J. W. IVERY.

METHOD AND MEANS FOR COATING KILN BAKED ARTICLES.

APPLICATION FILED JAN. 22, 1917.

1,237,520. Patented Aug. 21, 1917.

Fig. 1.

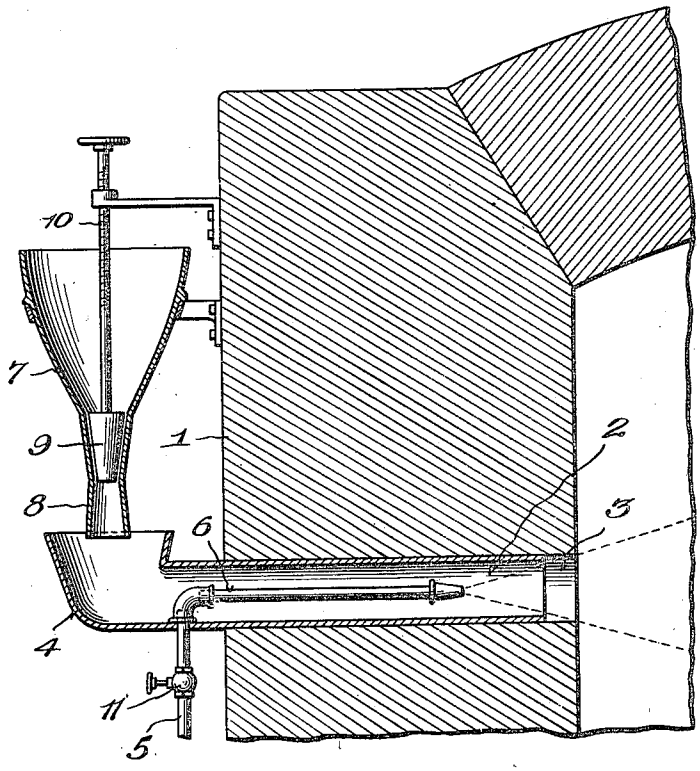


Fig. 3.

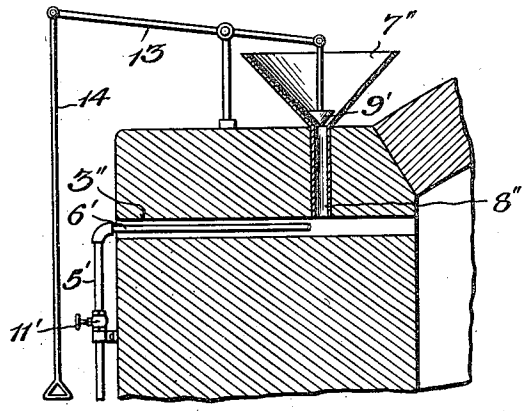
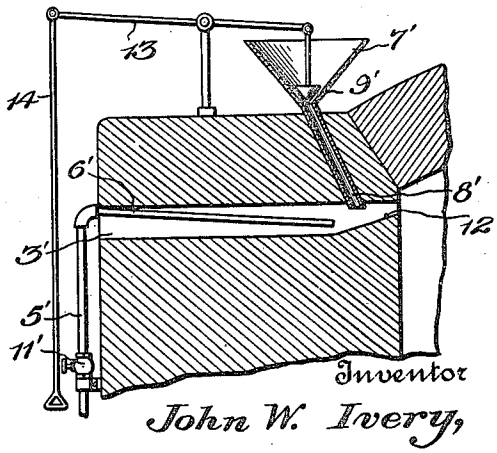


Fig. 2.



Witness

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UNITED STATES PATENT OFFICE.

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METHOD AND MEANS FOR COATING KILN-BAKED ARTICLES.

1,237,520. Specification of Letters Patent. Patented Aug. 21, 1917.

Application filed January 22, 1917. Serial No. 143,670.

To all whom it may concern:

Be it known that I, JOHN W. IVERY, a citizen of the United States, residing at Brazil, in the county of Clay and State of Indiana, have invented certain new and useful Improvements in Methods and Means for Coating Kiln-Baked Articles; 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.

My invention relates to improvements in the methods and means of glazing or otherwise coating kiln baked articles such as bricks, tiles, and the like, and the object is to provide a novel method and means whereby the articles may be coated while they are being baked in the kiln, rather than by the usual dipping processes now generally employed.

With the foregoing general object in view, the invention resides in the method and apparatus hereinafter fully described and claimed, several forms of the latter being shown in the accompanying drawings in which:

Figure 1 is a vertical section of one form of injector which may be employed; and Figs. 2 and 3 are similar views showing different forms of construction.

In the drawings above briefly described, the numeral 1 has reference to the kiln in which the articles to be coated are baked. During this baking operation, while the kiln is at a suitable temperature, the salt, or glazing or coating composition will be introduced by any of the three injectors shown in the drawings, or by other types which may be devised for accomplishing the required results.

In Fig. 1 a horizontal pipe 2 is shown inserted into a passage 3 which leads through the kiln wall, the outer end of said pipe being located on the exterior of said wall and being directed upwardly as at 4, this end being by preference enlarged as shown. A pressure supply line 5 extends into the pipe 4 and is equipped with a horizontally extending portion 6 terminating in spaced relation with the inner end of said pipe and constituting a nozzle for delivering pressure from the line 5 to create suction through the pipe 2. Any suitable pressure may be used and although steam and compressed air will in most cases be employed, a liquid will produce better results when injecting certain kinds of coating compositions.

