No. 887,294. PATENTED MAY 12, 1908.

A. J. WARNER.

MEANS FOR DRYING GREEN BRICKS.

APPLICATION FILED AUG. 15, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

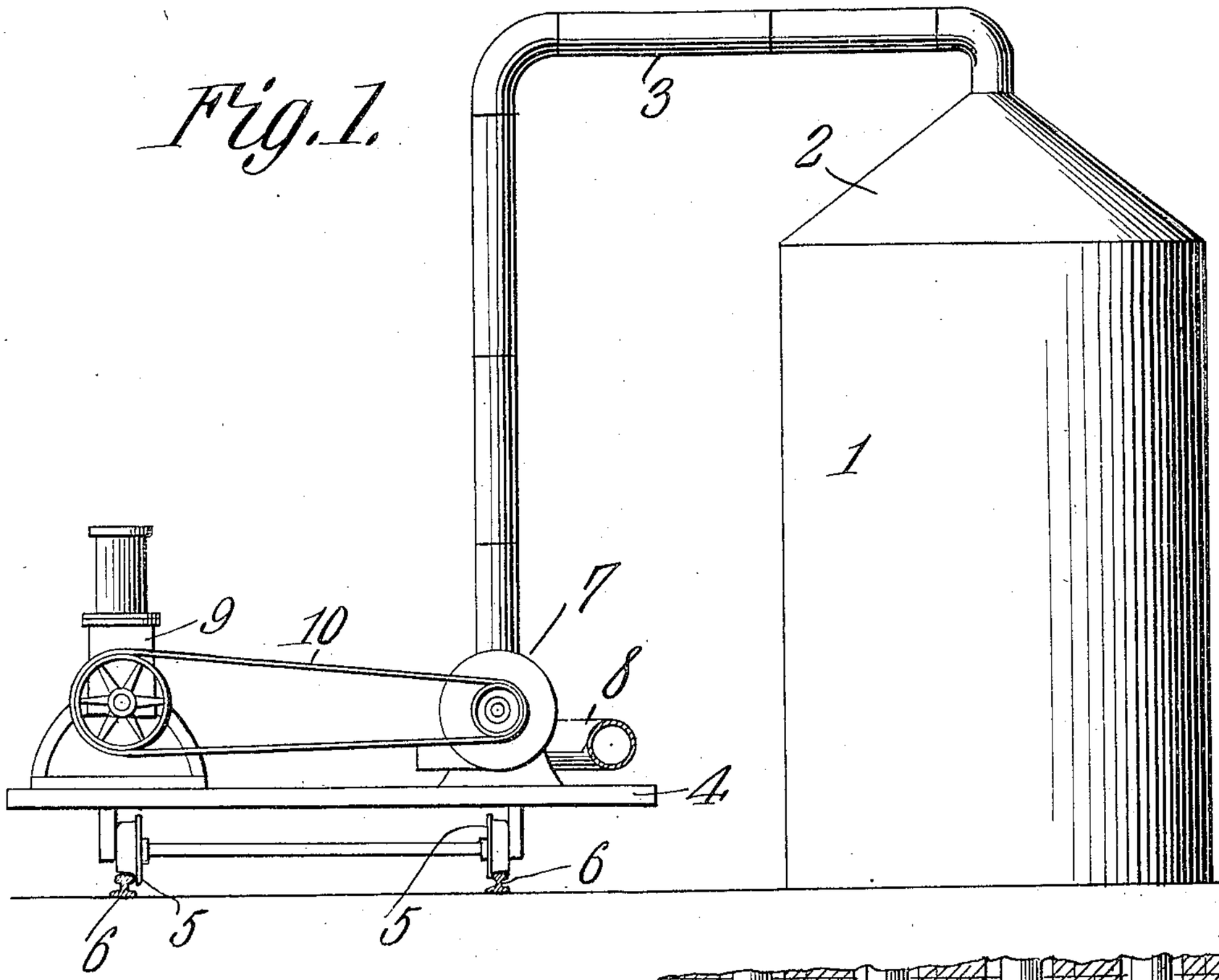
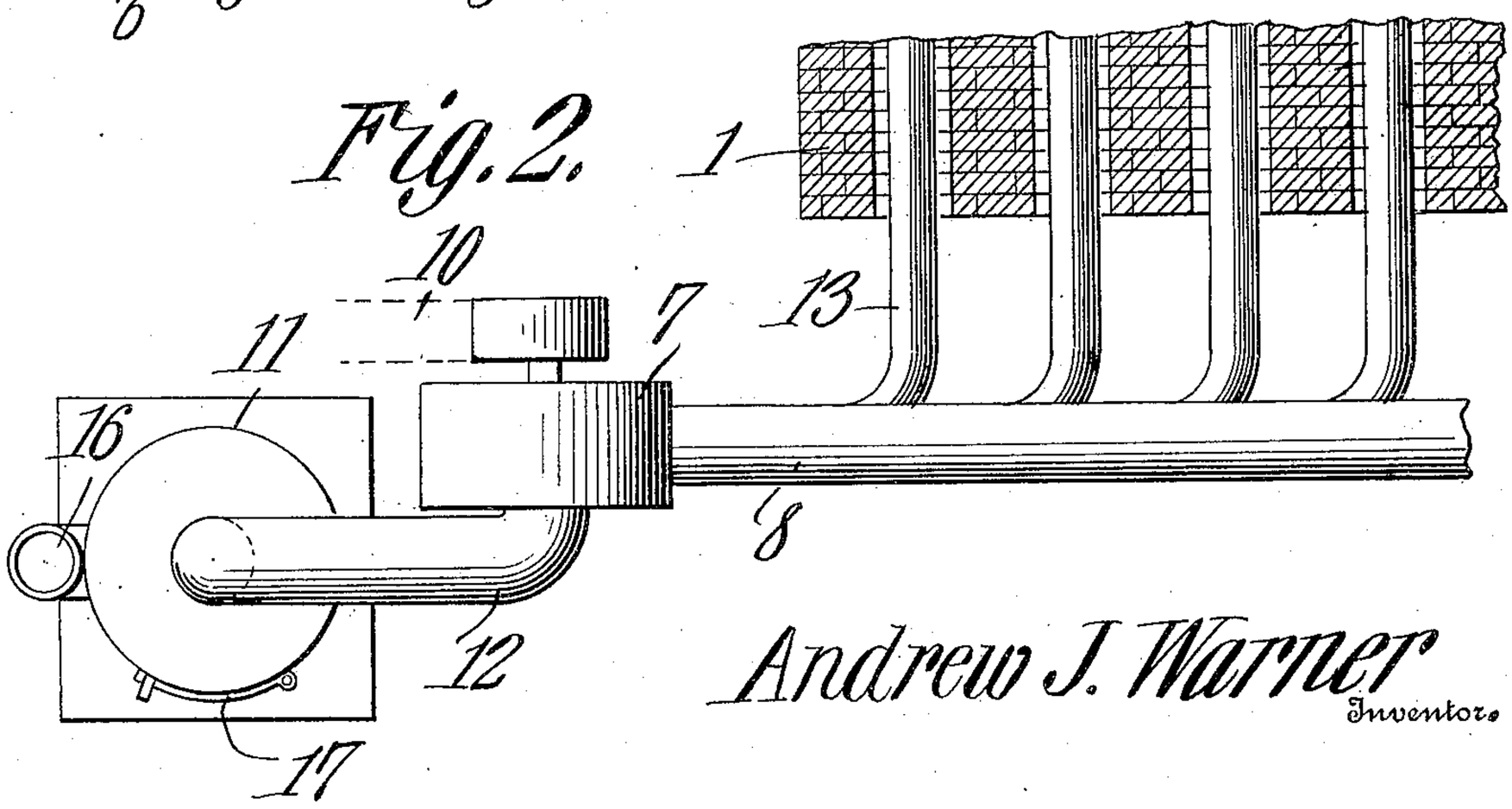


