Dec. 27, 1949 J. SCHILLINGER 2,492,241

ANIMATED DISPLAY APPARATUS

Filed Sept. 4, 1945 2 Sheets-Sheet 1

Fig. 1.

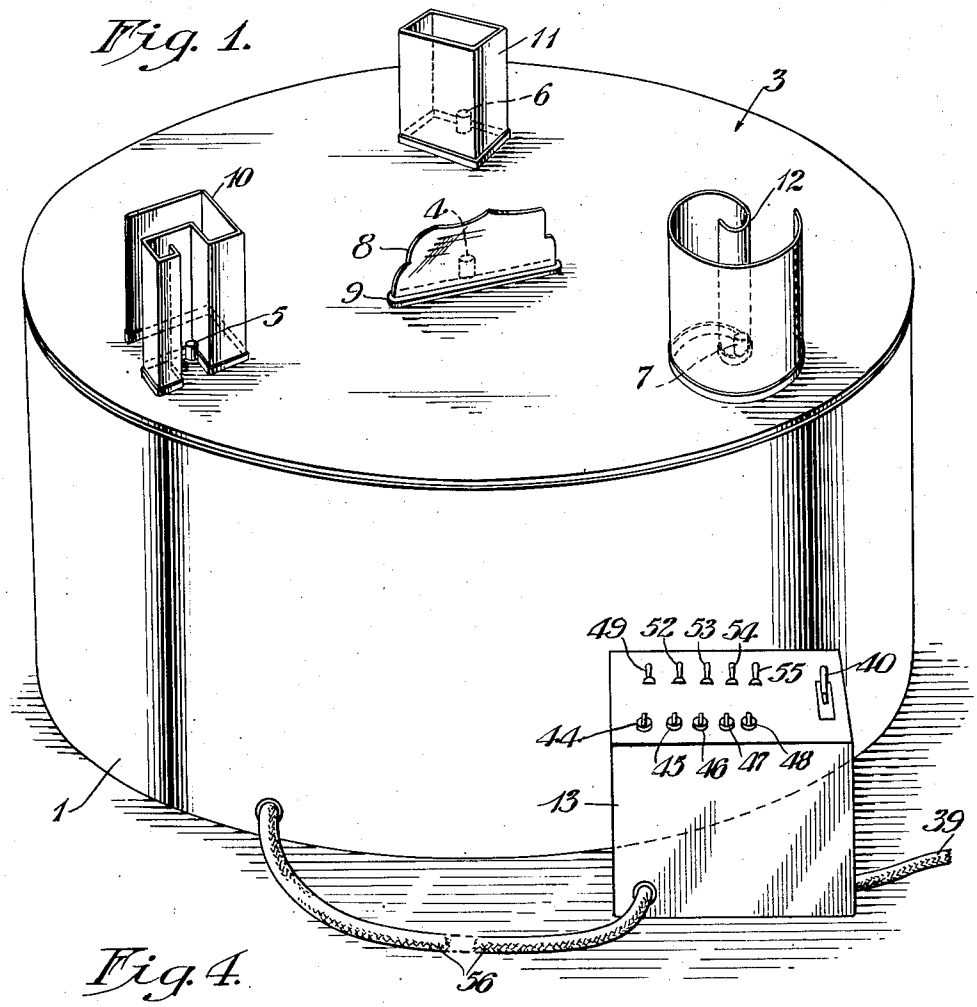
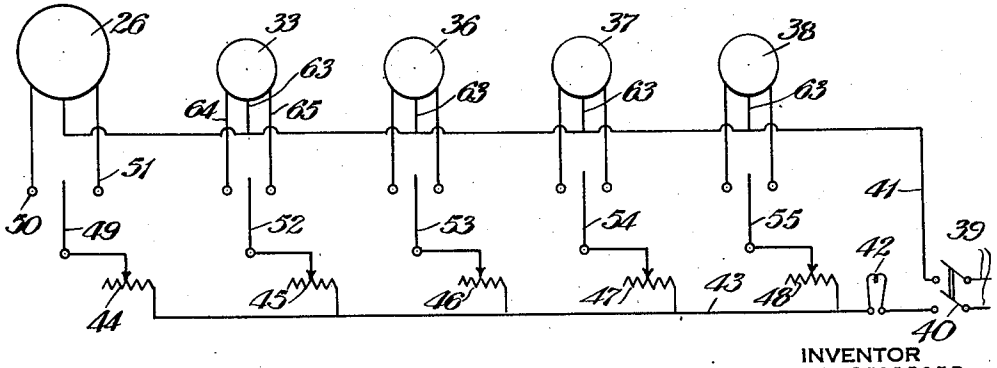


