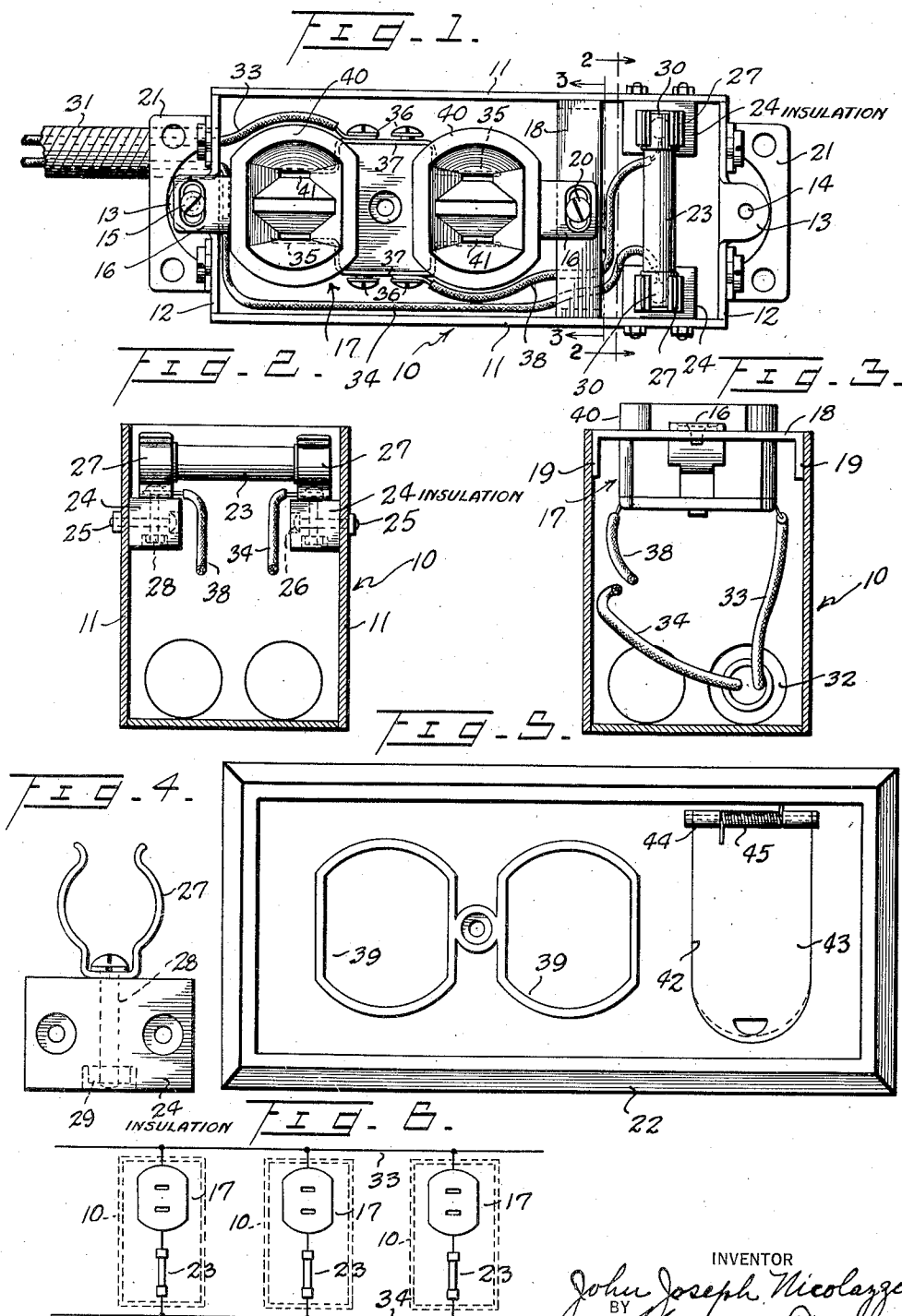


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FUSED WALL OUTLET BOX

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FUSED WALL OUTLET BOX

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This invention relates to a wall outlet box and receptacle and has for an object to provide a wall outlet box adapted to be mounted in a wall recess as is the usual box, with a conventional or standard plug-in receptacle therein, and one or more fuses also mounted in the box to protect the receptacle or receptacles mounted therein so that in case of a short circuit or overload being applied to the receptacle the fuse in the main line or switch box will not be blown and nothing will be affected but the individual outlet receptacle involved.

