May 8, 1962 J. F. KUEBLER 3,033,127

STAGE CURTAIN HANGER

Filed July 31, 1958 3 Sheets-Sheet 1

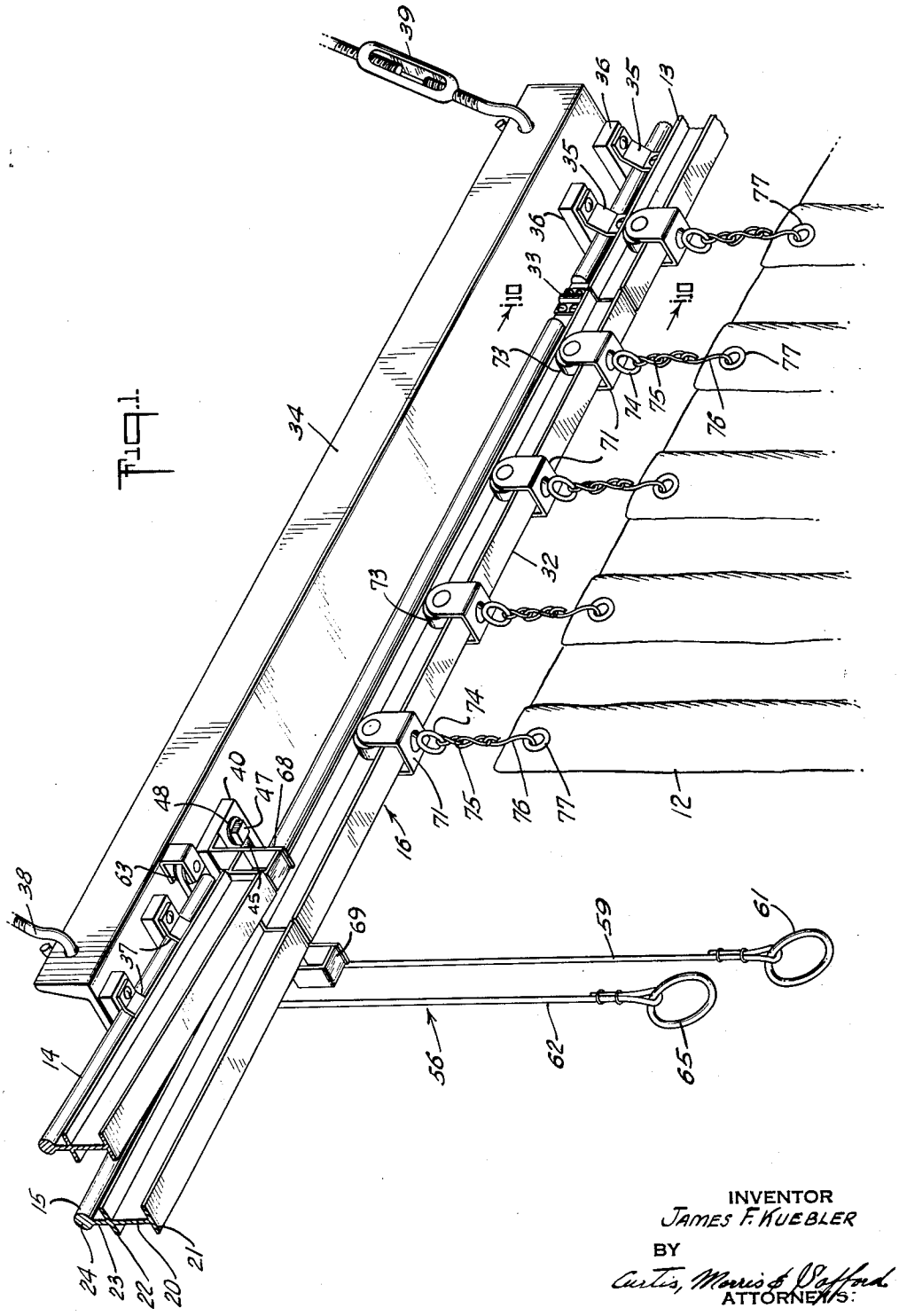


Fig. 1.

