ELECTRIC LOG LIGHTER

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ABSTRACT OF THE DISCLOSURE

An electric log lighter for fireplaces and the like. A log holding grill has a longitudinal channel of rectangular cross-section beneath its center. Extending diagonally upwardly and outwardly from the upper side edges of the channel are a pair of deflector plates. An elongated electrically operated heating rod is mounted within the upper portion of the channel. The rod heats air in the upper part of the channel, causing cold air to be drawn into the bottom of the channel as the heated air rises. This provides a continuous convection current flowing through the channel upwardly along the deflector plates beneath logs disposed on the grill to ignite the logs.

This invention relates to an electric log lighter which is particularly adapted for use in fireplaces and the like. Although gas operated log lighters are in common use, there appear to be no satisfactory electrically operated log lighters which serve the same purpose while at the same time providing all of the advantages of electrical operation. Among the obvious advantages are cleanliness, safety and the elimination of a second source of energy in an otherwise electrically energized building.

It is accordingly the primary object of my invention to provide an electric log lighter which is simple in construction and operation and which is effective to provide the necessary amount of heat for efficient results.

In particular, it is the object of my invention to provide an electric log lighter in which a continuous convection flow of air is utilized to move the heated air into engagement with the log and thus provide greater heat and incandescence action than would be provided by radiation alone.

Another object of my invention is to provide guide means which cooperate with the convection creating means to direct the heated air into engagement with the log.

A further object of my invention is to provide a log lighter which is simple and economical to manufacture, so that it can be sold at a reasonable price for widespread sale and use. It is also an object of my invention to provide such a log lighter which is simple to operate and which may be electrically controlled in operation.

My invention also comprises of such other objects, advantages and capabilities as will later more fully appear and which are inherently possessed by my invention.

While I have shown in the accompanying drawings a preferred embodiment of my invention, it should be understood that the same is susceptible of modification and change without departing from the spirit of my invention.

Referring to the drawings:

FIG. 1 is a top plan view of my electric log lighter;
FIG. 2 is a side elevational view of the same;
FIG. 3 is an end view of the same in use, partly in section, taken along line 3--3 of FIG. 1;
FIG. 4 is a partial sectional view of the channel and deflector plates, taken along line 4--4 of FIG. 1.

A preferred embodiment which has been selected to illustrate my invention comprises a symmetrical grill 10, which may be formed of one or more metal castings or other suitable material. The embodiment shown in the drawings is formed of two separate metal castings disposed opposite each other to form the complete grill 10. The grill 10 is arcuate or dish-shaped in cross section, to provide an area in which one or more logs may be placed.

The grill 10 comprises a plurality of arcuate bars 11, which curve upwardly and outwardly from the center, with open spaces between them. Extending along the longitudinal axis of the grill 10 beneath the bars 11 is an elongated channel 12, which is substantially rectangular in cross section. The channel 12 is formed by a pair of vertical side walls 13 which extend for the entire length of the grill 10.

A pair of leg members 21 extend through slots in the side walls 13 of the channel 12. Each of the leg members 21 includes a pair of legs 22 which support the grill 10. A pair of bolts 23 extend through one of the bars 11 and through the leg member 21 to secure each of the leg members 21 to the grill 10. The bottom of each bar 11 to which a leg member 21 is attached is provided with a downward extension 24 having an elongated slot which receives a complementarily formed boss 26 on the upper portion of each leg member 21 directly above each of the legs 22.

Extending diagonally upwardly from the top of each of the side walls 13 is a deflector plate 14, the function of which will be described hereinafter. The upper surface of each of the bars 11 extends diagonally downwardly and outwardly in a straight line for a short distance from the upper edge of the deflector plate 14 before becoming arcuate.

Extending transversely across the channel 12 are a plurality of cross members 44, which extend between the opposite sides of the grill 10. The upper surfaces of the cross members 44 extend in a straight horizontal line between the upper edges of the deflector plates 14. Each of the cross members 44 is provided with a downwardly facing semi-circular or substantially circular opening disposed within the channel 12. The portions of the leg members 21 which cross the channel 12 are provided with upwardly facing semi-circular openings which are also disposed within the channel 12 and which are aligned with the openings in the cross members 44.

