Jan. 6, 1953 W. J. LANCASTER 2,624,578

EXHIBITION AND STAGE DEVICE

Filed Dec. 20, 1949 2 SHEETS—SHEET 1

Fig.1

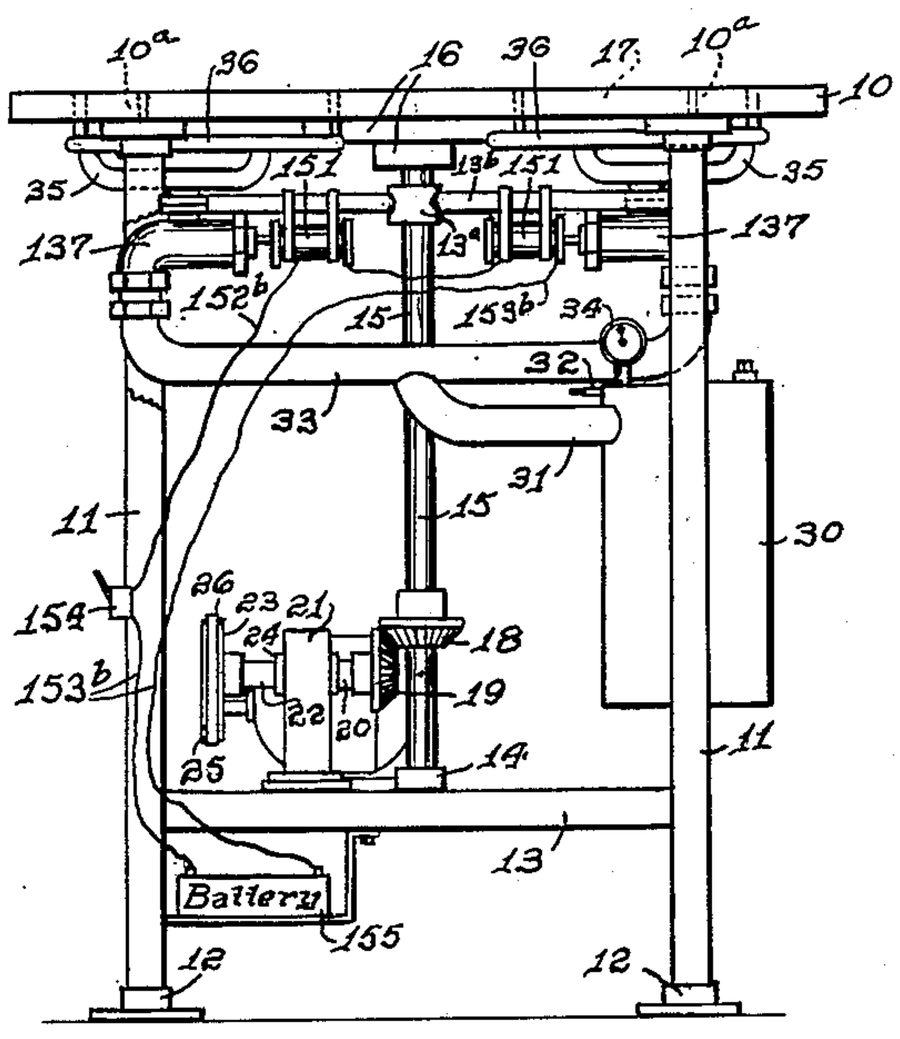


Fig.7

