

(No Model.)

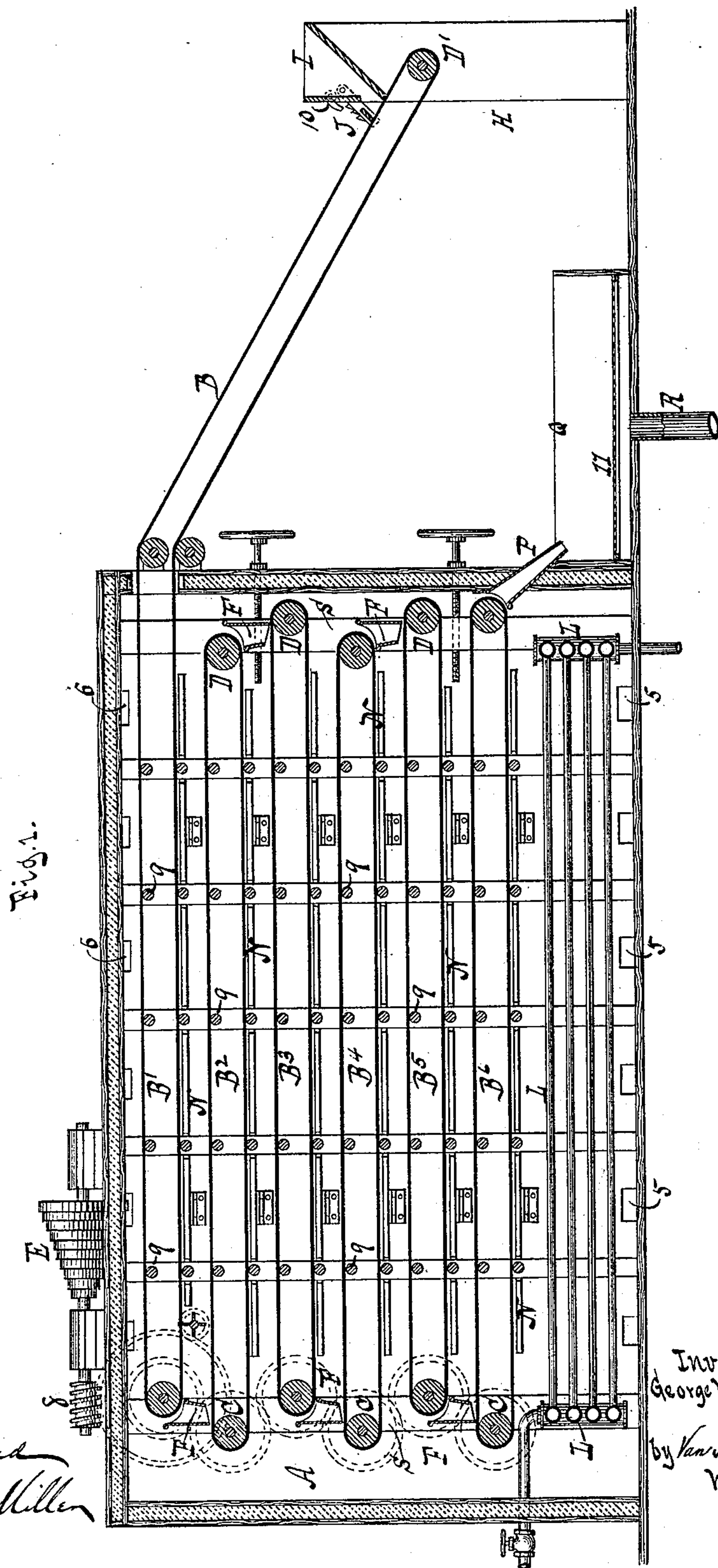
2 Sheets—Sheet 1.

G. W. HUNGERFORD.

MACHINE FOR TREATING COFFEE OR OTHER MATERIAL.

No. 250,818.

Patented Dec. 13, 1881.



Witnesses.
Otto Shufeldt
William Miller

Inventor
George W. Hungerford
by Van Santvoord & Hauff
his attys.

