14'. This movement of one intermediate slide member 66 will, through cable element 46', cause the other intermediate slide member 66 to move equally and oppositely with respect to central slide structure 12', and the other outer slide member 16' will be moved outwardly with respect to the adjacent intermediate slide member 66 by virtue of associated cable element 80. Thus, movement of either outer slide member will cause equalized movement of each of the intermediate slide members 66, and the other outer slide member.

To prevent the cable elements 80 from becoming tangled with cable element 46' in channels 38' and 40', the lengthwise plane of travel of cable element 46' is vertically displaced from the corresponding planes of travel of cable elements 80, as best seen in FIG. 6.

The present invention has been described in detail above for purposes of illustration only and is not intended to be limited by this description or otherwise except as defined in the appended claims.

I claim:

1. In a table extension slide mechanism operable to space primary table leaves for accommodating at least one intermediate extra leaf, said mechanism being of the type having at least two outer slide members assembled for sliding extension and retraction in opposite directions in telescoping relation with a central slide structure that has a center wall portion extending between the outer slide members, said outer slide members having an outer side wall extending in spaced parallel relation to said center wall and having portions slidably supported by said central slide structure with said outer side wall, said slidably supported portions and said center wall portion defining lengthwise channels at each side of said center wall portion, the improvement comprising means for equalizing the movement of said outer slide members during extension and retraction thereof, said equalizing means including a pair of spaced guide means mounted in lengthwise slots formed, respectively, at each end of said center wall portion, said guide means extending laterally across said center wall portion and being disposed within the lengthwise extent of said channels, and cable means extending within each of said channels and around each of said guide means to a connection with each of said outer slide members at said outer side wall thereof for equalizing the movement of said outer slide members.

2. In a table extension slide mechanism of the character described, the improvement defined in claim 1 and

further characterized in that said guide means are non-rotatable.

3. In a table extension slide mechanism of the character described, the improvement defined in claim 2 and further characterized in that each of said guide means includes a cooperating slot formed therein to receive said center wall portion.

4. In a table extension slide mechanism of the character described, the improvement defined in claim 3 and further characterized in that each of said guide means is composed of nylon and is formed with a cable receiving groove including an arcuate portion around which said cable means extends.

5. In a table extension slide mechanism operable to space primary table leaves to allow spacing thereof for accommodating at least one intermediate extra leaf, said mechanism being of the type having at least two intermediate slide members each having a carried portion thereof assembled for sliding extension in opposite directions in telescoping relation with a central slide structure that has a center wall portion extending between said intermediate slide members, each of said intermediate slide members also having a carrier portion and a center wall portion extending between said carried portion and said carrier portion, and an outer slide member assembled in telescoping relation with said carrier portion of each of said intermediate slide members for sliding extension therefrom to increase cumulatively the extending reach of said slide mechanism, each of said outer slide members having an outer side wall portion extending in spaced parallel relation to said intermediate slide member center wall portion whereby said central slide structure, said intermediate slide members, and said outer slide members provide lengthwise channels extending along each side of each center wall portion of said intermediate slide members; the improvement comprising a pair of spaced guide means on each said central slide structure center wall portion and said intermediate slide member center wall portions, respectively, with each guide means being mounted in lengthwise slots formed, respectively, at each end of the center wall portion on which it is mounted and with each guide means extending laterally across its center wall portion and disposed within the lengthwise extent of said channels, a first cable element extending within each of the channels located, respectively, at the inward side of said intermediate slide member center wall portions and extending around each of said guide means on said central slide structure center wall portion to a connection with each of said intermediate slide member at the center wall portion thereof for equalizing the opposite movements thereof, and a pair of second cable elements each of which is associated with a different intermediate slide member and extends within the channels extending along each side of the center wall portion thereof and extends around the guide means mounted on the associated intermediate slide member center wall portion to a connection with said central slide structure and with the adjacent outer slide member at said outer side wall thereof to equalize the cumulative movement of said outer slide members with respect to movement of said intermediate slide members.

6. In a table extension slide mechanism of the character described, the improvement defined in claim 5 and further characterized in that each of said guide means is non-rotatable.

7. In a table extension slide mechanism of the character described, the improvement defined in claim 5 and further characterized in that said cable elements extend in general lengthwise planes with the plane of said first cable element being displaced from the planes of each of said second cable elements.

References Cited

UNITED STATES PATENTS

1,149,964	8/1915	Steingruber	108—87
1,626,189	4/1927	Drew	308—3.6
2,718,922	9/1955	Fetter	160—344
3,097,614	7/1963	Duncan	108—83
3,337,274	8/1967	Green	108—83

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