F. W. WEBER.

HYDRATOR FOR LIME.

APPLICATION FILED APR. 12, 1920.

1,350,534.

Patented Aug 24, 1920.

3 SHEETS—SHEET 1.

FIG. 1

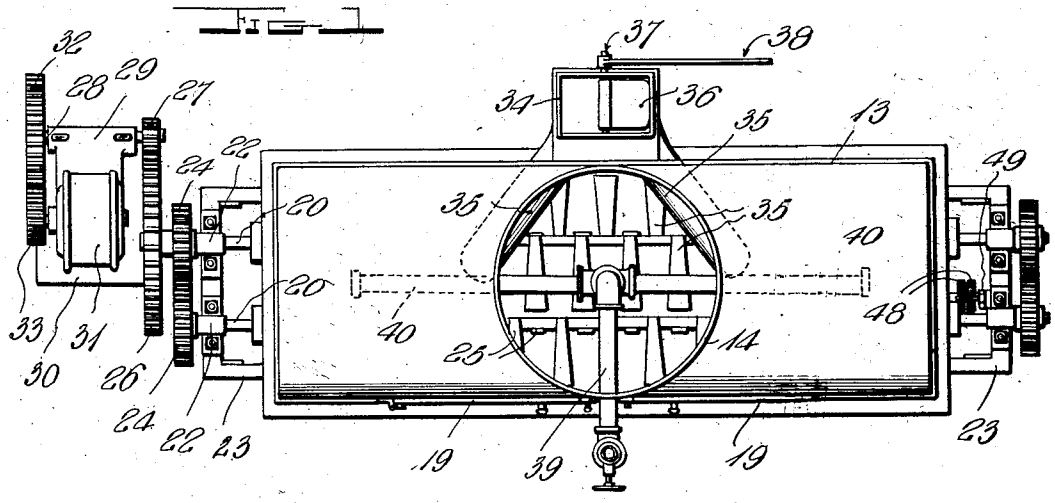
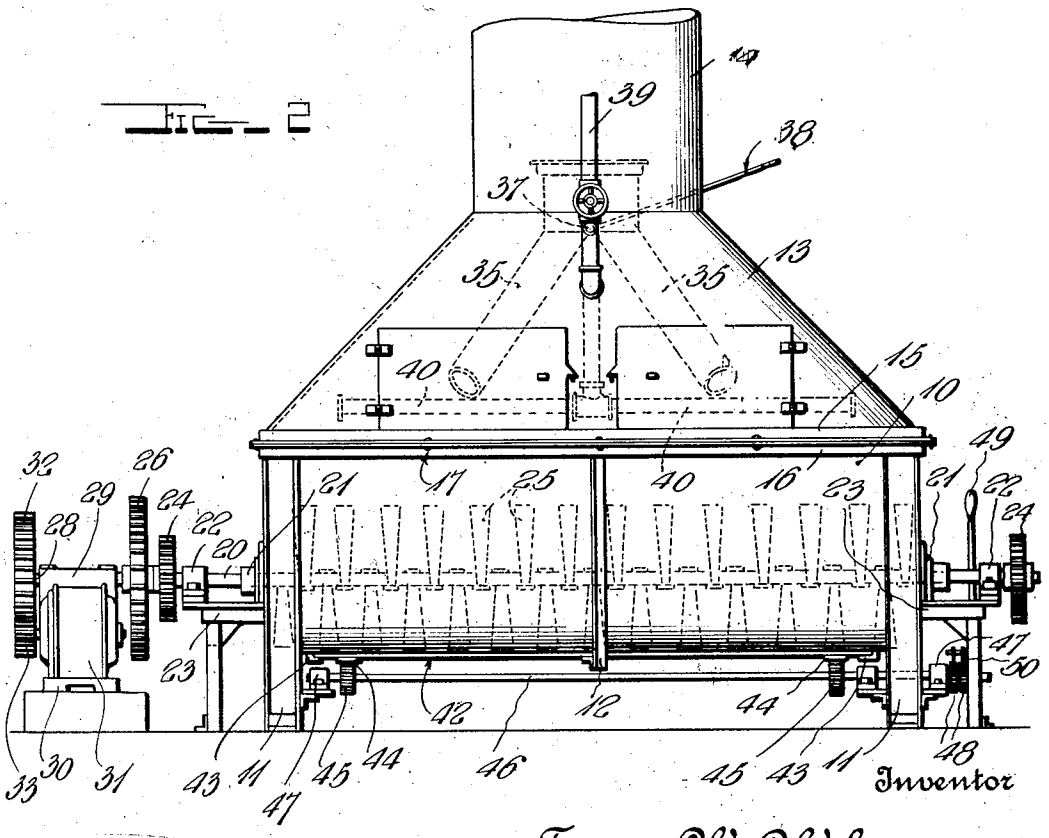


