

March 18, 1969

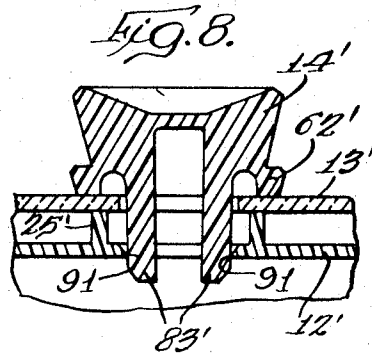
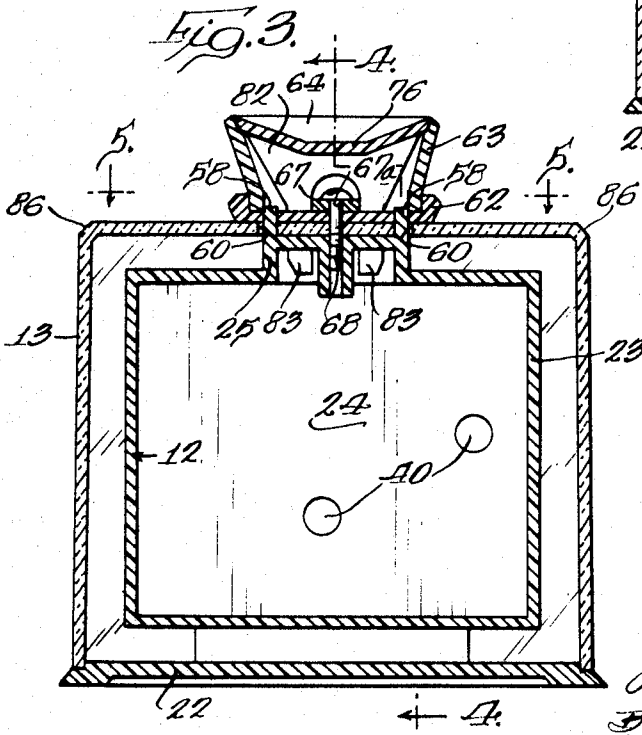
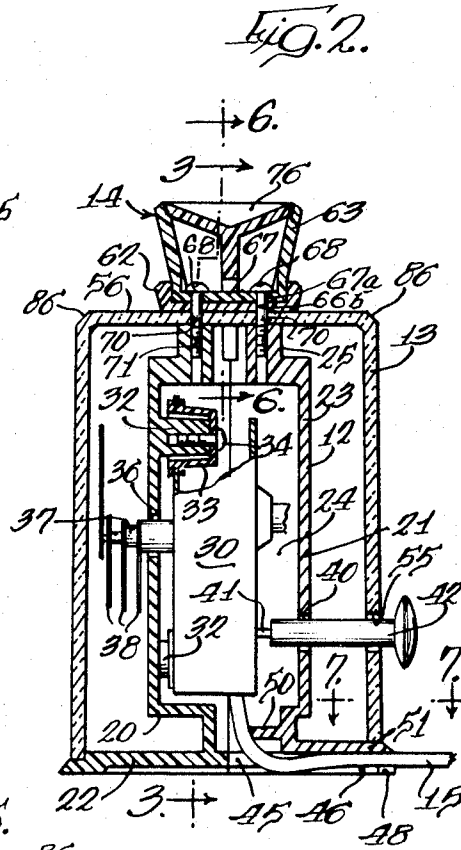
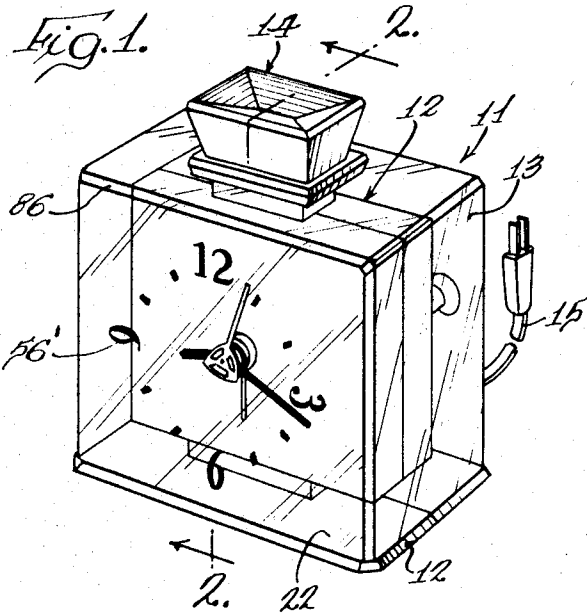
J. W. RICHMOND ET AL

