

Dec. 10, 1935.

B. W. TULLIS

2,023,624

BURNER

Filed Nov. 3, 1933

FIG 1

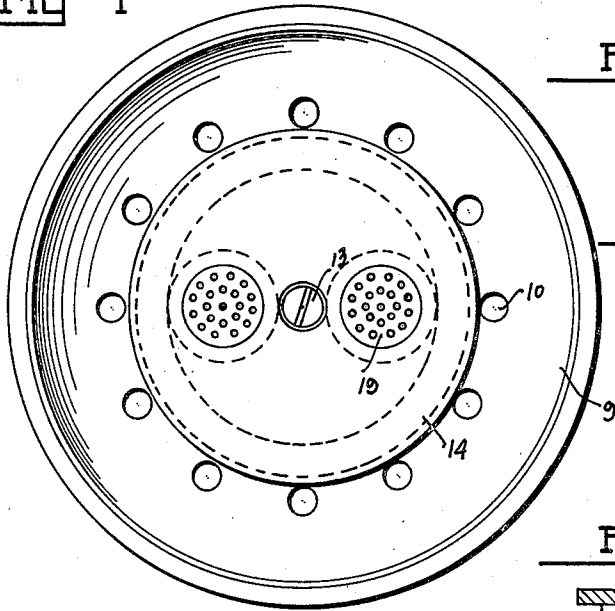


FIG 3



FIG 4

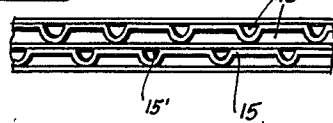


FIG 2

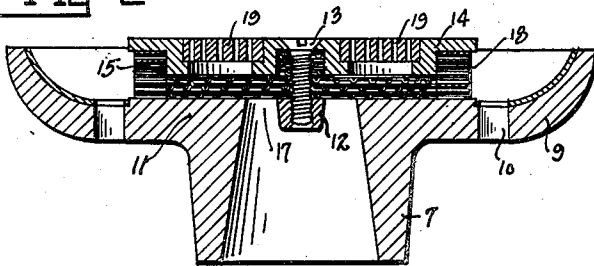


FIG 5

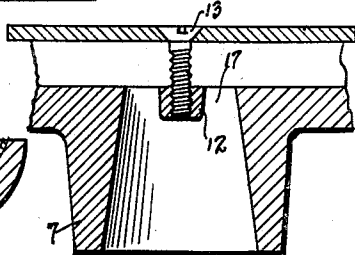
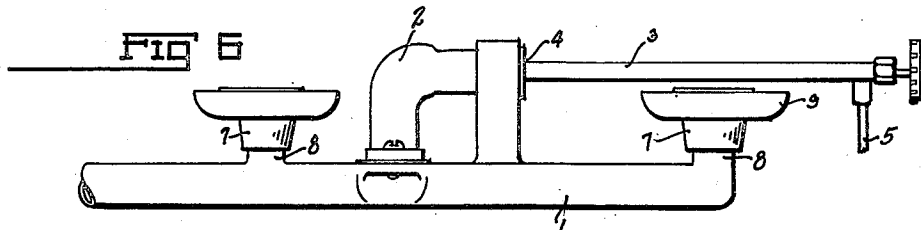


FIG 6



INVENTOR
BOYD W. TULLIS
BY *B. F. Frank*
ATTORNEY

UNITED STATES PATENT OFFICE

2,023,624

BURNER

Boyd W. Tullis, Wichita, Kans., assignor to The
Coleman Lamp and Stove Company, Wichita,
Kans.

Application November 3, 1933, Serial No. 696,503

2 Claims. (Cl. 158—116)

This invention relates to burner construction and particularly to burners for combusting hydrocarbon fuel such as gasoline and the like.

The primary object of the invention is to provide a burner which will have the maximum efficiency under varying conditions.

One of the problems encountered in gasoline stove construction is to provide a burner which will burn efficiently when the flame is relatively low and another problem is to provide a burner which can be set in the stove at a point near the object to be heated. For example, the ordinary gasoline stove has the burner or burners well below the grate of the stove because the flame space between the burner and the grate must be great enough to accommodate the upstanding flame. My invention contemplates the provision of means whereby the flame will be at the perimeter of the burner so the burner proper can be close to the grate.