Fig. 4.



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Fig. 2.

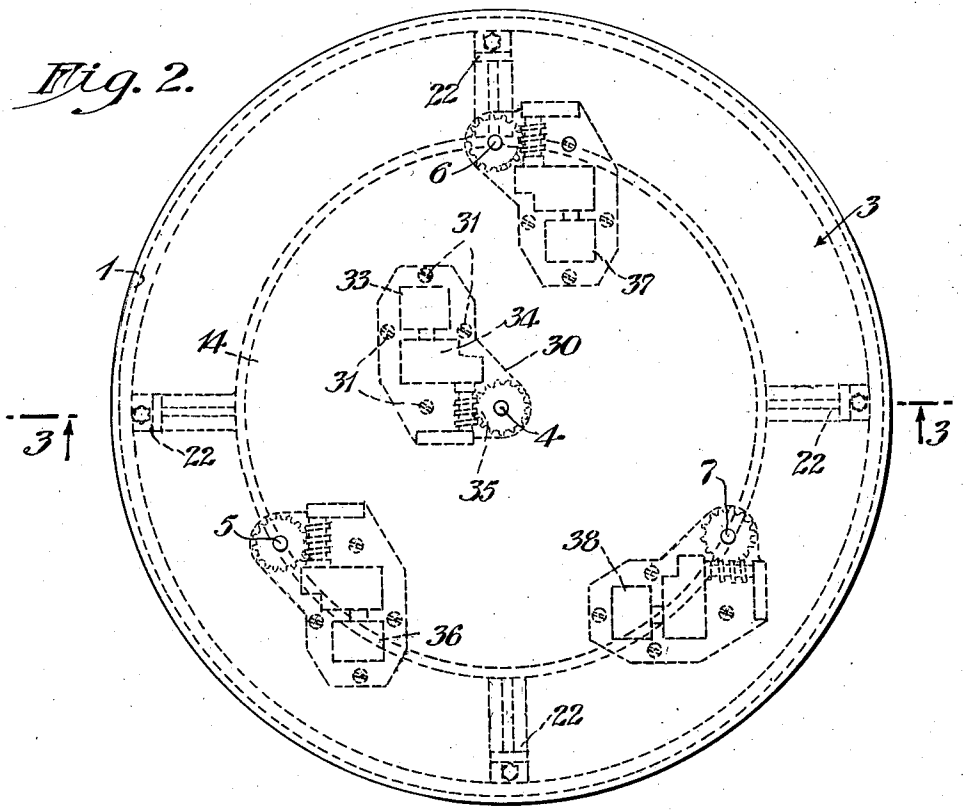
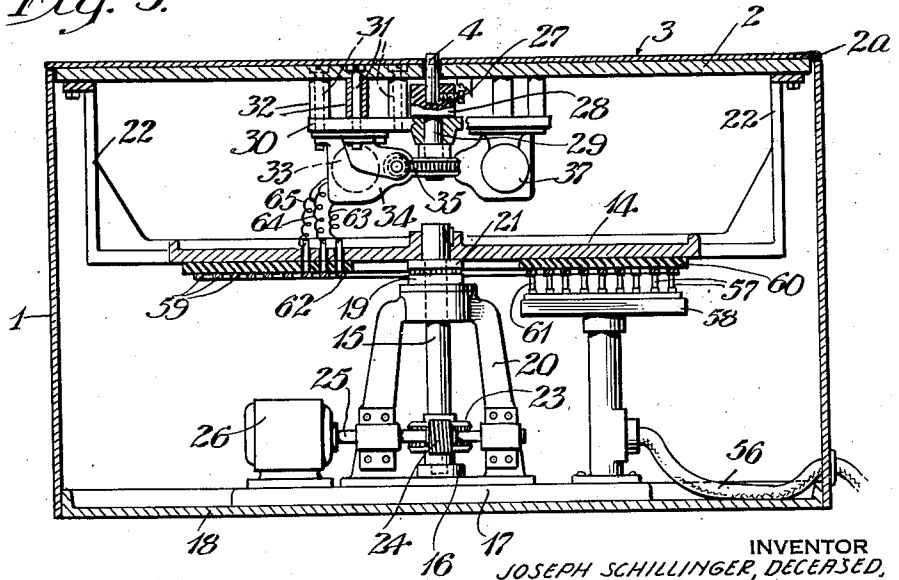