Another object is to provide a simple construction and arrangement for the purpose intended in which should a fuse be blown the blown fuse may be easily and quickly removed and a new fuse inserted without affecting other outlets or receptacles or installations in the house wiring system.

With the foregoing and other objects in view I have devised the construction illustrated in the accompanying drawing forming a part of this specification. It is, however, to be understood the invention is not limited to the specific construction and arrangement shown but may embody various changes and modifications within the scope of the invention.

In this drawing:

Fig. 1 is a front elevation of a wall outlet box constructed and arranged according to my invention with a receptacle in place but with the cover or face plate removed;

Figs. 2 and 3 are transverse sections substantially on lines 2-2 and 3-3 respectively of Fig. 1;

Fig. 4 is a detail elevation of one of the holding clips for the fuse and the mounting means therefor shown on an enlarged scale;

Fig. 5 is a front view of the cover or face plate, and

Fig. 6 is a wiring diagram showing the arrangement in a wiring system.

In the usual wiring system where main and auxiliary fuses are mounted in the main switch box in the basement or other location, if a short circuit is applied to any part of the system, as for instance by a person plugging in a defective electric iron or other electrical attachment, either the main fuse or one of the auxiliary fuses or possibly both would be blown. Usually it is the auxiliary fuse for the particular branch line affected which is blown and this puts the entire line out of commission so that none of it can be used until the blown fuse at the main switch box is renewed. This may mean the whole

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house or flat is darkened and the tenant must grope through a dark cellar or basement, or in multiple family houses or apartments the main switch box and the fuses may be in another tenant's or the owner's part of the basement which may be closed off from the other parts of the basement, requiring that the tenant with the blown fuse gain access somehow to the other party's portion of the basement or wait for assistance from that party. These are only a few examples of very annoying and possibly serious inconveniences or difficulties that may be involved in the blowing of a fuse so located. In the present invention there is a fuse located in a wall outlet box for each individual plug-in receptacle to protect that particular receptacle, and should a defective attachment, such for example as an electric iron or other device with a short in it, be plugged into the receptacle only the fuse for that particular receptacle is blown, not affecting the main fuse or even the fuse at the main switch box for the particular branch circuit involved; and thus in no way interfering with the operation of other devices or attachments plugged into other receptacles on the same circuit or the lighting system.

The device comprises a wall outlet box which may be of the usual or standard construction usually of rather heavy gauge sheet metal including side walls 11 and end walls 12, and open at the front. This box, however, is made somewhat longer than the box for the standard receptacle in order to provide space for mounting one or more fuses in the box. The end walls are formed with the usual ears 13 provided with tapped openings 14 to receive the securing screws 15 through the mounting yokes or brackets 16 of the conventional or standard outlet or plug-in receptacle 17. In the present case a conventional or standard duplex receptacle is shown, but it could be a single receptacle if desired. In mounting the receptacle 17, as the box is lengthened somewhat one end of the yoke 16 is secured to one of the ears 13 but an auxiliary support is provided for the other end of the yoke. In this case it is a transverse member 18 which may be a strip of flat metal with down-turned ends 19 secured by any suitable means to the inner sides of the side walls 11, preferably by welding to these side walls to thus provide a permanent support, and the other end of the yoke 15 may rest on this support and be secured thereto by a screw 20, the same as it could be secured to one of the ears 13. The assembled box may be mounted in a recess in the wall in the usual

manner and secured to the lath or other wood-work by screws through the mounting brackets 21. In replacing an old or shorter box all that is necessary is to lengthen the wall recess somewhat to accommodate this new box and there would be no wall marks or other disfigurement of the wall as the box and the recess will be covered by a cover or face plate 22.

