

H. T. DRAIN, J. McCLUNG & E. G. PENROSE.
Device for Feeding Air to Furnaces.

No. 226,603.

Patented April 20, 1880.

Fig. 1.

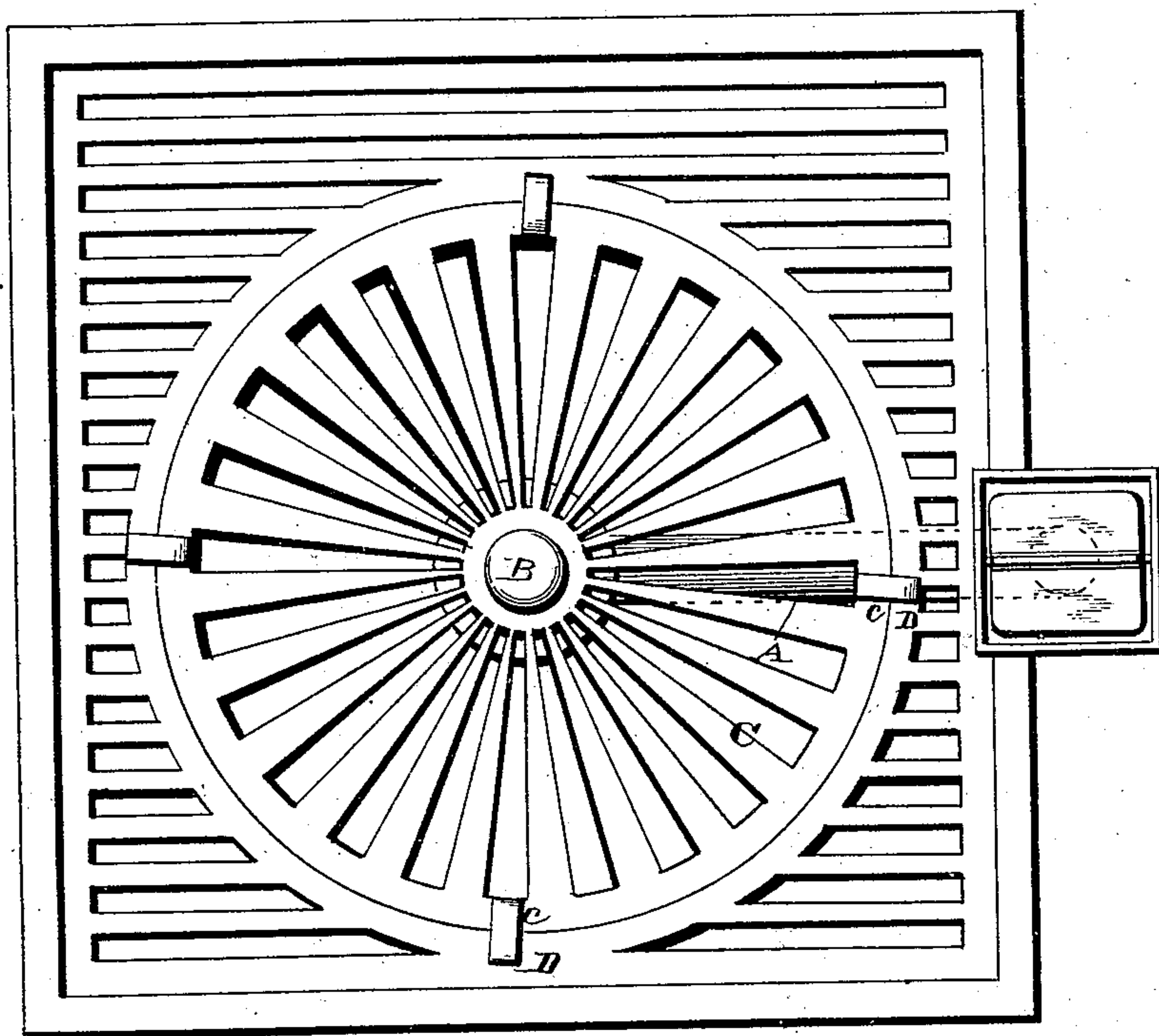
