

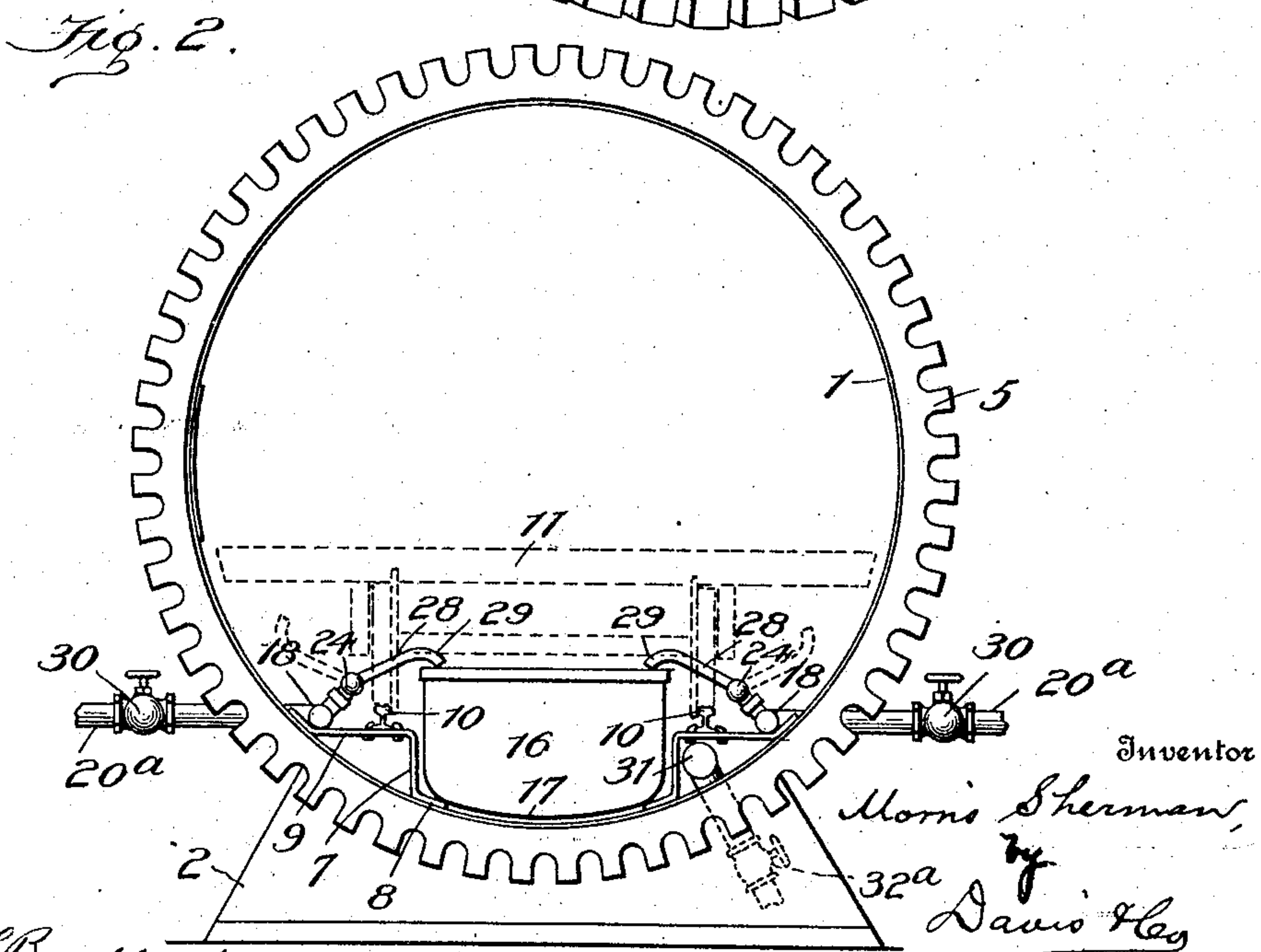