3,433,010

ELECTRIC CLOCK

Filed Jan. 19, 1966

Sheet 1 of 2



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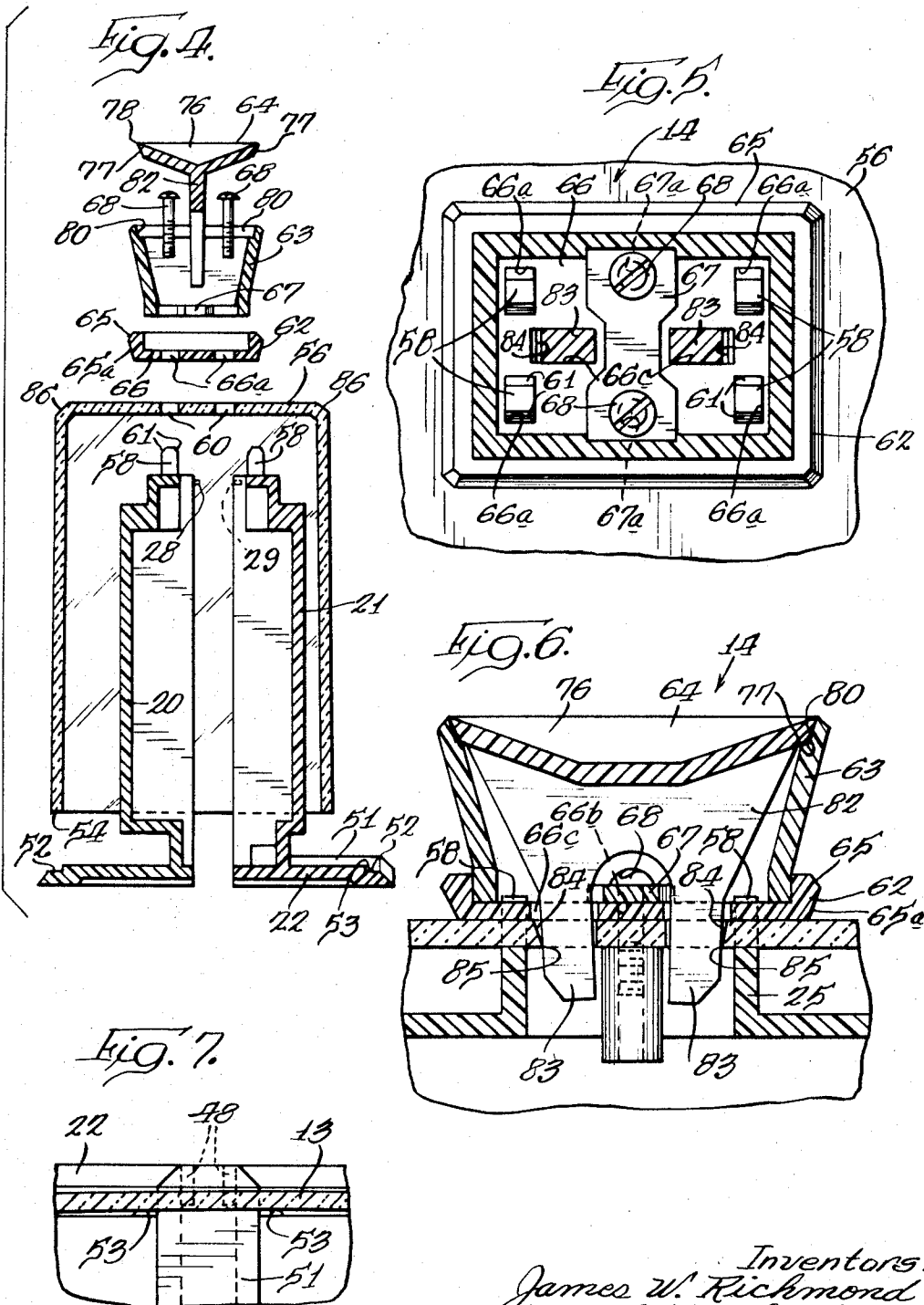
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Sheet 2 of 2



