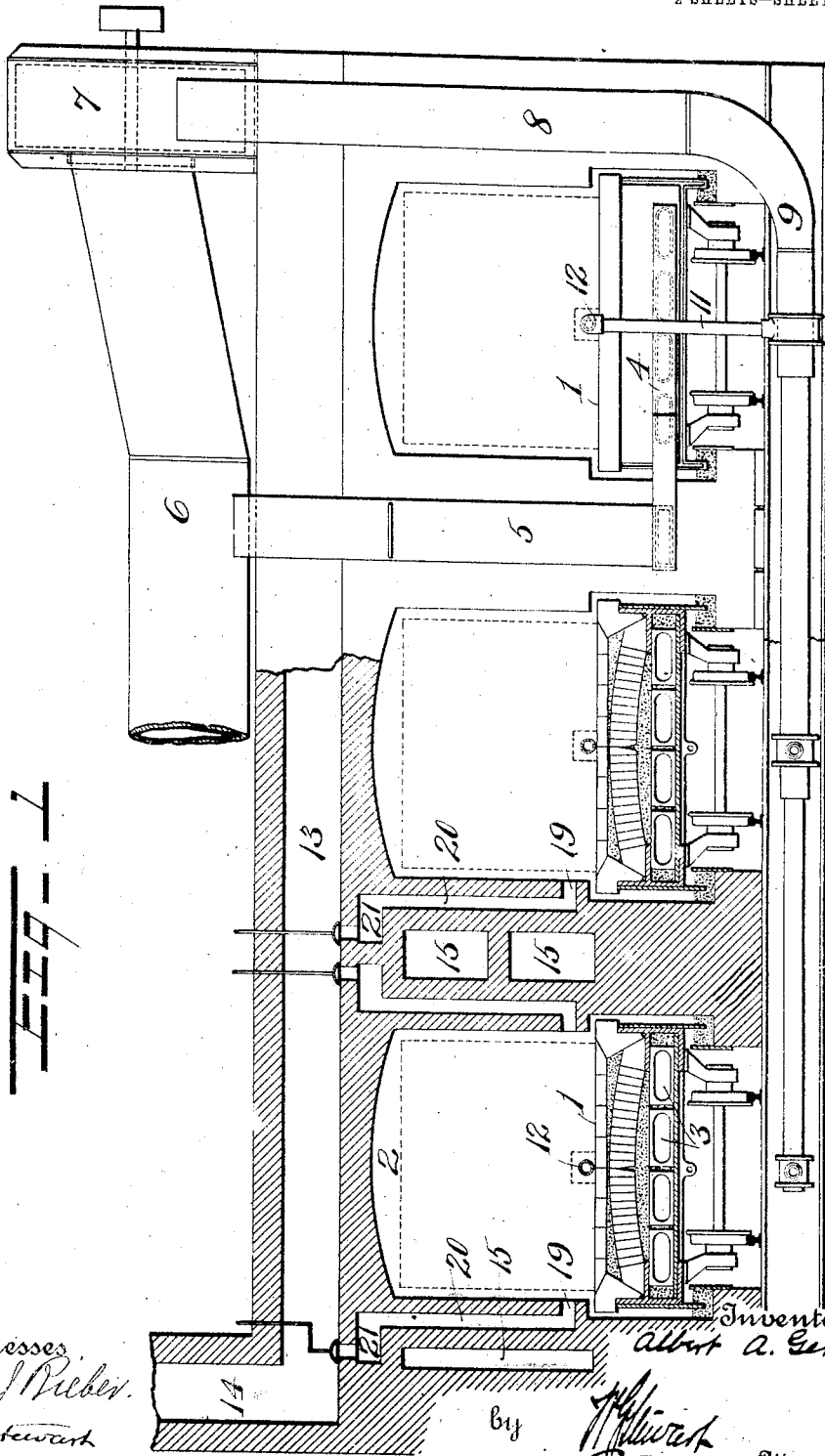


No. 839,833.

PATENTED JAN. 1, 1907.

