

(No Model.)

2 Sheets—Sheet 1.

C. SPRECKELS & J. MOORE.
Furnace for Burning Cane Trash.

No. 236,465.

Patented Jan. 11, 1881.

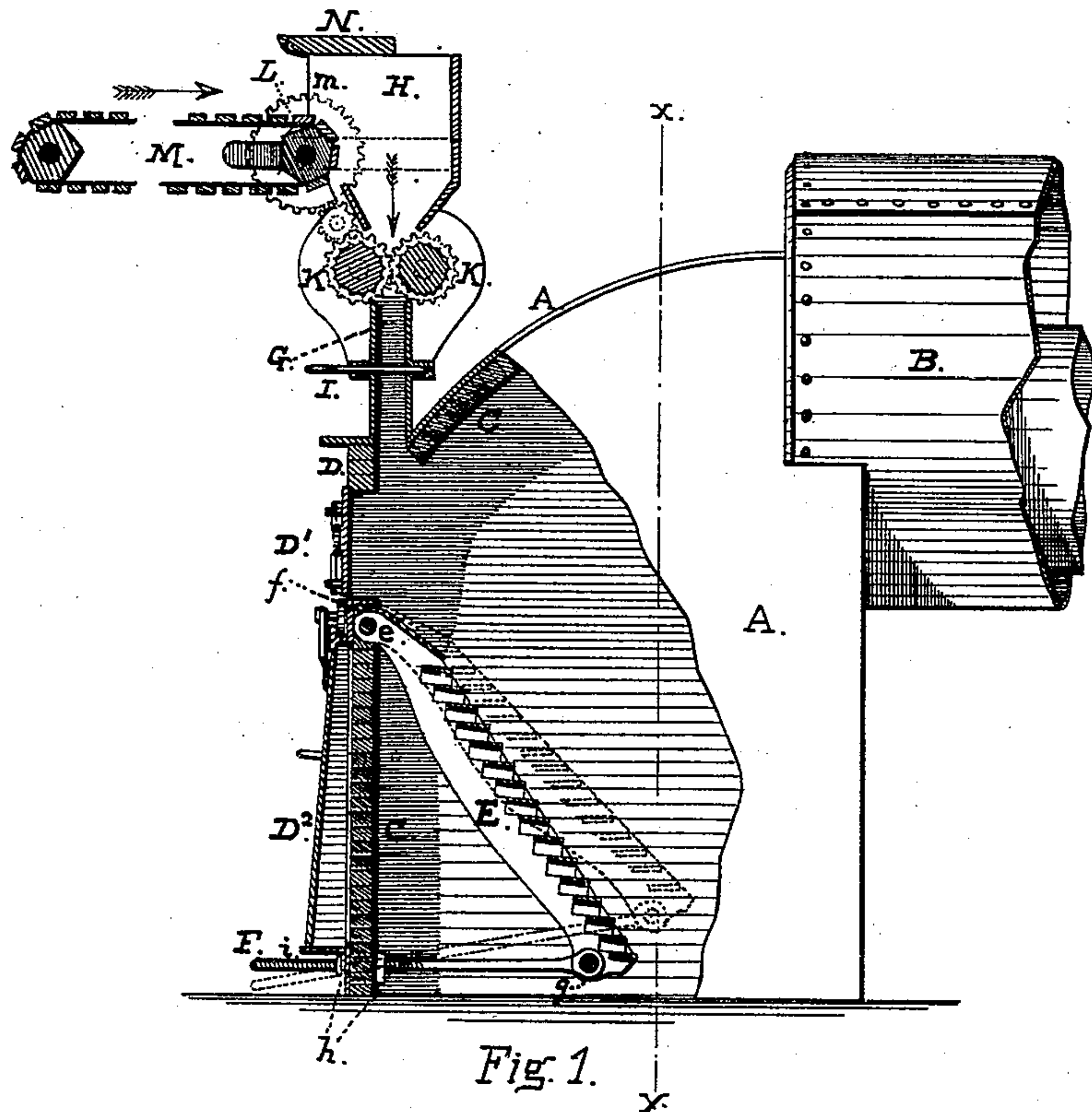


Fig. 1.

