

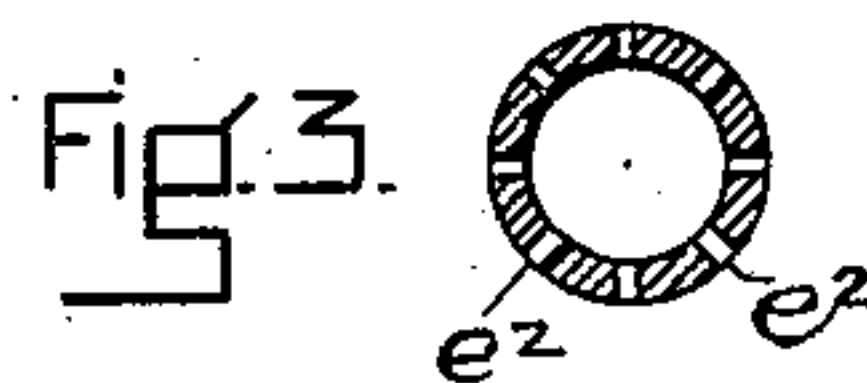
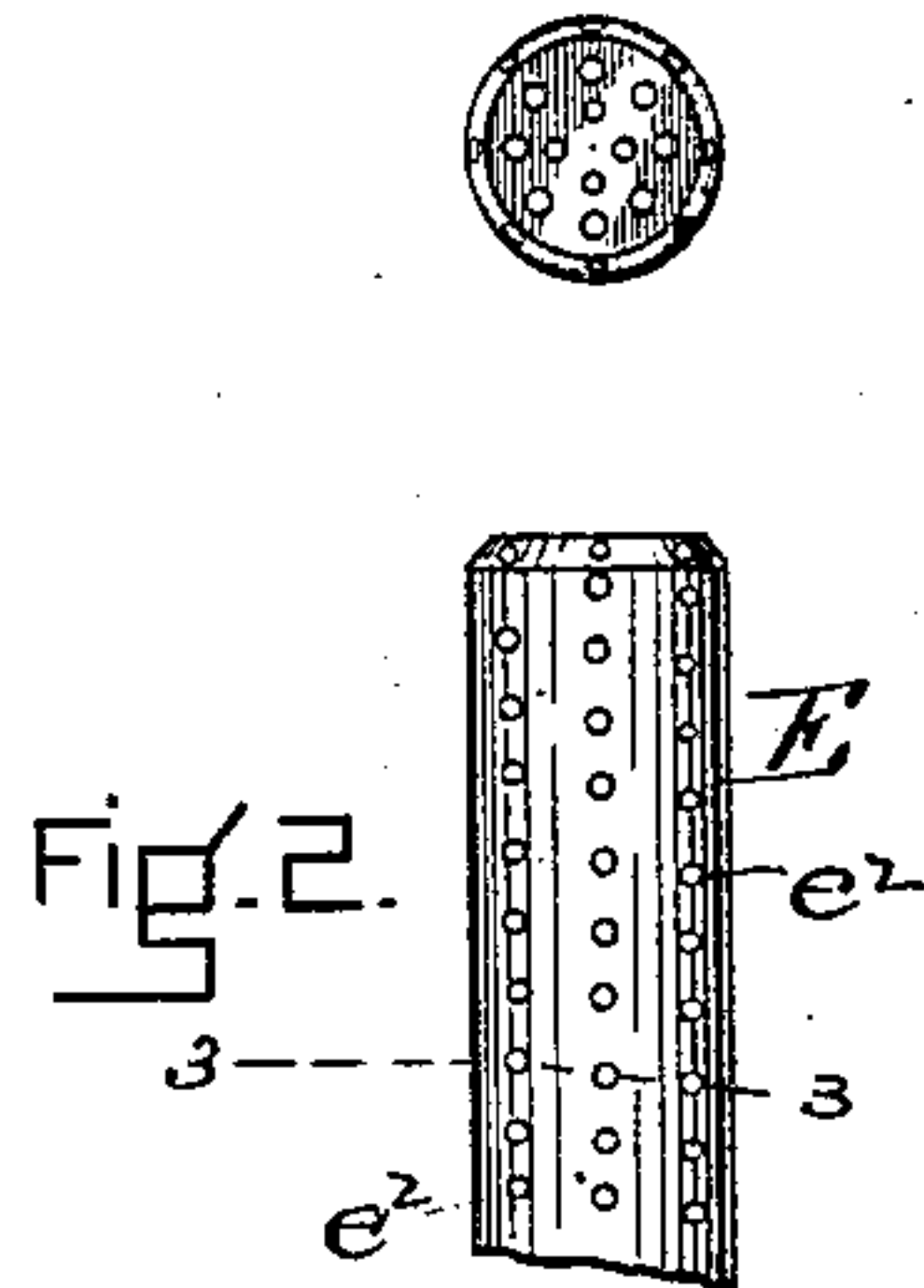
