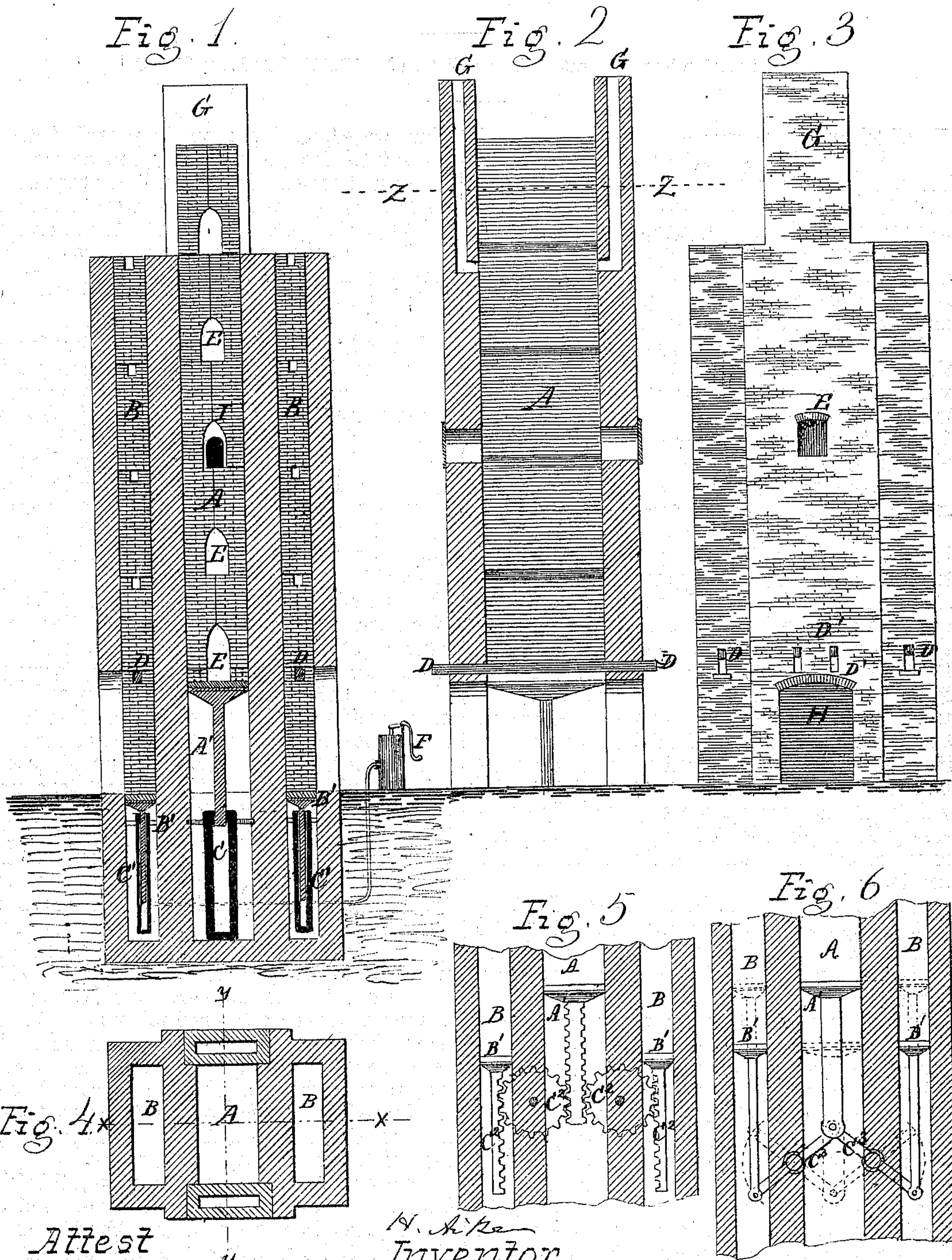


HENRY AIKEN.

Improvement in Kilns.

No. 127,007.

Patented May 21, 1872.



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UNITED STATES PATENT OFFICE.

HENRY AIKEN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN KILNS.

Specification forming part of Letters Patent No. 127,007, dated May 21, 1872.

To all whom it may concern:

Be it known that I, HENRY AIKEN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Brick-Kilns; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing making part of this specification, in which—

Figure 1 is a vertical longitudinal section on the line *x x*, Fig. 4. Fig. 2 is a vertical transverse section. Fig. 3 is an elevation. Fig. 4 is a horizontal section. Figs. 5 and 6 are sectional elevations, showing mechanism for operating the kiln.

In all the figures the same letters are used in designating the same parts.

My improvement relates to that class of kilns in which the fires are continuously maintained, and in which the green bricks are put into the top of the kiln, and gradually fed down as they are burned, until, when finished, they are removed from the bottom of the kiln. My invention consists in so coupling the platform, upon which the green bricks are raised to the top of the kiln, and that which supports the descending column of bricks which are being burned, that the weight of the latter shall be made available for counterbalancing the weight of the former, thereby rendering necessary the application of only power sufficient to overcome the difference of weight and the friction.

