FRONT CHASSIS ASSEMBLY FOR TIME DELAY OR INTERVAL TIMERS

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ABSTRACT OF THE DISCLOSURE

Front chassis assembly for a time delay or interval timer including a chassis plate having a bushing therein protruding from the front side of the plate, a dial mounted on the front side of the plate coating with an indicator carried on an indicator shaft rotatably mounted in the bushing, a time period selector rotatably mounted on the bushing having a pointer portion and stop coacting with the timing pointer to set the timer, and a frictionally mounted knob adjusting assembly drivingly connected to the selector pointer to adjust its position on the dial.

This invention relates in general to timers, and more particularly to a front chassis assembly for a time delay or interval timer having an improved time setting mechanism, and still more particularly to a front chassis assembly for a time delay timer including a meter face that may be panel mounted where the time period may be knob adjustable.

The timer front chassis assembly of the present invention includes a zinc die cast chassis and plastic molded parts resulting in lower material costs and ease of assembly. The assembly may be panel mounted and presents a modern appearance with a meter face. An improved time setting mechanism includes a selector that enables precise selection of the time delay and coacts with the dial pointer. The selector is provided with a vernier adjustment to enhance the preciseness of the time delay in choosing the delay. A frictional mounting for the selector assures holding of a selection after it has been made. Coaction between the timing pointer and the selector is such to assure that the actual time delay coincides exactly with the chosen time delay by the selector. A friction knob is provided with the selector to protect the time setting mechanism.

Accordingly, it is an object of the present invention to provide an improved timer front chassis assembly having an improved time setting mechanism.

Another object of this invention is in the provision of a timer front chassis assembly having a modern appearance with a meter face and capable of being panel mounted.

Still another object of this invention resides in the provision of a timer front chassis assembly that may be inexpensively made with a zinc die cast chassis and plastic parts.

Other objects, features and advantages of the invention will be apparent from the following detailed disclosure, taken in conjunction with the accompanying sheets of drawings, wherein like reference numerals refer to like parts, in which:

FIG. 1 is a front elevational view of the timer front chassis assembly of the present invention;
FIG. 2 is a side elevational view of the chassis assembly;
FIG. 3 is a rear elevational view of the chassis assembly;
FIG. 4 is a front elevational view of the chassis assembly with the shield and knob assembly removed to show underlying parts;
FIG. 5 is a rear elevational view, partially fragmentary, of the shield and knob assembly as removed from the chassis;
FIG. 6 is an exploded side elevational view of the chassis assembly of the present invention;
FIG. 7 is a vertical sectional view taken through the assembly;
FIG. 8 is an enlarged and fragmentary view of the pointer attaching hub and illustrating its mounted position on the indicator shaft with the retaining screw removed; and
FIG. 9 is an exploded side elevational view of the friction knob employed in the timer of the invention, and illustrating the knob partially in section for purposes of clarity.

Referring now to the drawings, the timer front chassis assembly of the present invention, generally indicated by the numeral 10, is shown in completely assembled relationship in FIGS. 1, 2 and 7, and is adapted to be employed with a suitable time-motion-transmitting mechanism. In general, the front chassis assembly includes a chassis assembly or plate 11, a dial 12 secured to one side of the chassis plate 11, a transparent shield 13 covering the dial and secured to the chassis plate, a knob or timing adjustment assembly 14 mounted on the shield 13, a pointer assembly 15 to be drivingly connected to a time-motion-transmitting mechanism, and a time cycle selector assembly 16.

The chassis plate 11 is zinc die cast and includes a front side or face 17 and a back side or face 18. A pair of locating lugs 19 are provided on the front face 17 to coact with cutout portions 20 of the dial 12 locating the dial properly on the front face of the chassis plate. Drive screws 21 secure the dial to the chassis plate. The front face of the dial 12 is preferably white enamelled with indicia 22 that includes black graduated markings and numerals thereon. The indicia is accurately arranged along an arc of about 90°.

A bushing 23 is suitably press fitted into an opening in the chassis plate 11 to define a sleeve bearing 24 for rotatably receiving an indicator shaft 25. A flange 26 is provided on the bushing to properly seat the bushing in the chassis plate. An external bearing surface or stub shaft 27 is provided on the bushing at the front face 17 of the chassis plate for rotatably mounting the selector 28 of the time cycle selector assembly 16 for coaction with the dial. Spacing and mounting studs 29 extend from the back face 18 of the chassis plate 11 to suitably mount the entire chassis assembly to a panel. An annular recess 30 is provided in the back face 18 for receiving a gasket to enable sealing relation between the timer housing sleeve and the chassis plate.

