No. 755,155. PATENTED MAR. 22, 1904.

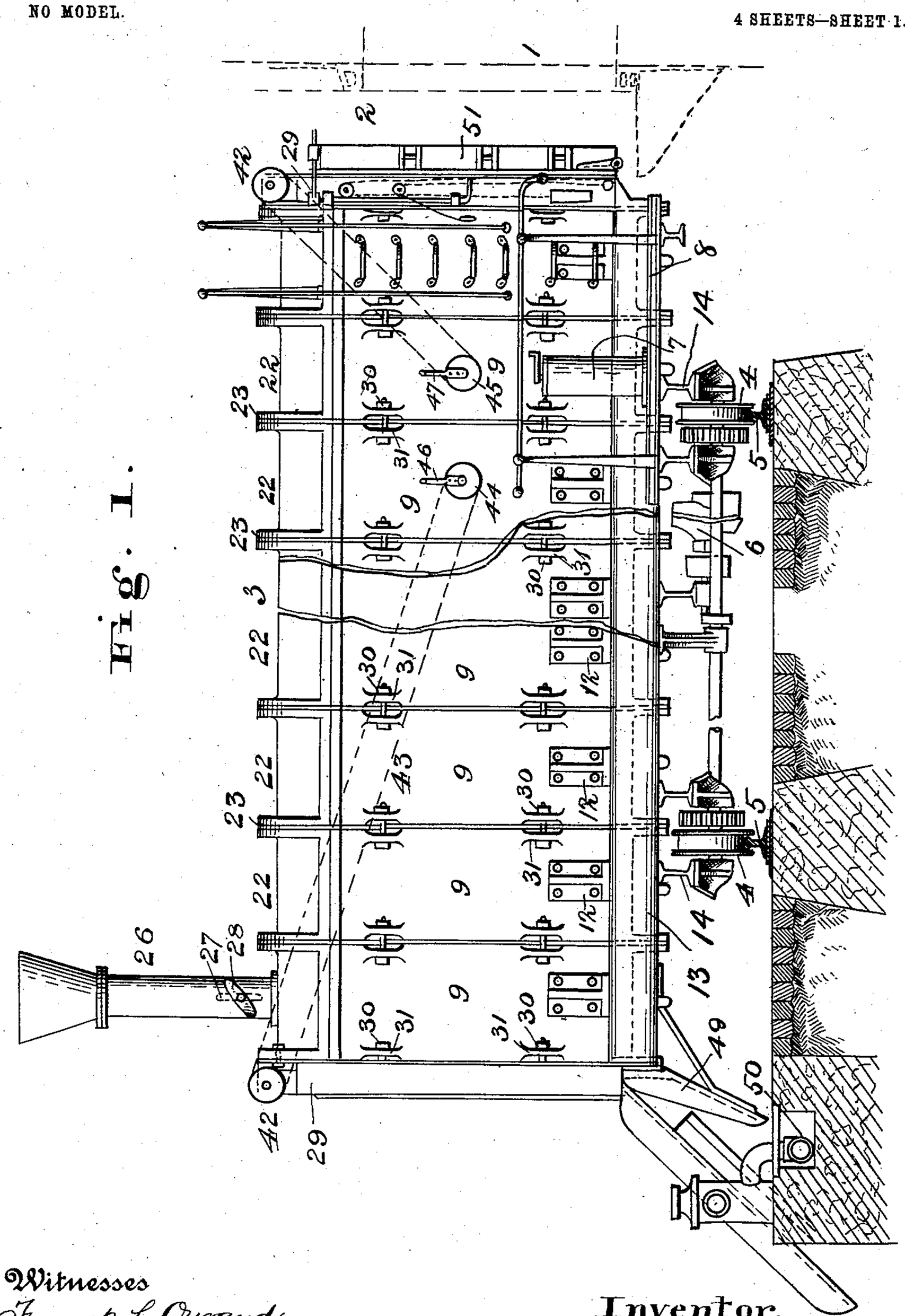
E. A. MOORE.

PROCESS OF QUENCHING AND BLEACHING COKE.

APPLICATION FILED NOV. 20, 1902. RENEWED AUG. 26, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1.



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NO MODEL. 4 SHEETS—SHEET 2.