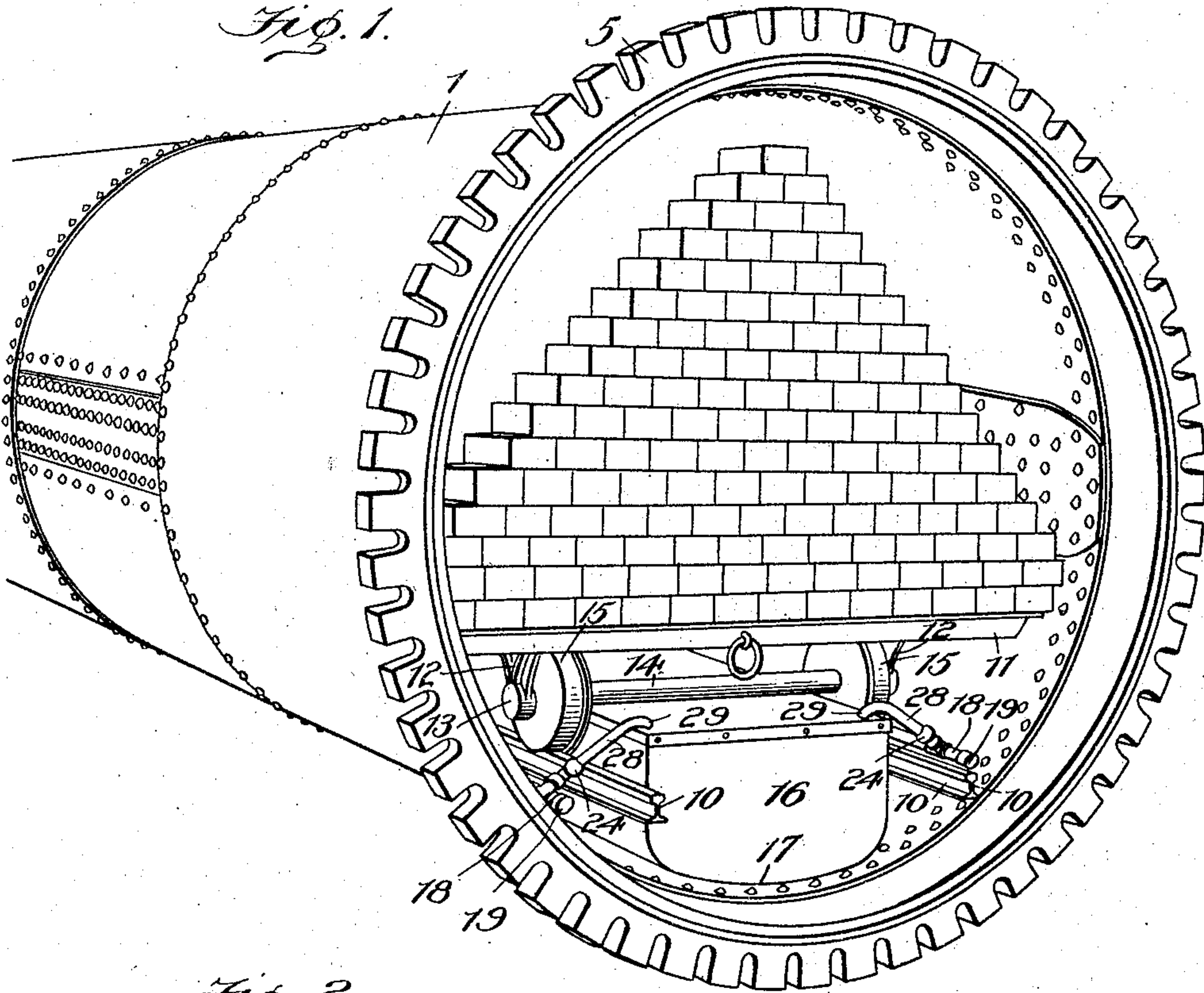
No. 781,372.

