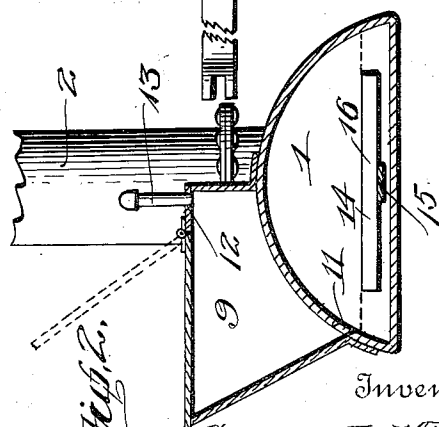
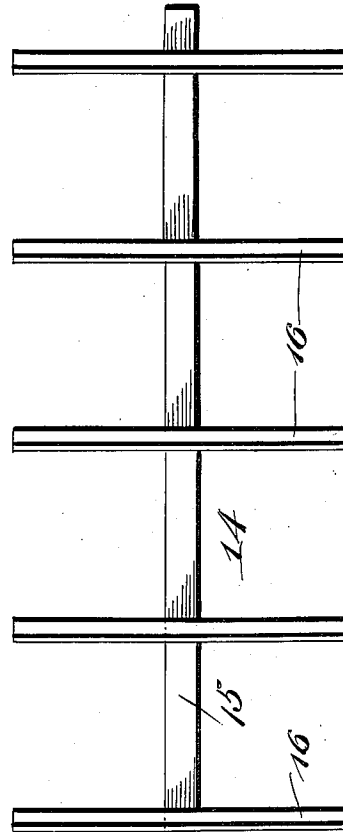
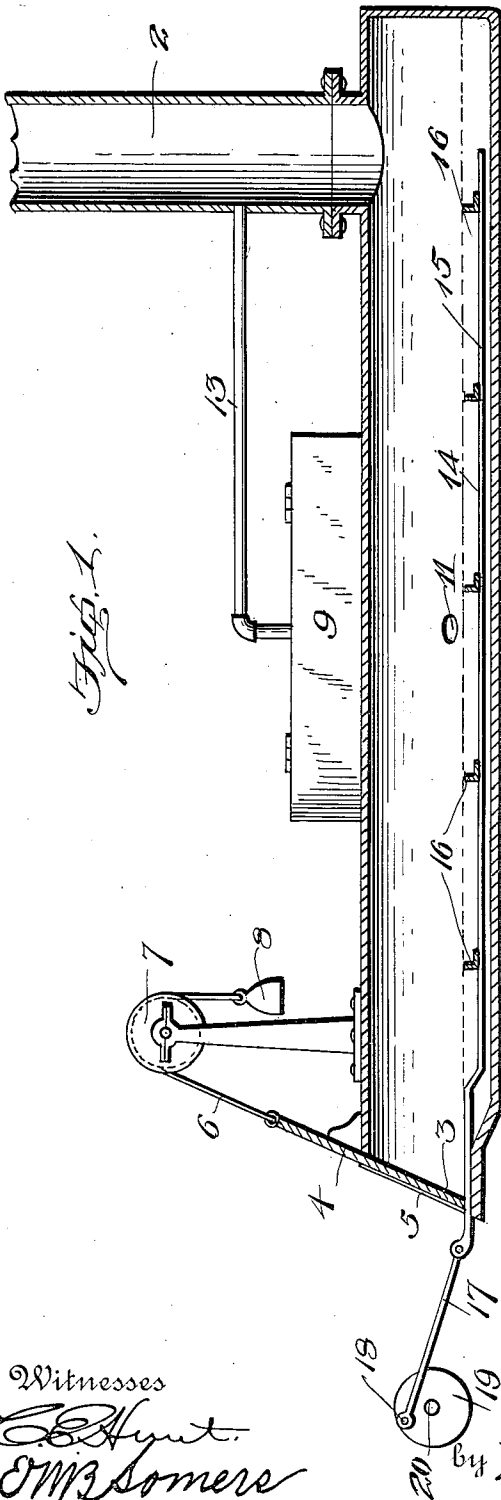


G. E. MILLER.
SULFUR BURNER.

APPLICATION FILED AUG. 1, 1911.

1,018,255.

Patented Feb. 20, 1912.



Witnesses
C. E. Hunt.
J. M. Somers

Inventor
George E. Miller
by A. B. Wilson & Co
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE ERNEST MILLER, OF MADISON, MAINE.

SULFUR-BURNER.

1,018,255.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed August 1, 1911. Serial No. 641,799.

To all whom it may concern:

Be it known that I, GEORGE E. MILLER, a citizen of the United States, residing at Madison, in the county of Somerset and State of Maine, have invented certain new and useful Improvements in Sulfur-Burners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in sulfur burners.

One object of the invention is to provide a sulfur burner having an improved construction and arrangement of agitator adapted to be submerged and operated entirely beneath the surface of the burning sulfur, whereby the agitator is protected from the intense heat of the flames of the burning sulfur and gases, and thereby greatly prolonging the life of the agitator.

Another object is to provide an agitator of this character which may be readily applied to flat sulfur burners, while the latter are in operation and without changing or altering the same.

A further object is to provide a sulfur burner having an improved construction and arrangement of feeding mechanism, whereby the sulfur is fed to the burner in a molten state and at a uniform temperature, and whereby the gases formed by the burning sulfur are prevented from being weakened or diluted by the admission of air to the burner which occurs in the usual method of supplying the sulfur to the burner through the door of the same.

