

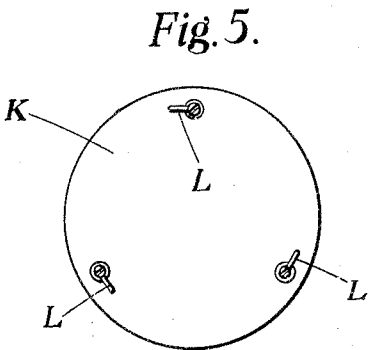
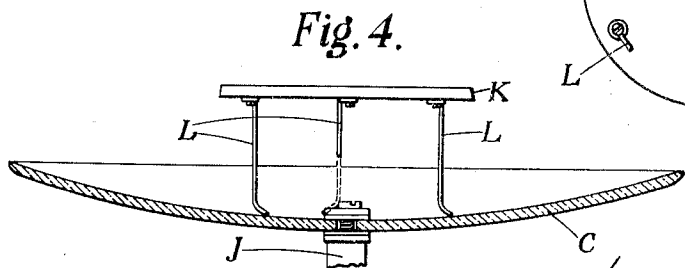
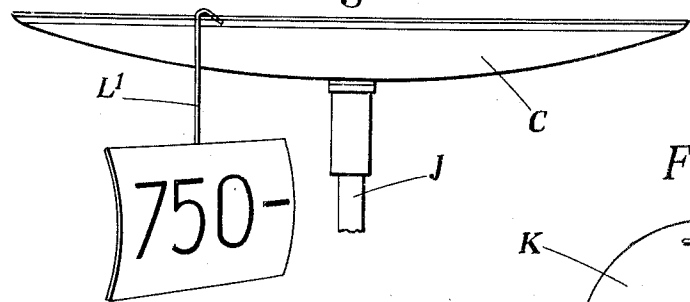
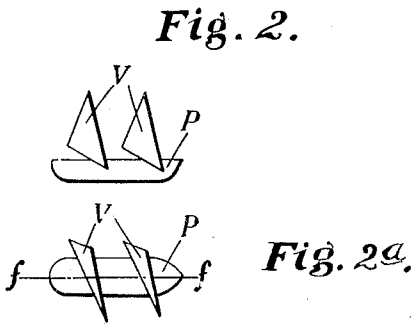
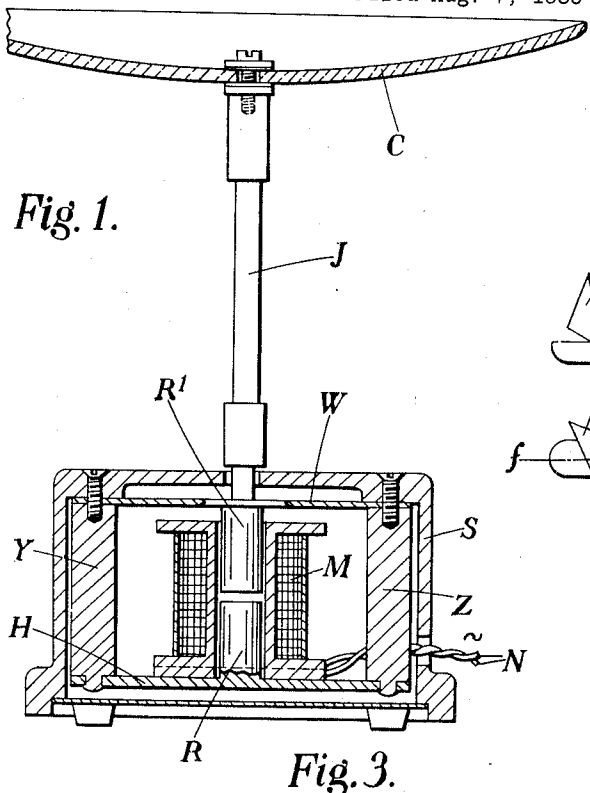
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DISPLAYING APPARATUS

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DISPLAYING APPARATUS

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The present invention relates to a display apparatus for giving movements applicable to the obtaining of publicity effects, of the kind adapted to cause visible movements of objects by subjecting the support upon which the objects are disposed to very rapid vibratory movements of sufficiently small amplitude to be practically invisible.

The object of the invention is to provide a display apparatus comprising the combination, with a standard and electro-magnetic means for imparting invisible vertical vibrations of small amplitude to said standard, of a horizontally disposed table mounted on the standard, said table being dished for preventing displayed objects carried by it from riding off under the vibration and for permitting the suspension of displayed objects from its rim.

Another object of the invention is to provide a device wherein the visible movements of the supported objects result from the combined action of the vibratory movement of the support on the one hand and of secondary actions on the other hand; these secondary actions being due, for example, to the form of the support or of the objects, to elasticity forces developed by the inertia of the object, to the resistance of the air and so forth.

