No. 618,020. Patented Jan. 17, 1899.

W. H. WILDER.

OIL STOVE.

(Application filed Dec. 6, 1897.)

(No Model.)

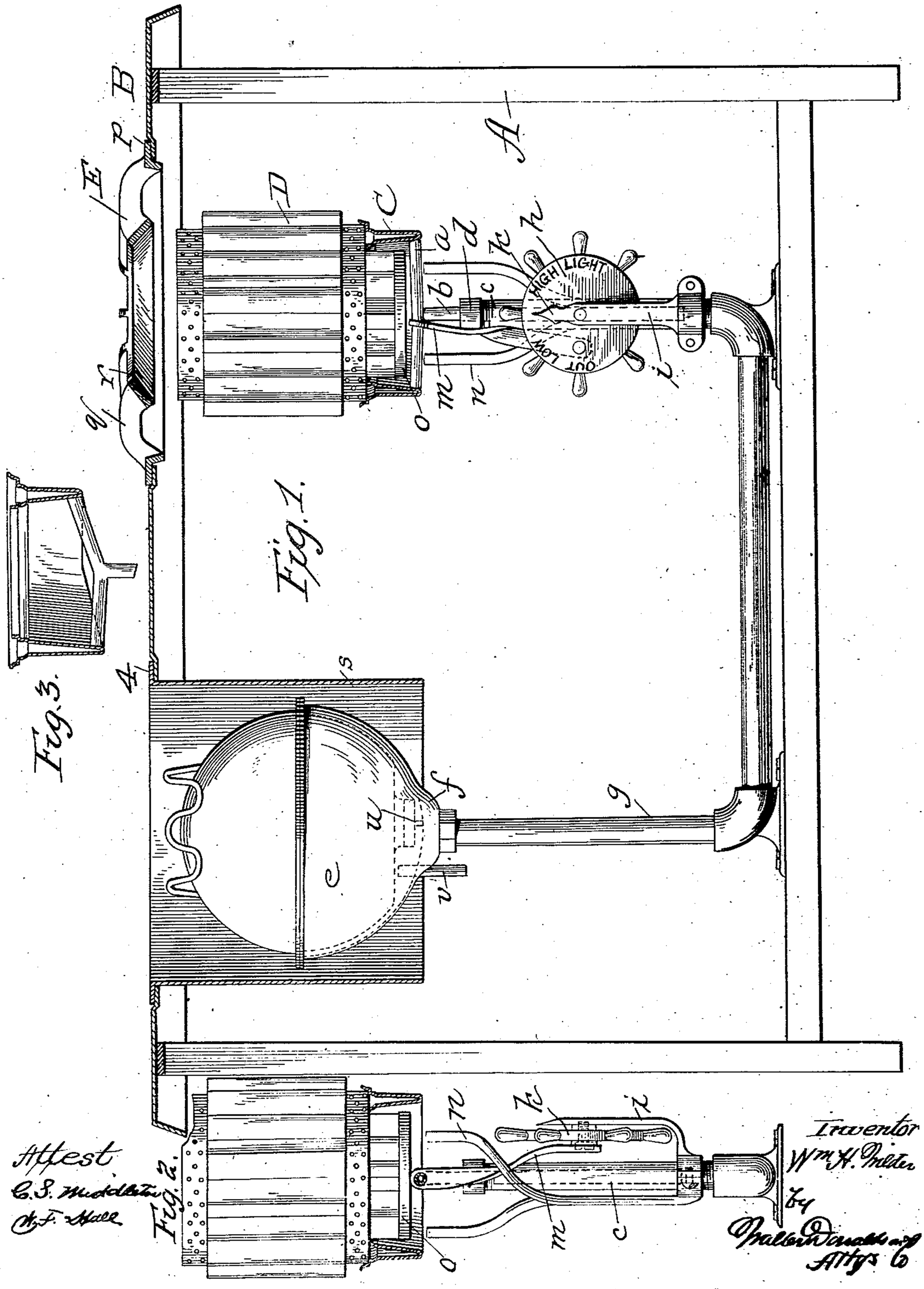

Fig. 1.

Fig. 3.

Fig. 2.

Attest
C. S. Middleton
H. F. Hall

Inventor
Wm H. Wilder
by
Fuller Donaldson & Co
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM H. WILDER, OF GARDNER, MASSACHUSETTS.

OIL-STOVE.

SPECIFICATION forming part of Letters Patent No. 618,020, dated January 17, 1899.

Application filed December 6, 1897. Serial No. 660,879. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. WILDER, a citizen of the United States, residing at Gardner, Massachusetts, have invented certain new and useful Improvements in Oil-Stoves, of which the following is a specification.

My invention relates to stoves adapted particularly for the use of oil as a fuel, and in some particulars embodies some of the features of a stove made the subject of an application filed in the United States Patent Office on the 19th of April, 1897, Serial No. 632,859. In the said application an oil-holder is used surmounted by a combustion-chamber, and the oil-supply is furnished from a vertically-adjustable reservoir providing an automatically-maintained oil-level, and this oil-level is adjusted bodily by the movement of the reservoir, and this adjustment will of course raise or lower the oil in the holder, thus permitting the regulation of the flame by the movement of the reservoir.

