Dec. 6, 1966 H. E. NELSON 3,289,667

FUEL BURNER

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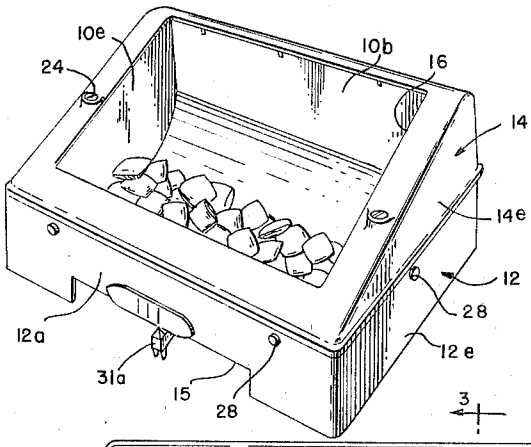
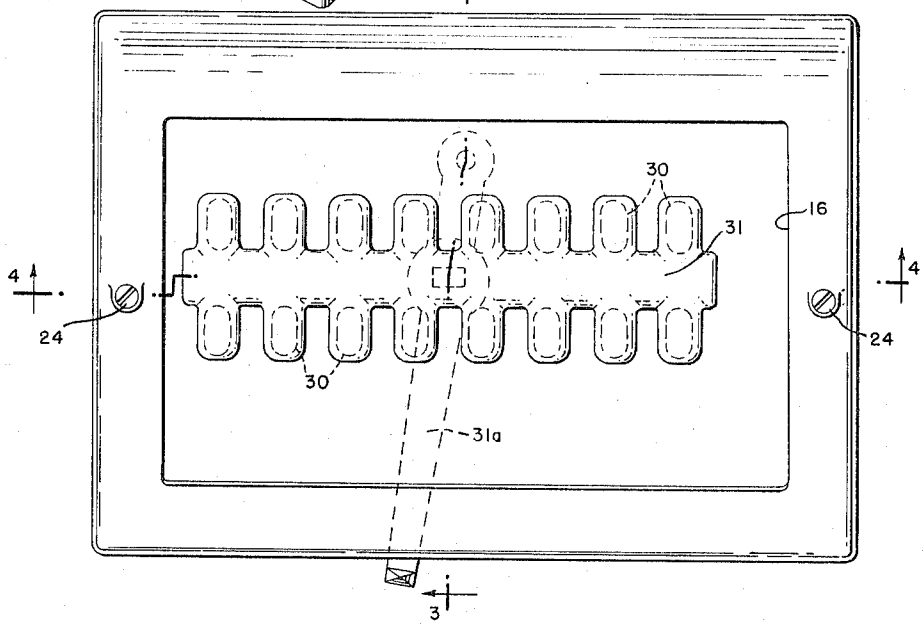


