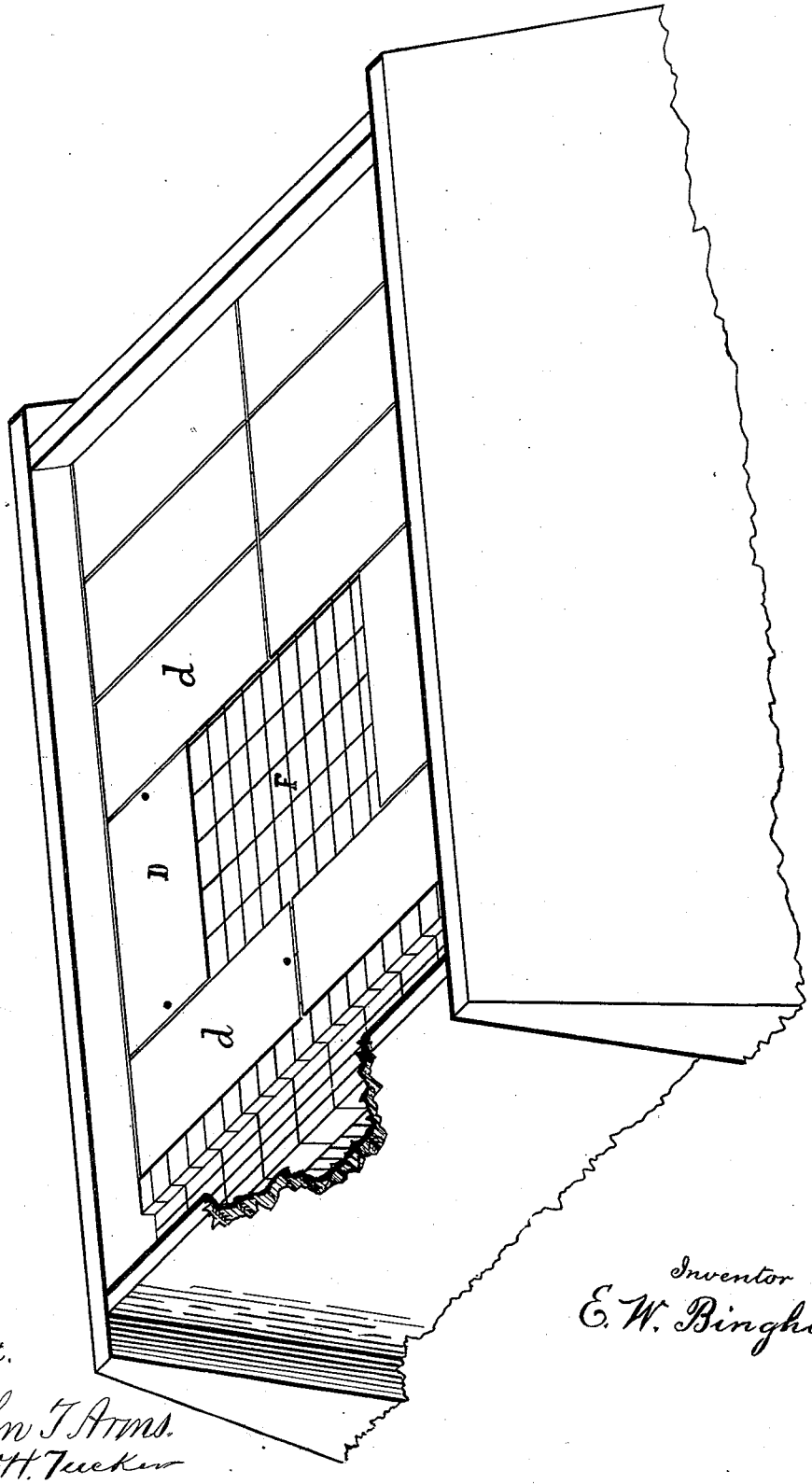
E. W. BINGHAM.

BRICK-KILN.

No. 188,277. Patented March 13, 1877.



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IMPROVEMENT IN BRICK-KILNS.

Specification forming part of Letters Patent No. **188,277**, dated March 13, 1877; application filed February 14, 1877.

