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Marx

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[45] **May 9, 1972**

[54] PLUG LOCK

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[21] Appl. No.: **101,262**

[52] **U.S. Cl.** **339/37,** 70/57, 339/82

[51] **Int. Cl.** **H01r 13/44**

[58] **Field of Search** 339/37, 36, 75, 82; 70/57, 70/58

[56] **References Cited**

UNITED STATES PATENTS

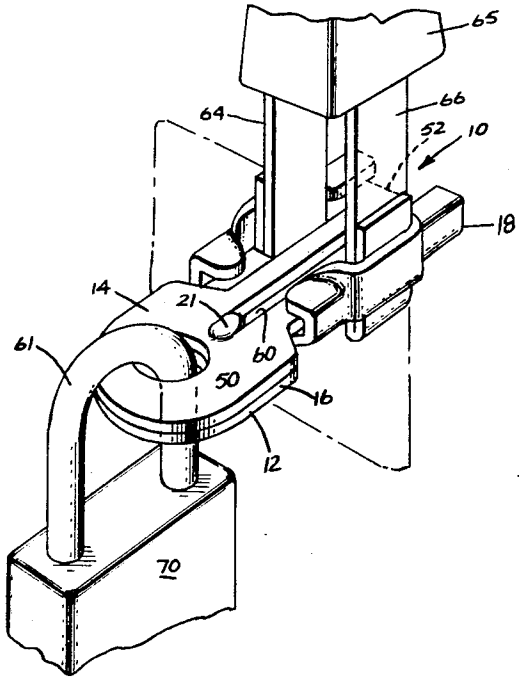
3,416,123	12/1968	Husebo	339/37
2,733,416	1/1956	Evalt	339/37
2,654,073	9/1953	Katz	339/37
3,539,968	11/1970	Tunstall et al.	339/37
3,345,600	11/1967	Scherer	339/37
2,844,805	7/1958	Darrell	339/37
3,535,899	10/1970	Gardner et al.	339/37 X

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[57] **ABSTRACT**

A lock for a conventional electrical plug comprising a frame and bolt which cooperates with the frame to secure the lock to the prongs of the plug, thereby to short circuit the prongs of the plug and to prevent the same from being inserted into a conventional electrical outlet until the lock is removed. In a specific embodiment, the frame and bolt have openings therein which coincide when the frame and bolt are in a locking position such that the shackle of a padlock can be positioned in the openings thereby to prevent the frame and bolt of the lock of the invention from being removed from a plug without removing the padlock from the lock.

