A. B. KLAY.

WARE DRIER AND FACTORY.

APPLICATION FILED JUNE 10, 1916.

1,256,237.

Patented Feb. 12, 1918.

4 SHEETS—SHEET 1.

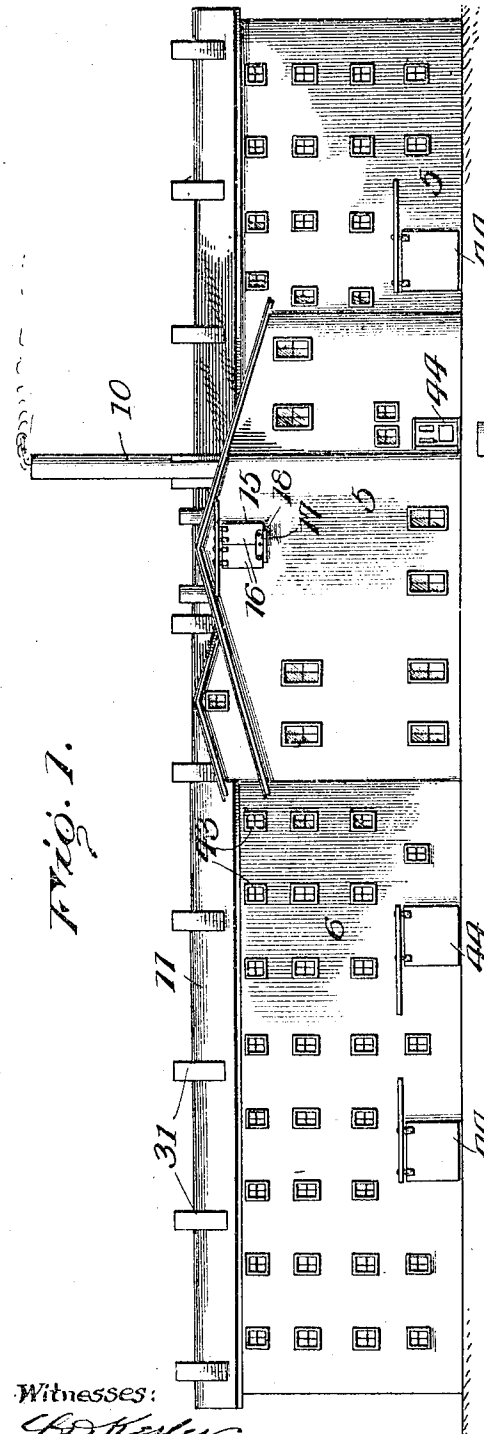

Fig. 1.

