July 24, 1934. I. DINSTMAN 1,967,227

CLOCK

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Fig. 1.

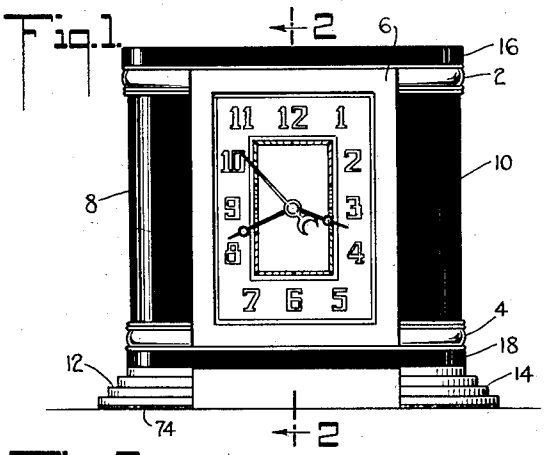


Fig. 2.

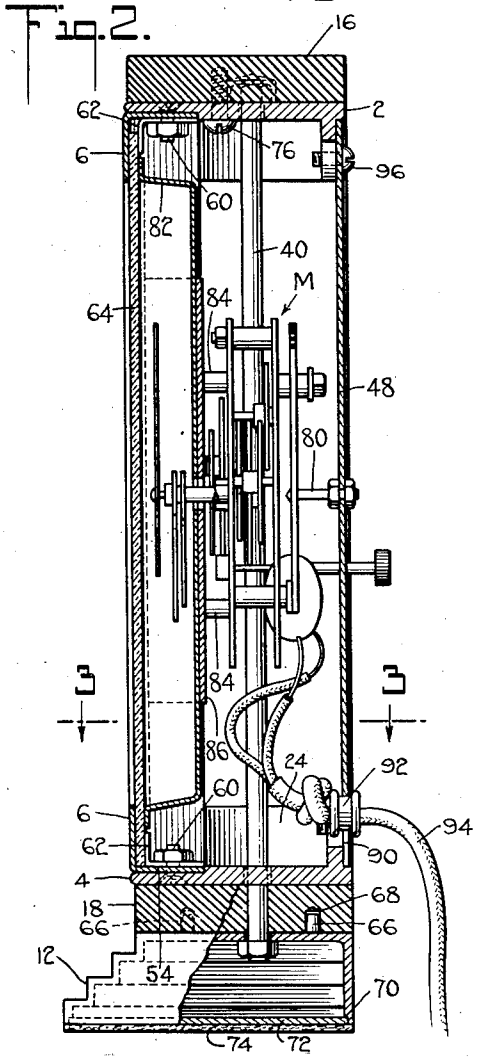
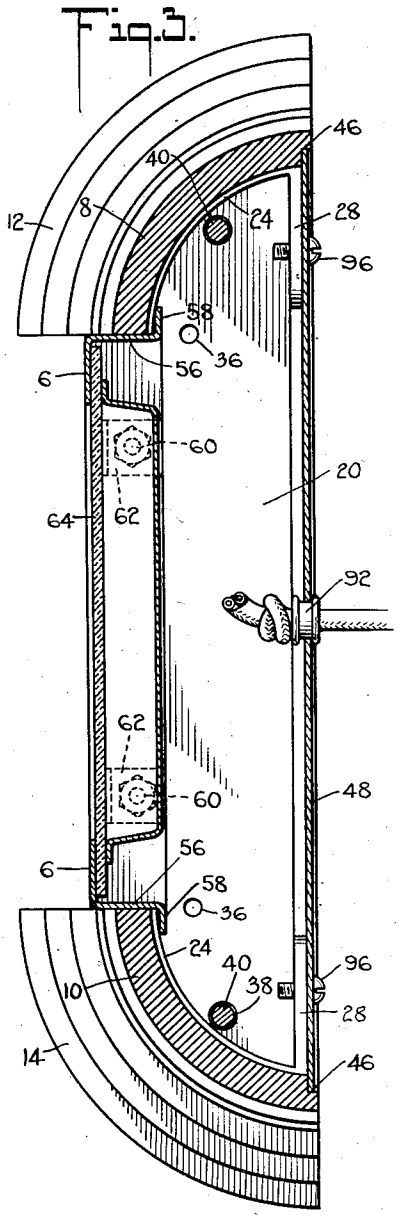


Fig. 3.



