(No Model.) 2 Sheets—Sheet 1.

L. H. REPPELL.

BRICK KILN.

No. 487,158. Patented Nov. 29, 1892.

Fig. II.

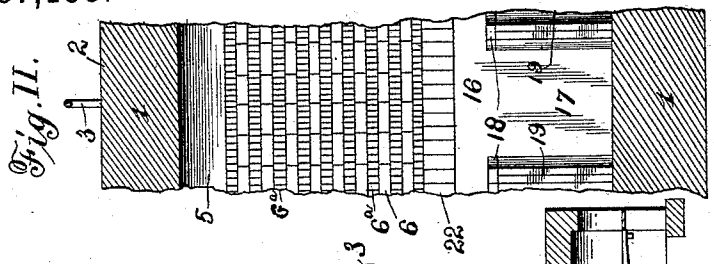
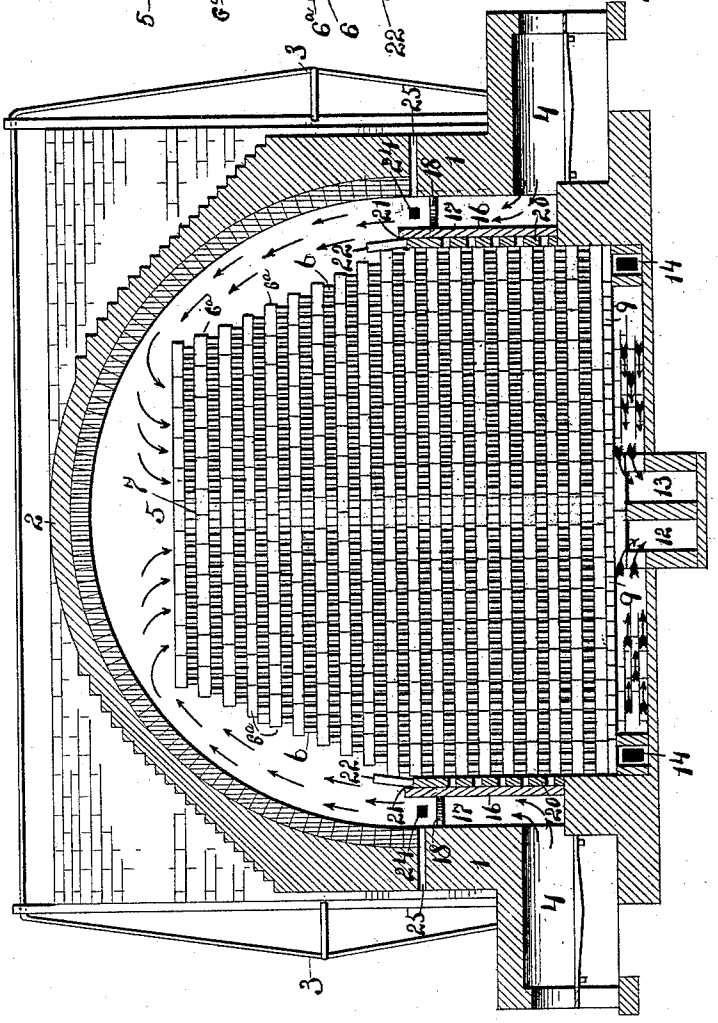


Fig. I.



Witnesses:
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Harry S. Rohrer.

