

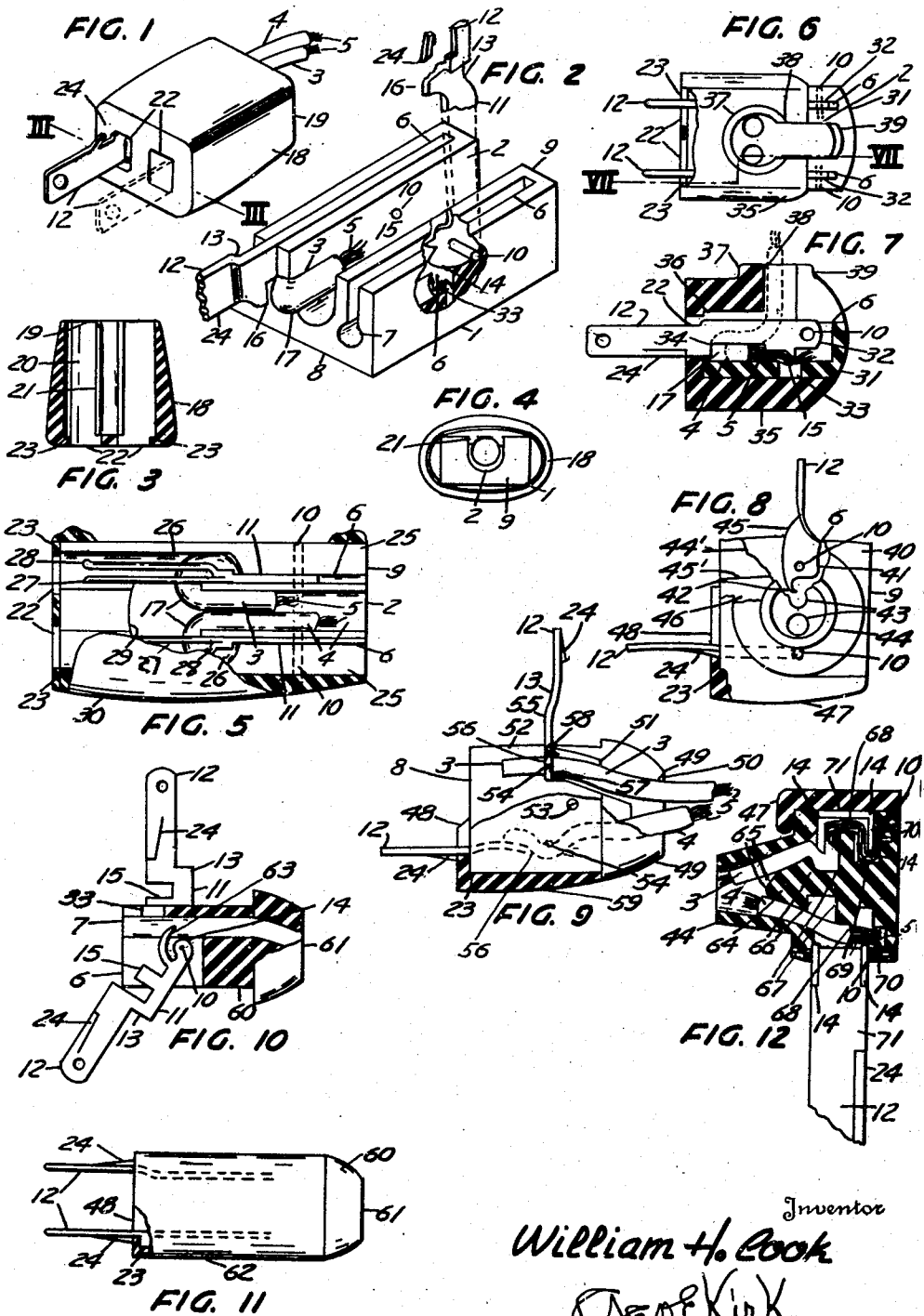
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TERMINAL MOUNTING ELECTRIC FITTING

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TERMINAL MOUNTING ELECTRIC FITTING

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This invention relates to electric fittings, more particularly to the movement of the terminal as to the insulation to anchor the conductor therein, the conductor holding even being effected upon its insulation jacket.

This invention has utility when incorporated in readily disconnectable electric fittings of the prong and socket type in an insulation jacket or rigid housing. A core insulation member with seat for pivotally mounting a terminal, has way thereto for an insulated conductor usually stranded wire. The swinging of the terminal is to pinch or pierce into the strand assembly, which may be thru insulation covering therefor, or there be kinking or direction change for the conductor to localize pull thereto and thus not directly upon the electrical connection of the terminal therewith.