A. A. GERY.
MANUFACTURING BRICK.
APPLICATION FILED MAY 19, 1905.

2 SHEETS—SHEET 1.



Witnesses
Paul J. Rieber.
D. Stewart

by

[Signature]

Attorney

Inventor
Albert A. Gery

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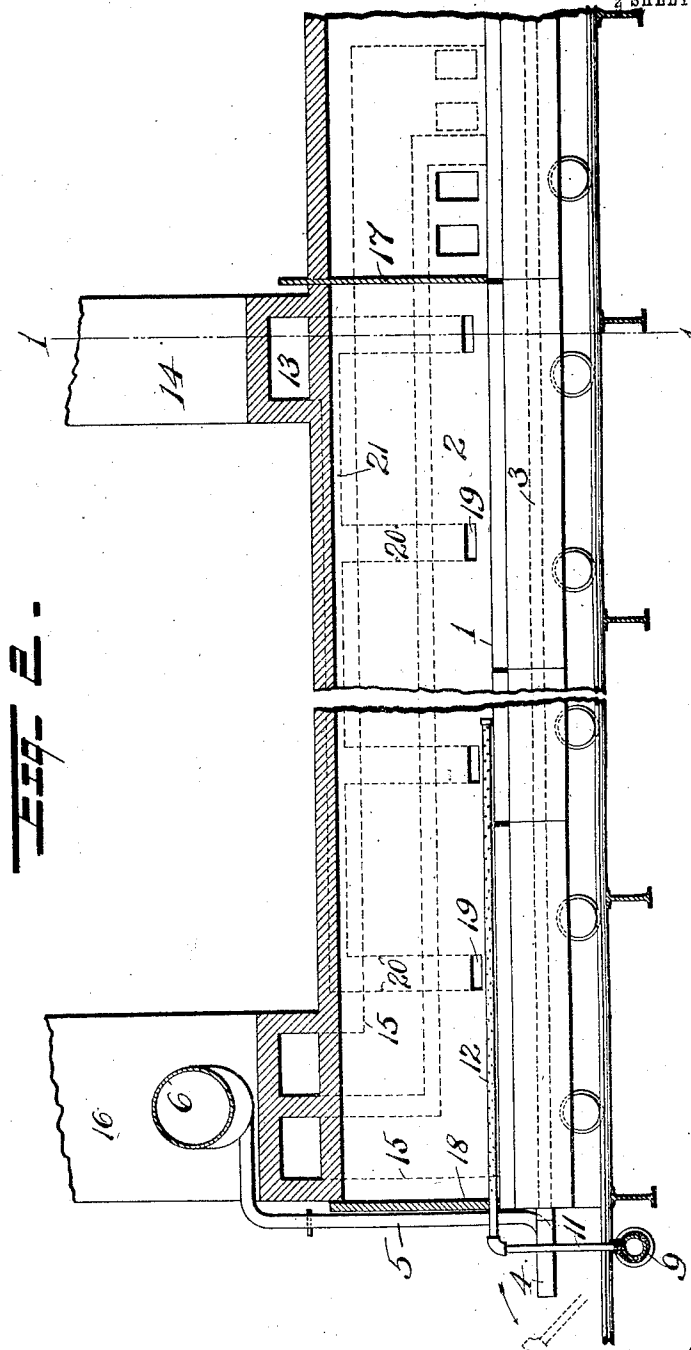


Fig. 2.

Witnesses
Caleb Pieber
D. M. Stewart

Inventor
Albert A. Gery
By *J. H. Stewart* Attorney

UNITED STATES PATENT OFFICE.

ALBERT A. GERY, OF READING, PENNSYLVANIA.

MANUFACTURING BRICK.

No. 839,833.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed May 19, 1905. Serial No. 261,104.

To all whom it may concern:

Be it known that I, ALBERT A. GERY, a citizen of the United States, residing in the city of Reading, Berks county, Pennsylvania, have invented certain new and useful Improvements in Manufacturing Brick, of which the following is a specification.

