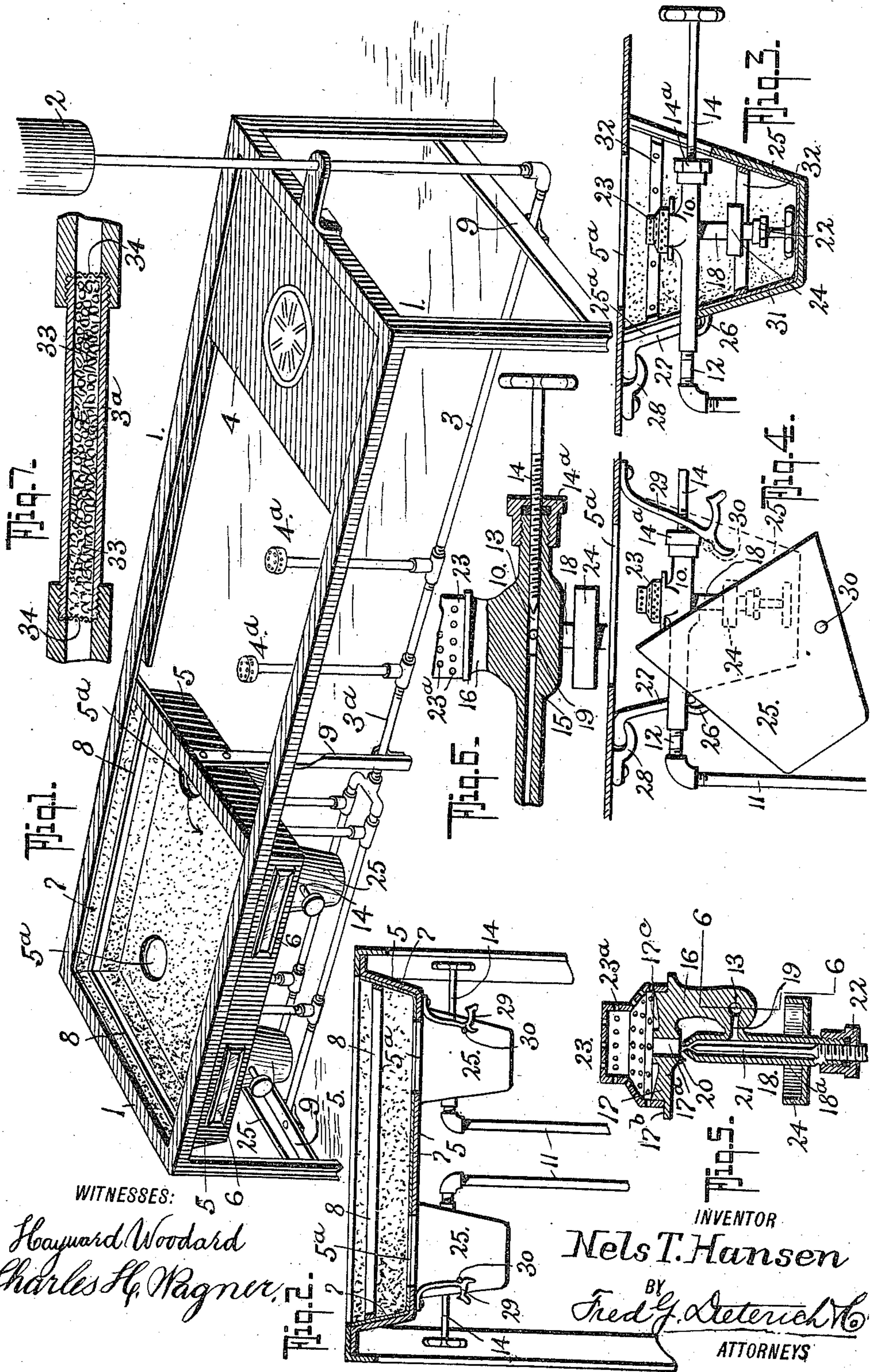


N. T. HANSEN.
LIQUID FUEL BURNER.
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UNITED STATES PATENT OFFICE.

NELS T. HANSEN, OF HAWARDEN, IOWA.

LIQUID-FUEL BURNER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NELS T. HANSEN, residing at Hawarden, in the county of Sioux and State of Iowa, post-office address general delivery, Hawarden, Iowa, have invented certain new and useful Improvements in Liquid-Fuel Burners, of which the following is a specification.

My invention relates to certain new and useful improvements in liquid fuel burners particularly adapted for use in connection with cooking stoves and the like.

The burners are of a special construction and form one of the essential improvements embodied in this application. Each burner comprises a tube having a cut-off valve, an auxiliary needle controlled valve directing the flow of fuel into the burner cone where it passes through the perforations of the burner cap and is ignited.

More specifically the invention resides in those novel details of construction, combination and arrangement of parts, all of which will be first fully described, then be specifically pointed out in the appended claims and illustrated in the accompanying drawings, in which:

Figure 1, is a perspective view of the invention in use. Fig. 2, is a vertical cross section of the same. Fig. 3, is an enlarged detail side elevation of one burner and its enveloping cup or bowl. Fig. 4, is a similar view, the cup being released and the burner exposed ready to light. Fig. 5, is a detail vertical longitudinal section of a burner. Fig. 6, is a cross section on the line 6—6 of Fig. 5. Fig. 7, is a detail sectional view of a part of the feed pipe.

