(No Model.)

I. S. McGIEHAN.

FURNACE.

No. 562,845. Patented June 30, 1896.

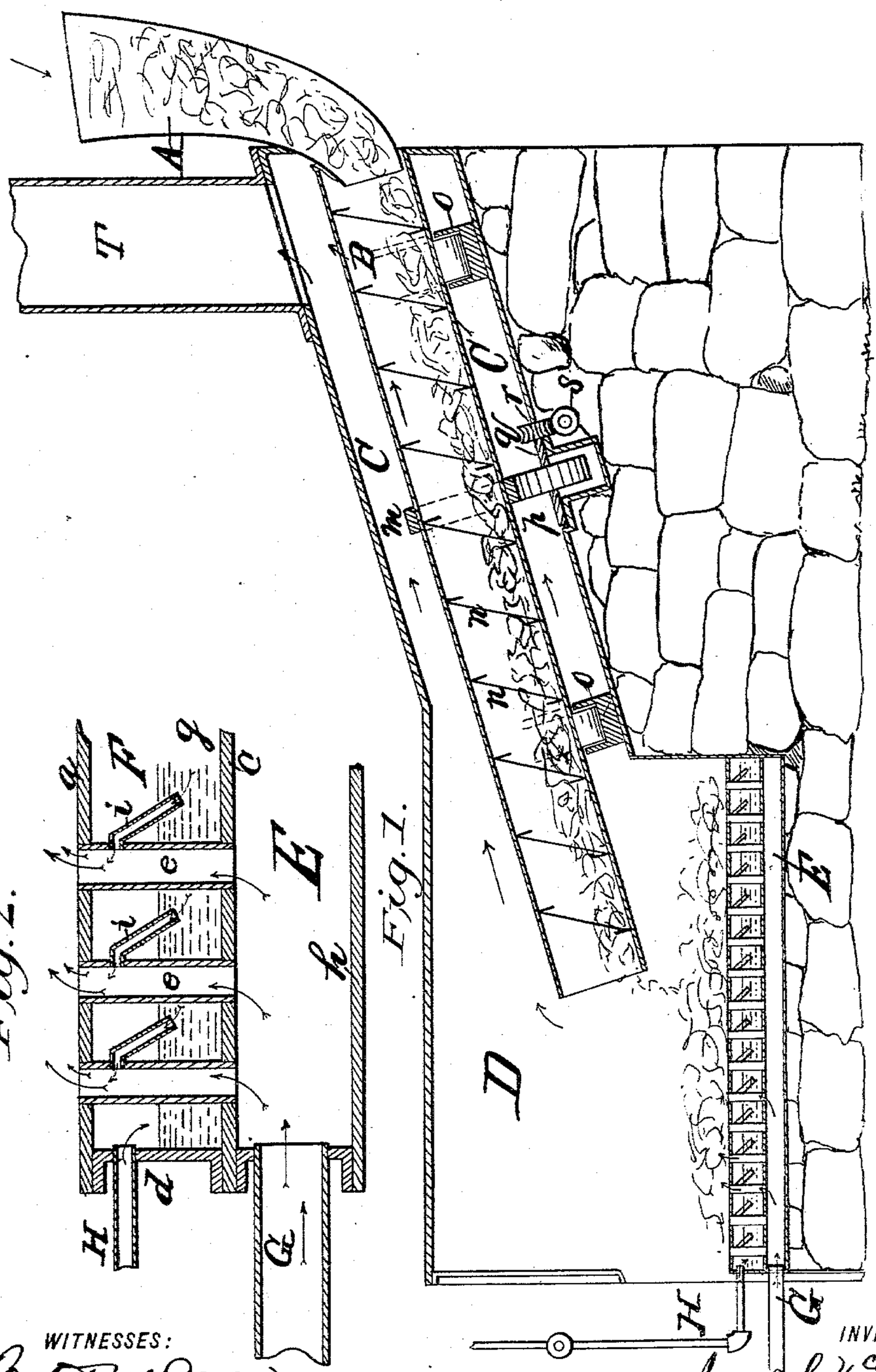

Fig. 1.

Fig. 2.

WITNESSES:

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FURNACE.

SPECIFICATION forming part of Letters Patent No. 562,845, dated June 30, 1896.

Application filed October 16, 1895. Serial No. 565,906. (No model.)

To all whom it may concern:

Be it known that I, ISAAC S. McGIEHAN, of the city, county, and State of New York, have invented a new and useful Improved Furnace, of which the following is a specification.

This invention relates to furnaces for burning garbage, and has as its object to first evaporate the moisture from the garbage by passing it through a rotating cylinder downwardly inclined, where fire traveling upwardly through the cylinder carries off the moisture, after which the garbage is burned, as will be hereinafter explained.