To the attainment of the last mentioned object, it is advantageous to employ, in combination with apparatus having a vertically vibrating table as aforesaid, one or more elastically flexible, bent or inclined supports for an object, which supports are strained under the inertia of the object during the upward vibrations of the table, and during the downward vibrations rotate the object, by their elastic recovery in the direction towards which they are inclined or bent, and at a speed determined by the degree of the inclination or bending.

Such supports, which are preferably of metal strip or wire, enable a particularly attractive display effect in that one object may be caused to rotate in one direction upon the table, while the suspended object (for example, a price ticket) is caused to move in the opposite direction about the rim of the table, by inclination or bending of the respective supports in the opposite directions relative to the table.

An apparatus according to the invention is thus particularly applicable to publicity purposes in general, in stands, exhibition halls, show cases and shop windows, for presenting by movements of mysterious source, articles, various objects, wares, publicity placards and so forth.

For effecting a vibratory movement of great rapidity and very small amplitude, recourse may be had simply to the mains of alternating current supply (50 cycles per second), which readily gives movement, by means of an electromagnet and its armature, the frequency of which is 100 cycles per second and the amplitude of which is in the order of a tenth of a millimetre.

This rigid support whose small and rapid movement is practically invisible to an observer, even with pre-knowledge and placed under the best conditions of observation, is, however, capable of imparting to any bodies a decidedly visible resultant movement, which is therefore of mysterious origin and possesses an attractive power capable of being used for publicity purposes.

The arrangement which is the subject of the invention is capable of being put into practice in a number of different forms. Simply by way of example, the accompanying drawing shows certain of these modes of execution.

Fig. 1 is an axial section of an apparatus according to the invention. The vibrating mechanism, located in the base S consists of an electric coil M connected by the wire N to the mains of an alternating current supply. The coil M contains two electromagnets R, R', one of which is riveted to the ground plate H, while the other is connected with an elastic steel-strip W, which at its ends is rigidly connected with two posts Y, Z, riveted to the ground plate H. Connected with the steel-strip W is a rod T which transmits the vibrations of the electromagnet R' to a horizontally disposed concave table or cup C.

The horizontal table or cup C, of glass for example when the coil M is energized, vibrates vertically and if it is supporting balls, such as celluloid balls, tennis balls and the like, causes the balls to leap in an irregular fashion, with a slow movement without, however, escaping from the cup, this being due to the concave shape of the latter.

The visible movement obtained may, in another application, be due, on the one hand to the vibration of the support and on the other hand to the reaction of the air on the object with the visible movement.

For example a boat as shown in elevation and plan in Fig. 2 and Fig. 2a, respectively, comprises a hull P and two sails V in planes which are inclined to the vertical and likewise inclined to the centre line $f-f$; such a boat, located on the horizontal cup C, which is vibrating vertically, is submitted, in view of the inclination of its sails,

to a resultant horizontal force inclined to the centre line $f-f$. The result is, the curvature of the cup assisting, that the boat undergoes a circular movement in the cup.

5 In a similar manner, a publicity placard, slightly curved as shown in Fig. 3, and suspended by a hook wire L' at the edge of the cup C turns slowly about the rod J as axis, the direction of rotation depending on the direction of the curvature.

10 In the foregoing two cases the ascending movement of the object has not the same speed as the descending movement (falling freely) and, on the other hand, the air resistance conditions are different, with the result that the object is subjected to a force which has a horizontal component generating a circular movement, the reaction of the raised rim of the cup assisting.

15 Figs. 4 and 5 show in elevation and in inverted plan respectively means whereby the visible movement obtained is due, on the one hand, to the vibration and shape of the table C, and, on the other hand, to the component, perpendicular to this movement, of the elastic forces developed in the object in visible movement (or in a solid system), due to the inertia of the object.

20 A cylindrical rigid body K rests on three feet constituted by similar flexible strips or wires L having their lower ends inclined, for example, at 45° in the same direction, with reference to the vertical axis of the body.

This body, placed on the vibrating cup C, turns about its axis. It is thus easy to cause to turn, for example, any box, a shoe, a book and so forth.

25 In this case the elasticity of the strips or wires L, under the inertia of the body K due to the upward vibrations of the cup C, causes a couple to be exerted on the cup and the body, which serves to turn the latter during the vibrations of the cup. The concavity of the latter maintains the object almost at the centre in spite of the rotation.

30 The above modes of execution have only been described simply by way of example and it will be understood that the characteristic means of the invention are capable of realization in several forms.

35 For example, the means described could be used wholly or in part and could be combined in any manner whatever having regard to the shape, nature and disposition of the object or objects to be presented as well as of the vibrating support. The latter itself may according to the curvature of the elastic steel strips or wires L turn the body K in one direction while the publicity placard moves along the rim of the plate in the other direction.

40 Any accessory equipment may be utilized with the object of obtaining secondary results, as for example, the diminution of noise, of friction and so forth. Particularly by using a glass cup as a support, friction is reduced to the minimum and, as a consequence, the motive power necessary and moreover, the use of glass removes, as far as an observer is concerned, the idea that any electric or magnetic contrivance is used.