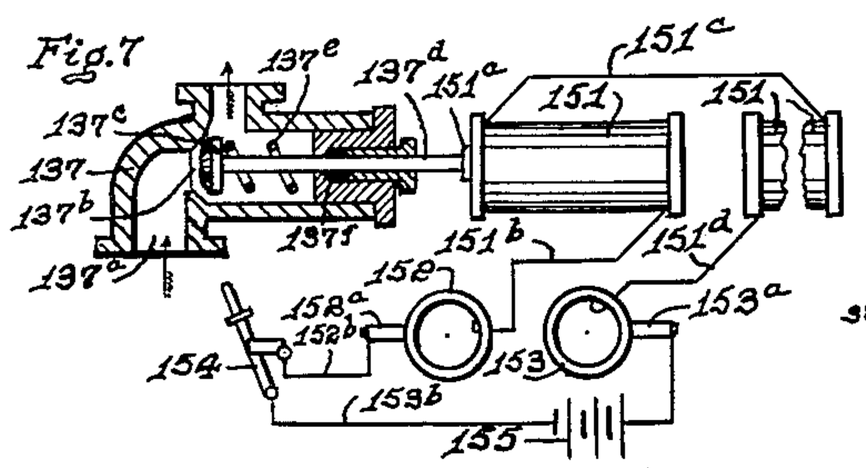


Fig.4

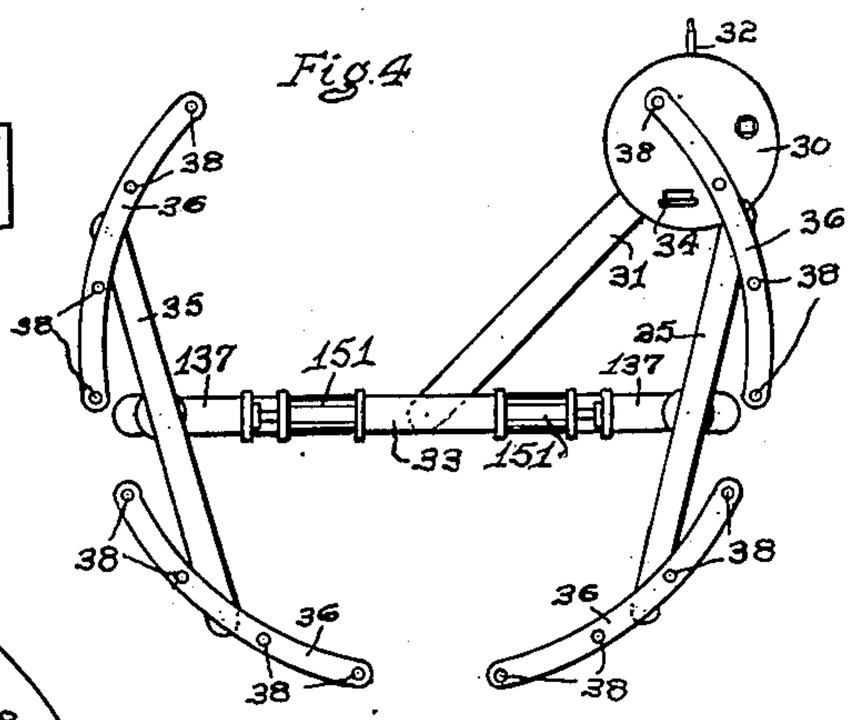


Fig.3

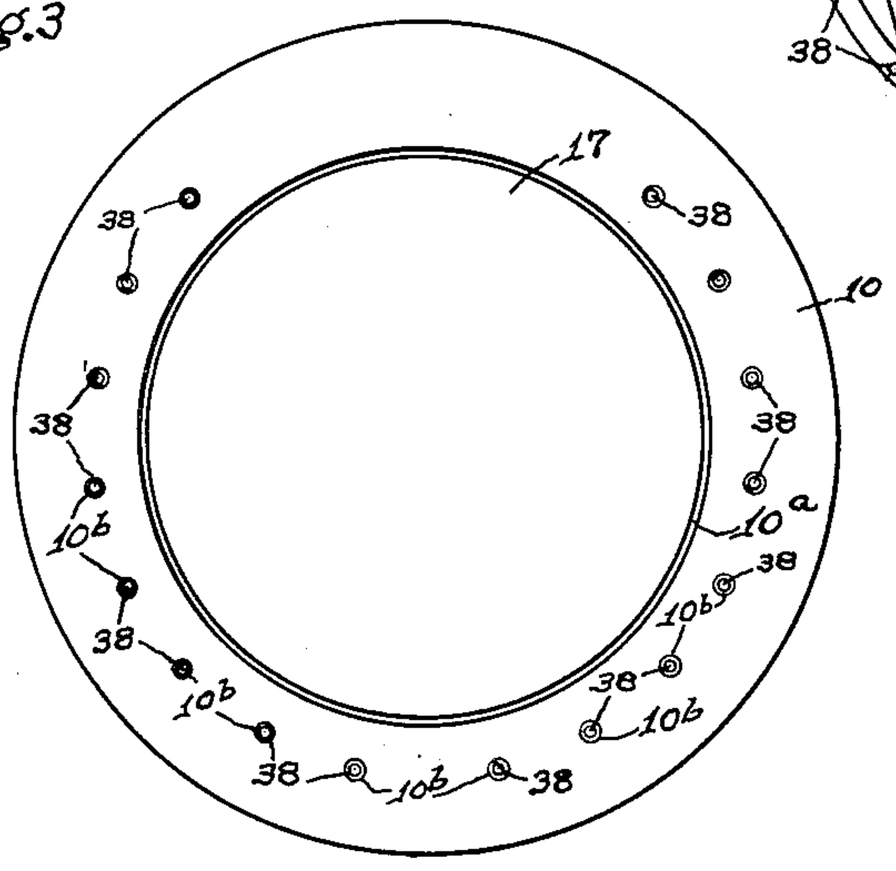
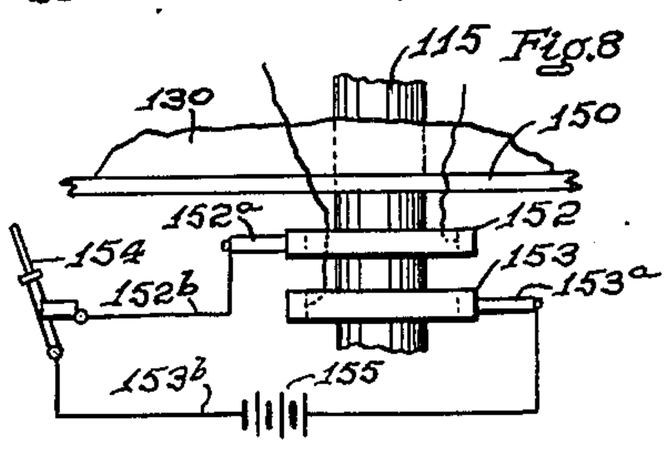


