Nov. 28, 1944. P. GANGEMI 2,363,859

ELECTRIC CHIME ON WINDING CLOCKS

Filed Sept. 3, 1942

Fig. 1.

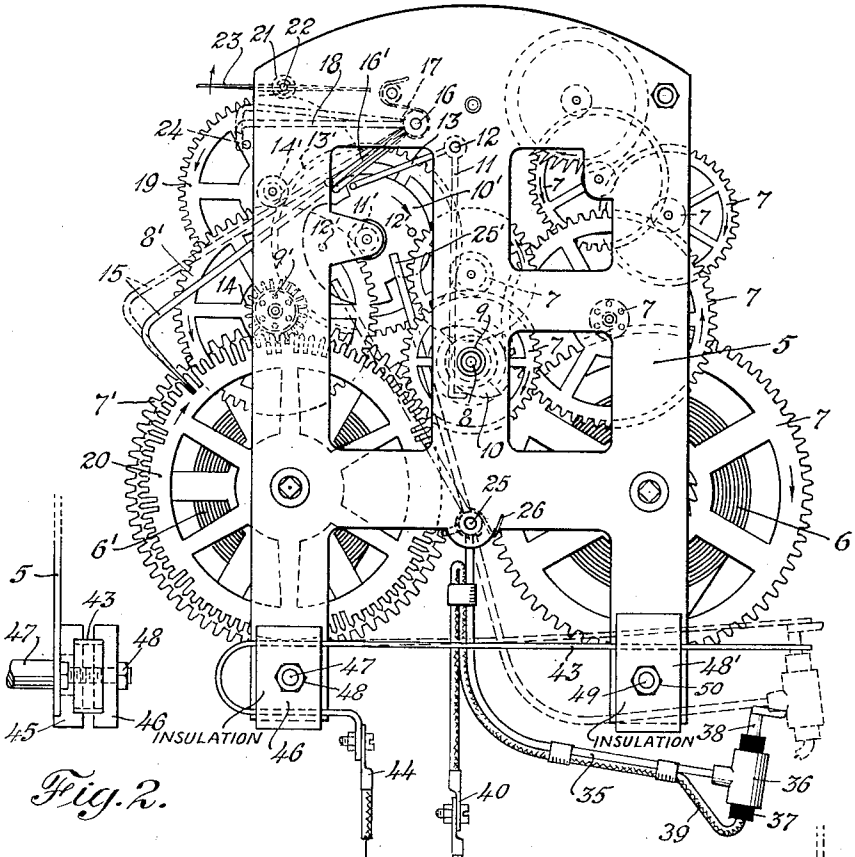


Fig. 2.

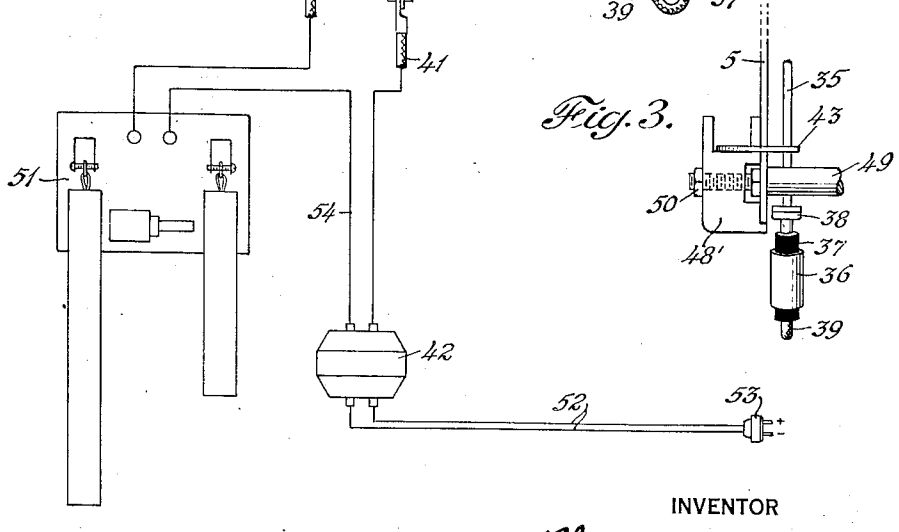


Fig. 3.

