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THEATRICAL TRANSPORTATION APPARATUS

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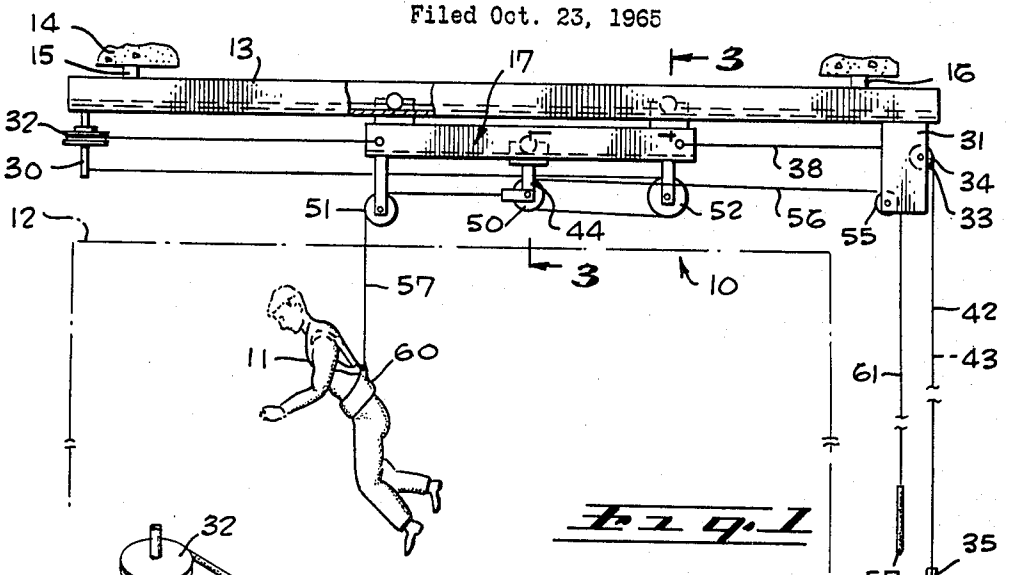


Fig. 1

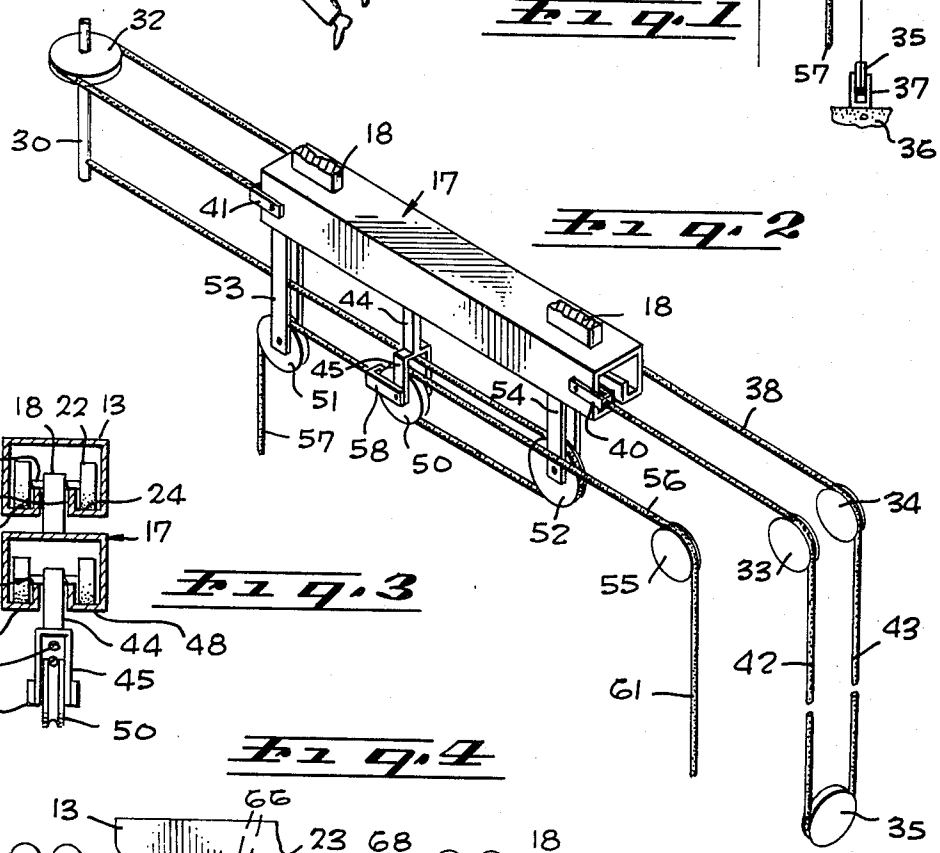
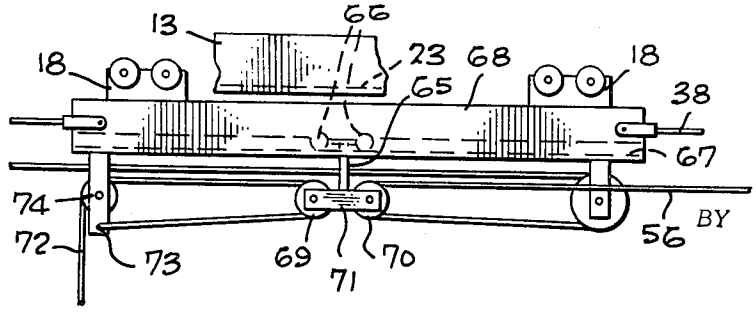