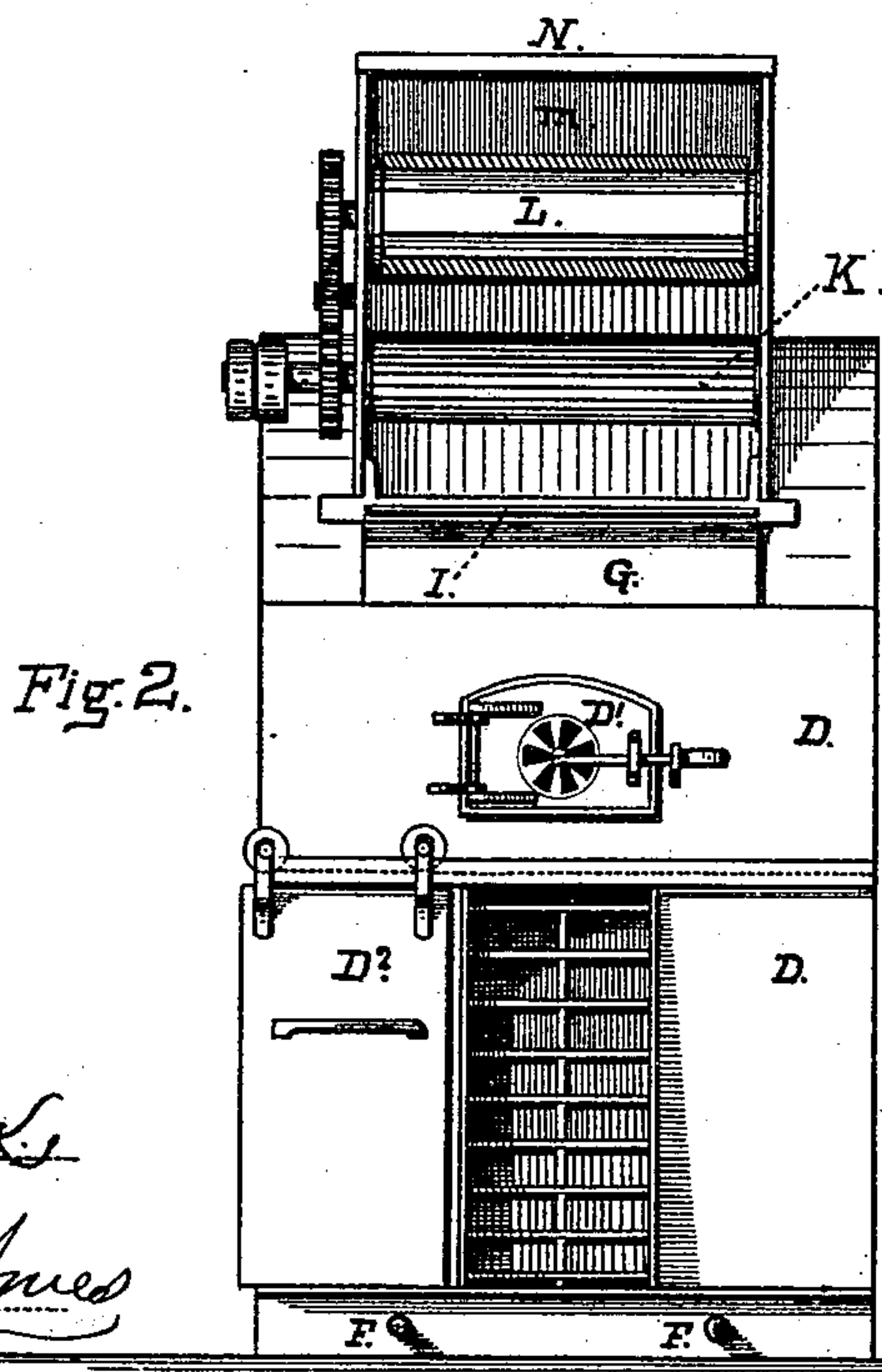


Fig. 2.

