

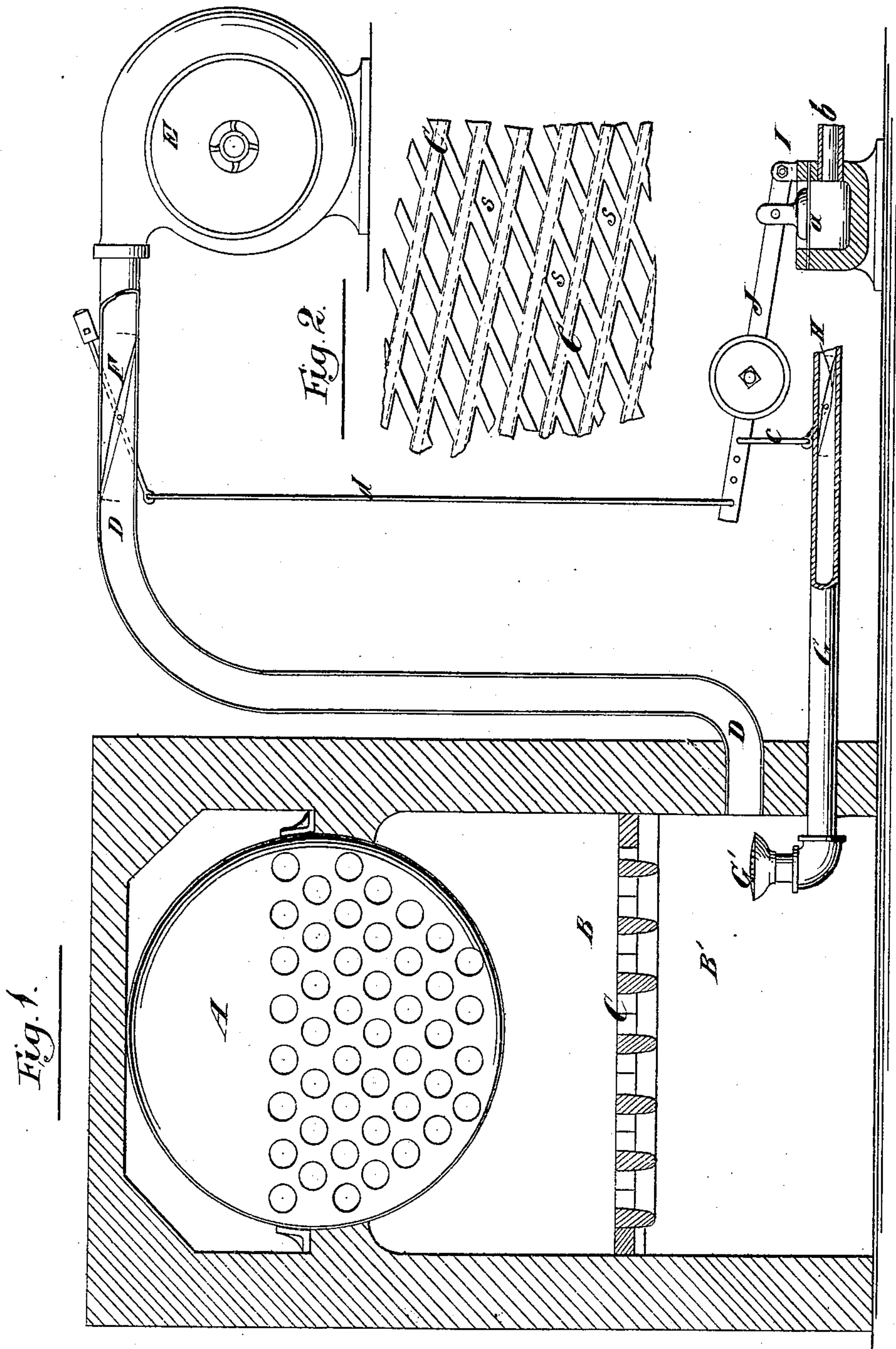
(No Model.)

C. TAYLOR.

APPARATUS FOR BURNING COAL SLACK.

No. 252,910.

Patented Jan. 31, 1882.



Witnesses :-

Louis W. Whitehead. -
Thomas E. Birch.

Inventor:-

1. April.
Charles Taylor
by his Attorney
Rownt & Rownt

UNITED STATES PATENT OFFICE.

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APPARATUS FOR BURNING COAL-SLACK.