Fig. 2

Fig. 3

Fig. 4



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THEATRICAL TRANSPORTATION APPARATUS

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ABSTRACT OF THE DISCLOSURE

A personnel transportation apparatus for positioning a performer in a vertical plane exposed to a viewing audience is disclosed which includes an elongated stationary support extending in the vertical plane on which carriage means move between the opposite ends thereof. A truck is movably supported from the carriage means and flexible means are connected to the truck which is adapted to be attached to the performer. Means are connected to the carriage and truck for selectively moving the carriage and the truck whereby the performer may be maneuvered vertically and laterally within the vertical viewing plane.

This invention relates to personnel transporting apparatus and more particularly to a novel theatrical personnel carrier or transportation rig adapted to vertically and transversely position or locate a performer across a staging area in order to achieve special theatrical and illusionary effect for the benefit of a viewing audience.

In the entertainment industry, it is oftentimes necessary to transport acting personnel about a stage to represent the appearance of unsupported suspension simulating the effects of flying, hovering, swimming or other similar special effects. Representative of such theatrical requirements are found in programming flying ballets, swimming effects for motion pictures, the performance of the well known play "Peter Pan" and other forms of theatrical presentations.

Various conventional overhead trolley and conveyor systems which suspend a performer from the end of a wire have been employed in the past to lift and transport acting personnel about a stage and which have employed simple pulley and line arrangements. However, various problems and difficulties have been encountered with such prior systems which stem largely from the fact that precision maneuvering and orientation of the actor or performer about the stage cannot be properly achieved in a satisfactory manner which is realistic, convenient and safe for the performer. In one system, the performer may be readily lifted from the stage floor but substantial swinging of the performer is encountered which greatly hampers precise maneuvering and prevents the desirable feature of spotting a swinging performer at a particular point or spot on the stage. In other prior systems, the performer may be precisely maneuvered but a substantial portion of the conveying or transportation equipment is exposed to the view of the audience which, obviously, negates the theatrical illusion intended to be presented. Also, twisting of the pulley system lines sometimes occurs which jams the pulleys and requires additional attention and handling.

Accordingly, the personnel transportation apparatus of the present invention incorporates a stationary overhead monorail track with a downwardly depending movable

carriage for effecting transverse or lateral orientation of a performer about a staging area and having a truck movably mounted on the carriage for determining the height of the performer from the stage floor. A pulley system is employed to independently actuate the movement of the carriage and the truck so that apparatus possesses both lateral and vertical movement to selectively maneuver a performer in any part of a square or rectangular viewing plane representing the normal viewing area exposed to an audience. By employing an independently actuated carriage and track mechanism, the pulley system can be operated in such a manner that no portion of the apparatus appears in the viewing plane exposed to the audience.

Therefore, it is a primary object of the present invention to provide a personnel transportation apparatus for achieving special theatrical effects which is capable of transporting an actual performer in a viewing plane about a stage area in such a fashion that precise transverse and vertical movement can be achieved.

Another object of the present invention is to provide a novel personnel transportation apparatus for use in connection with theatrical performances wherein the apparatus may be hidden from the view of an audience without interfering with efforts to precisely maneuver, orient and locate the performer within a vertical viewing plane.

Another object of the present invention is to provide a novel personnel flying rig which employs a movable carriage for effecting transverse movement of the performer in mid-air about a staging area and which incorporates a separate truck movable on the carriage to effect lifting and vertical positioning of the performer.

