Nov. 15, 1927. 1,649,215

W. K. BROWN

CURTAIN SUPPORTING AND OPERATING APPARATUS

Filed Dec. 5, 1924 2 Sheets-Sheet 1

Fig. 2.

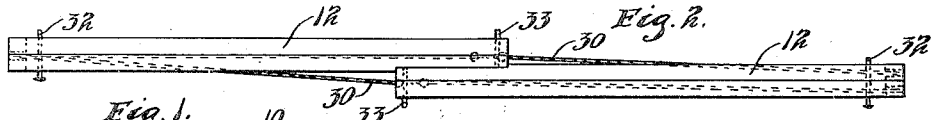


Fig. 1.

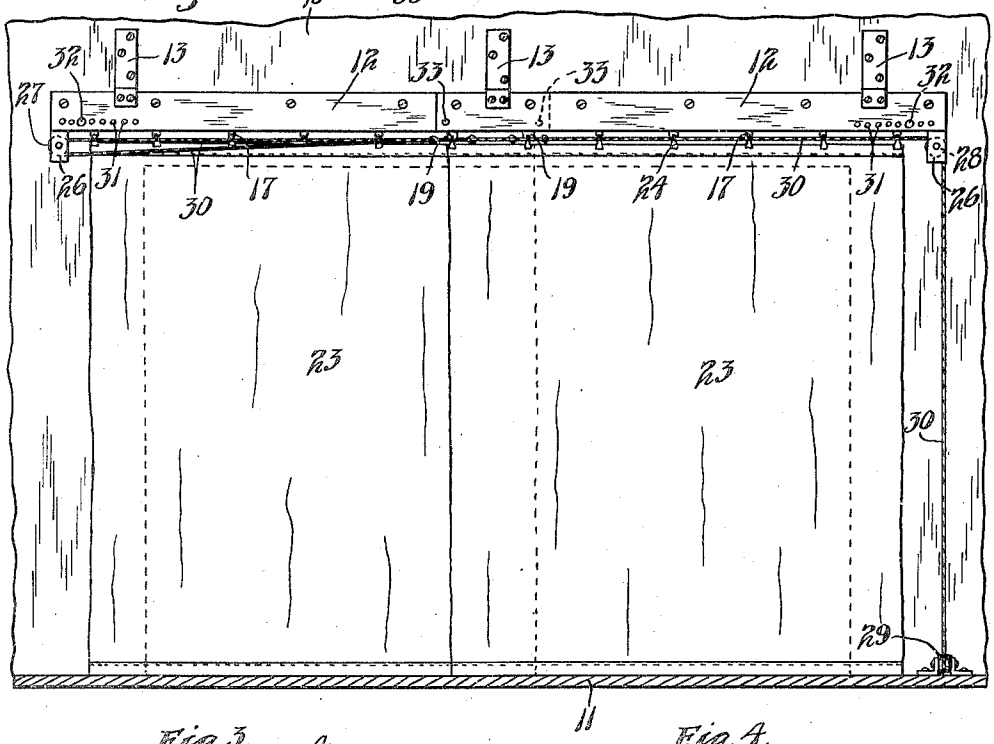


Fig. 3.

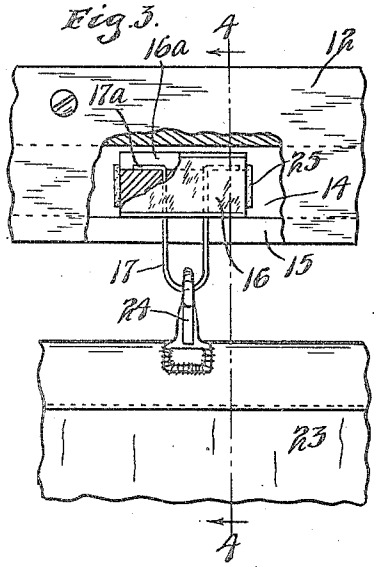
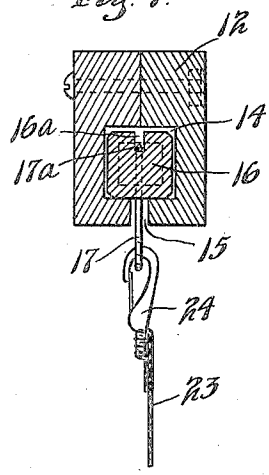


Fig. 4.