Referring to the drawings:

Fig. 1 is a perspective view of an embodiment of the invention in a two-prong electric fitting, one prong being broken away;

Fig. 2 is a perspective view, on an enlarged scale, of the core insulation member for the fitting of Fig. 1, one partly broken away terminal being down in conductor wire clamping position and the other terminal being swung out to receive a wire, portions of the latter terminal and of the member being broken away;

Fig. 3 is a section thru the outer insulation member on a medial line lengthwise, as shown on Fig. 1;

Fig. 4 is an end elevation of the fitting of Fig. 1 from the conductor inlet end, or that opposite from the prongs;

Fig. 5 is a view with portions broken away, of socket type fitting, for terminals of the general character of Fig. 1;

Fig. 6 is an embodiment of the pivoted terminal in a two-prong angle fitting, the core being not fully seated in the outer assembly locking insulation housing therefor;

Fig. 7 is a section on the line VII-VII, Fig. 6, on a slightly larger scale, but with the assembly completed;

Fig. 8 is a plan view of another type of angle fitting having a different type of swingable terminal, a partially broken away terminal being swung out in position to engage a conductor wire to be fed thereinto, and the other terminal being fully seated and embraced by an outer insulation housing, shown as broken away in allowing the swing-out terminal to be released;

Fig. 9 is a view with parts broken away of a

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two-part insulation core for an insulation housing in a two-prong straight fitting;

Fig. 10 is a side view, with parts broken away of a two-prong insulation core for a straight fitting, the prongs or terminals being swingable toward each other into conductor line pinching position;

Fig. 11 is a plan view looking down upon the assembled fitting of Fig. 10; and

Fig. 12 is a fragmentary medial section thru an angle fitting with swing terminals adapted to tandem kink the lead wires.

An insulation core 1 (Fig. 2) has a central channel or way 2 into which may extend insulated conductors 3, 4, of wire strands 5. On each side of the open top way 2 as longitudinal of the core 1, is a narrow way or slot 6 having a generally cylindrical or enlarged bottom groove 7 opening with the slot at end 8 of the core member 1. At opposite end 9 of the member 1, the slots 6 are closed, while the way 2 extends thru and is open at each end 9, 8. The enlarged portion 7 here may extend not a third of the length of the slot 6 from the end 8.

Pivot pins 10, transversely of the slots 6 somewhat away from the grooves 7, and more close to the closed end 9 than the open end 8, provide mounting for a swing terminal 11 having a free end 12 and an intermediate offset 13. Adjacent the pivot pin 10, the terminal portion 11 has a cam 14 to a toothed section 15 as penetrating or pinching means to kink the strands 5 into a port 33.

A lead in wire, may or may not be terminally stripped of its insulation or covering 3, 4, to expose its strands 5. The wire strands with the insulation thereon may be thrust into a groove 7 to approach the closed end. This travel is permitted when the terminal 11 is swung out from the slot 6. Reverse or inward swing has the cam 14 slightly grip or hold the lead wire 3, or 4. Further swing toward aligning the terminal 11 with the slot 6, brings the toothed portion 15 into punching or penetrating relation for cutting thru the insulation, if such be present, and spreading the wire strands 5 for an efficient electrical conducting connection. The lead wire 3, 4, as emerging from the groove 7 is flexed toward the way 2 in order to clear tongue 16 of the terminal 11. There is a full return bend 17 in placing the lead wire 3, 4, in the way 2.

An insulation envelop or housing 18 has an open end 19 to a chamber portion 20 lengthwise of which is a slight tongue 21. By thrusting the housing 18 at its end 19 over the end 8 of the

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core 1, for the tongue 21 to close the open top of the way 2, there is a snug slip assembly of the envelop 18 to lock the swingable terminal prongs in the slots 6. In this assembly, the prong portions 12 project thru windows 22 in the envelop 18. When ledge portions 23 at these windows 22 abut the end 8, spring tongues 24 from the terminal prongs 12, may snap out to engage the housing 18 outside at the windows 22 and thereby lock the fitting together as a rigid unit.

