

No. 619,167.

Patented Feb. 7, 1899.

C. GROLL.
FUEL FEED DEVICE FOR FURNACES.

(Application filed Nov. 4, 1898.)

(No Model.)

2 Sheets—Sheet 1.

FIG-1-

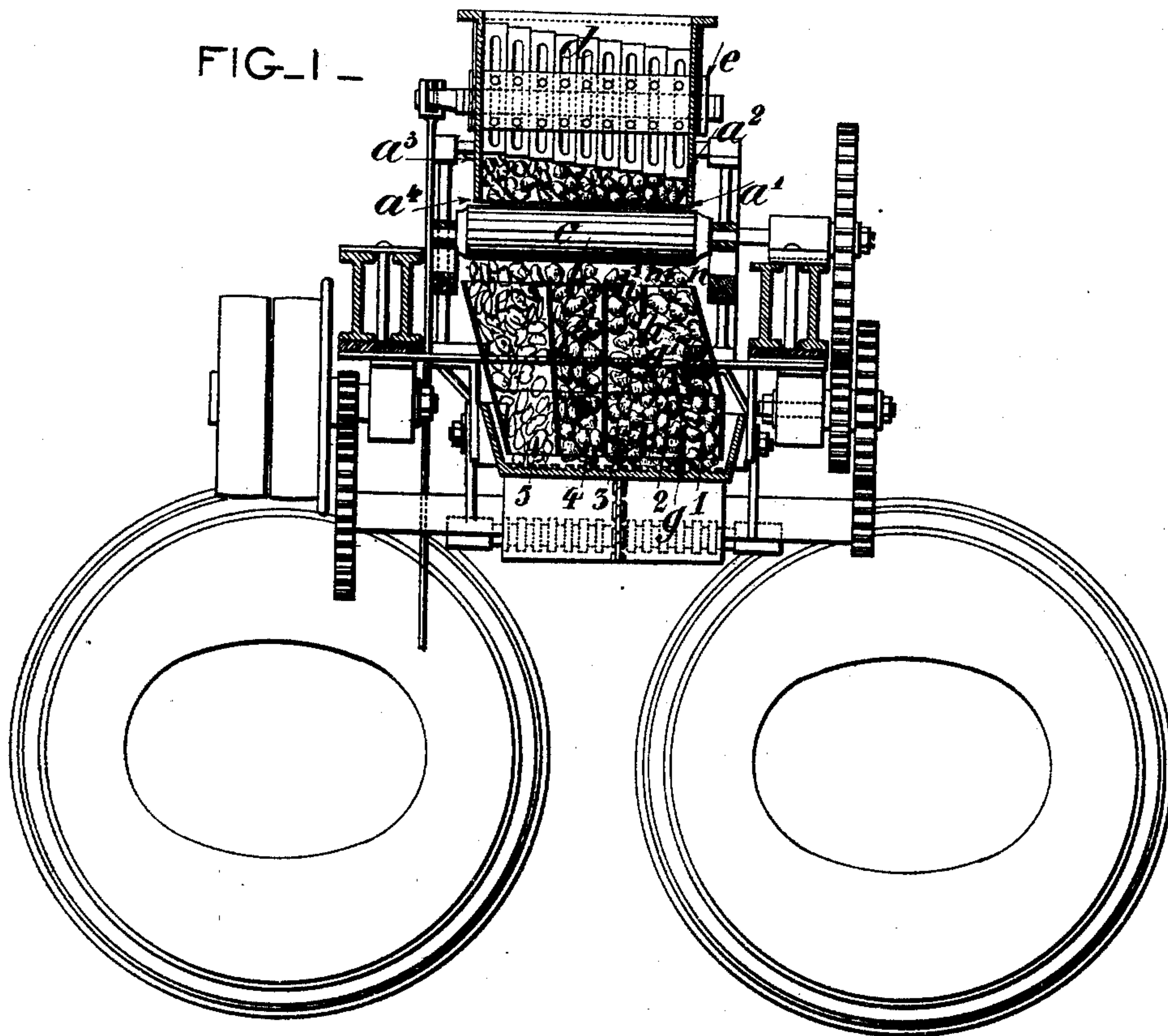