INVENTOR
JAMES F. KUEBLER
BY
Curtis, Morris & Safford
ATTORNEYS

May 8, 1962 J. F. KUEBLER 3,033,127

STAGE CURTAIN HANGER

Filed July 31, 1958 3 Sheets-Sheet 2

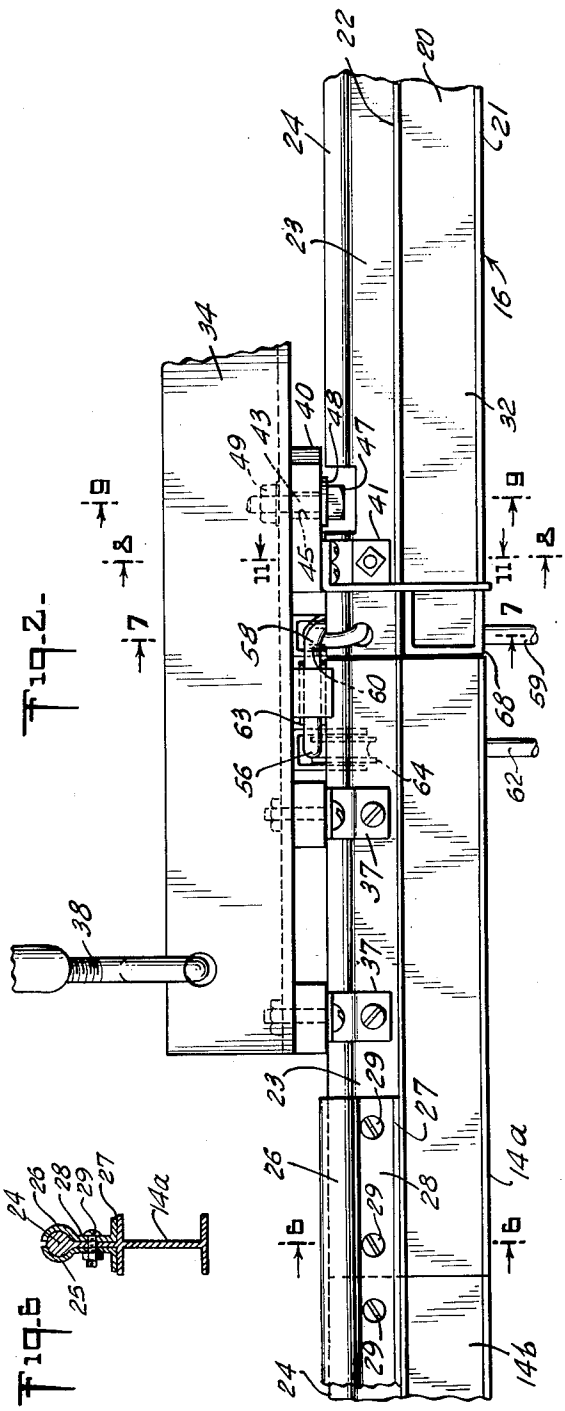


Fig. 2.

Fig. 6.

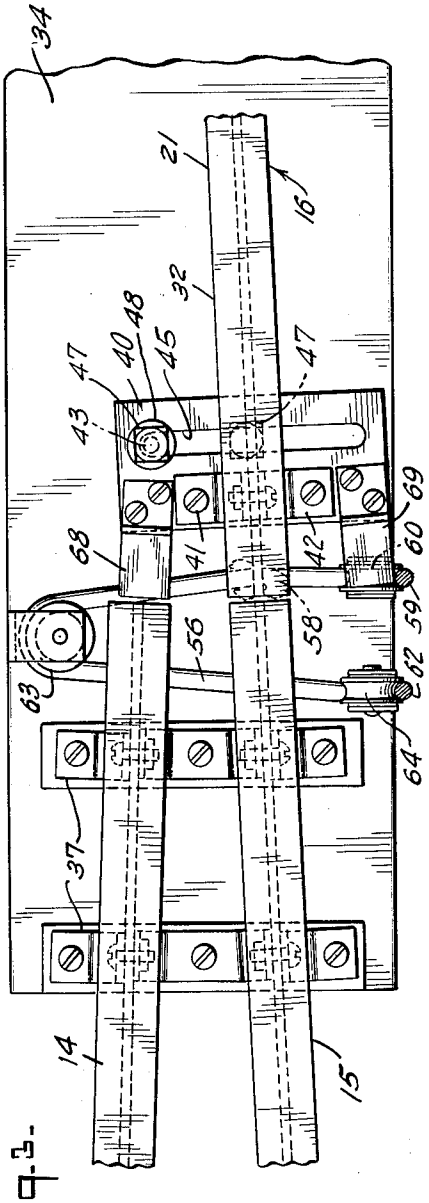


Fig. 5.