11 Claims, 9 Drawing Figures



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SHEET 1 OF 2

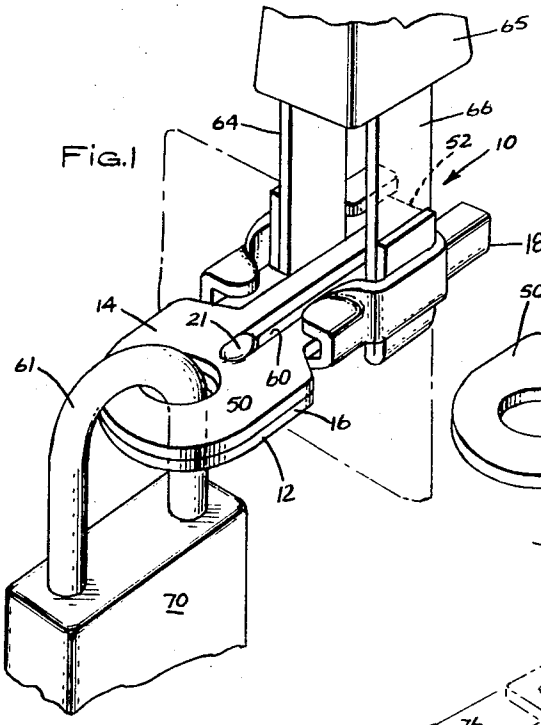


FIG. 1

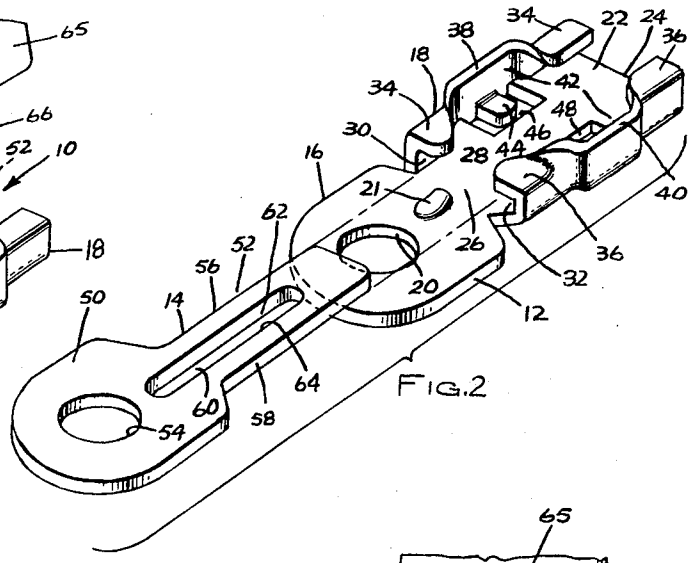


FIG. 2

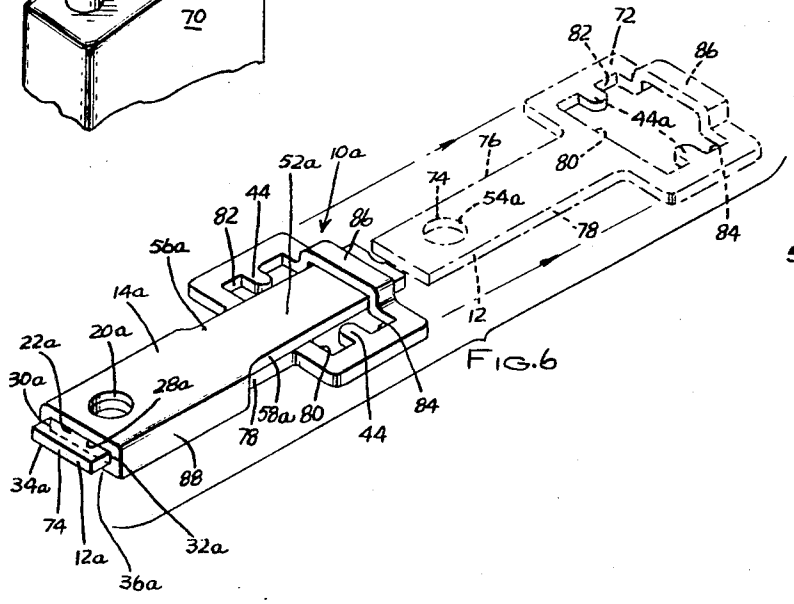


FIG. 6

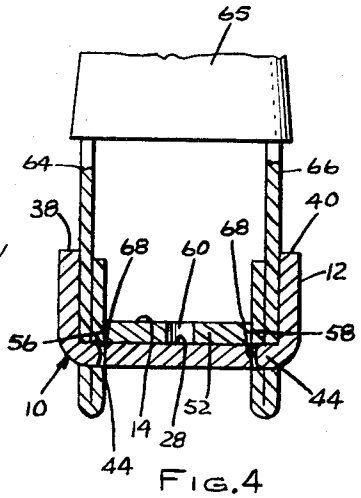