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Fig. 4.

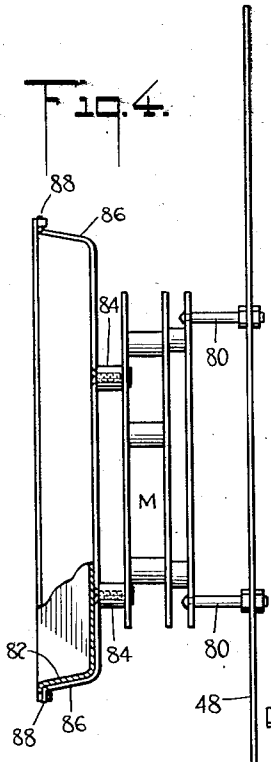


Fig. 5.

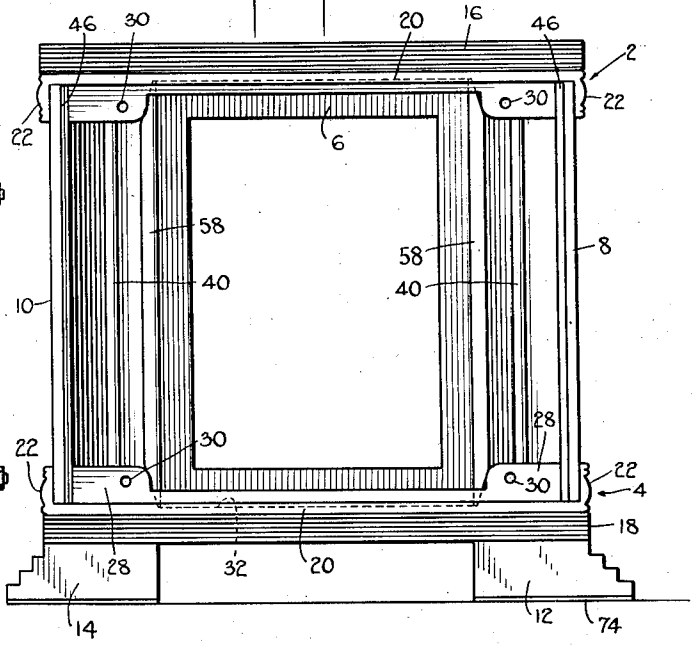


Fig. 6.

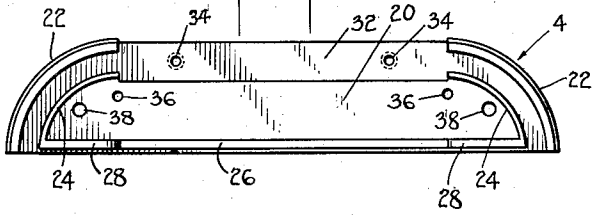


Fig. 7.

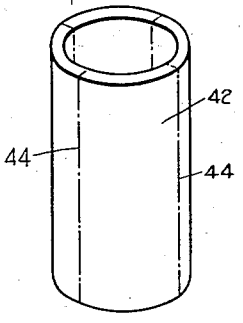
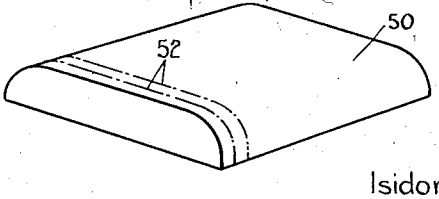


Fig. 8.



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1,967,227

UNITED STATES PATENT OFFICE

1,967,227

CLOCK

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Application November 14, 1931, Serial No. 574,934

16 Claims. (Cl. 58—53)

This invention relates to clocks, and more particularly to a novel form and construction of clock case.

One of the objects of the present invention resides in the provision of a novel form of clock case constructed partially of moldable composition material and partially of metal, the composition being obtainable in a variety of colors and finishes and showing up in sharp contrast with the metal parts of the case.

Other objects of the present invention are to devise a particularly advantageous mechanical assemblage of the parts of the clock case, resulting in a strong and rugged case made of a relatively few simple parts which may be assembled readily and rapidly under production conditions, so that the finished clock, although exceptionally rich and expensive-looking in appearance, may be marketed at an exceedingly reasonable cost.

