April 15, 1930. L. S. BRACH 1,754,709

COMBINATION CONNECTER AND LIGHTNING ARRESTER

Filed June 11, 1929

FIG. 1

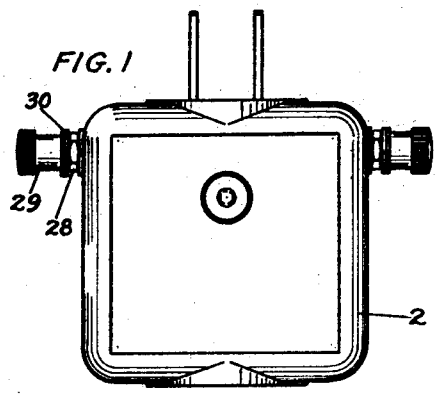


FIG. 2

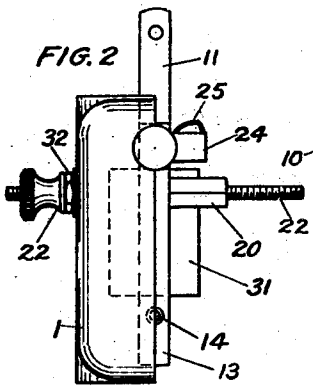


FIG. 3

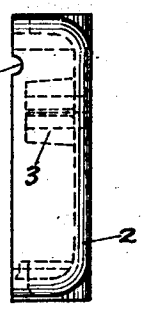


FIG. 4

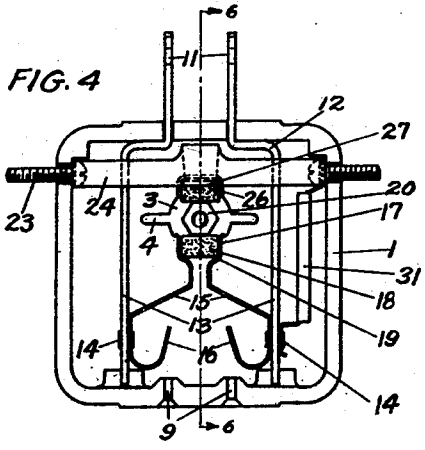


FIG. 5

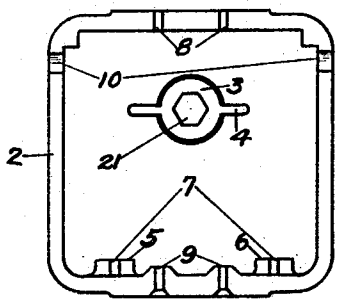


FIG. 6

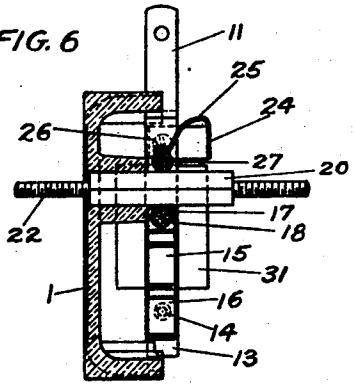
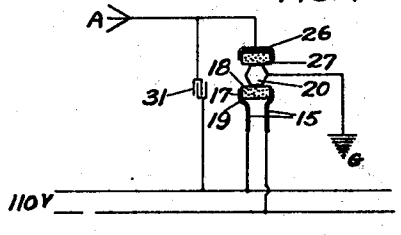


FIG. 7



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UNITED STATES PATENT OFFICE

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COMBINATION CONNECTER AND LIGHTNING ARRESTER

Application filed June 11, 1929. Serial No. 370,084.

This invention relates to a combined connecter and lightning arrester for electrical circuits, and as illustrated in the drawing forming a part of this specification, the device is shown as one which is adapted to be used for making connection with a house-lighting circuit and also for use in connection with a radio antenna circuit.