It is obvious that, although I have illustrated the application of this principle only to the case of a brick-kiln, it is equally adapted to kilns for burning pottery and other analogous purposes.

In the annexed drawing, a vertical kiln is shown having three compartments. In the central one the bricks are burned, and on each side of this the compartments are placed in which the green bricks are elevated. This arrangement is, however, not necessary, for two compartments of the same size may be employed. At the bottom of each compartment is a platform or plunger-head having a free vertical movement. In Fig. 1, I have shown these platforms as operated by hydraulic presses *C C'* connected with one another, and also with the pump *F* by pipes. The weight of the column of bricks supported upon the

platform *A'*, resting upon the press *C*, is transmitted to the presses *C'* by the connecting-pipes, and thus made available for supporting an equal weight of green bricks upon the platforms or plungers *B'*. If, then, the columns of brick in the compartments *B B* are to be raised it is only necessary to apply power by means of the force-pump *F*, sufficient to overcome the difference of weight and the friction.

In the kilns of this class heretofore known the entire weight of the column of green brick had to be raised, presenting an obstacle counterbalancing any other advantages incident to the use of the kiln.

Instead of the hydraulic presses shown in Fig. 1, racks and pinions, as shown in Fig. 5, may be employed; or a system of levers, as shown in Fig. 6; or any other mechanical device may be substituted which will transmit the weight of one column to act in the opposite direction upon the other. My claim will, therefore, not be limited to any particular arrangement of this transmitting device.

The bricks are arranged in the compartments *A* and *B* in subdivisions intended to correspond with the amount burned each day, and, as burned, removed from the bottom of the compartment *A*, and having their place supplied by piling an equal number taken from the compartments *B* upon the top of the pile in *A*. These columns of bricks may be supported, independently of the platforms or plungers *A' B'*, by means of timbers *D* passed through apertures left for the purpose in the permanent walls of the kiln, and also in the green bricks as piled in the kiln. The firing-furnaces *E* are properly arranged in piling the bricks in the compartment *A*, and also the usual flues or interstitial spaces for the equal diffusion of the heat through the bricks. *G G* are flues arranged in the walls of compartment *A*, for the purpose of carrying off the draught, so as not to interfere with the operation of the workmen while engaged in piling brick onto the top of the stack.

To illustrate the mode of operating this kiln, I will suppose that the kiln is in the condition represented in the drawing. The timbers *D*, Fig. 1, have supported the columns of bricks in compartments *B*, while green brick from the yard have been piled into the space below the timbers *D* and above the plunger

or platforms B'. The lower section of bricks in compartment A have been burned and are partly cooled, the fires having been withdrawn for two days; and a new section has been piled on top of these in the compartment A taken from the top of piles in B B. The timbers D D are now to be withdrawn, and power sufficient applied to force up the platform B B, the platform or plunger A' at the same time descending until the lower section of the burned bricks has been brought opposite to the doors H, and an equal quantity of bricks have been raised at the top of the piles in B B. Fires are now started in the upper section of freshly-set bricks, and maintained in the sections immediately below them. The fires are extinguished in the section immediately below the arch I, and the heat from this and the lower section permitted to rise through the pile above them. Timbers are now passed under the bricks in A, as shown at D', to support the column of bricks in the compartment, and the lower section removed through the doors H. When these bricks have been removed the platform or plunger A' is forced up under the bricks to relieve the weight from the timbers D, which are removed and fresh bricks piled under the columns in compartments B B, which are supported on the timbers. By this means each day a freshly-burned charge may be removed from the kilns, and their place supplied by fresh bricks taken from the top of compartments B B. As these bricks are retained for several days in contact with the highly-heated walls separating the compartments A and B, the water-smoke will have been carried off, and the bricks brought into a proper condition for burning. If desired, flues may be opened through these partition-walls, by means of which the heat in the sections from

which the fires have just been withdrawn may be passed directly into the compartments B B, and used for the purpose of driving off the water-smoke.

I am aware that vertical kilns have been used in which the bricks are fed into the top of the kiln, and when burned are withdrawn at the bottom. I do not therefore claim, broadly, for this feature, nor for the manner of raising the bricks to the top of the kiln by piling them in at the bottom and then elevating them, as this has been done by the use of an elevator.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with parallel vertical compartments A and B, platforms or plungers A' and B' when coupled together, substantially as described, so that the weight on the descending platform shall be brought to bear to assist in raising the ascending column of bricks.

2. In a kiln substantially such as described, the arrangement of the compartments B in relation to the compartment A, so that the heat transmitted through the thin partition-wall may be used for drying the green bricks in the former, substantially as set forth.

3. The arrangement of the flues G in the walls of compartment A so as to conduct the heat from the latter from a point below that where the green bricks taken from compartments B are piled preparatory to burning them, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY AIKEN.

Witnesses:

B. EDW. J. EILS,
A. RUPPERT.