Other and more detailed objects of the present invention center about the mounting of the movement of the clock within the case, and result in a unitary and permanent assemblage of dial, movement, and back plate, the parts of which are standardized and interchangeable and so arranged that when the back plate is secured to the back of the clock case, the dial is accurately located and supported by the back plate in proper relation to the open frame at the front of the case. Further objects are to so mount the dial on the clock movement that no securing means will be visible on the face of the dial, and at the same time to provide the necessary additional parts for attaining this result without appreciable extra cost for material, such parts being made from waste metal obtained when manufacturing other parts of the clock case. Still another object of the invention is to make the clock case perfectly dust-proof, so that the clock movement may be run indefinitely without attention or cleaning.

Further features of the invention center about the manufacture of the composition portions of the clock case, and make possible rapid production of accurately dimensioned and highly finished and polished parts at a relatively low cost. Still another object of the present invention is to so design the mechanical features and mode of assembly of the clock case as to make possible changes in design and appearance of the clock case without material or important alteration in the mechanical features thereof.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, my invention resides in the clock and clock case elements and their relation one to the other as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by drawings in which:

Fig. 1 is a front elevation of one form of clock embodying features of my invention;

Fig. 2 is a section taken in the plane of the line 2—2 in Fig. 1;

Fig. 3 is a horizontal section taken in the plane of the line 3—3 in Fig. 2;

Fig. 4 is a skeletonized plan view of the inside mechanism of the clock;

Fig. 5 is a rear elevation of the clock case with the back plate and internal mechanism of the clock removed;

Fig. 6 is a horizontal view of one of the metallic fittings of the clock case;

Fig. 7 is a perspective drawing explanatory of the mode of production of the composition end or corner pieces; and

Fig. 8 is a perspective drawing explanatory of the mode of production of the top and bottom composition laminations.

Referring to the drawings, and more particularly to Fig. 1 thereof, the clock case of my invention comprises top and bottom metal fittings or castings 2 and 4, a generally rectangular metallic frame 6 received between said castings, and composition corner or end pieces 8 and 10 located outside of the frame 6 and received between the castings 2 and 4. The clock case may be and preferably is provided with feet 12 and 14 located at the bottom of the case and acting as a base or foundation to add stability to the clock case which otherwise, as will be subsequently developed, is exceedingly thin in its front to back dimension. The case is preferably further provided with a top lamination 16 of composition material, the configuration of which may follow that of the top casting 2. If desired, still another lamination of composition material 18 may be provided at the bottom of the case between the casting 4 and the feet 12 and 14.

In Fig. 1 of the drawings, the exposed metal parts have been left unshaded and the composition parts are shown in solid black. The resulting appearance is that obtained when the clock case is made with chromium plated metallic parts and black composition material. However, it should be understood that the metal may be provided with any of a number of finishes, and the composition may be obtained in white or black or various colors and may be mottled or rippled in color so as to resemble marble, onyx,

and other natural materials. The composition is preferably an artificial product sold under the trade name "Catalin" which is desirable because of the beautiful effects and finishes obtainable, but it will be understood that other composition materials may be employed, and, in fact, even the natural materials may be used but at considerably greater cost and inconvenience.

The general scheme of assemblage of the clock case may be outlined with reference to Fig. 5 of the drawings, which is a rear view of the clock case with the back plate and internal mechanism removed. In this view the top and bottom castings 2 and 4, the front frame 6, the end pieces 8 and 10, the feet 12 and 14, the top composition layer 16, and the bottom composition 18 all correspond to the similarly numbered parts described in connection with Fig. 1. In Fig. 5, however, it should be noted that there are a pair of tie rods 40 extending vertically from the top to the bottom of the case. These tie rods, as is best shown in Fig. 2, extend from the top casting 2 through the bottom casting 4, the composition layer 18, and the feet 12 and 14, and thereby hold these elements in assembled relation, with the frame 6 and the end pieces 8 and 10 clamped between the top and bottom castings 2 and 4.