Witnesses:

Wm. H. Clark

Pelham W. Ames

Inventors:

Claus Spreckels & J. Moore

by their Atys.,

E. Boon & Sons

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Fig. 3.
Section through x.y.
fig. 1.

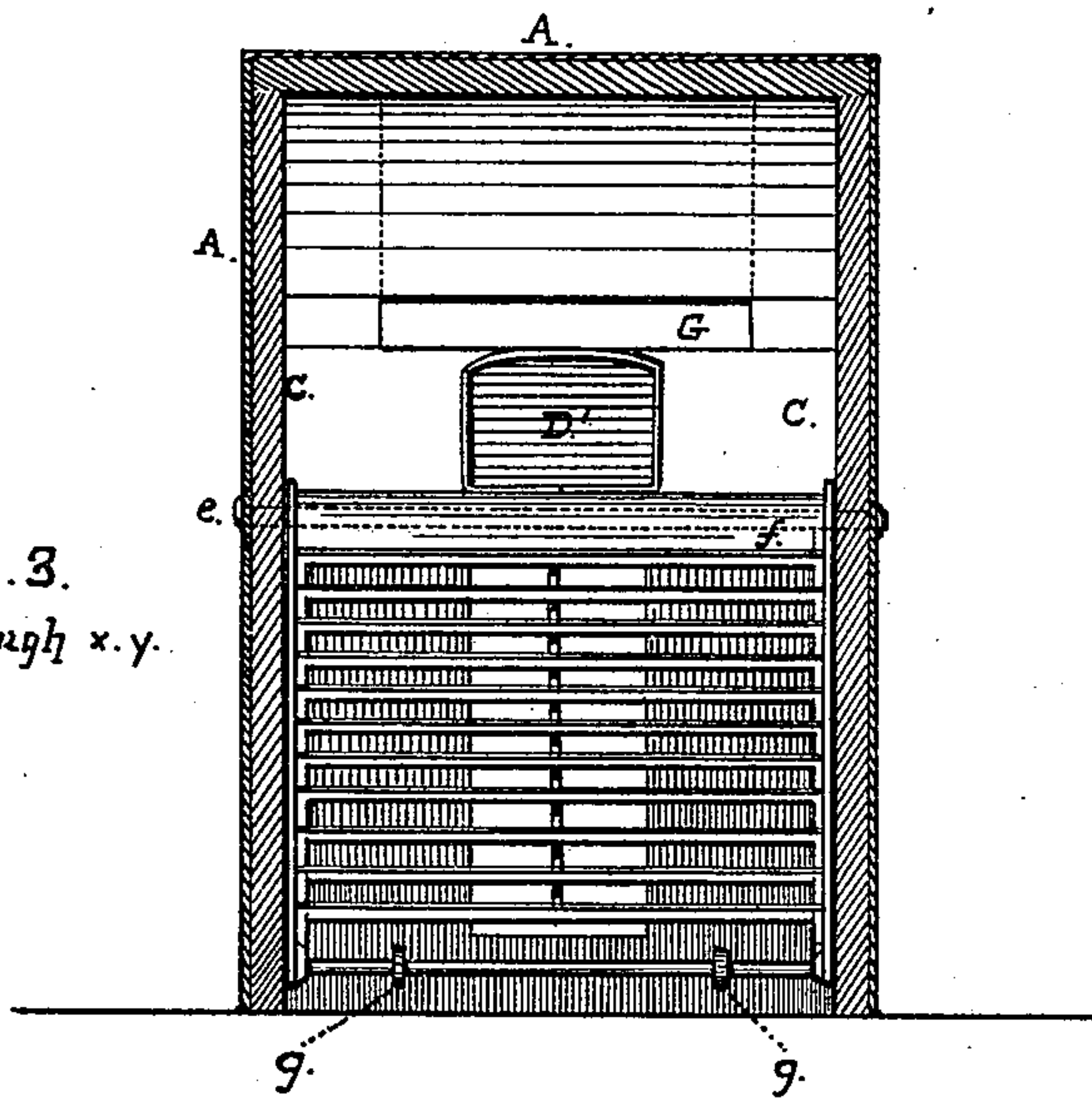


Fig. 4.

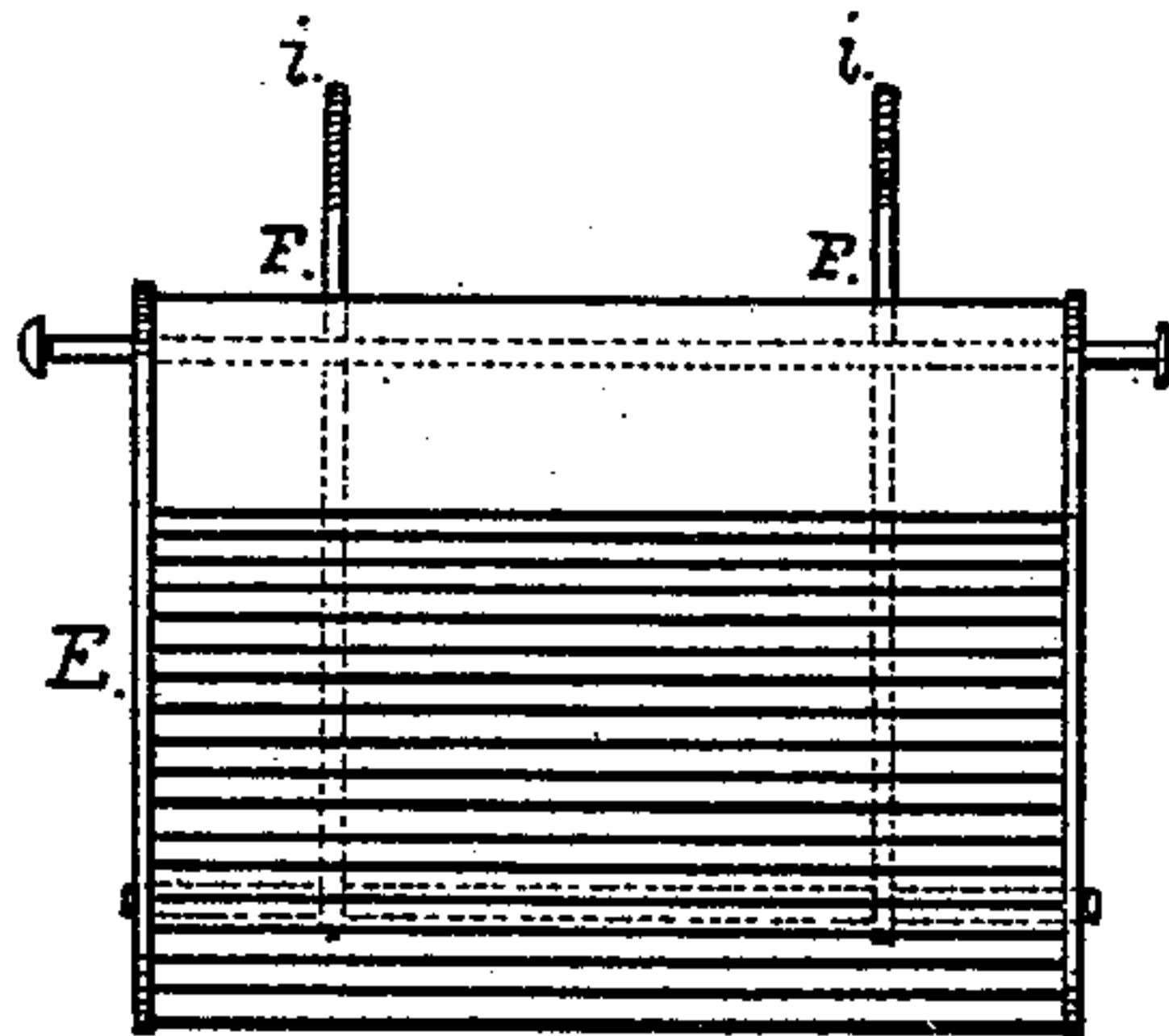
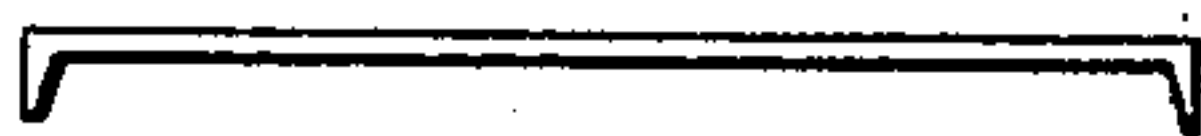