INVENTOR
JAMES F. KUEBLER

BY
Curtis, Morris & Safford
ATTORNEYS.

May 8, 1962 J. F. KUEBLER 3,033,127

STAGE CURTAIN HANGER

Filed July 31, 1958 3 Sheets-Sheet 3

Fig. 4.

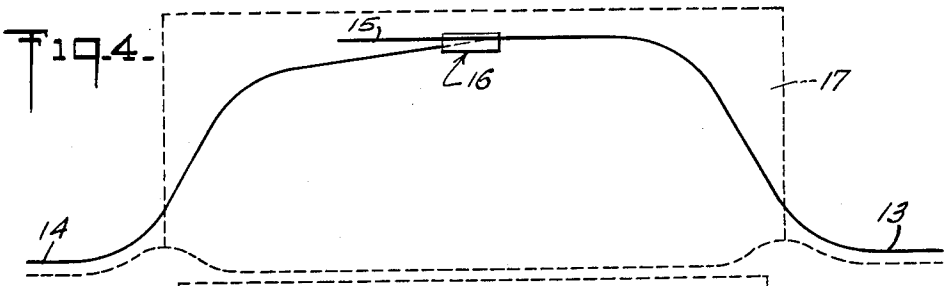


Fig. 5.

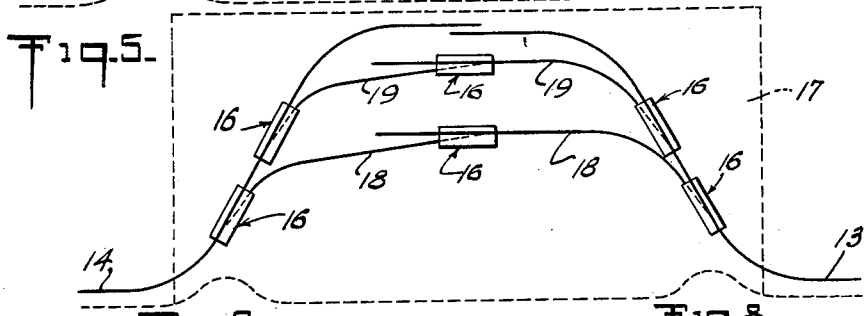


Fig. 7.

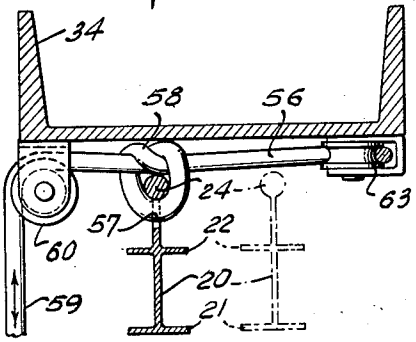


Fig. 8.

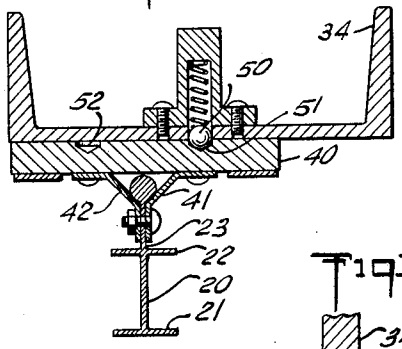


Fig. 11.

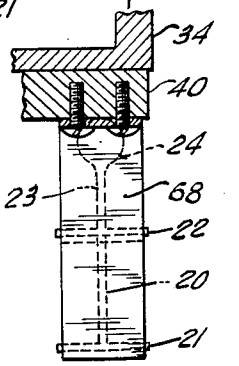


Fig. 9.

