

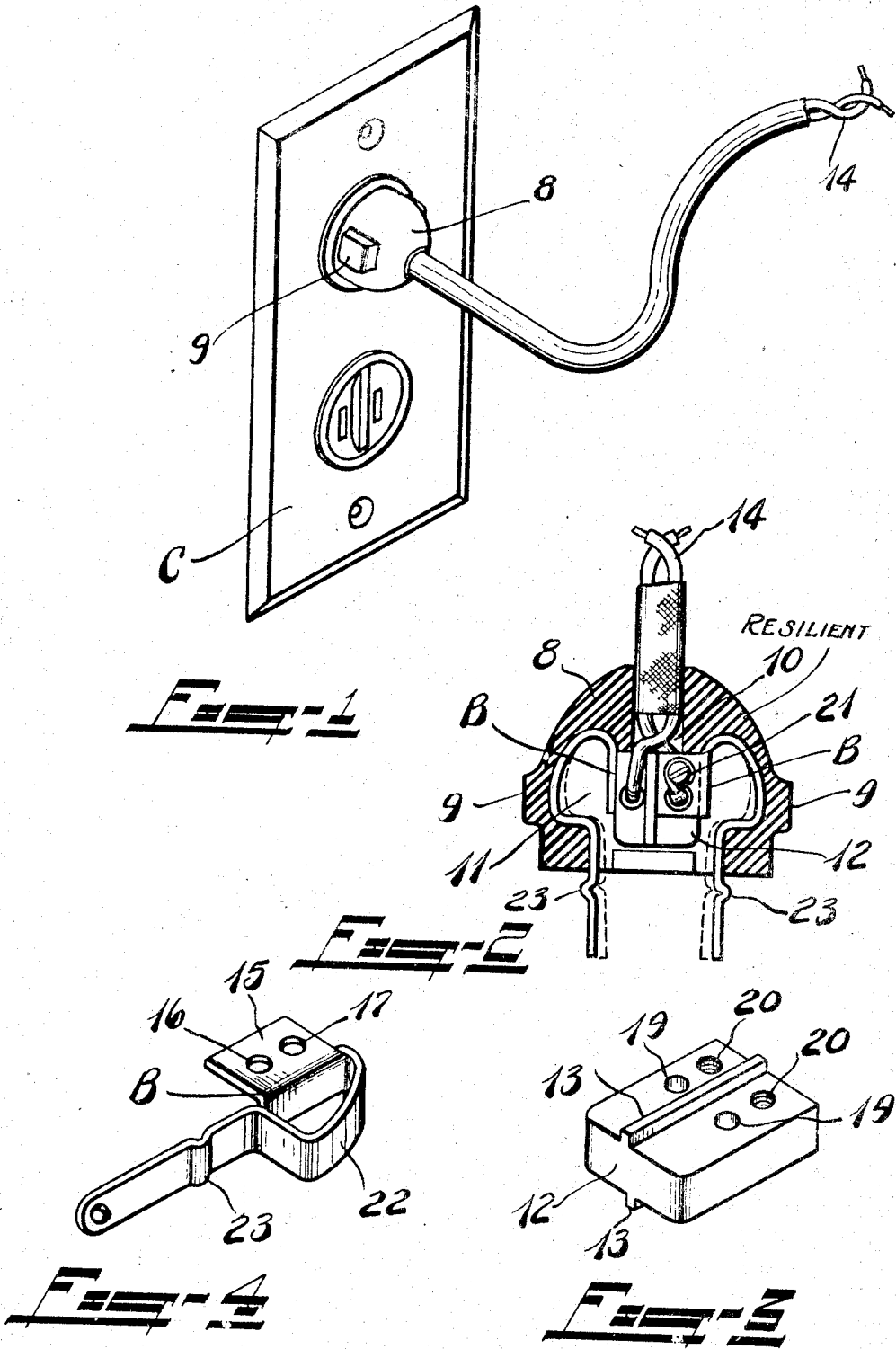
Aug. 6, 1940.

A. L. KUHLMAN

2,210,625

SELF-LOCKING PLUG

Filed March 23, 1939



INVENTOR.  
Arthur L. Kuhlman.  
BY Frank C. Seaman.  
ATTORNEY.

# UNITED STATES PATENT OFFICE

2,210,625

## SELF-LOCKING PLUG

Arthur L. Kuhlman, Ann Arbor, Mich.

Application March 23, 1938, Serial No. 197,546

7 Claims. (Cl. 173-361)

This invention relates to electric plugs such as used to electrically connect toasters, electric irons, lamps, and similar electrical equipment and appliances with a source of electrical current.

5 One of the prime objects of the invention is to design a self-locking plug which will be automatically locked against accidental or unintentional removal when it is "plugged" into position to establish electrical connection of an electrical  
10 appliance with a source of electric current.

Another object is to design a self-locking plug which is simple and inexpensive to manufacture and assemble, and which is composed of few parts, all of sturdy and substantial construction.

15 A further object is to provide a self-locking plug including resilient prong members, and provide means on the prongs for firmly locking them in contact in a socket.

A still further object is to provide a yieldable  
20 plug body having an insulator member mounted therein and to which the electrical conductors are connected in such manner as to prevent disconnection occasioned by accidental pulls or jerks.

This invention possesses other objects and features of advantage, some of which, together with the foregoing will be set forth in the following description of the preferred form of the invention which is illustrated in the accompanying drawing which forms part of the specification; it being  
25 understood however, that changes may be made in the form, size, proportion and minor details of construction, without departing from the spirit, or sacrificing any of the advantages of the invention.

35 In the drawing—

Fig. 1 is a perspective front view of an electrical receptacle showing my self-locking plug connected therewith.