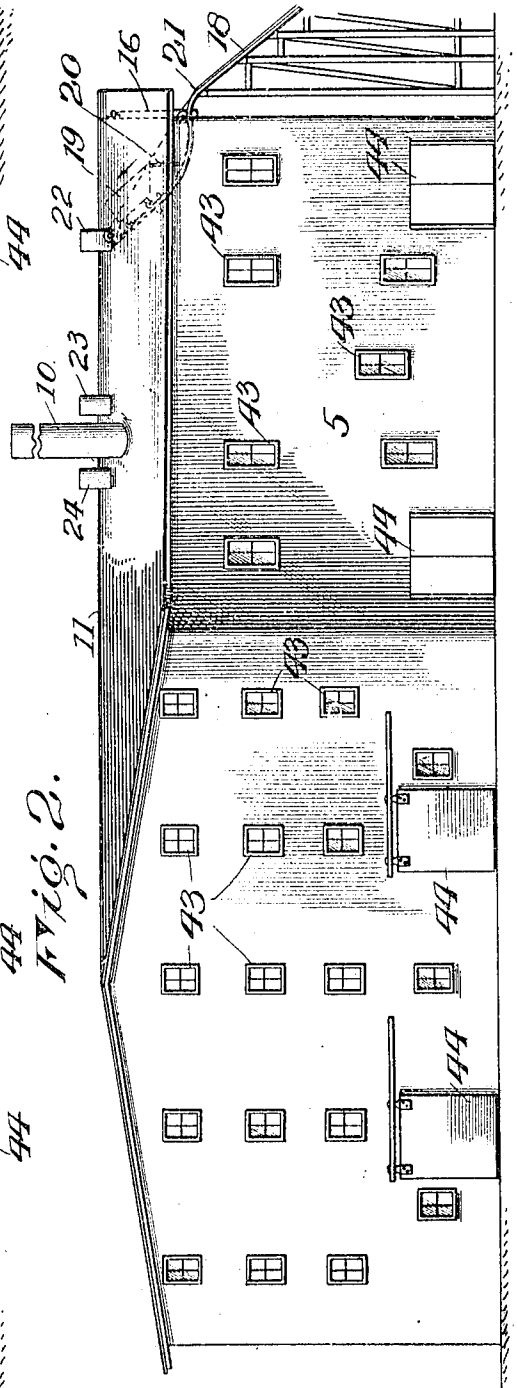

Fig. 2.

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Fig. 3.

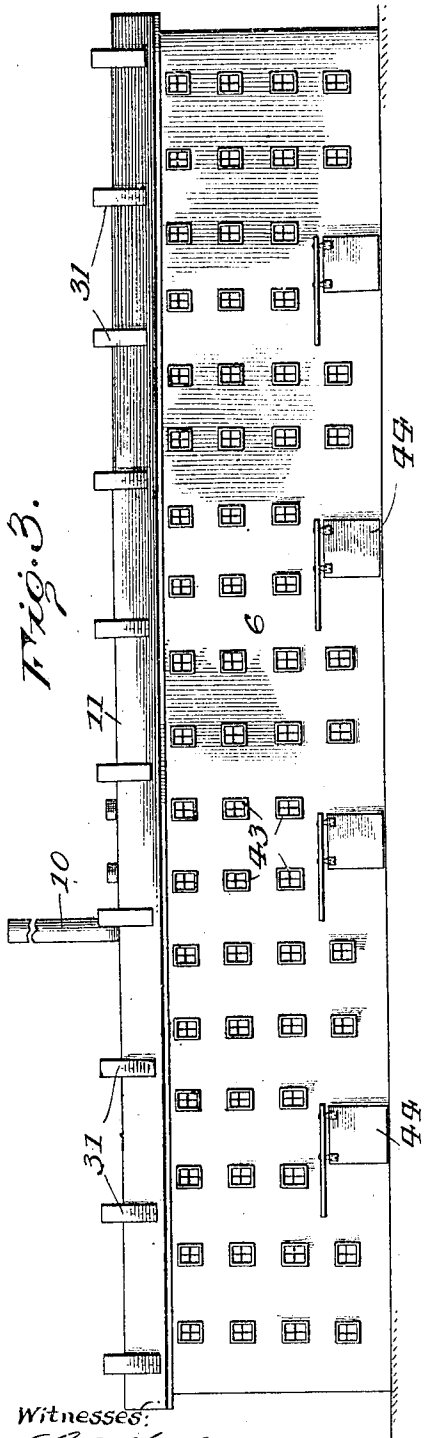
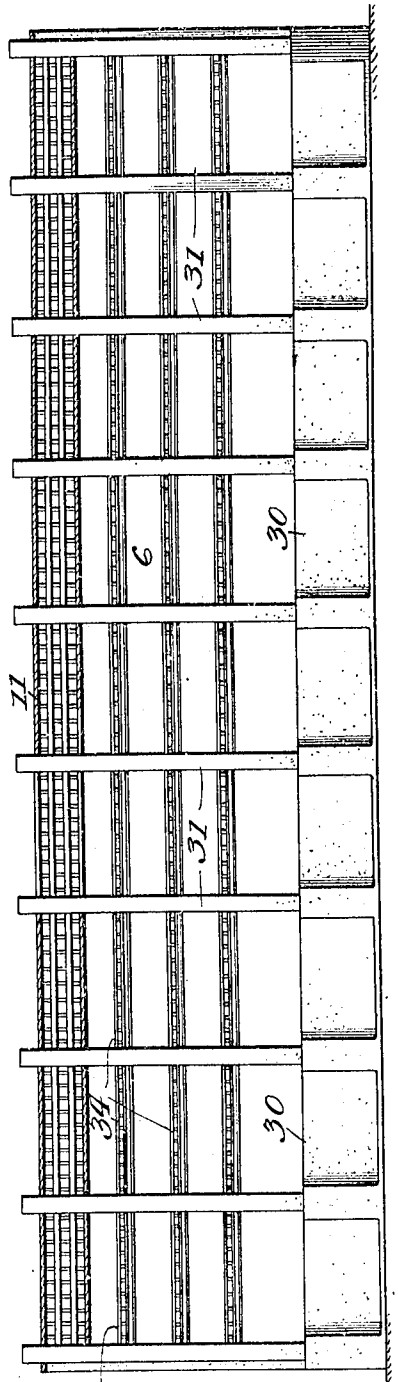