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ELECTRIC CHIME ON WINDING CLOCKS

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3 Claims. (Cl. 58—38)

My invention relates to electric chimes for clocks, and more particularly to clocks of the spring wound type.

The object of my invention is to provide an electric switch attachment to a clock in combination with the striking mechanism of a clock operable at the half and hourly periods to close the circuit and sound the chimes.

A further object is to provide a spring wound type of clock with an electric switch attachment in combination with the striking mechanism for closing the circuit leading to the chimes, which chimes may be attached to the clock itself or placed at any desired distance therefrom.

In the drawing forming part of the specification, Fig. 1 is a front elevational view of a conventional spring wound clock mechanism having attached thereto my improved switch arrangement, together with a diagrammatic illustration of an electric chime circuit and chime mechanism; Fig. 2 is a detailed view taken from the left side of the clock frame showing the leaf spring contact member and the insulating clamping and guide blocks; Fig. 3 is a detailed view taken from the right side of the clock frame showing the leaf spring member, the insulating guide block and the pivoted contact arm and shoe.

Referring more particularly to the drawing, in which similar reference characters identify similar parts in the several views, I have shown in Fig. 1 of the drawing one form of a conventional type of a spring wound clock mechanism together with my improved contact switch arrangement and chime mechanism associated therewith, and in which 5 represents the frame of the clock having a spring 6, and a train of gears 7 for operating the timing mechanism together with the shaft 8 on which the hour hand is mounted and a sleeve 9 on which the minute hand is mounted. At the rear end of the timing shaft 8 is a double face cam disc 10 which operates a lever arm 11, extending downwardly from a rock shaft 12, having a bent hook extension in contact with the cam 10 also secured to the shaft 12 and extending outwardly therefrom is a trip arm 13 which raises the dog arm 15 associated with the hour wheel 20, as indicated by the dotted lines in the drawing. The dog arm 15 is pivotally mounted on a rock shaft 16 and is held downwardly under the tension of a coil spring 17. Also secured to the rock shaft 16 and extending outwardly in a horizontal direction is a stop hook arm 18, the purpose of which will be explained hereinafter.

The chime gearing mechanism is operated by a spring 6' and a train of gears 7', 8', 9', 11', 13', 14', 19 and a gear 14 meshing with the teeth of count wheel 20, the speed of which is controlled by the gear 19 meshing with a pinion gear 21 on the shaft 22, on which is mounted a governor 23.

On the rear face of the wheel 19 is a stop pin 24 cooperating with the stop hook arm 18. The starting of the chime mechanism is effected by the chime or clock mechanism. During the rotation of the hour shaft 8, the cam 10 coacts with the arm 11 at the hour and half hour, to rock the shaft 12, thereby raising the lever arm 13, which in turn raises the dog arm 15 out of engagement with count wheel 20. At the same instant the hook arm 18 is also raised out of the path of the stop pin 24, thereby releasing the gear 19 and associated gears which will continue to rotate until the dog arm 15 re-enters one of the deep toothed recesses of the count wheel, thereby returning the stop hook arm 18 into the path of the stop pin 24, and arresting the striking mechanism until the next half-hour period is reached. The gear 8' is driven by the spring gear 7' through a pinion gear 9'; also the gear 8' drives a cam 10' through a pinion gear 11'. The cam 10' has two recesses oppositely disposed and is also provided on its face with two pins 12' oppositely disposed to the recesses. The rock shaft 16 has also mounted thereon a short hook arm 16' cooperating with the peripheral edge of the cam 10', the purpose of which is to intermittently raise the dog arm 15 out of engagement with the teeth of the count wheel during its rotation whereupon when the dog arm comes in registry with one of the deep toothed recesses of the count wheel, the dog arm will drop, causing a return rotation of the rock shaft 16 and thereby throwing the hook arm 18 down in the path of the stop pin 24' on the wheel 19, thereby arresting the train of gears until such time arrives when the hook arm 18 is raised again out of the path of the pin 24.