PATENTED JAN. 31, 1906.

M. SHERMAN.
APPARATUS FOR SLAKING LIME.

APPLICATION FILED OCT. 20, 1904.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

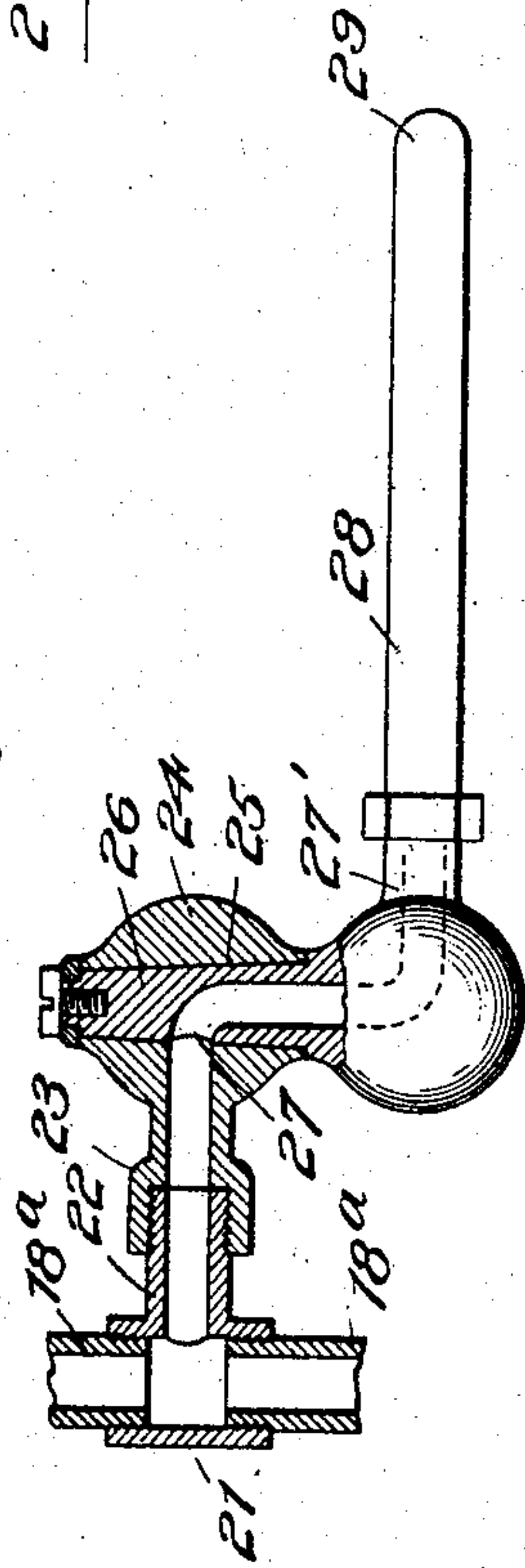
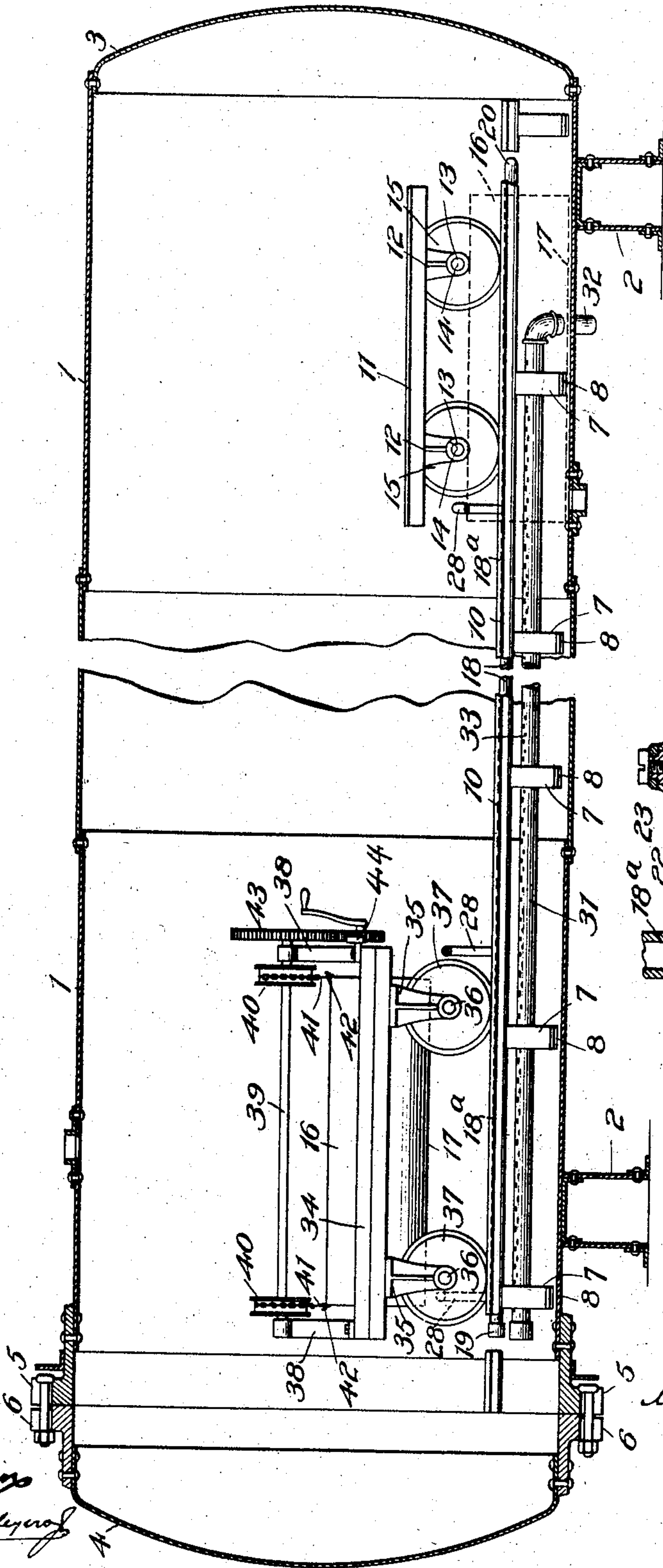