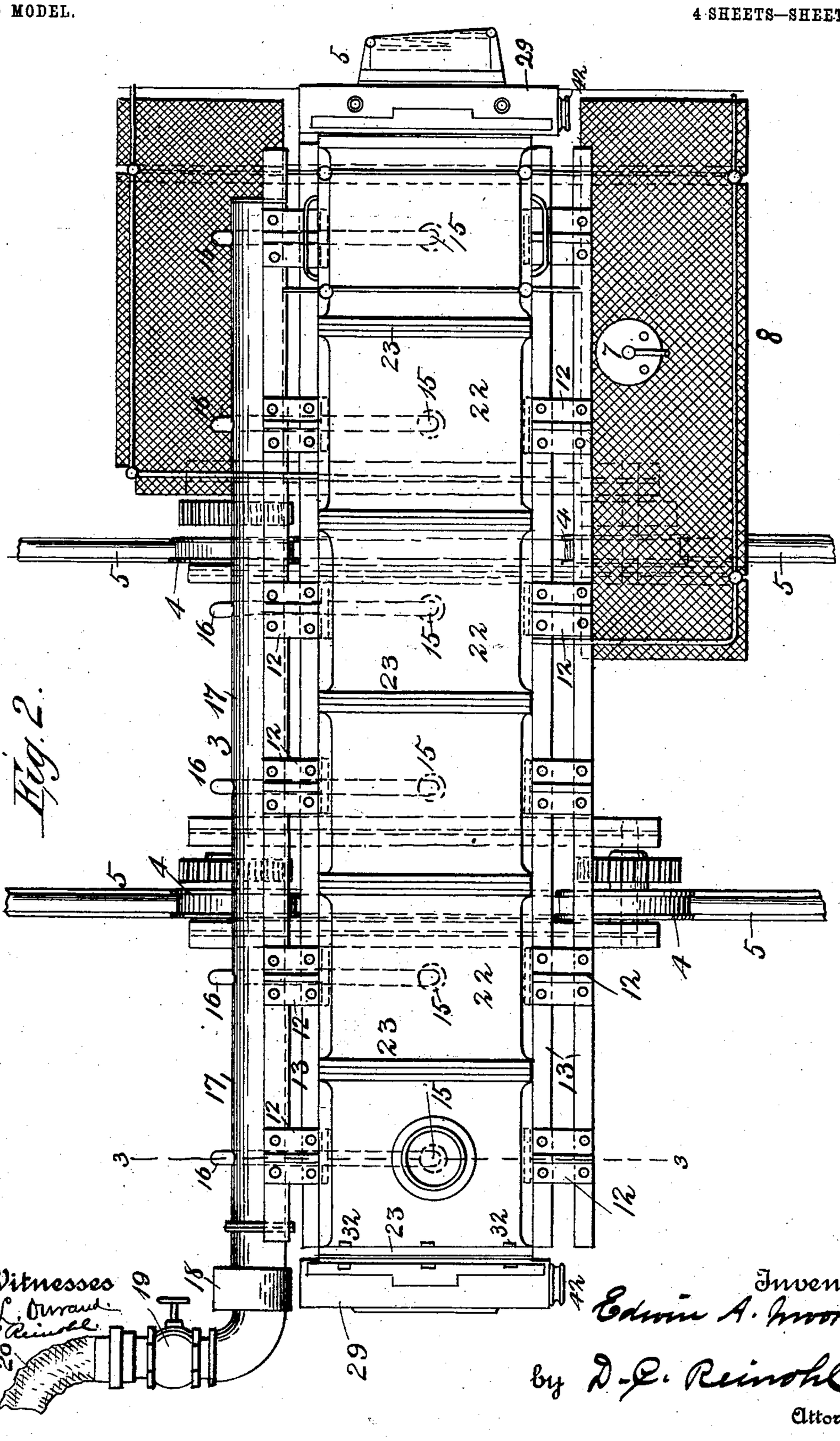

Fig. 2.

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NO MODEL. 4 SHEETS—SHEET 3.

