Nov. 10, 1959 D. V. TUTTLE 2,912,623

ELECTRIC IGNITER FOR GAS BURNERS

Filed March 22, 1956

Fig. 5.

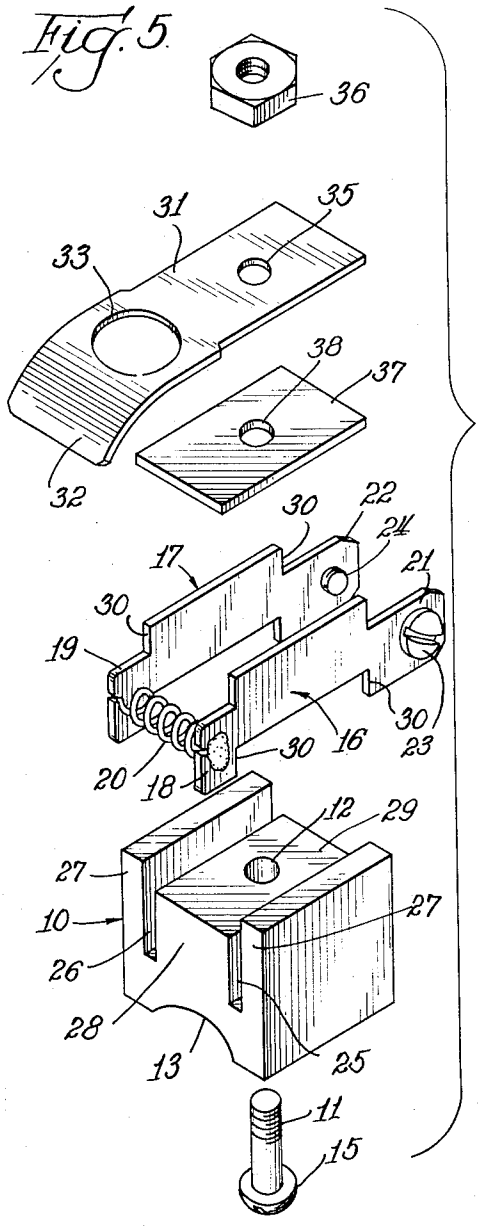


Fig. 2.

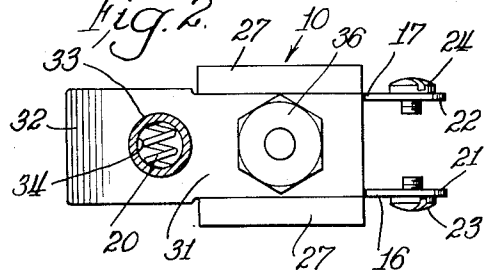


Fig. 1.

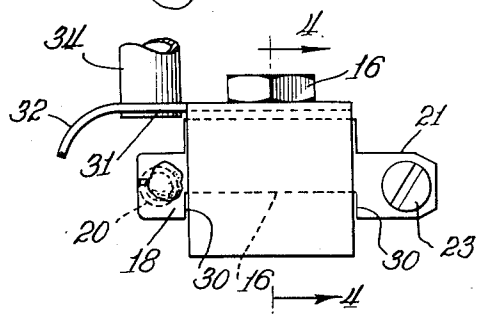


Fig. 3.

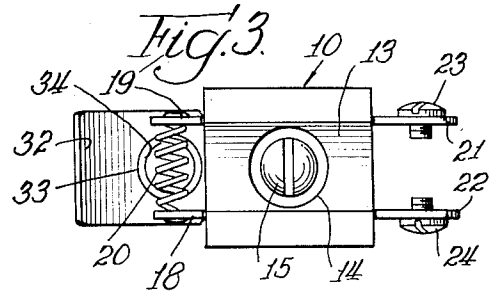


Fig. 4.