Fig.8



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EXHIBITION AND STAGE DEVICE

Filed Dec. 20, 1949 2 SHEETS—SHEET 2

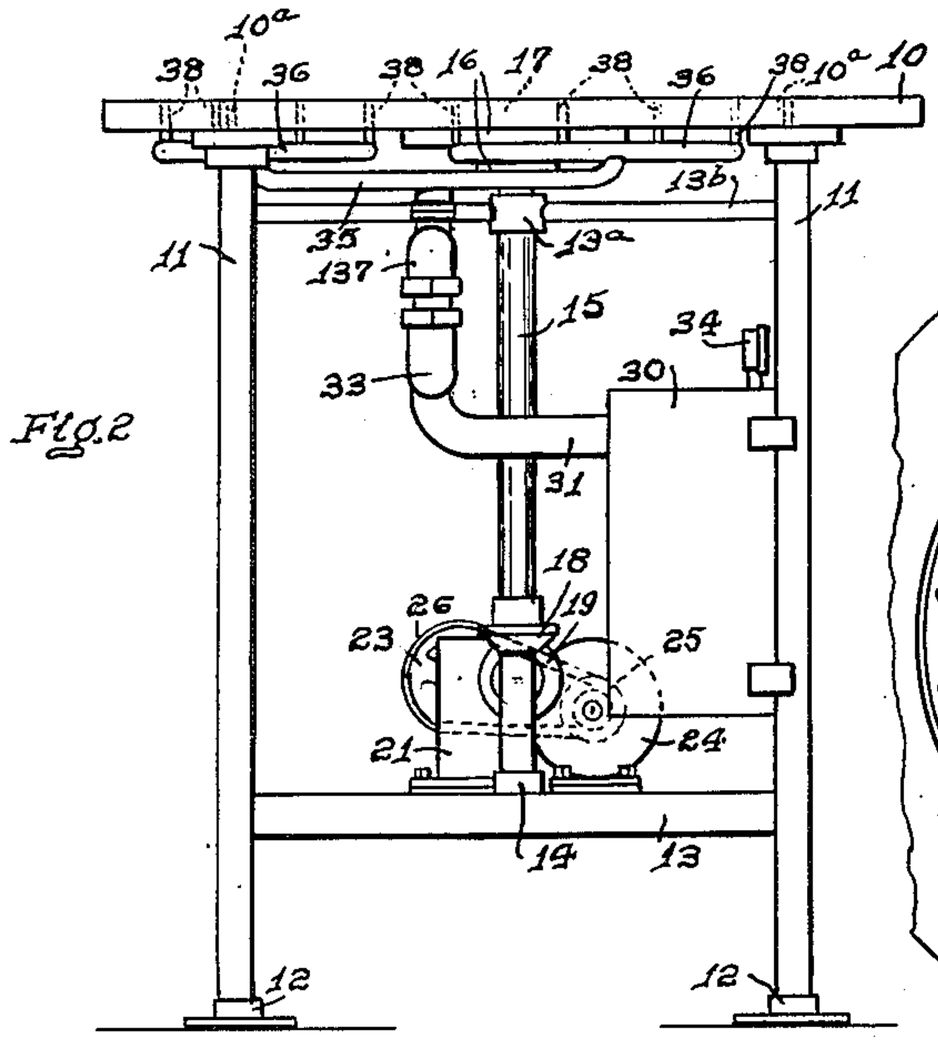

Fig.2

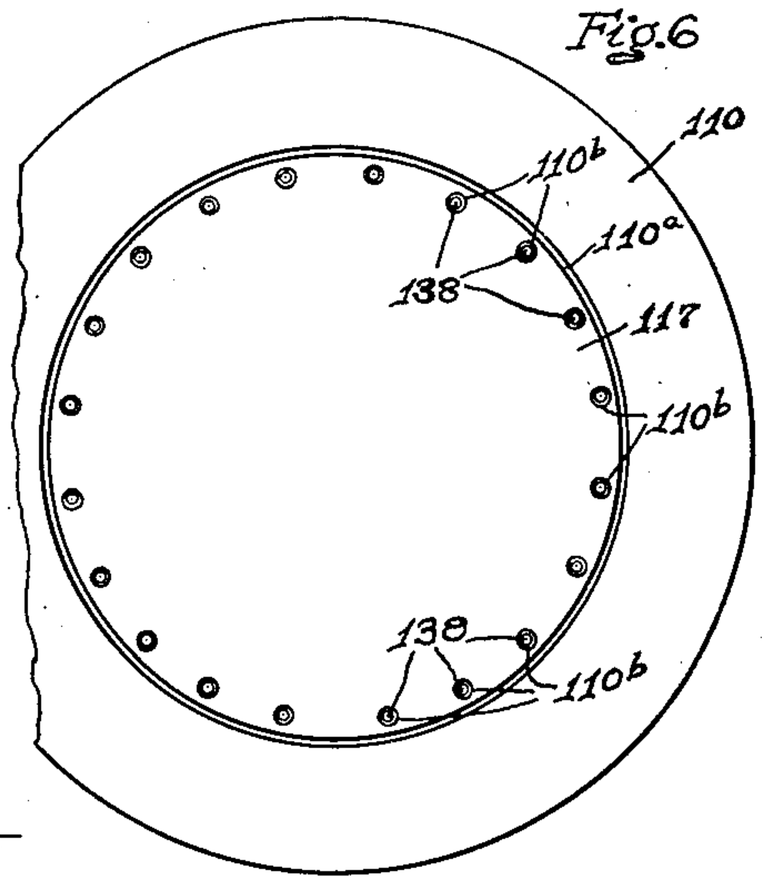

Fig.6

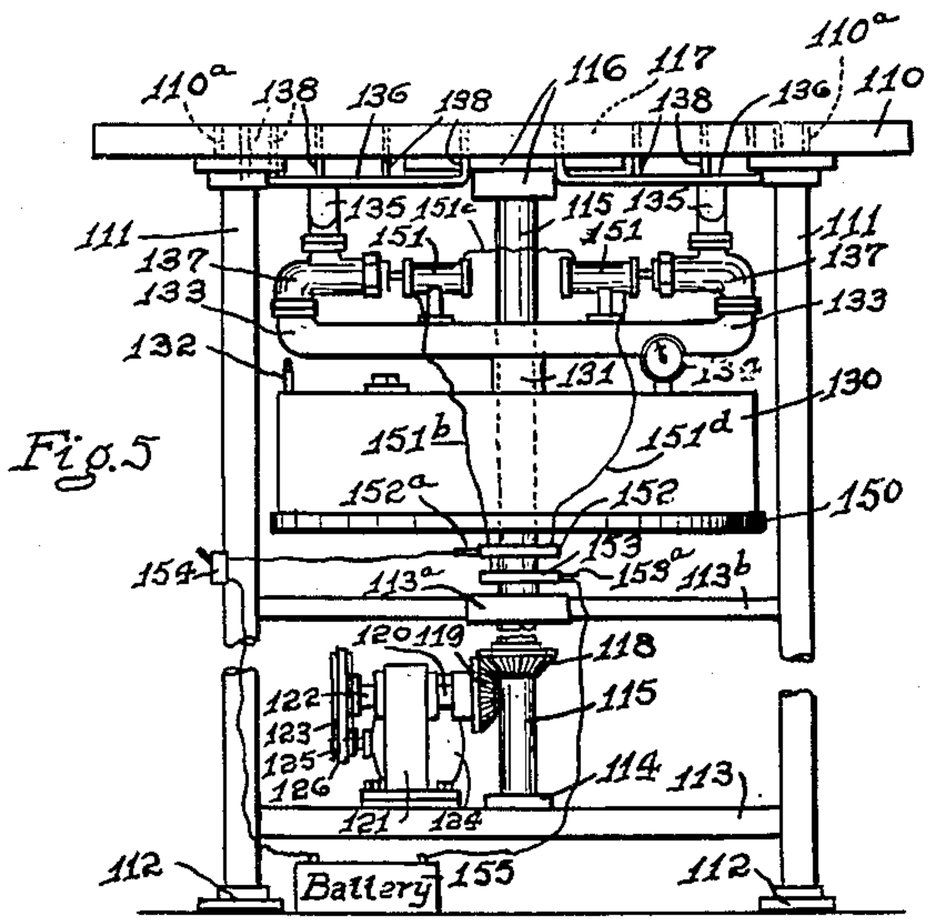

Fig.5

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2,624,578

EXHIBITION AND STAGE DEVICE

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4 Claims. (Cl. 272—21)

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This invention relates to exhibition and stage devices and has particular relation to that type of devices or machines which turn or rotate during the time they are being used.

The primary object of this invention is the provision of an improved exhibition or stage device.

Another object of the invention is the provision of an improved exhibition or stage device having a revolving table or platform flush with the surrounding supporting means and provided with means for emitting fog, gas, smoke, or vapor to obscure the object to be displayed.

Another object of the invention is the provision of an improved exhibition or stage device having a revolving table or platform with means for emitting fog, smoke, vapor, or gas adjacent the outside edge of the revolving table to obscure the object mounted thereon.