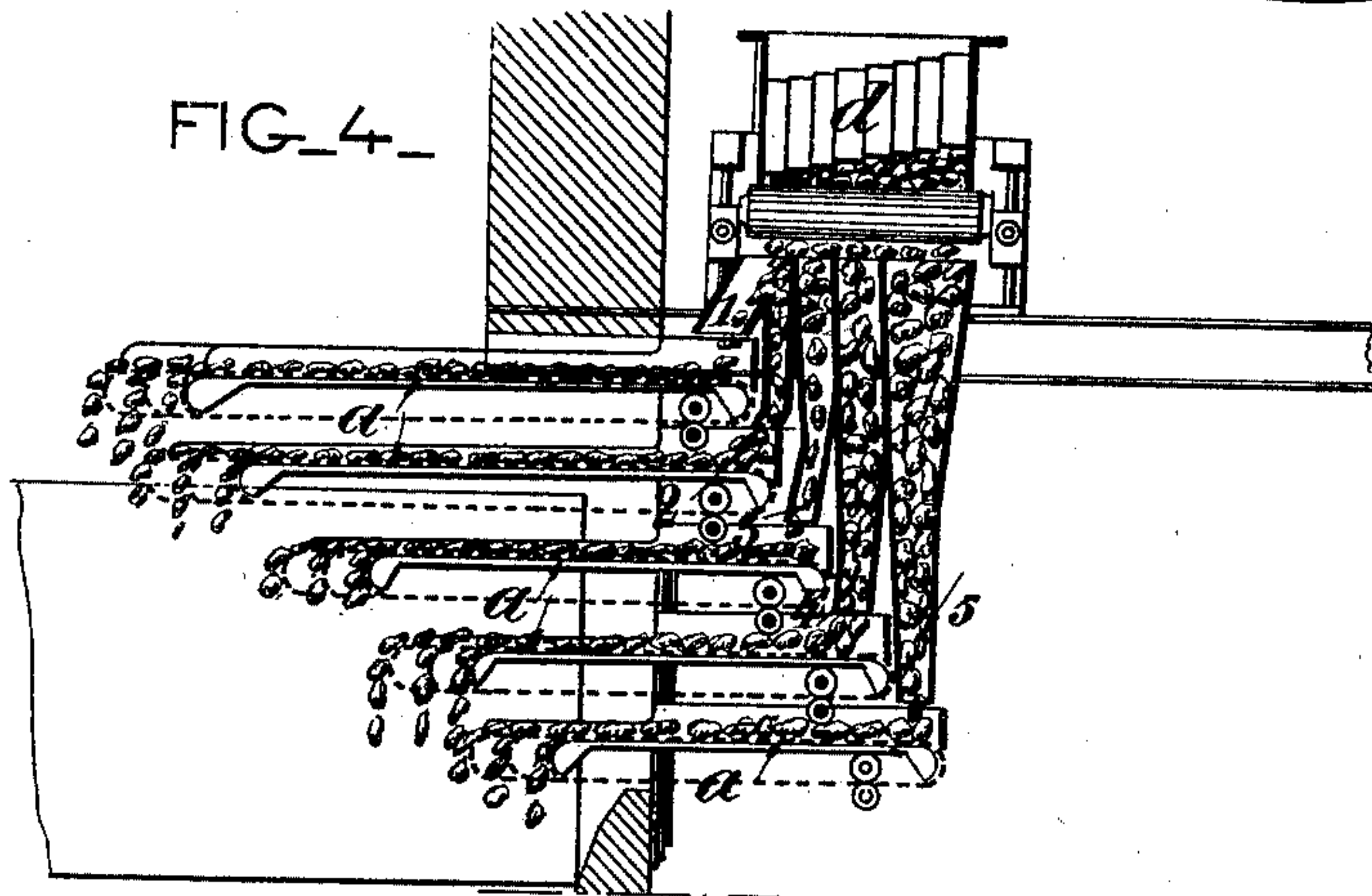


FIG-4-



Inventor:

Charles Groll

Witnesses:
Julius Lutz
John Lutz

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2 Sheets—Sheet 2.