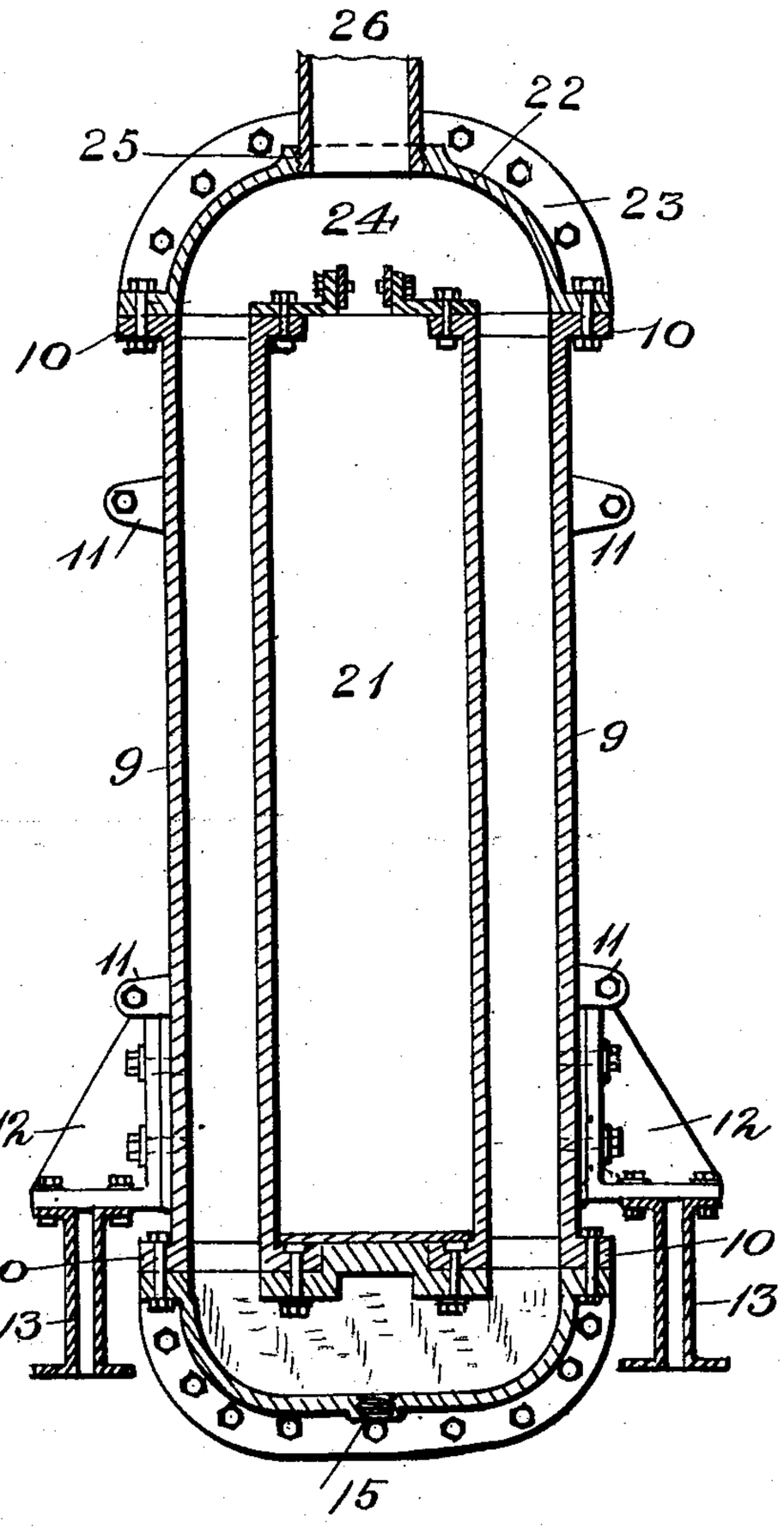

Fig. 3.