Another object of the invention is the provision of an improved exhibition or stage device having a revolving table or platform with means for turning the table or platform and means for emitting smoke, fog, gas, or vapor in such a manner that any object on the platform will be kept from sight until the operator, by shutting off the supply of fog, smoke, gas, or vapor, makes it possible for the object mounted upon the revolving platform, to be seen.

Referring to the drawing where I have illustrated an embodiment of my invention,

Fig. 1 is a front elevation of the invention, showing the nozzles in the outer stationary table and adjacent the periphery of the inner table.

Fig. 2 is a side view, parts being omitted for clearness.

Fig. 3 is a top view showing the stationary table and the revolving table therein, as shown in Fig. 1.

Fig. 4 is a pipe and nozzle layout of the structure of Fig. 1, the tables being omitted for the sake of clearness.

Fig. 5 is a front view of a slightly different form showing the delivery nozzles in the upper surface of the revolving table, the legs 111 and shaft 115 being broken to contract the figure.

Fig. 6 is a top plan view of the structure of Fig. 5.

Fig. 7 is a diagrammatic showing of the electro-magnetic control for the valves which may be used by either construction.

Fig. 8 is a slightly enlarged detail view of the slip rings 152, 153 and their connections.

Similar reference characters refer to the same or similar parts throughout the specification and drawing.

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The structure illustrated in Figs. 1 to 4 comprises two tables at substantially the same height, the inner circular table being rotatively mounted in an opening in the outer table, which in practice may be the surface of a stage or platform, which opening and inner table are concentric. Means for surrounding the inner table with fog, smoke, gas, or vapor are provided to obscure an object on the inner table, these latter means being under the control of the operator.

The outer table or platform 10 is supported in any desirable manner as by legs 11 which are here illustrated as being four in number. At the bottom of the legs are floor pads 12 to which the legs are suitably secured. The legs 11 are secured together by a bracing platform 13 on which is mounted a support for carrying the weight of the inner table as will later be described.

On the platform 13 at its center, is a bottom thrust bearing 14 for supporting the rotating supporting shaft 15. The upper portion of the shaft 15 is held in place by a bearing 13*a* which is mounted in a bracing frame 13*b* which, in turn, is secured to the legs 11. At the top of the shaft 15 is the table support 16 which is rigidly attached to the rotating shaft 15 and to which is rigidly secured the inner table 17. This inner table 17 is circular in shape and is concentric with the axis of its supporting shaft 15. The outer table or platform 10 is provided with an opening 10*a* which, for purposes of clearance, is concentric with and slightly larger than the inner table 17.