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ELECTRIC CLOCK

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17 Claims

ABSTRACT OF THE DISCLOSURE

An electrically operated clock having a split housing with a base portion enclosing an electric clock movement and an inverted cup-shaped transparent crystal disposed over the housing and in engagement with the housing base portion. The crystal holds the split housing closed and a handle on top of the crystal locks the housing to the crystal. An electric cord attached to the movement is not visible until it emerges from outside of the housing base portion.

The present invention relates to electric clocks and more particularly to an improved electric clock having a transparent crystal enclosing a casing containing a clock movement.

In recent years, there has been an increasing demand by the public for electric clocks having a distinctive or unusual design. In order to permit greater design flexibility, clock motors and movements have been constructed more compactly. Such a compact clock movement is disclosed in patent application Ser. No. 322,218 filed Nov. 7, 1963, which matured into Patent No. 3,248,867 and which is assigned to the same assignee as is the present invention. With the advent of compact clock movements, a variety of unusual clock designs became feasible. In certain instances, clocks have been designed which resemble commonly known articles. However, the unusual effect sought in such a design is diminished if the mechanical assembly parts such as screws or the like are visible. Another problem encountered in such designs is that of deemphasizing or obscuring the cord which interconnects the clock motor to a source of power. In a clock provided with a transparent means enclosing a clock movement, it would be desirable for the power cord for the electric clock movement to be hidden so that it would not be visible within the enclosing means. In addition, the clock design is more appealing if the manner of assembly is not readily discernable by a careful inspection of the clock. However, the clock design must be simple in order for the clock to be low in cost.

Accordingly, it is an object of the present invention to provide an electric clock which is easily assembled and low in cost.

Another object of the present invention is to provide a new electric clock having no visible assembly means.

Still another object of the present invention is to provide an electric clock which resembles a perfume bottle wherein a transparent crystal encloses a casing containing a clock movement so that said casing appears to be suspended within the crystal and a power cord is not visible within said crystal.

A further object of the present invention is to provide an electric clock wherein a clock movement is enclosed within a split housing and said housing is held closed by a transparent crystal disposed thereover.

Still another object of the present invention is to provide an electric clock having a movement housing spaced within a transparent crystal wherein means not outwardly visible are employed to maintain the clock in an assembled relationship.

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Further objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of the specification.

For a better understanding of the present invention, reference may be had to the accompanying drawings in which:

FIG. 1 is a front perspective view of an electric clock embodying the present invention;

FIG. 2 is a sectional view taken substantially on line 2—2 of FIG. 1 with certain portions of the clock movement shown in block form;

FIG. 3 is a sectional view taken substantially on line 3—3 of FIG. 2 with the clock movement deleted;

FIG. 4 is an exploded sectional view taken substantially on line 4—4 of FIG. 3;

FIG. 5 is an enlarged fragmentary view taken substantially on line 5—5 of FIG. 3;

FIG. 6 is an enlarged fragmentary view taken substantially on line 6—6 of FIG. 2;

FIG. 7 is an enlarged fragmentary view taken on line 7—7 of FIG. 2; and

FIG. 8 is a fragmentary view similar to FIG. 6 showing a modification of the present invention.

Briefly, the present invention relates to an electric clock having a split housing enclosing an electric clock movement and an inverted cup-shaped transparent crystal disposed over the housing. The crystal and housing are locked together in a manner holding the split housing together and in a manner which is not readily visible from the outside of said clock. In addition, the electric power cord supplying energy to the electric clock movement is not outwardly visible within the crystal.