The effective lead line anchoring into a terminal carrying electrical fitting disclosed in Figs. 1, 2, 3, 4, for prong type of unit, has utility in socket embodiment (Fig. 5). An insulation core 25, has from an end 9, thereof, for a portion of its longitudinal extent, a medial way 2, and on each side therefrom a slot 6. Pivot pins 10 rockably mount terminal portions 11 in the slot 6. The block of core 25, remote from the end 9 has widened way portions 26 from the slots 6. In alignment with the terminal portion 11 and integral therewith is a socket side portion 27, complementary to which is a rivet or weld attached socket side portion 28 in the outward widened way portion 26. Between the way portions 26 and as a cut-off abutment 29 there is a termination of the way 2, providing sufficient clearance for the return bends 17 of the lead wires 3, 4, to be wrapped back from the cam-squeezed and tooth penetrated strand regions 5 anchored by the terminal portions 11 in the core 25. The socket assembly may be completed by sliding an insulation envelop 30 over the block 25 from the end remote from the end 9 thereof, to bring its windows 22 in register with the open ends of the way portions 26 and the ledges 23 snugly to abut this end of the core 25. The windows 22 expose the free ends of the socket portions 27, 28, for receiving terminal prongs as thrust thereinto. As with the prong unit of Fig. 1, this socket unit (Fig. 5), has any pull strain of the lead lines relatively to the unit, taken at the return bends 17 and directly on the insulation covering for the strands 5. Furthermore this strain is taken by the insulation block core, and not upon the terminal nor the strands as press fitted into efficient electric circuit completing association.

A two-prong angle fitting (Figs. 6, 7) is provided with an insulation core member 31 having slots 6 upon opposite sides of a central way 2. Pivot pins 10 swingably mount terminal portions 11 in the slots 6. A penetrating tooth portion 15 swings into register with a port 33 of the block or core 31, to squeeze wire strands 5 into binding or locking efficient electrical contact relation. A clearance region 34 is close to pinching proximity to the return bend 17 of the lead line 4 from the locked strands 5. An insulation housing or envelop 35 has an open way 36 therethru. An arc rim 37 has its open side 38 adapted to be closed by an upstanding minor arc or lug 39 rising from the core 31 as a terminus for the way 2 in directing the lead lines 3, 4, from the bends 17, thru the ring entrance 37, 39, of this unit. With the block 31 thrust fully into the envelop 35, the terminal prongs 12 have their spring tongues 24 snap over the end of the envelop 35 about the windows 22 to hold the core 31 in the unit assembly. The prongs 12 are thus locked to protrude thru the windows 22.

An angle fitting of a somewhat different type, but still with the movable terminals to anchor the lead wires therewith, is shown in Fig. 8. A block 40 has pivot pins 10 across slots 6 to swingably mount terminal portions 41 having tooth

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portion 42 thereby movable across a port 43 from intake throat or ring entrance 44 for a pair of lead wires. Away from its end 8, the core 40, has lateral clearance 44' for terminal 90° twists 45. This permits prong terminals 12 to swing against a face 45' of the core 40 in lead line anchoring, for the prongs 12 to be in parallel upon opposite sides of spacer portion 46 of the core 40. A U-shaped envelop 47 is then thrust 10 over the prongs 12 to slide against the ring 44. Bounds of a window 48 in the envelop 47 are engaged by the tongues 24 of the prongs 12, and lock the fitting into a unit.

A movable terminal in a straight fitting is 15 shown in Fig. 9. Its core comprises a pair of similar complementary sections 49 having opposing semi-ring portions 50 for lead wire entrance. Half ways or complementary groove passages 51 therefrom extend to wider open side regions 52 toward the end 8. A screw 53 assembles the sections 49 into a core unit, and simultaneously seats trunnions 54 of rockable terminals 55 across the passage 51. The terminal 55 has a port 56 there- 20 thru as a window in register, as open, with the passage 51 when the terminal has its prong end 12 outward. Upon extending a lead line 3, 4, thru the throat to enter a passage 51 and be thrust thru the port 56, the prong portion 12 as outward beyond its offset 13, may be swung 30 toward the end 8 for the fully seated prongs to be parallel. In this travel, a tooth portion 57 at the free end of the terminal 55 moves toward the throat 50 to penetrate the covering of the lead wire 3, as the wire is kinked thru the open- 35 ing 56 and an additional penetrating tooth 58 crowds into the coating of the lead wire 3 as a second reinforcing anchoring means, supplementing the kink against working clear of the terminal 55. An insulation envelop 59 may now be thrust over the core unit 49 for the prongs 12 to protrude thru its window 48 and the tongues 24 to engage the window bounds in holding the core 49 against the ledges 23.