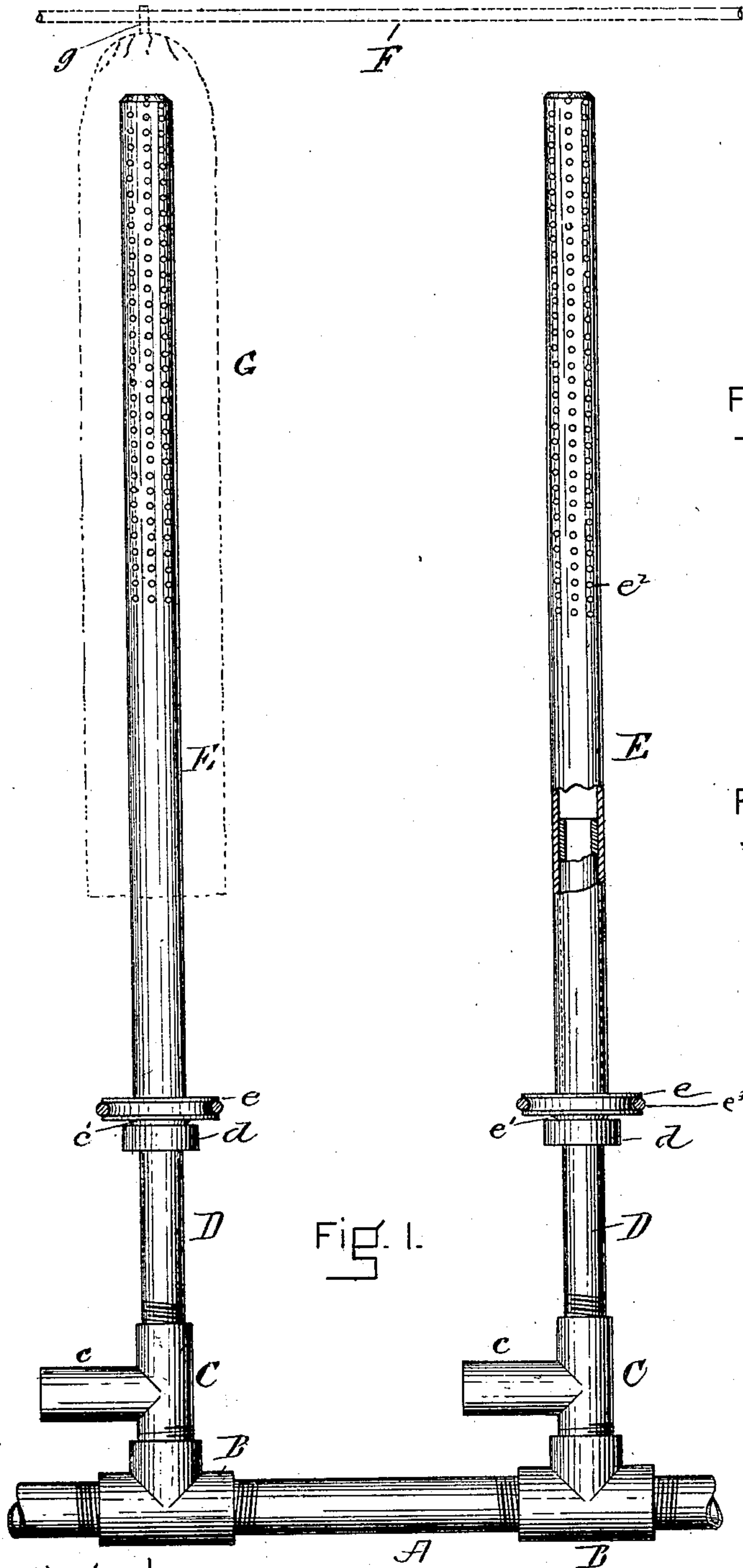
No. 763,305.

