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C. F. KENWORTHY.
NON-OXIDIZING ANNEALING FURNACE.

APPLICATION FILED DEC. 30, 1904.

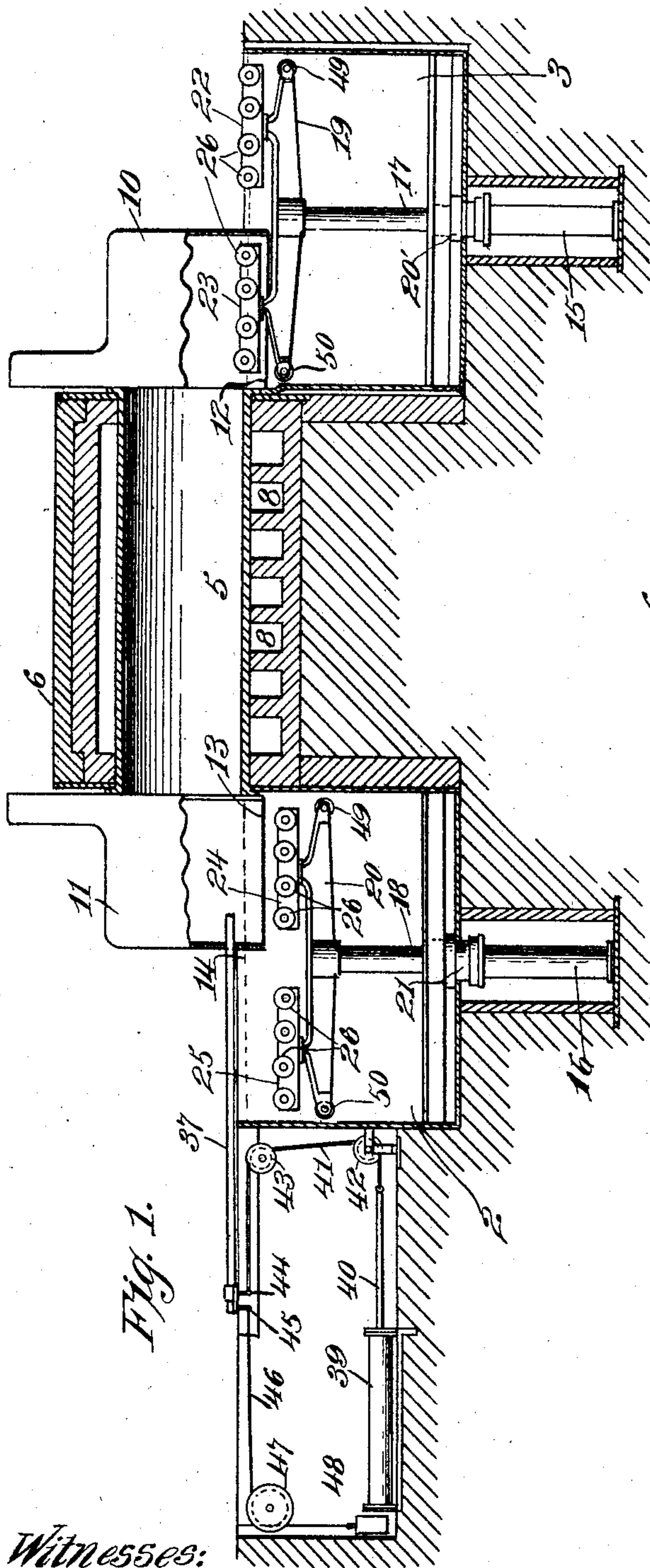


Fig. 1.