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Fig. 5.

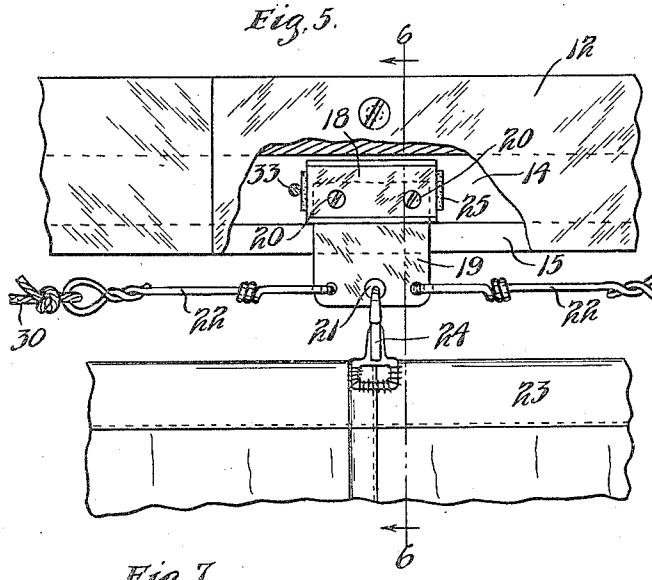


Fig. 6.

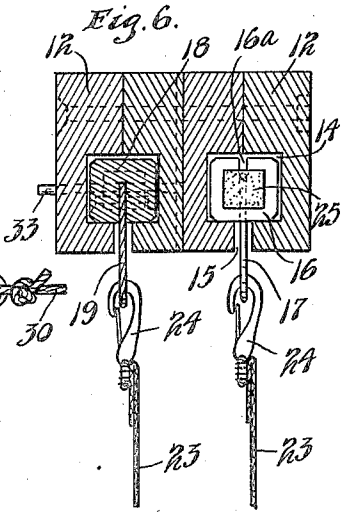


Fig. 7.

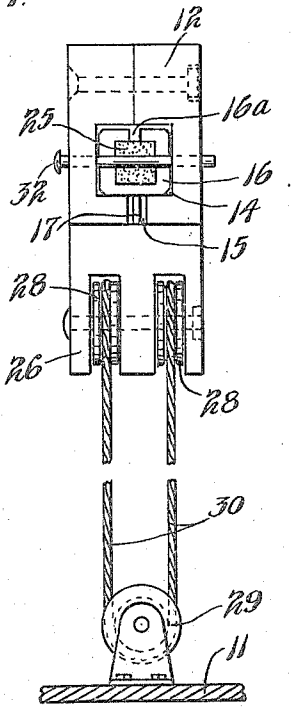
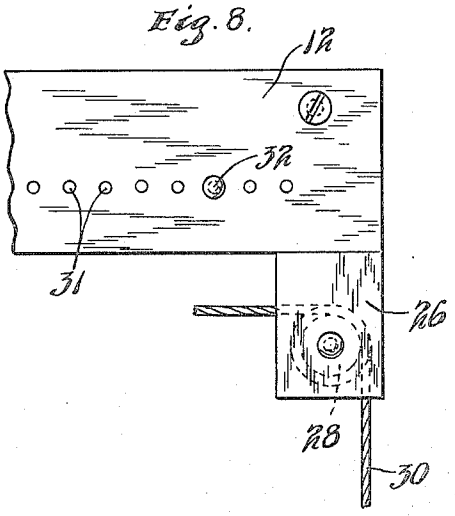


Fig. 8.



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Patented Nov. 15, 1927. 1,649,215

UNITED STATES PATENT OFFICE.

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CURTAIN SUPPORTING AND OPERATING APPARATUS.

Application filed December 5, 1924. Serial No. 754,091.

This invention relates to apparatus for supporting and operating horizontally sliding curtains of flexible material.

It is an object of the invention to provide a simple and highly efficient device, especially adapted to support and operate oppositely sliding theatrical curtains but capable of wide general use, including its application on window curtains and portières.

It is a further object of the invention to provide a device of this nature which will operate noiselessly and smoothly and have little tendency to jam or get out of order.