Fig. 4.



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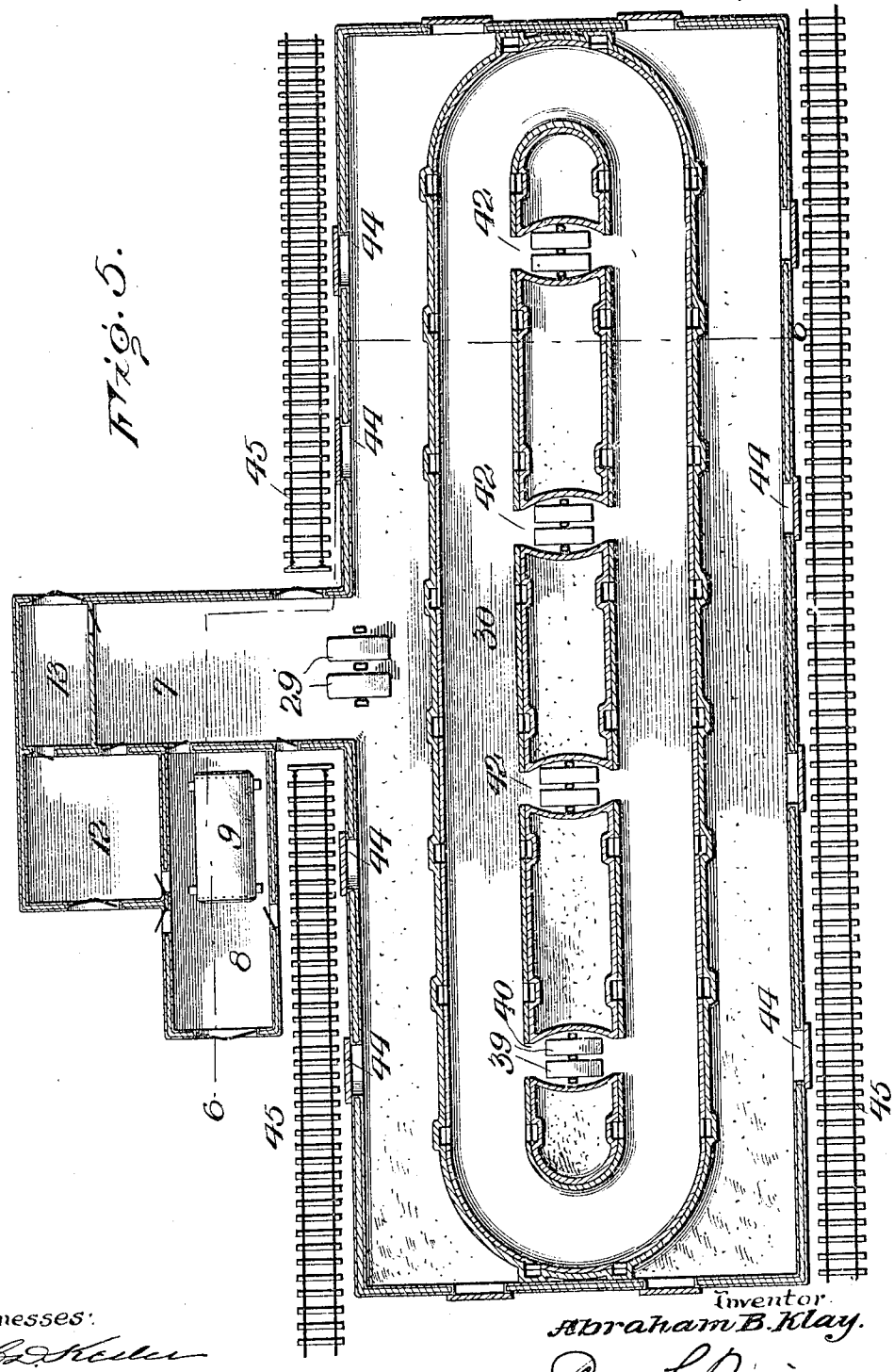
4 SHEETS—SHEET 3.

