May 11, 1965 E. J. PETRICK 3,182,714

TENSIONER MECHANISM FOR A PORTABLE MOVIE SCREEN

Filed April 24, 1963 2 Sheets-Sheet 1

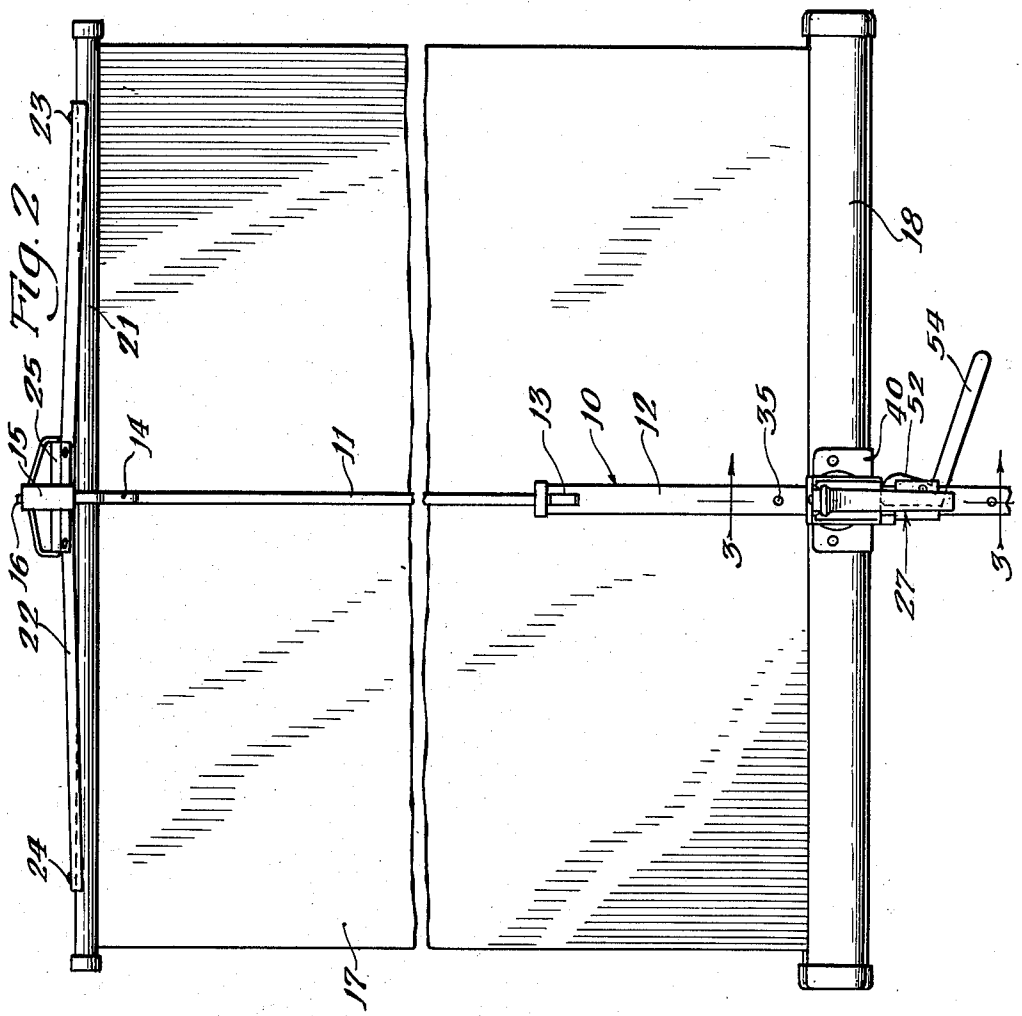


Fig. 2