Still another object of the present invention is to provide a novel personnel flying rig which employs dual rectilinear movable members downwardly depending from a stationary monorail track which are separably operable to position a performer suspended by a line about a vertical viewing plane so as to achieve various theatrical and illusionary effects.

A still further object of the present invention is to provide a novel theatrical personnel transportation rig which is economical to manufacture, simple to operate and which will accommodate a variety of illusionary effects or the like.

Yet another object of the present invention is to provide a novel personnel transportation apparatus which employs a pair of line and pulley systems which cooperate to position a performer in a vertical plane whereby the arrangement of the pulley systems avoid twisting and jamming of the pulley system as is sometimes encountered with prior art arrangements.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings, in which:

FIGURE 1 is a side elevational view of the novel personnel transportation apparatus of the present invention illustrating the separate means for effecting vertical and lateral positioning of a person suspended from a wire within the confines of a typical staging area;

FIGURE 2 is a perspective view of the apparatus of

FIGURE 1 which more clearly illustrates the dual pulley system employed in the apparatus thereof;

FIGURE 3 is a cross-sectional view of the personnel transportation apparatus shown in FIGURE 1, as taken in the direction of arrow 3—3; and

FIGURE 4 is a fragmentary side elevational view of another embodiment of the present invention for effecting vertical positioning of the performer.

Referring now to FIGURES 1 and 2, a personnel transportation apparatus employed for theatrical productions in accordance with the present invention is shown as indicated in the general direction of arrow **10**. The apparatus is illustrated in connection with the supporting of and for achieving the positioning of a performer **11** in a vertical viewing plane which is exposed to an audience and which is shown as being defined by the broken lines indicated by numeral **12**. In actual operation, the viewing area may be defined by curtains, scenery, camera view finders or the like so that the apparatus of the present invention is completely hidden when not in use and when the apparatus is being employed for performer positioning during performances such as flying ballets or similar theatrical special effects.

In general, the present invention includes an elongated monorail track **13** which is fixed to suitable supporting structure such as is indicated by numeral **14** via brackets **15** and **16** secured on opposite ends of the box rail **13**. To obtain lateral positioning or maneuvering of the performer **11**, a movable carriage **17** is employed which is downwardly depending from the rail **13** and is adapted to move rectilinearly between its opposite ends. For mobility, the carriage **17** includes a pair of spaced apart supports **18** which are fixed on one end to the opposite ends of the carriage **17** and which project upwardly through a guide slot **20**, as illustrated in FIGURE 3, and which terminates in the mounting of an axle **21**. The opposite ends of the axle are provided with rotating rollers **22** which are adapted to travel in parallel track portions **23** and **24** respectively, formed in the box rail **13**. Therefore, the carriage **17** is movable between the opposite ends of the monorail track **13** by means of the rollers **22** which travel in the track portions **23** and **24** on opposite ends of the carriage. By employing dual rollers on the opposite ends of the carriage, the lateral movement of the performer **11** is greatly stabilized and a relatively smooth and non-swinging movable supporting means is provided during such lateral maneuvering.

With respect to the pulley system for effecting lateral movement of the carriage **17**, it is noted that a shaft **30** is fixed on the extreme end of the rail **13** and that parallel support members **31** are provided on the other end of the rail **13**. The shaft **30** is employed for supporting a pulley wheel **32** which is oriented to rotate in a horizontal plane. The plane of rotation of pulley **32** is in direct alignment with the carriage **17** and a pair of pulleys **33** and **34** which are rotatably mounted on the brackets **31** and which are adapted to rotate in a vertical plane in fixed spaced apart relationship. The rotatable mounting for the pulleys **33** and **34** are coaxially disposed with respect to one another. An anchoring pulley **35** completes the pulley system for effecting lateral movement and is suitably anchored to a fixed support **36** by means of a suitable attachment means **37**.

It is to be particularly noted than an endless line **38** is selectively trained over the pulley system which has one end thereof attached to one end of the carriage **17** via a connecting fixture **40** and the opposite end of the line **38** secured to the other end of the carriage **17** via a connecting fixture **41**. Therefore, it can be seen that by pulling a line portion **42** downwardly, the carriage will be actuated to the right with respect to the viewing plane to the audience. Conversely, when a line portion **43** is pulled in a downward direction, the carriage **17** will be actuated to move to the left hand side of the same viewing plane. Therefore, complete lateral movement of the carriage is effected between the right and left hand sides of the staging area defining the viewing plane.