FIG. 4

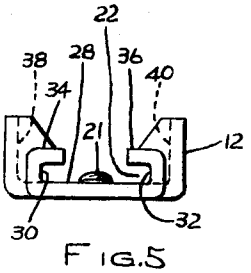


FIG. 5

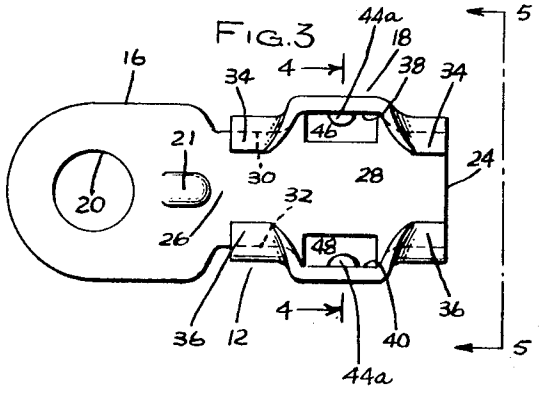
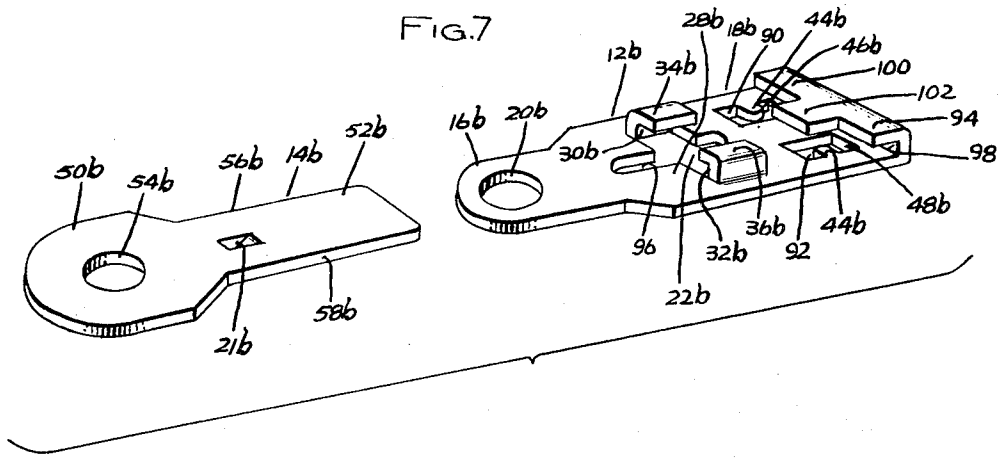


FIG. 3

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FIG. 7



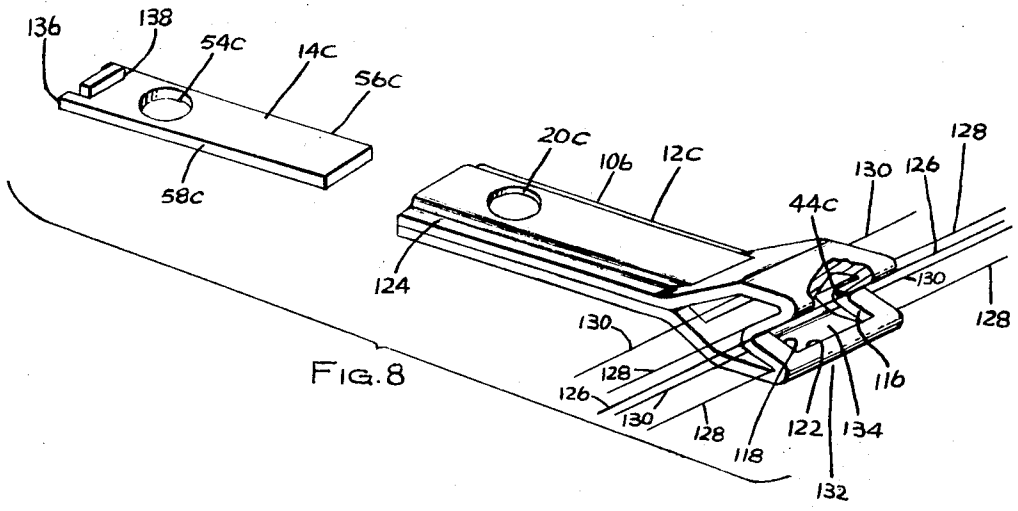
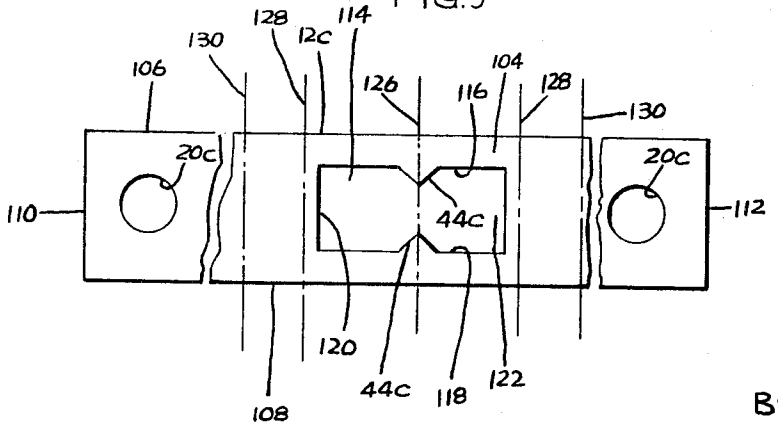


