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TERMINAL FOR ELECTRICAL APPARATUS

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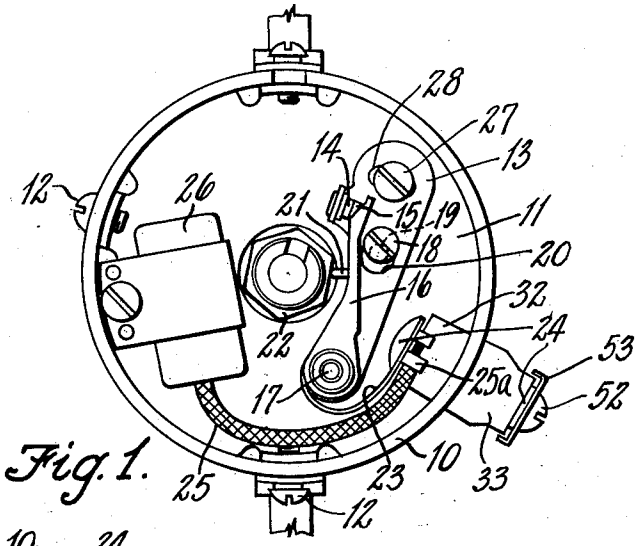


Fig. 1.

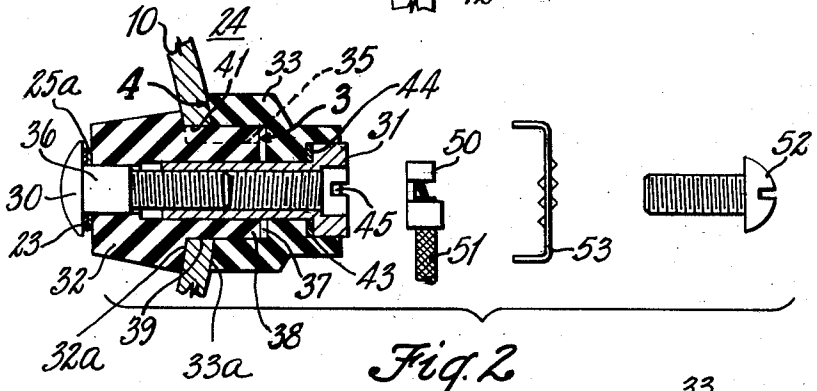


Fig. 2

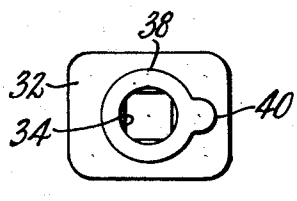


Fig. 3.

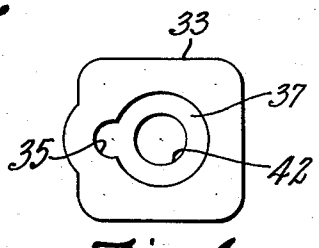


Fig. 4.

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TERMINAL FOR ELECTRICAL APPARATUS

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2 Claims. (Cl. 174—153)

1

This invention relates to terminals for an electrical apparatus, for example, ignition timers.

An object of the invention is to provide a terminal and means for insulatingly supporting the terminal by a metal housing of the apparatus such as the housing of an ignition timer having means for securing the terminal to the housing and to conductors within the housing, said means being independent of the use of any other device, such as a screw for fastening an external wire to the terminal. In the disclosed embodiment, this object is accomplished by the use of a terminal comprising a screw and a tubular nut threadedly engaged by the screw. The screw and nut extend within two non-conducting members, one of which extends from the interior through the housing and has a spline connection with the housing and with the external non-conducting member. The tightening of the nut on the screw secures conductors within the housing to the head of the screw and causes the non-conducting members to clamp the housing between them. The nut can be turned to permit loosening of the screw sufficiently to provide for removal or application of the conductors within the housing to the head of the screw while the non-conducting members remain in loose assembly with each other and with the housing. The nut provides for the reception of a screw for the attachment of an external conductor to the terminal of which the nut forms a part.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing, wherein a preferred embodiment of the present invention is clearly shown.

In the drawing:

Fig. 1 is a plan view of an ignition timer having a terminal embodying the invention.

Fig. 2 includes as a group of parts the terminal in section, a wire attached to a terminal clip, a lock washer and a screw used to attach the lock washer and the terminal clip to the tubular nut of the timer terminal.

Figs. 3 and 4 are end views of the terminal insulating members, these views being taken, respectively, in the direction of arrows 3 and 4 of Fig. 2.