Mounted on the supporting shaft 15 is a bevel gear 18 which coacts wtih another similar gear 19. This gear 19 is mounted on the shaft 20 of a gearing within the gear box 21. This gear box 21 contains gearing which drives the rotating shaft 15 to turn the inner table 17.

At the other or driving end of the gearing, in the gear box 21, is a shaft 22 on which is rigidly mounted a V-pulley 23. A motor 24 carrying on its shaft a drive V-pulley 25 provides the power to turn the table 17. A V-belt 26 connects the pulleys 23 and 25 for the driving connection therebetween. The motor 24 is provided with suitable reversing connections which permit its use to drive the table 17 in either rotative direction.

The motor 24 and the gear box 21 are supported by and secured to the bracing platform 13.

In the embodiment illustrated in Figs. 1 to 4, the apparatus which provides the fog, smoke, gas or vapor for obscuring the view of the object

or objects on the table 17, is supported directly on the outer table supporting means and do not turn with the table 17. This apparatus will now be described.

Supported from the legs 11 is a chemical tank 30 which is provided with a main outlet 31 which provides the supply line for the fog, smoke, gas or vapor which is used to obscure the object on the platform 17, as desired. An air pressure valve 32 is provided to supply the air pressure within the tank 30. A pressure gauge 34 is provided on the top of the tank 30 to indicate the pressure within the tank 30.

As shown particularly in Figs. 1, 2 and 4, the main outlet pipe 31 is connected to the first manifold 33 which divides the delivery from the pipe 31 and then delivers the supply to the second manifolds 35. To control the delivery from the manifold 33 to the manifold 35, I provide two release valves 137, which control the delivery of the fog, smoke, gas, or vapor being used to obscure from view the object or objects on the table 17. As the construction of the valve 137 is similar for both forms of the invention, the details of construction will be later described.

At the four ends of the second manifolds 35 are third manifolds 36. These third manifolds 36 are preferably curved on a circle and carry the jets which actually deliver the fog, smoke, gas, or vapor to the air. It will be observed that at the rear of the structure, there is a space between the adjacent ends of the third manifolds 36. This space is to provide an opening through which a person may enter the screen formed by the fog, smoke, gas, or vapor without being observed from the front.

Spaced on the manifolds 36 in that portion of the circle where the jets are to be placed, are openings in which are jet tubes 38, at the outer ends of which are suitable nozzles. These nozzles may be of the type to produce a conical delivery of fog, smoke, gas, or vapor or they may be of the type to deliver a flat brush-like stream, or any other suitable shape.

These jet tubes 38 with their nozzles, extend through openings 10*b* in the outer table 10 so that the delivery may be made around the outside of the inner rotating table 17. The nozzles may be pointed straight upwardly or rotatively at an angle or in any desired direction to produce the desired results.

The gearing may be made with any desired ratio between the driving shaft of the motor and the driven shaft of the gear box which carries the bevel gear 19, to produce the desired rotative speed of the shaft 15 and the table 17. I have found that under some conditions, a speed of six revolutions per minute of the table 17 gives desirable results.

In use, the outer table 10 may be placed on a level with or be integral with the stage or platform of the place where the exhibition or display is to take place. Or the unit can be used by itself. In the latter case, the user would probably place a curtain or drapery around the legs 11 to prevent the operating mechanism from being seen by the audience.

In Figs. 5 and 6 is illustrated a modified form of the invention wherein the nozzles are located on and revolve with the inner table.

The outer table or platform 110 is supported by legs 111 which are here illustrated as being four in number. At the bottom of the legs 111 are floor pads 112 to which the legs are suitably secured. The legs 111 are secured together by a bracing platform 113 on which is mounted a

support for carrying the weight of the inner table as will later be described.

On the platform 113 at its center is a bottom thrust bearing 114 for supporting the rotating supporting shaft 115. The upper portion of the shaft 115 is steadied by a bearing 113*a* which is mounted on a frame 113*b* which, in turn, is secured to the legs 111. At the top of the shaft 115 is the table support 116 which is rigidly attached to the rotating shaft 115 and to which is rigidly secured the inner table 117. This inner table 117 is circular in shape and is concentric with the axis of its supporting shaft 115. The outer table 110 is provided with an opening 110*a* which, for purposes of clearance, is concentric with and slightly larger than the inner table 117.