FIG. 8

FIG. 9



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PLUG LOCK

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a device for preventing conventional electrical plugs of the type having two parallel prongs from being used and more particularly, to a lock which can be secured on a plug in a manner to short circuit the prongs of the plug and to prevent the same from being inserted into a conventional electrical outlet until the lock is removed.

2. Description of the Prior Art

Locks for electrical plugs have heretofore been proposed. However, many of these devices have been unduly complicated and inconvenient to use. Many of these devices include several pieces and parts, and some of these devices include conventional lock mechanisms including tumblers and the like. Other devices include only a few parts, but the parts are structurally complicated such that the parts cannot be easily or inexpensively manufactured. It is therefore desirable to provide an improved plug lock which is simple in construction and can be relatively easily and inexpensively manufactured and conveniently used.

SUMMARY OF THE INVENTION

It is an object of this invention to provide an improved plug lock.

It is another object of this invention to provide an improved plug lock including only a few pieces, each of which can be relatively easily and inexpensively manufactured by conventional techniques.

It is yet another object of this invention to provide an improved plug lock which can be relatively easily and inexpensively manufactured by conventional techniques from conductive materials, for example, metals, and secured to a plug in a locking position so as to electrically short circuit the prongs of the plug and to prevent the same from being inserted into a conventional electrical outlet thereby rendering the plug inoperative until the plug lock is removed.

A further object of this invention is to provide an improved plug lock comprising two pieces each of which can be inexpensively manufactured and which when secured to a plug in a locking position can be held in that position by a conventional padlock such that it cannot be removed from the plug without mutilating the plug lock or the padlock.

In the broader aspects of this invention, there is provided a lock for an electrical plug of the type having two parallel prongs each of which has an opening therein adjacent to the distal end thereof comprising a frame and a bolt which cooperates with the frame when the bolt is assembled on the frame in a locking position to secure the frame and the bolt to the prongs of the plug, the frame or the bolt having an element which is positioned in the opening of the prong.

BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a perspective and fragmentary view of a preferred embodiment of the plug lock of this invention secured to a plug showing the plug lock held in its locking position by a conventional padlock;

FIG. 2 is an exploded, perspective view showing the two pieces of the plug lock of this invention illustrated in FIG. 1, disassembled;

FIG. 3 is a top view of the frame of the plug lock illustrated in FIGS. 1 and 2;

FIG. 4 is a fragmentary, broken-away and sectional view of the plug lock of this invention shown in FIGS. 1 through 3, taken substantially along the section line 4—4 of FIG. 3;

FIG. 5 is an end view of the frame of the plug lock of this invention illustrated in FIGS. 1 through 4, taken substantially along the line 5—5 of FIG. 3;

FIG. 6 is a perspective view of a second preferred embodiment of the plug lock of this invention shown assembled and in a locking position in solid lines and exploded and disassembled in dashed lines;

FIG. 7 is an exploded, perspective view showing the two pieces of a third preferred embodiment of the plug lock of this invention;

FIG. 8 is an exploded, perspective view showing the two pieces of a fourth preferred embodiment of the plug lock of this invention; and

FIG. 9 is a perspective view of a sheet of metal from which the frame of the plug lock illustrated in FIG. 8 is formed.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, and specifically to FIGS. 1—5, there is shown a preferred embodiment of the plug lock **10** of the invention. Plug lock **10** comprises a frame **12** and a bolt **14**. The frame **12** and bolt **14** are assembled as shown and cooperate together to function as a plug lock, as will be described hereinafter.