Fig. 4.

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UNITED STATES PATENT OFFICE.

MORRIS SHERMAN, OF CHATTANOOGA, TENNESSEE.

APPARATUS FOR SLAKING LIME.

SPECIFICATION forming part of Letters Patent No. 781,372, dated January 31, 1905.

Application filed October 20, 1904. Serial No. 229,345.

To all whom it may concern:

Be it known that I, MORRIS SHERMAN, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented new and useful Improvements in Apparatus for Slaking Lime, of which the following is a specification.

My invention has relation to new and useful improvements in apparatus for slaking lime, and more particularly to apparatus of the character mentioned which is associated with and forms part of a means for hardening brick or other artificial stone.

The primary objects of the invention are to provide an improved means for thoroughly and completely slaking all of the lime subjected to treatment and to generate heat of sufficient intensity from the slaking process to quickly harden the brick, as hereinafter set forth.

A further object is to provide means which will permit of the simultaneous and rapid treatment of a large quantity of lime without impairing the quality of the slaked lime resulting from such treatment.

A further object of the present invention is to provide means for the simultaneous and rapid treatment of a large quantity of lime and to separate the bulk into independent sections, each of which are acted upon independently of the others, whereby the handling of the bulk is facilitated and the thoroughness of the slaking process increased.

The invention consists, broadly, in providing a container capable of withstanding great pressure and adapted to receive a plurality of burnt-lime-containing receptacles and trucks for supporting bricks to be hardened, said container being provided with means to render it air and gas tight, means for discharging steam into the container, and means for directing water into each lime-receptacle independently of the others.

I have fully and clearly illustrated my invention in the accompanying drawings, to be taken as a part of this invention, and wherein—

Figure 1 is a perspective view of an apparatus embodying my invention, the end cover

of the cylinder being removed and showing a truck with its load of bricks in position to be hardened, one of the lime-receptacles being located beneath the truck and one of the water-supply pipes in position to discharge into the said receptacle. Fig. 2 is a view in front elevation of the cylinder with the cover removed, showing a lime-receptacle in position to have its contents slaked, the water-pipe being in position to discharge into said receptacle, said pipe being shown in dotted lines in the position it assumes when thrown out of operative position to permit the brick-trucks to pass on the rails and the removal of the lime-receptacles. Fig. 3 is a longitudinal central section through the cylinder, showing the trucks and lime-receptacles in position therein; and Fig. 4 is a detail view, partly in section, of the joint by means of which the movable discharge pipes or nozzles are connected to the main.

Referring to the drawings, 1 designates a container consisting of a cylindrical casing constructed to have the desired capacity and capable of withstanding great pressure from the interior thereof. This container 1 is preferably supported in horizontal position by supports 2, which may be of any suitable structure capable of attaining the purpose for which they are employed. The container need be of no special construction as far as this present invention is concerned, except that it must have great strength and be made as near air and gas tight as possible. The rear end of the cylinder constituting the container is closed by means of a permanent head 3, secured in position by any of the well known means, and the forward end, or that end through which the brick-trucks and lime-receptacles are placed in and removed therefrom, is closed by means of a removable head or cover 4, the said container and head being provided, respectively, with cooperating flanges 5 6, adapted to be secured together by any suitable locking or clamping means, which, as shown in Fig. 3, is preferably that forming the subject-matter of my application for Letters Patent of the United States filed August 22, 1904, and Serial No. 221,803. Inasmuch as said

locking means forms no part of this present invention, I do not deem it necessary to specifically describe the same in this application.