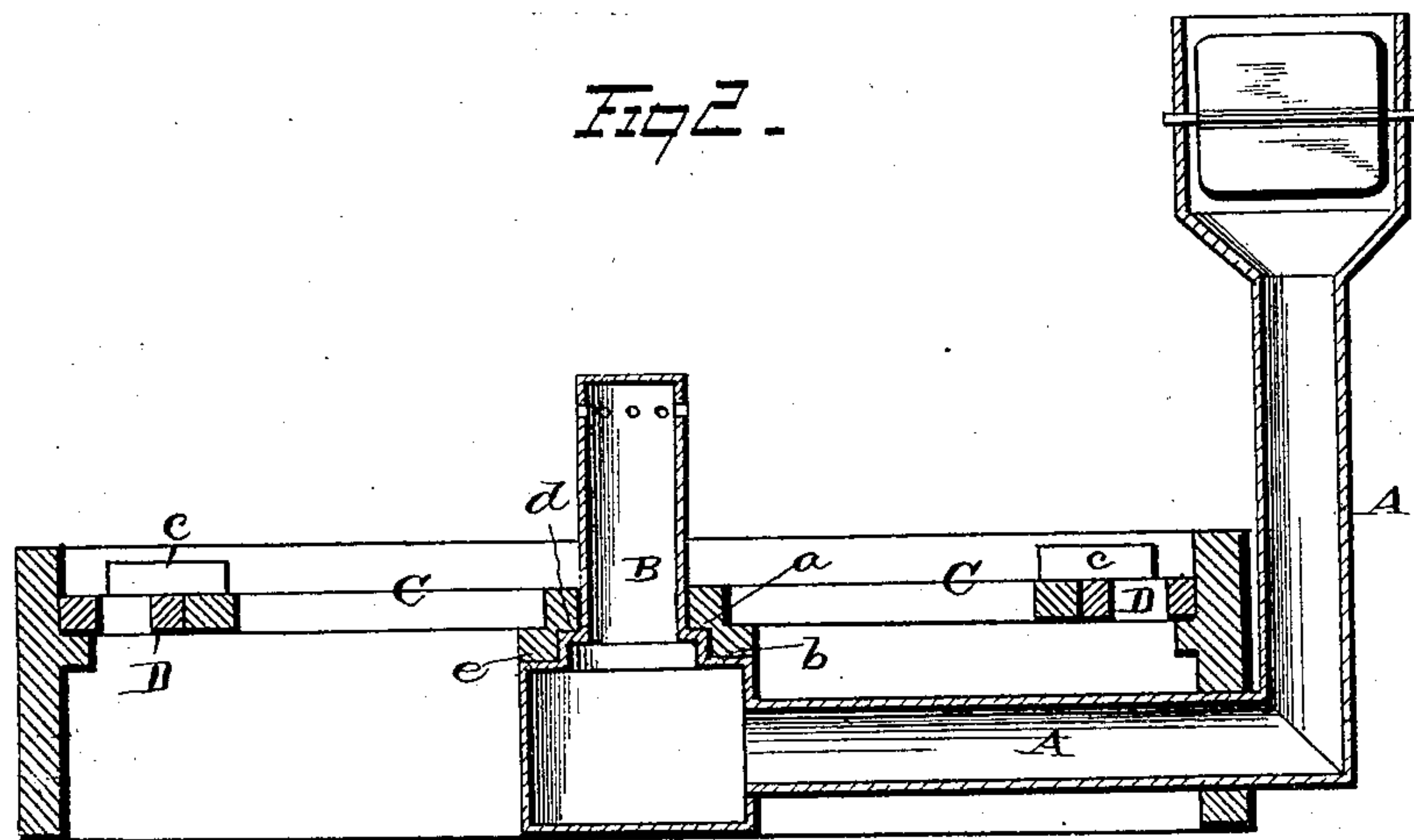


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY T. DRAIN, JAMES MCCLUNG, AND EMLLEN G. PENROSE, OF TAMA CITY, IOWA.