Referring to Figs. 1 and 2, a housing 10 supports a breaker plate 11 attached to the housing by screws 12. Plate 11 supports a bracket 13 which carries a stationary contact 14 engageable with a movable contact 15 carried by circuit breaker lever 16 journaled on a pivot post 17 and insulated therefrom, said post being attached to

2

the plate 11 and providing a pivot for the bracket 13 which is adjustable by the turning of a slotted disc 18 attached to an eccentric shank 19 pivotally supported by the plate 11. Disc 18 is received by slot 20 of bracket 13. This adjustment varies the location of a rubbing block 21 attached to lever 16 relative to the ignition timer cam 22 against which the block is urged by leaf spring 23 attached to lever 16 at one end and at the other connected with a terminal 24 insulatingly supported by housing 10 and connected also by wire 25 with one foil of a condenser, the other foil of which is connected with a condenser enclosing case 26 attached to plate 11. A screw 27 passing through a slot 28 in bracket 13 and threaded into plate 11, secures the bracket in adjusted position.

The terminal 24 (Fig. 1) comprises, as shown in Fig. 2, a screw 30 and a tubular nut 31 threadedly engaged by the screw. These terminal members extend through non-conducting bodies 32 and 33. Body 32 has a spline connection with the screw 30. For this purpose, body 32 has a square opening 34 for receiving the square portion 36 of the shank of screw 30. Body 32 has a tubular extension 38 extending through a hole 39 provided by the housing 10 which includes a notch 41 for receiving a boss 40 of body 32, thus providing a spline which is received by a groove 35 in the external insulating body 33 which provides a pocket 37 for receiving the tubular extension 38 of body 32. Thus body 32 is splinedly connected with housing 10 and with body 33. Body 33 provides a hole 42 for receiving the nut 31 and provides a pocket 43 for receiving a lock washer 44 and the head of the screw 31 which is provided with cross slots (one shown at 45, Fig. 2) for receiving a screwdriver blade.

The screw 30 and the body 32 are assembled loosely together and are placed within the housing and are assembled therewith by movement of the tubular extension 38 through the hole 39 of the housing, the rib 40 being received by the notch 41 provided by the housing. The body 33 is assembled with the internal body 32 loosely, the groove 35 receiving the rib 40. The lock washer 43 is assembled upon the nut 31 and, while manually holding parts 30, 32 and 33 in assembly, the nut 31 is screwed onto the threaded shank of the screw 30. Before the nut is tightened, the leaf spring 23 and a terminal clip 25a of wire 25 are assembled between the head of the screw 30 and the body 32, said parts 23 and 25a having square notches for receiving the square shank portion 36 of the screw 30. Then

by use of a screwdriver, the nut **31** is tightened in order to maintain the assembly as shown in Fig. 2, left. When the terminal members **30** and **31** are tightened together, the terminal assembly cannot turn relative to the housing **10** since body **32** is splinedly connected with housing **10** and with body **33** and bodies **32** and **33** are provided, respectively, with cylindrical surfaces **32***a* and **33***a* which conform to the interior and exterior surfaces of the housing **10**.

An external conductor, such as terminal clip **50** attached to a wire **51**, is attached to the terminal nut **31** by a screw **52** passing through a lock washer **53**, the screw **52** threadedly engaging nut **31**. The tightening or loosening of the screw **52** does not effect any turning of nut **31** by reason of the fact that its threads are frictionally held by the threads of screw **30** which is prevented from turning since its square shank portion **36** is received by the square hole **34** in body **32** which has a splined connection with housing **10**. Nut **31** cannot be turned by threading the screw **52** therein also by virtue of the fact that the head of nut **31** is gripped by a lock washer which grips body **33** which is splinedly connected with body **32** which is splinedly connected with housing **10**.

While the embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. In combination with an apertured wall of a metal housing, an insulated terminal member adapted to pass through said aperture and comprising a telescopic element including two insulated parts, the first of said parts being adapted for insertion through said housing aperture and comprising a shouldered member having a hole therethrough and a reduced diameter extension thereon of sufficient length to extend outwardly at the opposite side of said wall, the second of

said insulated parts including a recess adapted to fit over said outwardly extending reduced diameter extension, said second part having a hole therethrough in substantial register with the hole in the first part, means for holding said parts together in telescopic arrangement with the wall interposed therebetween, said means comprising a conductor including male and female parts engageable within said terminal member and accessible from either end of said member.

2. An insulating bushing adapted to pass through an aperture in a conducting wall comprising in combination, two non-conducting members, one of which is partially insertable through said aperture so as to extend outwardly of said wall and the other of which is adapted to embrace the outwardly extending portion of the first member at the other side of the wall, key means disposed between the embraced portions of said members and engaging the wall for preventing relative rotation of the members with respect to each other and to the wall, and means for preventing axial displacement of said members, said means comprising a conductor adapted to draw said members into tight engagement with said wall, said conductor consisting of male and female members accessible from either end of said bushing and passing through aligned holes extending axially within said two bushing members.

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