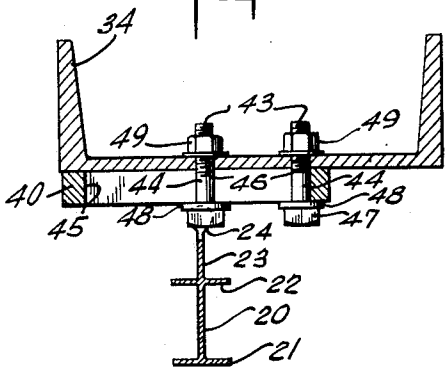
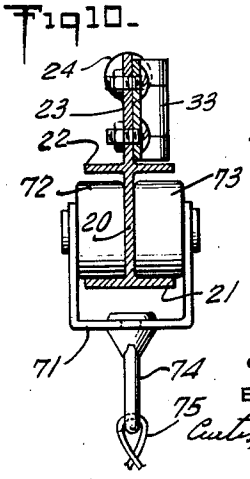


Fig. 10.



INVENTOR
JAMES F. KUEBLER
BY
Curtis, Morris & Safford.
ATTORNEYS.

United States Patent Office

3,033,127
Patented May 8, 1962

3,033,127

STAGE CURTAIN HANGER

James F. Kuebler, 194 Riverside Drive, Tiffin, Ohio

Filed July 31, 1958, Ser. No. 752,375
1 Claim. (Cl. 104—103)

The present invention relates to an apparatus for supporting, handling and positioning stage equipment such as curtains, draperies and the like, particularly on a theatre stage.

One of the objects of the present invention is to provide an improved apparatus for supporting and moving or running draperies, or the like, to different locations on a stage and permitting a quick change of such draperies or other equipment from one arrangement to another.

Another object is to provide an improved switch in a track system which may be shifted manually from the stage to adapt equipment supporting elements to be run from the wings to different areas of a stage with a minimum of physical effort and time.

Another object is to provide an improved rail construction which facilitates assembly of a track system from a plurality of rail sections and insures accurate alignment of the rail sections to provide a continuous track on which equipment supporting elements may be run freely to any desired location.

Still another object is to provide an apparatus for handling draperies on a stage which is of simple construction, economical to manufacture and reliable in operation.

These and other objects will become more apparent from the following description and drawings in which like reference characters denote like parts throughout the several views. It is to be expressly understood, however, that the drawings are for the purpose of illustration only and are not a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawings:

FIGURE 1 is a perspective view of a portion of a drapery hanging apparatus incorporating the invention and showing a portion of a track system with a track switch therein;

FIGURE 2 is a side elevational view of one end of the track switch for selectively running the drapery to one or the other of a pair of track branches;

FIGURE 3 is a bottom plan view of the end of the track switch illustrated in FIGURE 2 and showing the manner of shifting the switch into alignment with one or the other of the branches of the track system;

FIGURE 4 is a diagrammatic view of a curtain hanging apparatus extending from the wings along the sides and across the back of a stage with a switch in the back stage section;

FIGURE 5 has a diagrammatic view of another track system having a plurality of branches extending across the stage with switches for directing a drapery onto any part of the track system;

FIGURE 6 is a transverse sectional view on the line 6—6 of FIGURE 2 and showing the form of the track rails and the manner of splicing sections of the rail to maintain them in alignment;

FIGURE 7 is a transverse sectional view on the line 7—7 of FIGURE 2 and showing the pull cord for actuating the track switches;

FIGURE 8 is a transverse sectional view on the line 8—8 of FIGURE 2 and showing the plate to which one end of the track switch is attached and the detent mechanism for retaining the track switch in either of its operated positions;

FIGURE 9 is a transverse sectional view on the line

9—9 of FIGURE 2 and showing the stud and slot connection betwen the switch plate and its supporting beam;

FIGURE 10 is a transverse sectional view on the line 10—10 of FIGURE 1 and showing the hinge between the switch rail and fixed rail and the manner in which an equipment runner rolls on the flange of the rail; and,

FIGURE 11 is a transverse sectional view on the line 11—11 of FIGURE 2 and showing the abutment on the switch plate overlying one of the rails.