40 Fig. 2 is an enlarged vertical sectional view through the plug, the broken lines showing the prongs sprung inwardly to permit removal from the socket.

Fig. 3 is a perspective view of the insulator block.

45 Fig. 4 is an enlarged detail of one of the prongs.

Referring now more specifically to the drawing in which I have shown one embodiment of my invention, the numeral 8 indicates the yieldable plug body. This is formed of live rubber suitably  
50 moulded to the shape desired and is formed with oppositely disposed thumb and finger rests 9 which are raised slightly above the main body, and for a purpose to be presently described.

A centrally disposed passage 10 is moulded in  
55 the upper end of the plug body and opens into

a chamber 11 in which an insulator block 12 is mounted, said block being formed substantially as shown in Fig. 3 of the drawing, and is provided with ribs 13 to retain the electrical conductors, 14 in their proper position.

The contact prongs B are formed as clearly  
5 shown in Fig. 4 of the drawing. These are formed in one piece and are stamped from suitable resilient material, the upper main section 15 being  
10 angular in cross section and spaced apart openings 16 and 17 respectively are provided therein, said section being preferably angular in cross section so that it snugly fits the face and edge of the insulator block, the openings 16 and 17 being  
15 in alignment with similar openings 19 and 20 provided in said block, the opening 20 being threaded to accommodate the screw 21 which forms a binding post, and to which the end of one of the conductors 14 is anchored in the usual  
20 manner.

The leg section of the prongs is bent over and  
25 around to form a loop 22, the lower section extending downwardly and projecting beyond the face of the plug, a shoulder 23 being provided on the leg intermediate its length, and this shoulder  
30 is adapted to engage the shell of the receptacle C to firmly hold the prongs in locked engagement therewith.

I wish to direct particular attention to the manner of attaching the electrical conductors to the  
35 insulator block, the conductors leading along the opposite faces of the block, thence being threaded through the openings 19, and thence leading upwardly and being anchored to the threaded screw or post 21 in the usual manner, each conductor  
40 being secured in an identically similar manner, and it will be obvious that any jerk or severe pull will be taken by the insulator block, and there will be less tendency to pull the wire from the binding post or screw 21 and break the connection, the ribs 13 serving to keep the conductor  
45 wires in proper position.

It will be understood that the hollow portion of the plug is shaped to snugly fit the insulator block and the bowed prongs, sufficient clearance being provided to permit the bowed sections to  
50 be sprung when releasing the plug.

In practise the plug is inserted in a suitable receptacle or socket in the usual manner, the  
55 shoulders 23 engaging the receptacle shell and firmly locking it in position, then when it is desired to release, the user places the thumb and forefinger on the rests 9, squeezing the plug and flexing the looped sections 22 of the prongs so that they assume position as shown in broken

lines in Fig. 2 of the drawing, this disengages the shoulders 23 and the prongs can then be readily removed, and when the plug is released, the prongs and body spring back to original position.

5 The device is very simple, practical, and substantial, there are no intricate or delicate parts, the connections are sturdy and secure, and it can be easily manufactured and assembled.

10 From the foregoing description, it will be obvious that I have perfected a very simple, self-locking plug for electrically connecting electrical appliances with an electric current.

What I claim is:

15 1. A self-locking plug of the character described comprising a hollow, yieldable body portion, a rigid insulator block mounted in said hollow body, resilient prongs mounted in said plug body portion with their free ends projecting beyond the face of said plug body portion, the inner end sections of said prongs being shaped to form an open loop with the ends secured to said insulator block to permit said prongs to be sprung toward each other when pressure is exerted on the side walls of the resilient body portion to spring said loop sections inwardly and force the free ends of the prongs toward each other, shoulders on the free ends of the prongs and adapted to releasably engage the said wall of a receptacle, and electrical conductors connected to said prongs.

20 2. The combination as set forth in claim 1 in which the inner end of each prong is formed with a turned flat section of relatively large area for attachment to said insulator block.

35 3. The combination as set forth in claim 1 in which the insulator block is formed with cored openings so that each conductor extends through one of said cored openings before being connected to one of said prongs.

40 4. A self-locking plug of the class described, comprising a hollow, yieldable body portion, an insulating block mounted in said hollow body por-

tion, resilient prongs mounted on said block with the free ends projecting beyond the face of the body portion, the inner end sections of the prongs being shaped to form an open loop snugly fitting in said hollow portion and permitting said prongs to be sprung toward each other when pressure is exerted at predetermined points on the side walls of the resilient body portion to spring said loop sections inwardly, shoulders on the projecting free ends of the prongs directly adjacent the end of the body portion and adapted to engage the end wall of the shell of a receptacle when the plug is inserted in a receptacle, and electrical conductors secured to the opposite sides of said block.

5 5. The combination set forth in claim 4, which includes raised thumb and finger rests formed integral with said body portion in horizontal alignment with the looped sections of the prongs.

20 6. The combination as defined in claim 4 in which the hollow portion of the plug is shaped to accommodate the insulator block and looped portions of the prongs, and permit the looped sections to be sprung to release the shouldered sections of the prongs from a receptacle when pressure is exerted on the yieldable body.

25 7. A self-locking plug of the class described, comprising a one piece, hollow, yieldable body portion having a centrally disposed cored opening therein, an insulator block mounted in said hollow body portion, one piece prongs mounted on said block with their lower ends projecting beyond the face of the body portion, a shoulder on the projecting end of each prong directly adjacent the face of the body portion, the upper end sections being shaped to form an open loop to permit said prongs to be forced towards each other when pressure is exerted on the yieldable body portion and the looped portions of the prongs, and electrical conductors leading through said cored opening and connected to said prongs.

ARTHUR L. KUHLMAN.