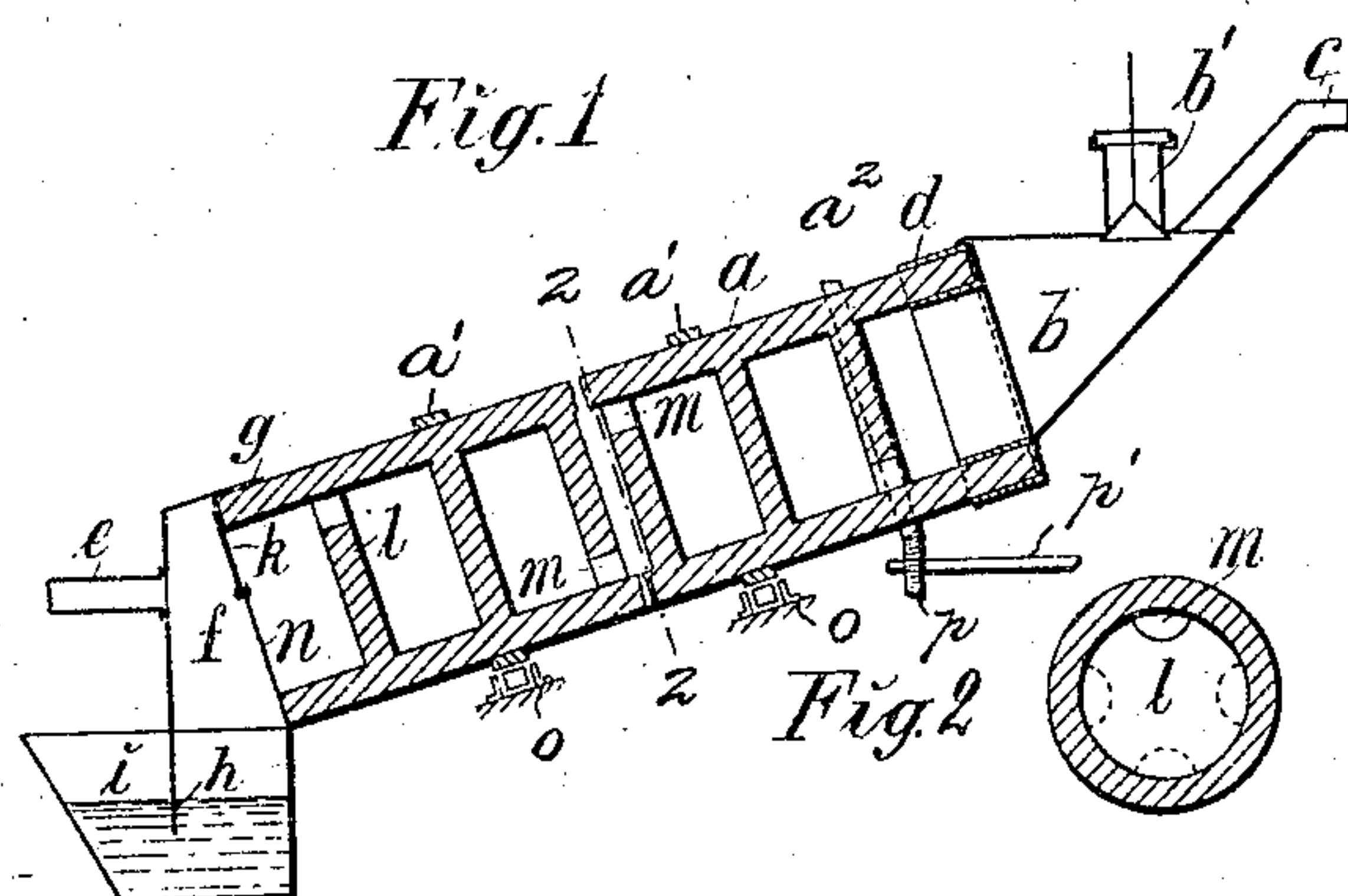


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S. E. SIEURIN.  
REVOLVING KILN FOR GENERATING GAS.  
APPLICATION FILED AUG. 14, 1905.



Witnesses.

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# UNITED STATES PATENT OFFICE

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## REVOLVING KILN FOR GENERATING GAS.

No. 822,394.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed August 14, 1905. Serial No. 274,169.

*To all whom it may concern:*

Be it known that I, SVEN EMIL SIEURIN, a subject of the King of Sweden and Norway, residing at Höganäs, Sweden, have invented certain new and useful Improvements in Revolving Kilns for Generating of Gas and Roasting; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in kilns for the generation of gas or for roasting ores; and it consists in providing a stationary charger adapted to feed the material to be acted upon into a rotating inclined kiln provided with partition-walls having openings therein so disposed to each other as to form a spiral path for the fuel or material to be roasted as it travels from the mouth to the outlet.