Referring now to the drawings in which like numerals designate like parts throughout the several views, the electric clock is generally designated by the reference numeral 11. The clock 11 includes a casing or housing 12, a cup-shaped, transparent crystal 13, an opaque handle or ornament 14 and an electric power cord 15.

The split casing 12 is molded from a suitable plastic such as a polystyrene which is opaque and the casing is formed with a front case 20 and a rear case 21. The mating line between the front and rear cases lies in a vertical plane which bisects the casing lengthwise. Each case is molded with a decorative outer finish to enhance the clock design. When the cases 20 and 21 are assembled together as shown in FIG. 1, the casing 12 has a base portion 22 which supports the clock in its normal operating position, a center portion 23 defining a clock movement chamber 24 and upper portion 25. In order that the front case 20 may be properly aligned with the rear case 21, the front case 20 is provided with a plurality of pins 28 which extend horizontally from the mating edge thereof, and the rear case 21 has a plurality of recesses 29 which are formed in the mating edge thereof and positioned to interlock with pins 28. By the use of the pins 28 and recesses 29, the front and rear cases are accurately aligned together so that their common surfaces are flush and appear to be uninterrupted.

Disposed within case chamber 24 is a clock movement 30 which is electrically operated. Inasmuch as the clock 11 resembles a perfume bottle, the chamber 24 is relatively small. Consequently, the clock movement 30 has a relatively compact design in order to fit within the chamber. Preferably, the clock movement 30 which is illustrated in block form in FIG. 2 is the same as disclosed in detail in patent application Ser. No. 322,218 filed Nov. 7, 1963 which matured into Patent No. 3,248,867 and which is assigned to the same assignee as in the present invention.

For the purpose of mounting the movement 30 to the casing 12, the front case 20 has a plurality of integrally formed posts 32 which are adapted to be received in clock movement mounting cups 33. Securely locking the movement 30 to the front case 20 are a plurality of screws 34 which fasten the case post 32 to the movement cups 33. The front case 20 has an opening 36 for allowing movement shafts 37 to pass therethrough. A plurality of clock hands 38 are secured to the movement shafts 37 for indicating the time and denoting the alarm setting. For the purpose of setting the clock movement 30, the rear case 21 is provided with at least one access opening 40 and the movement 30 has at least one control lever 41 aligned therewith. A knob 42 is in frictional engagement with control lever 41 and extends outwardly through access opening 40 so that the clock may be properly controlled.

For supplying power to the electric movement 30, the electric power cord 15 is secured to the movement near its bottom edge. The cord 15 extends through a passageway 45 in base portion 22. The passageway 45 runs from the movement chamber 24 to the outside edge of base portion 22 with the inner end thereof being formed by a U-shaped wall 50 and the outer end defined by a channel portion 51 raised about the remainder of the base portion. The bottom side of passageway 45 is open and the cord emerges from the passageway at its remote end 46. Inasmuch as the clock 11 could be easily tipped over if the cord 15 were permitted to extend loosely from the passageway 45 underneath the clock, a pair of opposed integral ribs 48 extend inwardly within passageway 45 at the remote end 46. The cross section of the cord 15 is oblong and the ribs 48 are spaced apart a distance slightly greater than the short distance of the cord cross-section. In this manner, the cord 15 may be disengaged from the passageway retaining ribs 48 by rotating the cord so that the thin section of the cord will pass between the spaced ribs 48. When it is desired to set the cord securely in the passageway 45, the cord is placed in its normal operating position so that the long dimension of its cross-section is horizontally disposed and the cord is retained within the passageway by the oppositely positioned ribs 48. Therefore, once the power cord 15 is properly positioned, it is not permitted to work its way free of the passageway 45 and, consequently, the cord is always properly captured within the passageway 45. It will be appreciated that since the casing 12 is formed of an opaque material, the power cord 15 is not visible when the clock is in its upright operating position until it emerges from the remote end 46 of passageway 45. A horizontally disposed shoulder 52 is formed in the base portion 22 near the periphery thereof on both the front and rear case 20 and 21. The shoulder 52 extends around the base portion 22 except for the raised channel portion 51. Disposed on each side of raised portion 51 at shoulder 52 is an integral outwardly extending protuberance 53. The purpose of the shoulder 52 and protuberance 53 will be disclosed hereinafter.