My invention relates to the manufacture of brick or other material which is successively subjected to drying, burning, and cooling treatment; and my main object is to provide for effecting a more positive and uniform action of passing air upon the loosely-piled material for the purpose particularly of thoroughly drying the same preparatory to the burning operation.

The invention is particularly applicable to the continuous method of burning in tunnel-kilns, which is fully described in my pending applications, Serial Nos. 228,128, 230,001, and 242,500, wherein the green material is periodically introduced at the entrance end of the tunnel and is successively dried, heated, burned, and cooled as it progresses to the exit end, the tunnel being constantly filled with material in different stages of treatment, and said material being carried upon a moving tunnel-floor made up of a series of abutting cars.

Having ascertained from practical experience that the thorough and uniform drying of the whole mass of green material is a matter of primary importance, the failure of which is a basic operation can be in no way remedied by succeeding treatment, I have heretofore employed special methods and means of drying, involving both indirect heating of the loosely-piled material and the direct action of heated air, as described in my pending application, Serial No. 242,500, above referred to.

In my present invention I provide for further improving the drying operation by positively insuring the effective and uniform action of the passing air upon the whole mass of material to be dried, the main novel features consisting in maintaining the air in a somewhat-compressed condition during its passage through the drying-chamber and in so controlling its withdrawal as to most effectively and uniformly utilize the same therein.

The invention is fully described in connection with the accompanying drawings and is specifically pointed out in the claims.

Figure 1 is an end view, partly in cross-

section on the line 1 1 of Fig. 2, of a series of parallel tunnel-kilns embodying requisite means for carrying my invention into effect. Fig. 2 is a longitudinal section of an end portion of a tunnel, shown to reduced scale, but corresponding mainly with Fig. 1.

In carrying out my present invention I preferably employ, as shown, a kiln and car-floor construction and an air-pipe system similar in the main to that set forth in said pending application, Serial No. 242,500, as my improvements are particularly adapted thereto. In this construction the abutting car-floors 1, upon which the brick or other material is periodically introduced to and gradually progressed through the tunnel 2, are each formed with one or more longitudinal air-conduits 3 below the floor-surface, and these conduits of each car-floor communicate with those of adjoining car-floors to form a continuous passage or passages extending the full length of the train. Atmospheric air drawn into these passages through the foremost car of the train at the exit end of the tunnel flows rearward through the train, abstracting heat in the first place from the outgoing floor-sections and then from the highly-heated inner tunnel floor-sections. When this heated air reaches the entrance end of the tunnel, it delivers its heat in part to the cooler incoming floor-sections, so as to indirectly heat the lower layers of brick piled on said sections and the lower strata of air in contact with said brick, and is finally utilized directly upon the incoming brick by delivering it into the incoming end portion of the tunnel through a suitable pipe system. This latter comprises, as shown, a connecting air-pipe 4, removably attached to the rear end of each last-entered car-floor, a fixed vertical air-pipe 5 therefrom to a common transverse pipe 6, a fan-chamber 7 in connection with the latter, and a main blast-pipe 8 therefrom, with extension 9, having branch blast-pipes 11 12, extending into the tunnel at a height above the movable car-floors and discharging the heated air through suitable perforations into the loosely-piled undried brick, all of which is more fully described in my pending application mentioned.

The heated air thus brought into contact with the undried brick in the tunnel and laden with moisture therefrom, is finally discharged through a transverse flue 13, connecting a series of tunnels with a common outlet or

stack 14. Each side wall of each tunnel is also formed with a passage-way or passage-ways 15 for conducting products of combustion from the inner portion of the tunnel to a main stack 16, as in my prior applications, thereby indirectly heating the incoming or drying end of the tunnel from the side walls thereof in a manner similar to the indirect heating effected through the movable hollow floor-sections. The drying portion of each tunnel is also cut off from communication with the inner tunnel during the intervals between the introduction of new cars by the vertically-movable partition 17.