In the present-day construction of radio receiving sets, it is customary to use the house-lighting circuit, which in the majority of cases is now alternating current, for the source of power for operation of the receiving set. However, in certain cases, batteries are use in connection with "B eliminators", and rectifier charging means for the "A" battery; but in these instances, the house-lighting current is utilized for the source of power.

In order to obtain the highest degree of safety, it is advisable that a lightning arrester be used in connection with the house-lighting circuit, especially if the lead wires coming into the house are "overhead". Furthermore, the underwriters require that the antenna circuit be equipped with a lightning arrester.

It is therefore the principal object of my invention to provide a lightning arrester for both of these circuits, the device being built into one unitary construction, so that it may be readily connected with a house-lighting socket, and a common ground connection used with both of the protecting circuits.

Another object of my invention is to provide a device of the class described which while readily adapted for quick connection with a house-lighting socket, is also adapted to have an extension cord connected thereto for carrying the lighting current to the place desired.

Another object of my invention is to provide a device of the class described which is small and compact with a few number of parts, and therefore cheap to manufacture.

These and other objects will be clear from a study of the specification taken in connection with the annexed drawing, wherein:

Figure 1 is a plan view of a completely assembled device.

Figure 2 is a side view of Figure 1, but with one-half of the casing removed.

Figure 3 is a view of one-half of the casing as removed from Figure 2.

Figure 4 is a view similar to Figure 1, but with one-half of the casing removed, showing the interior parts of the device.

Figure 5 is a plan view of a part of the casing as removed from Figure 4.

Figure 6 is a section on the line 6—6 of Figure 4.

Figure 7 is a diagrammatic view of the circuits passing through or used in connection with the device.

In the drawing, wherein like numbers refer to corresponding parts in the various views, 1 and 2 are two halves of a casing made of any suitable insulating material, preferably of a type which will stand hard usage. Each of the parts 1 and 2 of the casing, is provided with a hub 3 having ribs 4, all moulded integral with their respective parts. The parts 1 and 2 are also provided with bosses 5 and 6 moulded integral therewith, and these portions 5 and 6 are provided with slots 7 for a purpose to be hereinafter referred to. One end of each part of the casing is provided with a pair of cooperating slots 8, while the opposite end of the two parts of the casing is provided with cooperating slots 9, and the sides of each part of the casing are provided with openings 10.

Positioned within the slots 8, is a pair of metallic members 11 which are adapted for insertion into an attachment plug fitting into an electric light socket. The members 11 are bent as shown at 12, which bent portions are within the casing members 1 and 2; and extending from the bent portions 12, are the portions 13, the ends of which are positioned in the slots 7 of the two parts of the casing. Thus, the electric light connecting members are securely anchored in position within the casing.

Attached to the end portions 13, in any satisfactory manner as by eyelets 14, is a pair of spring members 15 having their ends 16 bent so as to intercept the members of an attachment plug like the ends 11, which may be inserted through the openings 9, whereby

the electric light circuit is extended by an extension cord through the sliding contact connection with the ends 16. The oppositely disposed ends 17 of the members 15 are bent so as to support an arrester member 18, which preferably is in the form of a piece of carborundum. The ends 17 at the point 19 are so formed as to continually force the carborundum piece 18 against a stud 20, which is preferably polygonal in shape and fits in a corresponding hole 21 in the studs 3, thereby completing a lightning arrester from each side of the lighting circuit to the stud 20 which is adapted to have a ground connection extending from either of its terminal ends 22.

Positioned in the holes 10, are screw contact members 23, which screws pass through a metallic strip 24, thereby holding the strip 24 in position. The strip 24 has an arm 25 preferably integral therewith and bent downward and terminating in a holder 26, which holder carries a second carborundum piece 27 in contact engagement with the ground stud 20. As will be seen from Figure 6, the metallic member 24 has its ends, which are engaged by the screws 23, bent so that the strip 24, as it crosses the portions 13 of the electric light connecter pieces, is spaced a suitable distance away from these latter members.