To all whom it may concern:

Be it known that I, EDWARD W. BINGHAM, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Brick-Kilns, which improvement is fully set forth in the following specification and accompanying drawing, which is a perspective sectional view of the top of my improved kiln.

This invention relates to brick-kilns, and particularly to the means for regulating the direction and strength of the draft in that class of up-draft open-topped kilns for which a patent was granted to E. W. BINGHAM, August 22, 1876, No. 181,399.

In this class of kilns the brick to be burned are set in a series of benches, having arches or flues formed of green brick in the bottom of the mass. The burning-chamber of the kiln above these flues acts as a chimney, and the draft is created by gravity. Where the fuel is introduced directly into these arches or flues in the bottom of the kiln, the operation of burning any particular arch or section of the kiln is regulated by regulating the quantity of fuel introduced, and the position in the arch where it is consumed; but in those kilns where the fuel is first decomposed in a separate furnace, common alike to several kiln-arches, and only the heated gaseous products are conducted into these arches, the incidents are different; and the tendency is for one or more of these sections or parts of sections to take the lead and outstrip the others. Dampers or cut-offs between the furnace-chamber and the kiln-arches do not afford a perfect remedy.

At the beginning of the burning there is no draft through the kiln, and if any unusual obstruction exists the currents are either too slow in working through or fail to get through at all in places; hence, it is the custom to commence firing with little or no check to all the draft the kiln is naturally capable of developing. As the ware in the kiln becomes heated the draft increases, and it becomes more and more necessary to regulate it.

Kilns have been designed with a view of controlling this draft, with arched or flat roofs or ceilings constructed of brick or metal, or both, and supported by the walls of the kiln, and adapted to open or shut as required; but the means in common use is a platting. This platting is a single course of brick, laid flatwise and close together over the top surface of the brick to be burned, so as to obstruct the free escape of the heated gases from the top of the kiln. When the kiln has become well heated through, and the top brick are four or five hundred degrees hot, this platting is sometimes re-enforced by a second course, and even a third, with earth spread over it; but, because of the temperature and soot, and carbonic oxide and acid gases, and other deleterious products of combustion escaping from the top of the kiln, the difficulties of doing this work are such that commonly the kiln is left in virtually the same open condition as at the beginning of the burning. To counteract the effects of this uncontrolled draft, extra quantities of fuel are consumed to reach and burn the contents of the corners and sides of the kiln, even after the other portions are finished, much of the heat escaping without fulfilling any useful purpose, while a portion of it is reaching some backward spot, which it does then chiefly by conduction through the substance of the brick. It is to better regulate this draft, direct the heat and avoid these difficulties, save this fuel and labor, and improve the burning or product, that this invention is designed; and it consists of, and in the use of, metallic sheets, either instead of, or in aid of, the platting mentioned above. These damper-sheets are not used until the upper courses of brick in the kiln become red hot, or nearly so, from the heat below. As fast as portions of the kiln show this proper degree of heat, these sheets are spread over the surface of the burning brick, until finally the whole upper surface of the mass of burning ware is laid over. This has, among others, the effect of causing a pressure to be exerted by the heated gases confined within, in such a manner as to more equally diffuse the heat. These sheets *d* are supported by the burning brick, and as the brick shrink and settle, these sheets also settle, always remaining in the same relative position to the top contents of the kiln. I prefer to use them in connection with a very loosely-laid course of platting, F, and to sustain the sheets two inches above

the top of this platting by means of a few pieces of brick left between the two. A coating of graphite and oil or grease will prove beneficial to the sheets. I prefer these damper-sheets made of thin rolled iron, four feet wide by eight feet long, and to have small ears or rings riveted onto them, or some substitute, to enable them to be quickly shifted about by means of a hook or suitable implement. The sheets may be made of other lengths and widths, and rolled up or otherwise disposed of. All that is essential in the use of them is that they be spread over the advanced or leading portions of the top of the burning brick in the kiln, at the proper time.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In an open-topped kiln, the combination of the upper surface of the contents of the kiln with the laterally-adjustable metallic sheets *d*, loosely spread over it, and adapted to descend with it as the mass settles, substantially as shown and described.

EDWARD W. BINGHAM.

Witnesses:
JOHN T. ARMS,
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