FIG-2.

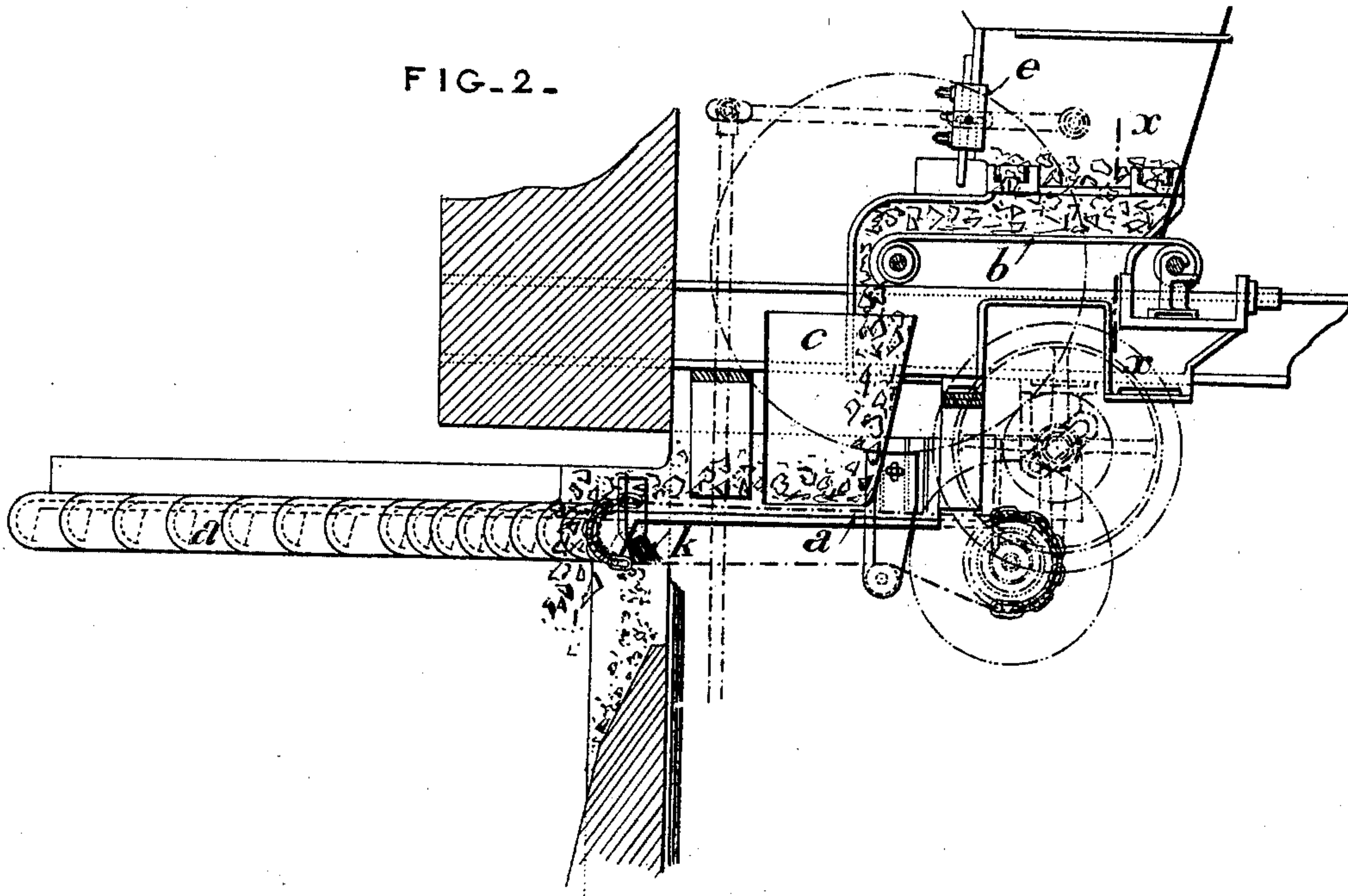