Fig. 3.



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2,492,241

ANIMATED DISPLAY APPARATUS

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5 Claims. (Cl. 40—33)

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This invention relates to animated display devices or apparatus and more particularly to display apparatus of the turntable type. The object of the invention is to provide an improved apparatus of this kind which, because of its particular construction, is adapted for a wide variety of uses.

Another object of the invention is to animate not only the platform or table on which the objects are displayed but also the objects themselves with relation to the platform.

One embodiment of the invention is illustrated by way of example in the accompanying drawings and the invention will be understood from a consideration of these drawings and the following detailed description. In these drawings:

Fig. 1 is a perspective view of the improved display apparatus and the control cabinet therefor;

Fig. 2 is a plan view of the apparatus shown;

Fig. 3 is a view in vertical section taken on the line 3—3 of Fig. 2 looking in the direction of the arrows; and

Fig. 4 is a diagram of electrical connections.

Referring now to the accompanying drawings, the apparatus comprises a cabinet 1, preferably of cylindrical form and preferably provided at the bottom with casters (not shown) to facilitate moving of the apparatus. At the top of the cabinet or housing 1 is a rotatable circular head 2, of wood or other suitable material. On the top of the head 2 there rests a smooth plate 2a preferably of metal such, for example, as duralumin, the two members constituting a rotary table or platform indicated by numeral 3. Both surfaces of the plate 2a are preferably coated with a hard lacquer to render these surfaces as smooth and frictionless as possible. The opposite faces may be in different colors and the plate placed either side up to expose the color which harmonizes best with the objects to be displayed upon it.

Projecting above the upper surface of table 3 are a plurality of rotary friction drive members such, for example, as indicated at 4, 5, 6 and 7. These drive members are mounted on the under side of table 3 and consequently rotate with it, and each drive member also is arranged to rotate about its own axis, so that they rotate both with

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and relative to turntable 3. As shown in the embodiment of the invention illustrated in the drawings one of these rotary drive members 4, is placed at the center of turntable 3, and the three other rotary drive members 5, 6 and 7, are symmetrically arranged with respect to the center. It will be understood that the number and arrangement of these rotary friction drive members can be changed to suit the requirements for which the apparatus is constructed.

Associated with and driven by each of the rotary friction drive members 4 to 7 inclusive is a display object of a predetermined configuration, these objects standing upright on table 3 and preferably being three-dimensional, although they may be thin sheet-like objects occupying only two principal dimensions if desired. Thus, for example, associated with the central friction drive member 4 there is a substantially two-dimensional object 8 consisting of a thin sheet of metal or other suitable material having any desired shape and supported upon an elongated base member 9 having a width just sufficient to maintain the display object 8 in upright position. The other three display objects, 10, 11 and 12, as shown, are respectively a scroll of angular design, a hollow rectangular polyhedron, and a scroll of substantially spiral shape.