FIG. 2



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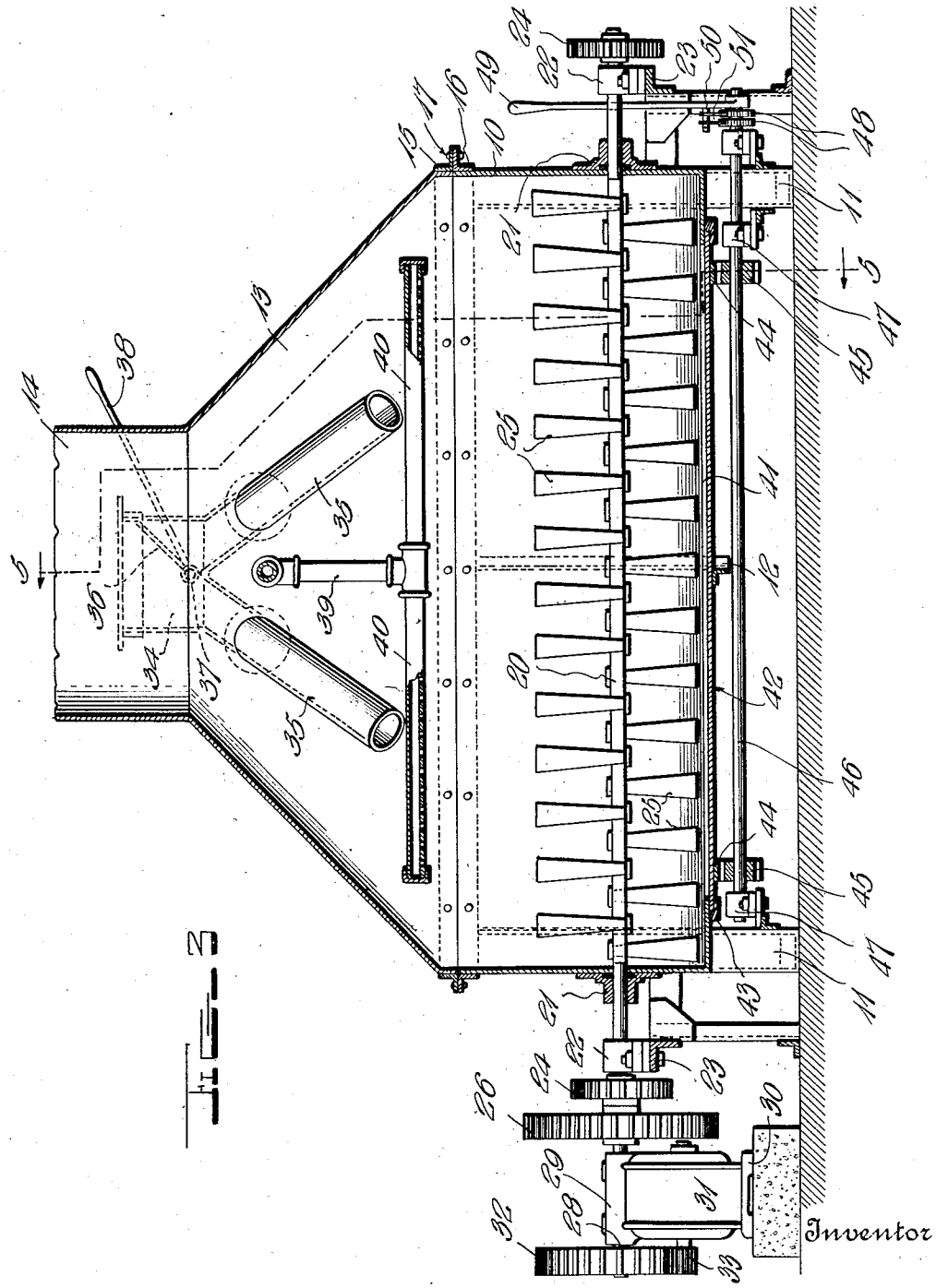

FIG. 2.