FIGURE 1 of the drawings illustrates a drapery 12 supported by and hanging from a portion of the apparatus constituting an illustrative embodiment of the present invention. The portion of the apparatus illustrated in FIGURE 1 comprises a track rail 13, a plurality of branch rails 14 and 15 and a rail switch 16. Rail switch 16 is adapted to selectively connect the track rail 13 to one or the other of the branch rails 14 or 15. It will be understood that the drapery-hanging apparatus illustrated in FIGURE 1 constitutes only a portion of a track system of rails such as those illustrated diagrammatically in FIGURES 4 and 5.

The track system illustrated in FIGURE 4 comprises the rails 13 and 14 which extend from the respective wings onto the stage proper 17, indicated by dash lines, and thence rearwardly along the sides of the stage and across the back. A single switch 16 is provided between rails 13 and 14 at the center of the back stage with a carry-off branch rail 15 extending from the switch. Such a track system permits draperies 12 to be applied to or removed from the ends of the rails 13 and 14 in the wings or at the carry-off branch 15 at the center of the back stage; and also to be run onto or off of the stage from either wing or from each wing in separate sections. Furthermore, the track arrangement in FIGURE 4 permits the draperies to be stored in the wings while hung on the rails when not in use on the stage. The rails 13 and 14 have curved sections of the proper radius between the wing portions and side portions and also between the side portions and the back stage portion.

The track system illustrated in FIGURE 5 has rails 13 and 14 extending from the wings along the sides and across the back of the stage 17 as in FIGURE 4, except that the separate rails 13 and 14 overlap each other in spaced relation at the center of the back stage to provide overlap masking. In addition, the track system of FIGURE 5 comprises a plurality of branches 18 and 19 extending across the stage, which is similarly overlapped for providing proper masking. This also permits forming variable depth acting areas by utilizing one and the same drapery sections throughout, and at the same time keeping the finished face of the drapery toward the camera or audience. A rail switch 16 is provided at each intersection between the cross branches 18 and 19 and side portion of the rails 13 and 14.

In accordance with the present invention the track system comprises a plurality of assembled rail sections of novel construction to provide a continuous track. Preferably, each rail section is a heat treated aluminum alloy extrusion including a portion which is in the general form of an I-beam in cross-section. As shown in FIGURES 1, 2 and 6, each section of rail has a central web 20, with lower and upper flanges 21 and 22 projecting from opposite sides of the web. In addition, each rail section also has a longitudinally extending supporting fin 23 projecting from the upper flange 22 in alignment with and constituting an extension of the web 20. The upper edge 24 of the fin 23 terminates in a bulbous rib of general cylindrical form. As shown at the left hand side of FIGURE 2 and in FIGURE 6, separate sections 14*a* and 14*b* of the rail branch 14 are spliced to each other by clamping plates 25 and 26. Each of the clamping plates 25 and 26 has a

flange 27 overlying the upper flange 22 and a side 28 of a contour corresponding to the contour of the side of the fin 23 and the bulbous edge 24. The plates 25 and 26 extend along the fin 23 of adjacent rail sectional 14*a* and 14*b* and are tightly clamped to the fins by means of bolts 29 extending therethrough. Thus, the clamping plates 25 and 26 splice the adjacent sections of rail to each other to form a continuous track, and, as the plates have the same contour as the fin 23 of the rail sections, they insure alignment of the lower flanges 21 of adjacent rail sections. Thus, a continuous track system is built-up from sections of rail having appropriate branches 13, 14, 18 and 19 for covering different areas of the stage 17 with switches 16 between adjacent branches.

Each of the rail switches 16 comprises a rail section 32 of the same size and contour as the other rail sections in the track. One end of the section 32 is pivotally connected to a rail 13 by means of a hinge 33, see FIGURES 1 and 10. The opposite end of the switch rail 32 is located adjacent the spaced ends of the rail sections 14 and 15. In the embodiment of the invention illustrated in FIGURE 1, the end of the rail section 13 adjacent the switch 16 is supported from the bottom of a channel beam 34 by brackets 35 attached to the sides of the fin 23 and to spacing blocks 36 at the bottom of the channel beam. Similarly, the rails of branches 14 and 15 are supported by brackets 37 from the bottom of the channel beam at its opposite end. The channel beam 34, in turn, may be supported in any suitable manner from a ceiling, as by turn-buckle stays 38 and 39 having hooked ends engaging the flanges of the channel beam.

