W. E. WEATHERS.

OIL BURNER.

APPLICATION FILED JAN. 20, 1910.

965,775.

Patented July 26, 1910.

Fig. 1.

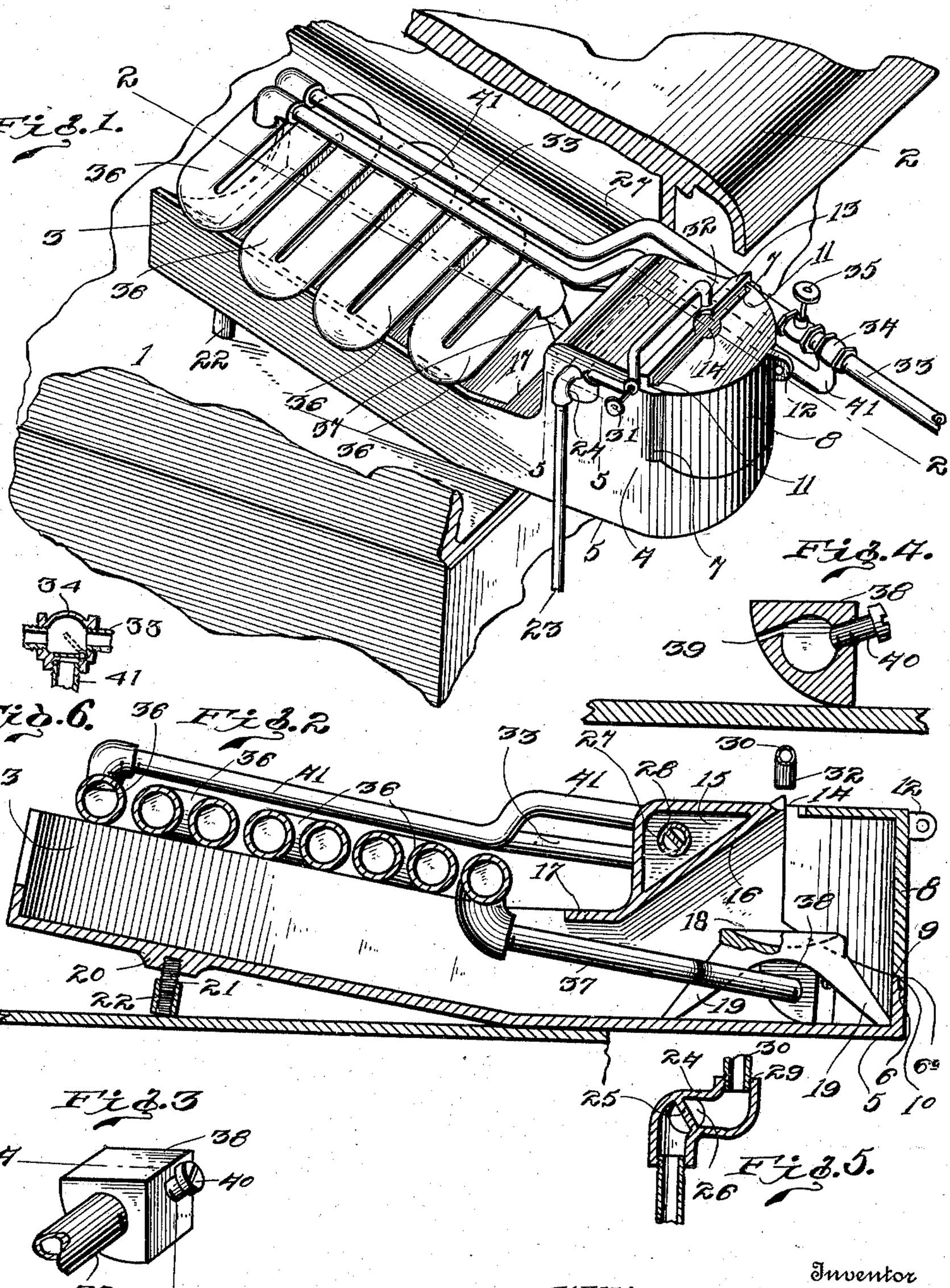

Fig. 4.

Fig. 6.

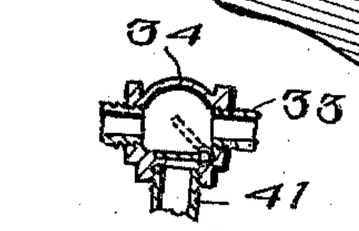

Fig. 2.

Fig. 3.