The invention also consists in a blast at the opposite end of the kiln to that of the material-inlet, so that a volume of air injected into or of gases generated in the kiln is caused to travel in a direction opposite to that of the path of the fuel or material to be roasted, said air or gases being, through the medium of the partitions and their openings, compelled to pass through and not only above the fuel or material being roasted.

The invention further consists in means for regulating the discharge of fuel from the kiln.

In the annexed drawings I have illustrated a constructional form of apparatus for the generation of gas, in which—

Figure 1 is a longitudinal section of an apparatus embodying my invention; Fig. 2, a cross-section on the line 2 2; Fig. 1.

$a$  designates a cylindrical kiln made of or lined with a fireproof material and provided with bearing-rails  $a'$ , resting on antifriction-rollers  $o$ , which are mounted on a suitable support. The kiln may be rotated by any suitable means, such as that shown in Fig. 1, which consists of a beveled gear  $a^2$ , surrounding the kiln, in mesh with a bevel-gear  $p$  on a shaft  $p'$ , which may be driven from any suitable source of power.

The fuel or material to be roasted is fed to the kiln through a hopper  $b$ , a suitable gas-tight connection  $d$  being provided for con-

necting the two parts, said hopper having a charging-aperture provided with a valve  $b'$  to prevent the escape of gas therefrom, a suitable gas-outlet  $c$  being provided for withdrawing the gas.

An air-blast  $e$  is connected with the kiln opposite the feed-hopper, a blast-box  $f$  being formed by means of an air-tight coupling  $g$  and an extension  $h$ , which latter extends down into a water seal in an ash-pit  $i$ . The air is injected into the blast-box, and from there it is forced through a perforated plate  $n$  into the kiln.

In order to obtain a long layer of fuel, the kiln is divided into compartments by partition-walls  $l$ , in which are formed openings  $m$ , so disposed relatively to each other that a spiral path is formed for the material as it passes through the kiln. By this arrangement the gases are compelled to pass through and not only above the layer of fuel, as would be the case if the kiln were not provided with the partition-walls. A more complete stirring of the fuel is also attained by this arrangement, and new reaction-surfaces of the fuel will constantly come in the way of the gases. If granulated fuel is used, the partition-walls prevent it from lumping, and a long layer of fuel is obtained.

The ashes resulting from the combustion of the fuel in the kiln are discharged through a door  $k$  in the perforated plate  $n$ .

It is obvious that the material in the kiln cannot to any important degree fall out through the perforations of the plate  $n$ , as these perforations are to be adapted to the material used.

The operation of the apparatus when employed for the generation of gas is as follows: The hopper is filled with the gas generating or the roasting material, together with the requisite fuel, through the charging-aperture, and the valve  $b'$  is then closed. The fuel having been ignited, the kiln is set in motion and the air-blast turned on. The air entering through the perforations in the plate  $n$  is driven through the kiln in a direction opposite to the direction of travel of the material, which latter is, by gravity and the rotation of the kiln, gradually fed through the openings in the partitions and may be discharged through the door  $k$ .

I claim—

1. In an apparatus of the character specified, the combination with a rotary kiln, of means for supplying fuel into one end of the



latter, means to inject air into the opposite end of the same, a plurality of transverse partitions in said kiln having openings arranged to form a prolonged passage for said air and fuel passing through the kiln.

2. In an apparatus of the character specified, the combination with a rotary kiln, of a stationary hopper adapted to supply fuel into one end of the kiln, a blast-box mounted at the opposite end of the latter, an air-supply for said box, and a plurality of transverse partitions dividing the kiln into compartments, each of said partitions having an opening so arranged relatively to the adjacent opening as to form a spiral passage for the fuel and air.

3. In an apparatus of the character specified, the combination with an inclined rotary kiln, of a stationary feed-hopper connected therewith at one end, a valved charging-port in said hopper, a gas-outlet port in the hopper, an air-blast connected with said kiln at the other end, a perforated plate in the last-mentioned end of said kiln, a plurality of

transverse partitions dividing the kiln into compartments, each of said partitions having an opening so arranged relatively to the adjacent opening as to form a spiral passage through the kiln.

4. In an apparatus of the character specified, the combination with an inclined cylindrical kiln, means to rotate the same, a stationary feed-hopper communicating with one end of the kiln and provided with a charging-port, a valve in said port, a gas-outlet port in the hopper, an ash-pit at the opposite end of the kiln, a blast-box having an air-tight connection with the kiln and extending into the ash-pit, an air-supply communicating with the blast-box, a perforated end plate in the kiln, and a door in said plate.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

SVEN EMIL SIEURIN.

Witnesses:

KNUT LANDIN,  
WILHELM ÖRTENHOLM.