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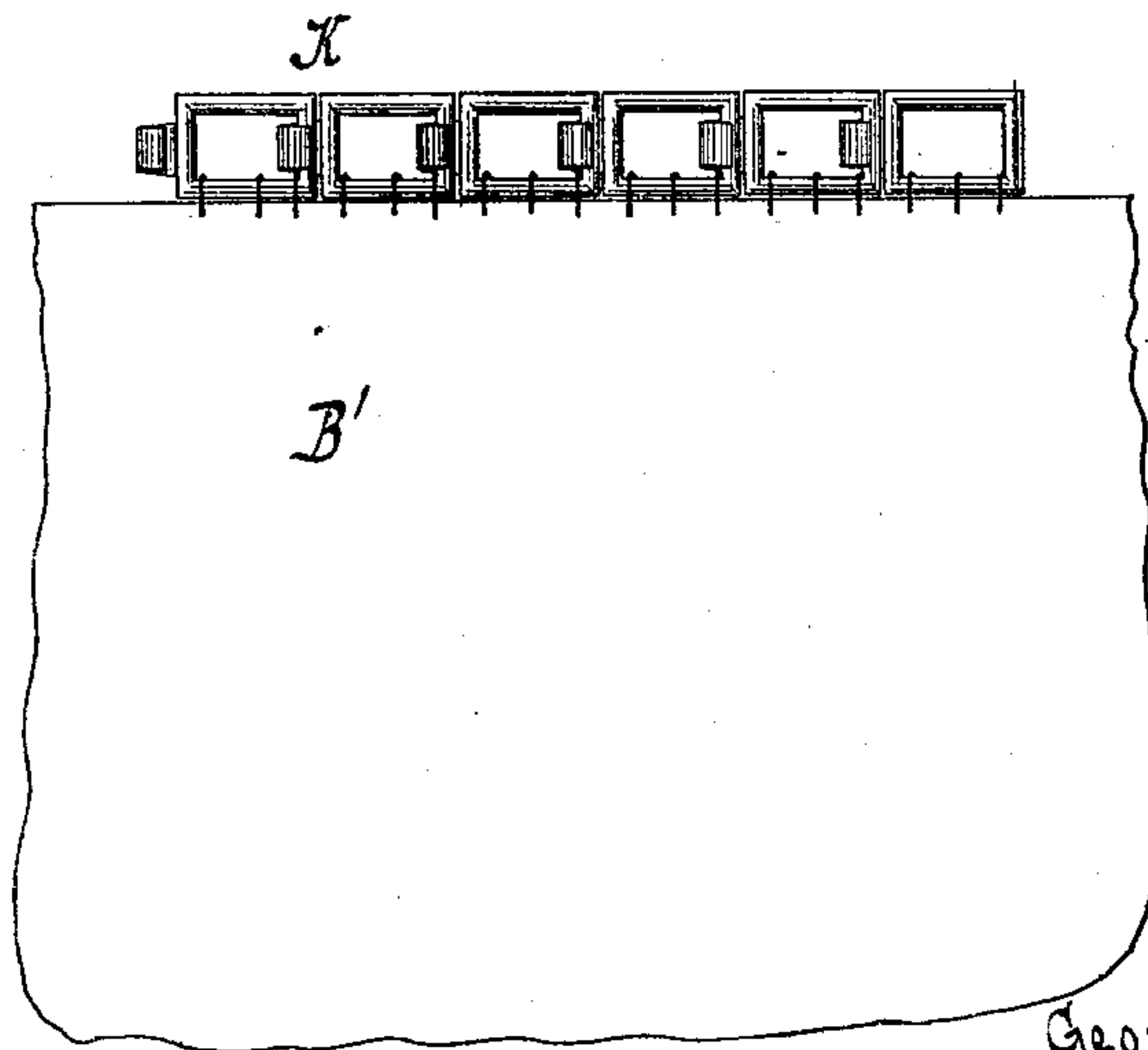
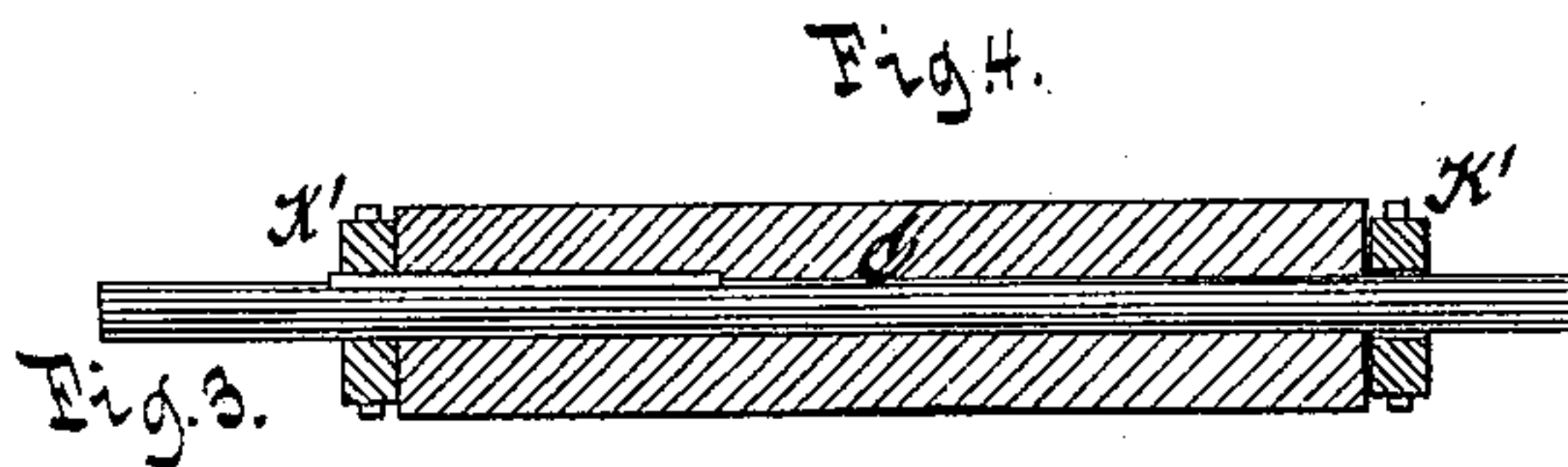