The several display objects 8, 10, 11 and 12, are maintained in frictional engagement with their respective rotary drive members 4 to 7 inclusive, by any suitable magnetic means. Thus, for example, each of these drive members may be made in the form of a rod or bar magnet such as indicated in Fig. 3 in connection with drive member 4, each of the display objects 8 to 12 inclusive being constructed of magnetizable material, at least at their base portions. Therefore, it will be understood that the base 9 of display object 8 is of magnetizable material such as soft iron, and that the display objects 10, 11 and 12, if not made of magnetizable material, are provided along the bottom with a narrow strip of soft iron as indicated.

Arrangements are provided, which are about to be described, for rotating the turntable 3 in either direction and at any desired suitable speed and also for rotating each of the friction drive members 4 to 7 inclusive in either direction and at any desired rotative speed. These speed ad-

justments and directions of rotation are controllable from outside of the apparatus cabinet 1 while the apparatus is operating by means of mechanism provided in a control cabinet 13.

The construction of the apparatus is shown in more detail in Figs. 2, 3 and 4. The rotary platform or table 3 is supported on a rotatable spider 14 which is keyed to the upper end of a vertical shaft 15 having a bearing 16 mounted on a base member 17 which is secured to the base 18 of housing 1. Shaft 15 extends upwardly somewhat more than one-half the height of housing 1 and is supported adjacent its upper end in a bearing 19 at the top of a bracket member 20 firmly attached at its bottom to base member 17. A thrust bearing 21 supports the spider 14 and the parts carried thereby. Spider 14 is provided with four horizontal arms which terminate in vertical portions 22, to the upper ends of which head 2 is secured.

At the lower end of vertical shaft 15 there is a worm gear 23 and cooperating therewith a driving worm 24 which is fixed to shaft 25 of the table operating motor 26. The gear reduction afforded by the worm gearing 23, 24, when operated by a motor 26 of appropriate speed, is such as to give the turntable 3 a rotative speed range of from about one to about six revolutions per minute, although this speed range, as well as the minimum and maximum speeds may be changed to suit the requirements of the display.

The four rotary friction drive members 4 to 7 inclusive are each driven by individual electric motors through suitable reduction gearing to provide a speed range of from about 40 to about 240 revolutions per minute for these drive members. These mechanisms are constructed in similar units as shown in dotted lines in Fig. 2 and a description of one of them will be deemed sufficient.

The rotary friction drive member such, for example, as drive member 4 at the center of the table, consists of a short bar magnet as shown in Fig. 3, clamped by a set screw 27 arranged in a centering holder 28. Holder 28 is mounted at the upper end of a short shaft 29 which has a single comparatively long bearing, as shown in Fig. 3, which extends vertically through a horizontal frame member 30.

Member 30 is secured to the under side of platform or table 3 by means of four screws 31, the heads of which are accessible in countersunk recesses in the top of head 2. The lower ends of these screws are threaded into the frame member 30, spacing collars 32 being provided to hold member 30 at a suitable distance below the bottom of head 2. On the lower side of frame 30 are mounted the driving motor 33 for the unit and a speed reducing mechanism indicated by numeral 34. The high speed shaft of this mechanism is connected to driving motor 33 and the low speed shaft to shaft 29 through worm gearing 35.

In order to simplify the wiring and control switches, main driving motor 26 and motors 33, 36, 37 and 38 for the four friction drive members 4 to 7 inclusive, are each constructed with a reversing winding for operating the motor in a counter-clockwise direction, this being indicated in the diagram of connections shown in Fig. 4. Referring to Fig. 4, current from supply conductors 39 is under the control of a main switch 40 through which one side of the supply is connected to a common conductor 41 leading to the terminal connection of each of the five motors.

The other side of the supply is connected through switch 40 to a ballast resistor 42 and thence through conductor 43 to a plurality of adjustable resistors 44, 45, 46, 47 and 48, all of which are connected in parallel and there being one of these resistors for each of the five motors. Adjustable resistor 44 is connected to a reversing switch 49 which, when moved to the left to engage a contact 50, operates main motor 26 in a counter-clockwise direction, and when moved to the right to engage contact 50 operates this motor in a clockwise direction.