FIG. 1

FIG. 2



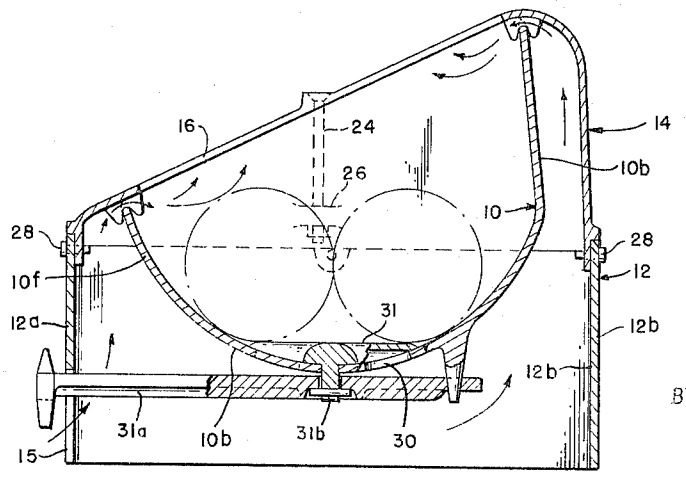


FIG. 3

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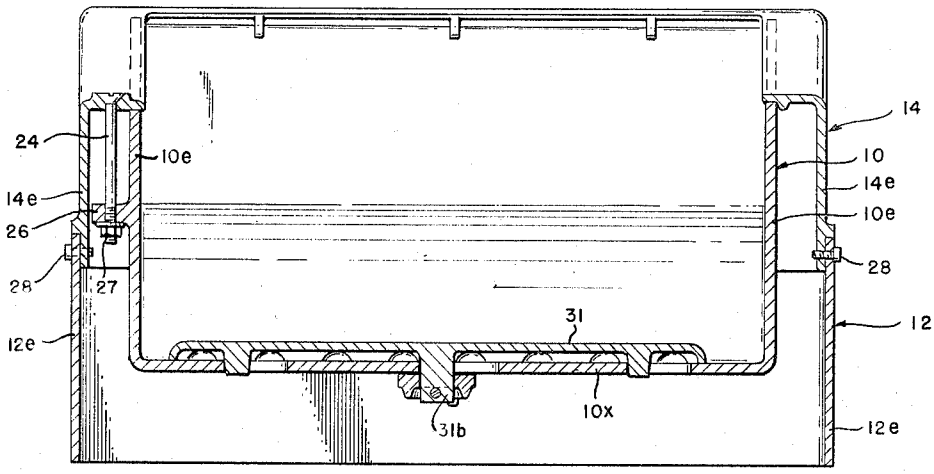


FIG. 4

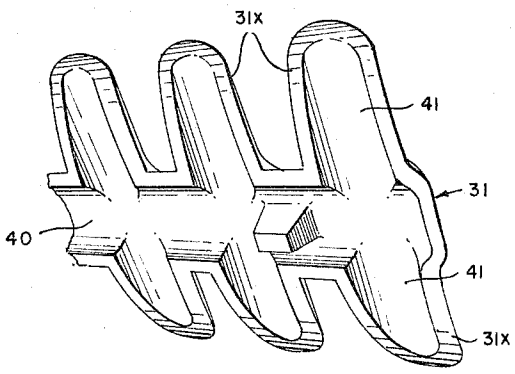


FIG. 5

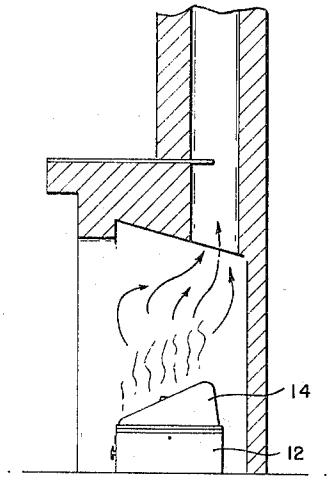


FIG. 6

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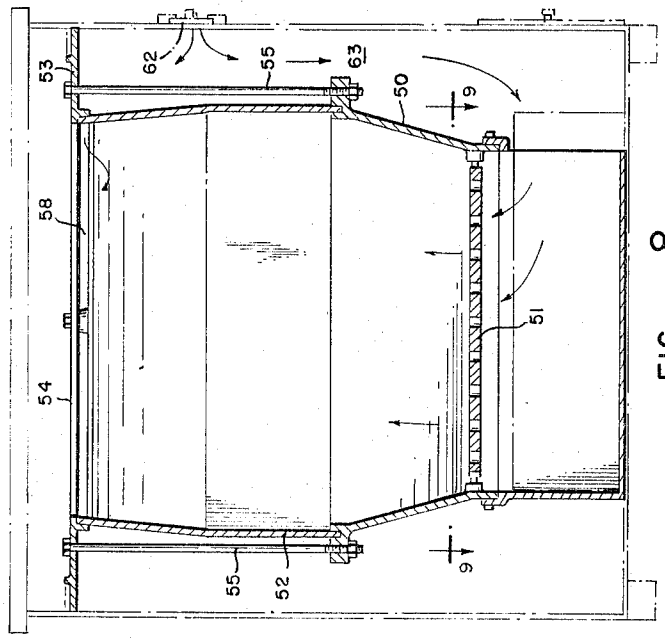