Frame **12** comprises a flat end portion **16** and a formed end portion **18**. Portion **16** is provided with an opening **20** centrally located therein and an upset boss or like device **21**, the purpose of which shall be mentioned hereinafter. Portion **16** and portion **18** define the opposite ends of frame **12**.

Portion **18** has an elongated groove **22** therein extending from portion **16** the entire length of portion **18**, groove **22** has opposite open ends **24** and **26**. Groove **22** is provided with a bottom **28**, upstanding sides **30** and **32** and portions **34** and **36** which are spaced from and overlie bottom **28**. As can be seen from the drawings, bottom **28** is a continuation of a surface of portion **16**.

Frame **12** also is provided with side portions **38** and **40**. Portions **38** and **40**, respectively, upstand beyond portions **34** and **36** and are spaced apart a distance greater than sides **30** and **32**. Portions **38** and **40** have facing surfaces **42**.

Bottom **28** is provided with spaced openings **46** and **48**. Opening **46** is adjacent to side wall **30** and portion **38**. Similarly, opening **48** is adjacent side wall **32** and portion **40**. Secured to both portions **38** and **40** is a protrusion **44**. Both protrusions **44** extend from surfaces **42** toward each other; however, protrusions **44** do not extend beyond sides **30** and **32**. Protrusion **44** on portion **38** is positioned in opening **46**. Protrusion **44** on portion **40** is similarly positioned in opening **48**.

Bolt **14** is provided with a flat end portion **50** and a tongue portion **52**. Portion **50** is shown to have the same shape and dimensions as portion **16** of frame **12**. An opening **54** is provided in portion **50** in a centrally located position, such that when portion **50** is superposed on portion **16** and bolt **14** and frame **12** are assembled as shown in FIG. **1**, opening **54** and opening **20** can be coaxially positioned.

Tongue **52** is elongated and extends from portion **50**. Tongue **52** and portion **50** are the opposite end portions of bolt **14**. Tongue **52** has opposite sides **56** and **58**. Sides **56** and **58** are parallel and extend the entire length of tongue **52**. An elongated slot **60** is positioned in tongue **52**. Slot **60** has opposite sides **62** and **64** which are spaced from and are parallel to sides **56** and **58**. Slot **60** is spaced from the distal end of tongue **52** and opening **54**.

In operation, bolt **14** can be assembled on frame **12** by inserting tongue **52** in groove **22** and securing the upset boss **21** in slot **60**. With the tongue **52** in groove **22**, tongue **52** is positioned between bottom **28** and overlying portions **34** and **36** with tongue sides **56** and **58** respectively positioned adjacent to frame sides **30** and **32** such that tongue **52** cannot be removed from slot **22** unless the frame or the tongue is deformed from the shape illustrated. In this locking position, tongue sides **56** and **58** are spaced from portions **38** and **40**.

The upset boss 21 and slot 60 allow tongue 52 to slide in and out of the locking position in the direction shown in FIG. 2, but prevent the frame 12 and bolt 14 from becoming disassembled in normal use.

As shown in FIGS. 1 and 4, the prongs 64 and 66 of a conventional electric plug can be positioned in the openings 46 and 48 and the tongue 52 can be slid into groove 22 and positioned between prongs 64 and 66. Protrusions 44 are positioned in the openings 68 of the prongs 64 and 66 and prongs 64 and 66 are positioned between surfaces 42 and tongue sides 56 and 58, as shown in FIG. 4. Openings 68 or recesses which function similarly to openings 68 as far as this invention is concerned are conventional electrical plugs of the type illustrated.

When plug lock 10 of this invention is assembled on a conventional electric plug and positioned in the locking position as described, plug lock 10 cannot be removed from the plug without deforming either bolt 14 or the frame 12. Since the openings 20 and 54 can be coaxial in this position, a shackle 68 of a conventional padlock 70 can be positioned in the openings 20 and 54. In this manner, lock 70 will ensure that plug lock 10 will remain on the plug until it is removed by a person having a key to lock 70.