Inventor:
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By Knight Bros.
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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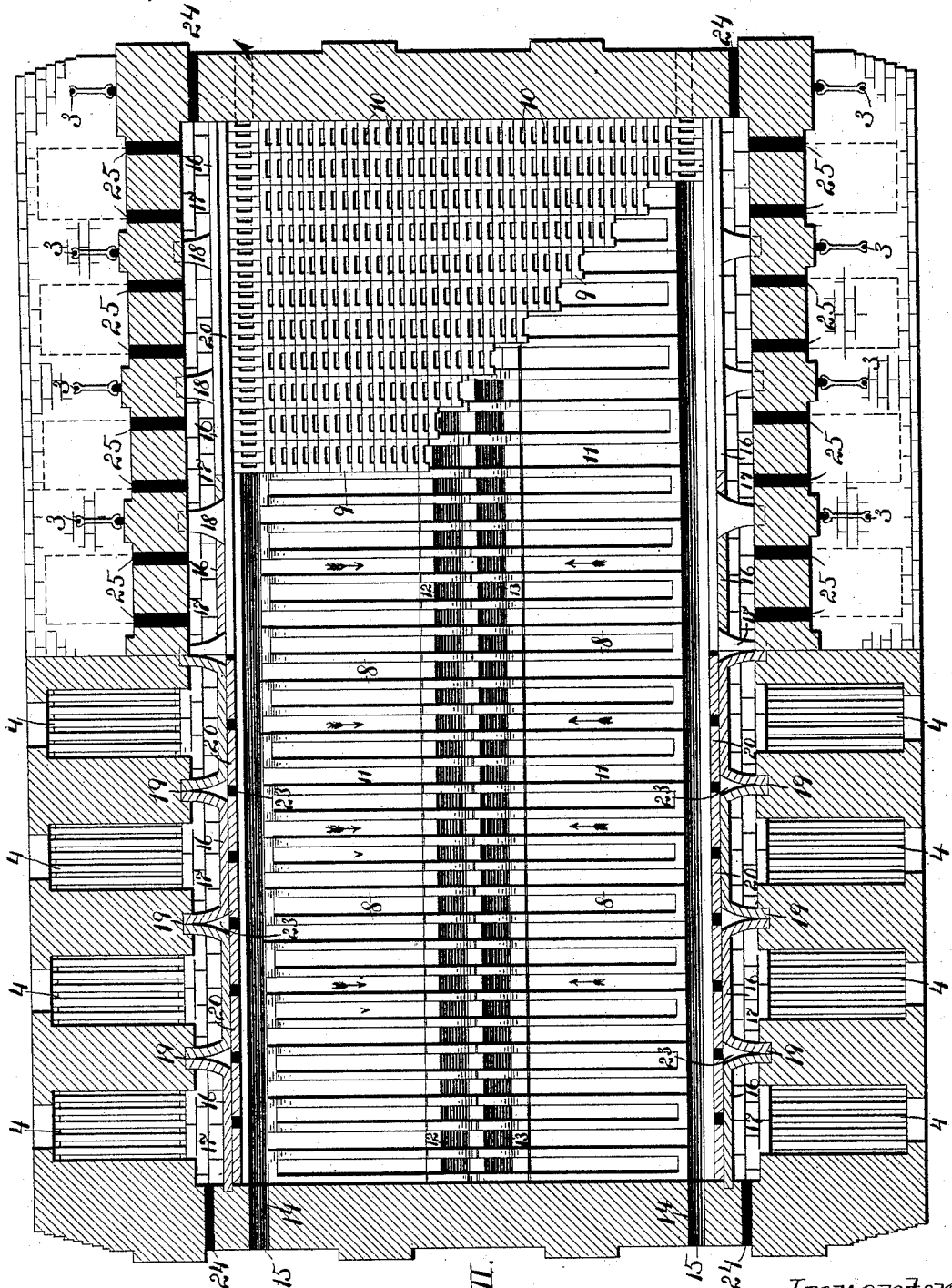

Fig. III.

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UNITED STATES PATENT OFFICE.

LOUIS H. REPPELL, OF KANSAS CITY, MISSOURI.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 487,158, dated November 29, 1892.

Application filed April 17, 1891. Serial No. 389,365. (No model.)

To all whom it may concern:

Be it known that I, LOUIS H. REPPELL, of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Downdraft Brick-Kilns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain new and useful improvements in the construction and operation of downdraft brick-kilns; and my invention consists in certain features of novelty hereinafter described, and pointed out in the claims.

Figure I represents a transverse section of my improved kiln. Fig. II is a detail side elevation taken on a line just within the wall. Fig. III represents a horizontal section of the kiln.

Referring to the drawings, 1 represents the walls of the kiln, and 2 the roof, which is made in an arch form.

3 represents the usual brace used in the construction of kilns.

4 represents the furnaces, of which there is a series on each side of the kiln.

5 represents the interior of the kiln in which the bricks are placed, as shown at 6, preparatory to being burned, the body of the brick being laid in the usual form with spaces intervening, so that the heat may readily pass between the same.

7 represents a middle or central vertical wall or division formed of the same material or of the same kind of brick which it is desired to burn, the bricks in said wall being laid close to each other without any intervening space in order to prevent the heat-current from passing between the same or across the pile of brick from one side to the other side of the kiln.

8 represents the supports located at the bottom of the kiln, on which are placed tiles 9, having openings 10, through which the heat may circulate, there being a series of openings 11 between the supports 8, through which the draft passes on its way to the smoke-stack or discharge-flue, the brick to be burned being laid in courses on the tiles 9. Located beneath the tiles 9 are two flues 12 13, which connect with the discharge-flue (not shown) and through which the products of combustion are carried off. The flues 12 13 are connected with the cross-spaces 11 between the supports 8.

14 represents air-ducts extending out through the front wall of the kiln, as shown at 15.

16 represents the bags or flash-walls located to the rear of the furnaces 4, against which the flame and heat deflect, the heat passing up through a chamber 17 between the flash-walls and the walls of the kiln. The flash-walls are braced near the upper end by cross-pieces 18, connecting the same with the inner side of the kiln-wall. The flash-walls are preferably made in arch shape, having the ends of the arches secured by being let into the kiln-wall, as shown at 19. Said flash-walls extend up in the body of the kiln for some distance to prevent the outer rows of bricks from being burned too much and deflecting the flame and heat to the top of the kiln, from whence it passes downward through the body of the brick, as shown by arrows.