FIG. 8

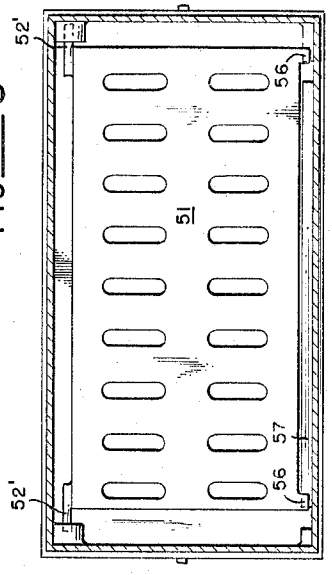


FIG. 9

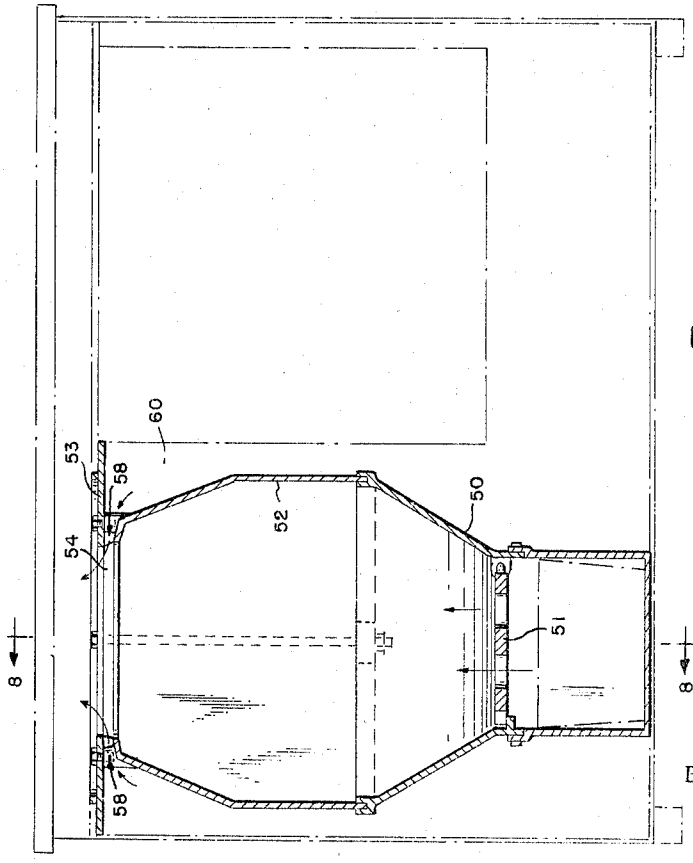


FIG. 7

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United States Patent Office

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FUEL BURNER

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Filed Jan. 25, 1965, Ser. No. 427,736

3 Claims. (Cl. 126—165)

This invention relates to improvements in what may be designated a fuel burner, designed for placement and use in the combustion chamber of a typical residential fireplace or in the combustion chamber of a "Franklin" stove for the economical burning of fuel briquettes, "Presto-Logs" or coal.

It is the principal object of the present invention to provide a fuel burner for the above stated purpose, having a basket-type fuel container of cast iron, that is held within a supporting housing designed for placement on the floor of the combustion chamber of a residential fireplace, or within the combustion chamber of a "Franklin" stove as a unitary device for the burning of fuel in view of persons in front of the fireplace or the stove in which the burner may be placed for use.

It is also an object of the present invention to provide a fuel burner of the above stated character, comprising a fuel container that is so designed and is so applied within the supporting housing as to provide for an unrestricted circulation of incoming air about the walls of the fuel container and for a regulated inflow of air through dampered passages in the bottom of the fuel container, thus to facilitate and control the rate of fuel burning. Also, to provide for air flow into and across the top of the burning fuel bed as held in the fuel container, thus to promote complete combustion of fuel gasses and fuel.