Briefly, the process is to dump the garbage into a rotating cylinder placed upon an incline, the cylinder being provided with a fixed inwardly-projecting flange, which, when the cylinder is rotated, will separate the garbage and regulate its feed to the grate, where, by means of a forced draft, it is completely burned, petroleum or petroleum-gas being automatically mixed with the garbage, while burning on the grate, when necessary to make it sufficiently inflammable to be consumed.

My invention is illustrated in the accompanying drawings, which form a part of this specification, with similar letters of reference to indicate corresponding parts, as follows:

Figure 1 represents a vertical longitudinal section through the center of my improved furnace, showing the hopper A, into which the garbage is dumped and which feeds the cylinder B, the latter being located within the inclined reach C of the fire-box D. Fig. 2 represents an enlarged vertical longitudinal section of the draft-chamber E and perforated petroleum-feed grate F, showing by the arrows the direction of the forced draft and the manner in which the petroleum is fed to the garbage.

The petroleum-feed grate is constructed of top and bottom plates, as *a* and *c*, Fig. 2, the requisite length and width of the grate-surface required. There are end and side pieces, as *d*, to make what may be termed a "large flat box." At equal distances apart in each direction numerous small tubes, as *e e*, pass vertically through the said flat box, forming a series of openings to the draft-chamber E below. A smaller tube, as *i*, is tapped into each of the tubes *e*, at or near the top, and bent down so as to enter the petroleum *g*, which is lying in the feed-grate F.

Immediately below the feed-grate F is the plate *h*, which is provided with suitable ends and sides to form an air-tight box directly under the grate F, so that when air is forced into the chamber E its only exit will be vertically through the tubes *e* to the fire. The pipe G leads to the fan-blower, which provides the forced draft, and the pipe H leads to the receptacle which contains the petroleum to be fed.

The cylinder B is provided with an inside spiral flange, (represented by the lines *n n*,) which may be regulated to any pitch desired, depending upon the rapidity with which the cylinder is to be rotated. The drying-cylinder B rests upon two collars, as *o* and *o*, Fig. 1, which are provided with sets of small rollers to insure the rotating of the cylinder without friction.

In the center of the cylinder, surrounding the same, is a geared band, as *m*, which meshes with a geared wheel, as *p*. Mounted upon the same shaft *q* with the gear-wheel *p* is a worm-geared wheel, as *r*, which is rotated by means of a worm-wheel, as *s*, fixed upon a transverse shaft. The stack T and hopper A may be of any desired pattern.

The operation of my improved furnace is as follows: The garbage is dumped into the hopper A, which delivers it to the rotating cylinder B, where it meets the blaze coming in the opposite direction, and which carries off the moisture at the upper end of the cylinder before it passes to the grate. The burning process is to partly fill the petroleum-grate F with petroleum by means of the pipe H; then by means of a suitable fan-blower force the air through the pipe G very rapidly into the draft-chamber E, and so up through the various tubes *e* with sufficient velocity to siphon the petroleum up through the small tubes *i*, where it mixes with the draft air, and is thus thoroughly mixed with the burning garbage by keeping the petroleum below the siphons *i*, and generating gas by means of the heat above. Petroleum-gas will be mixed with the garbage in the same way, which in some cases is preferable. The furnace is preferably constructed with the reach portion

C, which surrounds the drying-cylinder B, on an incline, so as to create a more rapid travel of the hot air and flame around the cylinder, thus insuring a better prospect of the garbage being thoroughly dried before it reaches the grate.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a refuse-burner, the combination of a combustion-chamber, a reach or flue leading therefrom, an inclined revoluble feed and drying cylinder smaller than and situated within said reach or flue, the said cylinder having communication at one end with the combustion-chamber and at the other end with the reach or flue, and provided with an opening for the reception of refuse material, substantially as described.

2. In a refuse-burner, the combination of a combustion-chamber, a reach or flue leading therefrom, an inclined revoluble feed and drying cylinder smaller than and situated within said reach or flue, the said cylinder being open at its lower end and having such end situated substantially at the middle of the combustion-chamber, and having its upper end in communication with the reach or flue and provided with an opening for the reception of refuse material, substantially as described.

3. A petroleum-feed grate consisting of an oil-pan having air-passages extending through the same and above the normal oil-level, in combination with induction oil-tubes leading from said pan and entering the air-passages, and means for forcing a blast of air through the air-passages, substantially as described.

4. In a refuse-burner, a petroleum-feed grate consisting of an oil-pan having air-passages extending through the same above the normal oil-level, in combination with induction oil-tubes leading from said pan and entering the air-passages, means for forcing a blast of air through the air-passages, and a feeder for delivering refuse matter to said grate, substantially as described.

In testimony that I claim the foregoing improved furnace as above described I have hereunto set my hand this 14th day of October, 1895.

ISAAC S. McGIEHAN.

Witnesses:

ROBT. M. COLE,

F. LYNCH.