Referring now to FIG. 6, a second preferred embodiment of the plug lock of this invention is shown. This embodiment 10*a* comprises a bolt 14*a* and a frame 12*a*. A suffix herein will be used to denote like but different parts of two embodiments. Frame 12*a* has opposite end portions, portion 72 and tongue portion 74. Tongue portion 74 is shown to be an elongated member having parallel sides 76 and 78 and an opening 54*a* therein. Portion 72 has an opening 80 therein, opening 80 having opposite facing sides 82 and 84. Extending from opposite sides 82 and 84 are protrusions 44*a*. Protrusions 44*a* extend into opening 80 from sides 82, 84 toward each other. Portion 72 also includes a strap 86. Strap 86 is spaced from tongue portion 74 by opening 80.

Bolt 14*a* has a tongue portion 52*a* and a grooved portion 88. Tongue portion 52*a* and grooved portion 88 are the opposite end portions of bolt 14*a*. Tongue 52*a* has opposite parallel and spaced apart sides 56*a* and 58*a* which extend the entire length of tongue 52*a*. Grooved portion 88 includes a groove 22*a* defined by a bottom 28*a*, opposite sides 30*a*, 32*a* and overlying portions 34*a* and 36*a*. Bottom 28*a* has an opening 20*a* therein.

In operation, embodiment 10*a* functions similarly to embodiment 10 above-described. In this embodiment, prongs 64 and 66 of plug 65 are inserted into opening 80 and the protrusions 44*a* are inserted into openings 68 of the prongs. The bolt 14*a* is assembled on portion 74 of the frame as illustrated with tongue portion 74 in groove 22*a* and tongue portion 52*a* beneath strap 86. The tongue portion 52*a* is positioned between prongs 64 and 66, thereby securing the plug lock 10*a* to plug 65. Openings 20*a* and 54*a*, respectively, are provided in portion 74 of frame 12a and portion 88 of bolt 40*a* such that a shackle 68 of a padlock 70 can be positioned in the openings when the bolt 14*a* and frame 12*a* are assembled as above-described.

Referring to FIG. 7, a third preferred embodiment of the plug lock of this invention is shown. This embodiment comprises a frame 12*b* and a bolt 14*b*.

Frame 12*b* comprises a flat end portion 16*b* and a formed end portion 18*b*. Portion 16*b* is provided with an opening 20*b* centrally located therein. Portion 16*b* and portion 18*b* define the opposite ends of the frame 12*b*.

Portion 18*b* has a groove 22*b* formed therein. Groove 22*b* has a bottom 28*b*, upstanding side 30*b* and 32*b*, and portions 34*b* and 36*b* which are spaced from and overlie groove bottom 28*b*.

Frame 12*b* is provided with spaced openings 46*b* and 48*b*. Openings 46*b* and 48*b* are spaced form opening 20*b* by groove 22*b*. Openings 46*b* and 48*b* have facing surfaces 90 and 92. A protrusion 44*b* is secured to and extends from each of the surfaces 90 and 92. Protrusions 44*b* are respectively located in openings 46*b* and 48*b* and extend toward each other.

Frame 12*b* is further provided with an end member 94 and a slot 96. Slot 96 is in groove bottom 28*b* and extends longitudinally of frame 12*b* between groove sides 30*b* and 32*b*. The purpose of slot 96 will be mentioned hereinafter.

End member 94 is positioned at the distal end of portion 18*b* of frame 12*b*. Member 94 is spaced from groove 22*b* by the openings 46*b* and 48*b*. Member 94 comprises an end wall 98 and a portion 100 which is spaced apart and overlies the surface of portion 18*b* which is in the same plane as groove bottom 28*b*. Portion 100 has a portion 102 thereon which extends between the surfaces 90 and 92 of the openings 46*b* and 48*b*.

Bolt 14*b* is provided with a flat end portion 50*b* and a tongue end portion 52*b*. Portion 50*b* is shown to have the same shape and dimensions as portion 16*b* of frame 12*b*. An opening 54*b* is provided in portion 50*b* in a centrally located position such that when bolt 14*b* is positioned in groove 22*b* with the distal end of tongue end portion 52*b* in close proximity to end wall 98 of member 94 and with portion 50*b* superposed on portion 16*b*, openings 54*b* and 20*b* are coaxial.