Arranged at the lower side portions of the container are rigidly secured rail-supporting brackets, each of which consists of a vertical member 7, the lower end of which is secured to the shell of the container, as at 8, and a horizontal member 9, projecting laterally from the upper end of the member 7, the outer end of said horizontal member engaging and being secured to the shell of the container. These brackets, as just described, are arranged longitudinally of the container at suitable intervals, and upon the horizontal members 9 of each set of brackets is secured a track-rail 10, the rails on each side of the container constituting a track upon which travel the cars or trucks for moving and supporting the brick. The trucks referred to may be of any suitable construction; but I have shown them as comprising a horizontal body 11, adapted to support the brick, and from the bottom side of this body depend brackets 12, two at each end of the truck, and having bearings 13, adapted to receive axles 14, upon which the track-wheels 15 are mounted.

From Figs. 1 and 2 it will be noted that when the brick-trucks are in position in the container a clear space is maintained longitudinally of said container beneath the trucks and between the track-supporting brackets and this space is adapted to receive a plurality of receptacles 16, within which is placed the burnt lime to be slaked. These receptacles 16 are independent of each other and are separably movable into and out of the cylinder, each receptacle comprising a rectangular open-topped sheet-metal body of a length approximately that of the trucks, so that one receptacle may be placed beneath each truck when slaking the lime and hardening the brick and of such width as to render them freely movable into and out of position. In order that the receptacles may rest firmly in position, their bottoms are rounded, as at 17, on a radius the same as that of the cylinder 1.

Within the container and extending longitudinally thereof are two pipes 18 18, which rest, respectively, upon the horizontal members 9 of the track-supporting brackets outside of the track-rails. At one end this pipe is sealed, as at 19; but at its opposite end it is extended through the shell of the container, as at 20, and leads by a pipe 20^a to some convenient source of water-supply. (Not shown.) The pipes 18 18, above referred to, are made up of a plurality of sections 18^a, each length for a reason to be hereinafter stated being substantially the length of one of the brick-supporting trucks heretofore mentioned.

The meeting ends of these pipe-sections 18^a are coupled by means of T-joints 21, the laterally-extending nipple 22 of which projects inwardly toward the space occupied by

the lime-receptacle. To the nipple 22 of each of the T-joints is connected a valved swing-joint 24, which may be of any appropriate construction, but which I have shown in Fig. 4 of the drawings as being specifically constructed as follows: 23 designates a connecting-nipple which is threaded to the nipple 22, and this nipple carries a socket-piece 24, having a transverse tapered opening 25, in which is rotatably mounted a hollow turning-plug 26, secured in said opening in any suitable manner and having in its side wall an opening 27, communicating with the interior thereof and adapted to be turned into registration with the opening through the nipple 23 to establish communication between the pipe 18 and said hollow turning-plug. At the end remote from the socket-piece 24 the plug is provided with a laterally-extending nipple 27', which communicates with the passage through said plug and to which is connected an outlet pipe or nozzle 28, which is provided with a downwardly-bent end portion, as at 29. These pipes 28 are of such a length as to permit them to be swung on their respective swing-joints toward the lime-receptacles and discharge therein, the arrangement of the valves being such that when the pipes are thrown back out of position to discharge into the receptacles the turning-plugs will be rotated to cut off the supply of water and when the pipes are in position to discharge the water the valves will permit the water to flow through the said pipes.

The pipes 20^a are supplied with suitable valves 30, by means of which the volume of water flowing through the pipes 18 may be regulated and cut off when irrespective of the position of the pipes 28.

Extending longitudinally of the cylinder and for economy of space arranged beneath the track-supporting brackets on one side of the cylinder is a steam-pipe 31, supplied with steam by pipe 32, entering the shell of the container, said pipe 32 having therein a valve 32^a, by which the flow of steam is controlled. The pipe 31 is provided on its upper surface with perforations 33, by means of which steam from said pipe is disseminated thoroughly throughout the entire length of the container.