With these and other objects in view, the invention consists of certain novel features, of construction, combination and the arrangement of parts as will be hereinafter more fully described and afterward specifically claimed.

In the accompanying drawings:—Figure 1 is a vertical longitudinal section through a sulfur burner constructed in accordance with the invention; Fig. 2 is a vertical cross sectional view on the line 2—2 of Fig. 1; Fig. 3 is a plan view of the agitator removed from the burner.

Referring more particularly to the drawings 1 denotes my improved sulfur burner, said burner being of the flat or semi-cylindrical type, having a curved or rounded top 26 and a substantially flat bottom 25

which rises slightly at the front into a sill 25^a as shown. Connected to the top of the burner near its rear end is a stack or discharge pipe 2, by means of which the gases generated by the burning sulfur are conducted to a gas cooler or other receptacle (not shown). In the front end of the burner above the sill 25^a is a door opening 3, which is normally closed by a door 4, said door being slidably supported at an angle in suitable guide ways 5 arranged on the end of the burner. To the upper end of the door is connected a cable 6 which passes over a guide pulley 7 and has connected to its opposite end a weight 8 adapted to counterbalance the weight of the door and to hold the same in the position to which it may be adjusted, thus providing means for holding the door in position to form a draft opening of any desired size at the front end of the burner.

Mounted on one side and extending part way across the top of the burner midway between its ends is a hopper 9, the top of which is provided with a hinged section adapted to form a door 10, whereby sulfur may be placed in the hopper. In the side of the burner which forms the bottom of the hopper is a feed opening 11, through which the melted sulfur from the hopper is adapted to flow in a uniform stream into the burner. The top of the hopper is provided with a gas vent 12, which is connected by a gas conducting pipe 13 to the stack 2, as shown, whereby any gas which may accumulate from the melted sulfur in the hopper is conducted, to the stack by which it is conducted together with the gas from the burner, to the cooler.

Slidably mounted on the bottom of the hopper and entirely submerged beneath the burning sulfur therein is an agitator 14 comprising a central longitudinally disposed flat metal bar 14 to which, at suitable intervals, are secured angle iron cross bars 16 which form the arms of the agitator and which project beyond each side of the central bar 15, as shown. The arms or bars 16 are of sufficient length to extend nearly across the bottom of the burner and when the agitator is operated, will stir or agitate the burning sulfur, thus preventing the formation of scum on the surface of the burning sulfur. The outer front end of the bar 15 is bent upwardly at 15^a to a slight extent to bring the same on a level with the sill

25^a at the bottom of the door opening, whereby said end is adapted to project through a draft opening formed by raising the door 4 or through any other suitable opening at the front end of the burner. Any suitable means may be employed for reciprocating the agitator, said means being here shown as consisting of a pitman rod 17, one end of which is pivotally connected to the outer end of the agitator bar 15, while the other end of said pitman rod is connected to a wrist pin 18 on the crank disk 19. The disk 19 is fixed on a suitably mounted operating shaft 20 to which any suitable power or driving mechanism may be applied.

By constructing and arranging the agitator 14 as herein shown and described, it will be seen that the same when in use is entirely submerged beneath the surface of the burning sulfur in the burner and is thus removed and protected from the intense heat of the flames from the burning sulfur and gases thereby greatly prolonging the life of the agitator. This arrangement of the agitator does not interfere with the purpose or object of the same in preventing the formation of a coating of scum on the surface of the burning sulfur.

By providing the hopper 9 and improved feeding arrangement of the burner as herein shown and described, the sulfur is uniformly fed to the burner without reducing the temperature of the burning sulfur already in the burner. In supplying the sulfur to this form of feed mechanism, the same is thrown into the hopper and is heated and reduced therein to a molten state before being fed to the burner through the feed opening 11, as hereinbefore described. The usual method of feeding sulfur to the burner is to shovel the sulfur into the same through the door opening 3, which operation causes the fire to die down to a greater or less degree, thus producing an uneven temperature in the burner and permitting a quantity of outside air to enter the burner, which, mixing with the gas produced by the burning sulfur therein, weakens or dilutes the same and causes a waste of sulfur.

By means of the improved feeding mechanism, the disadvantages of the old style feeding are entirely overcome and a uniform temperature and production of undiluted gas is produced.

From the foregoing description, taken in connection with the drawings, the construction and operation of my invention will be readily understood, without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to within the scope of the claims without departing from or exceeding the spirit of the claimed invention.

I claim as my invention:—

1. A sulfur burner combined with an agitator arranged and adapted to operate therein beneath the surface of the burning sulfur, and means whereby said agitator is reciprocated.

2. A sulfur burner combined with an agitator adapted to be submerged and to operate beneath the surface of the burning sulfur in the burner, said agitator comprising a centrally disposed bar and a series of laterally projecting arms secured to said bar, and means whereby the agitator is reciprocated.

3. A sulfur burner combined with an agitator arranged in and adapted to operate beneath the surface of the burning sulfur in said burner, said agitator comprising a centrally disposed flat bar, a series of angle iron cross bars spaced apart and secured thereto, said cross bars projecting laterally beyond the opposite sides of the longitudinal bar to form agitator arms, a suitably driven crank disk, a pitman rod to connect said disk with the outer end of the agitator whereby the latter is reciprocated in said burner, and means whereby the sulfur is uniformly fed to the burner.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE ERNEST MILLER.

Witnesses:

GEORGE W. SMALL,
BORDEN SMITH.