Fig. 5.



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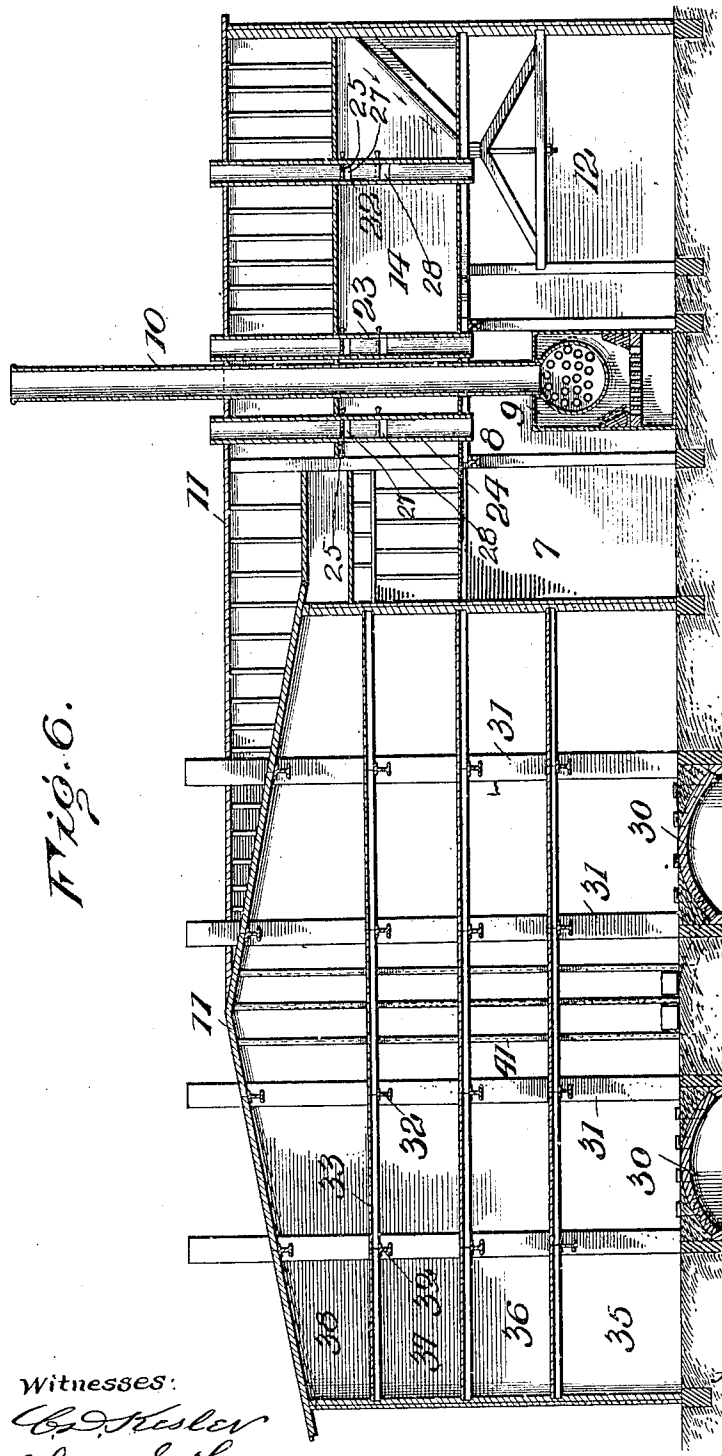

Fig. 6.