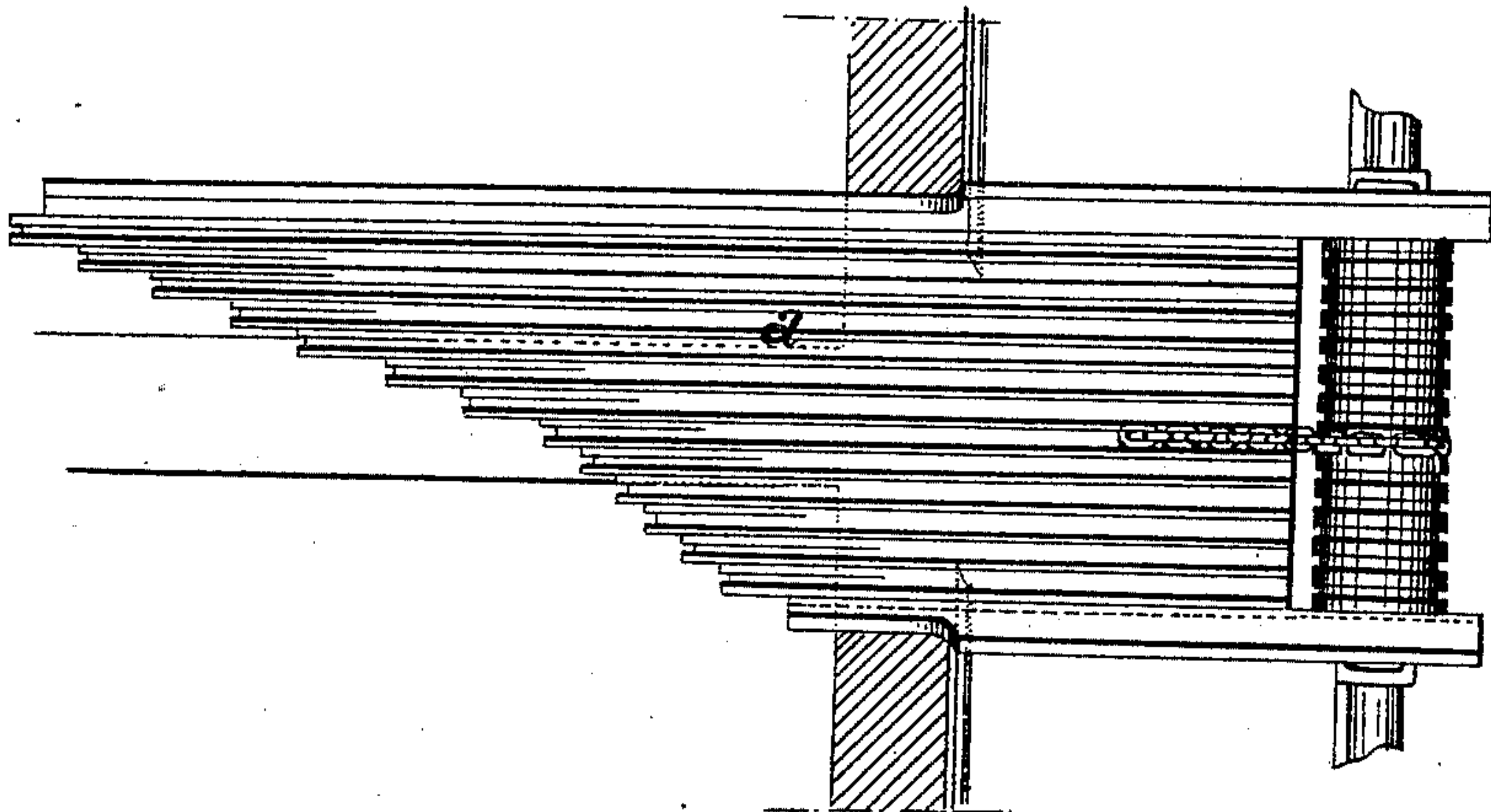


FIG-3.