More specifically, it is an object of the invention to provide a pair of horizontal guideways in which a plurality of spaced supporting members are disposed adapted to be connected to the upper edges of a pair of oppositely opening flexible curtains and to control the opening and closing of said curtains by a single endless flexible member conveniently located for the manipulation of the operator.

A still further object in such a device is to provide a guideway or rail of rectangular internal cross section, having a longitudinal guide slot communicating therewith and a plurality of blocks of rectangular cross section disposed within said guideway and having depending centrally disposed supporting members working through said slot.

These and other objects of the invention will be apparent from the following description made in connection with the accompanying drawings, wherein like characters refer to similar parts throughout the several views, and in which,

Fig. 1 is a back elevation of the improved apparatus applied to the back of the proscenium opening in a theater;

Fig. 2 is a top plan view of the apparatus detached;

Fig. 3 is an enlarged fragmentary view of a portion of the rail broken away in part to show the construction of one of the slidable blocks disposed within;

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 3;

Fig. 5 is an enlarged fragmentary elevation showing the construction of one of the lead blocks;

Fig. 6 is a vertical section taken on the line 6—6 of Fig. 5;

Fig. 7 is an end elevation of the apparatus with some parts broken away; and

Fig. 8 is an enlarged rear elevation of the outer end portion of one of the rails.

The usual proscenium wall of a stage or theater is indicated by the numeral 10, extending to the floor of the stage 11 and leaving the usual proscenium opening. A pair of longitudinal horizontally aligned rails 12, having their inner ends overlapped and secured together, are supported at the top of the proscenium opening in any suitable manner, here shown as supported from the top of the proscenium wall by means of angle brackets 13. Each of said rails 12 thus extends a trifle more than half the distance across the proscenium opening and slightly beyond the side walls of the opening. Each of the rails 12 is constructed from two elongated strips or boards secured together at intervals therealong, said strips or boards having longitudinally registering grooves on their inner surfaces adapted to form a guideway 14 of rectangular cross section when the rail is assembled. The rails 12 are also provided with longitudinal guide slots 15 extending through their bottoms centrally thereof and communicating with the internal guideways 14. These guide slots 15 are preferably formed by cutting down the surfaces on the inner sides of the lower flanges formed by the grooves in the two strips of boards constituting the rails 12. A plurality of sliding blocks 16, of substantially rectangular cross section, are disposed in the internal guideways 14 of each of the rails. Each of the blocks 16 is provided with a groove 16^a on its top surface extending longitudinally and centrally of said block. A pair of longitudinally spaced vertical holes extend through each block and communicate with the grooves 16^a. Supporting members 17, preferably in the form of wire staples, extend through the vertical holes in blocks 16 and have outturned retaining portions 17^a, which are countersunk in the grooves 16^a. A lead block 18, also of substantially rectangular cross section, is disposed within each of said rails 12 beyond the blocks 16 and constitutes the innermost block in each rail. The lead blocks 18 are provided with relatively deep vertical grooves through their bottom sides extending longitudinally and centrally thereof. Depending plates 19 are seated in said grooves and secured to the blocks 18 by transverse screws 20 or in any other suitable manner. A relatively large fastening aper-

ture 21 is provided in the central portion of the lower edge of plate 19 and a pair of spaced smaller apertures are formed at either side thereof, adapted to receive the looped ends of a pair of leads 22.

Obviously, the depending plates 19 and depending supporting members 17 work through the guide slots 15 and project beyond the bottom sides of the rails 12. A pair of flexible curtains 23, of somewhat greater width than half of the proscenium opening, are provided at their upper edges with a plurality of spaced fastening members, preferably in the form of snap hooks 24. These snap hooks are sewed or otherwise secured to the upper edges of curtains 23, at intervals along the entire width of the curtain, and are adapted to engage the members 17 and the lead block plates 19. One of the curtains will, of course, be supported by the blocks in one of the rails 12, while the second curtain will be supported by the several blocks in the second rail. Bumper pads 25, of soft resilient material, are secured on the ends of the blocks 16 and 18. Pulley housings 26 are secured at the outer ends of each of the rails 12, and preferably depend therefrom. A single pulley 27 is centrally journaled in one of the housings 26, while a pair of spaced pulleys 28 are journaled in the other housing 26. A fourth pulley 29 is mounted below the pulleys 28, preferably on the floor of the stage 11, having its axis at right angles to the axis of pulleys 28. An endless flexible member 30 is trained over the pulleys 27, 28 and 29 and extends along the front and back sides of the rails 12. The endless flexible member 30 is secured to the leads 22 of each of the lead blocks 18 having, of course, one side of its looped portion connected to one lead block and the other side of its looped portion secured to the other lead block. Movement of the lead blocks will thus take place in opposite directions, when one strand of the flexible member 30 is pulled between the pulleys 26 and 29.