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

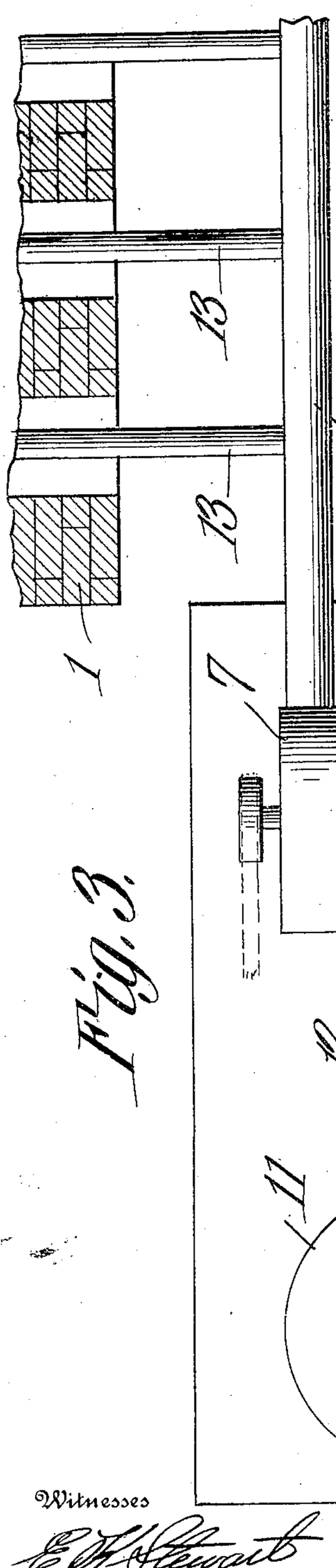

Fig. 3.

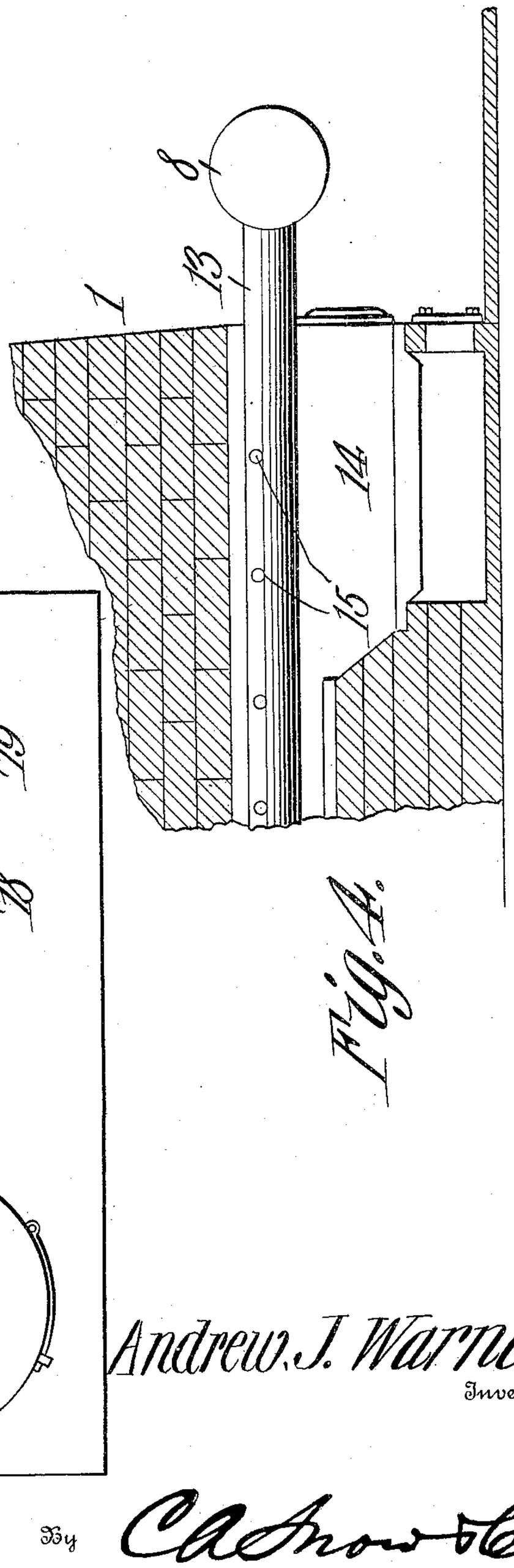

Fig. 4.