A hopper 7 is supported in any preferred manner above the outer end of the pipe 2 and is shown as having a tubular outlet 8 alined with the center of said end, a cone valve 9 or any other suitable type being employed for controlling said outlet. If the valve be of cone shape as shown, an adjusting screw 10 will by preference be employed for operating the same, although it will be clear that any other means may well be provided.

In operation, the material with which the articles in the kiln are to be coated, is placed in the hopper 7, and after said articles have been baked to the required amount and the kiln is at a suitable temperature, pressure will be permitted to discharge from the pipe line 5 by opening the valve 11 thereof, this pressure serving to create suction through the pipe 2 so that when the valve 9 is opened and the salt or coating material drops into said pipe, it will be carried in a fine spray or cloud into the kiln and will thus cover the contents thereof with a coating of sufficient thickness, after first being volatilized by the heat in the kiln. This coating, when baked, produces a finished article which is practically the same as those now obtained by the present method of salt glazing or by dipping the product before or after it has been baked, yet it will be observed that the two operations, that is, baking and coating, are performed simultaneously to effect a great saving in time and labor.

In Fig. 2 a passage 3′ is formed through the wall of the kiln 1 and at its inner end is preferably decreased in transverse area by inclining it as shown at 12. A pressure supplying nozzle 6′ projects a suitable distance into the passage 3′ from the supply line 5′, the inner end of said nozzle preferably terminating at the lower end of the incline 12 as shown. In this type of apparatus the hopper 7′ is supported on top of the kiln wall and discharges its contents into the contracted inner end of the passage 3′ by means of a tubular outlet 8′ which by preference inclines downwardly and inwardly so as to locate its lower end a slight distance in advance of the nozzle 6′.

A cone valve 9′ normally prevents the passage of the coating material from the hopper 7′, said valve being shown as connected to the inner end of a horizontal lever 13 from which an operating rod 14 depends to a point adjacent the valve 11′ of the pipe line 5′. The two controls are thus easily accessible and may be operated simultaneously or in quick succession to permit the contents of the hopper 7′ to descend on to the incline 12 and to then cause the discharge of pressure from the nozzle 6′ to carry said contents into the kiln within which it will produce the results above set forth.

In Fig. 3 the construction shown is substantially the same as in Fig. 2. The passage 3″, however, is of equal diameter throughout its length and the outlet 8″ of the hopper 7″ is disposed vertically. In some instances this style of apparatus may be preferable over those previously described, and similarly occasion may demand that one of the former be employed. Any one of the several forms, however, will inject the coating, glazing, salt, or finishing material in an efficient manner, and will equally distribute the same over the contents of the kiln.

From the foregoing taken in connection with the accompanying drawings, it will be obvious that although the apparatus is of simple nature, it effectively carries out the method, and for these reasons the constructions shown constitute the preferred forms of the same. It is to be understood, however, that within the scope of the invention as claimed, numerous minor changes may be made.

In the present method of salt glazing, although others have been attempted, the salt is thrown directly into the fire and only the fumes reach the articles treated. This results in loss of much of the salt, and my invention produces a material saving of salt over the present methods, and more efficient results.

It is to be observed that in all forms of the apparatus shown, a current of atmospheric air is induced through the inlet passage by a fluid pressure blast and that the coating material is introduced into said passage. By this method, the granulated or powdered glazing salt or other material used, mixes freely with the currents passing through the passage and is carried by such currents into the kiln, in the form of a cloud rather than a stream as is the case with certain apparatus with which I am familiar. By introducing glazing salt or the like in a cloud, in this manner, it is properly volatilized by the heat in the kiln before it settles onto the contents and thus the efficiency of the present invention is much greater than those in which a stream of the glazing medium is forced into the kiln.

I claim:

1. The method of coating kiln-baked articles during the baking operation, consisting in inducing a current of atmospheric air through a passage by a fluid pressure blast and blowing said air into the upper portion of the kiln by such blast, and in introducing the glazing material into said passage, whereby free mixing of said material with the currents passing through the passage is effected, and whereby said currents will discharge said material into the kiln in the form of a cloud.

2. An apparatus for introducing a coating material into kilns during the baking operation comprising a passage leading into the kiln and open at its outer end to admit an abundant quantity of air, means for directing a fluid pressure blast through said passage to induce a current of said air therethrough, and means for supplying the coating material to said passage, whereby the same is freely mixed with the currents passing through said passage and carried therewith into the kiln in the form of a cloud.

3. An apparatus for injecting a coating material into kilns comprising a horizontal pipe extending through the wall of the kiln and open at both ends, the outer end of said pipe being directed upwardly to a slight extent, a pressure supply nozzle in said pipe directed toward the inner end thereof, a hopper supported above said outer end of the pipe and having a tubular outlet of less size than and delivering into said end, and a valve for controlling the passage of coating material from said hopper through said outlet.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN W. IVERY.

Witnesses:
L. O. Hilton,
Bessie G. Ivery.