Referring now to the accompanying drawings in which like letters and numerals of reference indicate like parts in all of the figures 1 represents the stove which may have the usual gasoline or oil tank 2, main feed pipe 3, burner plates 4 and burners 4^a, etc.

In carrying out my invention, I provide a trough-shaped body 5, which is supported on the frame of the stove, and has burner holes 5^a in its bottom. The trough 5 has windows 6 in its front through which the burners may be seen to observe the condition of the flame. The interior walls of the trough 5 are lined with asbestos 7, or other poor conductor of heat, to concentrate the heat within the chamber of the trough 5. The lining 7 is retained in place by bands 8, or in any other suitable manner. Beneath the band and

trough 5 are the burners 10 which are supplied by lateral pipes 11 and 12 from the main pipe 3, which pipes are supported by hangers 9, as indicated. Each burner 10 (there being one for each hole in the trough 5) is composed of a pipe-like section 15, having a bore 13 threaded from its free end to receive the cut-off valve 14 which is threaded into the bore 13 to close off the flow of fuel at times, a stuffing nut or gland 14^a being provided to prevent leaking through the valve. The burner includes an upwardly projecting member 16 to which the member 17 of the burner is secured in any desired way.

A needle valve device 18 connects at 19 with the pipe-like section 15 of the burner and has its orifice 20 controlled by a valve needle 21 that is threaded into the valve casing 18, a gland 22 being provided to prevent leakage. The valve device 18 discharges into the hole 17^a of the member 17 of the burner. The member 17 of the burner has a cup portion or annular depression 17^c to receive any fluid or fuel residue that collects during the operation of the burner or particularly at the commencement of the lighting of the burner before the burner cap has become heated. The member 17 of the burner is also provided with a flange 17^b to support the burner cap 23, through whose perforations 23^a, the fuel when vaporized is discharged. A cup 24 is held on the casing of the valve device 18 for use in starting the burner, as will be readily apparent to those skilled in the art to which the invention appertains.

25 is a cup slotted at 25^a to permit it to be fitted over the burner. The cup 25 has an eye 26 to which the hanger 27 is pivoted, the hanger 27 being held by a clamp 28 on the bottom of the pan or trough 5, and the cup is held over the burner by a spring catch 29 that engages a lug 30 on the cup 25. The cup 25 is asbestos lined at 31, the lining 31 being retained by bands 32, as shown.

By providing the cups 25 and the trough or pan 5 the heat from the burners is retained as long as possible and concentrated beneath the parts being heated, it being understood that an oven or cooker or other utensil is placed over the pan 5, in practice.

By constructing the burner as shown and described a simple, effective and easily manufactured burner is produced which is very effective and economical in its operation.

When gasolene is used as fuel the section 3^a of the feed pipe 3 is filled with washed gravel 33 which is held in place by perforated sheet steel screens 34 at each end, the gravel and screens, however, being omitted when kerosene is to be used as a fuel.

When it is desired to light a burner it is only necessary to release the cup 25 so it may assume the position shown in Fig. 4, after which, by opening the cut-off valve 14, the fuel in the drip cup 24 may be ignited to heat the burner, after which ignition may take place at the burner cap and the cup 5 restored to its closed position, as shown in Fig. 3.

From the foregoing description taken in connection with the accompanying drawings, the complete construction, operation and advantages of my invention will be readily understood by those skilled in the art to which the invention appertains.

What I claim is:

1. A burner that comprises a pipe-like member having a longitudinal bore from end to end, a fuel supply pipe delivering into one end of said member, a valve rod threaded into the other end of said member, a needle valve casing formed with said pipe-like member intermediate its ends, said pipe-like member and said casing having a communicating port, said valve rod adapted to be moved past said port to prevent the flow of fuel into said port, a valve needle threaded into said needle valve casing, said needle valve casing having an outlet orifice controlled by said valve needle, said pipe-like member having a vertically projected supporting portion, a burner mem-

ber carried by said supporting portion, said burner member having a central bore aligning with said needle valve casing outlet and into which said outlet discharges, said burner member having an annular groove in its upper face surrounding said central bore of said burner member and a burner cap held on said burner member.

2. A burner that comprises a pipe-like member having a longitudinal bore throughout its length, a fuel supply pipe delivering into said pipe-like member at one end, and a valve rod threaded into the other end of said pipe-like member, said pipe-like member having a transverse opening communicating with said bore between which and the fuel inlet end of said pipe-like member said valve rod is adapted to be projected to shut off the flow of fuel, a needle valve device including a needle-valve casing carried by the pipe-like member, said transverse opening delivering into said needle valve casing, a burner member over said needle valve casing and having a central passage into which said needle valve device delivers, a drip cup carried by said needle valve device, said burner member having a flange, an apertured burner cap held on said flange, the upper surface of said burner member having an annular depression to leave a flange around said central passage of said burner member, substantially as shown and described.

NELS T. HANSEN.

Witnesses:

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