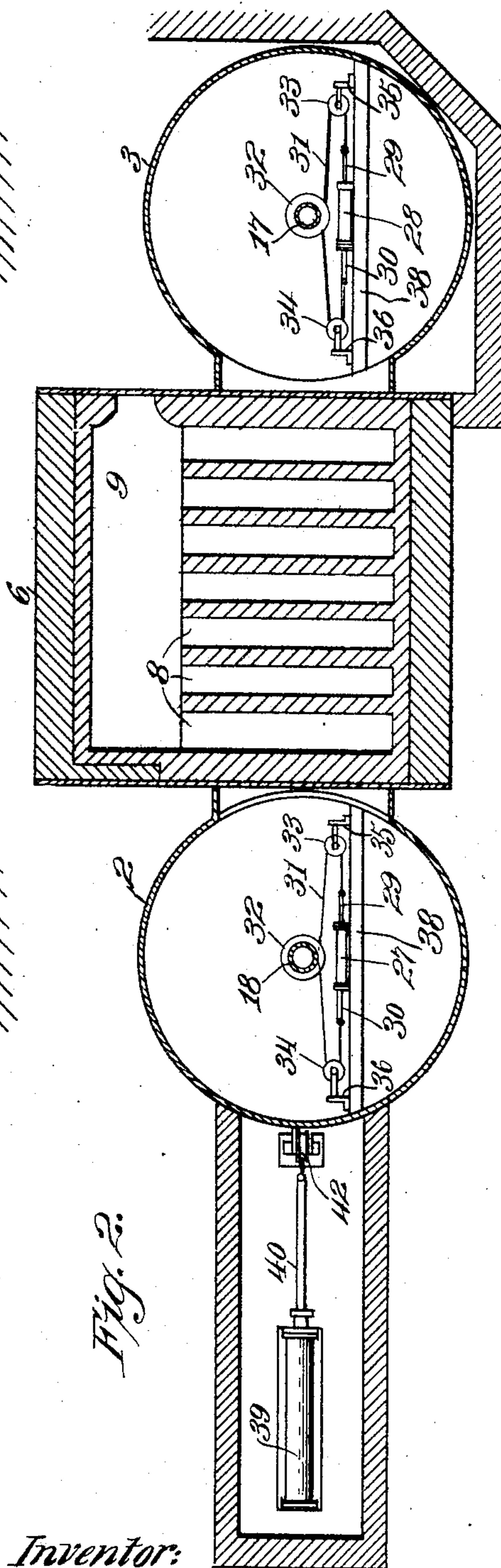


Fig. 2.

Witnesses:

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NON-OXIDIZING ANNEALING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 786,365, dated April 4, 1905.

Application filed December 30, 1904. Serial No. 238,879.

To all whom it may concern:

Be it known that I, CHARLES F. KENWORTHY, a citizen of the United States, residing in Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Non-Oxidizing Annealing-Furnaces, of which the following is a specification.

This invention has reference to annealing-furnaces and also to means whereby material may be delivered to and discharged from such furnaces, such delivery and discharge being preferably accomplished through a seal, whereby air may not enter the furnace; and it is an object of the invention to preferably accomplish the delivery and discharge of the material to and from the furnace by a simple construction of mechanism.

While the main idea of delivering to a furnace through a seal and discharging from a furnace through a seal may be accomplished in any suitable manner, it may be found advantageous to adopt such a construction or a similar construction to that shown on the accompanying sheet of drawings, whereon—

Figure 1 is an elevational sectional view of a furnace and the means of delivery and discharge, and Fig. 2 is a top plan view of the same also in section.

Similar characters of reference indicate corresponding parts in both the figures.

In the form shown I provide two tanks 3 and 4, respectively, located a suitable distance apart, and above and between said tanks may be horizontally located a furnace or retort 5, mounted in a suitable casing 6, and beneath which furnace in the present instance are flues 8, which communicate with a fire-box 9, which may be located at any suitable point. Each end of the retort 5 is provided with a hood 10 and 11, respectively, whose lower ends 12 and 13, respectively, extend beyond the water-line 14 in the tanks 3 and 4, it being understood that these tanks may be filled with water or some other suitable fluid. Beneath the tanks 3 and 4, respectively, are lo-

cated cylinders 15 and 16, respectively, into which are mounted pistons 17 and 18, respectively, each of which supports carriages 19 and 20, respectively, and suitable glands 50 or stuffing-boxes 20' and 21 are provided to prevent the water from within the tanks escaping into the cylinders 15 and 16. These carriages in the present instance are each provided with secondary carriages 22, 23, 24, and 25, upon which is delivered the stock to be annealed and from which is discharged the same stock after the annealing process has been completed. In the present instance these secondary carriages may be provided with 60 rollers 26, so as to facilitate the removal of the stock therefrom, and the secondary carriages are sufficiently elevated above the main carriages 19 and 20 so that when the elevators are raised to their highest point they may extend above the water-line, as seen, for instance, in Fig. 1. It is intended in the present instance that these elevators shall revolve, as seen in Fig. 2, and suitable mechanism for accomplishing this purpose is provided, which 70 in the present case may comprise cylinders 27 and 28, within each of which operate pistons 29 and 30, respectively, the pistons of each cylinder operating in opposite directions, and to the ends of said pistons is secured a 75 belt, chain, or cable 31, which passes over wheels or pulleys 32, one mounted on each piston 17 and 18, respectively, it being understood that said wheels are or may be splined to the said shafts or pistons 17 and 18, whereby to permit said pistons to be elevated and lowered at will regardless of the position of said pulleys. The said cables 31 will also run over pulleys 33 and 34, respectively, carried in suitable bearings 35 and 36, and said pistons and bearings may be carried by beams 85 38, mounted in the tanks.

