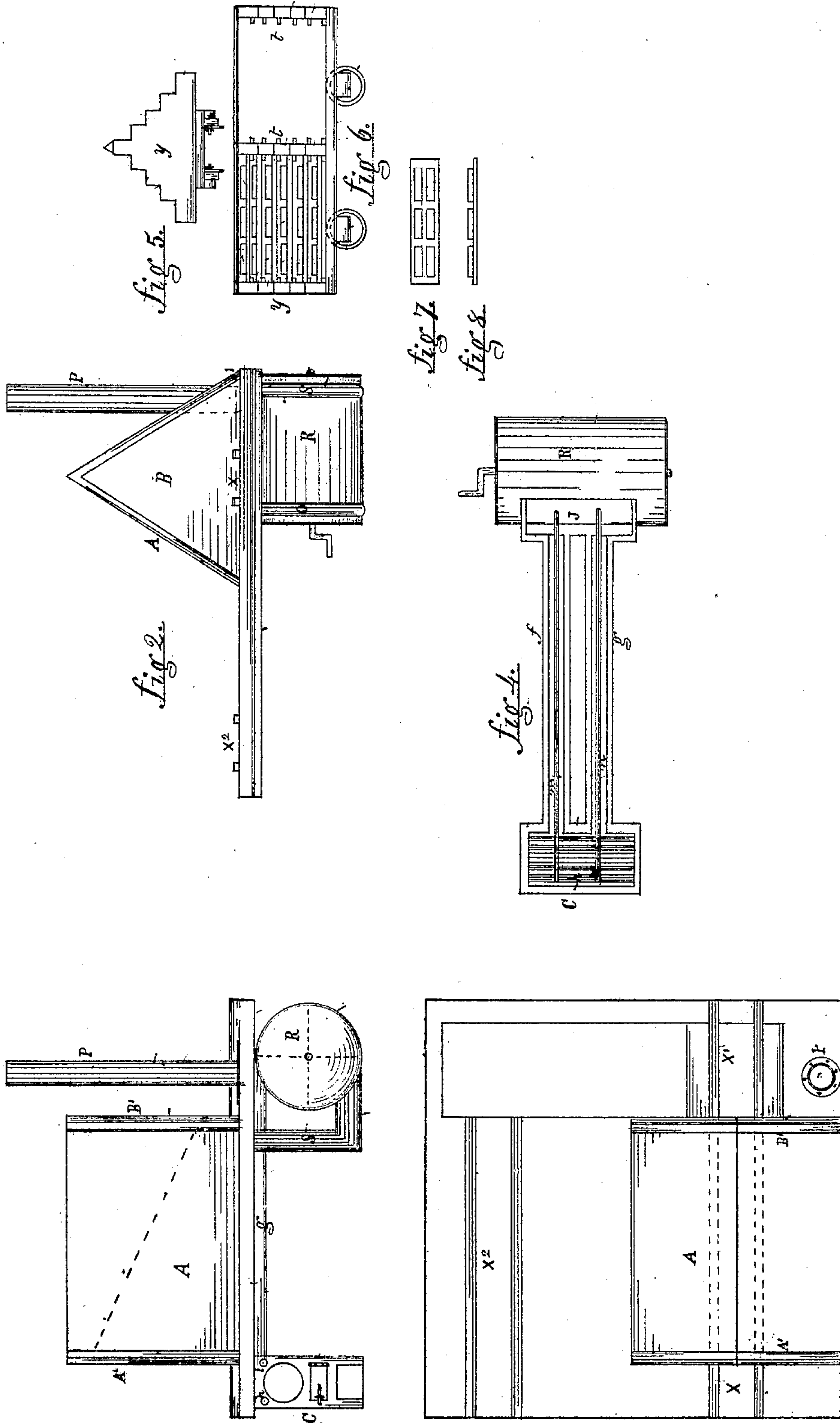


J. J. JOHNSTON.
BRICK DRIER.

No. 69,217.

Patented Sept. 24, 1867.



Attest.

H. A. Chapman
A. S. Johnston

Fig. 1

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

Inventor.

Fig. 3
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United States Patent Office.

JAMES J. JOHNSTON, OF ALLEGHENY CITY, ASSIGNOR TO THE PEOPLE'S
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Letters Patent No. 69,217, dated September 24, 1867.

IMPROVED BRICK-DRIER.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JAMES J. JOHNSTON, of the city and county of Allegheny, in the State of Pennsylvania, have invented a new and useful improvement in Brick-Driers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon.

The nature of my invention consists in the use of a "dry-house" provided with flues, air-conducting pipes, and a suction-fan, said flues, pipes, and fan so arranged with relation to each other that pure air is drawn into and heated in its passage through the pipes, and forced into the "dry-house" by the fan without any increase of the draught on the fire of the furnace.

My invention further consists in a peculiar form of the "dry-house" and bearing-off cars or trucks, which are so arranged with relation to each other that the heat in the "dry-house" is kept in close contact with the brick on the cars or trucks, the form of which readily permits the moisture and vapor to pass off from the brick, which are so arranged in tiers that they are exposed to the evaporative action of the "dry-house;" the whole being constructed, arranged, and operating in the manner hereinafter described.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation. In the accompanying drawings, which form part of my specification—

Figure 1 represents a side elevation of my improvement for drying bricks.

Figure 2 represents an end elevation of the same.

Figure 3 is a top view or plan of the same.

Figure 4 represents a plan of the furnace-flues, pipes, and fan.