Tongue portion 52*b* is elongated and has opposite sides 56*b* and 58*b*. Sides 56*b* and 58*b* are parallel and extend the entire length of tongue 52*b*. Positioned between sides 56*b* and 58*b* is an upset boss or like device 21*b* which cooperates with slot 96 in frame 12*b* in a manner similar to device 21 and slot 60 of the preferred embodiment illustrated in FIGS. 1 through 4. Boss 21*b* and slot 96 prevent the frame 12*b* and bolt 14*b* from becoming disassembled in normal use.

In operation, embodiment 10*b* functions similarly to embodiments 10 and 10*a* above-described. Bolt 14*b* is assembled in slot 22*b* and connected to frame 12*b* by device 21*b* and slot 96. The prongs 64 and 66 of a plug 65 are inserted into openings 46*b* and 48*b* and the protrusions 44*b* are inserted into the openings 68 of the prongs. Slot 96 will allow the bolt 14*b* to be slid into a locking position in which portion 50*b* is superposed on portion 16*b* and openings 20*b* and 54*b* are coaxial. In this locking position, the distal end of the tongue portion 52*b* is positioned closely adjacent to end wall 98 of end member 94 and between overlying portion 100 of end member 94 and the facing surface of portion 18*b* of frame 12*b*. Further, in this locking position, tongue portion 52*b* is positioned between the prongs 64 and 66 as in the prior embodiments 10 and 10*a* hereinabove described.

Referring now to FIGS. 8 and 9, a fourth preferred embodiment 10*c* of the plug lock of this invention is shown. This embodiment 10*c* comprises a bolt 14*c* and a frame 12*c*. Frame 12*c* is formed from a strip 104 of material such as that shown in FIG. 9. Strip 104 is elongated with opposite sides 106 and 108 and opposite ends 110 and 112. Sides 106 and 108 are spaced apart and parallel. Ends 110 and 112 are also spaced apart and parallel, thereby giving strip 104 an elongated rectangular shape. Intermediate sides 106 and 108 and ends 110 and 112 is positioned a rectangular opening 114. Opening 114 has opposite sides 116 and 118 which are spaced apart and parallel to strip sides 106 and 108. Opening 114 also has opposite ends 120 and 122 which are similarly spaced apart and parallel to strip ends 110 and 112. Secured to sides 116 and 118 are two protrusions 44*c*. Protrusions 44*c* are positioned in opening 114 and extend toward each other.

Strip 104 has two openings 20*c* therein. Openings 20*c* are positioned, respectively, between opening 114 and the strip ends 110 and 112. One of the openings 20*c* is adjacent to end 110; the other opening 20*c* is adjacent to end 112.

Strip 104 is bent and formed into the shape illustrated in FIG. 8. Strip portions adjacent to the opposite ends 110 and 112 are superposed one over the other in a manner such that ends 110 and 112 are in the same plane and openings 20*c* are coaxial. Adjacent to ends 110 and 112, strip 104 is formed into a grooved portion 124 having a groove therein in which bolt 14*c* may be positioned. Sides 106 and 108 from end to end of groove portion 124 are joined together as by crimping or welding, or the like. The portion of strip 104 surrounding opening 114 is folded about lines 126, 128 and 130 into formed portion 132 of frame 12*c* and the shape shown in FIG.

8. Opening **114** provides an end opening **134** in formed portion **132**.

Bolt **14***c* is provided with opposite sides **56***c* and **58***c* which extend the entire length of bolt portion **14***c*. These sides are spaced apart and parallel to each other as in the previously described embodiments **10**, **10***a* and **10***b*. Adjacent to one end **136** of bolt **14***c* a stop **138** is provided and an opening **54***c*. Both the thickness of bolt **14***c* and the distance between sides **56***c* and **58***c* are such that bolt **14***c* can be positioned within the groove of groove portion **124**.