While the construction referred to in my application aforesaid is a very desirable one, I found that certain advantages result from making the reservoir stationary and providing for the vertical adjustment of the burner or oil-holder in relation to the automatically-maintained oil-level, and it is one of the objects of the present invention to provide for this adjustment in a simple but effective manner. I have also aimed to improve the stove in other particulars.

In the drawings, Figure 1 shows a stove, partly in section and partly in side elevation. Fig. 2 is a sectional view of some of the parts. Fig. 3 illustrates a section of modification.

The frame of the stove may be of any ordinary or desirable construction, the end standards being indicated at A and the top plate at B. The oil-holder is shown at C and is of annular form, providing a ring-shaped channel having a contracted lower portion which gradually increases in width to its upper end. It will be understood that the holder C is intended to contain oil, and the vapor burned in the combustion-chamber D rises from the surface of the oil in the holder C, the vaporization taking place by reason of the heat within the combustion-chamber adjacent to the oil-holder. The tapering shape of the oil-holder and its depth prevent total vaporization and provide for a constant supply of the oil in the holder, except, of course, when the chamber is drained by being adjusted above the oil-level in the reservoir. The combustion-chamber D is preferably of the form shown in the application referred to.

The oil-holder has a supply-tube passing across its center on a level with its lower edge, as at *a*, and this in turn is connected to a vertical tube *b*, which supplies the oil to the holder C through a pipe *a*. As the holder must have vertical movement in order to regulate the flow of the oil thereto it is necessary to provide a sliding connection between the movable feed-pipe *b* and the stationary pipe *c*, and this is done very simply by using for the pipe *c* a tube of larger diameter than the pipe *b* and adapted to surround the same, the connection between the pipes at the upper end of *c* having a suitable packing *d*. The pipe *b* freely slides within the pipe *c*, and its lower end is open, so that the oil flows from the reservoir *e* and oil-chamber *f*, where the level is automatically maintained, through the tube *g* to its vertical extension *c* and in through the open end of the pipe *b*.

As the oil is automatically maintained in the chamber *f* at a certain level, it will be seen that the oil-holder C will be full of oil, partially full, or empty, depending upon its adjustment in relation to the maintained oil-level. As it is elevated the oil drains out, and as it is lowered the oil rises in the holder. In order to adjust the holder easily and intelligently, I provide a hand-wheel *h*, pivoted upon the bracket *i*, which is clamped to the pipe *c*. The bracket *i* terminates in a pointer *k*, and I mark the hand-wheel on its periphery with words or signs, such as "Out," "Low," "High," "Light," and when these words are opposite the pointer they indicate the working position of the burner. The disk or hand-wheel *h* has a link *m* pivotally connected to it and pivoted to the channel *a*, so that in the rotation of the hand-wheel the holder C is raised or lowered.

In order to ignite the stove initially, it is necessary to separate the holder and combustion-chamber, and thus expose the surface of the oil in the holder, and in order to cause this separation at the proper time I use pro-

jections *n*, also supported by the pipe *c*, and extend these projections up to a position directly in the path of the lower end *o* of the combustion-chamber, this end fitting within the central opening of the oil-holder. Thus as the holder is lowered the combustion-chamber moves down with it, being supported by it until the bottom *o* comes in contact with the projections *n*, and further operation of the hand-wheel lowers the holder alone, leaving the combustion-chamber supported on the projections and exposing the oil in the holder for the purposes of ignition. Vaporization may be begun by the use of a volatile liquid or in any suitable manner.

It will be seen from the above that in the lighting action the combustion-chamber is separated from the oil-holder or bowl by limiting or arresting the downward movement of the combustion-chamber, while the bowl or oil-holder continues its downward movement. The combustion-chamber is maintained in this elevated position with respect to the bowl, and air is admitted immediately to the bottom of the combustion-chamber for the combustion of the vapor, and in this separation, by the limiting action on the combustion-chamber and the downward movement of the bowl, the oil rises in the bowl and is thus exposed for lighting, which, together with the air-supply, enables the flame to be produced quickly and to pass into the combustion-chamber.

It is necessary to provide a way of adjusting the burner and its operating mechanism vertically as a whole, so that in setting up the stove any slight variations in the length of the vertical pipes *c* may be allowed for in order to locate the burner in a definite relation to the oil-level, so that, for instance, when the burner is down all the way the oil-holder or bowl will be flooded and when the burner is raised all the way the bowl will be completely drained. For this purpose the bracket *i*, which carries all the operating parts, is clamped to the pipe in such a way that by loosening the clamping-screws the burner, with all the operating parts, may be properly adjusted to the desired height.

The grate E is of substantially ordinary construction, comprising an outer ring *p* and a series of radially-extending bars *q;* but I connect the inner ends of the bars by an inclined ring *r*, this ring being positioned directly above the opening between the combustion-tubes, and in the boiling over of any liquid the ring *r* will shed it outwardly and prevent it from dropping into the annular combustion-space.