At one side of receptacle 17, preferably between the auxiliary support 18 and the other end of the box 10, is mounted a fuse 23. Suitable supports for this fuse are mounted in the box preferably so located that the fuse is easily accessible for removal of a blown fuse and the insertion of a new one. A simple and effective means of mounting this fuse is by means of a pair of blocks 24 of insulating material secured to the inside of the walls 11 by any suitable means, such as a pair of spaced bolts or screws 25 passing through the blocks, and at their inner ends their heads 26 may be in countersunk openings in the blocks so that they are not exposed for inadvertent contact with the live elements of the assembly. These two bolts effectively support the blocks and prevent their turning from position. Mounted on each block is a spring contact clip 27 which may be of any desired shape or construction, but a satisfactory and effective clip may be substantially U-shape as shown mounted on each block by a bolt or screw 28 passing through the block between the bolts or screws 25 so that they are effectively insulated therefrom and also from the box or other elements, and the insulating effect may be increased by countersinking the lower heads or nuts 29 in the block. These screws may not only secure the clips 27 to the block but also may act as binding post screws for connecting lead wires to clip 27, or if preferred separate binding or connecting screws could be provided for the clips. The blocks 24 are so located that the clips 27 support the fuse closely adjacent the front of the box 10 and closely adjacent the rear of the cover or face plate 22 so that the fuse is easily accessible. With this arrangement an old or blown fuse can be removed by merely slipping it out or of withdrawing it from the clips 27 and a new unblown fuse as easily inserted, the end ferrules 30 of the usual cartridge fuse providing electrical contact with the clips 27.

A portion of the usual BX cable 31 of a house wiring system is shown leading through an opening 32 in one end of the box and carrying the usual conductors 33, 34. The plug-in receptacle 17 has the usual stationary contacts indicated diagrammatically at 35 for engagement with the contact blades of a plug-in cap connected with the electrical device to be operated in the usual manner, and mounted on the sides of the receptacle are binding screws 36 mounted on bars 37 connected with these receptacle contacts as in the usual construction. One of the wires from the BX cable, as for example the wire 33, is connected to one of these binding screws 36 on one side of the receptacle and a lead 38 is connected to the binding screw on the other side of the receptacle and leads therefrom to one of the clips 27 for the fuse 23. The other wire 34 of the BX cable is connected to the other clip 27 for the fuse. Thus the fuse is connected in series with the receptacle and the supply wires of the BX cable so that should an electrical attachment, such for example as an electric iron or other device, which has a defective wiring that would

cause a short, be plugged into the receptacle, the fuse will be immediately blown but the main fuses in the main switch box will not be affected, the fuse 23 of each individual receptacle or outlet box being of a smaller capacity than the fuses at the main switch box. Therefore should a defective appliance which would cause a short be plugged into this receptacle, only the receptacle involved would be put out of commission and none of the remainder of the house wiring system would in any way be affected but would continue to function in the normal manner.

It will be understood that the fuse 23 could be mounted in either end of the box 10 or if preferred there could be two fuses in the box each protecting one-half of the duplex receptacle. In this case, however, each fuse would be connected in series with the contacts of its particular half of the receptacle and the contacts for the two receptacles would not be connected. That is, bars 37 would be in two disconnected pieces one for each set of contacts 35 and individually connected to the supply wires 33 and 34.

After the box with the combined receptacle and fuse arrangement is installed in the wall recess the open front side of the box and the recess are covered by a cover or face plate, preferably a face plate similar to that shown at 22 in Fig. 5. This plate is of a sufficient size to cover the wall recess and give a finished appearance, and it has openings 39 to receive and expose the bosses 40 of the receptacle to give access to the plug-in openings or slot 41. It also is provided with an elongated opening 42 over and in alignment with the fuse 23 so that the fuse is easily accessible and should the fuse be blown the operator may easily grip the fuse, withdraw it from its mounting clips, and insert a new fuse. This opening 42 may be closed by a closure 43 which may be mounted in any suitable way, but is preferably mounted on a spring hinge 44 provided with a spring 45 tending to swing the closure 43 to the closed position and retain it in this position.

Fig. 6 shows diagrammatically how a plurality of these wall outlet boxes with their receptacle and fuse assemblies may be mounted and connected in a branch of the house wiring system, each having an individual fuse connected in series with its receptacle to protect the individual receptacle without in any way affecting the other receptacles in the line.