The screws 23 are provided with nuts 28 and thumb nuts 29 and washers 30 for the purpose of making connections with the incoming and outgoing ends of the antenna circuit. Preferably attached to one of the screw studs 23, as shown in Figure 4, is a filter condenser 31, the opposite end of which is connected by the eyelet 14 with one of the members 13. It is to be understood that this filter condenser is of very small capacity and acts as such filter condensers usually act.

The method of operation of my device is shown diagrammatically in Figure 7, and will be perfectly clear from what has already been said without further description.

It will be noted that the ground stud 20 also serves, through the medium of the lock nuts 32, as means for holding the two parts 1 and 2 of the casing together.

While I have shown the plug type connection in the shape of the metallic ends 11 for connecting the device to a plug fitting into an electric light socket, it is within the scope of my invention to provide a screw attaching means in place of the sliding plug contact ends 11, which screw contact itself, may be screwed directly into the lighting socket without the use of an attachment plug.

It is also to be noted that the carborundum piece 27 used in connection with the antenna circuit, may be of a lower resistance than the corresponding piece 18 used in connection with the lighting circuit.

It is evident that certain of the details entering into the construction of my device may be varied without departing from the spirit of my invention or the scope of the appended claims; for example, instead of using a non-air gap type of arrester in the shape of a piece of high-resistance spark gap material, which is my preferred arrangement as illustrated, I may use a gap type of arrester.

Having thus described my invention, what I claim is:

1. An arrester including a two-part casing of insulating material, a metallic stud passing through said casing and serving to hold the two parts together as well as a grounding stud, a pair of spaced metallic members disposed within the casing away from said stud, but having associated contacting members extending toward the stud and supporting a piece of silicon carbide between their ends and against said stud, said casing having openings in one wall thereof, said contacting members also having portions disposed in alignment with said openings to be engaged by sliding plug members inserted through said openings, said metallic members having ends protruding from the casing for engagement with a lighting socket member, a metallic member extending across the interior part of the casing but spaced from said stud and said pair of metallic members, contact studs connected to the ends of said cross member and protruding through the casing to receive the incoming and outgoing ends of an antenna circuit, an arm extending from said cross member terminating in a holder, and a piece of silicon carbide carried in said holder against said stud.

2. An arrester including a two-part casing of insulating material, a metallic stud passing through said casing and serving to hold the two parts together as well as a grounding stud, bosses arranged in spaced relation on the interior of one side of said casing parts and having cooperating slots therein, metallic members having their ends positioned in said slots and extending across the interior of the casing and through the opposite walls thereof to form sliding plug terminals for a lighting socket member, spring contact members fastened to said metallic members and having parts extending toward said stud and supporting a piece of carborundum between their ends and against said stud, said spring contact members having their free ends bent to act as contact engaging members, said casing having openings therein whereby sliding contact members may be inserted through said openings into engagement with said free spring ends, a metallic strap formed to fit within the casing and passing across the interior thereof in spaced relation with said other metallic members, said casing parts having complementary holes therein adjacent the ends of said strap, contact screws lying in said holes and acting to clamp the

strap in position and to carry a circuit through the arrester, said strap having at least one arm formed therefrom, and a piece of carborundum carried by said arm against said stud.

3. An arrester including a two-part casing of insulating material, a metallic stud passing through said casing and serving to hold the two parts together as well as a grounding stud, a pair of metallic members held in place by the two parts of the casing and having ends protruding on one side of the casing for connecting with a member of a lighting socket, said casing having cooperating openings in the two parts opposite said protruding ends, spring contact members fastened to said metallic members, and having ends formed into alignment with said openings to contact with plug members inserted through said openings, said spring contact members also having ends extending toward said stud and supporting a piece of carborundum between their ends and against said stud, a metallic strap lying within the confines of one of the casing parts and having its ends bent toward and overlapping the other part of the casing, said casing parts having complementary holes therein adjacent the ends of said strap, contact screws lying in said holes and acting to clamp the strap in position and to carry a circuit through the arrester, said strap having at least one arm formed therefrom, and a piece of carborundum carried by said arm against said stud.