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UNITED STATES PATENT OFFICE.

ANDREW JACKSON WARNER, OF WEST DURHAM, NORTH CAROLINA.

MEANS FOR DRYING GREEN BRICKS.

No. 887,294. Specification of Letters Patent. Patented May 12, 1908.

Application filed August 15, 1907. Serial No. 388,708.

To all whom it may concern:

Be it known that I, ANDREW JACKSON WARNER, a citizen of the United States, residing at West Durham, in the county of Durham and State of North Carolina, have invented a new and useful Means for Drying Green Bricks, of which the following is a specification.

This invention has reference to improvements in means for drying green bricks preparatory to burning the same.

It is customary to dry green bricks before burning in order to prevent scalding, which is liable to occur when wet bricks are subjected to the heat usually employed for burning. The most common method for the preliminary drying of the bricks is to permit them to dry slowly in drying sheds, and it usually takes several days for this to occur.

Now, it is the object of the present invention to hasten the drying of the bricks without increasing the cost of production, and this is done by utilizing the heat of a kiln in which bricks are being burned to effect the drying of bricks already stacked in a furnace ready for firing. Or, heat may be separately generated and air subjected to the heat may be blown through the green bricks after they have been stacked ready for burning, so as to effect a rapid and thorough drying of the bricks preparatory to burning them. When the heat of a fired kiln is utilized for drying the green bricks the heated gases from the kiln are suitably collected and driven by a blower into a cold kiln in which the green bricks have been stacked ready for burning. When the heat is otherwise produced a suitable furnace may be utilized to heat the air or to generate steam which in turn shall heat the air, and a blower is provided for forcing the air so heated through the kiln containing the green bricks.

By means of the present invention the bricks are not handled as is necessary when they are first placed in a drying shed, but are transferred directly from the molding machine to the kiln and there stacked and the hot air or gases are forced through them until the excess of moisture has evaporated, this process, of course, being considerably hastened by the heat of the air or gases.

The invention will be fully understood from the following detailed description taken in connection with the accompanying drawings forming part of this specification, in which—

Figure 1 is a side elevation of a brick kiln conventionally shown, with means for withdrawing the hot gases and directing them toward another kiln for drying bricks; Fig. 2 is a plan view, partly in section, of a means for forcing hot air into a kiln, the hot air being produced by a suitable furnace; Fig. 3 is a similar view, showing means whereby the hot air may be produced by radiation from steam pipes, to be subsequently forced into the kiln; and Fig. 4 is a vertical section through a portion of a kiln, showing the general arrangement of the air injection pipes.

Referring to the drawings, there is shown a kiln 1, which showing is merely conventional. On top of the kiln there is a hood 2 carried by a pipe 3, which latter rises from a truck 4 to which it may be secured in such manner as to be carried by and travel with said truck. The pipe 3 also carries the hood 2, so that the structure may be moved from kiln to kiln as needed for the progressive drying and burning of the bricks, it being understood that the kilns will be arranged in successive order and the drying and burning will proceed in like order. The truck 4 is mounted upon wheels 5 which, in turn, move upon tracks 6 arranged along the series of kilns so that the truck may be readily moved from place to place as needed. The pipe 3 is coupled to a blower 7 of any suitable type, and shown conventionally in the drawings, and the outlet pipe 8 from this blower is conveyed to the next succeeding kiln and has branches entering the fire chambers thereof in a manner which will presently appear. A suitable motor may be mounted upon the truck, and in the present instance an explosive engine 9, which may be of the gasolene or oil type, is also mounted on the truck and is connected by a belt 10 to the blower 7.

When it is not convenient to utilize the hot gases of a kiln to cause the drying of the bricks in an adjacent kiln, a separate source of heat may be employed. In Fig. 2 is shown a stove or furnace 11 for the production of hot air, which is conveyed by a pipe 12 to the blower 7 and from the latter

through a pipe 8 from which branch pipes 13 extend into the kiln 1, preferably into the fire chambers 14, best shown in Fig. 4. The branch pipes 13 are provided with series of perforations 15 so that the hot air is well distributed within the kiln and is directed against the stacks of bricks so as to flow through the passages between the bricks, thus reaching the bricks on all sides except where they are supported and causing the evaporation of the contained water to the necessary extent until the bricks have become dry enough for burning.