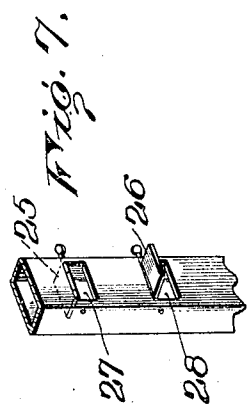

Fig. 7.

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UNITED STATES PATENT OFFICE.

ABRAHAM B. KLAY, OF MODESTO, CALIFORNIA.

WARE DRIER AND FACTORY.

1,256,237. Specification of Letters Patent. **Patented Feb. 12, 1918.**

Application filed June 10, 1916. Serial No. 103,004.

To all whom it may concern:

Be it known that I, ABRAHAM B. KLAY, a citizen of the United States, residing at Modesto, in the county of Stanislaus and State of California, have invented new and useful Improvements in Ware Driers and Factories, of which the following is a specification.

This invention relates to a ware drier and factory and one object of the same is to embody in a unitary building structure all the accessories necessary in the manufacture of various kinds of ware from plastic material and embodying a compartment for storing plastic material or clay in a readily accessible manner and providing for the protection of the same during cold weather; power generating means, such as a boiler and engine; ware pressing and shaping mechanism space or inclosure in operative adjacency to the boiler and engine or power generating means; a kiln below ground surface with drying compartments superposed thereover into which the radiated heat from the various parts of the kiln is permitted to pass by uninterrupted circulation through the floors, and elevating means between the space or inclosure containing the ware pressing and shaping mechanism and the several drying compartments and between the kiln and these compartments and whereby all the steps and operations required in the formation of plastic ware may be conveniently effected in one building structure and without requiring the operatives to go back and forth from one building to another. A further object of the invention is to economize in a building structure by utilizing the stacks of a kiln as a supporting means for the floors of a drier and also for the roof covering of such drier and to expose these stacks in such manner in the several drying compartments as to use the radiated heat therefrom for drying the ware in the compartments. A further object of the invention is to generally improve and economically construct a fully equipped factory and drier and kiln in one structure to expeditiously manufacture plastic ware.

One structural embodiment of the improved drier and factory is illustrated in the accompanying drawings, and therein:

Figure 1 is a front elevation of a building structure including a drier embodying the features of the invention.

Fig. 2 is an end elevation of the same.

Fig. 3 is a side elevation of the improved factory and drier looking toward the side opposite that shown by Fig. 1.

Fig. 4 is a longitudinal vertical section through the drier portion of the factory.

Fig. 5 is a horizontal section and ground plan of the kiln and remaining parts of the factory.

Fig. 6 is a transverse vertical section taken through the drier and kiln and also through the boiler and engine room and compartments thereabove including the plastic material or clay compartment and also through the plastic ware pressing and shaping room or space.

Fig. 7 is a detail perspective view of a portion of one of the ventilators which also serves as a heat conducting means for the plastic material or clay compartment.

The numeral 5 designates what may be termed the manufacturing section of the factory and 6 the drier which is a part of the factory structure. The main factory section, as more clearly shown by Figs. 5 and 6, comprises a manufacturing compartment 7 wherein suitable mechanism may be placed for pressing and shaping plastic ware, this compartment as shown extending at a right angle to the main building structure; and adjacent thereto is the boiler and engine compartment 8 which is illustrated as having a boiler 9 therein with a stack 10 extending upwardly through the superstructure above and at a suitable distance above the roof 11 of the building or factory. The boiler and engine room 8 extends parallel to and is located at a distance from the main building structure, and projecting outwardly about midway from this boiler and engine room is a lower compartment 12 which may be used for any purpose desired. The manufacturing compartment 7, wherein the mechanism for pressing and shaping the plastic material is adapted to be located, has a machine shop and tool room 13 at one end thereof and all of these compartments and rooms have exterior and interior communicating doors and openings as shown. Above the boiler and engine room or compartment 8 and the room or compartment 12 is a plastic material or clay storage compartment or room 14 which is provided with an upper inlet opening 15 normally closed by sliding doors 16, as shown by Fig. 1, the said doors having lower openings 17 over a track 18 extending from the exterior