4. An arrester including a two-part casing of insulating material, a metallic stud passing through said casing and serving to hold the two parts together as well as a grounding stud, a pair of spaced contact members positioned within the casing but having ends protruding therefrom for engagement with a lighting socket plug, spring contact members fastened to said pair of contact members, a carborundum piece held between parts of said spring contact member and against said stud, said casing having openings therein to admit plug members to engage parts of said spring contact members, an antenna circuit member extending across the interior of the casing at right angles to said pair of contact members, circuit engaging means fastened to the casing and to the ends of said antenna circuit member, at least one arm fastened to said last mentioned member, and a carborundum piece held by said arm against said stud.

5. In a device of the class described, a divided casing having external contact members adapted to be inserted in an electric light socket, contacts within the casing electrically connected to said external contacts, said casing having openings therein to receive plug members to engage the internal contact members, a metallic stud having ends for clamping the parts of the casing together and to connect at least one ground wire thereto, a high resistance spark gap piece held by and between parts of said internal contact members and against said stud, an antenna circuit member extending across the interior of the casing but spaced from said internal contact member, binding posts connected to the opposite ends of said antenna member and a high resistance spark gap piece held by a part of said antenna member against said ground stud.

6. In a device of the class described, a divided casing having external contact members adapted to be inserted in an electric light socket, contacts within the casing electrically connected to said external contacts, said casing having openings therein to receive plug members to engage the internal contact members, a metallic stud having ends for clamping the parts of the casing together and to connect at least one ground wire thereto, spark gap means between said interior contact members and said stud, an antenna circuit member extending across the interior of the casing but spaced from said internal contact member, binding posts connected to the opposite ends of said antenna member and spark gap means between said last mentioned member and said ground stud.

7. In a device for the purpose described, a divided casing, a stud carried by the casing and having ends projecting on at least one side thereof, means cooperating with said ends to hold the parts of the casing together and to clamp a ground wire thereto, electrical contact members for a plurality of different circuits housed within said casing, but having protruding parts for making connections to their respective circuits, and spark gap means for each circuit, said stud acting as a common ground element for all spark gap circuits.

8. In a device for the purpose described, a divided casing, a stud carried by the casing and having ends projecting on opposite sides thereof, means cooperating with said ends to hold the parts of the casing together and to clamp a ground wire thereto, electrical contact members for a plurality of different circuits housed within said casing, but having protruding parts for making connections to their respective circuits, and spark gap means for each circuit, said stud acting as a common ground element for all spark gap circuits, and a filter device within the casing connected across two of said different circuits.

9. In a device for the purpose described, a divided casing of insulating material, a stud carried by the casing and having ends projecting on opposite sides thereof, means cooperating with said ends to hold the parts of the casing together and to clamp a ground wire thereto, electrical contact members housed within said casing but having pro-

truding parts, certain of which are to make connections with an antenna circuit and others with a lighting circuit, means for passing an extension plug through the wall of the casing into contact with said other contact members, and spark gap means within the casing for both circuits, said means including said stud as a grounding device.

10. In a device for the purpose described, a divided casing of insulating material, a stud carried by the casing and having ends projecting on opposite sides thereof, means cooperating with said ends to hold the parts of the casing together and to clamp a ground wire thereto, electrical contact members housed within said casing but having protruding parts, certain of which are to make connections with an antenna circuit and others with a lighting circuit, means for passing an extension plug through the wall of the casing into contact with said other contact members, and spark gap means within the casing for both circuits, said means including said stud as a grounding device, and a filter condenser within the casing connected from the antenna circuit to at least one of the contact members adapted to be connected to the lighting circuit.