Oppositely swingable terminals (Figs. 10, 11) 45 are in a core 60. Pivot pins 10 swingably mount terminal portions 11 in oppositely open slots 6 having groove bottoms 7 separately from an entrance throat 61. The lead wires are thrust along in the grooves 7 past the terminals as swung 50 outward. In-swing causes arc tooth 63 to pierce thru the coating outward from the pivot 10 and swing back as on thru for a return thrust or piercing in contacting the strands 5 with the terminal tooth 63. A straight tooth 15 from the terminal portion 11 may then kink the end of the lead wire into a port 33. The prongs 12 of the terminals as outward beyond the offsets 13, are brought into parallelism. An envelop 62 is slipped over the core 60 for the prongs 12 to extend thru the window 48 and have their tongues 24 engage the window bounds in holding the core 49 against the ledges 23 in assembling the unit.

Under the invention herein, a swing terminal may make two kinks in a lead wire (Fig. 12). 65 An insulation core 64 has an entrance throat 44 for lead wires 3, 4, to enter passages 65. The passage 65 has a centerward dip enlargement 66 to an abrupt rise terminus 67 with a less diameter way 68 entrance to a second inward dip 69 to a small end 70.

Pivot pin 10 mounts a terminal 71 having cam cheeks 14 in parallel as arc portions clear of the way portions 66, 69, when the terminal prongs 12 are outward from the opposite sides of the 75 core 64. The lead wires 3, 4, may have terminal

bare strands 5. The wires are thrust thru the throat 44 into the passages 65 for the strands 5 to be therein adjacent the end 70. The wire covering or insulation portion may approach the less diameter way 68. Swinging of the terminal prong portions 12 toward parallelism, causes the cam portions 14 to thrust a kink of the insulated or covered wire 3, 4, into the enlargement 66, in providing substantial anchoring thru the insulation. Simultaneously, the parallel cam portions 14 enter the dip portions 69 in producing a kink in the bare strands 5 in providing snug electric contact with the terminal. Then with the prongs 12 thru the window 48 in the envelop 47, the envelop 47 is slipped over the core 64 to a limit ledge 23, and the spring tongues 12 lock the unit assembled.

What is claimed and it is desired to secure by Letters Patent is:

1. A device of the class described comprising a contact blade having a pivot, an inner body member having a face and a recess in the member extending from the face, said recess including a seat for the blade pivot, an electric conductor in a portion of the recess, said blade having a prong and a tongue, said tongue coacting to pinch the conductor in the recess upon swinging movement of the blade on its pivot to position the prong to protrude from said member face, and an outer body member slidable over the inner member to lock the blade in protruding prong position against shifting relatively to the inner member and conductor.

2. An electric fitting inner insulation member having an end face with a terminal-positioning-recess extending from said face, said member recess having in communication therewith a conductor wire recess to a different face of the member, said terminal recess including a bearing, a terminal having a complementary bearing coacting in assembly with the member bearing for the terminal to swing on the bearing to register with the recess and extend beyond the end face in providing a prong, said terminal including a tongue adapted to coact to pinch a conductor wire in the conductor wire recess upon the swinging of the terminal into terminal-recess register position, and an outer insulation member movable to embrace the terminal and inner member to lock the terminal in the wire pinching register position.

3. An electric fitting member having a recess therealong with a laterally open portion, a conductor wire extending into the recess, a prong-providing terminal having swingable mounting to register in the recess open portion, the terminal including a tongue then coacting to pinch against the wire, and an outer member slidable over the terminal registering open portion to lock the terminal to pinch the wire and direct the ter-

terminal prong to protrude from the assembled members.

4. A device of the class described comprising outer and inner body members, one of said members having a hole therein directed toward a seat therealong, a prong-providing contact blade adapted to be positioned in the seat, and an electric conductor wire thru the hole and extending along the blade at the seat, said seat providing a bearing for relative angular movement between the blade and said seat-providing one member, said blade including a tongue coacting in said movement to pinch-anchor the hole-held wire in said one member, the other member being movable relatively to the blade and one member to lock the blade to hold the wire pinched and the prong to protrude from the device.

5. An electric fitting comprising an inner insulation member having a face with an opening therefrom for a pair of lead-in conductor wires and an additional face with partially open side recess pair therefrom in communication with said opening, said recesses each providing a bearing, a pair of prong-providing terminals each having a bearing for swingable mounting in one of said recess bearings as complementary thereto, each of said terminals having a tongue, lead-in-wires directed by the opening to said communication with the recesses, said respective terminals being swingable on the bearing mounting therefor to thrust the tongues to pinch the different lead-in wires upon swinging of the terminals to register with the recesses and the prongs to protrude from said additional face, and an outer insulation member movable relatively to the inner member and terminals to lock the assembly.

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