SPECIFICATION forming part of Letters Patent No. 252,910, dated January 31, 1882.

Application filed June 2, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES TAYLOR, of the city of New York, in the county and State of New York, have invented certain new and
5 useful Improvements in Apparatus for Burning Coal-Slack, of which the following is a specification.

The object of my invention is to provide for the successful utilization of coal slack or dust
10 as a fuel.

My invention relates to apparatus for burning coal slack, in which the coal-slack is moistened before being placed upon the grate and in which the air-blast employed for creating an
15 artificial draft is sprayed with water before passing through the grate.

The invention consists in the combination, with a steam-boiler furnace, of pipes for introducing air and spraying water below the grate,
20 valves in said pipes for controlling the passage of air and water through them, and a pressure-regulator for simultaneously opening and closing said valves, thereby automatically controlling the supply of air and water.

25 In the accompanying drawings, Figure 1 represents a transverse section of a boiler-furnace, and a side view, partly in section, of devices combined therewith for producing an air-blast and an injection of water into the furnace;
30 and Fig. 2 represents a plan of a portion of a grate which I prefer to employ.

Similar letters of reference designate corresponding parts in both figures.

A designates a boiler, here shown as of the
35 return-tubular type, though any other form of boiler may be used.

B designates the furnace, B' the ash-pit, and C the grate. Although other forms of grate may be used, the grate which I prefer to employ, and have here represented, has isolated
40 lozenge-shaped openings *s*, with ribs arranged obliquely and parallel with each other, as shown by dotted lines in Fig. 2. The openings *s* afford provision for the free passage of
45 air, and from their shape prevent the coal-slack from falling through them.

D designates a pipe for conveying air from any source of supply—such for instance, as a fan-blower, E—to the furnace under the grate
50 C; and F designates a throttle-valve in said

pipe, by which the passage of air through it may be regulated.

G designates a pipe for conveying water from any suitable source of supply under a
55 suitable pressure to the furnace under the grate, and communicating in the ash-pit B' with a suitable spraying device, shown as consisting of a rose-sprinkler, G', so arranged that air entering through the pipe D will become
60 charged with moisture.

In the water-pipe G is a valve, H, here shown as consisting of a throttle-valve similar to the valve F in the air-pipe D, and both
65 said valves are shown as very long, so that a slight movement will close or open them, and are elliptical in form to fit the pipe.

The supply of water and air to the furnace are both automatically controlled by the pressure of steam, and to effect this I employ a pressure-regulator, I, comprising a diaphragm,
70 *a*, below which steam is admitted through a pipe, *b*, and a weighted lever, J, which is raised or lowered by the action of the steam upon the diaphragm *a*. The lever J, through a suitable
75 connection, *c*, operates the throttle-valve H in the water-pipe G, and through another connection, *d*, operates the valve F in the pipe D. When the pressure of steam decreases the lever J falls and opens both the air and water-
80 valves, increasing the draft and causing more rapid combustion; but when the pressure of steam increases beyond the desired point the supply of water and air is simultaneously decreased. It will be seen that the amount of
85 water entering the furnace may thus be made proportionate to the amount of air.

In lieu of the regulator I, I may employ a pressure-regulator of any desired construction.

The coal slack or dust is first moistened by the spraying device G' or other means to give
90 it sufficient adhesion to cause it to lie upon the grate and prevent its falling through the openings therein, and the air-blast is then set in operation to produce a draft. The air is moistened as it enters the furnace, and, the water
95 which is held in suspension becoming decomposed, the hydrogen combines with the sulphur contained in the coal and produces a very intense combustion.

I am aware that water has been sprayed 100

upon the top of fuel and in front of a fire-place prior to placing it upon the grate; but in such case the water is not carried through the grate and fuel by the air-blast, as in my invention.

5 What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a steam-boiler furnace, of pipes for introducing air and spraying water below the grate, valves in said pipes
10 for controlling the passage of air and water through them, and a pressure-regulator for simultaneously opening and closing said valves, whereby the supply of air and water is auto-

matically and uniformly regulated, substantially as specified.

2. The combination, with steam-boiler furnace, of the pipes D and G for supplying air and water thereto, valves F and H contained
15 in said pipes, and the pressure-regulator I and connections between said regulator and valves
20 for simultaneously opening and closing the latter, substantially as specified.

CHAS. TAYLOR.

Witnesses:

ADAM HENS,
MICHAEL HENS.