To adjustably limit the backward or opening movement of the curtains, a plurality of spaced and oppositely aligned holes 31 are provided in both sides of the end portions of the rails 12, through which pins 32 are adapted to be passed, extending across the central portion of the internal guideways 14. Transverse pins 33 thru the inner ends of the rails 12 limit the forward movement of the curtain.

The operation is probably obvious from the above description but may be briefly summarized as follows:—

Assuming the curtains to be disposed in normal closed overlapping position, as illustrated in Fig. 1, with the several sliding supporting blocks disposed in spaced relation within the rails 12, the operator will stand adjacent pulley 29 and pull the inner strand of flexible member 30 downwardly to draw the curtains apart into open position. The lead blocks will, of course, contact the adjacent following blocks 16, causing the curtain to drape, as it is pulled towards the side walls of the proscenium opening. The blocks will be successively engaged and the movement of the last block in either rail will be limited by the pin 32. When the flexible member 30 is pulled in the opposite direction, the curtains will again be extended to closed overlapping position and the blocks 16 will slide out to their normal spaced position in the guideways 14.

It will be apparent that, because of the rectangular cross sectional shape of the guideways 14 and the blocks 16 and 18, the supporting members 17 and 19 will always project through the central portion of the guide slot 15 and will never contact the sides thereof. The blocks will consequently never jam but will always slide smoothly, with their supporting members properly spaced from the sides of the guideways. Most curtain operating apparatus on the market, at this time, employs sliding members of some form within guideways, but, however, permits the sliding members to turn somewhat axially, causing objectionable jamming and wearing of the guideways and slots.

The arrangement and construction of the overlapped rails provides a durable and efficient means for properly guiding a pair of oppositely sliding curtains to and from closed overlapping position.

Controlled by an endless flexible member, there is no necessity for dangling loose ropes, which too easily may become tangled or confused by the operator.

A plurality of holes at the outer ends of the two rails 12 provide a readily adjustable stop means for the outward movement of the curtain, and the leads 22, pivoted to the supporting plates 19, permit the slack in the endless cable 30 to be quickly taken up, or a new rope or cable to be readily installed.

The bumper pads 25 prevent any clicking or noise when the blocks are contacted.

From the above description, it will be seen that a highly efficient device has been invented for supporting and operating oppositely slidable flexible curtains. Extensive actual usage has proven the device to be successful for all the purposes intended. It has been found that smoother and faster operation of the curtains may be obtained with less wear on the several parts than in any of the devices of similar nature at present on the market.

It will be understood that various changes may be made in the form, details and arrangement of parts without depart-

ing from the scope of the invention, and that, while the invention is especially applicable to theatrical curtains, it may also be used with equally successful results on window curtains, portières, or single sliding curtains.

What is claimed is:—

1. A curtain supporting and operating apparatus comprising a rail horizontally disposed at some distance above a floor having an internal guideway and a longitudinal guide slot through one of its sides communicating with said guideway, a plurality of sliding blocks disposed in said guideway and having supporting members working through said slot and adapted to support the upper edge of a flexible curtain, means for moving said blocks towards either end of said rail, and adjustable means adjacent one end of said rail to limit the movement of the blocks and the opening of the curtain in that direction.

2. The combination with a pair of oppositely slidable curtains of a supporting and operating apparatus therefor, comprising a pair of horizontally alined guideways supported at their outer ends and having their inner ends overlapped and secured together, a plurality of slidable supporting members in each of said guideways to which the upper edges of said curtains may be secured, a pulley mounted at the outer end of one of said guideways, a pair of spaced pulleys mounted at the outer end of said other guideway, a pulley mounted below said second mentioned pulleys, an endless flexible member trained over said pulleys, secured to one of said slidable members in each of said guideways and adapted to draw said curtains apart or together, and means adjacent the outer ends of said guideways for adjustably limiting the outer movement of said supporting members.

In testimony whereof I affix my signature.

WILLIAM K. BROWN.