Mounted on the supporting shaft 115 is a bevel gear 118 which coacts with another similar gear 119. This gear 119 is mounted on the shaft 120 of a gearing within the gear box 121. This gear box 121 contains gearing which drives the rotating shaft 115 to turn the inner table 117.

At the other or driving end of the gearing, in the gear box 121, is a shaft 122 on which is rigidly mounted a V-pulley 123. A motor 124 carrying on its shaft a drive V-pulley 125, provides the power to turn the table 117. A V-belt 126 connects the pulleys 123 and 125 for the driving connection therebetween. The motor 124 is provided with suitable reversing connections which permit its use to drive the table 117 in either rotative direction. These reversing circuits are well known in the art and are therefore omitted.

The motor 124 and the gear box 121 are supported by and secured to the bracing platform 113.

In the embodiment illustrated in Fig. 5, the apparatus which provides the fog, smoke, gas, or vapor for obscuring the view of the object or objects on the table 117, is supported directly on a platform 150 which in turn is supported on the shaft 115 and turns with the rotating table 117. This apparatus will now be described.

Supported on the platform 150 is a chemical tank 130 which is provided with a main outlet 131 which provides the supply line for the fog, smoke, gas, or vapor which is used to obscure the object on the platform 117, as desired. An air pressure valve 132 is provided to supply the air pressure within the tank 130. A pressure guage 134 is provided on the top of the tank 130 to indicate the pressure within the tank 130.

As shown particularly in Fig. 5 the main outlet pipe 131 is connected to the first manifold 133 which divides the delivery from the pipe 131 and then delivers the supply to the second manifolds 135. To control the delivery from the manifold 131 to the manifold 133, I provide two release valves 137, which control the delivery of the fog, smoke, gas, or vapor being used to obscure from view the object or objects on the table 117.

At the four ends of the second manifolds 135 are third manifolds 136. These third manifolds 136 are preferably curved on a circle and carry the jets which actually deliver the fog, smoke, gas, or vapor to the air.

Spaced on the manifolds 136 and preferably in a circle are jet tubes 138, at the outer ends of which are suitable nozzles. These nozzles may be of the type to produce a conical delivery of fog, smoke, gas, or vapor or they may be of the type to deliver a flat brush-like stream, or of any other suitable shape.

These jet tubes 138 with their nozzles, extend

through openings 110*b* in the inner table 117 so that the delivery may be made not around but through and near the outside of the inner rotating table 117. The nozzles may be pointed straight upwardly or rotatively at an angle or in any desired direction to produce the desired results.

The gearing may be made with any desired ratio between the driving shaft of the motor and the driven shaft of the gear box which carries the bevel gear 119, to produce the desired rotative speed of the shaft 115 and the table 117. I have found that under some conditions, a speed of six revolutions per minute of the table 117 gives desirable results.

In use, the outer table 110 which may be of any shape or size may be placed on a level with or be integral with the stage or platform of the place where the exhibition or display is to take place. Or the unit can be used by itself. In the latter case, the user would probably place a curtain or drapery around the legs 111 to prevent the operating mechanism from being seen by the audience. It is thus seen that in this form, the jets revolve with the inner table instead of remaining stationary.

In Figs. 7 and 8, I have illustrated an electric valve-operating mechanism which as already stated is adapted for admitting the gas, smoke, vapor, or fog as it comes from the tank 30 or tank 130. This construction will now be described.

In Figs. 7 and 8, the control valves 137 are each provided with an opening 137*a* leading from the manifold 33, 133. This opening extends to the valve seat 137*b*, with which registers a cut-off valve member 137*c* which is conical in form and fits the valve seat 137*b*. The valve member 137*c* is carried by a valve stem 137*d* which is attached at its other end to the end of a solenoid armature 151*a* of the solenoid 151.

The spring 137*e* is provided to normally tend to hold the valve member 137*c* on its seat 137*b*. A packing 137*f* is provided for the valve stem 137*d* to prevent leakage of the gas, vapor, smoke, or fog when the valve member 137*c* is not seated.

It is to be understood that the solenoid 151 is of the usual type with a free-moving armature 151*a* and also that the spring 137*e* is of sufficient strength to move the valve member 137*c* and the armature 151*a* whenever the solenoid 151 is not energized.