Figure 5 represents an end elevation of the car or truck used for bearing off the brick into the "dry-house."

Figure 6 represents a side elevation of the same.

Figure 7 represents a top view of the boards used for supporting the brick on the car or trucks.

Figure 8 represents a side elevation of the same.

In the drawings, A is the dry-house, which is coniform when viewed in cross-section, and is formed of boards, sheet iron, or other suitable material. B represents the doors, which are hinged at the point marked 1. Under the floor of the dry-house A are flues *f* and *g*, which are connected with the boiler-furnace of the engine used for driving the machinery connected with the manufacture of brick. In the heat-chamber of the boiler-furnace are two pipes, *h* and *i*, which run lengthways of the furnace. To the pipes *h* and *i* are connected pipes *m* and *n*, which run longitudinally within the flues *f* and *g*, and connect with the case R of the fan. The flues *f* and *g* terminate in a flue, J, which is provided with a stack, P. To the fan-case R are connected two pipes, *o* and *s*, which communicate with the interior of the dry-house. Through the dry-house runs a railway, *x*, for the cars or trucks. At each end of this railway should be switches *x*¹, for shifting the cars from the track *x* to the return track *x*². The cars or trucks *y* should be made in the form represented in figs. 5 and 6. The boards for supporting the brick on the cars or trucks should be of sufficient length and breadth to hold six brick, as shown in figs. 7 and 8. These boards with their load of brick are placed on the shelves *t* of the cars or trucks *y*, as shown in fig. 6.

The manner of constructing the several parts of my improved brick-drier will readily be understood by the skillful mechanic from the above description and by reference to the accompanying drawings. I will, therefore, without further description of its construction, proceed to describe its operation.

Having all things constructed and arranged substantially as herein described, the brick as fast as they are moulded are turned out on the boards, which are as fast as they are filled placed in their proper position on the shelves of the car or truck, which, as soon as it has received its load, is run into the front end of the dry-house, which is its coolest part; and as each succeeding car is loaded and enters the dry-house, the cars which preceded them will be moved forward into a hotter part of the dry-house, thus gradually bringing the brick in contact with a gradual increase of heat in the dry-house, thereby gradually and evenly drying the brick without liability of cracking them. It will readily be observed that the form of the car or truck and the arrangement of the brick thereon will greatly facilitate the escape of the moisture and vapor from the brick, and at the same

time expose the brick to evaporative action of the dry-house. After the loaded cars have passed through the dry-house, they may by means of suitable railways convey the brick to the kiln, and the brick set for the burning process. Each loaded car or truck should remain in the dry-house for about seven hours, which will be sufficient time for drying the brick so that they can at once be set in the kiln for burning. Pure air is drawn into the pipes *h* and *i*, and from them passes along the pipes *m* and *n* into the fan *R*, from which it is thrown or forced through pipes *o* and *s* into the dry-house at or near its back end. (*A'* represents the front end and *B'* the back end of the dry-house.) It will readily be seen and understood that pure air can be forced into and through the pipes *h*, *i*, *m*, and *n* into the dry-house, therefore I do not confine myself to a single mode of supplying the dry-house with heated air. The heat of the boiler-furnace heats the pipes *h* and *i*, and the heat which passes through the flues *f* and *g* will heat the pipes *m* and *n*, and the air passing through all these pipes combined will be heated and put in motion through the dry-house for the purpose set forth. The smoke, dust, and other refuse of combustion of the furnace are conveyed along the flues *f* and *g* into the flue *J*, and from it up through and out of the stack *P*. - By this arrangement of the flues, pipes, and fan hereinbefore described, the flues of the boiler-furnace serve a triple purpose, to wit, they convey the smoke and dust from the boiler-furnace, they heat the floor of the dry-house, and they heat and form chambers for the air pipes.

The skillful mechanic will readily notice another very important feature in my invention, to wit, that I can increase the force of the heated air in the dry-house without any increase of draught to the furnace. This is accomplished by the use of the pipes *h*, *i*, *m*, and *n*, in combination with the fan. Another feature connected with my improved brick-drier is that its coolest part is next to the fire which imparts heat to the whole of the dry-house.

In case it should be desired, the escape steam from the engine may be conveyed through pipes on the under side of the roof of the dry-house, (as indicated by dotted lines in fig. 1,) and used for imparting heat to the interior of the dry-house.

The advantages obtained by the form, construction, and arrangement of the several parts of my improvement in brick-driers are too apparent to require any recital or enumeration, for any mechanic skilled in the art of drying brick will see at a glance that all the requirements for the brick-drying process are fully supplied by my invention, as herein described and set forth.

Having thus described the nature, construction, and operation of my improvement, what I claim as of my invention, is—

1. The conformed dry-house, in combination with the car, (when viewed in cross-section,) provided with flues connected with the boiler-furnace and its stack, substantially as herein described and set forth.
2. The car or truck for bearing off the brick, when constructed as herein described and represented, and used for the purpose set forth.
3. The combination of the pipes *h*, *i*, *m*, and *n* with the boiler-furnace, and the flues *f* and *g*, constructed, arranged, and operating substantially as herein described, and for the purpose set forth.
4. The use of a fan, in combination with the pipes *h*, *i*, *m*, and *n*, for forcing heated air into and through the dry-house, in the manner and for the purpose set forth.

JAMES J. JOHNSTON.

Witnesses:

W. A. CHAPMAN,

A. C. JOHNSTON.