The indicator shaft 25 includes a radial flange 31 that bears against the rear end of the bushing 23 when mounted in the bushing as seen in FIG. 7, a forward portion 32 that is being received in the bushing sleeve bearing 26, and a rear portion 33. At the very terminal end of the forward portion 32, the shaft is flatted at 34 to define a male coupling portion mateable with a female coupling portion in the form of an opening or socket provided in the hub 35 of the pointer 36 (FIG. 8). Thus, the pointer 36 of the pointer assembly 15 is locked into the indicator shaft 25 for rotation therewith, and a retainer screw 37 operates to retain the pointer on the shaft.

Timing power is applied to the indicator shaft 25 through a quadrant adjustment 38 that is adjustable secured to the rear portion 33. The quadrant adjustment 38 is a molded plastic part with a metal insert 39 suitably threaded to receive one or more set screws 40 for adjustably locking the quadrant adjustment to the indicator shaft 25. The insert 39 is suitably press fitted or staked.
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gear for engagement with said selector gear portion to define a vernier timing adjustment.

2. A front chassis assembly as defined in claim 1, and a transparent shield over the dial and front side of the chassis plate enclosing said selector and pointer.

3. A front chassis assembly as defined in claim 1, means spring loading said selector.

4. A front chassis assembly as defined in claim 3, and means spring loading said pointer toward said selector stop portion.

5. A front chassis assembly as defined in claim 1, wherein said knob adjusting assembly includes a knob shaft having the spur gear on one end and a knob assembly on the other end.

6. A front chassis assembly as defined in claim 5, and said knob assembly including means frictionally connecting same to said knob shaft.

7. A front chassis assembly for a time delay timer comprising, a chassis plate having front and back sides, a bushing in said plate extending from the back side and protruding from the front side thereby defining a sleeve bearing through the plate and a stub shaft at the front side, a dial mounted on the front side of the plate having arcuately arranged indicia along about a 90° arc, an indicator shaft rotatably mounted in said bushing sleeve bearing and extending from opposite sides of said bushing, a pointer secured to said indicator shaft at the front side of the plate and coacting with said dial, a timing cycle selector rotatably mounted on the bushing stub shaft at the front side of the plate, said selector including a pointer portion coating with said dial, a stop portion for said pointer and a segmental internal gear, a transparent shield mounted on said chassis plate covering the front side thereof together with the dial, pointer and selector, and a selector drive shaft frictionally and rotationally mounted on said shield and having a pinion gear in engagement with said selector segmental gear, the gear ratio between the pinion gear and selector segmental gear defining a vernier movement between the selector drive shaft and selector, whereby about one revolution of the selector drive shaft will cause traversing of the selector pointer portion along substantially the entire dial indicia.

8. A front chassis assembly as defined in claim 7, wherein said selector segmental gear includes thirteen teeth and said pinion gear includes ten teeth.

9. A front chassis assembly as defined in claim 8, and a gear mounted on said indicator shaft at the back side of said chassis plate.

10. A front chassis assembly as defined in claim 9, and spring means driving said indicator shaft and pointer toward the selector stop portion.

11. A front chassis assembly as defined in claim 10, and means spring loading said selector.

12. A front chassis assembly as defined in claim 7, wherein said selector segmental gear includes at least as many teeth as said pinion gear.

13. A front chassis assembly as defined in claim 7, wherein said selector segmental gear includes more teeth than said pinion gear.

14. A front chassis assembly for a time delay timer comprising, a chassis plate having front and back sides, a bushing in said plate protruding from the front side, a dial mounted on the front side of said plate, an indicator shaft rotatably mounted in said bushing and extending from opposite sides of said plate, a pointer secured to said shaft at the front side of the plate and coacting with said dial, a selector rotatably mounted on said bushing at the front side of the plate having a pointer portion coacting with said dial to set the timer, and a stop portion for said pointer, a transparent shield mounted over said front side of the chassis, a knob adjusting assembly supported on said shield and drivingly connected to said selector pointer portion to control movement thereof, said knob adjusting assembly including a knob shaft frictionally and rotatably mounted on said shield and extending from both sides thereof, means on the knob shaft for drivingly connecting to said selector, means on the knob shaft for mounting a knob thereon, and a knob mounted on said knob shaft having means for providing a frictional connection to said knob shaft.

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