DEVICE FOR FEEDING AIR TO FURNACES.

SPECIFICATION forming part of Letters Patent No. 226,603, dated April 20, 1880.

Application filed September 10, 1879.

To all whom it may concern:

Be it known that we, HENRY T. DRAIN, JAMES MCCLUNG, and EMLLEN G. PENROSE, of Tama City, in the county of Tama and State of Iowa, have invented certain new and useful Improvements in Devices for Feeding Air to Furnaces; and we 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Our invention relates to certain improvements in devices for feeding air, gas, liquid, or other substance to fires, and may be used for heating purposes or for generating steam.

In the drawings, Figure 1 is a plan view of the invention, showing a portion of the parts in dotted lines. Fig. 2 is a vertical transverse section in a plane passing through the feed-pipe.

The feed-pipe A may be provided with a fan in its ingress end, as shown in the drawings, for forcing the air therethrough; or any other device may be employed, or the pipe be formed as desired for the particular substance which may be introduced therein. Its egress end connects with the tubular standard B, which latter is formed with annular shoulders *a b*, adapted to provide bearing for the grate C. This grate is made in circular form, with lateral lugs *c* projecting from the upper surface of its periphery. These lugs extend over the adjacent stationary grate portion D, and serve a double purpose. They provide means whereby the grate may be rotated about its axis, and they also prevent the grate from undue sagging at its periphery.

The central portion of the rotary grate is perforated and fits over the standard. It is provided with an annular bearing, *d*, which rests on annular shoulder *a* of the standard; and it is further provided with an annular depending head, *e*, which rests on shoulder *b* of said standard. The upper extremity of this standard projects above the grate, and its rear side is provided with perforations *f*, which

discharge the contents of the standard over the upper surface of the grate.

If desired, we may provide this upper extremity of the standard with tubular arms, which project rearward and laterally over the grate, said arms being provided with perforations, and adapted to accomplish the same purpose which the perforations in the standard themselves accomplish. So, also, we may desire to form the grate on an incline, its rear portion being the highest, and gradually inclining downward as the front portion is approached.

A grate constructed in accordance with our invention is adapted to operate as follows: The coal is first coked on the front grate portion. The grate is then rotated about its axis so as to bring said coked coal around to the rear portion of the grate, when it is subjected to the action of the fresh and heated air, liquid, or gas issuing from the discharge previously described. This rearward discharge throws quantities of oxygen or gas into the fire about the coked coal, thus thoroughly consuming the latter, and it also supplies heated oxygen or gas sufficient to consume the products of combustion from the coal which is then coking on the front portion of the grate.

It is evident that many slight changes can be made in our improved device without departing from the spirit of our invention—as, for instance, instead of lugs on the periphery of the rotating grate, a flange may be used. Again, instead of one feed-pipe, we may desire to use two, one for air and one for liquids; and, again, we may desire to discharge the air and fluid to the sides or toward the front of the furnace.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a feed-pipe and a tubular standard, into which the latter empties, of a rotary grate having central bearing on the standard, said pipe and standard being adapted, as described, to force air or other substance horizontally over said grate into the combustion-chamber, substantially as set forth.
2. The combination, with a tubular stand-

ard adapted, as described, to discharge its
contents into the combustion-chamber, of a ro-
tary grate having central bearing on the stand-
ard, a stationary grate surrounding the rotary
5 grate, and lateral lugs, or their flange equiva-
lent, projecting from the periphery of the ro-
tary grate over the adjacent portion of the sta-
tionary grate, substantially as set forth.

In testimony that we claim the foregoing we

have hereunto set our hands this 2d day of 10
September, 1879.

HENRY T. DRAIN.
JAMES McCLUNG.
EMLEN G. PENROSE.

Witnesses:

E. S. CARMICHAEL,
J. J. McALLISTER.