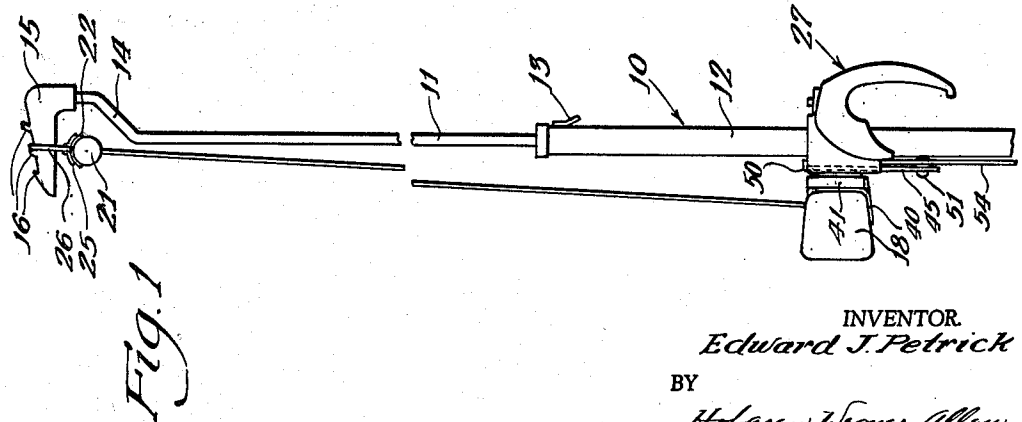


Fig. 1

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Fig. 3.

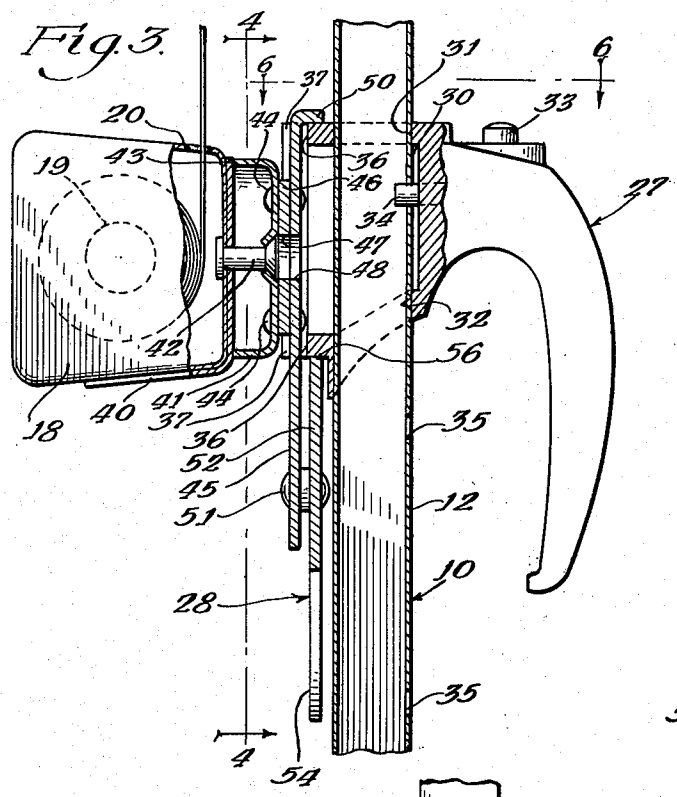


Fig. 6.

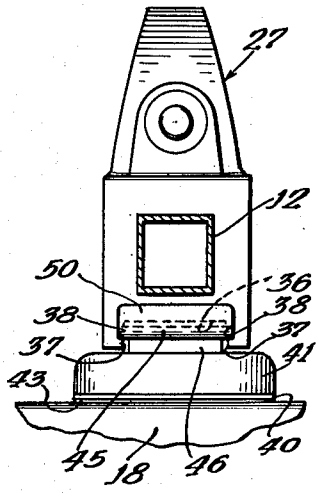


Fig. 4.