The opposite end of the rail section 32 of switch 16 is attached to a plate 40 mounted to slide on the web of the channel beam 34. As illustrated in FIGURES 2 and 3, the end of the switch rail 32 is attached to the sliding plate 40 by means of brackets 41 and 42, similar to the brackets 35, and the plate is retained in sliding engagement with the web channel beam 34 by a pair of spaced bolts 43. The shank 44 of each bolt 43 extends through a slot 45 in the plate 40 and a hole 46 in the web of the channel beam 34 and has a head 47 underlying the plate at each side of the slot. As illustrated in FIGURES 2, 3 and 9 a washer 48 is provided between the head 47 of the bolt 43 and sliding plate 40. A nut 49 is screwed onto the threaded end of each bolt shank 44 and overlies the web of the channel beam to hold the plate closely adjacent the web but with sufficient clearance to permit relative sliding. Thus, the plate 40 and free end of the switch rail 32 is free to move laterally from the position shown in FIGURE 3 in alignment with the rail section 15 to a position in alignment with the other rail section 14. As shown in FIGURE 8, a spring pressed ball detent 50 is mounted on the web of the channel beam 34 and cooperates with recesses 51 and 52 in the sliding plate 40 to releasably hold the rail section 32 of the switch 16 in one or the other of its positions in alignment with the rail section 14 and 15, respectively.

The movable rail section 32 of the switch 16 is moved from one to the other of its two positions by means of a pull cord 56 adapted to be operated from the stage 17. As shown in FIGURES 2, 3 and 7, the pull cord 56 extends through a hole 57 in the fin 23 of the switch rail 32 and is tied around the edge 24 in a knot 58. One end 59 of the cord 56 extends from the knot 53 over a vertically arranged pulley 60 attached to the web at one side of the channel beam 34 and hangs down therefrom with a ring 61 at its end. The opposite end 62 of the cord 56 extends laterally around a horizontally arranged pulley 63 and then back over a vertical pulley 64 and hangs down adjacent the end 62 with a ring 65 at its end. Thus, by pulling the end 62 of the cord 56, the rail section 32 of switch 16 may be shifted from the position illustrated in FIGURE 3 to a position in alignment with the rail section 14.

Bumpers 68 and 69 are mounted on the sliding plate 40 at opposite sides of the switch rail 32 so as to overlie the end of the rail section 14 or 15, respectively, when the end of the rail section 32 is aligned with the other section. Each of the bumpers 68 and 69 is in the form of a bracket attached to the plate 40 by screws and has a laterally projecting loop constituting the bumper.

The curtain or drapery 12 is hung on the rails of the track system by means of a plurality of runners 71. Each of the runners 71 is in the form of a U-shaped stirrup straddling the lower flange 21 of the track rail and having inwardly projecting rollers 72 and 73 on opposite arms which are adapted to roll on the flange 21 at each side of the web 20. Thus, each runner 71 may be easily and quickly applied to a rail of the track by merely aligning its rollers with the opposite sides of the flange 21 and pushing it onto the track. Because of the I-beam form of the track rail which depends from its supporting fin 23, each runner 71 is free to roll along flange 21 unimpeded by any obstructions such as supporting brackets or splicing connections and each runner is free to rock on the rail flange in the manner of a pendulum. Rollers 72 and 73 may have a neoprene or nylon tread and mounted to rotate on ball bearings, or provided with nylon bearings rotatable on a stud. A ring 74 is swiveled to each runner 71 with a chain 75 depending from each ring. S-shaped hooks 76 connect the ends of the depending chains 75 to an eyelet 77 in the top of the drapery or curtain 12. Thus, a number of runners 71 are provided for supporting the curtain or drapery 12 at closely spaced points adjacent its upper edge. One form of the invention having now been described in detail the mode of operation of the equipment supporting apparatus is explained below.