In operation, embodiment **10***c* functions similarly to embodiments **10**, **10***a* and **10***b* above-described. Prongs **64** and **66** are inserted into the end opening **134** and the protrusions **44***c* are inserted into the openings **68** of the prongs. Bolt **14***c* is inserted into the groove portion **124** of the frame **12***c* and stop **138** is engaged to the frame **12***c*. In this position, bolt **14***c* is positioned between the prongs **64** and **66** and the prongs **64** and **66** are positioned, respectively, between opening sides **116** and **118** and bolt sides **56***c* and **58***c*, thereby securing the plug **65** to plug lock **10***c*. In this position, openings **20***c* are coaxial with opening **54***c* such that a shackle **68** of a padlock **70** can be positioned therein.

As shown and described, each of the embodiments of the invention comprise two pieces made of electrically conductive material. Each of the pieces may be formed of sheet metal and manufactured utilizing only punching and pressing machinery. This allows the plug lock of this invention to be manufactured relatively inexpensively.

Further, it will be noted that once the plug lock of this invention is locked to a conventional plug with a conventional padlock in the manner described hereinabove, the plug lock of this invention cannot be removed therefrom by a person not having a key to the padlock without deforming the pieces of the plug lock or destroying the padlock. So long as the plug lock of the invention is secured to the plug, the plug cannot be used as the plug lock of the invention will short circuit the prongs of the plug and prevent the plug from being inserted into a conventional electrical outlet. It should be noted that the shackle **68** of a single padlock **70** can be positioned within the openings **20**, **54** or **20***a*, **54***a* of more than one plug lock of this invention, if desired.

While there have been described above the principles of this invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of this invention.

What is claimed is:

1. A lock for an electrical plug of the type having two parallel prongs each of which has an opening therein adjacent to the distal end thereof comprising: a frame having a surface against which a prong of a plug can be positioned, and a bolt which cooperates with said frame when said bolt is assembled on said frame in a locking position to secure said frame and bolt to the prongs of a plug, one of said frame and bolt having an element thereon which is positioned in the opening of a prong positioned adjacent to said surface and the other of said frame and bolt holding said element in said opening when said frame and bolt are assembled on a plug and are in said locking position, at least one of said frame and bolt being an electrical conductor and electrically connecting the prongs of a plug when said bolt and frame are assembled thereon and in said locking position, and means for holding said frame and bolt in a locking position wherein said frame partly surrounds said bolt when said frame and said bolt are in said locking position, said bolt being slidable into and out of said locking position, said element extending in a direction transverse to the direction in which said bolt slides into and out of said locking position.

2. The lock of claim **1** wherein said frame has a slot therein, said slot having a bottom and an upstanding side, said frame having a portion thereof overlying said bottom, said bolt being slidably positioned in said slot between said bottom and frame portion.

3. The lock of claim **2** wherein said bolt when said bolt and frame are in said locking position and assembled on a plug is positioned between the prongs of the plug.

4. The lock of claim **3** wherein said frame bottom has an opening therein in which said adjacent prong is positioned when said frame is positioned on a plug.

5. The lock of claim **4** wherein said surface is the surface of one of said frame sides and said element is secured to said surface, said element extends toward the other of said frame sides.

6. The lock of claim **4** further comprising a second element secured to said other frame side, said elements extending outwardly of said frame sides toward each other so as to be positioned on the openings, respectively, of the prongs of a plug when said frame and bolt are assembled thereon.

7. The lock of claim **4** further comprising means for holding said frame and bolt together in assembled condition.

8. The lock of claim **4** wherein said means for holding said bolt and frame in said locking position are openings in both said bolt and frame which are coaxial when said bolt and frame are in said locking position, whereby the shackle of a padlock can be positioned in said openings.

9. The lock of claim **1** wherein said frame and bolt assembled on a plug and in said locking position are secured to both prongs of said plug.

10. The lock of claim **1** wherein said frame has opposite ends, each opposite end having an opening therein, one of said end openings being the entrance to a slot in which said bolt is positioned when said frame and bolt are assembled, the other end opening is partially bounded by said frame surface against which a prong of a plug on which said frame is assembled is positioned.

11. The lock of claim **10** wherein said bolt is positioned in both of said end openings when said frame and bolt are in said locking position.

* * * * *