(No Model.)

A. KITSON.

SMOKE CONSUMING APPARATUS.

No. 490,826. Patented Jan. 31, 1893.

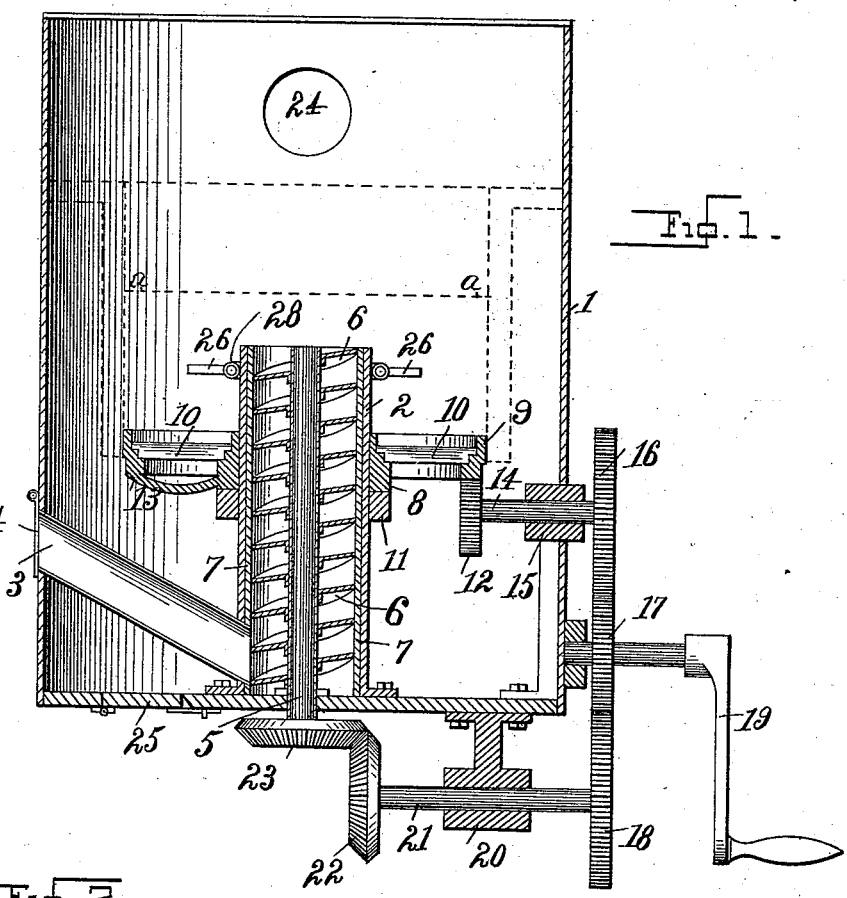
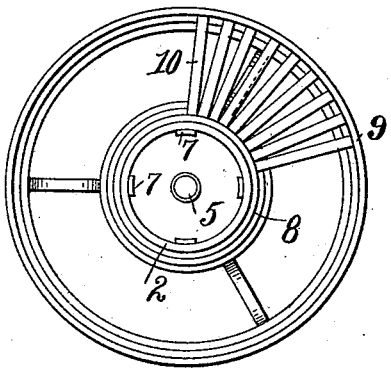


Fig. 1.

Fig. 2.



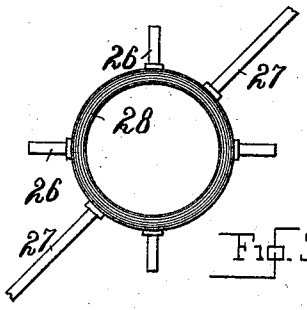


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

ARTHUR KITSON, OF PHILADELPHIA, PENNSYLVANIA.

SMOKE-CONSUMING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 490,826, dated January 31, 1893.

Application filed June 18, 1892. Serial No. 437,113. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR KITSON, a subject of the Queen of Great Britain, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Smoke-Consuming Apparatus; and I do hereby 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.

My invention has for its principal object the prevention of smoke when soft or bituminous coal is burned. The production of smoke is greater in ordinary stoves and furnaces, when new fuel is fed to the fire. It is accompanied by incomplete combustion and distillation of gases which go off without burning and thereby a considerable portion of the heating efficiency of the coal is lost. To obviate this I propose to feed new coal to the lower or central part of the mass of incandescent coal already in the stove, and my invention consists of an improved apparatus for carrying out this purpose.

In the one sheet of drawings accompanying this specification. Figure 1 is a vertical central section of a stove with the firebrick lining shown in dotted lines only and the legs removed. Fig. 2 is a partial plan of the grate, and tube passing up through the same. Fig. 3 is a detail view of water ring and radiating fingers.

Throughout the drawings the same reference figure refers to the same part.

1 is the shell of the stove.

2 is a vertical tube placed in the center of the stove and coming up through the grate. The lower end of the tube 2 is closed. 3 is an inclined coal chute or magazine which opens into the lower end of the tube, 2, and has its outer end closed by the door 4. The central shaft 5, in the tube 2, has the broad helical thread 6, formed thereon. The tube 2 has longitudinal ribs or corrugations 7, formed on its inside.

The grate consists of the spider, 8, the outer ring 9, and the radial removable bars 10. It rests and turns upon the collar 11, on the tube 2. On the under side of the ring 9, is the rack 13, with which the pinion 12 meshes. This pinion is on the shaft 14, which also carries the gear 16, and is journaled in the bearing 15. The crank shaft 19 and pinion 17, convey motion to the grate through the above described train of gearing. They also convey motion to the screw, 6, through the gear 18, shaft 21, journaled in bearing 20, and beveled gears 22 23. The pipe hole, 24, serves as an outlet for the hot gases to the chimney, when the top of the stove is closed. 25 is the ash pit door.

The mode of operation of my invention is as follows: A fire having been started by ordinary methods and the coal level brought up to the line *a—a* or thereabout, further additions of coal are made by shoveling it into the chute, 3, and rotating the screw 6. The coal accumulates in the bottom of the chute 3, and tube 2, and is lifted up by the screw, the ribs 7, preventing it from rotating with the screw. The mechanism described, simultaneously rotates the grate so that the fuel which comes out of the top of the tube, 2, is evenly distributed.

The advantages of feeding the coal to the central or lower portion of the fire, are evident. The distilled gases and the smoke are both burned in passing up through the incandescent coal above them and the full heating effect of the coal is realized without the escape of smoke.

Other means of producing a roughened interior surface of tube 2 may be employed, such as corrugation &c. to prevent the fuel being carried around by the screw instead of being forced up. Two or more stationary arms or fingers 26, 26, are formed on the tube 2, which act to spread the coal evenly on the grate. These radiating fingers would preferably be made hollow, and supplied with water by pipes 27, 27, which connect with the central hollow ring 28. These fingers would remain stationary while the grate revolves and would consequently have a leveling effect on the coal discharged upon said grate from the mouth of the tube 2.

Having therefore, described my invention what I claim as new and desire to protect by Letters Patent, is:

1. In a furnace feeding apparatus the combination of the rotating grate, the tube which

passes up through the center of said grate, mechanism for feeding fuel up through said tube and rotating the grate, and radiating fingers extending from the exterior of said tube out over said grate, substantially as described.

2. In a stove feeding apparatus the combination of the grate the tube which passes up through said grate, the longitudinal ribs inside said tube, the feed screw in said tube and mechanism which rotates said screw, substantially as described.

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

ARTHUR KITSON.

Witnesses:
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