The construction and operation already described enable good results to be secured; but I have found that the passing air may be better utilized and more uniform action attained by more positively and efficaciously controlling the contact and flow of the air through the brick. To this end I convert the entrance end of the tunnel rearward of the movable partition 17 into an approximately air-tight chamber having properly-located and adjustably-restricted outlets, whereby the air forced into said chamber may be sufficiently compressed therein to insure uniform contact thereof with every portion of the loosely-piled brick, and the flow of outgoing air at all points in the length of the chamber may be properly controlled to secure equal and thorough treatment throughout. The end closure 18 of the tunnel is adapted to close the latter, so as to practically cut off the inflow of atmospheric air therethrough to the drying-chamber, thus permitting a sufficient compression of air to be readily maintained by the forced delivery through the blast-pipe 12. A series of low-down side outlets 19 from the drying-chamber communicate through suitable conduits 20 with air-passages 21, each having damper-controlled communication with the transverse flue 13 and the outlet or stack 14, whereby a properly restricted and distributed flow of air from the bottom of the drying-chamber to the latter is secured. By means of the uniform pressure and regulated flow of air thus secured in all parts of the drying-chamber, in connection with the indirectly-heated side walls and floor, the most effective and uniform treatment of the brick may be positively secured. The amount of heated air delivered into the drying-chamber and withdrawn therefrom is adapted to effect the thorough drying of each car-load of brick during its normal passage therethrough.

What I claim is—

1. The improvement in manufacturing brick or the like which consists in subjecting the same while loosely piled in a drying-chamber to the action of in-forced air which is temporarily stored in said chamber under compression while circulating therethrough.

2. The improvement in manufacturing

brick or the like which consists in subjecting the same while loosely piled in a drying-chamber to the action of in-forced heated air which is temporarily stored in said chamber under compression while circulating there-through.

3. The improvement in manufacturing brick or the like which consists in subjecting the same while loosely piled in a drying-chamber to the action of in-forced air which is temporarily stored in said chamber under compression, and indirectly heated therein while circulating therethrough.

4. A tunnel-kiln having an end section thereof separated from the main kiln by a movable partition, and provided with an end closure to form a cut-off chamber, a periodically-progressing brick-carrying floor made up of abutting floor-sections, means for admitting heated air under pressure to the lower portion of said chamber midway of its width, and restricted low-down outlets therefor through each side wall of said chamber, whereby a central upward flow of the incoming air and lateral downward flow of stored air is maintained in said chamber, substantially as set forth.

5. A tunnel-kiln having an end section thereof separated from the main kiln by a movable partition, and provided with an end closure to form a cut-off chamber, a periodically-progressing brick-carrying floor made up of abutting floor-sections, means for forcing air into said chamber to compress the same therein, and adjustable means for discharging the air therefrom whereby a desired degree of compression of the passing air is maintained in said chamber substantially as set forth.

6. A tunnel-kiln having an end section thereof separated from the main kiln by a movable partition, and provided with an end closure to form a cut-off chamber, a periodically-progressing brick-carrying floor made up of abutting floor-sections, means for forcing heated air into said chamber to compress the same therein, and adjustable means for discharging the air from the lower portion of said chamber whereby a downward circulation of compressed air is maintained in said chamber substantially as set forth.

7. A tunnel-kiln having an end section thereof separated from the main kiln by a movable partition, and provided with an end closure to form a cut-off chamber, a periodically-progressing brick-carrying floor made up of abutting floor-sections, means for forcing heated air into said chamber, and restricted side outlets for air from the lower portion of said chamber whereby a downward circulation of temporarily-stored air is maintained in said chamber substantially as set forth.

8. A tunnel-kiln having an end section thereof separated from the main kiln by a

movable partition, and provided with an end closure to form a cut-off chamber, a periodically-progressing brick-carrying floor made up of abutting floor-sections, flues in the side walls of said chamber arranged in communication with the main tunnel; separate outlets for air in said side walls arranged in communication with the lower portion of said chamber, and means for maintaining a circulation of

air through the latter to said air-outlets substantially as set forth.

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

ALBERT A. GERY.

Witnesses:

D. M. STEWART,
W. G. STEWART.