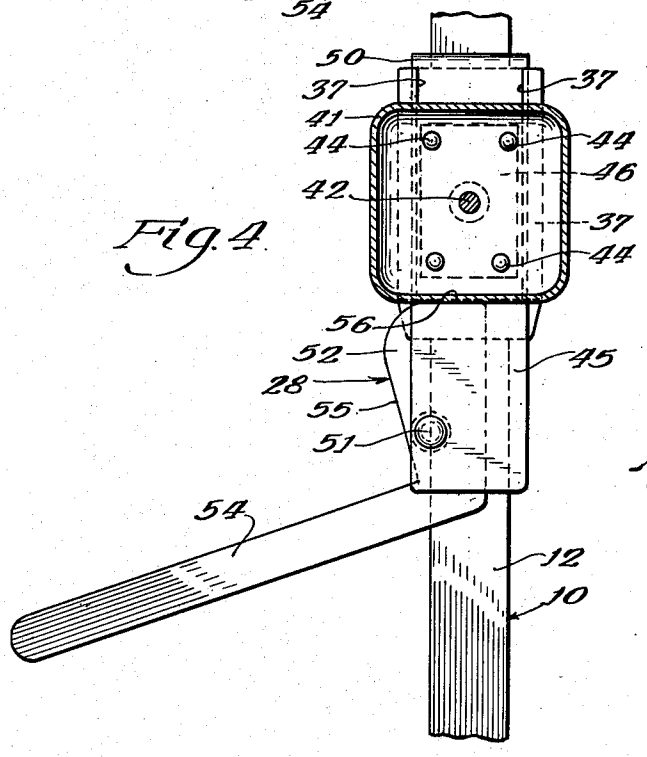
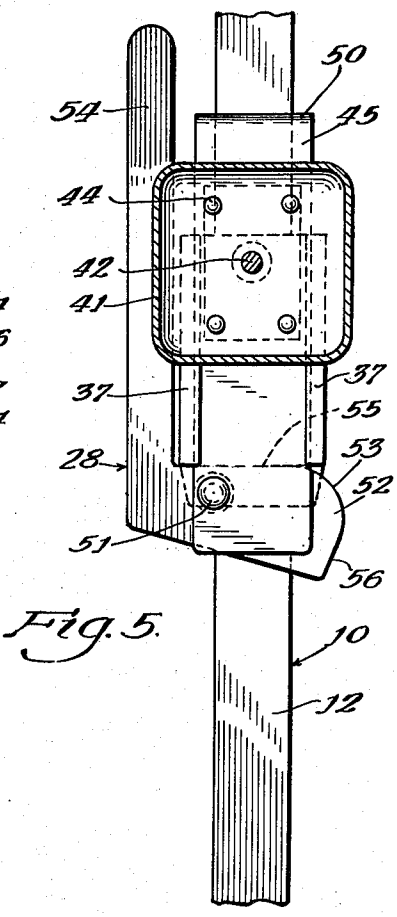


Fig. 5.



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TENSIONER MECHANISM FOR A PORTABLE MOVIE SCREEN

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6 Claims. (Cl. 160—24)

This invention relates to portable projection screens, and more particularly to a tensioning apparatus for stretching the screen fabric taut when in viewing position.

The structure of the present invention is a further improvement over the device shown in my earlier U.S. Patent No. 2,793,687, entitled "Movie Screen Stretching Device," issued May 28, 1957.

Screen manufacturers have sought for many years to develop structures for satisfactorily eliminating undulations from a screen surface when in viewing position. A planar screen surface is important because it eliminates image distortion in the reflected light so that sharply defined objects may be seen on the screen.

The primary object of the present invention is to provide a new and improved structure for tensioning a movie screen fabric in open viewing position.

Another object is to provide a new and improved tensioning device and screen casing mounting positioned and arranged to mutually cooperate to apply stretching forces to the screen fabric when in viewing position.

A further object is to provide an improved mounting for a screen casing which mounting is constructed for limited sliding movement vertically on the standard.

Still another object is to provide a tensioning device for a screen fabric supported at its opposite marginal edge portions by a pair of rod members on an upright support, the tensioning device being in the form of a rotatable cam which upon rotation causes one of the rod members to be moved away from the other rod member to stretch the screen fabric taut.

The invention is illustrated in a preferred embodiment in the accompanying drawings, in which:

FIG. 1 is a broken fragmentary side elevational view of a movie screen device with the screen fabric in exposed tensioned position;

FIG. 2 is a rear elevational view taken from the right of FIG. 1 and showing the cam turned to its operative position for imparting tension to the screen fabric;

FIG. 3 is an enlarged fragmentary side elevational view, partly in section, showing the handle, screen casing, and tensioning device of FIG. 1;

FIG. 4 is a sectional view taken as indicated on line 4—4 of FIG. 3 and showing the cam and its lever arm turned to tensioning position;

FIG. 5 is a sectional view similar to FIG. 4, but showing the cam and its lever arm turned substantially 90° to nontensioning position; and

FIG. 6 is a fragmentary sectional view taken on line 6—6 of FIG. 3.

In the embodiment illustrated, and referring particularly to FIGS. 1 and 2, a supporting standard, generally designated 10, is held in upright position by a tripod leg unit (not shown). The standard 10 includes a telescoping rod 11 which is slidably received within a tubular member 12, and the rod 11 may be held in varying positions of extended adjustment by a conventional clamp member 13. The free end of the telescoping rod is offset rearwardly, as at 14, and is provided with a bail support 15 having a number of hook members 16.