45 Having thus described my invention, what I claim is:—

1. Display apparatus comprising the combination, with a standard and electromagnetic means for imparting invisible vertical vibrations of small amplitude to said standard, of a horizontally disposed table mounted on the standard, said table being dished for preventing displayed objects carried by it from riding off under the vibration and

for permitting the suspension of displayed objects from its rim.

2. Display apparatus of the kind including a support for displayed articles and electromagnetic means for imparting invisible vibrations of small amplitude to said support, comprising, in combination, a base housing, an electromagnetic coil disposed on a vertical axis in the housing, leads for conducting alternating electric current to the coil, a vertically resilient element mounted above the coil, an armature mounted on the resilient element and disposed within the coil for vertical vibration by the magnetic field of the coil when energized, a vertical rod secured to the armature for vibration therewith, and a horizontally disposed table mounted on the rod, the table being dished for preventing displayed objects supported by it from riding off under the vibration and for permitting the suspension of displayed objects from its rim.

3. Display apparatus comprising the combination, with a standard and electromagnetic means for imparting invisible vertical vibrations of small amplitude to said standard, of a horizontally disposed table mounted on the standard, and suspension means for an object to be displayed, said means including at least one elastically flexible support tangentially inclined to the rim of said table so as to be strained under the inertia of the object during the upward vibrations of the table and by its elastic recovery to rotate the object during the downward vibrations in the direction towards which said flexible support is inclined, and said table having a raised rim for preventing the suspension means from riding off its rim under the vibration.

4. Display apparatus of the kind including a support for displayed articles and electromagnetic means for imparting invisible vibrations of small amplitude to said support, comprising, in combination, a base housing, an electromagnetic coil disposed on a vertical axis in the housing, leads for conducting alternating electric current to the coil, a vertically resilient element mounted above the coil, an armature mounted on the resilient element and disposed within the coil for vertical vibration by the magnetic field of the coil when energized, a vertical rod secured to the armature for vibration therewith, a horizontally disposed table mounted on the rod, and suspension means for an object to be displayed, said means including at least one elastically flexible support tangentially inclined to the rim of said table so as to be strained under the inertia of the object during the upward vibrations of the table and by its elastic recovery to rotate the object during the downward vibrations in the direction towards which said flexible support is inclined, and said table having a raised rim for preventing the suspension means from riding off its rim under the vibration.

5. Display apparatus comprising the combination, with a standard and electromagnetic means for imparting invisible vertical vibrations of small amplitude to said standard, of a horizontally disposed table mounted on the standard, and an object having at least one elastically flexible support inclined to the horizontal so as to be strained under the inertia of the object during the upward vibrations of the table and by its elastic recovery to rotate the object during the downward vibrations in the direction towards which said flexible support is inclined, said table being dished for preventing said object from riding off under the vibration.

6. Display apparatus of the kind including a support for displayed articles and electromagnetic means for imparting invisible vibrations of small amplitude to said support, comprising, in combination, a base housing, an electromagnetic coil disposed on a vertical axis in the housing, leads for conducting alternating electric current to the coil, a vertically resilient element mounted above the coil, an armature mounted on the resilient element and disposed within the coil for vertical vibration by the magnetic field of the coil when energized, a vertical rod secured to the armature for vibration therewith, a horizontally disposed table mounted on the rod, and a carriage for an object to be displayed, said carriage being supported freely on said table by a plurality of elastically flexible supports inclined to the horizontal and tangential relative to a common vertical axis so as to be strained under the inertia of the object during the upward vibrations of the table and by their elastic recovery to rotate the carriage during the downward vibrations in the direction towards which said flexible supports are inclined.

7. Display apparatus comprising the combination, with a standard and electromagnetic means for imparting invisible vertical vibrations of small amplitude to said standard, of a horizontally disposed table mounted on the standard, and a carriage for an object to be displayed, said carriage being mounted freely on said table by a plurality of elastically flexible supports inclined

to the horizontal and substantially tangential relative to a common vertical axis so as to be strained under inertia during the upward vibrations of the table and by their elastic recovery to rotate the carriage during the downward vibrations in the direction towards which said flexible supports are inclined.

8. Display apparatus of the kind including a support for displayed articles and electromagnetic means for imparting invisible vibrations of small amplitude to said support, comprising, in combination, a base housing, an electromagnetic coil disposed on a vertical axis in the housing, leads for conducting alternating electric current to the coil, a vertically resilient element mounted above the coil, an armature mounted on the resilient element and disposed within the coil for vertical vibration by the magnetic field of the coil when energized, a vertical rod secured to the armature for vibration therewith, a horizontally disposed table mounted on the rod, and an object having at least one elastically flexible support inclined to the horizontal so as to be strained under the inertia of the object during the upward vibrations of the table and by its elastic recovery to rotate the object during the downward vibrations in the direction towards which said flexible support is inclined, and said table being dished for preventing said object from riding off under the vibration.

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