N. E. McLOON.

LIMEKILN.

APPLICATION FILED AUG. 7, 1911.

1,014,015.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 1.

FIG. 1.

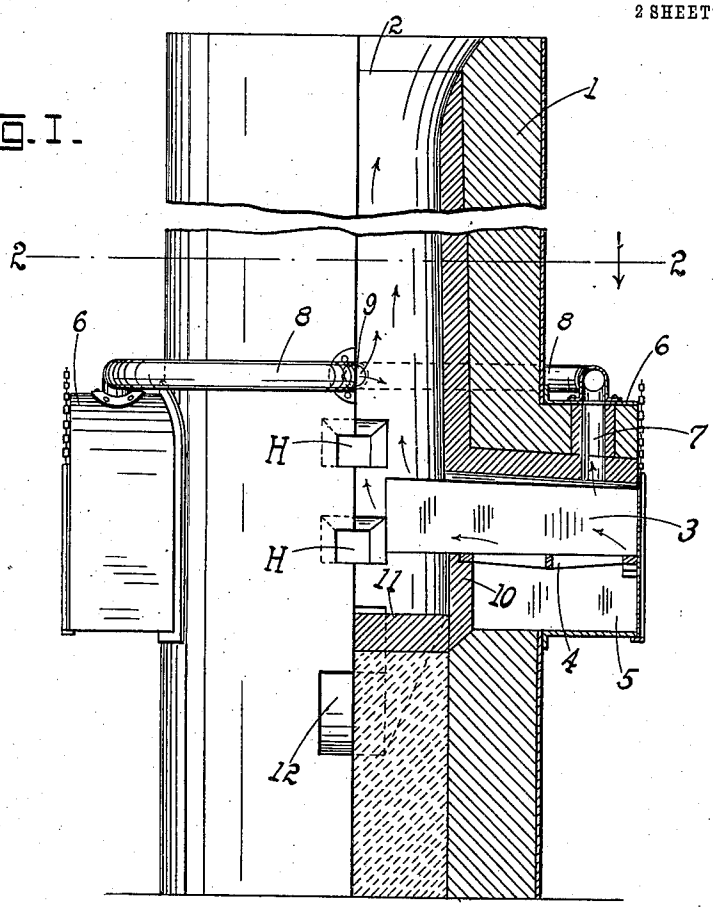
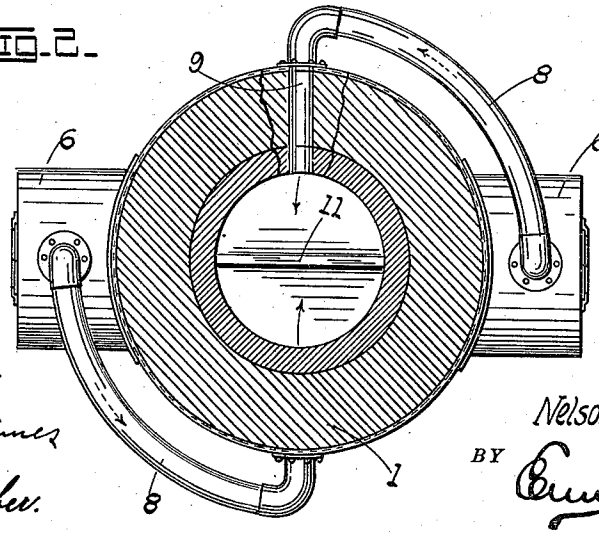


FIG. 2.



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2 SHEETS—SHEET 2.

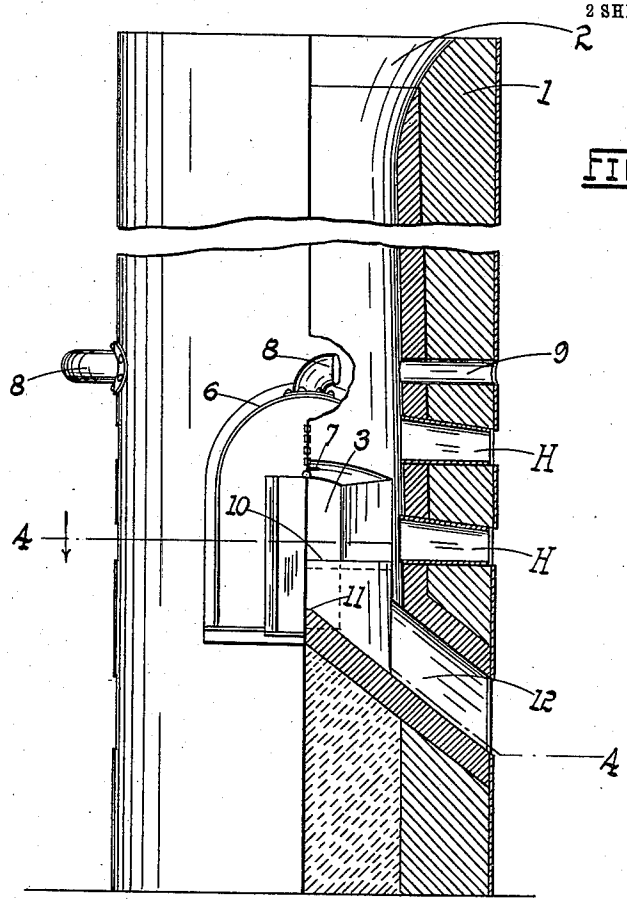

FIG. 3.