Fig. 5.



Witnesses:

Wm. H. Clark

Pelham W. Ames

Inventor:

Claus Spreckels & J. Moore.

by his Atlys.,

Boone T. Brown

UNITED STATES PATENT OFFICE.

CLAUS SPRECKELS AND JOSEPH MOORE, OF SAN FRANCISCO, CALIFORNIA.

FURNACE FOR BURNING CANE-TRASH.

SPECIFICATION forming part of Letters Patent No. 236,465, dated January 11, 1881.

Application filed May 3, 1880. (No model.)

To all whom it may concern:

Be it known that we, CLAUS SPRECKELS and JOSEPH MOORE, both of the city and county of San Francisco, in the State of California, one of the United States of America, have invented new and useful Improvements in Furnaces for Burning Bagasse or Cane-Trash; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of our said invention, reference being had to the accompanying drawings.

The first part of our invention relates to certain improvements in the fire-chamber and the grate or fuel-supporting surface of bagasse or cane burning furnaces; and the second part of our invention to a means or apparatus for automatically feeding the bagasse or cane-trash to the furnace.

We construct our furnace of an iron rim or case independent of the boiler, but of a shape to receive or be connected to the front end thereof, and to give a greater height of fire and combustion space than is afforded in the fire-chambers of ordinary boiler-furnaces. This case is lined with brick or fire-clay, and is provided with a feed-hopper on top and near its front line or wall. Below the inlet of this hopper, within the chamber, we arrange an inclined grate or fuel-supporting surface, which is capable of adjustment to occupy a greater or less degree of inclination beneath the fuel-inlet, as may be required, according to the kind or quality of fuel used. This grate-surface fills up the space between the side walls of the chamber, and its front end is pivoted or hinged to a plate or bridge fixed to and projecting from the front wall of the furnace, about midway between the bottom or ash-pit and the roof of the chamber, so that a large space below the grate is afforded for the reception of the ashes. The surface of this grate we construct of a number of flat plates or bars placed one above and in advance of the other in a regular manner, with a free vertical space between the surface of one plate and the edge of the next adjoining one, similar to the arrangement of a flight of steps, and the rear and lower end of the grate is connected to horizontal rods, which extend through the space at the bottom of the chamber and through

its front wall, where they run through adjusting-nuts, the front ends of the rods being cut with screw-threads for this purpose. Below the bridge-plate, on the front wall of the chamber and beneath the inclined grate-surface, we provide a large opening covered by a sliding door for the purpose of supplying air in sufficient quantity beneath the fuel, and for giving also ready means of access to the entire surface of the grate below the fire, for raking or keeping the draft free and clear of obstructions. We also provide a fuel-door in the front wall and above the grate, for the introduction of fuel of the ordinary kinds in firing up the furnace or in burning other kinds of fuel than the cane-trash in cases where the supply of the latter is interrupted or exhausted.