Any suitable means may be employed for moving the lime-receptacles into the container; but for this purpose a truck, which is clearly illustrated in Fig. 3 of the drawings, is employed. As shown, this truck comprises a rectangular open frame formed of side and end members 34, from the ends of which side members depend brackets 35, carrying at their lower ends stub-axles 36, upon which the track-wheels 37 are mounted. Arranged upon each of the end members of the truck-frame at a point intermediate the ends thereof is a vertical post or standard 38, in which is journaled a shaft 39, carrying at its ends

hoisting-sheaves 40, upon which are wound chains or cables 41, carrying hooks 42 at their free ends adapted to engage rings on the ends of the lime-receptacles. The shaft is adapted to be rotated to wind the chains on the sheaves to elevate a receptacle by means of a crank and gearing mechanism 43 of any preferred construction. The gearing 43 has associated therewith a pawl 44 of any form, which engages therewith to lock the gearing against return movement, and thereby hold the receptacle to any height to which it may be raised. When it is desired to lower the receptacle, the pawl is removed from engagement with the gearing, and the shaft 39 is then free to rotate in a direction to permit the receptacle to take a position between the track-rails.

The manner in which this apparatus is employed and the operation of the same is as follows: The discharge-pipes are thrown back on their swing-joints against the shell of the container, so as to be removed from proximity to the track-rails, and thereby out of the path of movement of the trucks for the bricks and also the carrying-truck for the lime-receptacles. This having been done, a lime-receptacle is carried by the elevating-truck into position into the rear of the cylinder, where the receptacle is lowered into position on the bottom of the container between the track-rails. One of the trucks carrying the bricks to be hardened is then rolled into the cylinder and placed in position over the lime-receptacle above referred to, after which the movable water-discharge pipes opposite the receptacle are swung on their pivots until their nozzles are in position to direct the water flowing therefrom into the receptacle. The elevating-truck is then employed to place in position additional receptacles, other brick-trucks are placed in position, and the remaining movable pipes are swung to discharge their flow into said receptacles, as above described. The container having been filled with lime-receptacles and brick-trucks to the extent of its capacity or to the number desired, the cover 2 is placed in position to close the mouth of the container and is chained thereto, so as to seal the same against the escape of any gases which may be created in the container as a result of the hardening and slaking processes. The container having been sealed, the valves 30 in the pipes 20^a are opened and the water thereby permitted to flow through the pipes 28 into the lime-receptacles for the purpose of slaking the lime and generating heat to harden and set the bricks carried by the trucks. At the same time that the valves 30 are opened the valve 32^a in the steam-pipe 32 is opened and steam flows through said pipe out of the perforations 33 into the container. The water being equally distributed in the receptacles filled with lime, I am enabled to retain all the gases rising from the slaking

of the lime, and by turning on the steam a quick and fast-setting heat is obtained, which is especially effective in hardening the brick. By placing the lime in separate receptacles, independent of each other, and by the arrangement of piping shown the process of slaking is greatly facilitated and the thoroughness of the treatment increased, for the reason that the water is distributed throughout the bulk of the lime and every part of the latter is subjected to the water. The proper time having been allowed for the slaking process to have been thoroughly accomplished and the hardening of the bricks completed, the valves 32^a and 30 are closed, the cover removed, the first set of pipes 28 are thrown back out of the path of the trucks, and the first brick-truck is removed, after which the elevating-truck is employed to remove the first lime-receptacle, after which the second set of pipes are thrown back and the next brick-truck and receptacle removed, and so on until the container is cleared.

It will be seen that should it be desired to employ less receptacles than the capacity of the container permits those pipes 28 which do not come opposite to said receptacles may be thrown back and the valves in the joints thereof will prevent flow of water there-through, even though the valve 30 in the pipe 20^a is open, so that there will be no danger of flooding the container by a flow of water through the pipes which are not discharging into a receptacle. This structure, it will be apparent, provides means whereby the discharge-pipes are each provided with an independent means for controlling the flow of water therethrough, so that the water may only flow therefrom when the pipe is in position to discharge into the receptacle and that a movement of said pipe out of said position cuts off the flow of water. By having the pipes 28 bent at an angle I am better able to direct the water flowing therefrom into the receptacles, so as to prevent any of the water from escaping into the bottom of the container.

Should it be desired, the rear end of the container instead of having a permanent head might be provided with a removable head of the same construction as that shown at the front end of the container. This employment of two removable heads would facilitate the operation of charging the container, for the reason that the trucks carrying the fresh brick could be run in at one end of the cylinder and after the completion of the hardening process could be run out at the other end.

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

1. In an apparatus for slaking lime, a container, a receptacle therein, a water-supply main associated with the container and a movable discharge-pipe located within the container and connected to the main and adapted

to be moved into and out of position to discharge water into the receptacle.