Considering the parts of the clock case in greater detail, the top and bottom castings 2 and 4 are preferably made identical and interchangeable. Referring to Fig. 6, showing the lower casting in plan, the casting consists of a flat layer of metal 20 the ends of which are provided with curved outer and inner flanges 22 and 24. The casting may be additionally provided with a rear flange or rail 26 adapted to subsequently receive and support the back plate of the clock case. The end portions 28 of the rail 26 run directly into the curved inner flanges 24 and are preferably elevated above the top edge of the intermediate portion of rail 26, as is best shown in Fig. 5, in order to provide ample room for tapped holes 30 subsequently used to screw the back plate in place. The supports 28 also help keep the back plate in a rigid and stiffened condition. The front or leading edge portion 32 of the casting is cut away or depressed below the level of the portion 20 in order to receive and accurately seat the front frame 6 in place. In addition to the tapped holes 30 for holding the back plate, the casting or fitting is further provided with tapped holes 34 which receive screws 60 for retaining pieces or angles 62 which in turn hold the glass 64 against the front frame 6 (see Figs. 2 and 3); holes 36 through which screws may be passed for anchoring the top composition lamination 16 in place; and holes 38 through which the previously mentioned upright tie rods 40 are passed when locking the various composition and metal parts of the clock case in assembled relation.

In the particular form of clock here shown, the end or corner pieces 8 and 10 are preferably cylindrical in curvature. These pieces may most expeditiously and economically be made by first forming or molding the "Catalin" or other composition material in the form of a complete cylinder 42, as is indicated in Fig. 7. The outer surface of the cylinder may then be trued to correct cylindrical shape and dimension, and may be polished as highly as desired. The cylinder is then cut into segments of desired size. In the particular case here shown, each piece 8 and 10 is exactly one-fourth of a cylinder, and the pieces are made by cutting the cylinder 42 into quarters, as is indicated by the broken lines 44 in Fig. 7. The rear edges of the material are preferably grooved, as at 46 in Figs. 3 and 5, in order to receive the back plate 48 of the clock case with an accurate and dust-proof fit. Similar grooves are provided on fittings 2 and 4 by a slight inward location of rail 26, 28.

The laminations 16 and 18 of composition material are given a configuration similar to that of casting 4 shown in Fig. 6. To cut these out of a thin sheet of material would be costly, would result in inaccuracies of shape, and would necessitate polishing the forward or curved edges of the layers of material, which in turn would round or otherwise mutilate the same in an unsightly manner. In accordance with my method, a rod of "Catalin" or other suitable composition material is made with a cross-section similar to the desired shape of the layers 16 and 18, as will be clear from an inspection of Fig. 8 of the drawings. This rod, numbered 50, is polished on its outer surfaces and thereafter is sliced or cut into laminations, as is indicated by the broken lines 52. In the case of the lower lamination 18, only the edge of which is exposed, no further finishing process is needed. In the case of the upper lamination 16, the top face of which is exposed to view, one side of the lamination is polished. The polishing operation, however, is here applied to a flat surface and does not tend to round or mar the corners or edges of the piece. The pieces are provided with a number of recesses and holes to be described later.

The front frame 6 is made of sheet metal and preferably comprises a flat continuous front surface heretofore designated 6, rearwardly extending top and bottom surfaces 54, best shown in Fig. 2 of the drawings, rearwardly extending side surfaces 56, best shown in Fig. 3, and outwardly projecting side flanges 58, best shown in Figs. 3 and 5 of the drawings. This frame being struck from a single piece of metal, presents a perfectly smooth and continuous outer surface with a desirable appearance, such as is indicated in Fig. 1. At the same time the top and bottom surfaces 54 permit the frame to be accurately received by and firmly held in place by the top and bottom castings 2 and 4. The cut-out or recessed portions 32 of the castings 2 and 4 accurately receive and position the frame 6 in place. The side surfaces 56 and outwardly projecting flanges 58 serve to receive and house the forward edge of the corner pieces 8 and 10, as is readily apparent from an inspection of Fig. 3. The flanges 58, however, are preferably located to fit directly behind the forward edges of the inner flanges 24 of the castings, thereby additionally locking the frame in place. This construction is alone sufficient to hold the frame within the clock case assembly even without the additional and main securing means provided by the four bolts 60 which, as is almost self-evident from the drawings, hold small angle pieces 62 which in turn hold the glass or crystal 64 of the clock case dial against the front portion 6 of the frame. The bolts 60 pass through holes 34 shown in Fig. 6 of the drawings. These holes are preferably tapped to prevent rotation of the bolt when the nut is applied thereto.