The means or apparatus which we construct and employ for feeding the bagasse to the furnace consists of the feed-hopper above described as situated on top of the furnace or fire-chamber, and having a pair of fluted feeding-rollers located within it, and an endless traveling apron or carrier of the width of the hopper extending from its upper end or mouth to any desired distance and point of supply of the bagasse. The feeding-rollers and the endless carrier are geared together, so that the speed of both shall be uniform and the feeding of the fuel shall proceed in a regular manner without choking in the hopper. To regulate the thickness or amount of fuel upon the endless apron to be carried into the hopper, we provide an adjustable plate or striker upon the hopper, just over the edge of the apron, by which any excess of fuel lying on the apron above the line of the top of the hopper is caught by the striker as the endless apron moves forward and prevented from falling into the hopper.

Referring to the accompanying drawings, Figure 1 is a side elevation of our improvement as applied to a boiler, the side wall of the furnace being broken away and the feed-hopper and fuel-carrier being shown in section. Fig. 2 is a front view of Fig. 1. Fig. 3 is a transverse section taken vertically across the furnace and looking toward the front wall thereof. Fig. 4 is a top or plan view of the inclined grate, and Fig. 5 is a detailed view of one of its plates or bars.

A is the outer rim or case of the furnace; B, the front end of the boiler to which the furnace is connected, and C is the fire-proof lining.

5 D is the front wall, in which are the fuel-door D' and the large opening covered by the door D².

E is the inclined grate, and *f* the bridge-plate, to which the grate is hinged at *e e*.

10 F F are the rods that support and hold out the lower end of the grate. These rods are pivoted to the end of the grate at *g*, and are held by means of the nuts *h h* on the screw-threaded ends *i i*.

15 G is the inlet from the feed-hopper H, and I is a sliding gate or damper for controlling the opening leading from the hopper.

K K are the fluted feeding-rollers, which are geared together and to the driving-roller L of the endless carrier or apron M, so that the apron and rollers shall travel at a uniform rate of speed.

N is the plate or striker placed above the opening *m* in the side of the hopper H.

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

1. The furnace or fire-chamber adapted to receive or be connected to the end of a boiler, 30 having an inclined grate, E, the highest point of which is at the front of the chamber, and provided with a feed-inlet, G, and feed-hopper H, situated on top and across the front end of the furnace, in combination with the feeding device, consisting of the feed-rollers K K 35 and the endless traveling fuel-carrier M, ar-

ranged below the top or rim of the hopper and above the feed-rollers, said rollers and carrier being operated to travel at the same rate of speed, substantially as described, for the purpose set forth. 40

2. In combination with a bagasse or cane-burning furnace having an inclined grate, the highest point of which is at the front of the furnace, the feeding device or apparatus for 45 automatically introducing and supplying the fuel to and across the highest part of the grate, consisting of the feed-hopper H, with its feeding-inlet across the top and front end of the furnace, the feeding-rollers K K 50 within the hopper, and the endless traveling apron or carrier M, placed at the side of the hopper at a point below the top or rim thereof, and connected with said rollers or driven so as to move at uniform speed with them, sub- 55 stantially as described, for the purpose set forth.

3. The hopper H, having the feed-rolls K, the endless traveling fuel-carrier M, arranged to introduce the fuel into the hopper at the 60 side and below the rim or top thereof, and the striker N, placed above the line of travel of the carrier M, in combination with the furnace, substantially as and for the purpose set forth.

Witness our hands and seals this 15th day 65 of March, A. D. 1880.

CLAUS SPRECKELS. [L. S.]
JOSEPH MOORE. [L. S.]

Witnesses:

EDWARD E. OSBORN,
WM. F. CLARK.