2. In an apparatus for slaking lime, a container, a receptacle therein, a water-supply main associated with the container, a movable discharge-pipe located within the container and connected to the main and adapted to be moved into and out of position to discharge water into the receptacle and means operated by the movement of said pipe to control the flow of water therethrough.

3. In an apparatus for slaking lime, a container, a receptacle therein, a water-supply main associated with the container, a movable discharge-pipe located within the container and connected to the main and adapted to be moved into and out of position to discharge water into the receptacle and means whereby the movement of the pipe into discharging position permits the water to flow therethrough and whereby the water is cut off when said pipe is not in position to discharge into the receptacle.

4. In an apparatus for slaking lime, a container, a receptacle therein, a water-supply main associated within the container, a discharge-pipe located within the container and connected to the main and adapted to be moved into and out of position to discharge water into the receptacle, said pipe being connected to the main by a valved swing-joint.

5. In an apparatus for slaking lime, a container, a plurality of receptacles removably mounted therein, a water-supply main associated with the container, a plurality of discharge-pipes located within the container and connected to the main, one of said pipes being arranged to discharge into each receptacle.

6. In an apparatus for slaking lime, a container, a plurality of receptacles therein, a water-supply main associated with the container, a plurality of discharge-pipes located within the container and connected to the receptacles, one of said pipes being adapted to discharge into each of the receptacles and means for controlling the flow of water through each of the pipes independently of the others.

7. In an apparatus for slaking lime, a container, a plurality of receptacles therein, a water-supply main associated with the container, a plurality of discharge-pipes located within the container and connected to the main, corresponding in number to the receptacles, each of said pipes being movable to assume a position to discharge into one of the receptacles, and means operable by the movement of pipes into such position to permit the water to flow therethrough.

8. In an apparatus for slaking lime, a container, a plurality of receptacles therein, a water-supply main associated with the container, a plurality of discharge-pipes located within the container and connected to the main corresponding in number to the receptacles,

each of said pipes being movable to assume a position to discharge into one of the receptacles, means to control the flow of water in the main, and means operable by the movement of the pipes into such position to permit the water to flow therethrough.

9. In an apparatus for slaking lime and drying bricks, the combination of a container having tracks therein, a receptacle located between the tracks, a water-main located at one side of the tracks and a movable pipe located within the container and connected to the main and adapted to be moved across the track into a position to discharge into the receptacle.

10. In an apparatus for slaking lime and hardening bricks, the combination of a container having tracks therein adapted to have a brick-carrying truck run thereon, a receptacle located between the tracks, a water-main located outside of the tracks, a movable pipe located within the container and connected to the main and adapted to be moved across the track into a position to discharge into the receptacle and also to be moved to one side out of position to discharge into said receptacle and out of the path of movement of the truck on the truck-rails.

11. In an apparatus for slaking lime and hardening bricks, the combination of a container having tracks therein adapted to have a brick-carrying truck run therein, a receptacle located between the tracks, a water-main located outside of the tracks, a movable pipe located within the container and connected to the main and adapted to be moved across the track into a position to discharge into the receptacle and also to be moved to one side out of position to discharge into said receptacle and out of the path of movement of the truck on the truck-rails, and a steam-pipe within the container and extending longitudinally thereof, said steam-pipe having perforations throughout its length.

12. In an apparatus for slaking lime, a container adapted to receive a receptacle, and a water-pipe arranged within said container and having its discharge end positioned to direct the water into the receptacle, when the latter is in position within the container.

13. In an apparatus for slaking lime, a container adapted to receive a receptacle, a water-pipe arranged within said container and having its discharge end positioned to direct the water into the receptacle when the latter is in position within the container, and means for heating the container.

14. In an apparatus for slaking lime, a container adapted to receive a plurality of receptacles, and a plurality of water-pipes located within the container and arranged at regular intervals throughout the same and each having its discharge end positioned to direct the water into one of the receptacles when the latter are in position within the container.

15. In an apparatus for slaking lime, a con-

tainer adapted to receive a plurality of receptacles, and a plurality of water-pipes located within the container and arranged at regular intervals throughout the same and
5 each having its discharge end positioned to direct the water into one of the receptacles when the latter are in position within the container, and a steam-pipe in the container constructed

to discharge steam at points throughout the length of the container. 10

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

MORRIS SHERMAN.

Witnesses:

D. F. BECKHAM,

W. A. CANFIELD.