The crystal 13 is preferably molded from an acrylic plastic and is rectangularly shaped with flat top wall 56, side walls and an open bottom defined by bottom edge 54. The bottom edge of the crystal is formed to cooperate with the shoulder 52 in order to hold the base portion 22 together in tight relationship. Thus, when the cases 20 and 21 are properly aligned in assembled relationship, the crystal 13 is positioned thereover so that the bottom edge 54 engages the shoulder 52 to hold the base portion 22 tightly together whereby the crystal forms a spaced canopy over the casing. To insure that the base portion 22 is held tightly closed, the protuberances 53 are sufficiently large to bow the rear side wall of crystal 13 outwardly a short distance causing a resultant closing force on the base portion.

In the assembled position, the crystal 13 has at least one opening 55 in alignment with access opening 40 and con-

trol lever 41. It will be appreciated that knob 42 is designed to extend through casing opening 40 and crystal opening 55 to engage the control lever 41 in locking friction engagement. It will, moreover, be appreciated that in the assembled relationship, the crystal 13 essentially forms a canopy around the casing center portion 23. The crystal 13 has on its front face indicia 56' for denoting the hour positions.

Both the front and rear case 20 and 21 have a pair of upwardly extending projections 58. The crystal top wall 58 is formed with four complementary openings 60 which are of the same size as the cross-sectional area of projections 58. In order for the crystal 13 to be easily assembled to the case 12, the projections 58 are formed with chamfers 61 for guiding the projections 58 into the complementary openings 60. The projections 58 and openings 60 are positioned to hold the upper case portion 25 tightly closed. Therefore, the split casing 12 is held closed when the crystal 13 is assembled thereto by the lower edge of the crystal 54 engaging the casing shoulder 52 and the projections 58 entering into openings 60. With this construction, no fastening devices are needed to hold the split casing 12 closed.

In accordance with the present invention, the handle assembly 14 serves not only as a decorative ornamental stopper but also locks the casing 12 to the crystal 13 in a manner that conceals how the assembly is accomplished. The handle assembly 14, which resembles a decorative stopper for a perfume bottle, includes a collar 62, a hollow member 63 and a cover 64, all of which are molded from an opaque plastic material. The collar 62 is formed with a peripheral ridge 65 having an upwardly and outwardly extending outer surface 65a. The collar 62 is sufficiently large to cover and hide the top of upper case portion 25. In addition, the collar 62 includes a horizontally extending wall 66 having a plurality of clearance openings 66a which are adapted to receive the upper portions of projections 58. Moreover, collar wall 66 includes a plurality of round clearance openings 66b for receiving threaded fastening means, see FIG. 2, and two rectangular clearance openings 66c, see FIG. 6.

The hollow member 63 is formed with a lower wall which is received within the ridge 65 of collar 62. Extending across the bottom opening of hollow member 63 is a horizontally disposed web 67 which has a plurality of screw openings 67a.

For the purpose of rigidly locking together the casing 12, crystal 13 and collar 62, there are provided a plurality of threaded fasteners 68 which extend downwardly through web openings 67a, clearance openings 66b in collar wall 66, clearance openings 70 in top crystal wall 56 and into threaded holes 71 in the upper portion of the case 25. Therefore, when screws 68 are tightened into position, the hollow member 63, collar 62, crystal 13 and casing upper portion 25 are rigidly locked together.