Extending across the ends of the channels 12 are a pair of integral end members 29, each of which is provided with an opening of substantially circular shape, such openings being aligned with the openings in the cross members 44 and leg members 21.

In use, the upper surfaces of the cross members 44 and the upper surfaces of the end members 29 are adapted to support logs and hold them in such a position that air can freely pass from the channel 12 along the deflector plates 14 without interference from the logs.

An elongated electrically operated cylindrical heating rod 16 is slidably and removably mounted so that it extends through the elongated cylindrical opening defined by the aligned openings in the cross members 44, leg members 21 and end members 29. The heating rod 16 is thus adjacent to the upper portion of the channel 12. A flexible cable connects the heating rod 16 to a suitable source of electrical supply. An automatic timer may be connected to the cable, so that the duration of operation of the heating rod 16 may be automatically controlled. Extending outwardly from one or both ends of the grill 10 is a semi-circular hook 59 which supports a right angular portion of the heating rod 16.

The cross members 44 have extensions 46 which extend along the adjacent bars 11 of the grill 10 from the outer edges of the deflector plates 14 to the upper ends of the bars 11. These extensions 46 have upper surfaces which are disposed above the upper surfaces of the bars 11,
so that they elevated the logs to make sure that heated air from the channel 12 can flow beneath the logs.

In use, there are no moving parts whatsoever in my log lighter. As electrical energy is supplied to the heating rod 16, it begins to glow and radiate heat into the surrounding air. As the heated air rises, it draws colder air into the channel 12 through the open bottom thereof. This air is in turn heated, so that the process becomes a continuous one in which cold air is continuously drawn into the bottom of the channel 12 and heated air is driven out of the top of the channel 12.

As heated air moves out of the top of the channel 12, it is guided upwardly and outwardly by the deflector plates 14 so that heated air moves first beneath the log or logs disposed on the grill 10, and then around the outer periphery of the log or logs. The logs are thus completely surrounded by heated air which is driven by convection currents. This assures far better ignition than if heat were provided by radiation alone.

In use, the automatic timer can be set for the estimated time required to light the logs. The lighter will then be turned off automatically after the fire is lit, requiring no further attention on the part of the user.

I claim:

1. An electric log lighter comprising a grill formed of metal or the like, said grill comprising a plurality of arcuate bars with open spaces between them, said bars curving upwardly and outwardly from the center of said grill, an elongated channel extending along the longitudinal axis of said grill beneath the center thereof, said channel having an open top and bottom and closed sides, said channel being substantially rectangular in cross section, a pair of diagonally directed deflector plates extending upwardly and outwardly from the upper end of said channel, a plurality of cross members extending transversely across the top of said channel, said cross members having horizontal upper surfaces substantially aligned with the upper edges of said deflector plates and disposed above the surfaces of said deflector plates, each of said cross members having a pair of extensions extending along one bar on each side of said channel, said extensions having upper surfaces disposed above the upper surfaces of the other bars of said grill, a pair of aligned slots extending through the sides of said channel adjacent the opposite ends thereof, a pair of legs extending through said slots, said legs being attached to said leg members, said leg members having leg spacing said grill upwardly and outwardly from a support of end members extending across the ends of said channel, each of said end members having a circular opening therein, each of said cross members having a downwardly directed semi-circular opening disposed within said channel, an elongated cylindrical heating rod extending through all of said openings along the entire length of said channel adjacent to the upper portion thereof, means for supplying electrical energy to said heating rod, said rod in operation heating the air in the upper part of said channel so that cold air is drawn into the bottom of said channel as said heated air rises, to provide a continuous convection current flowing through said channel upwardly and outwardly along said deflector plates beneath logs disposed on said grill to ignite said logs.