The feet 12 and 14 are preferably made of cast metal and may be hollow, as is shown in Fig. 2. The top surface of each foot is bored to receive the tie rod 40, as is shown in Fig. 2, and in order to properly locate and prevent turning of the foot, the casting is additionally provided with upward-

ly extending lugs or posts 66 which mate with holes 68 drilled in the bottom of the lower composition layer 18. The bottom edge of the foot is grooved, as at 70, to receive and support surfacing material which may be heavy cardboard 72 bottomed with a layer of felt 74. The disclosed construction is not only economical and light, but possesses the additional advantage of being silent and vibrationless when the clock is in operation.

To assemble the clock case as so far described, the top and bottom castings 2 and 4 are provided with the four screws 60. The castings are then assembled with the frame 6 and the composition pieces 8 and 10 therebetween. Rods 40 are passed through the castings. Composition layer 18 and feet 12 and 14 are added at the bottom of the case, and the assemblage is bolted tightly together by means of the nuts at the ends of the tie rods 40. The glass or crystal 64 is put in place and followed by the four small angles or retaining pieces 62 which in turn are held by the nuts applied to bolts 60. The top composition layer 16 is recessed to clear the ends of rods 40, and is drilled and tapped with holes mating with the holes 36 in the casting. Screws 76 are passed through the casting 2 and threaded into composition layer 16 in order to anchor the same in place. The feet 12 and 14 may finally be bottomed with the cardboard and felt bottom 72, 74.

The clock movement is preferably of the synchronous electrical type and is generally indicated by the letter M in Figs. 2 and 4 of the drawings. It is preferably mounted on and secured to the back plate 48 of the clock, which may be accomplished by means of posts 80. The dial 82 of the clock is in turn preferably mounted on the movement M, and this may be accomplished through the medium of posts 84. However, it is desirable that the face of the dial be unmarred or unblemished by securing means, and I therefore provide an intermediate piece of metal 86 (see Figs. 2 and 4) between the movement M and the dial 82. This intermediate piece of metal is in the form of a broad flat U the bend of which is arranged to follow the deep bend or dish of the dial 82. The central or flat portion of the intermediate member 86 is secured to posts 84 by means of small screws, as is clearly shown in Fig. 4 of the drawings. The intermediate member 86 and dial 82, however, are secured together only at their extreme edges, as is indicated at 88 in Fig. 4, the edge of the dial being slotted to receive tongues projecting from the edge of the member 86. This edge portion is concealed by the front frame 6 of the clock when the dial is mounted in place.

Back plate 48 is made of relatively heavy sheet metal and is provided with holes mating with the holes 30 in castings 2 and 4. The mounting of dial 82 on the clock movement M, and the mounting of the clock movement M on back plate 48, and finally the mounting of the back plate 48 on the clock case itself are all accurately predetermined and standardized, which results not only in the parts being interchangeable, but more importantly, in securing perfect centering and registration of the dial 82 with relation to the front frame 6 of the clock. The bottom edge of back plate 48 is slotted at 90 to receive a flanged insulation bushing 92 which protects the feed wires 94 for the movement M. With this construction the clock movement is readily applied to the clock case, it being simply necessary to put the dial and movement within the case, and then apply the four holding screws 96. The movement may, of course, be taken out of the case for inspection or repair with similar facility and ease. The outer edges of back plate 48 are received in grooves provided in castings 2 and 4 and composition ends 8 and 10, whereby insuring a dust-proof fit which protects the clock movement.

In order to economize in the use of metal, the intermediate piece of metal 86 is made equal to or smaller in dimension than the opening in frame 6. The piece of metal struck from frame 6 during the manufacture of the same is therefore readily used as the raw material for manufacturing intermediate holding piece 86.

It will be understood that numerous changes in design may be made, and a number of these may be inspected by reference to my copending design applications Serial Nos. 41,502, 41,503, and 41,504, filed October 23, 1931, and since issued on December 15, 1931, as Design Patents Nos. 85,739, 85,740, and 85,741, respectively. Considering the matter briefly, it will be obvious that the end or corner pieces 8 and 10 may be made of any desired configuration and may be made of a plurality of strips of composition material or of combinations of strips of composition and metallic materials. Either or both of the insulation laminations 16 and 18 may be omitted. The lower insulation lamination 18 may be omitted and a stepped piece of insulation inserted between the feet 12 and 14 and secured to casting 4 in the same manner that the top lamination is secured to casting 2. The metal and the composition parts may be given dull or highly polished finishes with any preferred kind of contrast both as regards color and finish.