In using the control valve 137 in the form shown in Figs. 5 and 6, it will be noted that special provision for the energization of the solenoid 151 must be made. This is due to the fact that the supply and delivery devices for delivering the gas, fog, smoke, or vapor are constructed to revolve while the control switch must or should be operated from a fixed position which may be some distance away. To take care of this requirement, I have provided two contact slip rings and their connections which will now be described.

Mounted concentrically and to revolve with the supporting shaft 115 are a pair of slip-rings 152 and 153. These slip-rings are respectively connected to the ends of the coils within the solenoids 151 by the terminal wires 151*b*, 151*c* and 151*d*. These connections are made in such a manner that the outer cylindrical surfaces of the respective rings are clear for contact with the brush members 152*a* and 153*a* which are mounted on the platform 150 as shown diagrammatically in Fig. 5. These brushes 152*a* and 153*a* are at all times in contact with their respective rings and are connected by the wires 152*b* and 153*b* to the manually operated control switch 154, which latter is mounted at any suitable place, as on the frame, the connection 153*b* being through the battery or other source of electrical energy, at 155. In the case of the structure of Figs. 1 to 4, the wires 152*b*, 153*b* are connected directly to the coils of the solenoids 151 as shown in Fig. 1.

By the construction just described, it is possible for the platform 150, with the apparatus carried thereby, to rotate any number of times with the switch 154 always within reach of the operator to control the delivery of the gas, smoke, vapor, or fog, as desired. In use it is to be understood that as long as the switch 154 is closed, the solenoid 151 will be energized and the spring 137*e* compressed as the valve member 137*c* leaves its seat 137*b*. And as soon as the switch 154 is opened, the spring 137*e* will expand to permit the valve member 137*c* to close and end the discharge of the fog, smoke, vapor, or gas from the tank 130.

In either of the forms of Fig. 1 or Fig. 5, it is to be understood that hand operated valves may be substituted for the valves 137 in a well-known manner.

The term "object" is used to apply either to an animate object as a person or an inanimate object such as a statue. One method of use is in starting the emission of fog, gas, smoke, or vapor prior to the time, for example, when the curtain is raised. The audience then sees the place of location of the rotating table but does not see any object upon the table. If the first exhibit takes its place on the rotating table prior to the raising of the curtain the valves 137 may then be closed. By using the proper kind of artificial fog, smoke, gas, or vapor, only a very short time will pass before the exhibit is in full view. When it is desired to close that part of the exhibit, it is necessary only to open the valves 137. The exhibit will then, almost at once, become enveloped and the exhibit can then be changed. It has been found in actual practice that the closer the valves 137 are to the jets, the greater will be the efficiency of the operation.

It is to be understood that the particular material for producing the fog, smoke, gas, or vapor is not a part of this invention, per se and for this reason, will not be further described.

While details of illustrative structure have been set forth in the specification and drawing, it is to be understood that modifications and changes, may be made without departing from the spirit of the invention and within its scope as claimed.

Having described my invention, what I claim is:

1. An exhibition device comprising a rotatable exhibit table, an exhibition space above the table, means rotatable when the table rotates, and adjacent the periphery of the table and between the exhibition space and the audience to emit an upwardly extending obscuring screen of fog, smoke, gas or vapor to screen the exhibition space above the table from view and power means for revolving the table.

2. An exhibition device comprising a substantially circular exhibit table, an exhibition space above the table, a second table having a substantially circular opening, means for rotatively mounting the first table in the circular opening, jet openings in the surface of one of the tables in a row extending along the edge of the other table and between the exhibition space and the audience jets in the openings a container for fog, gas, smoke or vapor and connections between the container and jets.

3. An exhibition device comprising a substan-

tially circular exhibit table, an exhibition space above the table, a second table having a substantially circular opening, means for rotatively mounting the first table in the circular opening, jet means mounted in the surface of the second table with the jet openings in position to emit fog, smoke, gas, or vapor across the front of the space above the first table and between the exhibition space and the audience, a container for fog, gas, smoke or vapor and connections between the container and jets.

4. An exhibition device comprising a substantially circular exhibit table, an exhibition space above the table, a second table, supporting means including legs for supporting the second table, means for rotatively supporting the first table on the second table supporting means, a motor means, power transmission means between the motor means and the first table to rotate the first-named table, a container, jets having openings adjacent the surface of the second table and arranged to emit fog, gas, smoke or vapor to screen

the space in front of the first table and between the exhibition space and the audience, conduit connections between the container and the jets and valve control means for controlling the flow from the container to the jets.

WILLIAM J. LANCASTER.

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