For the purpose of removing the stock from the carriage 25 and causing the same to be passed into the retort 5 I provide a horizontally-movable plunger 37, which passes through the stuffing-box formed in the hood

11 and which is adapted to reciprocate at will. For operating said plunger 37 I provide a cylinder 39, having a piston 40, to the end of which may be secured a cable 41, passing over pulleys 42 and 43, respectively, and which is connected with said plunger 37—for instance, at 44. Also connected at 45 to said plunger is a cable 46, which passes over a pulley 47, and to the end of which is secured a weight 48. Thus it will be understood that when it is desired to push material from the secondary carriages some motive power will be employed to draw in the piston 40 within the cylinder 39, which will cause the plunger 37 to go forward, and when the operation is completed the weight 48 will be sufficient to retract the plunger to its original position.

The carriages 19 and 20 in the present instance may be provided with friction-rollers 49 and 50, so that if the carriage canters to one side or the other, owing to the weight thereon, the same will not scrape the side of the tanks.

The elevators are sent up to their highest points, when one of the secondary carriages will extend above the water-line of the tanks, when the material to be annealed may be deposited thereon. The same is then lowered to a point beneath the bottom portion of the hoods, when the cylinder 27 will be operated to revolve the elevator to a position such that when the elevator is again raised the said secondary carriage, with its load, will pass into or under the hood 11. At this juncture the plunger 37 may be operated—for instance, by such mechanism as has been described—whereupon the material upon the carriage will be pushed into or upon the floor of the furnace or retort. This operation is repeated from time to time until the entire length of the furnace is occupied, when the next introduced supply of stock will cause the first piece to be deposited on the secondary carriage carried by the carriage 19. The operation of the elevator at this end is similar to the operation just explained, and the elevator may then be lowered and revolved, so that the annealed stock may be removed from a point above the water-line of the tank 3.

Having thus described my invention, I claim—

1. An annealing-furnace comprising a retort, seals at each opening thereof, discharge and delivery means operating in said seals and which are rotatable in a horizontal plane, and means other than the delivery means for transmitting materials from the delivery means to the retort.

2. An annealing-furnace comprising a retort, hoods inclosing each opening of said retort, seals located at each opening and into which said hoods extend, delivery and discharge mechanism in said seals and which rotate in a horizontal plane, and means other than the delivery means for transmitting materials from said delivery mechanism and also from said retort to said discharge means.

3. An annealing-furnace comprising a retort, hoods inclosing each opening of said retort, seals located at each opening and into which said hoods extend, delivery and discharge mechanism in said seals and which rotate in a horizontal plane, and means other than the delivery means for transmitting materials from said delivery mechanism and also from said retort to said discharge means.

4. An annealing-furnace comprising a retort, a pair of tanks on opposite sides of said retort and which may be filled with water, hoods carried by said retort and extending into said tanks whereby to form a seal against the admission of air into the retort, an elevator adapted to operate in each tank, carriages carried by said elevators and upon which the material is placed, and a horizontally-reciprocating member adapted to push the material from one elevator into the retort and also from the retort onto the other elevator.

5. An annealing-furnace comprising a retort, a pair of tanks on opposite sides of said retort and which may be filled with water, elevators in each tank, carriages mounted on said elevators, a horizontally-movable device for pushing the material from one of said carriages into said retort, and mechanism for operating said horizontally-movable device.

6. An annealing-furnace comprising a retort, a seal at each opening thereof, delivery and discharge means in said seals, means for heating said retort, means for revolving said delivery and said discharge means, means for shifting the material from the delivery means to the retort and from the retort to the discharge means, and mechanism for operating said shifting means.

7. In an annealing-furnace the combination with a retort, of a tank at each opening thereof and which is filled with water, a hood depending from said openings and extending beneath the water-line in the tanks, an elevator operating in each tank, and rotating in a horizontal plane, carriages mounted on said elevators and which are adapted to project up under the hoods, and means for rotating the elevators in the tanks.

8. In an annealing-furnace the combination with a retort, of a tank at each opening thereof and which is filled with water, a hood depending from said openings and extending beneath the water-line in the tanks, an elevator operating in each tank, and rotating in a horizontal plane, carriages mounted on said elevators and which are adapted to project up under the hoods, means for rotating the elevators in the tanks, and means for shifting material from one of said carriages into the retort.

9. In an annealing-furnace the combination
with a retort, of a tank at each opening there-
of and which is filled with water, a hood de-
pending from said openings and extending be-
5 neath the water-line in the tanks, an elevator
operating in each tank, and rotating in a hori-
zontal plane, carriages mounted on said ele-
vators and which are adapted to project up un-

der the hoods, means for rotating the eleva-
tors in the tanks, means for shifting material to
from one of said carriages into the retort, and
means for operating said shifting means.

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