Inventor:

Charles Groll

Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES GROLL, OF ROUBAIX, FRANCE.

FUEL-FEED DEVICE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 619,167, dated February 7, 1899.

Application filed November 4, 1898. Serial No. 695,480. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GROLL, engineer, of Roubaix, Department du Nord, in the Republic of France, have invented certain
5 new and useful Improvements in Fuel-Feed Devices for Furnaces, of which the following is a specification.

In my Patent No. 578,146, of March 2, 1897, I have described the combination of a distributing device and of a stoking device having lateral or superposed channels, the said combination enabling me to insure the equal distribution on my rotary grate of any manufacturing-coal and however wet the latter
15 may be.

According to the construction described in my application for patent filed December 30, 1897, Serial No. 664,647, an eccentric imparting a rapid reciprocating motion produces
20 the sliding displacement of the coal in the channels.

My present invention has for its object to do away with the said reciprocating motion and to simply conduct the fuel onto the grate
25 by a continuous motion obtained by means of a device which is shown in the accompanying drawings.

Figure 1 is a part front elevation and section of the distributor, the section being made
30 on the line xx of Fig. 2. Fig. 2 is a longitudinal section, and Fig. 3 a plan view, of the said distributor. Fig. 4 shows a modification of the same.

My distributor consists of a fixed stoking device a , on which a series of contiguous chains slide and act as distinct carriers to feed the coal to the different stoking-points of the grate, the said points being sufficiently near to each other to insure by the rotation
40 of the grate a perfectly even distribution of the fuel on the same. To obtain this result, each chain or series of contiguous chains corresponding to the compartments 1 2 3 4 5, the number of which may vary according to the
45 size of the grate, must receive exactly the quantity of coal which corresponds to the annular portion of the grate to which it has to feed the fuel. For this purpose I employ, in conjunction with the stoking device a , comprising chains, as described, a distributing-box c and a feed-apron b . Above the feed-

apron are located vanes or gates d , whose distance from the apron increases progressively from one end to the other, as indicated at a' a^2 a^3 a^4 . These vanes are normally stationary. The amount of fuel fed depends
55 upon the speed of the apron, the width thereof, and the clearance between the apron and the vanes or gates. The fuel falls from the said apron into the distributing-box c , each
60 of the compartments 1 2 3 4 5 of which receives the quantity of coal necessary for the chains which it supplies. The said quantity is regulated in two ways—first, by the width of the distributing-apron b , to which each
65 compartment corresponds, and, second, by the corresponding height of the vanes d above the apron b . To that end the said vanes d are made adjustable; but when once adjusted they remain fixed on the sliding part
70 e and only move vertically with the same, which is under the control of the stoker, to vary the amount of coal fed and modify the fire.

As but little coal is to be received in the
75 compartments 1 and 2, since the fuel fed from them falls on the center of the grate, their width must be very small, and might on that account prevent the pieces of coal from passing at $m n$. To obviate that without increasing the width, I have devised the arrangement shown in Fig. 1 of the drawings. The partition $g g'$, separating the compartments 1 and 2, is inclined and does not reach the level of the adjacent partitions. The partition h
80 h' , situated between the compartments 2 and 3, is open at its middle. In this way there remains at each side of the partition $g g'$ a free space quite sufficient for the passage of the large pieces of coal. The distance $h g'$ must
85 be at least equal to the minimum height of the passage left by the vanes d above the distributing-apron c .

To clean the chain carrier a , I arrange above the lower part of the endless chains one
95 or more metal brushes k , the action of which is continuous and causes the coal retained by the links to fall into the furnace.

I reserve to myself the right of modifying the forms, dimensions, and materials of the
100 parts constituting my invention and also the relative proportions of the said parts accord-

ing to the size of the smoke-consuming furnace to which the stoking device may be attached.