Centrally journalled in the frame 5 is a rock shaft 25 upon which is mounted a lever arm 25' extending upwardly therefrom which is normally held in the path of a pair of cam pins 12' on the cam 10' by a coil spring 26. During the rotation of the cam, the pins 12' will cause the lever arm to be tripped on every half revolution of the cam.

The foregoing is a general description of one of several conventional spring wound clock mechanisms to which my electric switch arrangement and chime mechanism may be applied.

Referring more particularly to my electric switch arrangement in combination with a clock mechanism which is illustrated in the accompanying drawing:

Pivotally mounted upon the rock shaft **25** and extending downwardly in arcuate direction is a rocker arm **35** carrying at its free end a contact element comprising a sleeve member **36** secured to said arm and into which is secured an insulating plug member **37** which also carries a contact shoe element **38** to which is also attached a conductor wire **39** leading from the bottom of said shoe and permanently secured to the lower side of the rocker arm and up to and near the pivotal point of said arm and then terminating downwardly, having at its free end a metal eyelet **40** to which may be attached a conductor wire **41**, of any desired length, to the positive side of a transformer **42**, as shown.

Mounted upon the lower portion of frame **5** of the clock and insulated therefrom is a leaf spring contact member **43** having its free end extending beyond the right side of the clock frame and in registry with the contact shoe member **38**. The left end of the contact spring member is U-shaped and terminates in a short downward projection to which is attached a conductor wire **44** of any desired length, leading to the negative side of an electric two tone chime **51**. A conductor wire **54** leading from the transformer to the chimes completes the circuit. An electric socket plug **53** and a conductor cable **52** of any desired length attached to the transformer are herewith shown for furnishing the necessary current.

To prevent any short circuiting of the leaf contact member **43** with the clock frame, I have provided insulating clamping blocks **45** and **46** in which the leaf spring is clamped and held in spaced relation at one side of the clock frame and permanently fixed thereto by the tie-rod **47** and nut **48**. The free end of the leaf spring **43** is guided within an insulating block member **48'** which is secured to the clock frame by the tie-rod **49** and nut **50**.

Having described my invention, I claim as follows:

1. The combination with a clock mechanism of the spring wound type, of an electrical chime mechanism, an electrical contact member, a conductor leading from such member to the chime mechanism, a rocker arm pivotally mounted in said clock, an electrical contact carried by said arm, a transformer, a conductor leading from said arm contact to said transformer, a second conductor leading from said transformer to the electrical chime, and means controlled by the clock mechanism for actuating said arm at predetermined intervals in the operation of the clock to close the circuit for operating the chime.

2. The combination with a clock mechanism of the spring wound type, of an electrical chime mechanism, an electrical leaf spring contact member, electrical insulation means connecting one end of said member to the clock frame, electrical insulating guide means, connected to said clock frame and coacting with the free end of said member to guide the same in its movements, a rocker arm having a contact member thereon to engage the free end of said spring contact member, a transformer, a conductor leading from said arm contact to said transformer, a second conductor leading from said transformer to the electrical chime, and means controlled by the clock mechanism for actuating said arm at predetermined intervals in the operation of the clock to close the circuit for operating the chime.

3. The combination with a clock mechanism of the spring wound type, of an electrical chime mechanism, an electric circuit including said chime mechanism, a rocker arm pivotally mounted in said clock and having an electrical contact element thereon, an electrical contact member secured to said clock and connected in the chime circuit for cooperation with the contact on said rocker arm to close the chime circuit, a pair of conductors to said chime circuit, and means controlled by the clock mechanism for actuating said arm at predetermined intervals in the operation of the clock to close the circuit for operating the chime.

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