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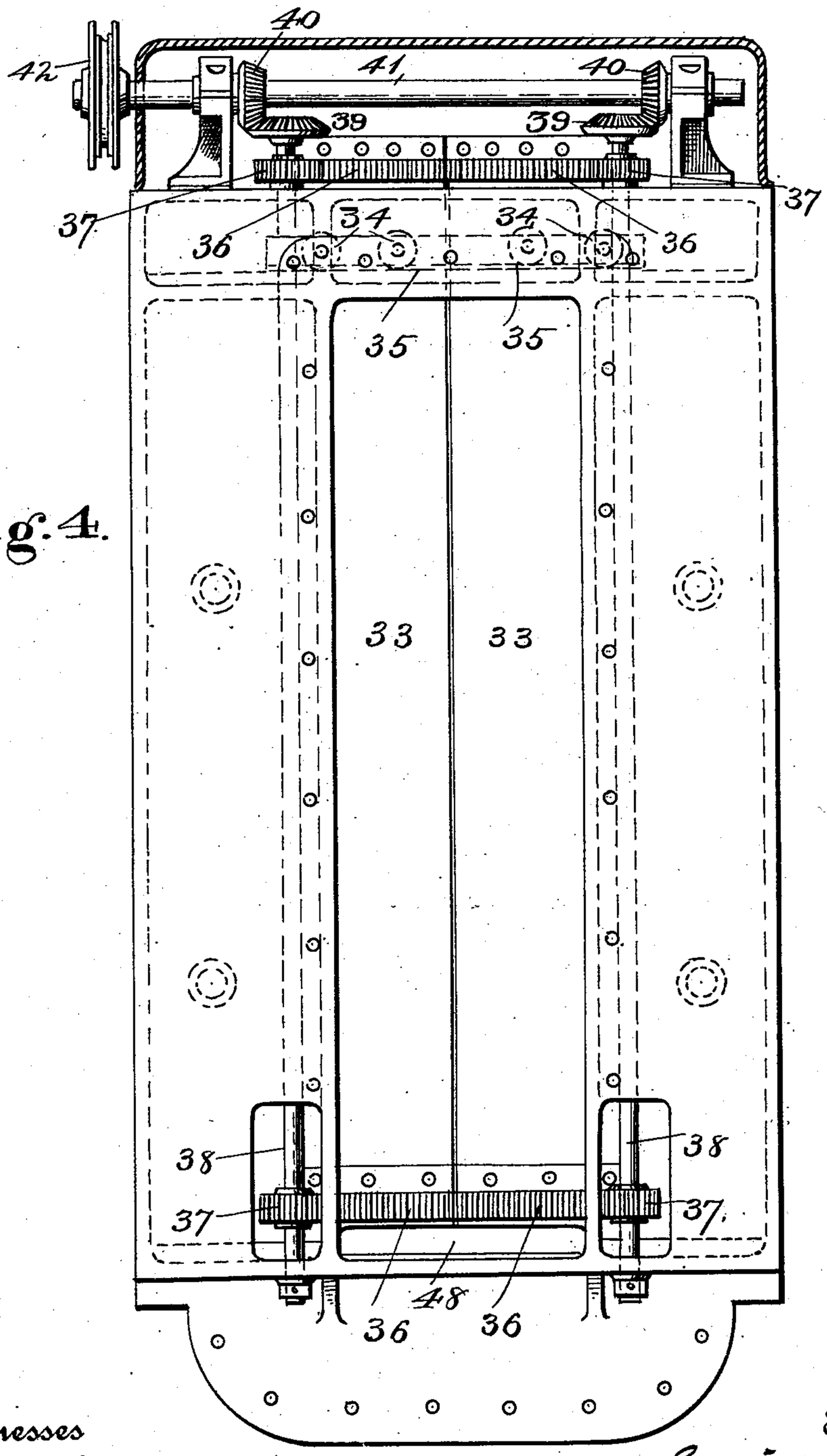
NO MODEL. 4 SHEETS—SHEET 4.

Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWIN A. MOORE, OF PHILADELPHIA, PENNSYLVANIA.

PROCESS OF QUENCHING AND BLEACHING COKE.

SPECIFICATION forming part of Letters Patent No. 755,155, dated March 22, 1904.

Original application filed September 18, 1902, Serial No. 123,925. Divided and this application filed November 20, 1902. Renewed August 26, 1903. Serial No. 170,879. (No model.)

To all whom it may concern:

Be it known that I, EDWIN A. MOORE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Processes of Quenching and Bleaching Coke; 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.

My invention relates, primarily, to the art of converting coal into coke by what is known as the "Otto-Hoffman" by-product process, has especial reference to treating coke as it proceeds from an oven for the purpose of quenching and bleaching it, and consists in certain steps or the process which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a side elevation of a coke quenching and bleaching apparatus and a vertical section of part of a coke-oven, the two being in relative position for use, except that the vestibule of the former is folded; Fig. 2, a top plan view of the same; Fig. 3, a vertical transverse section on line 3 3, Fig. 2; and Fig. 4 a front elevation, on an enlarged scale, of one of the door-casings and the doors at the ends of the apparatus.

Reference being had to the drawings and the designating characters thereon, 1, Fig. 1, indicates a coke-oven, one of a series arranged side by side in battery in the usual manner of constructing this type of ovens, and is provided with a frame 2 to receive a door, (not shown,) with which the ovens are provided at each end.

3 indicates a coke quenching and bleaching apparatus mounted upon wheels 4, which engage rails 5 of a track, and the apparatus, receptacle, or car is propelled by a suitable motor 6, preferably an electrical motor, connected through suitable gearing to the axle or axles of the car in any preferred manner, and the motor is electrically connected to a controller 7 on the platform 8 of the car for convenient operation by a motorman.

The receptacle is composed of transverse sections having straight hollow sides 9, rectangular in cross-section, as shown in Fig. 3, provided with flanges 10 at their upper and lower ends, lugs 11 opposite each other by which the sections are detachably connected together, so that any section or part of a section can be renewed without disturbing any other section in the structure. Each section is provided with brackets 12, secured to the sides 9, which rest upon the sills 13, which extend the length of the structure and in turn are supported on beams 14, which rest upon the truck of the car, as shown in Figs. 1, 2, and 3.