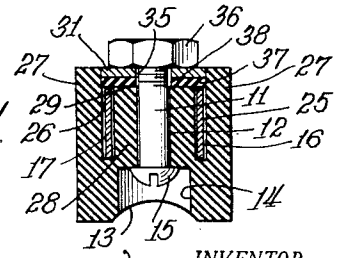
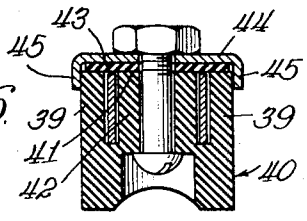


Fig. 6.



INVENTOR.

Daniel V. Tuttle

BY

Eugene M. Giles Atty.

United States Patent Office 2,912,623
Patented Nov. 10, 1959

2,912,623

ELECTRIC IGNITER FOR GAS BURNERS

Daniel V. Tuttle, Kirkland, Ill., assignor to Tuttle Electric Products, Inc., Kirkland, Ill., a corporation of Illinois

Application March 22, 1956, Serial No. 573,189

4 Claims. (Cl. 317—87)

This invention relates to electric igniters for gas burners and has reference more particularly to an igniter of the type wherein a block of insulating material supports in spaced apart relation two electrically conductive strips which have an igniter resistance coil extending between corresponding ends thereof beyond one end of the block and at one side of a hood which is attached to the block.

The principal objects of the invention are to simplify the construction, facilitate the assembly and minimize the cost of such igniters; to utilize an insulating block in which the recesses and openings thereof are arranged to simplify and facilitate the molding thereof; and to combine the parts in a unitary assembly with a single fastener, these and other objects being accomplished as pointed out more particularly hereinafter and as shown in the accompanying drawing in which

Fig. 1 is a side view of the igniter;

Fig. 2 is a view looking at the top of the igniter of Fig. 1;

Fig. 3 is a view looking at the bottom of the igniter of Fig. 1;

Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is an exploded perspective view showing all the parts of the igniter in positions for assembling thereof; and

Fig. 6 is a transverse sectional view, like that of Fig. 4, of a modified form of the igniter.

Referring to the drawing, which shows a preferred form of the igniter, the reference numeral **10** indicates a block of insulating material which constitutes the body of the igniter and has all of the other parts mounted thereon and secured thereto in a unitary assembly by a single fastener, shown herein as a stove bolt **11** which extends through an opening **12** of the body.

Preferably the block **10** is provided at what is herein considered and referred to as the bottom thereof, with a shallow groove **13** of arcuate cross section which extends from end to end of the block, and the opening **12**, which extends directly between the top and the bottom of the block and is preferably midway between the ends of the block and also midway between the sides of the block, is countersunk at the lower end, as shown at **14**, to receive the head **15** of the bolt **11** therein at a place where it is located well above the groove **13** as shown in Fig. 4.

Two conductors **16** and **17** extend through the block **10** from end to end thereof in laterally spaced parallel relation at opposite sides of and electrically insulated from one another and from the bolt **11** by intervening portions of the block **10**, as shown in Fig. 4, and at one end of the block these conductors **16** and **17** have end portions **18** and **19** respectively thereof projecting beyond the end of the block and supporting a small coil **20** of resistance wire which extends directly between the projecting ends **18** and **19** at a short distance from the end of the block and is electrically connected at its opposite ends to the conductor ends **18** and **19** respectively. This

coil is designed to be heated to incandescence by current supplied thereto through the conductors **16** and **17** and thereby serves as the ignition means for the gas.

At the end of the block **10** opposite that from which the coil **20** is located, the conductors **16** and **17** are adapted to have conductors attached thereto through which current is supplied to the igniter, and for this purpose any desired connecting facilities may be provided, as for example, by providing the conductors **16** and **17** with projecting terminal ends **21** and **22** each having a tapped opening therethrough in which a terminal screw **23** and **24** respectively are engaged.

The conductors **16** and **17** are of the same form comprising a sheet metal strip, and to accommodate these conductor strips therein, the block **10** is provided with two laterally spaced relatively deep narrow grooves **25** and **26** which are in respective laterally spaced planes normal to the plane of the top of the block, and each said groove opens through the top of the block and extends from end to end thereof, these grooves being adapted to receive intermediate portions of the respective conductors edgewise therein and to confine the said intermediate portions sufficiently closely to maintain them in upright position and in substantially parallel relation to one another.