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3 SHEETS—SHEET 3.

FIG. 4

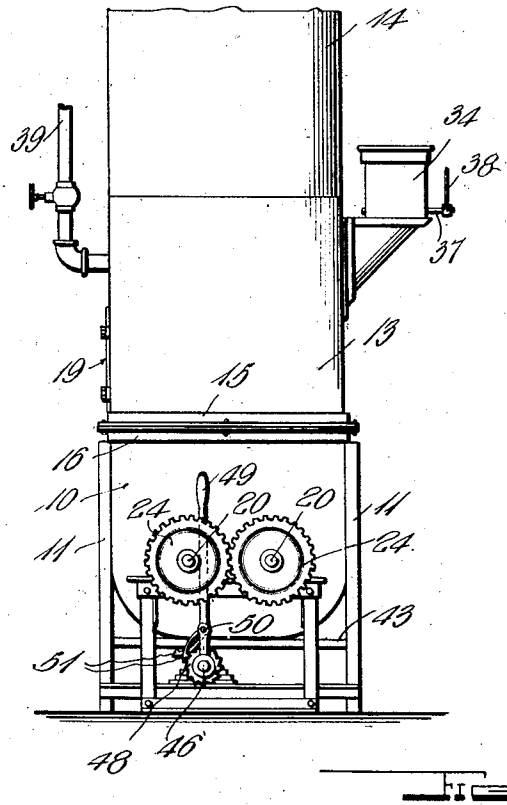


FIG. 5

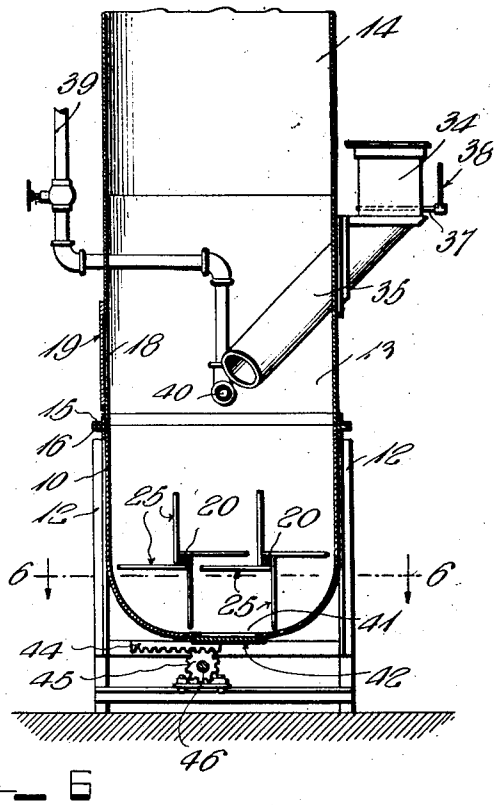
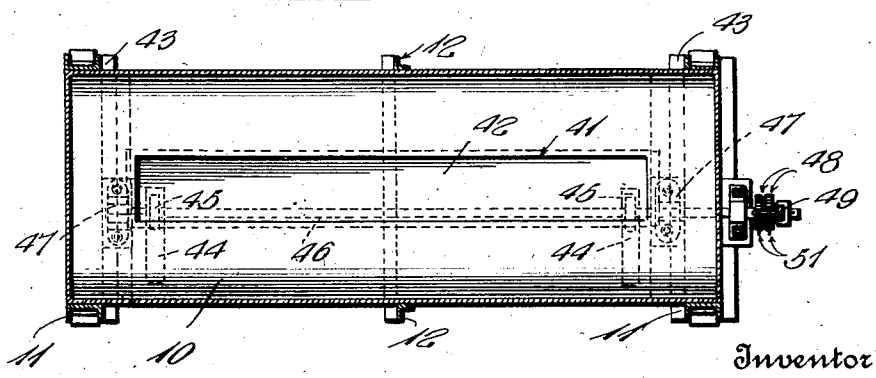


FIG. 6



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UNITED STATES PATENT OFFICE.

FRANZ W. WEBER, OF WOODVILLE, OHIO.

HYDRATOR FOR LIME.

1,350,534. Specification of Letters Patent. Patented Aug. 24, 1920.

Application filed April 12, 1920. Serial No. 373,302.