Each transverse section is provided with an inlet 15 for connection with a water-supply branch pipe 16, connected to a main pipe 17, extending the length of the structure and provided at its supply end with a water-meter 18 for measuring a determined quantity of water supplied to the apparatus, a regulating or supply valve 19, and a hose 20 for connection with a suitable plug or hydrant. The supply-pipes are of such capacity as to provide a copious body or volume of water to deluge the coke in the coke-chamber 21 and rapidly extinguish the fire on the surface of the lumps or bodies of coke. The meter may be dispensed with and the supply of water timed so as to provide sufficient water for the work required through the proper manipulation of the valve 19.

The top or cover 22 of each transverse section is connected to the flanges on the upper ends of the sides 9, and the sections are connected together by flanges 23 to form a continuous chamber 24 throughout the length of the receptacle, and one of the covers is provided with an outlet 25, to which a stack 26 is connected, and the stack is provided with a valve 27, operated by a lever 28, to allow the steam generated in the coke-chamber and in the hollow sections to escape when desired and to exclude air from the coke-chamber while the bleaching of the coke is being effected.

At each end of the structure is a hollow casing 29, connected thereto by bolts 30 engaging lugs 31, as shown in Fig. 1, and by bolts 32 en-

gaging flange 23 of the end cover 22, and in said casings are laterally-movable doors 33, supported on rollers 34 for closing the ends of the coke-chamber to exclude atmospheric air while the coke is being quenched and bleached, there being a discoloring of the coke effected by exposure to the constituent parts of the atmosphere. The rollers 34 rest upon tracks 35, and on the face of each door, preferably near each end thereof, is secured a toothed rack 36, which are engaged by pinions 37, mounted on vertical rods 38, having a miter gear-wheel 39 at their upper ends, and are revolved by miter gear-wheels 40 on shafts 41, provided with a pulley 42, engaged by a chain 43, also engaging pulleys 44 and 45, respectively, (see Fig. 1,) and operated by a crank 46 or 47 on said pulleys 44 and 45. The doors 33 are manipulated from the platform 8 by the motorman and are opened and closed as occasion requires, and at the lower end of the doors at one end of the structure is a discharge-passage 48 for the water from the coke-chamber, and the water is conducted through chute 49 to a trough 50, running the length of the battery of ovens. The structure in practice has a fall of about six inches from the coke-receiving end to the discharge end to insure a ready flow of the water toward the discharge-opening 48.

At one end of the structure is a vestibule 51 for engagement with the end of a coke-oven and through which the coke enters the coke-chamber as it is discharged from an oven by a pusher. (Not shown.)

The construction of the several parts is fully shown and described and claimed in my application, Serial No. 123,925, for coke quenching and bleaching apparatus, of which application this is a division.

The operation of quenching and bleaching coke is as follows: The apparatus having been moved into position opposite a coke-oven, the vestibule is extended and connected with the mouth of the oven, the doors 33 at the end of the structure adjacent to the coke-oven opened, and the door at the opposite end of the structure closed. The oven-door is removed, when the pusher discharges the coke from the oven into the coke-chamber of the apparatus 3. The doors 33 and the valve in the stack are then closed to exclude the atmosphere, when water is supplied to the coke in as great volume as the pipes will admit to suddenly deluge the coke and extinguish the surface fire on the lumps or bodies of coke, the water running off freely after the coke has been deluged. The heat in the body of the coke then generates steam from the water on the surfaces of the coke, and this steam passes through the coke and is allowed to escape through the open valve in the stack to prevent injury to the apparatus, the steam acting as a bleaching medium, and as it passes off gradually through the stack the coke is gradually dried by the heat still retained in the coke and by the heat in the walls of the coke-chamber.

The coke is of a silver-gray hue, contains a very small percentage of fine particles, and is greatly enhanced in value as compared with coke quenched on benches and exposed to the atmosphere while a heavy stream or streams of water are directed on the coke.

Having thus fully described my invention, what I claim is—

1. The process of extinguishing and bleaching coke, which consists in transferring hot coke from an oven into a receptacle from which atmospheric air is excluded, deluging the coke with water and discharging the excess of water as rapidly as it is supplied, and then subjecting the coke to steam generated in the receptacle by the heat in and the water on the coke.

2. The process described which consists in transferring hot coke from an oven into a receptacle from which atmospheric air is excluded, deluging the coke with water and discharging the excess of water as rapidly as it is supplied, and then subjecting the coke to steam generated in the receptacle by the heat in and the water on the coke, and discharging the steam from the receptacle, and then drying the coke.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN A. MOORE.

Witnesses:
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