These grooves **25** and **26** are located near to the opposite sides respectively of the block which has corresponding side wall or wide leg portions **27** extending upwardly at the outer sides respectively of the grooves **25** and **26**, and the block has a relatively wide saddle portion **28** extending upwardly between and separating the grooves **25** and **26** and terminating in a flat top face **29** which is located at a substantially lower elevation than the upper ends of the side wall portions **27**, as shown particularly in Fig. 4, thereby providing in the top of the block a wide recess extending from end to end thereof and having the grooves **25** and **26** extending downwardly into the block from the opposite lateral extremities of that wide recess.

The intermediate portions of the conductors **16** and **17** which are contained in the grooves **25** and **26** are of such width that when located in their respective grooves **25** and **26** their upper edges are substantially in the plane of the top face **29** of the saddle portion **28** of the block, and the said intermediate portions are offset with respect to their projecting ends **18**, **19**, **21** and **22** of the conductors to provide a wide corresponding notch at the bottom of each conductor **16** and **17** with shoulders **30** at the opposite extremities of the notch which engage the opposite end faces of the block to prevent endwise displacement of the conductors **16** and **17** in the grooves **25** and **26**.

An elongated plate **31** is secured to the top of the block **10** and has an end portion **32** thereof projecting beyond the end of the block at one side of the coil and at a safe distance therefrom and curved part way across the end of the block at a place beyond the coil **20** as shown in Fig. 1 to provide a hood therefor and this end portion **32** is provided, at a place directly opposite the coil **20**, with a large opening **33** through which gas is supplied from a flash tube **34** to the hooded area for ignition by the coil **20**. Preferably the end of the flash tube is secured to the plate **31** in or at the opening **33** and the ignitor may thus be supported by the flash tube or it may be supported in any other desired manner.

This plate **31** is secured to the top of the block **10** by means of the bolt **11** and the portion thereof which overlies the block is of suitable width to be received in the recess between the upper ends of the wall portions or legs **27** of the block, as shown in Fig. 2, and has an opening **35** therethrough through which the upper

threaded end of the bolt 11 projects and the latter has a nut 36 threaded thereon against the top of the plate 31.

This plate 31 and the bolt attachment is also utilized to hold the conductors 16 and 17 in their respective grooves 25 and 26 and in order that it may serve this purpose, a plate 37 of relatively hard electrical insulating material is provided which has an opening 38 to receive the upper end of the bolt 11 and is interposed between the top face 29 of the saddle portion 28 of the block 10 and the plate 31 to be clamped therebetween when the plate 31 is secured to the top of the block as aforesaid.

This insulating plate 37 is of a width to occupy the entire width of the recess between the upper ends of the side walls or legs 27 of the block and preferably extends the full length of that recess so that the lateral margins thereof overlie the upper edges of the conductors 16 and 17 to insure complete electrical insulation of said conductors from the plate 31 throughout the length of the said conductors' offset portions which occupy the grooves 25 and 26 and the upper ends of the side wall or leg portions 27 project coefficiently above the top face 29 of the saddle portion 28 and likewise above the upper edges of the conductors so that both the insulating plate 37 and the mounting or shank portion of the plate 31 are within the top recess of the block and confined between the upper ends of the walls or legs 27 and held thereby in a fixed position of orientation at the top of the block.

Thus it will be noted that the assembly of the ignitor is greatly simplified and facilitated as it is merely necessary to place the conductors 16 and 17 in the grooves 25 and 26 and locate the insulating plate 37 and the rear end of the plate 31 in the recess between the upper ends of the side walls or legs 27, whereupon they are all secured in place in the igniter assembly by application of a single fastener, such as the bolt 11 and nut 36.

The block or body 10 of insulating material may be made in any convenient manner, and shaped by machine operation to provide the required grooves, recesses and openings if desired, but it is an important feature of the invention that the grooves, recesses and openings are all arranged so that the block or body may be made by a simple molding operation in an inexpensive mold from an inexpensive material such as porcelain, the top recess and the grooves 25 and 26, and the bottom grooves 13 and the bolt opening 12 and countersink 14 thereof all being arranged so that the draw therefrom in the molding operation is in directions normal to the top and bottom of the block and there are no crosswise openings or recesses which complicate or require special facilities for the molding operation.