In the case, for example, where the width would not allow the use of the devices shown in Figs. 1, 2, and 3 I have represented in Fig. 4 a device in which a single distributing-apron supplies several stoking-chains superposed and projecting stepwise one in advance of the other in such a manner as to insure the distribution of the coal on the whole length of the radius of the grate.

In a similar manner to that described in my Letters Patent No. 578,146, of March 2, 1897, and my applications for patents of December 30, 1897, and April 8, 1898, Serial Nos. 664,647 and 676,852, respectively, the hereinbefore-described device will allow of the use of an air-blower above the grate. The said air-blower may be placed directly under the stoking device and also serve the double purpose of promoting the combustion of the gases always given off chiefly in the direction of the stoking radius and of protecting the stoking device. The chains of the latter will be cooled by the fresh coal, and they may, on the other hand and if useful in certain cases, be cooled by passing through water in a vessel placed outside.

I claim—

1. A self-acting apparatus for stoking smoke-consuming furnaces, comprising an endless distributing-apron mounted on two operating-rollers and placed at the bottom of a hopper, one wall of which is provided with vanes which allow of varying the height of the free passage above the said distributing-apron at the point where it leaves the hopper, in combination with a distributing-box receiving the coal distributed by the said apron, a stoking device conducting the coal to the several points of the grate, and devices controlling simultaneously the rollers operating the apron.

2. A self-acting apparatus for stoking smoke-consuming furnaces, comprising a hopper having regulating-vanes, an endless distributing-apron, a distributing-box the partitions of which are arranged to allow coal of varying sizes to pass, although each compartment cannot receive a greater quantity of coal than that intended for it, in combination with a stoking device having an endless apron, and controlling devices for the distributing and stoking aprons.

3. A self-acting apparatus for stoking smoke-consuming furnaces, comprising a hopper having regulating-vanes, an endless distributing-apron, a distributing-box, a stoking device formed by a fixed channel serving as a support and guide for a series of chains each acting as an isolated carrier and con-

ducting the coal to the several points of the grate, in combination with metal brushes operating to clean the said chains, substantially as described and shown.

4. A self-acting apparatus for stoking smoke-consuming furnaces, comprising, in combination with a hopper, a distributing-apron and a distributing-box, a series of superposed stoking devices each formed by a fixed channel serving as a support and guide to a certain number of carrier-chains, each of the said stoking devices having to distribute the coal on a well-defined portion of the radius of the grate, the arrangement having for its purpose to reduce the width of the stoking apparatus, substantially as described and shown in the accompanying drawings.

5. The combination of the feed-apron, the transverse gate or barrier located above the apron and spaced therefrom, the lower edge of the gate approaching gradually toward the surface of the apron from one side of the apron to the opposite side thereof, so that the amount of clearance between the gate and the apron will vary at different points, and a fuel-distributing device arranged to receive the material discharged from the apron.

6. The combination of the feed-apron, the transverse gate or barrier located above the apron and spaced therefrom, the lower edge of the gate approaching gradually toward the surface of the apron from one side of the apron to the opposite side thereof, so that the amount of clearance between the gate and the apron will vary at different points, and a distributing box or hopper arranged to receive the fuel discharged from the apron, and provided with partitions dividing it into a series of compartments of unequal size.

7. The combination of the feed-apron, the transverse gate or barrier located above the apron and spaced therefrom, the lower edge of the gate approaching gradually toward the surface of the apron from one side of the apron to the opposite side thereof, so that the amount of clearance between the gate and the apron will vary at different points, and a distributing box or hopper arranged to receive the fuel discharged from the apron, and provided with partitions dividing it into a series of compartments of unequal size, and a series of conveyers located beneath the distributing-box and having their discharge ends arranged stepwise one in advance of the other.

Signed at Roubaix, in the Republic of France, this 22d day of September, 1898.

CHARLES GROLL.

Witnesses:

J. LANGLOIS,
ALFRED C. HARRISON.