11. A combined connecter and lightning arrester including; a casing of insulating material, contact members within the casing having sliding plug ends extending without the casing, said casing having openings in one side to allow an extension plug to be inserted into contact with parts of said contact members, a metallic strap passing across the interior of the casing substantially at right angles to said contact members but spaced therefrom, means for attaching wires to the opposite ends of said strap, a ground stud passing through the casing and spark gap means carried by said strap and by parts of said contact members, said stud acting as a common electrode for said gap circuits.

12. A combined connecter and lightning arrester including; a two-part casing of insulating material having slots therein, a stud for clamping the two parts together and provided with means for attaching a wire thereto, contact members positioned in said slots and held therein only by the two parts when clamped together, said contact members having ends extending without the casing for engagement with a lighting socket plug, said casing having openings to receive an extension plug into engagement with parts of said members, a carborundum piece held by said parts of said members in engagement with said stud, a metallic strap extending across the interior of said casing and having an arm carrying a piece of carborundum in engagement with said stud, and means for making connections with the opposite ends of said strap at a point where the two parts of the casing come together.

13. A combined connecter and lightning arrester including, a casing of insulating material, a stud passing through the casing and provided with means to attach a wire thereto, a pair of relatively stiff contact members positioned within the casing and having one pair of ends supported by the interior wall of the casing while the other ends protrude from the casing to form sliding plug members to engage a lighting socket plug, springs fastened to said stiff members and having one pair of ends formed to hold a piece of high resistance spark gap material in contact with said stud, the other pair of said spring ends being formed to engage plug members, said casing having openings adjacent said last mentioned spring ends whereby extension plug members may be inserted through the openings into engagement with said spring ends, a metallic strap extending across the interior of the casing and held thereto by screw terminals, said strap having an arm formed to hold a piece of high resistance spark gap material in contact with said stud.

14. A combined connecter and lightning arrester including, a two-part casing of insulating material, a stud for holding the parts together and also acting as a ground connection, contact members carried within the casing but having protruding ends to engage an exterior circuit member, said casing having openings to receive an extension plug into contact with said contact members, a metallic strap extending across the interior of the casing and having means for connecting a wire at each end thereof, and a piece of silicon carbide held by a part of the strap and by parts of said contact members against said stud.

15. A combined connecter and lightning arrester including; a two-part casing of insulating material, a stud for holding the parts together and also acting as a ground connecter, contact members within the casing arranged to be connected to different circuits, and spark gap means positioned between said members and said stud.

16. A combined connecter and lightning arrester including; a casing, a stud having at least one end projecting from the casing for connecting a wire thereto, contact members arranged in insulated relationship within the casing and adapted to be connected to different circuits, and spark gap means associated with said contact members, said stud acting as a ground connecter for said spark gap means.

17. A casing having plug terminals adapted to be inserted in an electric light socket, means for making plug connections in the interior of the casing with said plug terminals, said casing also having a binding post for a ground wire connection, and spark gap means between parts of said plug terminals and said ground post.

18. A casing having contact members extending externally for insertion in an electric light socket, said casing having means to receive an extension cord plug from an auxiliary circuit for connection with said contact members within the casing, a ground binding post carried by said casing, spark gap means between said contact members and said ground binding post, additional binding posts on the casing adapted to be connected to an aerial circuit, an electrical connection between said additional binding posts, and spark gap means between said electrical connection and said ground binding posts.

19. A casing having contact members extending externally for insertion into an electric light socket, said casing having means whereby an extension cord plug connected to an auxiliary circuit, may be passed into electrical engagement with said contact members within the casing, a ground binding post carried by said casing, an aerial binding post carried by the casing, spark gap means connected between said contact members and said aerial binding post and ground binding post, and a filter condenser connected between the aerial post and at least one of said contact members.

20. A casing having contact members extending externally for insertion into an electric light socket, said casing having means whereby an extension cord plug connected to an auxiliary circuit, may be passed into electrical engagement with said contact members within the casing, a ground binding post carried by said casing, an aerial binding post carried by the casing, and spark gap means connected between said contact members and said aerial binding post and said ground binding post.

In testimony whereof, I affix my signature.

LEON S. BRACH.