In considering this invention it should be borne in mind that gasoline is relatively heavy in hydrocarbon content and that it is capable of being burned in a low pressure burner, so I have designed the burner so that the pressure at the outlets will be less than that at the inlets, therefore the flame will be close to the perimeter of the burner, and the fuel passages are shown as having progressively increasing cross sectional areas to cause the reduction of the pressures. Also, the burner has certain novel structural features all of which will be specifically described hereinafter, reference being had to the accompanying drawing in which

Figure 1 is a top plan view of a burner constructed in accordance with my invention.

Figure 2 is a vertical cross sectional view through the same.

Figure 3 is a fragmentary plan view of one of the fuel-passage-forming laminations.

Figure 4 is a fragmentary edge view of a plurality of the laminations.

Figure 5 is a fragmentary sectional view of the burner casting and the cap piece, and

Figure 6 side elevational view of the burner manifold, two burners and the vapor generator.

The burner manifold 1 is supplied through a mixing chamber 2 from a vapor generator 3 having a tip which enters the air opening 4 in the usual manner. The liquid fuel is supplied to the generator 3 by a pipe 5 connected to a fuel tank containing liquid fuel under air pressure as is well understood by those skilled in the art to which this invention relates. The burner casting has an open neck 7 supported by an open

upstanding tubular portion 8 on the manifold.

The neck portion of the casting merges at its upper end into a concave reflector 9 having secondary air openings 10 in circular series about the head portion 11 of the casting.

In the opening of the neck is a cross bar 12 to receive the threaded end of a bolt 13 to clamp the cap 14 against the series of laminations 15 so as to clamp them against the head portion 11 as shown in Figures 1 and 2.

The laminations are shown as corrugated rings with flat spacer rings 15' between them to form radial passageways 16 so that the combustible mixture can flow from the central fuel chamber 17 in radial streamlines to the periphery 18 of the burner.

The passageways 16 are long enough so that danger of back-flashing will be prevented.

The rings are preferably made of corrosive resisting material. Lava tips 19 may be inserted in the cap piece 14 if desired to heat the generator.

From the foregoing, it will be seen that the cap pieces can be set close to the grate of the stove and that the flame will be located at the perimeter of the burner across the face of the reflector so that secondary air will be supplied through the openings 10 and that the reflector will intensify the heat furnished.

The laminated arrangement of the passage forming rings 15 allows the burner to be manufactured inexpensively and the transverse ribs forming the corrugations will maintain the passageways of predetermined sizes in order that the streamlines of fuel will be uniform and thus provide a blue flame band about the burner.

The outlets or radial passageways 16 are shown as having progressively increasing port areas so that the pressure at the perimeter of the burner will be less than that at the inlets of the passageways so the gas or fuel at the perimeter of the burner has very little pressure, and since the lengths of the passageways 16 are approximately 4 times the short dimension of the passageways, danger of back-firing will be prevented.

What I claim is:

1. A burner comprising a casting having a central opening for the flow of vaporized fuel, a stack of ring-shaped laminations surrounding a space above the central opening and provided with fuel passageways having progressively increasing port areas from the inner edges of the rings to the outer edges so that the vapor pressure at the outlets of the fuel passageways will be less than that at the inlets thereof, the laminations consisting of ring shaped members having one flat face and

one corrugated face to provide grooves, and complementary laminations consisting of flat rings resting upon the flat faces of the first named laminations to close the grooves to provide outlet passageways running radially with respect to the axis of the central opening.

2. A burner comprising a casting having a neck portion with a vertical passageway, a plurality of rings surrounding the upper end of the passageway, said rings each having a flat face and a corrugated face to provide grooves, and flat rings alternating with the first named rings and lying

against the flat faces thereof so that the two rings form fuel passageways directed radially with respect to the axis of the vertical passageway. the grooves formed by the corrugations having outward diverging walls so that the effective port areas of the radial passageways progressively increase toward the peripheries of the rings, whereby fuel pressure at the outlets will be less than at the inlets and means for fastening the stack of rings to the casting.

BOYD W. TULLIS.