It is believed that the mode of constructing the clock case and clock of my invention, and the many advantages thereof, will for the most part be apparent from the foregoing detailed description. The construction set forth permits of the use of metal and composition parts in unusual contrasts of color and finish. The mechanical assemblage is rugged and strong, yet simple and composed of relatively few parts. The clock movement and the dial are all supported from the back plate and are properly located in the clock thereby, and are removable from the clock therewith. No means of attachment mar the appearance of the dial. The mechanical features of the clock case construction may be embodied in numerous forms and shapes of clock case design.

It will therefore be apparent that while I have shown and described my invention in preferred form, many changes and modifications may be made in the structure disclosed, without departing from the spirit of the invention, defined in the following claims.

I claim:

1. A clock case comprising top and bottom metallic fittings, a metallic frame received between said fittings, composition corner or end pieces located outside of said frame and received between said fittings, feet mounted at the bottom of the case, and means securing said parts together including a pair of tie rods extending from the top fitting through the bottom fitting and feet.

2. A clock case comprising top and bottom metallic castings, a generally rectangular metallic frame received between said castings, composition corner or end pieces located outside of said frame and received between said castings, a top lamina-

tion of composition material located above the top casting, feet mounted at the bottom of the case, and means securing said parts together including a pair of tie rods extending from the top casting through the bottom casting and feet.

3. A clock case comprising top and bottom metallic castings, a generally rectangular metallic frame received between said castings, composition corner or end pieces located outside of said frame and received between said castings, top and bottom laminations of composition material located above and below said castings, feet mounted near the bottom composition lamination, and means securing said composition and metal parts together.

4. A clock case comprising similiar top and bottom metallic castings, a generally rectangular metallic frame received between said castings, composition corner or end pieces located outside of said frame and received between said castings, top and bottom laminations of composition material located above and below said castings, cast metal feet mounted near the bottom composition lamination, and means securing said parts together including a pair of tie rods extending from the top casting through the bottom casting and feet.

5. A clock case comprising similar top and bottom castings, each of said castings including a flat layer of metal provided at its ends with outer and inner curved flanges and at its rear with a straight flange or rail, a generally rectangular frame arranged between said castings at the forward edge thereof, corner or end pieces located outside of said frame and between said castings, said pieces being made of composition material and being arcuately shaped and received between and held by the outer and inner curved flanges of the castings, feet located at the bottom of the case, and tie rods extending from the top casting through the bottom casting and the feet, in order to hold the case in assembled relation.

6. A clock case comprising top and bottom castings, a generally rectangular frame arranged between said castings at the forward edge thereof, said frame being made of sheet metal and comprising front surfaces, rearwardly extending top, bottom and side surfaces, and outwardly extending side flanges, composition corner or end pieces located between said castings and outside of the side surfaces and flanges of said frame, feet located at the bottom of the case, and tie rods extending from the top casting through the bottom casting and the feet in order to hold the case in assembled relation.

7. A clock case comprising top and bottom castings, a generally rectangular frame arranged between said castings at the forward edge thereof, composition corner or end pieces located outside of said frame and between said castings, flat laminations of composition material mounted above the top and below the bottom castings, hollow cast metal feet located below the lower lamination of composition material, said feet being provided with upstanding posts mating with holes in the lower composition lamination to locate and prevent turning of the feet, and tie rods extending from the top casting through the bottom casting, the composition lamination, and the feet, in order to hold the case in assembled relation.

8. A clock case comprising top and bottom castings, each of said castings including a flat layer of metal provided at its ends with flanges, a generally rectangular frame arranged between said castings at the forward edge thereof, said frame being made of sheet metal and comprising front surfaces and rearwardly extending top, bottom, and side surfaces, corner or end pieces located outside of said frame and between said castings, said pieces being made of composition material and being received and held by the flanges of the castings, feet located at the bottom of the case, and tie rods extending from the top casting through the bottom casting and the feet, in order to hold the case in assembled relation.