2. An electric log lighter comprising a grill formed of metal or the like, said grill comprising a plurality of arcuate bars with open spaces between them, said bars curving upwardly and outwardly from the center of said grill, an elongated channel extending along the longitudinal axis of said grill beneath the center thereof, said channel having an open top and bottom and closed sides, said channel being substantially rectangular in cross section, a pair of diagonally directed deflector plates extending upwardly and outwardly from the upper end of said channel, a plurality of cross members extending transversely across the top of said channel, said cross members having horizontal upper surfaces substantially aligned with the upper edges of said deflector plates and disposed above the surfaces of said deflector plates, each of said cross members having a pair of extensions extending along one bar on each side of said channel, said extensions having upper surfaces disposed above the upper surfaces of the other bars of said grill, a pair of aligned slots extending through the sides of said channel adjacent the opposite ends thereof, a pair of legs extending through said slots, said legs being attached to said leg members, said leg members having leg spacing said grill upwardly and outwardly from a support of end members extending across the ends of said channel, each of said end members having a circular opening therein, each of said cross members having a downwardly directed semi-circular opening disposed within said channel, an elongated cylindrical heating rod extending through all of said openings along the entire length of said channel adjacent to the upper portion thereof, means for supplying electrical energy to said heating rod, said rod in operation heating the air in the upper part of said channel so that cold air is drawn into the bottom of said channel as said heated air rises, to provide a continuous convection current flowing through said channel upwardly and outwardly along said deflector plates beneath logs disposed on said grill to ignite said logs.

3. An electric log lighter comprising a grill formed of metal or the like, said grill comprising a plurality of bars with open spaces between them, said bars extending upwardly and outwardly from the center of said grill, an elongated channel extending along the longitudinal axis of said grill beneath the center thereof, said channel having an open top and bottom and closed sides, said channel being substantially rectangular in cross section, a pair of diagonally directed deflector plates extending upwardly and outwardly from the upper end of said channel, a plurality of cross members extending transversely across the top of said channel, said cross members having horizontal upper surfaces substantially aligned with the upper edges of said deflector plates and disposed above the surfaces of said deflector plates, each of said cross members having a pair of extensions extending along one bar on each side of said channel, said extensions having upper surfaces disposed above the upper surfaces of the other bars of said grill, a pair of aligned slots extending through the sides of said channel adjacent the opposite ends thereof, a pair of legs extending through said slots, said legs being attached to said leg members, said leg members having leg spacing said grill upwardly and outwardly from a support of end members extending across the ends of said channel, each of said end members having a circular opening therein, each of said cross members having a downwardly directed semi-circular opening disposed within said channel, an elongated cylindrical heating rod extending through all of said openings along the entire length of said channel adjacent to the upper portion thereof, means for supplying electrical energy to said heating rod, said rod in operation heating the air in the upper part of said channel so that cold air is drawn into the bottom of said channel as said heated air rises, to provide a continuous convection current flowing through said channel upwardly and outwardly along said deflector plates beneath logs disposed on said grill to ignite said logs.

4. An electrical log lighter comprising a grill, said grill comprising a plurality of bars with open spaces between them, an elongated channel extending along the longitudinal axis of said grill beneath the center thereof, said channel having an open top and bottom and closed sides, a pair of diagonally directed reflector plates extending upwardly and outwardly from the upper end of said channel, means for supporting logs disposed on said grill to said heating rod, said rod in operation heating the air in the upper part of said channel so that cold air is drawn into the bottom of said channel as said heated air rises, to provide a continuous convection current flowing through said channel upwardly and outwardly along said deflector plates beneath logs disposed on said grill to ignite said logs.

5. An electric log lighter comprising a grill having a plurality of bars with open spaces between them, an elongated channel extending beneath said grill, said channel having an open top and bottom and closed sides, a pair of deflector plates extending upwardly and outwardly from the open top and bottom and closed sides of said channel, an elongated heating rod extending along said channel, means for supplying electrical energy to said heating rod, said rod in operation heating the air in the upper part of said channel so that cold air is drawn into the bottom of said channel
as said heated air rises, to provide a continuous convection current flowing through said channel upwardly and outwardly along said deflector plates beneath logs disposed on said grill to ignite said logs.

References Cited

UNITED STATES PATENTS

1,632,126 6/1927 Giddings 13—20 X
1,943,209 1/1934 Davis 126—164

2,534,953 12/1950 Curry 219—270 X
2,627,017 1/1953 Howard 219—366
2,920,243 1/1960 Taren 219—270
3,068,868 10/1962 MacLachlan 110—1

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