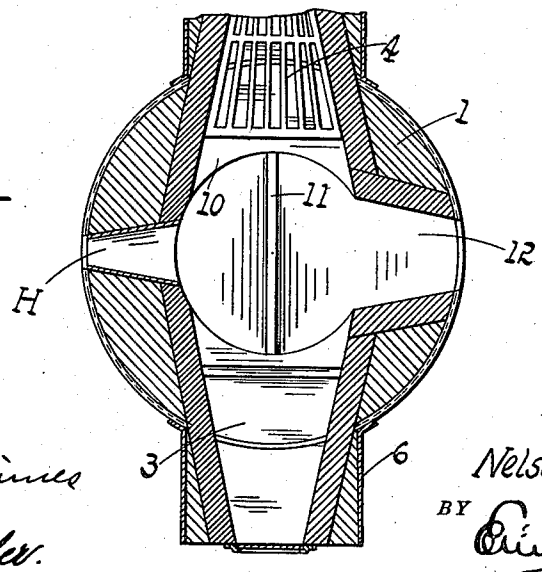

FIG. 4.

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LIMEKILN.

1,014,015. Specification of Letters Patent. Patented Jan. 9, 1912.

Application filed August 7, 1911. Serial No. 642,751.

To all whom it may concern:

Be it known that I, NELSON E. McLOON, citizen of the United States, residing at Glencoe, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Limekilns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in lime-kilns; and it consists in the novel details of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a half side elevation and half vertical section of my improved kiln; Fig. 2 is a horizontal section on the line 2—2 of Fig. 1; Fig. 3 is a half front elevation and half section; and Fig. 4 is a horizontal section on the broken line 4—4 of Fig. 3.

The object of my invention is to construct a kiln in which the heat from the fire places may be distributed over a considerable section of the chamber of the kiln, thereby permitting a larger portion of the contents of the kiln to be treated at any one time. This extended distribution of the hot gases and combustion products from the fire-places reduces the time of the burning of the lime and hence results in an increased capacity for the kiln.

The advantages of the invention will be better apparent from a detailed description thereof which is as follows:—

Referring to the drawings, 1 represents the kiln as a whole, and 2 the main chamber thereof. At a convenient point from the bottom of the kiln, and on opposite sides of the chamber 2 are located the fire-boxes or fire-places 3, provided each with a grate 4 for the support of the fuel, and with an ash compartment 5 below the grate. The walls of the fire-boxes project out a suitable distance beyond the wall of the kiln forming hoods 6, 6, the top of each hood outside the kiln being provided with a passage-way 7 which communicates with a conduit or pipe 8 partially encompassing the kiln and discharging into the chamber 2 thereof through a passage-way 9 formed in the kiln-wall at a point substantially ninety degrees from the passage-way 7. The conduit 8 leads from one of the hoods 6 around the kiln in one direction, whereas the conduit 8 from the opposite hood leads around the kiln on the opposite side from the first conduit, and in the opposite direction, the discharge passage-ways 9, 9, being diametrically opposite one another.

The inner end of each grate rests on a bridge-wall 10 the top of which is some distance above the ridge 11 forming the apex of the bottoms of the diverging draw-shafts 12 through which the burnt lime is extracted. This ridge 11 being depressed below the level of the grates permits of an incipient cooling of the lime the moment the charge descends below the grate level or the tops of the bridge-walls 10. As shown in the drawings, the sides of the draw-shafts converge downwardly, the axes of the shafts inclining downward and outward in opposite directions from the ridge 11. This feature *per se* however is not claimed as it is old in the art. H, H, represent poke-holes likewise understood in the art.

From the arrows as shown in the drawings, it will be observed that a portion of the hot gases and combustion products from the fuel on the grates 4 pass directly from the rear of the grates into the chamber 2 of the kiln, another portion being diverted and passing into the kiln-chamber by way of the passages 7, pipes 8, and passages 9, the diverted currents passing around the kiln in opposite directions as described. To prevent cooling of the pipes 8, they may be covered with mineral wool or asbestos as well understood in the art. It will thus be seen that the hot gases from the fire-boxes enter the kiln-chamber 2 at different levels, thus penetrating a zone of considerable extent within the chamber, the lime being treated (or burnt) within a vertical range of several feet. The penetration of the lime by the hot gases at different levels in the chamber-kiln, and the distribution of these gases throughout an extended zone not only insures the treatment of a greater quantity of limestone in a given time, but permits its quicker abstraction from the kiln, so that the efficiency of the latter is increased. Without the presence of the shunts 8, 8, the heat from the fire-places would be confined to an area practically opposite the rear discharge ends of the fire-places, and hence more time would be consumed in treating a given charge of limestone. It will be seen (Fig. 2) that the general direction of discharge from the rear ends of the fire-boxes

3 is parallel to the ridge 11, the discharge from the conduits 8 being at right angles thereto. This tends to increase the efficiency since the charge of limestone is subjected to heat from all sides.

Having described my invention, what I claim is:—

1. In combination with a kiln having a main chamber, a pair of downwardly and outwardly diverging draw-shafts having bottoms meeting at a central ridge at the bottom of the chamber, fire-boxes disposed on opposite sides of the chamber and discharging at the rear into the chamber in paths parallel to, and at a suitable distance above, the ridge, hooded extensions for the fire-boxes projecting out beyond the walls of the kiln, conduits leading from the tops of the hoods at points outside the kiln-walls and extending partially around the kiln in opposite directions, said conduits discharging into the kiln-chamber in paths at right angles to the direction of the discharges from the rear ends of the fire-boxes, and at a relatively higher level, for the purpose set forth.

2. In combination with a kiln having a main chamber for the charge, a fire-box discharging in the rear into said chamber at a certain level, and means for diverting a portion of the hot gases and combustion products from said fire-box and discharging the same into the kiln-chamber at a relatively higher level, and at an angle to the general direction of the first discharge.

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

NELSON E. McLOON.

Witnesses:
EMIL STAREK,
FANNIE E. WEBER.