A complete drapery or sections of drapery 12, illustrated in FIGURE 1, may be applied to a track system, such as illustrated in FIGURES 4 and 5, by attaching runners 71 to the drapery and mounting the runners on the track system at the ends of the rails. The runners 71 are attached to the drapery 12 at spaced points adjacent its upper edge by inserting one end of an S-hook 76 into an eyelet 77 in the drapery and then inserting the opposite end of the hook into the chain 75 of a runner 71. With the track system illustrated in FIGURE 4, the successive runners 71 may be applied to the ends of the rails 13 and 14 in the wings or at the end of the carry-off section 15 at the back of the stage. This is accomplished by merely aligning the rollers 72 and 73 of each runner 71 with the opposite sides of the lower flange 21 of the rail and pushing it along the flange.

After a drapery or a section of a drapery 12 is applied to the rail system illustrated in FIGURE 4, it may be stored in the wings at opposite sides of the stage 17 or run to any desired location at the sides and rear of the stage by merely towing the forward edge to the desired location. The runners 71 then freely roll along the lower flange 21 of the track. Furthermore, a drapery 12 applied to one of the rails 13 or 14 of the track system may be run to the other rail through the switch 16. For example, if the drapery 12 were applied to the end of the rail 13, the switch rail 32 would be shifted from the position illustrated in FIGURE 1 to that illustrated in dotted lines in FIGURE 4 to align its movable end with the section 14 so that the drapery could be run from the rail 13 onto the rail 14. If the drapery 12 were applied at the end of the rail section 15 at the rear of the stage it could be run onto the rail 13 with the switch in the position illustrated in FIGURE 1 and then by shifting the switch rail 32 into alignment with the rail 14 it could be run back onto the rail 14. Similarly, the drapery 12 may be easily and quickly run off the track system at either wing or at the back of the stage 17.

When a drapery 12 is to be hung on a track system such as that illustrated in FIGURE 5, it may be applied to the end of the rails 13 and 14 at opposite wings

of the stage 17, or at the center overlap of any across stage rail. With the switches 16 in the position illustrated in full lines in FIGURE 5, a drapery or section of drapery 12 can be run to any position on the tracks 13 and 14. By selectively operating the switches 16 by the position illustrated in dotted lines in FIGURE 5 the drapery can be run onto either of the branches 18 and 19. Similarly a curtain or drapery 12 can be removed at either wing or at the center of the overlap of any across stage rail for replacement by another drapery or may be stored at the ends of the rails 13 and 14 in the wings.

The single switch 16 in FIGURE 4 or each of the multiple switches 16 in FIGURE 5 may be shifted from one to the other of its positions by merely pulling one end 59 or 62 of the pull cord 56. For example, if it is desired to move the rail section 32 of a switch 16 from a position in alignment with the branch 15, as illustrated in FIGURE 1, into alignment with the branch 14, as illustrated by dotted lines in FIGURE 4, the end 62 of the cord 56 is pulled manually. Such movement of the end of cord 56 acting through the pulleys 64 and 63, see FIGURE 3, and knot 58 attached to the movable end of the rail section 32 produces a lateral force thereon. When the force applied by cord 56 is sufficient to cam the ball detent 50 out of recess 51 the rail section 32 pivots on hinge 33 into alignment with the rail 14. During such movement of the switch rail section 32, the plate 40 slides on the bolts 43 to hold the movable end of the rail in alignment with the rail sections 14 and 15. The spring pressed ball detent 50, see FIGURE 8, slides into the recess 52 to insure accurate alignment of the ends of the rail sections and yieldingly retains the switch rail 32 in accurate alignment. Furthermore, the bumper 69 on the sliding plate 40 aligns with the end of the branch rail 15 to prevent any runners 71 thereon from running off the end of the disconnected rail. Similarly, the switch rail 32 may be shifted from alignment with the rail section 14 into alignment with the rail section 15, as illustrated in FIGURE 3, by pulling the end 59 of the cord 56. The cord 56 acting through the pulley 60 and knot 58 attached to the end of the switch rail section 32 produces a lateral force in the opposite direction to shift the rail.