It is a further object of the present invention to provide the fuel container with bottom air intake passages and a slidably adjustable damper plate of novel formation. designed for its protection against burning or overheating, by entering air.

Further objects and advantages of the invention reside in the provision of a modified form of fuel burner, embodying therein the principal features of the first mentioned device designed for use in the fire-box of a cook stove or the like.

In accomplishing the above mentioned and other objects and advantages of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein:

FIG. 1 is a perspective view of the unitary fuel burner embodied by the present invention.

FIG. 2 is a plan or top view of the fuel burner of FIG. 1.

FIG. 3 is a vertical section, taken transversely of the burner on line 3—3 in FIG. 2.

FIG. 4 is a longitudinal cross-section of the burner taken on line 4—4 in FIG. 2.

FIG. 5 is an enlarged detail showing the underside of the damper plate used in the fuel container.

FIG. 6 is a view showing the normal position of use of the fuel burner of FIG. 1 in the combustion chamber of a fireplace.

FIG. 7 is a vertical cross-sectional view showing my modified form of device as used in the firebox of a cook stove.

FIG. 8 is a vertical section taken longitudinally of the burner and stove on line 8—8 in FIG. 7.

FIG. 9 is a horizontal section taken on line 9—9 in FIG. 8.

Referring more in detail to the drawings:

The device of this invention, as disclosed in FIGS. 1 through 5, comprises what I have herein designated as the fuel container or burner or basket **10** which is best shown

in FIGS. 3 and 4 to be supported and enclosed by an assembled housing made up of a rectangular sheet metal base section and a cast iron top section **14** as will presently be fully described.

Devices of the kind shown in FIG. 1 may be made in various dimensions, but for use in a typical residential fireplace, would generally be approximately sixteen to twenty inches long, twelve to fourteen inches from front to back depth and with a height of about twelve inches at the back side and of substantially lesser height at the front.

The dimensions of the burner as above given are not critical and are herein given only to impart a better understanding of the character of the device as generally known.

The fuel container **10** is of cast iron and is of a trough-like formation, with a substantially cylindrically rounded bottom **10***x* and with an upwardly extended and slightly forwardly leaning back wall **10***b* which is extended to a substantial height above the front wall portion **10***f*, and at its opposite ends this container is closed by vertical end walls **10***e* seen in FIG. 4 that have top edges sloped upwardly front to back to the same level of these walls.

The housing that supports and encloses the fuel container **10** therein is comprised by the base section **12** and the top section **14**. The base section **12** is rectangular in plan and has a front wall **12***a*, a back wall **12***b* and opposite end walls **12***e*. The front wall **12***a* is formed with an elongated opening **15** of ample dimensions for easy inflow of outside air. The top section **14** is of rectangular formation and is disposed upon the base section **14** with their corresponding vertical walls in registration as in FIG. 3. It is also noted in FIG. 3 that the top section **14** has a relatively high back wall, a relatively low front wall and is formed with an integral top wall provided with an opening **15** that is only slightly lesser in dimensions than the open top of the fuel container **10** over which it is applied.

In its assembly, with the supporting housing, the fuel container **10** is applied and is secured symmetrically within the top section **14** and it is to be noted in FIG. 4 that this top section is applied as a sort of top cover that rests upon the top edges of the walls of the lower or base section **12** with the container **10** extending lengthwise of the assembled sections **12** and **14** as seen in FIG. 4.

The top section **14** is rectangular and as formed with the top opening **16**, has a length and width only slightly lesser than the dimensions of the open top of basket **10** and it is to be observed also that the top section **14** is closed across its opposite ends by vertical walls **14***e*, as best shown in FIG. 4, which are outwardly spaced from the end walls of the basket **10** when it is applied and fixed therein.

The base section **12** of the container supporting housing is rectangular and its enclosing walls are all of the same height, sufficient to support the cylindrically rounded bottom of the container **10**, as fixed in the top section **14**, well above the surface on which the base of the housing is supported.

