

(No Model.)

R. H. NOGAR.

BURNER FOR SAWDUST OR REFUSE FUEL.

No. 503,328.

Patented Aug. 15, 1893.

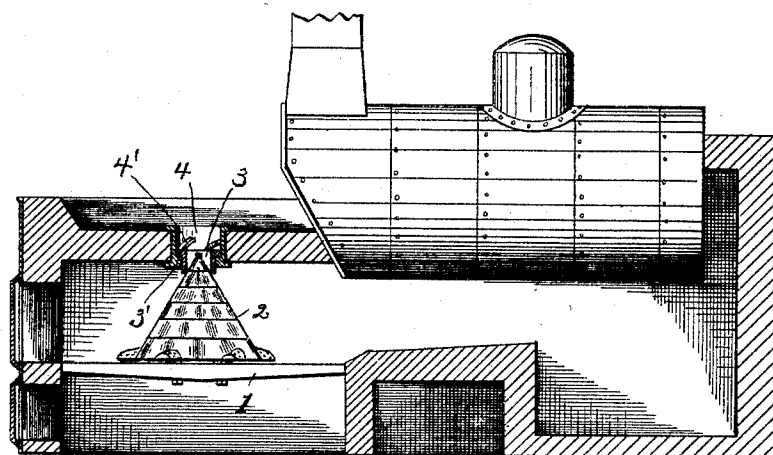


Fig. 1.

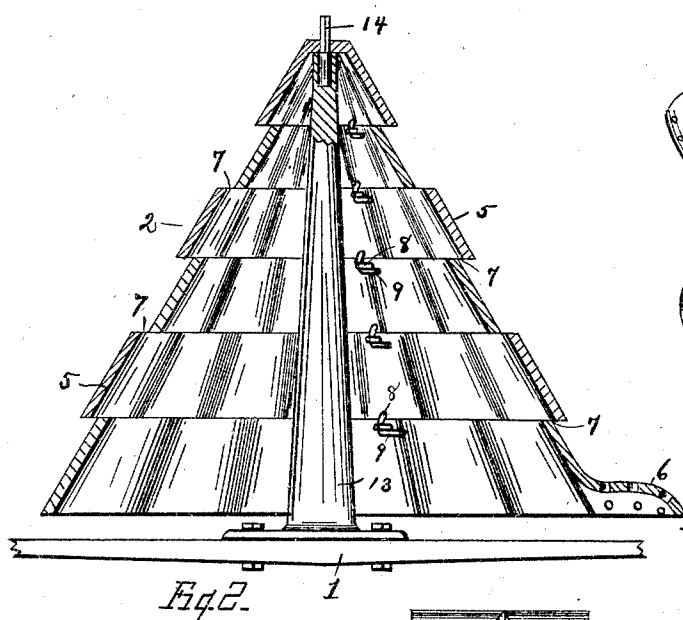


Fig. 2.

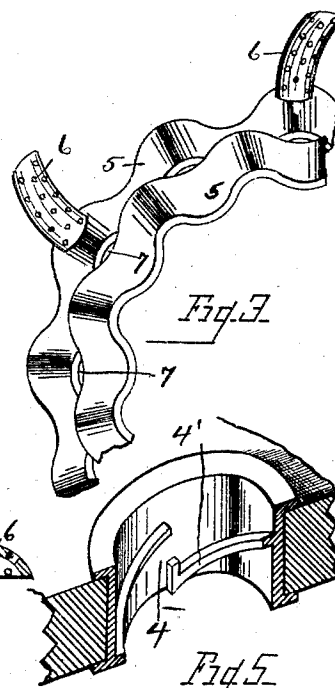


Fig. 3.

Fig. 5.

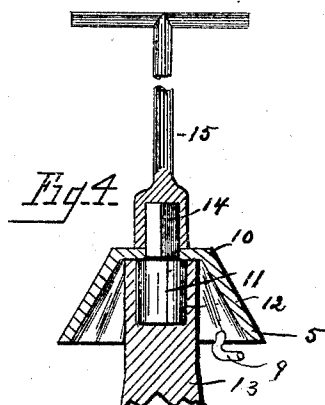


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

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BURNER FOR SAWDUST OR REFUSE FUEL.

SPECIFICATION forming part of Letters Patent No. 503,328, dated August 15, 1893.

Application filed August 13, 1892. Serial No. 442,995. (No model.)

To all whom it may concern:

Be it known that I, RUSSELL H. NOGAR, of Dundee, county of Monroe, and State of Michigan, have invented certain new and useful Improvements in Burners for Sawdust or Refuse Fuel; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to a burner for utilizing saw-dust, shavings, comminuted coal, &c., in combustion, and has especial reference to the use of refuse matter as fuel in furnaces, especially such as are employed under boilers.

The object of the invention is to provide a burner that shall be adaptable for the purposes named, and that shall be inexpensive of construction, and composed of parts that shall be convenient to cast in molds, and easily assembled to form a complete burner.