of the factory any suitable distance and entering the latter through the said doors for plastic material or clay carriers 19 of the usual dumping type and provided with end gates 20 adapted to be tripped and deposit their contents into the room or compartment 14. The track 18 extends at an upward angle of inclination adjacent to the roof within the factory, as shown by dotted lines in Fig. 2, and the carriers 19 are operated by a suitable cable means 21 and whereby the plastic material or clay may be conveyed from a pug mill or other point of preparation and conveyed to and deposited in the compartment 14 where it may be stored ready for use. This track structure 18 and cable operated carriers 19 are well known in the art of plastic ware making and need not be further described. Extending upwardly through the room or compartment 14 are pipes 22, 23 and 24 which are fully open at their upper and lower ends and communicate at their lower ends with the boiler room or compartment 8 and the compartment 12, the latter being preferably used as an engine room, though the engine may be disposed in the boiler room. The pipes 22, 23 and 24 are provided with inwardly opening dampers 25 and outwardly opening dampers 26, the dampers in each pipe being the same, and in cold weather the dampers 25 will be adjusted or operated to close the pipes and the dampers 26 actuated to open the pipes relatively to the compartment or room 14 and whereby the heat from the rooms or compartments below may be utilized for preventing the plastic material or clay from freezing. In warm weather these pipes 22, 23 and 24 may be used for ventilators to cool the compartments with which their lower ends communicate, and when serving as ventilators the valves 25 will be closed down to fully clear the said pipes, and the valves 26 will be closed so as to prevent heat from passing into the storage compartment or room 14. As shown by Fig. 7, the valves 25 and 26 coöperate with openings 27 and 28 in the one side of each pipe 22, 23 and 24, or any other form of valve may be used, though that illustrated is convenient and simple in its application and operation. It will be understood that the factory part of the improved building, or where the clay is stored and the working mechanism located, is not confined in the specific divisions or compartments above explained and may be modified at will. For all practical purposes, however, the arrangement of the compartments or rooms as particularly described is very convenient and especially the disposition of the compartment 7 where the plastic ware is pressed and shaped, as the said ware when shaped may be readily removed from the said compartment and conveyed by elevators to different portions of the drier 6, these elevators being shown by Fig. 5 and indicated by the reference character 29. The elevators 29 are movable in reverse directions or while one is ascending the other will be descending, and it is preferred that the ware that has been properly shaped be placed upon suitable trucks or other movable transporting devices and elevated to the drier compartments and the remaining elevator utilized in lowering the empty trucks or transporting means for the ware to the compartment or room 7 for reloading.

The drier 6 is erected directly over a kiln 30 which may be of any form but is preferably constructed as disclosed by my copending application filed May 31, 1916, Serial No. 100,932. Whatever may be the form of kiln used, the stacks 31 thereof are extended fully from the base upwardly through and above the roof 11 which is continued over the drier. The stacks 31 form the main upright supports for the drier and have the ends of girders or floor and roof beams 32 let partway into the stacks or are terminally held by the said stacks, and over these girders floor beams 33 are disposed and secured and spaced regularly, as at 34, see Fig. 4, to provide a plurality of compartments 35, 36, 37 and 38 which constitute drying rooms having floors with openings therein to permit the heat radiated from the kiln 30 below to pass upwardly therethrough. The several compartments of the drier are also heated by the stacks 31, there being more or less heat radiated from these stacks, but the main function of the extended stacks is to serve as the essential upright supporting means for the drier structure. The elevators 29 have regular landing points relatively to the several compartments 35, 36, 37 and 38 and especially those compartments above the ground floor as in all elevator constructions, and the green ware, as hereinbefore explained, is conveyed by one of the elevators 29 to the drier compartments preferably by means of trucks and the empty trucks are taken down on the remaining elevator 29. After the ware is properly dried it is removed from the several compartments of the drier by elevators 39 and 40 disposed in a suitable shaft 41 in the longitudinal central portion of the drier, said elevators alternately descending to and ascending from charging passages 42 disposed transversely with relation to the kiln 30, as shown by Fig. 5, and by this means the ware which is in proper condition to be burnt may be quickly placed in the kiln along the length of the latter from various portions of the compartments of the drier.