PATENTED JUNE 21, 1904.

F. W. MERRILL.
BURNER.

APPLICATION FILED JUNE 20, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

FRED W. MERRILL, OF SOMERVILLE, MASSACHUSETTS.

BURNER.

SPECIFICATION forming part of Letters Patent No. 763,305, dated June 21, 1904.

Application filed June 20, 1903. Serial No. 162,377. (No model.)

To all whom it may concern.

Be it known that I, FRED W. MERRILL, of Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Burners, of which

5 the following is a specification.
My invention is mainly useful in the manufacture of mantles for Welsbach and other burners. Mantles for these burners are ordinarily made from fabric woven in tubular form, which fabric is saturated with a chemical solution which hardens, and thereafter the fabric is burned away, leaving a shell of earthy matter, which is further treated and finished
15 to make the mantle of commerce. In the process of finishing it is desirable to submit the mantle to strong heat after burning away the fabric, and for this purpose I have devised the burner herein described, its novelty
20 lying, as I believe, in its shape, in the fact that it rotates, so that heat is applied to every part of the mantle, and in the fact that its perforations are peculiarly arranged, so that the jets of the flame reach all parts of the
25 mantle, and consequently their work is very perfectly done.

My invention will be understood by reference to the drawings, in which—

30 Figure 1 is an elevation showing two burners arranged side by side, a portion of one of them being broken away to show the interior construction, Fig. 2 being an enlarged view of the tip, and Fig. 3 a cross-section on line 3 3 of Fig. 2.

35 A is a gas-pipe furnishing the supply to a number of burners.

B B are T-joints, in each of which is screwed a second T-joint C, having the branch *c* extending laterally therefrom.

40 D is a vertical continuation of the pipe having a platform or collar *d* near its middle, which serves as a bearing upon which rests the burner itself, E. This burner sets over the upper end of the pipe D, which serves as
45 a guide to it, and has at its lower end a sheave *e* and below the sheave a slight bearing-surface *e'*, which rests upon the collar *d*, so that the burner may be rotated with but little friction.

The upper portion of the burner is perforated, the perforations *e*² being preferably arranged, as shown, in a spiral extending from the top of the burner down any desired distance. The top of the burner is also provided with perforations, as shown in Fig. 2. The
55 purpose of the pipe *c* is to connect each burner with an air-supply, so that air may be mixed with the gas in the tube D, as in the ordinary Bunsen burner. The purpose of the sheave *e* is to provide for a belt or cord (not
60 shown) which may connect the burner with a suitable source of power. A number of these burners may be arranged in gangs, all connected together and adapted to be rotated from the same source of power. Over the
65 burners may be suitably supported a rod of wire F, from which the mantle to be operated upon can be hung, as shown in the left-hand view of Fig. 1, where the mantle is indicated in dotted lines at G, the wire F passing
70 through the ordinary loop *g* in the top of the mantle.

In practice the mantle being hung over the top of the burner and the fiber having been burned off by ignition, the burners are rotated
75 and the gas and air supply are turned on. The gas immediately ignites, and as the rotation of the burner should be from left to right, as shown in the drawings—that is, the lower end of the spiral line of jet-openings advancing—the hot flame is caused to permeate the
80 mantle and at the same time by reason of the spiral arrangement of the jets there is a tendency of the flames to stretch the mantle downward, although at the same time the heat
85 of the burners tends to shrink the mantle. As a result while the mantle shrinks it does so evenly and regularly, and the mantle when it is finally removed from the burner is found
90 practically unshrinkable.

A large number of these burners may be arranged in gangs and all being rotated at once a corresponding number of mantles may be treated at the same time in the manner described. For this purpose I have shown in
95 the drawings two burners placed in line on the same pipe A, each having a sheave *e*, the sheaves being in line, and therefore adapted

to be engaged by the same belt c^3 , and consequently connected with the same source of power. This construction is so simple that it would seem to be unnecessary to describe it
5 any further in order to make one skilled in the art understand its operation.

In the process of manufacture as heretofore practiced these mantles were shaped and roasted singly by hand. With the herein-described burners any number—say from five to
10 fifty—may be shaped and roasted mechanically in the same time as now required to shape and roast one.

What I claim as my invention is—

15 1. In a burner, a tubular support having a tip-supporting surface, and a tip mounted to turn on said tip-supporting surface, said tip having a series of perforations extending along a considerable portion of its length, as described.
20

2. In a burner, a tubular support having a tip-supporting surface and a tip mounted to turn on said tip-supporting surface and having perforations in its periphery arranged in
25 the form of a spiral, as set forth.

3. In a burner, a tubular support provided with a collar, and a perforated tip having a bearing at its lower end, said bearing being

adapted to rest on said collar to turn thereon, as described. 30

4. In a burner, a perforated rotary tip and means whereby it is supported comprising a feeding-tube having an annular projection about its middle, said rotary tip having a bearing at its lower end adapted to rest on said
35 annular projection.

5. In an apparatus of the kind described, a series of burners, each adapted to be rotated, means whereby all of said burners may be rotated in unison, each burner being perforated
40 about a portion of its periphery, as set forth.

6. In a burner, in combination a feeding-tube connected both with gas and air supply, a support mounted on said feeding-tube and having a supporting-surface, a perforated tip
45 mounted on said support and turnable thereon and having a sheave mounted thereon whereby it may be connected with suitable motive power, said tip being perforated, as described.

In testimony whereof I hereunto set my
50 name this 15th day of June, 1903.

FRED W. MERRILL.

Witnesses:

GEORGE O. G. COALE,
M. E. FLAHERTY.