Similar reversing switches 52, 53, 54 and 55 are provided for each of the friction drive member operating motors 33, 36, 37 and 38 respectively. These switches are mounted within the control cabinet 13 and by means of them the operation of turntable 3 and of each of the friction drive members 4 to 7 inclusive, at any suitable speed and in either direction of rotation, may be obtained.

It will be understood that the conductors, according to the wiring diagram shown in Fig. 4, are contained within cabinet 13, a cable 56 interconnecting this cabinet with housing 1. In order to complete the circuits between the conductors of cable 56, between the end of this cable inside housing 1 and the four motors which rotate with platform 3, namely, motors 33, 36, 37 and 38, the terminal ends of nine of the conductors within cable 56 are connected to nine stationary flexible contacts or brushes 57 caried on stationary mounting 58 directly beneath the rotating spider 14 and arranged radially with respect to this spider. Brushes 57 are maintained in engagement with a series of continuous rings 59 of conducting material such as copper which are mounted on an insulating plate 60 on the under side of spider 14.

The common conductor 41 of Fig. 4 is connected to one of these brushes 57, for example the innermost brush 61 which contacts the innermost ring 62. A conductor 63 leads from innermost ring 62 to motor 33 and similar conductors (not shown) connect each of motors 36, 37 and 38 with ring 62 also. The remainder of the brushes 57 and rings 59 are connected in pairs to the two leads of each of the four motors 33, 36, 37 and 38. Thus, for example, the two rings next adjacent to innermost ring 62 may be connected through conductors 64 and 65 to the forward and reverse windings of motor 33. The remaining three pairs of rings 59 are connected respectively to the remaining three motors 36, 37 and 38.

By means of this apparatus the table 3 can be rotated at any desired speed within the range of the apparatus, and simultaneously the friction drive members 4 to 7 inclusive can be rotated in either the same or opposite directions, and at the same rotative speeds or at different speeds, all under the control of the speed regulating resistors 44 to 48 inclusive. Accordingly, the display objects 8, 10, 11 and 12 will be carried around by the turn-table 3 and will also be moved on the surface of table 3 around their respective drive members and in a path corresponding to the particular configuration of each of these objects.

In the case of the display object represented by the rectangular polyhedron 11 the inner surface of the polyhedron will be rolled continuously on the surface of the rotating friction drive member 6. In the case of the open display objects such as the angular scroll 10 and the spiral scroll 12 the friction drive members or rolls 5 and 7

will roll alternately on opposite sides of these objects. As shown, drive member 5 is in contact with the outer surface of the angular scroll object 10 and when the surface of the scroll is fed past the drive member until one end of the scroll reaches this member, the scroll will swing to the opposite side of drive member 5 which will then roll in contact with the inner surface of the object. The same is true of the spiral scroll display object 12.

Accordingly, each of these four display objects 8, 10, 11 and 12 will be moved by their respective drive members in different and predetermined paths on the surface of turntable 3. It will be understood that by appropriately adjusting the speeds of the respective drive members 4, 5, 6 and 7 by means of their respective speed control resistors 45, 46, 47 and 48, the cycles of motion of the four display objects can be timed with respect to one another so that the various cycles may be made to synchronize or to occur rhythmically with respect to one another. It will also be understood that many other shapes of display objects may be used in addition to the four which have been illustrated.

The apparatus of the invention has a number of uses, the first of which is as an advertising apparatus. Articles, such as jewelry, fabrics, etc., can be mounted or secured to the surfaces of the display objects 8, 10, 11 and 12, so that with the apparatus mounted in a store window, for example, the various articles will be exhibited from different angles and views, thus bringing out their characteristics. By the motion of table 3 and of the display objects 8, 10, 11 and 12 relative to the table, the articles displayed on the display objects will be brought into view from different angles with respect to the lighting of the store window (or other illuminating devices provided for the purpose), and this not only will illuminate from various directions the goods displayed, but will also cause the production of a variety of shadow effects. Such effects are capable of infinite variation by changing the display objects.