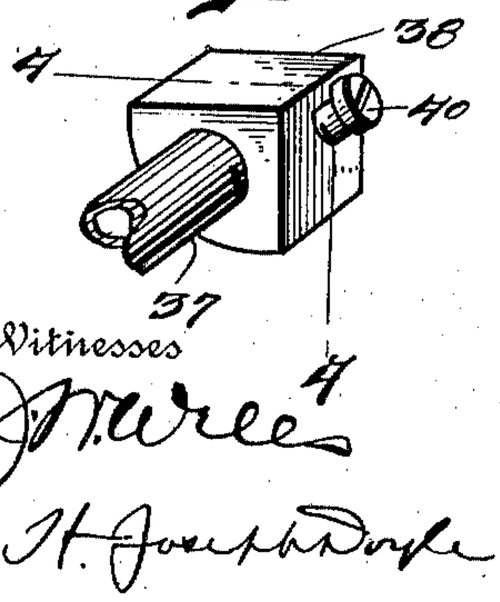

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM E. WEATHERS, OF FREDERICK, OKLAHOMA.

OIL-BURNER.

965,775. Specification of Letters Patent. **Patented July 26, 1910.**

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To all whom it may concern:

Be it known that I, WILLIAM E. WEATHERS, a citizen of the United States of America, residing at Frederick, in the county of Tillman and State of Oklahoma, have invented certain new and useful Improvements in Oil-Burners, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to oil burners, and the principal object of the same is to provide a novel type of oil burner in which a thorough combustion of the fuel is obtained by the use of steam, means being provided whereby the steam is generated through the heat from the burner, and means being provided whereby the danger of explosion of the steam is automatically prevented.

In addition to the foregoing prominent features of the invention, it is contemplated providing a novel type of burner pan one end of which is provided with a burner, the burner being surrounded by a sectional casing through which the fuel is fed to the burner, and one portion of said casing being provided with a compartment through which the fuel is passed before being delivered to the burner, said compartment being arranged relatively to the burner so that the heat from the burner retains said compartment highly heated.

In carrying out the objects of the invention generally stated above it will be understood, of course, that the essential features of the same are necessarily susceptible of changes in details and structural arrangements, one preferred and practical embodiment of which is shown in the accompanying drawings, wherein—

Figure 1 is a fragmentary perspective view of the firebox of a stove showing the improved burner mounted therein. Fig. 2 is a central vertical sectional view taken on the line 2—2, Fig. 1. Fig. 3 is a detail perspective view of the steam discharge nozzle forming a part of this invention. Fig. 4 is a vertical sectional view taken on the line 4—4, Fig. 3. Fig. 5 is a detail vertical sectional view taken on the line 5—5, Fig. 1. Fig. 6 is a detail view of the check valve for permitting the excess steam to escape from the generator.

The improved burner is equally applicable to cooking or heating stoves, and is placed in the firebox 1 of a stove 2 such as is conventionally shown in the accompanying drawings.

The burner comprises a pan 3, the bottom of which is flat and provided with a casing 4 at its forward end the bottom 5 of which is preferably at an angle to the bottom of the major portion of the pan. The outer end of said casing is rounded and has its upper portion cut-away, the lower edge of said cut-away portion being provided with a seat 6 and the sides of said cut-away portion being arranged to provide vertical side guides 7. A closure 8 is provided for said cut-away portion, said closure conforming to the contour of the casing and having a bottom edge that is provided with a seat 9 and a flange 10 which are adapted for overlapping engagement with the seat 6 and the seat flange 6^a of the bottom edge of the cut-away portion, and the vertical sides of said closure being provided with flanges 11 which engage the inner surfaces of the side guides 7. Said closure 8 is also provided with an external handgrip 12 by means of which the closure may be readily manipulated to place the same in position to close the cut-away portion of the casing or to be removed therefrom. At its top, the casing is provided with a raised guard flange 13 the free edge of the central portion of which is cut-away, and the free edge of the top of the closure 8 at its center is complementally cut-away, so that an opening 14 is provided that communicates with the interior of the casing and through which fuel is fed.

The inner upper corner of casing 4 is divided into a heating compartment 15 by means of the inclined wall 16 which merges into the inner vertical wall of the casing, and said vertical wall, in turn, merges into a flat flange 17 that covers or overlaps, the open end of casing 4 that communicates with pan 3.

A substantially cup-shaped burner 18 is supported within casing 4 by the legs 19, said burner being located directly beneath the fuel opening 14.

The pan 3 is provided with bottom lugs 20 which are provided with a threaded opening for the reception of an adjusting screw 21, the screws in turn engaging internally threaded tubes 22, thereby providing adjustable supporting legs for the pan by means of

which said pan may be adjusted relatively to the grate or bottom of the firebox upon which it is resting.