A particular feature of the present invention resides in the fact that the vertical positioning and lifting of the performer **11** is achieved by independent means separate from the later moving means. The vertical positioning or lifting means includes a movable truck **44** which is provided with a downwardly depending yoke **45** on one end thereof and an axle and roller assembly indicated by numeral **46** secured to its other end which is similar to the roller arrangement on the carriage **17** mounted on the monorail **13**. It is to be noted that the carriage **17** includes a pair of track portions **47** and **48** for receiving and guiding the roller arrangement **46** in a fashion similar to the track portions **23** and **24** carried by the rail **13**. The yoke **45** is employed for rotatably mounting a pulley **50** which is adapted to move on its roller assemblage **46** across the entire length of the carriage **17** from one end to its opposite end.

Inasmuch as the vertical positioning of the performer **11** involves lifting of weight, mechanical advantage is introduced into the vertical maneuvering system by employing a pair of downwardly depending pulleys **51** and **52** which are rotatably supported by brackets indicated by numerals **53** and **54** secured to the opposite ends of the carriage **17** so that the pulleys **51** and **52** are separated from one another in fixed spaced apart relationship. Another pulley **55** is rotatably mounted on the bracket **31** and is included in the pulley arrangement comprising the vertical positioning means. To complete the pulley system, a line **56** is employed which is trained over the pulleys as shown more clearly in FIGURE 2 and having one end thereof attached to the extreme end of the shaft **30** in fixed spaced relationship to the pulley **32** and wherein the opposite end of the line **56** terminates with a weighted anchor **57**. It is to be noted that, thus far, the line and pulley system employed for vertical movement is effective to move the truck **44** between pulley **51** and pulley **52** in a horizontal mode of operation. However, this horizontal movement of truck **44** is translated into vertical positioning of the performer **11** by means of a line **57** which is trained over pulley **51** and having one of its opposite ends secured to the pulley **50** by means of a connection fixture **58** and having its opposite end detachably connected to a suitable harness **60** which is worn about the hips and shoulders of the performer **11**. By employing a hip harness, the performer has complete flexibility and mobility of his extremities so that a variety of movements and motions can be accommodated without encountering interference with either the supporting line **57** or the personnel transportation apparatus in general.

Therefore, it can be seen that the movement of the truck **44** between the pulleys **51** and **52** has the effect of raising and lowering the performer with respect to the stage floor by means of lengthening and shortening the distance between the performer **11** and the pulley **51** via line **57**. A distinct mechanical advantage is gained by employing the movable pulley **50** in conjunction with the fixed pulleys **52**, **55** and the fixed end of line **56** with the shaft **30**. A feature of the invention resides in the fact that the distance between pulley **50** and **52** remains constant no matter where the carriage **17** is moved laterally until the lift line **56** is raised or lowered. Furthermore, it is to be noted that to raise the performer **11**, it is necessary to move a line portion **61** of the line **56** in a downward direction which will cause the pulley **50** to move toward the pulley **52** which draws the line **57** over the pulley **51** to raise the performer. However, the performer is lowered by means of his own weight when the line portion **61** is released and the weighted anchor **57** serves a damper or counter-balance to prevent the performer from lowering too rapidly.

Referring now to FIGURE 4, a modification for the vertical maneuvering means is illustrated for particu-

larly increasing the available vertical lift without the necessity of increasing the length of the carriage track. This means incorporates a truck **65** having a dual set of rollers **66** rectilinearly operating on a track **67** carried by a box carriage **68**. The truck inciludes a pair of fixed pulleys **69** and **70** which are secured thereto by means of rotatable connections on the opposite ends of parallel support plates **71**. The system is somewhat similar to the vertical positioning system shown in FIGURE 2 with the exception that pulley **69** has been added to the truck and the line **72** has one of its ends terminating in a fixed connection **73** with a pulley wheel support bracket **74** while its opposite end terminates in a pivotal connection with the supporting harness worn by the performer (not shown). To some extent, the mechanical advantage of the lift system of FIGURE 1 is decreased; however, a definite increase is gained in the amount of lifting power permissible with the limited length of the lower track **67**.

For the foregoing, it can be seen that a novel apparatus is provided for vertically and laterally positioning a performer within the view plane exposed to an audience. The apparatus employs a dual independently operated pulley system which incorporates a first movable carriage supported from a rail for determining lateral positioning and a second movable track supported from the carriage for effecting vertical positioning. Such apparatus has greatly improved the technical and theatrical effects oftentimes demanded by modern entertainment programming.

While particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspects, and therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of this invention.

I claim:

1. A theatrical personnel transportation apparatus for positioning a performer in a vertical viewing plane having a portion thereof exposed to a viewing audience comprising:

an elongated stationary monorail lying in the vertical viewing plane out of view of the audience;

a movable carriage downwardly depending from said monorail and being adapted to move between the opposite ends thereof;

a movable truck downwardly depending from said carriage and adapted to move between the opposite ends thereof;

a first pulley system having a plurality of pulley wheels and a line trained over said wheels wherein the opposite ends of said line are connected to the respective opposite ends of said carriage so that said carriage may be selectively moved along said monorail;

a second pulley system having a plurality of pulley wheels and a line trained over said wheels wherein one end of said line is attached to one end of said monorail and the remainder of said line is looped over a fixed pulley connected to said carriage and a movable pulley connected to said truck so that said truck may be selectively moved along said carriage; and

a third pulley system having a pulley wheel and a line trained thereover wherein the opposite ends of said line are connected to said truck and to the performer respectively whereby the performer is supported in mid-air from said monorail so that the performer may be maneuvered vertically and laterally within the vertical viewing plane exposed to the audience in response to movement of said truck and said carriage respectively.

2. A theatrical personnel transportation apparatus for maneuvering a performer about a stage in a vertical viewing plane exposed to a viewing audience, the combination comprising:

an elongated box-like stationary monorail lying in the vertical viewing plane over the stage out of audience view and having a pair of parallel spaced apart tracks extending from one end of said monorail to its other end so that said tracks define a slot therebetween;

a movable carriage having the same cross section as said monorail so that a pair of parallel spaced apart tracks are provided with an elongated slot defined therebetween;

said carriage including brackets disposed within said monorail slot and having rollers carried thereon adapted to ride in said pair of monorail tracks so as to downwardly movably support said carriage from said monorail;

a movable truck having rollers adapted to ride in said pair of carriage tracks so as to downwardly movably support said truck from said carriage;

a first pulley system having a plurality of pulley wheels and a line trained over said wheels wherein the opposite ends of said line are connected to the respective opposite ends of said carriage so that said carriage may be selectively moved along said monorail;

said carriage having two fixed pulley wheels each secured respectively to one of the opposite ends thereof;

said truck having pulley wheel means secured thereto adapted to travel in a rectilinear path between said fixed pulley wheels on said carriage ends;

a line secured at one end to one end of said monorail and being trained over said fixed pulley wheel located on the end of said carriage opposite to its end nearest to said monorail end having said line secured thereto and looped over at least a part of said truck pulley wheel means so that a loop is provided which opens and closes as said truck moves;

a harness worn by the performer; and

a lift line connected at one end to said harness and trained over said fixed pulley wheel located on said carriage end nearest to the end of said monorail to which said above mentioned line is secured and being operatively coupled to said truck whereby the performer is supported in mid-air above the stage so that the performer may be maneuvered vertically in response to movement of said truck and laterally in response to movement of said carriage within the vertical viewing plane exposed to the audience so that special theatrical effects may be achieved.

3. The invention as defined in claim **2** wherein

the end of said line having its opposite end connected to said harness is secured to said truck.

4. The invention as defined in claim **2** wherein said truck pulley wheel means includes a second pulley wheel secured to said truck and wherein the end of said line having its opposite end connected to said harness is trained over said second pulley wheel and terminates in fixed connection to the mounting of said fixed pulley wheel carried on the end of said carriage nearest to the end of said monorail to which said truck operating line is attached.

5. A personnel transportation apparatus comprising:

an elongated stationary track;

a movable carriage supported on said track;

a movable truck supported on said carriage;

a first pulley system including a line secured to said carriage for moving said carriage along said track;

a second pulley system incorporating said truck and said carriage including a line for moving said truck on said carriage; and

personnel supporting means including a third pulley system incorporating said carriage and said truck including a pulley wheel carried on said carriage and a line trained thereover operably coupled to said truck whereby personnel supported therefrom may be positioned laterally in response to movement of

said carriage and positioned vertically in response to movement of said truck.

6. The invention as defined in claim 5 wherein said personnel supporting line includes two ends, one of said ends fixed to the personnel and the other of said ends fixed to said truck.

7. The invention as defined in claim 5 wherein said personnel supporting line includes two ends, one of said ends fixed to the personnel and the other of said ends fixed to said carriage.

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