A flexible movie screen fabric 17 is conventionally attached at one end to a spring-wound rod or roller 19 (shown in dotted outline in FIG. 3) which is journaled

within an elongated screen casing 18. The fabric 17 extends through a longitudinal slot 20 in the casing 18 and is normally urged to be wound about the roller within the casing 18. It is preferred that the roller is provided with a roller lock of well-known construction so that the rotation of the roller is automatically arrested when a predetermined length of screen fabric 17 is withdrawn from the casing.

The free end of the screen fabric 17 is secured to a rod member 21 which mounts a resiliently deformable tension bar 22 secured thereto at 23 and 24. The tension bar 22 carries a saddle member 25 to which a bail member 26 is swingably secured so that the free end of the screen fabric 17 can be supported from any one of the several hook members 16 as shown in FIG. 1. The screen structure thus far described is conventional and well-known in the art.

The means for effecting the new and improved tensioning includes a novel mounting between the casing 18 and a handle or support member, generally designated 27, to afford relative vertical movement, and a tensioning means, generally designated 28, coacting with said mounting to move the casing 18 and its internal rod or roller 19 away from the rod member 21.

To this end, the handle member 27 is provided with a hollow chamber 30 and upper and lower bearing portions 31 and 32 which make a close slidable embrace about the tubular member 14. The handle member 27 can be held in varying positions of vertical adjustment by a slidable bolt 34 which in normally urged to its projected position within a preselected one of a number of apertures 35 in the backside of the tubular member 12. Bolt 34 is retracted by depressing button 33.

The forward face of the handle member 27 provides a mounting surface in the form of a shallow channel which affords a retaining track 36 for mounting the screen casing 18 for limited slidable movement longitudinally of the standard 10. The track 36 is provided with a pair of inwardly projecting shoulders 37 which are spaced from and overlie opposite marginal portions of the track to afford a pair of grooves 38.

The screen casing 18 is provided with structure which fits within the track 36 for sliding movement and also is provided with other structure affording pivotal movement to the casing 18. To this end, the screen casing 18 is provided with an L-shaped bracket 40 secured thereto. The casing 18 may be pivoted with respect to a cup-shaped support 41 about a pivot pin 42 which projects through the rear wall of the casing 18, one arm of the bracket 40 and the bottom of the cup-shaped support 41. The forward face of the side walls of the cup-shaped member 41 affords a peripheral bearing surface 43 to stabilize the casing 18 during its pivotal movement between an inoperative position parallel to the standard 10 and an operative position perpendicular to the standard 10, as shown in FIG. 2.

The bottom of the cup-shaped member 41 is in turn rigidly secured by rivets 44 to an elongated metal slide member 45 which fits within the track 36 in the grooves 38. A spacer 46 may be provided between the opposed faces of the slide 45 and the bottom of the cup-shaped support 41 to space the support 41 from the shoulders 37 on the forward face of the handle member 27, the width of the spacer 46 permitting it to lie between the shoulders 37. Aligned apertures 47 and 48 in the spacer 46 and the slide 45, respectively, are provided for access to the pivot pin 42 for assembly purposes.

Since the slide 45 is freely slidable within the track 36, a stop 50 is turned inwardly on the upper end of the slide 45 to abut the upper face of the handle member 27 to limit downward movement of the slide 45 together with the casing 18 which is secured thereto as above described.

The tensioning means 28 is operatively associated with the slide 45 and the handle member 27 so as to cause movement of the casing 18 downwardly to stretch the screen material 17 taut in viewing position.

The tensioner means 28 is pivotally secured to the lower end of the slide 45, as at 51, and preferably includes a head portion 52 which is peripherally shaped to provide an arcuate camming edge 53 and straight edges 55 and 56. A lever arm 54 may be formed integrally with the head portion 52 for manually swinging the tensioner means 28 between an inoperative position (shown in FIG. 5) and an operative position (shown in FIGS. 2 and 4). As best seen in FIG. 3, it will be noted that upward movement of the slide 45 is limited by the head portion 52 abutting the under surface of the handle member 27 (see FIG. 5), while downward movement of the slide 45 is limited by the bent end portion or stop 50 as previously described.