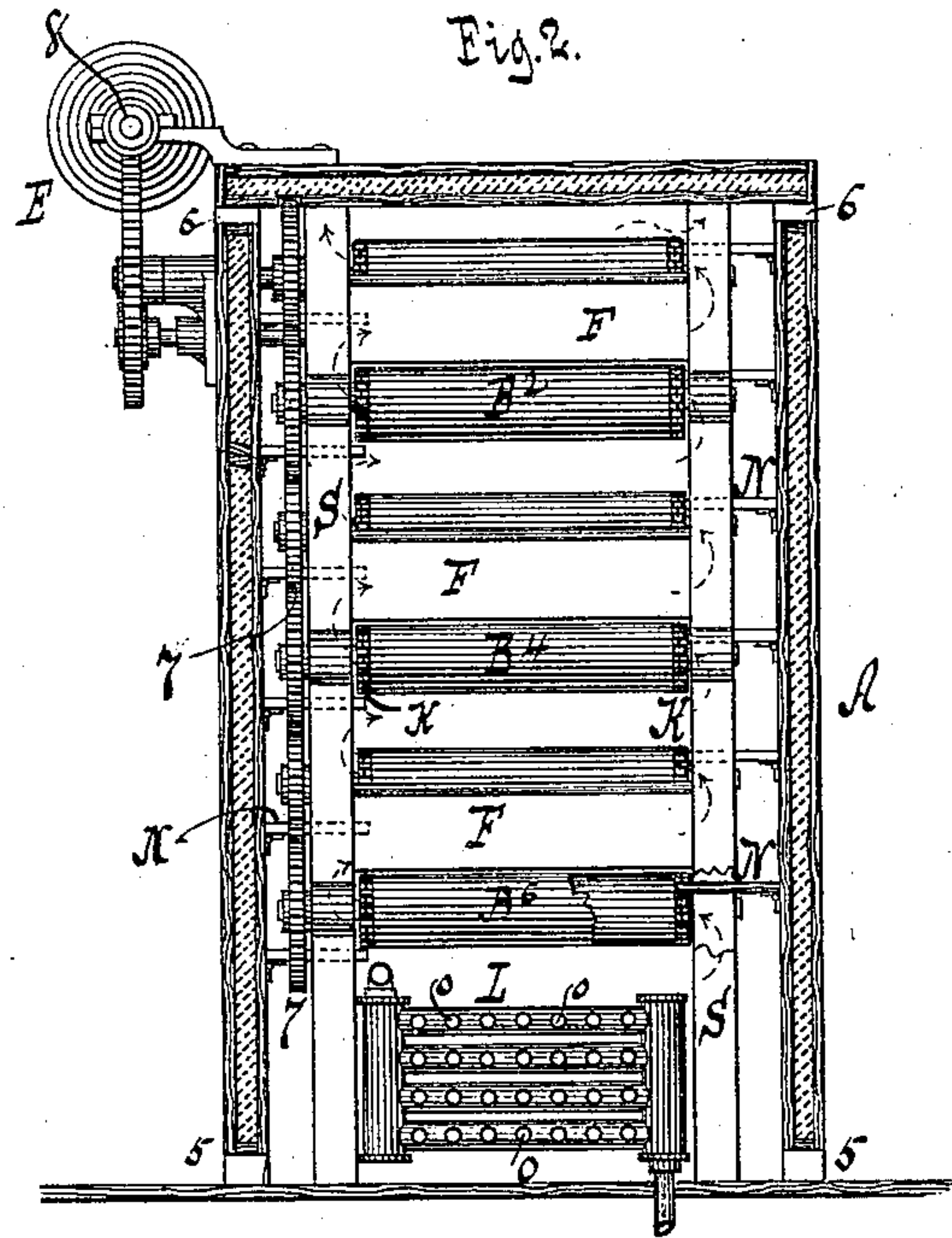
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UNITED STATES PATENT OFFICE.