Further, in using the apparatus for advertising purposes, goods may be displayed on the rotating table 3 and the rotation of the table and the cyclical movements of the display objects thereon (together with the shadow effects produced thereby) may be employed to attract attention to the merchandise displayed.

It will be understood also that the apparatus may be advantageously used in connection with outdoor advertising.

Another use of the apparatus is in connection with miniature theaters where mechanical figures taking the place of display objects 8, 10, 11 and 12 can be made to go through dance routines or move from place to place on the circular stage consisting of the turntable 3. These dance routines can be timed with respect to the various figures by adjusting the speeds of the friction drive members 4, 5, 6 and 7.

Another use is in connection with motion picture sets.

By constructing the apparatus in comparatively small sizes it can be used as a child's toy.

Additional uses for the apparatus, constructed in appropriate size, are in producing scenic effects in connection with stage presentations, and in the television studio.

Still another use of the apparatus is in connection with the production of abstract motion pictures.

It will be understood that the above is merely

an exemplifying disclosure of the improved animated display apparatus of the invention and that many changes in the details of the construction and arrangement of the various parts can be made without departing from the spirit of the invention, the scope of the invention being set forth in the appended claims.

It is claimed:

1. In an animated display apparatus a rotatable horizontal table having a plurality of rotary friction drive members projecting above the surface thereof, a plurality of display objects of predetermined configuration resting on said table, magnetic means for causing one of said objects to be held in frictional engagement with each of said drive members to cause said objects to be moved over the surface of the table around said drive members in adjacent paths of motion on the surface of said table so as to produce a group display effect, and means for simultaneously rotating said table and said drive members relative to the table.

2. In an animated display apparatus a rotatable horizontal table having a plurality of rotary friction drive members projecting above the surface thereof, a plurality of display objects of predetermined configuration resting on said table, magnetic means for causing one of said objects to be held in frictional engagement with each of said drive members to cause said objects to be moved over the surface of the table around said drive members in adjacent paths of motion on the surface of said table so as to produce a group display effect, means for simultaneously rotating said table and said drive members relative to the table, and means for independently adjusting the speed of said table and of each of said drive members to vary said display effect.

3. In an animated display apparatus a rotatable horizontal table having a plurality of rotary friction drive members projecting above the surface thereof, a plurality of display objects of predetermined configuration resting on said table, magnetic means for causing one of said objects to be held in frictional engagement with each of said drive members to cause said objects to be moved over the surface of the table around said drive members in adjacent paths of motion on the surface of said table so as to produce a group display effect, means for simultaneously rotating said table and said drive members relative to the table, means for independently adjusting the speed of said table and of each of said drive members, and means for independently changing the direction of rotation of each of said drive members and of said table to vary said display effect.

4. In an animated display apparatus, a turntable, means for supporting the turntable for rotation in a horizontal plane, a plurality of individual units rotatable with said turntable and mounted therebeneath, each unit including a friction drive member projecting vertically through an aperture in said turntable, a variable speed electric driving motor and power transmission means including speed reducing gearing interconnecting the motor with the drive member, means for supplying electric current to the motor of each of said units as said turntable rotates, a variable speed motor operatively connected to drive said turntable, and individual speed controlling means for each of said motors.

5. In an animated display apparatus, a turntable, means for supporting the turntable for rotation in a horizontal plane, a plurality of individual units mounted on the underside of said

turntable to rotate therewith, each unit including a friction drive member projecting vertically through an aperture in said turntable, a variable speed electric driving motor and power transmission means including speed reducing gearing interconnecting the motor with the drive member, means for supplying electric current to the motor of each of said units as said turntable rotates, a variable speed motor operatively connected to drive said turntable, and remote control means for changing the speed and direction of rotation of each of said motors.

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