Situated to the rear of the flash-wall 16 is a perforated partition 20, the flash-wall 16 extending slightly above the partition 20, (see Fig. I,) thus forming a recess 21, on which may rest a tile 22, said tile being for the purpose of further deflecting the heat from the outer layer of brick and extending up at an angle or in substantially the same direction as the arch, so as to conform thereto.

As the bricks are being burned they will settle, and the tile will settle with them, at all times resting against the brick which are being burned and preventing the draft or heat from passing into the spaces between the brick, the foot of the tile being held from slipping off and falling into the chamber 17 or extending over the same by the flash-wall 16 extending up higher than the partition 20. The outer layer 6^a of brick to be burned are laid close together above the tile 22, so that the current of heat is compelled to go to the top of the kiln before passing down through the spaces between the brick.

Between the partition 20 and the portions of the arch of the bags or flash-walls which connect with each other is a series of pockets 23. As the air becomes heated in said pockets it passes out through the perforated

partition 20 and is radiated between the brick being burned. Were it not for the perforations in the partition 20 the air in the pockets 23 would become superheated and heat the partition to such an extent that the outer layer of brick in the body of the kiln would be burned to too great an extent.

24 represents peep-holes located at the end of the kiln, through which the operator may look into the chamber 17 and judge of the amount of heat passing through the same.

25 represents a series of openings leading in from the side of the kiln, which may be used for peep-holes and also for admitting the outer air should either side of the kiln become overheated. Said openings may be closed with a brick or other suitable plug. The openings 14 in the bottom of the kiln are for the purpose of admitting fresh air in case it is found that the bottom of the kiln is becoming too hot. Thus the air may be admitted on both sides at once or on either side in which it is found that the heat is too great. Said openings may be closed by a suitable damper or plug. (Not shown.)

My object in constructing the central close wall 7 is for the following reasons: In case I desire to burn a kiln with different kinds of brick—such, for instance, as the ordinary brick and vitrified brick, in which the vitrified brick would require a greater degree of heat than the ordinary brick—I burn the whole kiln until the necessary heat for burning the ordinary brick has been discharged into the kiln, and then I close either one of the flues 12 or 13, shutting off the draft on one side of the kiln and leaving it open on the opposite side, whereby the heat will be drawn entirely through one side of the kiln, thereby burning the brick on that side to a greater extent than the brick on the opposite side and also at the same time receiving the benefit of the accumulated heat in the side which it is not desired to burn any longer, the accumulated heat in this side, after the draft is closed on said side, being drawn over to the opposite side. I can thus use the furnaces on each side of the kiln and burn the brick on one side to a greater consistency than the brick on the opposite side.

By the use of my dividing close wall I can also (if it is found that one side of the kiln is burning faster than the opposite side) shut off the draft on the side that is burning too hard, and thus throw the heat into the opposite side.

In an ordinary kiln it is found by experience that frequently, owing to rush of air or other reasons, the heat will pass over to a great extent to one side of the kiln, and thus burn the brick on that side to too great an extent, while on the opposite side they were not burned to a sufficient degree. By regulating my drafts I can readily remedy this defect.

The central close wall 7 may be constructed of the same material as the balance of the brick, and can thereby be taken out with each kiln of brick and a new one built up with fresh material as the kiln is filled, said wall thus not being in the way in emptying the kiln and also not making any lost space in the body of the kiln.

By means of my partition 20 I am enabled to lay the brick against the same in a straight line, which could not be done were there no partition to the flash-walls or bags 16, and as the same is perforated the heat is allowed to radiate from the flash-wall through the same, whereas if the brick were placed directly against the flash-wall the outer layer of the same would be burned to too great an extent.

I claim as my invention—

1. The combination, with a vertical close division-wall for preventing the passage of air-currents across the pile, of the double flue 12 13, located beneath and extending parallel with the division-wall, the side flues 14, parallel with the double flue, and the supports 8, extending from the side flues to the double flue, substantially as described.

2. A brick-kiln pile or stack having close layers at the outer sides thereof to compel the air-currents to pass to the top of the kiln-chamber before entering the pile or stack and a vertical close division-wall for preventing the passage of air-currents across the pile or stack, a downdraft being caused to pass through the pile or stack between the sides and the division-wall thereof, substantially as described.

3. The combination, with a brick-kiln having side furnaces and flash-walls formed with inwardly-curved portions providing pockets, of the perforated partitions located on the inner side of the flash-walls and through which the heat radiates from the flash-walls and pockets, the partitions keeping the sides of the pile or stack from coming against the flash-walls, substantially as described.

4. The combination, with a brick-kiln having side furnaces and flash-walls formed with inwardly-curved portions providing pockets, of the perforated partitions located on the inner side of the flash-walls and the cross-pieces located over the pockets, substantially as described.

5. The combination, with a brick-kiln having side furnaces and flash-walls, of the partitions located on the inner side of the flash-walls and shorter in height than the latter to provide recesses on the inner side of the flash-walls for the reception of the lower ends of the deflecting-tiles between the flash-walls and the pile or stack, substantially as described.

LOUIS H. REPPELL.

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