The fuel container **10** is fixedly supported in the top section **14** by screw bolts **24** that are applied downwardly through openings in the horizontal end portions of the top section **14** and through outwardly projecting lugs **26** cast on the end walls **10***e* of the basket and are secured by nuts **27** applied to their lower ends, as shown in FIG. 4. Also, the top edge of the enclosing walls of the rectangular base **12** are secured to the side and end walls of the top section by screws, as at **28**, in FIG. 4.

The arcuately rounded bottom surface of the fuel container **10** is provided with centrally and longitudinally spaced draft openings **30** as shown in FIG. 3, over which a damper plate **31** is slidably mounted for movement be-

tween open and closed positions. The damper plate **31** is longitudinally movable by means of a lever **31***a* which is secured to the damper plate by the leg **31***b* which extends downwardly from the damper plate. The lever extends outwardly beyond the front wall **12***a* for movement of the damper plate as required.

A feature of this damper plate formation is noted in FIG. 5 which shows the under surfaces of the damper bar **31** to be centrally longitudinally troughed as at **40** and the lateral wings of the damper to be similarly troughed as at **41**, thus to allow an inflow of air beneath the wings and damper bar when the damper is either in closed or open position, thus to protect the damper from any burning or overheating.

The modified form of the present invention as shown in FIGS. 7 and 8, includes all of the principal features of the device of FIG. 1. It comprises a bottom section **50** of simulated hopper form closed at its lower end by a horizontal grate **51**. Mounted on the top edge of section **50** is a body section or combustion box **52** with opposite side walls inclined upwardly toward each other and mounting a horizontal top plate **53** defining a top opening **54**. The parts **50**, **52** and **53** are joined together by tie bolts **55** across their opposite ends.

It is to be noted that the top plate **53** is upwardly spaced from the top edges of the opposite side walls of the body section to provide air passages **58—58** into the top portion of the combustion box **52**. The lower end of the bottom section is closed by the grate **51** which, as shown in FIG. 9, is hinged at one edge for downward swinging at its opposite edge for the dumping of ashes from the combustion chamber **52**. Hinges are designated at **52'** in FIG. 8.

This grate is held in horizontal position by lugs at its swinging edge, that normally rest on a notched supporting flange at its swinging edge. Shifting of the grate a slight distance front or back sets the lugs in or displaces them for the supporting flange, for downward swinging.

The position of use of the device of FIG. 7 is within the firebox **60** of a stove of the kind indicated. Air is supplied to the ash box of the firebox or ashbox door through an adjustable damper **62**. The inflowing air being delivered through a passage **63** as in FIG. 8 under control of the damper.

What is claimed is:

1. A fuel burner comprising a housing having front, back and opposite end walls, said back wall being higher than said front wall, an upwardly and rearwardly inclined cover portion defining a top opening, a trough-like fuel container supported in said housing spaced from the walls of said housing and said cover portion, said container having a trough-like bottom portion of cylindrical curvature and having a low front wall and a rear wall extended to a substantially higher level than said front wall of the housing and closed at its opposite ends by vertical end walls, and said fuel container being supported at its opposite ends from the end defining portions of the cover plate, and the longitudinal edge portions of said cover plate being shaped to deflect the air currents delivered from the housing chamber inwardly across the top edges of the container walls to facilitate the combustion of fuel burning in the container.

2. A fuel burner according to claim **1** wherein the fuel container includes evenly spaced draft openings in its bottom surface and a damper plate is adjustably mounted in said container for adjustment over and from said openings said draft openings being directed transversely of the container and said damper plate being formed with laterally directed wings for overlying said openings and formed with channeled under surfaces for the flow of cooling air from the air chamber therein.

3. A fuel burner according to claim **2** wherein said damper plate is shiftable endwise in said container by means of an actuating lever that is disposed below the bottom of said trough-like container transversely thereof and which has its inner end pivoted to the container and its outer end extends beyond the front wall of said housing, and having a pivoted connection between its ends with a leg extending downwardly from the damper plate.

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CHARLES J. MYHRE, *Primary Examiner.*