After the bricks have become sufficiently dry the pipes 13 may be removed from the fire chambers and the fires may then be built and the bricks burned in the usual manner, but because of the preliminary drying the bricks are not subjected to the effects of scalding, and, also, time and labor are saved since it is not necessary to handle the bricks after being dried, as is the case where the bricks are first dried in drying sheds and must then be conveyed to the kiln and stacked for burning.

Reverting to Fig. 2, it may be noticed that the furnace is provided with a smoke flue 16 and fire door 17 for the purpose of building a fire therein. The structure shown in Fig. 3 differs from that shown in Fig. 2 only in the fact that the furnace or heater 11 may be a steam producing heater from which the steam is conveyed to radiators 18 contained in a chamber 19 through which the air may be drawn by the blower 7 and distributed through the pipe 8 and branch pipes 13 into the kiln 1.

While the structures of Figs. 2 and 3 are particularly adapted for single kilns, still the blowers and furnaces may be mounted upon trucks and moved from place to place where it is desirable to use these structures in connection with more than one kiln, and a gasolene motor or any other type of motor may be used, as desired, for actuating the blower.

With the structure shown in Fig. 1 there is practically no waste of heat and the only expense attached to the operation of the device is the necessary attendance and the cost of fuel for the gasolene motor. Since the waste heat from a burning kiln is utilized for drying out the green bricks of another kiln preparatory to burning the latter bricks, there is no expense attached to this mode of drying so far as the heat is concerned.

When it is desired to change from one kiln to another the pipe 3 may be taken down, and for this purpose may be made of several joints, as indicated, and when the drying of the bricks in a kiln has been effected the fires may be started in said kiln and the hood 2 may be placed over the same and the hot gases may be directed to the next kiln of the series where the green bricks are stacked preparatory to drying and then firing.

The removal of the blower and engine from one kiln to another is facilitated by the truck and the tracks upon which the same is mounted. The track is a convenient, though not necessary, means of support for the truck, since the latter may be supported upon its wheels directly upon the ground and moved from place to place as required. The gasolene motor provides a convenient power unit for driving the blower, and where the parts are heavy may be suitably coupled to the wheels of the truck for driving the latter. Of course, where an electric current is convenient the gasolene motor may be replaced by an electric motor.

I claim:—

1. A means for drying green bricks in a kiln, preparatory to burning the same, comprising a source of heat, perforated conduits insertible into the fire chambers of the kiln, and a blower interposed between the source of heat and the perforated conduits for directing a heated fluid into the kiln and against the green bricks therein.

2. A means for drying green bricks in a kiln, preparatory to burning the same, comprising means for collecting hot gases from a kiln where the process of burning is progressing, perforated conduits insertible into the kiln containing the green bricks, and a blower for directing the heated gases from the fired kiln through the conduits into the kiln containing the green bricks.

3. A means for drying green bricks in a kiln, preparatory to burning the same, comprising a hood adapted to be placed over a kiln where the firing of bricks is in progress for collecting the heat generated therein, a truck, a blower mounted thereon, connections between the blower and the hood, a power unit for driving the blower mounted upon said truck, a conduit leading from the blower, and other, perforated conduits insertible into the fire chambers of another kiln and leading from the delivery end of the blower.

4. A means for drying green bricks in a kiln, preparatory to burning the same, comprising a means for collecting the heat generated in a kiln where the process of burning is progressing, a truck, a blower mounted thereon, a knock-down connection between the blower and the means for collecting the heat from the fired kiln, means on the truck for propelling the blower, a conduit leading from the blower, and other, perforated conduits insertible into the fire chambers of another kiln where the green bricks are stacked preparatory to burning.

5. A means for drying green bricks in a

kiln preparatory to burning the same, comprising a source of heat, means insertible into and removable from the kiln to direct fluid heated by said source to the interior of the kiln, and means for causing the flow of heated fluid from the source of heat and into the kiln and against the green bricks therein.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ANDREW JACKSON WARNER.

Witnesses:

LAWRENCE A. ADAMS,

K. P. LEWIS.