It will be understood that the plastic material or clay will be removed from the compartment 14 by any suitable means and

brought to the mechanism for pressing and shaping the ware and which is located in the compartment or room 7 and from the latter room, through the medium of the elevators 29, the green ware may be expeditiously placed in the drying compartments of the drier and after the ware has been properly dried it may then be taken directly to the kiln below without requiring the operatives to leave the factory to perform any part of these several operations. The factory as a whole including the drier will be provided with suitable windows or light admitting means 43 and also with suitable doors in the sides and ends thereof, as at 44, for ingress and egress purposes. Along opposite sides of the factory tracks 45 will be laid in convenient positions relatively to portions of the doors 44 to permit the ware when completed to be readily loaded on suitable cars, and these tracks may also be used for bringing fuel by means of cars up to opposite sides of the building or factory and storing it at suitable points for use in the kiln.

The drier 6 has a large capacity and occupies the greater portion of the factory, and as shown by Fig. 5 the kiln 30 extends full length under the drier. By utilizing the heat from the kiln 30 and stacks 31 to heat the several compartments of the drier a material saving results in the manufacture of the ware in view of the fact that it is unnecessary to provide separate heating means for the drier. It is proposed to construct the several parts of the factory and drier of any building material adapted for the purpose and also to increase and decrease the dimensions and general proportions of the compartments of the drier and factory as a whole in accordance with the size of the plant.

What is claimed is:

1. In a factory of the class specified, a plurality of superposed drying compartments, a kiln disposed at the base of the compartments for heating the latter, and closed stacks extending from the kiln fully upwardly through the drying compartments and providing heat radiating means common to all of the compartments and also means for structurally supporting the components of the compartments.

2. In a factory of the class specified, a plurality of superposed drying compartments, a kiln disposed at the base of the compartments, the compartments having floors with openings therein and heated from the kiln through the said floors, and stacks extending upwardly from the different portions of the kiln through the several compartments and forming heat radiating means relatively to the latter, the floors of the drying compartments having portions engaging the said stacks and the latter thereby serving as a part of the supports for the superstructure above the kiln.

3. In a factory of the class specified, a plurality of superposed drying compartments comprising girders having spaced floor beams thereon to provide the said compartments with open floors, a kiln disposed at the base of the compartments for heating the latter through the floors and for burning the ware, and closed stacks extending upwardly from different portions of the kiln and through and exposed as heat radiating means in the drying compartments and having the said girders terminally supported therein, the stacks forming the uprights for the superstructure over the kiln embodying the compartments.

4. In a factory and drier of the class specified, a base kiln having a continuous burning chamber centrally divided by a partition means and around the ends of which the chamber continues, the partition means being transversely divided at intervals by closed walls to form spaces which have opposite communications with the chamber, plastic material pressing and shaping compartments and superposed drying compartments for plastic ware over the kiln and whereby the heat from the latter will be utilized in the several compartments for drying the ware, and elevators mounted to move downwardly into the said spaces of the burning chamber and also upwardly and downwardly through the several drying compartment floors for conveying the dried ware from the drying compartments downwardly into the burning chamber of the kiln and from the latter chamber upwardly for delivery in burnt condition from the factory.

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

ABRAHAM B. KLAY.

Witnesses:
CHAS. S. HYER,
S. E. WHITE.