A fuel supplying pipe 23 has one end in communication with the inlet end of a union 24, said union being provided with a partition plate 25 that divides a side outlet 26 into which a pipe 27 extends, said pipe 27 being provided with a central, longitudinally arranged partition plate 28. Said pipe 27 is open at both ends, and extends into compartment 15. The discharge end 29 of union 24 has a threaded engagement with a feed pipe 30 that is equipped with a controlling valve 31, said pipe 30 extending over the top of casing 4 and having a pendent discharge end 32 that is arranged directly over fuel opening 14. This arrangement of fuel feeding means causes the fuel to pass through one side of pipe 27 and enter compartment 15 and leave said compartment through the other side of said pipe, and be delivered through fuel feeding opening 14 in a heated condition owing to the fact that said compartment has been heated by the flames from burner 18.

A water supply pipe 33 equipped with a check valve 34 and a controlling valve 35, has one end portion extending longitudinally over pan 3, said pipe communicating with the inner end of a water coil 36. The outer end of coil 36 has a pipe 37 extending therefrom that projects through the open end of casing 4 and passes beneath burner 18 and enters one end of a nozzle 38 that is provided with a downwardly inclined discharge orifice 39 which directs the steam discharged therethrough to the bottom of the open end of casing 4. A threaded plug 40 closes a threaded opening that communicates with the interior of the discharge nozzle 38 and through which access may be had to the interior of the nozzle to permit the same and its discharge orifice to be cleaned when necessary or desirable.

As described, it will be understood that the necessary air supply is had between the guard flange at the top of casing 4 and the free edge of the top of closure 8 to insure combustion of the fuel in the burner 18, and that the heated products of combustion from the fuel burning flows through the open end of casing 4 and contacts with and highly heats the coil 36 supported upon pan 3 so that the water entering said coil is converted into steam. And the steam from said coil is discharged from nozzle 38 toward the open end of casing 4, which mixes with the burning fuel and causes a thorough combustion of the same, and also causes a draft to be formed through said open end of the casing which directs the heat from the casing to the coil 36.

As an adjunct to the steam generating feature of the invention, means are provided whereby the surplus steam may be automatically withdrawn from the coil 36 so that an explosion is prevented, said means comprising a pipe 41 that has one end in communication with the inner end of said coil, and its other end in communication with the check valve casing 34 of water supply pipe 33. It will be understood that when more steam is generated in coil 36 than can be discharged by nozzle 38, the excess steam will be by-passed through pipe 41 to supply pipe 33, the check valve 34 forming the connection between pipes 33 and 41 and being of the well known inwardly opening type which will readily permit the passage of the steam to said pipe 33.

What I claim as my invention is:—

1. An oil burner comprising a burner pan, a casing at one end thereof, a burner in said casing, means for feeding fuel to said burner, water coils carried by said pan, means for supplying water thereto, a discharge nozzle in said casing and in communication with said coils, and means for by-passing excess steam from said coils to said water supply.

2. A device of the character described comprising a pan, a casing in one end thereof, said casing having an upper heating compartment, a burner in said casing, fuel feeding means for said burner adapted to cause the fuel to circulate through said compartment before being delivered to said burner, a steam generator carried by said pan and delivering steam to said casing, and means for removing the excess steam from said generator.

3. A device of the character described comprising a pan, a casing at one end thereof provided with an upper heating compartment, a burner in said casing, a fuel feeding pipe, a pipe communication between said feeding pipe and said compartment for causing the fuel to circulate through said heating compartment, a supply pipe for delivering the fuel from said compartment to said burner, and a steam generator heated by said burner and adapted to deliver steam thereto.

4. A device of the character described comprising a casing, a slidable end closure therefor, a burner in said casing, means for feeding fuel to said burner, a compartment in said casing for heating said fuel, and means for delivering steam to said burner.

5. A device of the character described comprising a pan, a casing in one end thereof, an end closure slidably mounted in said casing, a burner in said casing, and means for feeding fuel to said burner.

6. A device of the character described comprising a pan, a casing carried thereby and provided with a fuel heating compartment, a pipe extending into said compartment and provided with a central partition

plate for dividing the same into an inlet passage and an outlet passage, a fuel feeding pipe communicating with the inlet passage of said pipe, a burner cup in said casing, a burner cup supplying pipe communicating with the outlet passage of said pipe and adapted to deliver the fuel from said compartment to said burner cup, and means for supplying steam to said burner cup.

7. A device of the class described comprising a pan, a casing at one end thereof, said casing being divided to provide an upper fuel heating chamber, a burner cup in said casing, a steam coil carried by said pan and having a discharge outlet beneath said cup, means for feeding fuel through the heating chamber to said cup, and means for automatically withdrawing the excess steam from said coil.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

WILLIAM E. WEATHERS.

Witnesses:
H. JOSEPH DOYLE,
EDWARD W. CADY.