GEORGE W. HUNGERFORD, OF NEW YORK, N. Y.

MACHINE FOR TREATING COFFEE OR OTHER MATERIAL.

SPECIFICATION forming part of Letters Patent No. 250,818, dated December 13, 1881.

Application filed August 18, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. HUNGERFORD, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Machines for Treating Coffee or other Materials, of which the following is a specification.

This invention consists in certain novel combinations of parts, hereinafter fully described, and pointed out in the claims, whereby I obtain a machine capable of heating or evaporating or drying coffee or other grain, as well as seeds, fruits, or other materials, in a rapid and effective manner and with economy of labor.

This invention is illustrated in the accompanying drawings, in which Figure 1 represents a vertical longitudinal section. Fig. 2 is a vertical cross-section. Fig. 3 is a plan view of a portion of one of the endless aprons. Fig. 4 is a detail view of the chain-wheels.

Similar letters indicate corresponding parts.

The letter A designates a chamber, which, for convenience, will be termed the "drying-chamber," in the lower and upper portions of which are formed openings 5 6 for the admission and discharge of air or vapor. The walls of this chamber A are preferably made hollow, and are filled with charcoal or other non-conducting material, and within the chamber are located a series of endless aprons, B' B² B³, &c., running over rollers C D, one set of which is geared together by cog-wheels 7, driven by a worm, 8, or other suitable means.

To the shaft of the worm 8 is fixed a cone-pulley, E, whereby any desired speed may be given thereto, and thence to the endless aprons B', &c.

In order to afford a support to the intermediate portions of the endless aprons B', &c., I make use of a series of idler rollers, 9, or in lieu thereof suitable slats. The endless aprons B', &c., are arranged one over the other, and with the same are combined chutes F, which are arranged alternately at the opposite ends of the aprons—namely, at their discharge ends, respectively—so that if the material to be treated is fed to the uppermost apron it falls into the chute at the discharge end thereof, and is thereby conducted to the next lower

apron, whence it is deposited on the next lower one, and so on to the end of the series. The chutes F are fastened to posts S.

The apron-rollers C D are so arranged that the receiving end of each apron B', &c., projects beyond the discharge end of the one next above it in a horizontal plane, as shown in Fig. 1, and by this arrangement a safe delivery of the material by the chutes F is insured; but the desired result can also be attained by inclining the chutes in an inner direction.

The upper apron, B', is provided with an extension, B, running over a roller, D', which is mounted in a standard, H, at the top of which is situated a hopper I, adapted to discharge upon the extension of the apron, so that the material is received on this extension and by it may be fed to the machine.