To all whom it may concern:

Be it known that I, FRANZ W. WEBER, a citizen of the United States, residing at Woodville, in the county of Sandusky and State of Ohio, have invented certain new and useful Improvements in Hydrators for Lime; and I do 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.

This invention relates to an improved hydrator for lime, and one object of the invention is to provide a machine of the character described which is so constructed that lime which is unslaked may be fed into the housing or mixing chamber and selectively directed toward either end of the housing desired and to provide improved means for agitating the lime in the housing and mixing it with water sprayed upon the lime, the agitating means consisting broadly of shafts extending longitudinally through the housing and rotating in opposite directions and carrying paddles which are positioned in staggered relation and pass in overlapped relation as the shafts rotate.

Another object of the invention is to provide an improved sliding door for closing an outlet opening formed in the bottom of the receptacle and to also provide means for imparting movement to the door, the door carrying racks engaging gears mounted upon a rotatable shaft which may be rotated in either direction according to the direction it is desired to move the door.

Another object of the invention is to so construct this machine that it may be mounted upon an elevated base or over a pit thus permitting the lime when slaked to be deposited in the pit from which it may be removed by any suitable means or to permit the lime to be received in a wagon or other vehicle positioned beneath the outlet opening.

Another object of the invention is to so construct this hydrator that the upper portion or hood thereof may be provided with a central stack through which steam and dust pass and thus prevent danger of dust and steam accumulating in the housing.

This invention is illustrated in the accompanying drawings wherein:

Figure 1 is a top plan view of the improved hydrator.

Fig. 2 is a view showing the improved hydrator in side elevation.

Fig. 3 is an enlarged longitudinal sectional view through the hydrator.

Fig. 4 is a view showing the hydrator in end elevation.

Fig. 5 is a vertical sectional view taken along the line 5—5 of Fig. 3.

Fig. 6 is a longitudinal sectional view through the lower portion of the housing taken along the line 6—6 of Fig. 5.

This hydrator is provided with a housing or hydrating chamber 10 having its end portions supported by the yokes 11 and braced at a point intermediate its length by means of the bracing band 12. This housing is provided with an upper section or hood 13 which tapers or converges upwardly and is provided with a central opening from which extends a stack 14 through which the dust and steam will pass. A securing flange or collar 15 is positioned about the lower end of the hood and engages a similar collar 16 carried by the upper end portion of the housing 10. Fasteners 17 pass through these flanges or collars 15 and 16 thus securely connecting the hood with the housing. Openings 18 are formed in one side of the hood for permitting access to the interior of the hydrator and doors 19 are provided for normally closing the openings and preventing steam and dust from passing out through the openings 18.

In order to agitate the lime placed in the receptacle 10 there have been provided shafts 20 which extend longitudinally through the housing and have their end portions extended and after passing through bushings 21 are rotatably mounted in bearings 22 mounted upon frames 23 positioned at the end of the housings. These shafts carry gears 24 which mesh so that the two shafts rotate in opposite directions and thus cause the lime to be thoroughly agitated or stirred by the paddle blades 25. These paddle blades 25 extend from the shafts as shown clearly in Figs. 3 and 5 and the blades of one shaft are positioned in staggered relation to the blades of the second shaft so that the blades may extend in overlapped relation and not interfere with rotation of the two shafts,

One of the shafts extends beyond its gear 24 at one end of the housing or receptacle and carries a large gear 26 which meshes with a relatively small gear 27 mounted upon one end of a driven shaft 28. This driven shaft 28 is rotatably mounted upon a standard 29 which extends upwardly from the base 30 carrying the motor 31 and this shaft 28 carries at its opposite end a relatively large gear 32 which meshes with a relatively small gear 33 carried by the motor shaft. It will thus be seen that the speed of rotation from the motor to the shafts 20 will be reduced but that the two shafts 20 will rotate at the same rate of speed.