9. A clock case comprising top and bottom castings, each of said castings including a flat layer of metal provided at its ends with outer and inner curved flanges, a generally rectangular frame arranged between said castings at the forward edge thereof, said frame being made of sheet metal and comprising front surfaces and rearwardly extending top, bottom, and side surfaces, corner or end pieces located outside of said frame and between said castings, said pieces being made of composition material and being arcuately shaped and received between and held by the outer and inner curved flanges of the castings, a flat lamination of composition material mounted above said top casting, means securing the top lamination to the top casting, feet located at the bottom of the clock, means to locate and prevent turning of the feet, and tie rods extending from the top casting through the bottom casting and the feet, in order to hold the case in assembled relation.

10. A clock case comprising similar top and bottom castings, each of said castings including a flat layer of metal provided at its ends with outer and inner curved flanges and at its rear with a straight flange or rail for receiving a back plate, a generally rectangular frame arranged between said castings at the forward edge thereof, said frame being made of sheet metal and comprising front surfaces, rearwardly extending top, bottom, and side surfaces and outwardly extending side flanges, corner or end pieces located between said castings and outside of the side surfaces and flanges of said frame, said pieces being made of composition material and being arcuately shaped and received between and held by the outer and inner curved flanges of the castings, flat laminations of composition material mounted above the top and below the bottom castings, means securing the top lamination to the top casting, outwardly stepped hollow cast metal feet located below the lower lamination of composition material, said feet being provided with upstanding posts mating with holes in the lower composition lamination to locate and prevent turning of the feet, and tie rods extending from the top casting through the bottom casting, the composition lamination, and the feet, in order to hold the case in assembled relation.

11. A clock comprising top and bottom metallic fittings, a frame received between said fittings, composition corner or end pieces located outside of said frame and received between said castings, feet mounted at the bottom of the case, means securing said composition and metallic parts together, a back plate dimensioned to be received by and to close the back of the clock, means to detachably secure the back plate to the clock, a clock movement secured to said back plate, and a clock dial secured to the opposite side of the movement, whereby the dial and movement are affixed to and located and supported by the back plate, and are removable from the clock case with said back plate.

12. A clock comprising similar top and bottom metallic castings, a generally rectangular metallic frame received between said castings, composition corner or end pieces located outside of said frame and received between said castings, top and bottom laminations of composition material located above and below said castings, cast metal feet mounted below the bottom composition lamination, means securing said parts together including a pair of tie rods extending from the top casting through the bottom casting and feet, a back plate dimensioned to be received by and to close the back of the clock, means to detachably secure the back plate to the clock, a clock movement secured to said back plate, and a clock dial secured to the opposite side of the movement, whereby the dial is affixed to and accurately located in the frame by the back plate, and is removable from the clock case with said back plate.

13. A clock comprising a frame for the glass or crystal, a rearwardly dished dial dimensioned to be received in back of the frame, the edges of the dial being concealed by the frame, a clock movement, and means securing said movement to said dial, including an intermediate piece of metal which is appropriately dished to receive the dished dial, and the central rearwardly dished portion of which is secured to the movement and solely the extreme forward edge portions of which are secured to the mating extreme forward edges of the dial, so that no securing means are visible when looking at the dial.

14. A clock comprising a front sheet metal frame for the glass or crystal, said frame being struck from a single piece of sheet metal, a rearwardly dished dial dimensioned to be received in back of the frame, the edges of the dial being concealed by the frame, a clock movement, and means securing said movement to said dial, including an intermediate piece of metal which is appropriately dished to receive the dished dial, and the central portion of which is secured to the movement and the extreme edge portions of which are secured to the extreme side edges of the dial, so that no securing means are visible when looking at the dial, the said intermediate piece of metal having dimensions equal to or smaller than the open area of the metallic frame, so that metal struck from the frame during its manufacture may be used for the said intermediate piece of metal.

15. A clock comprising a front sheet metal frame for the glass or crystal, a rearwardly dished dial dimensioned to be received in back of the frame, the edges of the dial being concealed by the frame, a clock movement having a plurality of forwardly extending posts, and means securing said movement to said dial, including a broad U-shaped piece of metal the flat surface of which is secured to the forwardly extending posts of the movement and the forwardly turned or flanged edges of which are secured to the extreme side edges of the dished dial, so that no securing means are visible when looking at the dial.

16. A clock case comprising top and bottom metallic fittings, respectively having depending and upstanding marginal flanges, a metallic frame received between said fittings, composition corner or end pieces located outside of said frame and received and held between said fittings within the flanges thereof, and means securing said parts together including a pair of tie rods extending from the top fitting to the bottom fitting.

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