Closing the top of the opening in hollow member 63 is cover 64 having an indented roof portion 76 with a peripheral surface 77. The surface 77 is angled inwardly to form a relatively sharp upper edge 78. The tubular member 63 has an internal, inclined surface 80 disposed inside the upper opening. The surface 80 is formed at an angle so that there will be a gap between the surface 80 and the cover surface 77 whereby the contact between the cover and the member is made between surface 80 and edge 78. With this construction, there is no outwardly visible gap between the cover 64 and the member 63. In order for the cover 64 to fasten itself to the clock without the aid of additional fastening members, the cover 64 is provided with a downwardly extending trunk 82 having a bifurcated portion formed by legs 83 which are slightly resilient. The lower edge of the legs 83 are chamfered in order to facilitate assembly. The legs 83 extend downwardly through hollow member 63 and collar clearance openings 66c. As may be easily seen in FIG. 6, a pair of openings 84 in the crystal top wall 56

are formed with each having a lower knife edge 85 adapted to cooperate with legs 83 for holding the cover in an assembled position. The distance between the knife edges 85 is slightly less than the distance between outer surfaces of legs 83 in their disassembled position. Consequently, the knife edges 85 tend to bias the legs inwardly producing a resultant locking force between the knife edges and legs. As cover 64 is inserted into its proper position, the legs 83 extend downwardly through openings 84 and the knife edges 85 lock against the sides of the legs 83 to prevent their removal without a relatively large upward force being exerted. However, when it is desired to remove the cover 64, pressure is exerted on the sides of tubular member 63 so that surface 80 forces against peripheral surface 77 causing the cover 64 to move upwardly. It will be appreciated that the handle 14 hides the fastening screws 68 and gives no clue as to how the various components are assembled.

Since the crystal 13 is fabricated from a clear or transparent material, the edges which border the top wall 56 have a chamfer 86 in order to obscure the assembly means between the handle 14, crystal 13 and casing 12. Thus, when the crystal is viewed parallel to the top wall 56 at the edges, it is impossible to observe the assembly means due to the bending of the light waves at the chamfers 86.

An alternate embodiment of the present invention having an integrally formed handle is disclosed in FIG. 8 wherein parts similar to those in the preferred embodiment have the same reference numerals but with a prime mark thereafter. As revealed in FIG. 8, handle 14' has an integral collar 62' which effectively covers or hides the upper portion 25' of the clock housing 12'. In addition, the handle 14' is formed with integral bifurcated legs 83' which extend downwardly into the upper portion of case 25'. It will be appreciated that the bifurcated legs 83' are somewhat resilient. The upper case portion 25' is formed with a plurality of knife edges 91. Thus, as the handle 14' is inserted into position, the legs 83' engage the knife edges 91 and are forced inwardly. Since the legs are somewhat resilient, they tend to resist the inward movement due to the knife edges and are interlocked with the knife edges. Therefore, the handle 14', crystal 13' and split casing 12' are interlocked together by the knife edges 91 of the casing 25' being locked to the handle legs 33'.

In the clock herein above described, a transparent crystal encloses an opaque clock movement casing and a handle is positioned on the upper surface of the crystal. There is no outwardly visible means for holding the clock in assembled relationship and the cord is not visible until it emerges from the periphery of the base portion. Moreover, the clock resembles a perfume bottle having a clock suspended therein without any apparent connection between the electrical cord and the clock movement housing.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. An electric clock comprising an opaque plastic casing enclosing an electric clock movement so that said movement is not outwardly visible and having a unitary base portion for supporting the clock, an inverted cup-shaped transparent crystal having a bottom edge which defines the open end thereof, said crystal edge engaging said casing base portion so that said crystal forms a spaced canopy over said housing, means fastening said crystal and casing together, an electric power cord connected to said clock movement, said casing defining a passageway from said clock movement to an outside edge of said base, said cord extending through said passageway whereby said cord is not visible until after it emerges from said outside base edge, said crystal and casing each having a front wall, said crystal front wall bearing indicia for indicating the time, said casing front wall having an

opening, shaft means connected to said clock movement and extending through said casing opening, time indicating arms secured to said shaft means for indicating the time in cooperation with said indicia.