In order to feed the lime into the receptacle there has been provided a hopper 34 which is positioned to one side of the hood 13 at a point intermediate its length and is provided with an open bottom from which extend the spouts 35. These spouts 35 extend in diverging relation as clearly shown in Fig. 3 and are extended through openings in the hood so that the open inner ends of the spouts extend toward opposite ends of the receptacle. A plate 36 is positioned in the lower portion of the hopper and has its lower end mounted upon a shaft 37 which extends through the outer wall of the hopper and is engaged by a lever 38 by means of which the shaft may be rotated to swing the plate from the position shown in Fig. 3 for directing lime through one of the spouts 35 to an opposite position for directing lime through the second spout. It will thus be seen that when it is desired to feed lime into the receptacle it is simply necessary to swing the plate 36 to the proper position and then feed the lime into the hopper. In order to slake the lime it is necessary to wet the same and since it is preferred to have the water sprayed upon the lime in the receptacle there has been provided a water supply pipe 39 which extends into the hood at the opposite side from the hopper. This pipe 39 has its inner end portion extended downwardly and connected with side pipes 40 which extend longitudinally of the receptacle and have their lower portions provided with a plurality of outlet openings through which the water will be sprayed upon the lime in the housing or receptacle. Therefore the water will be sprayed upon the lime as the lime is agitated in the receptacle and the desired hydration will take place in the receptacle. Dust and steam given off by the lime which is being slaked will pass out through the stack 14.

The receptacle 10 is provided in its bottom with an outlet opening 41 which extends longitudinally of the receptacle and is normally closed by a closure plate 42. This closure plate 42 is engaged at a point intermediate its length by the strip 12 and has its end portions engaged by strips 43 which assist the strip 12 in supporting the plate and also constitute tracks for guiding the sliding movement of the closure plate to an open or a closed position. Rack bars 44 are secured to the end portions of this closure plate 42 and are engaged by the pinions 45 mounted upon the shaft 46 so that when the shaft 46 is rotated the closure plate will be moved transversely of the receptacle. This shaft 46 is rotatably mounted in bearings 47 connected with the yokes 11 and extends beyond the receptacle at one end and carries ratchet wheels 48 which have their teeth cut in opposite directions. The lever 49 is loosely mounted upon the shaft and carries a pin 50 having pawls 51 loosely mounted thereon so that the pawls may be swung into and out of engagement with the ratchet wheels 48. When one pawl is in engagement with its ratchet wheel the shaft will be rotated to move the closure plate to an open position upon oscillation of the lever 49 and when this pawl is swung to inoperative position and the second pawl moved to operatively engage its ratchet wheel the ratchet wheel will be moved to the closed position upon oscillation of its lever. It will thus be seen that when it is desired to empty the slaked lime from the receptacle or housing it is simply necessary to oscillate the lever 49 with the proper pawl in an operative position and the door can be moved to an open position, thus permitting the slaked lime to pass out through the opening 41 and drop either into a pit beneath the receptacle or into a wagon or other vehicle. The closure plate can then be moved to the closed position and the machine is again ready for use. An additional supply of unslaked lime will then be fed into the receptacle through the spouts 35 and when the water is turned on the shafts carrying the beaters or blades will be again rotated to agitate the lime and mix the same with the water sprayed from the pipe extensions 40.

What is claimed:

1. A hydrator comprising a receptacle including an upper hood section provided with a stack, a hopper positioned to one side of the hood of the receptacle, spouts extending downwardly from the bottom of the hopper in diverging relation and extending into the receptacle through the hood section thereof, a closure pivotally mounted in the lower portion of the hopper for selectively closing the entrance to one spout and directing material into the second spout, means for adjusting the position of the closure, mixing means in the receptacle, and water spraying means in the receptacle.

2. A hydrator of the character described comprising a housing having a tapered hood provided with a steam and dust outlet, agitating means positioned in the lower portion of the housing through the hood, water

spraying means entering the housing, and a hopper having feed spouts extending into the housing through the hood for directing material into the end portions of the housing.

3. A hydrating machine comprising a receptacle having an inlet and an outlet, the outlet being positioned in its lower portion and extending longitudinally of the receptacle, tracks carried by the housing and extending transversely of the outlet, a closure plate for the outlet held in sliding engagement with the receptacle by said tracks for movement across the outlet racks carried by the closure plate, a shaft rotatably mounted beneath the receptacle and carrying pinions engaging the racks to impart movement to the closure when the shaft is rotated, and means for rotating the shaft to move the closure across the opening.

4. A hydrator of the character described comprising a housing having a tapered hood terminating in a steam and dust outlet stack, agitating means positioned in the lower portion of the housing, a water supply pipe entering the housing through the hood thereof and provided at its inner end with a spraying nozzle extending longitudinally of the housing, and a hopper having feed spouts extending into the housing through the hood for directing material into the end portions of the housing.

In testimony whereof I have hereunto set my hand.

FRANZ W. WEBER.