Heretofore it has been customary to arrange the oil-reservoir outside of the frame, either at the rear or to one side, where it was liable to be wrenched and displaced in transportation and use, and I have aimed to overcome this objection by locating the reservoir within the frame directly beneath the top, where it is protected and is easily accessible for filling or cleaning purposes. To protect it from the heat, I use a shield *s*, having a flange 4 fitted into a depression around an opening in the top plate around the stove.

In case the valve *u* of the reservoir should fail to work properly and feed out more than the usual amount of oil this would cause some difficulty if not corrected at the burner; but I avoid any difficulty of this kind by arranging an overflow-pipe *v*, which will not permit the oil in the chamber *f* to get so far beyond the ordinary level as to do any damage, and from the pipe *v* the overflow may be caught in any suitable vessel. A very great advantage also results from the adjustment of the burner toward and from the grate, in that when the flame is high the burner is in its lowest working position and can draw oxygen freely from the surrounding air, there being more clearance between the top of the burner and the grate for the access of air to the flame. When the flame is low, not so much oxygen is required to support perfect combustion, and at this time the burner is raised. This increase and decrease of the flame when the burner is moved, respectively, away from and toward the grate tends also to keep the heat regular at the grate.

I wish it to be understood that the projections *n* may be adjustably supported so as to change the limit of movement of the combustion-chamber in relation to the oil-holder.

While I have shown the overflow-pipe as arranged in connection with the chamber *f*, I do not limit myself in this particular, as an overflow might be provided in the fuel-holder or in the pipe-line with the same results.

Under some circumstances I may make the fuel-holder deeper on one side than the other instead of having the bottom on a level, and this I have shown in Fig. 3. This construction will materially aid in perfectly draining the holder. The most important result of this construction is that the oil may be lowered so as to be present only in a part of the deep side of the bowl, the high side not having any oil exposed for vaporization, and there would not therefore be an annular surface of oil from which the vapor could be generated. This form of bowl will adapt the burner for successfully using light as well as heavy oils, for the former only a small area on the deep side of the bowl being exposed, while for the heavy oils all of the annular space would be utilized for exposing the oil.

What I claim is—

1. In an oil-stove, a reservoir having a maintained oil-level, a burner comprising an oil-holder and a combustion-chamber, a grate above the burner and means for moving the burner toward or from the grate, substantially as described.

2. In an oil-stove, a reservoir having a maintained oil-level, a burner comprising an oil-holder and a combustion-chamber, means for moving the burner vertically and means for separating the holder and combustion-chamber in the said vertical movement for

purposes of ignition by limiting the movement of the combustion-chamber, substantially as described.

3. In an oil-stove, a reservoir having a maintained oil-level, a burner comprising an oil-holder and a combustion-chamber, means for moving the burner vertically and stops in the path of the combustion-chamber for limiting its downward movement thereby separating the oil-holder and chamber, substantially as described.

4. In an oil-stove, the combination of a burner comprising an oil-holder, a combustion-chamber separable therefrom, operating means for moving the burner vertically, and means for limiting the movement of the combustion-chamber to separate it from the oil-holder, substantially as described.

5. In an oil-stove, a reservoir having a maintained oil-level, a stationary pipe leading therefrom having a vertical extension, a burner supported by said vertical extension and adjustable vertically, a bracket secured to said extension and operating means carried by the bracket, substantially as described.

6. In combination, in an oil-stove having a maintained oil-level, the burner, means for moving it vertically and a vertically-adjustable bracket carrying said means and adapted to give to the burner its initial adjustment relative to the oil-level, substantially as described.

7. In an oil-stove, a reservoir having a maintained oil-level, a burner vertically movable in relation to the oil-line and an indicating device comprising a bracket and a movable part, said movable part being connected to the burner and adapted to change its position in the movement thereof to indicate the condition of the burner in relation to the oil-level, substantially as described.

8. In an oil-stove, a reservoir, a pipe connection having vertical extension, a burner vertically movable and supporting a combustion-chamber, a bracket, a hand-wheel supported thereby with an operating connection to the burner and projections also carried by the bracket adapted to limit the downward movement of the combustion-chamber, substantially as described.

9. In an oil-stove, a burner having a combustion-chamber and a grate above the combustion-chamber and having an outwardly and downwardly inclined ring protecting the flame-passage and adapted to shed outwardly any liquid falling toward the combustion-space, substantially as described.

10. In an oil-stove, a reservoir, a vertically-movable burner comprising an oil-holder, an oil-chamber adapted to receive the oil from the reservoir means for maintaining the level of the oil in the said chamber and an overflow-pipe from the said chamber adapted to prevent overflow of the burner, substantially as described.

11. In an oil-stove, a reservoir having a maintained oil-level, a fuel-holder of annular form said holder being deeper upon one side than upon the other, and an oil-supply connection between the reservoir and holder one of said parts being movable in relation to the other, substantially as described.

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

WILLIAM H. WILDER.

Witnesses:
H. M. GATES,
C. H. STOCKWELL.