As opposite ends of the switch rail 32 are supported by the hinge 33 and sliding plate 40 on the channel section 34 and as the other rail sections 14, 15, 18 and 19 are similarly supported from the fins 23, the relatively movable sections of the track are held in alignment. Furthermore, the novel construction of the rail permits the track system to be assembled from a series of sections spliced to each other by the clamping plates 25 and 26, as illustrated in FIGURES 2 and 6. As the upwardly projecting fins 23 of adjacent rail sections have the same shape, and as the clamping plates 25 and 26 have a shape corresponding to the shape of the fin 23 with flanges 27 overlying the upper flanges 22, an accurate alignment of the lower flanges 21 of adjacent spliced sections is insured. Thus, the runners 71 roll freely over the entire track system unimpeded by supporting brackets or offset flanges on adjacent rail sections.

It will now be observed that the present invention provides an improved apparatus for running draperies or other stage equipment to different locations on a stage and permitting a quick change of such equipment from one arrangement to another. It also will be observed that the present invention provides an improved switch construction adapted to be manually shifted from the stage to run stage equipment from the wings to different areas of a stage with a minimum physical effort and time. It will further be observed that the present invention provides an improved rail construction which facilitates assembly of a track system from separate sections which insures accurate alignment of adjacent sections in a continuous track. It will still further be observed that the present invention provides an improved apparatus for handling draperies on a stage which is of simple construction, economical to manufacture and reliable in operation.

While several embodiments of track systems incorporating the invention are herein illustrated and described, it is to be understood that further changes may be made in the construction and arrangement of elements without departing from the spirit or scope of the invention. Therefore, without limitation in this respect the invention is defined by the following claims:

I claim:

A theatre stage having an open front and wings at opposite sides extending laterally beyond the open front, and a track system above the stage floor on which equipment props may be moved quickly to and from different areas of the stage comprising, a plurality of sets of transverse track branches extending parallel to the open front of the stage in spaced relation to each other with each set of branches having overlapping ends at the center of the stage, the opposite ends of each set of branches merging at opposite sides of the stage to form curved end branches extending into the opposite wings, a switch between the overlapping ends of each set of spaced branches at the center of the stage and between each transverse branch and its end branch, respectively, so that props may be run onto and off of any transverse set of branches from either wing or at the center of the stage, beams hung from the ceiling for supporting the track system, the rail sections forming the sets of transverse branches, end branches and switches having a vertical web and horizontal flanges projecting from opposite sides of the web below the top thereof, brackets connecting the upwardly projecting portion of the web of each rail section to its supporting beam, the flanges providing spaced horizontal tracks, equipment supporting runners in the form of U-shaped stirrups adapted to straddle the rail with rollers at each side for rolling engagement on the flanges at opposite side of the rails and having means for hanging stage equipment thereon, each of said switches comprising a hinged rail section having one end hingedly connected to the end of a rail section and supported thereby, means for supporting the movable end of each hinged rail section for sliding movement comprising a plate attached thereto and having a slot therein with a stud depending from said supporting beam through the slot in the plate and having a head underlying the plate at the opposite side of the slot, operating means for sliding said movable end of each hinged rail into alignment with the end of the overlapping branches of a set and merging branch sections, means acting between said supporting structure and said hinged rail section to releasably positions its movable end in alignment with the end of a selected section, and bumper stops mounted on the movable plate attached to the end of said movable switch rail at opposite sides of the latter to overlie the end of a rail section not aligned with the switch rail, whereby to adapt stage equipment to be mounted on or removed from one end of any of the rail sections and movable along its rail section and through the switch rail to other rail sections to overlie different areas of the theatre stage.

References Cited in the file of this patent

UNITED STATES PATENTS

242,754	Cole	June 14, 1881
848,681	Newton	Apr. 2, 1907
1,032,368	Ballard	July 16, 1912
1,580,546	Wehr	Apr. 13, 1926
1,602,378	Harris	Oct. 5, 1926
1,603,261	Adams	Oct. 19, 1926
1,958,162	Diehl	May 8, 1934
2,208,521	Clary	July 16, 1940
2,434,523	Sheets	Jan. 13, 1948

FOREIGN PATENTS

674,301	Germany	Apr. 12, 1939
417,688	Great Britain	Oct. 10, 1934