To place the projection screen in viewing position, casing 18 is first swung to horizontal position, as shown in FIGS. 1 and 2. The screen fabric 17 is then pulled outwardly of the casing and suspended from one of the hook members 16 of the bail support 15 by the bail member 26. When the screen fabric 17 is pulled to exposed position in this manner, the slide 45 also is pulled upwardly in its track 36 to its extreme upward position, as shown in FIG. 5. Further upward movement of the slide 45 and of the casing 18 mounted thereon is prevented by the edge 55 abutting against the underside of the forward part of the handle member 27 as previously explained. At this time, the lever arm 54 is in its inoperative position (FIG. 5).

The lever arm 54 of the tensioner means 28 is then swung counterclockwise from its inoperative position (FIG. 5), to its operative position (FIG. 4) so that the arcuate camming edge 53 bears against the underside of the handle member 27 to force the slide 45 downwardly in its track 36. The head portion 52 is shaped so that the swinging movement of the lever arm 54 to operative position is slightly greater than 90° in which position a second straight edge portion 56 engages the underside of the handle member 27, as shown in FIG. 4, to retain the tensioner means 28 in its operative, tensioning position.

Thus, it is apparent that the downward movement of the slide 45 carries the casing 18 and its internally journaled reel 19 straight downwardly of the standard to stretch the screen fabric 17 between the rod or reel 19 and the suspended rod member 21. The movement of the reel 19 away from the rod member 21 also resiliently flexes the tension bar 22 so as to distribute stretching forces in the opposite marginal edge portions of the screen fabric 17 in a well-known manner.

To release the tension in the screen fabric, it is merely necessary to swing the arm 54 clockwise from the position shown in FIG. 4 to the position shown in FIG. 5. This releases the forces exerted on the tension bar 22 and in the screen fabric 17 so that the casing 18 and the slide 45 are permitted to ride upwardly in the track 36; that is, the reel 19 is caused to move upwardly toward the rod member 21.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom for some modifications will be obvious to those skilled in the art.

I claim:

1. A portable projection screen, comprising: an upright standard; an elongated hollow screen casing; a flexible screen provided with a pair of rod members one secured to each of the opposite end portions of said screen, one rod member being in the form of a spring-wound reel journaled in the casing about which the screen is wound in retracted position, and the other rod member being adapted to be attached to the standard to expose the screen in viewing position; a support member attached to the standard and having a track on its forward face; a slide secured centrally of the casing and shaped to cooperate with said track to permit limited slidable movement of the casing when the screen is in viewing position; and a cam member on the slide and rotatably mounted for turning between a tensioning and a nontensioning position, the cam member being positioned and shaped to bear against the support member whereby rotation of the cam member to tensioning position moves the slide and casing with respect to the support member to stretch the screen taut between the rod members.

2. A portable projection screen as specified in claim 1, in which a stop is provided to limit the movement of the slide and casing by the cam member when the cam member is turned to tensioning position.

3. A portable projection screen as specified in claim 1, in which the cam member has a flattened portion on its periphery which bears against the support member when the cam member is turned to tensioning position thereby to retain said cam member in said tensioning position.

4. A portable projection screen as specified in claim 1, in which a stop is provided to limit the slidable movement of the slide and casing in one direction, and the cam member is positioned on the slide to abut the support member and limit the slidable movement of the slide and casing in the other direction.

5. A portable projection screen as specified in claim 1, in which the cam member is provided with a lever arm positioned adjacent the standard when the cam member is in nontensioning position, said cam member being positioned and shaped so that swinging of the lever arm through substantially 90° places the cam member in tensioning position.

6. A portable projection screen, comprising: an upright standard; an elongated hollow screen casing; a flexible screen provided with a pair of rod members one secured to each of the opposite end portions of said screen, one rod member being in the form of a spring wound reel journaled in the casing about which the screen is wound in retracted position, and the other rod member being adapted to be attached to the standard to expose the screen in viewing position; a support member attached to the standard and having a track on its forward face; a slide secured centrally of the casing and cooperating with said track to permit limited slidable movement with the casing when the screen is in viewing position; a rotatable cam member; and a pair of portions one on the slide and the other on the standard, one of the portions rotatably mounting the cam member whereby rotation of the cam member causes the cam member to engage the other of the portions to force the slide and the portion thereon to move away from the other rod member when the screen is in viewing position to stretch the screen taut between the rod members.

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HARRISON R. MOSELEY, *Primary Examiner.*