It will be seen from the above that this makes a very simple and effective construction and arrangement requiring only simple changes from the conventional outlet box, but requires no change in the conventional or standard outlet receptacle. Also that each individual receptacle is effectively protected by its own individual fuse, so that if a defective attachment is plugged into the receptacle to cause a short circuit the fuse for that individual receptacle will be blown, preventing blowing of the main fuse or the auxiliary fuses at the main switch box, so that the use of other receptacles on the line or in the system is in no way affected, doing away with the necessity of someone groping through a darkened house or basement to the main switch box to replace a fuse at this box. Usually there are several branches leading from the main switch box with a fuse in each branch and it is often difficult to determine in which branch the fuse has blown. This difficulty is eliminated in the present arrangement as the operator will know that it is the fuse in

the particular receptacle that has blown and must be renewed.

Having thus set forth the nature of my invention, what I claim is:

1. In a device of the character described, an open sided wall outlet box adapted to be mounted in a wall recess and including side and end walls forming a compartment, said box being provided with mounting means for securing it in a wall recess as a permanent part of the house wiring system, an ear at one end of the box, a transverse support spaced from the other end, means for mounting a conventional outlet receptacle within the box on said ear and support and comprising an insulating body enclosing contacts adapted to engage attachment plug contacts inserted into the body, means operable by a given overload to open a circuit, means mounting the circuit opening means in the box compartment between the support and the other end of the box in a position where it is accessible for renewal from the front of the box and including electrical connections to the circuit opening means, and means in the box and outside the receptacle for electrically connecting the electrical connections in series with the receptacle contacts and supply wires forming a permanent part of the house wiring system leading to the box.

2. A wall outlet box adapted to be mounted in a wall recess, said box having an open front and including spaced side and end walls, ears extending outwardly from the box for securing it in the wall recess as a permanent part of the house wiring system, a conventional standard outlet receptacle mounted in the box comprising an insulated body enclosing receptacle contacts and provided with contact blade inlet slots at said open front of the box leading to said contacts for insertion of attachment plug contacts to engage the receptacle contacts, means operable to open a circuit by a given overload therein, means for mounting the circuit opening means in the box independently of said receptacle and in a position where it is accessible for renewal from the front of the box, supply wires forming a permanent part of the house wiring system leading to the box, and means in the box outside the receptacle electrically connecting the circuit opening means in the circuit with the receptacle contacts and the supply wires.

3. In a device of the character described, a wall outlet box adapted to be mounted in a wall recess, ears extending outwardly from the box for mounting it in said recess as a permanent part of the house wiring system, said box being open at the front and including a rear wall and spaced side and end walls, a conventional standard outlet receptacle mounted in the box comprising an insulated body enclosing receptacle contacts and provided with entrance slots in its front wall for insertion of attachment plug contacts to engage the receptacle contacts, means operable by a given overload in a circuit to open the circuit, means mounting the circuit opening means in the box

between a wall of the box and the receptacle and adjacent the front of the box, means in the box outside the receptacle electrically connecting the circuit opening means in series with the receptacle contacts and supply wires forming a permanent part of the house wiring system leading to the box, and a face plate covering the open side of the box and provided with openings in alignment with the receptacle and the circuit opening means to allow access thereto from the front of the plate.

4. In a device of the character described, a wall outlet box adapted to be mounted in a wall recess, ears extending laterally from the box for mounting it in said recess as a permanent part of the house wiring system, said box being open at the front and including a rear wall and spaced side and end walls, a conventional standard outlet receptacle mounted in the box comprising an insulating body enclosing receptacle contacts and provided with entrance slots in its front wall leading to said contacts to receive attachment plug contacts to engage the receptacle contacts, a fuse, supporting means for said fuse mounted in the box outside of said receptacle and adjacent the front of the box, means in the box electrically connecting said fuse in series with the receptacle contacts and supply wires forming a permanent part of the house wiring system leading to the box, a face plate covering the open front side of the box and provided with openings in alignment with the receptacle and the fuse to permit access thereto from the front of the plate, and a closure for the fuse opening.

5. In a device of the character described, a wall outlet box open at the front and including a rear wall and spaced side and end walls, ears extending outwardly from the box for mounting it in a wall recess as a permanent part of the house wiring system, said box being provided with means for mounting in the box a conventional standard outlet receptacle comprising an insulating body enclosing receptacle contacts and entrance slots for attachment plug contacts leading to the receptacle contacts, said mounting means being also positioned to locate said receptacle with its entrance slots at the front of the box, insulated mounting means in said box separate from and independent of the receptacle, and means carried by said latter means for mounting a means operable to open a circuit by a given overload therein and in a position where it is accessible for renewal from the front of the box.

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