The recess in the top of the block or body 10 in which the insulating plate and the mounting end of the plate 31 are located may be omitted by employing the modification of Fig. 6.

In the said modification the same parts are employed as in the previously described construction and they are assembled in the same manner except that the side walls or legs 39 of the block or body 40 of the Fig. 6 construction terminates at the same elevation as the top face 41 of the saddle portion 42, and there is no recess between the upper ends of the side walls 39 as there is in the previously described construction.

In this modified construction a plate 43 of insulating material is provided which is the same as the previously described insulating plate 31 except that said plate 43 is of a greater width to cover the entire top of the block 40 as shown in Fig. 6, and the portion of the metal plate 31 which overlies the block in the previously described construction is of greater width in the modified construction, as shown at 44 in Fig. 6, and provided with downturned lateral edge portions 45 which project downwardly a sufficient distance to accommodate the insulating plate 43 therebetween and to embrace the top portion of the block 40 at the opposite sides thereof as shown in Fig. 6.

Thus the wide plate portion 44 with its down-turned lateral margins 45 serves the same purpose as the groove in the top of the block of the previous construction, namely, to hold the insulating plate and the hood plate in a fixed position of orientation on the top of the block or body 40.

While I have shown and described my invention in a preferred form, I am aware that various modifications can be made therein without departing from the spirit of my invention, the scope of which is to be determined by the appended claims.

What is claimed is:

1. An electrical igniter of the class described comprising a block of electrical insulating material of squarish cross-section formed with a pair of opposite side walls extending upwardly from and connected to one another by the bottom portion of the block, said block having a thick wall portion thereof extending upwardly from said bottom portion and spaced from said side walls to provide between said thick wall and said side walls narrow slots extending from end to end of the block and open at the top thereof, said block having a fastener receiving opening extending upwardly therethrough at approximately the midwidth of said thick wall, a pair of laterally spaced corresponding thin metal strips confined in upright position in the respective slots and extending from end to end of the block and beyond the opposite ends thereof, said strips having a resistance coil igniter extending between corresponding end portions thereof beyond one end of the block and each strip having a notch in the bottom thereof of a length corresponding to that of the block and having opposed depending stop shoulders at the opposite ends of the notch and engaging the opposite ends of said bottom portion of the block therebetween to hold the strips against endwise movement in their respective slots, and each said strip having at the top thereof above its respective notch an upwardly projecting portion extending at least approximately to the top of its respective slot, and means for retaining the strips in said slots, said means comprising a layer of electrical insulating material and a plate and a fastener, the layer of which overlies the top of said thick wall and extends over said upwardly projecting portions of the strips and the plate of which overlies said layer and has an extension thereof projecting beyond the igniter end of the block at one side of and beyond the igniter and the fastener of which extends through said opening of the block and clamps the layer and plate onto the top of the thick wall portion and over said upwardly projecting portions of the strips.

2. An igniter as described in claim 1 wherein the plate has opposite edge portions engaged with upper end portions of said side walls and cooperable therewith to hold the plate and layer in a predetermined fixed position of orientation relatively to the block.

3. An igniter as described in claim 1 wherein the plate and layer are confined between upper end portions of the side walls and held thereby in a predetermined fixed position of orientation relatively to the block.

4. An igniter as described in claim 1 wherein the plate has depending opposite edge portions confining the layer and upper end portions of the side walls therebetween.

References Cited in the file of this patent

UNITED STATES PATENTS

2,384,797	Cerny	Sept. 18, 1945
2,730,662	Perl	Jan. 10, 1956
2,753,930	Fleury	July 10, 1956
2,768,677	Traver	Oct. 30, 1956

FOREIGN PATENTS

429,653	Germany	Jan. 22, 1925
522,215	Germany	Mar. 19, 1931