At the throat of the feed-hopper I is arranged a spreader or distributing-gate, J, which is pivoted to the hopper and rests on the extension B by its own gravity, so that as the material escapes from the hopper it is spread in an even layer, which obviously is a desideratum. A stop, 10, serves to limit the motion of the spreader J.

In order to give a positive motion to the aprons B', &c., they are provided with chains K, (best seen in Fig. 3,) adapted to engage with wheels K' on the apron-roller shafts.

In the lower part of the drying-chamber A is arranged a steam-radiator, L, for the purpose of heating the air admitted to the chamber through its bottom openings, 5, and maintaining a circulation of air in the chamber. In some cases—as for the purpose of swelling teas or treating other goods which demand the use or application of free steam or vapor—a portion of the pipes composing the radiator L may be perforated, as at o, Fig. 2.

To the interior and opposite sides of the drying-chamber A are connected deflectors N, which are alternately arranged below and between the aprons B', &c., as shown in Fig. 2. These deflectors N project inwardly from the sides of the chamber A beyond or within the edges of the aprons and extend nearly the entire length thereof, and by their alternate arrangement the ascending current of air is caused to take a zigzag course under and between the aprons from side to side of the cham-

ber, as indicated by arrows in Fig. 2, and by this means the air is caused to act on every portion of the apron. If desired, the deflectors N may be made adjustable, and in this example they are represented as hinged for that purpose.

At the discharge end of the lower apron, B⁶, is arranged a delivery-spout, P, emptying into a box, Q, which is constructed with a foraminous diaphragm, 11, which is arranged within said box, so as to create an air-distributing chamber between the bottom of the box and the foraminous diaphragm. In the air-distributing chamber opens one end of a pipe, R, for the introduction of a blast of cold or hot air, for the purpose of cooling or heating the dried material which has been treated in the drying-chamber, which blast of air is discharged into the air-chamber below the foraminous diaphragm, where it is distributed so as to pass upward through all parts of the diaphragm.

In case of any variation in the length of the links composing the chains K the latter are liable to draw the aprons out of a straight course; and in order to obviate this danger one of each set of the chain-wheels K' is left loose, or is unattached to the supporting-shaft of the roller C', as indicated at the right-hand end of the shaft, as in Fig. 4, so that the chain passing over that wheel may accommodate itself to the motion of the other chain, while the action of the chains on the aprons remains unimpaired.

I do not broadly claim a series of endless aprons arranged within a drying-chamber and discharging the material to be dried from one of said aprons to the other, and the apron at the top projecting through the drying-chamber to receive the material from a hopper; nor do I claim a distributor arranged in relation to a revolving heated cylinder for the purpose of evenly spreading the material to be dried upon said cylinder. My invention embraces a novel combination and arrangement of parts acting in the manner hereinbefore described; and therefore

What I claim as new, and desire to secure by Letters Patent, is—

1. The gravitating spreader, in combination with the hopper and the endless traveling apron leading from the hopper into the drying-chamber, substantially as and for the purpose described.

2. In an apparatus for treating coffee and other material, the combination of the drying-chamber, a series of traveling endless aprons arranged therein, the upper one of which extends through the drying-chamber, as described, the feed-hopper arranged above the extension of the upper apron, and the depending gravitating spreader pivoted at the discharge-throat of the hopper above the extension of the upper traveling apron, for evenly spreading the material thereon for its conveyance by the apron into the drying-chamber, the said combination being and acting in the manner herein shown and described.

3. In a machine for treating coffee and other material, the combination of the drying-chamber, the series of traveling endless aprons arranged therein, and the series of horizontal deflecting-plates attached to the side walls of the drying-chamber, and filling at one side the space between the wall of the drying-chamber and the aprons, and projecting at the opposite side into the spaces between the aprons for causing the ascending current of air to take a tortuous course under and between the aprons from side to side of the drying-chamber, all substantially as and for the purpose described.

4. The combination, substantially as hereinbefore set forth, with the endless aprons, of their attached chains, and the chain-wheels, having one of each set thereof left loose or unattached to the supporting-shaft, for the purpose specified.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

GEORGE W. HUNGERFORD. [L. S.]

Witnesses:

W. HAUFF,
CHAS. WAHLERS.