2. A electric clock comprising an opaque plastic casing enclosing an electric clock movement so that said movement is not outwardly visible and having a unitary base portion for supporting the clock, an inverted cup-shaped transparent crystal having a bottom edge which defines the open end thereof, said crystal edge engaging said casing base portion so that said crystal forms a spaced canopy over said housing, means fastening said crystal and casing together, an electric power cord connected to said clock movement, said casing defining a passageway from said clock movement to an outside edge of said base, said cord extending through said passageway whereby said cord is not visible until after it emerges from said outside base edge, said crystal having an upper wall, said casing being provided with upwardly extending projections which interlock with said crystal upper wall, opaque handle means secured to said crystal and overlying the connection between said crystal and casing projections so that the connection is not outwardly visible.

3. The electric clock of claim 2 wherein said crystal and casing each have a rear wall, said casing rear wall being provided with access means, said crystal rear wall provided with access means in alignment with said casing access means, control means connected with said clock movement for controlling the clock and in alignment with said access means, knob means in frictional engagement with said control means and extending outside of said crystal.

4. The electric clock of claim 2 wherein said handle means is hollow, fastening means locking said crystal and casing securely together, said fastening means disposed within said handle means, said handle means including a removable opaque cover overlying said fastening means so that the fastening means is not outwardly visible.

5. The electric clock of claim 2 wherein said casing passageway is open at the bottom for a portion of its length, said casing having integral ribs adjacent the outside edge of said base portion which extend inwardly toward said passageway whereby said cord is releasably captured within said passageway underneath the clock.

6. An electric clock comprising a split housing enclosing an electric clock movement, said housing having a base portion for supporting said clock, an inverted cup-shaped transparent crystal having an upper portion and a lower edge defining the open end thereof, said crystal disposed over said housing so that said edge engages said base portion, said housing being provided with integral projections extending upwardly and engaging locking means on said crystal upper portion whereby said split housing is held closed by the interlocking of said projections and said locking means on said upper portion and of said crystal edge and housing base portion.

7. The electric clock of claim 6 wherein said housing being split substantially along a vertical plane into two sections, said base portion defining a shoulder, said crystal edge adapted to snugly engage said shoulder in order to hold the base portion closed, said housing projections being disposed on both sections of said split housing, said crystal upper portion locking means including openings adapted to receive said projections for holding said housing closed.

8. The electric clock of claim 7 wherein guide means associated with said housing projections and crystal openings close said housing sections during assembly.

9. The electric clock of claim 7 wherein handle means secured to said crystal upper portion overlie said crystal opening and housing projections, fastening means associated with said handle means for securing together said handle means, crystal and housing.

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10. The electric clock of claim 6 wherein said housing is split into two sections, one of said sections being provided with a plurality of pins and the other section defining a plurality of recesses for receiving said pins in order for maintaining said sections in proper alignment.

11. The electric clock of claim 7 wherein said base portion shoulder is provided with an outwardly extending protuberance adapted for engaging said crystal near said crystal edge whereby a tight connection is provided between said shoulder and crystal.

12. An electric clock comprising a housing containing an electric clock movement, a cup-shaped transparent crystal enclosing said housing, said crystal having an upper wall, said housing having locking means at its upper portion securing said crystal upper wall and housing together, and a handle disposed on said crystal upper wall and including means fastening said crystal and housing upper portion together and said handle and crystal together.

13. The electric clock of claim 12 wherein said housing upper portion locking means includes upwardly extending projections and said crystal upper wall defines openings adapted to receive said projections.

14. The electric clock of claim 12 wherein said handle includes fasteners which extend downwardly to lock said crystal upper wall and housing together.

15. The electric clock of claim 14 wherein said handle includes a tubular portion surrounding said fasteners, said portion having an upper edge and a surface sloping downwardly and inwardly therefrom, and a cover disposed on said tubular portion, said cover having an edge

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of the same approximate configuration as said tubular portion edge, said cover edge being tapered so that only said cover edge engages said tubular portion surface.

16. The electric clock of claim 15 wherein said cover is provided with downwardly extending arms, said crystal upper wall defining openings having a lower knife edge, said cover locked to said tubular portion by said arms being held fast by said knife edge.

17. The electric clock of claim 12 wherein said upper crystal wall has chamfer edges obscuring the viewing of said fastening means.

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U.S. Cl. X.R.

58—55; 219—10.77, 519; 250—206; 317—31, 36, 124