A further object is to provide means for revolving the burner to remove the ashes and débris incident to combustion of refuse matter.

A further object is to provide means for supplying atmospheric air to the burner in the proper position, and quantity to support combustion, and agitate the granular fuel to prevent the same from compacting to a degree to prevent combustion.

The invention consists in the parts, and combination of parts hereinafter described and pointed out in the claims.

In the drawings: Figure 1 is a longitudinal vertical sectional elevation of a furnace, supplied with one of my improved burners, in use beneath a boiler, showing the adjustable hopper for regulating the feed to the burner. Fig. 2 is a longitudinal vertical sectional view of the burner the front half being removed to more fully disclose the interior construction. Fig. 3 is a sectional detail view of a portion of the burner, this view being intended to illustrate the relations that exist between the sections of which the burner is constructed. Fig. 4 is a sectional elevation of the upper section of the burner and journal,

showing also the squared portion, and wrench or key in place for revolving the burner. Fig. 5 is a detail sectional view of the revolvable annular support for the hopper, showing the inclined ways for raising or lowering the same.

1 designates the grate bar of an ordinary furnace, upon which is placed the burner 2, surmounted by a hopper 3, suspended in an annular support 4, having an inclined way 4' upon which lugs 3' of the hopper rest, by which means the feed of the burner is regulated, the increased or diminished space between the hopper and apex of the burner, caused by the upward or downward movement of the hopper, determining the amount of fuel fed thereto.

The burner is composed of a series of corrugated rings 5, the lower of the series being of greater diameter, and in the form of a truncated cone, the base having projecting therefrom curved arms 6, hollow upon the interior and perforated throughout their lengths. Each section of the burner from the base section is conical shape and of less diameter than the one upon which it rests, whereby the sections when assembled form a cone in which the curves of the corrugations intersect, thereby forming concentric rows of openings 7 in alternate vertical alignment through which the upward current of air from the furnace finds exit, and thereby lightens, and revolves the fuel in its gravitating course from the apex to the base of the cone. Each section of the burner is formed with a lug 8 upon its interior upper side, with which a hook 9 formed upon the interior lower side of the succeeding section engages, thereby suspending the several sections in close assembled order upon a central journal 10, formed with a cylindrical portion 11 journaled in a circular recess 12, formed in a central standard 13, the upper end of the journal being formed with a squared portion 14, which projects through a rectangular opening in the upper section of the burner a sufficient distance to receive a wrench or key 15 by which to revolve the entire burner.

In operation, the parts being assembled, as shown in Figs. 1 and 2, an initial fire is started upon the grate bars, when the saw-dust, shav-

ings, comminuted coal, or analogous refuse fuel is fed to the apex of the burner, in a quantity determined by the position of the hopper 3, which is either raised or lowered with relation to the apex of the burner by the revolution of the annular support, to cause the lugs 3' to ride either upwardly upon the wings to increase the space between the hopper and burner, or downwardly to decrease, the space, and gravitates toward the base of the burner, igniting in its descent and is consumed. The current of air received within the interior of the burner finds egress through openings 7, and not only prevents the fuel from passing through the openings but supports combustion of the same. In the descent of the fuel, any quantity that falls upon the arms 6 is rapidly consumed, by reason of the current of air ascending through the perforations, which lightens the fuel in its tendency to compact, thereby allowing the flame to pass through the same. The primary object of the arms 6 is to free the grate bars or ashes, cinders, &c., which is accomplished by revolving the entire burner by means of a wrench or key 15, thereby causing the arms to sweep the bars free from deposit for a radius equal to the greatest diameter of the burner and projecting arms.

It will be understood that by constructing the burner of the conical sections I am enabled to readily withdraw the same from the sand in casting, thereby reducing the expense.

Another feature of great value in the construction shown, is the fact that the burner may be adapted to furnaces of any size as the height and diameter may be determined by the number of sections employed.

Another advantage is that should one section, by reason of being subjected to more intense heat than the others become warped or burned, it can be removed, and a new one substituted therefor.

It will be apparent that I may arrange the burner to revolve but the lower section with the projecting arms is desired.

What I claim is—

1. A burner for sawdust and the like, conical in shape, and composed of a series of corrugated truncated conical sections, arranged one above the other, the corrugations alternating, providing a series of non-aligning air-passages.

2. In a burner for saw dust and the like, the combination with a grate, of a cone shaped burner, revolvably arranged thereon, and the wings formed upon the lower portion of the cone shaped burner, to clear the grate when said burner is revolved.

3. In a burner for saw dust and the like, the combination of a grate of a standard thereon a cone shaped burner journaled upon the said standard and adapted to be revolved by a key.

4. An improved burner, conical in shape and composed of a series of tapering ring sections, each section having an interior pin and hook whereby the said ring sections are connected with one another.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

RUSSELL H. NOGAR.

Witnesses:

WILLIAM WEBSTER,
CARROLL J. WEBSTER.