

E. K. RICHARDS.
 Measuring and Discharging Apparatus for Bone-
 Black Furnaces.

No. 206,263.

Patented July 23, 1878.

Fig:1.

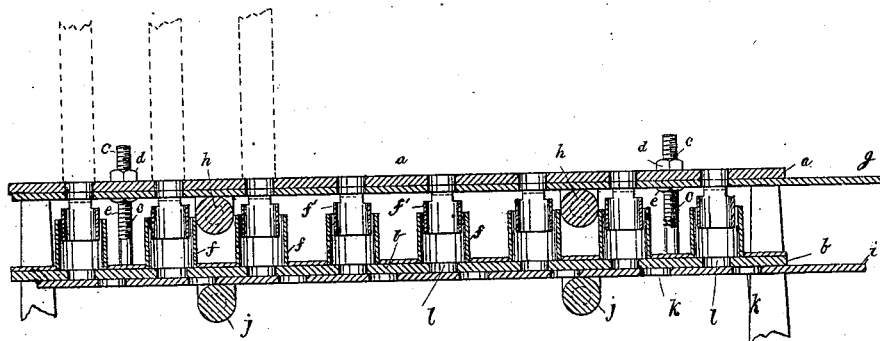
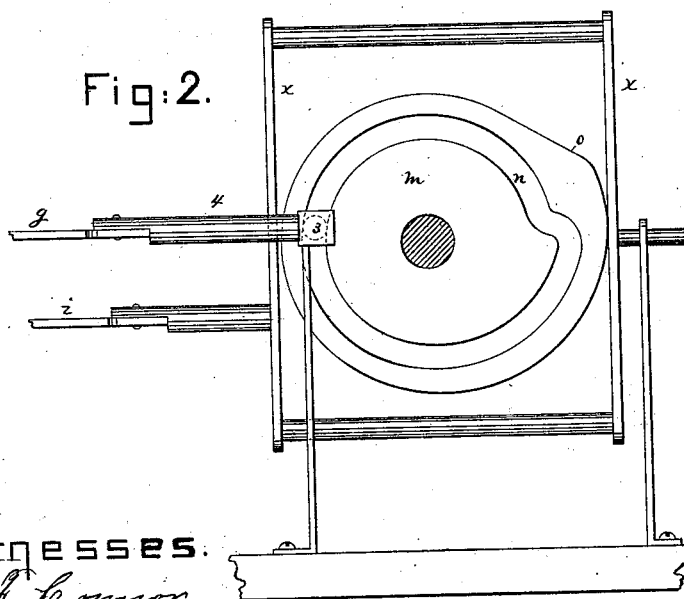


Fig:2.



Witnesses:
L. A. Connor
M. S. Whitney

Inventor.
 } *Edmond K Richards*
 by *Brook & Arroyo* Attys

UNITED STATES PATENT OFFICE.

EDWARD K. RICHARDS, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN MEASURING AND DISCHARGING APPARATUS FOR BONE-BLACK FURNACES.

Specification forming part of Letters Patent No. **206,263**, dated July 23, 1878; application filed May 27, 1878.

To all whom it may concern:

Be it known that I, EDWARD K. RICHARDS, of Cambridge, county of Middlesex, State of Massachusetts, have invented an Improved Discharging Apparatus for Bone-Black Furnaces, of which the following is a specification:

This invention relates to that portion of a bone-black furnace which measures the bone-black as it falls from the cooling-tubes; and consists in the combination, with the stationary measuring-boxes, which may or may not be extensible, of reciprocating covering and discharging plates to co-operate with such boxes, constructed and arranged substantially as hereinafter described.

Figure 1 represents, in longitudinal section, a row of discharging-boxes and their covering and discharging plates; Fig. 2, a view of the cam to operate the plates, it being shown detached from the right of Fig. 1.

The frame-plates *a b*, fixed below the cooling-tubes, (shown in dotted lines,) and provided with openings coinciding with the open ends of such tubes, are connected together by means of bolts *c*, provided with nuts *d e*, or equivalent devices, or cams, so that the lower plate *b*, suspended by such screws, and carrying the main portion *f* of the boxes, may be raised or lowered when it is desired to change the holding capacity of the boxes, for in the drawing it will be noticed that the boxes are shown as made in two parts, telescopic or extensible, the part *f'* being connected rigidly with the plate *a*.

The covering-plate *g*, provided with openings corresponding with those in plate *a*, is placed below plate *a*, and mounted preferably upon rollers *h*, so that the covering-plate may be reciprocated in opposite directions at the proper intervals of time, in order that the openings in such plate *g* and the plate *a* may coincide to permit the bone-black in the tubes to fall and fill the boxes, or may be moved out of coincidence, so as to prevent the bone-black from falling into the boxes.

The discharging-plate *i*, placed below the

plate *b* and boxes, and supported upon rollers *j*, is provided with passages *k*, which at the proper time, as the plate *i* is moved, are placed to coincide with the openings *l* in plate *b*, below the boxes, so as to discharge the bone-black held in the boxes, and at other times the portions of the plate *i* between the openings *k* cover the holes or passages *l*. These two plates *g i* are moved in opposite directions, so that when the openings of one coincide with the openings in the boxes the other will not, for when the covering-plate permits bone-black to fall into the boxes the discharging-plate prevents it from falling below the boxes; and when the discharging-plate is placed to permit the bone-black to be discharged from the boxes, then the covering-plate cuts off communication between the cooling tubes or pipes and boxes.

These two plates may be reciprocated to operate in the manner described by any proper mechanism, as, for instance, by a revolving cam, *m*. This cam has a groove, *n*, to receive a pin, *3*, attached to the covering-plate *g*, or to a link, *4*, connected therewith; and the periphery *o* of the cam is suitably shaped to act upon a yoke, *x*, connected with plate *i*, and fitted to embrace the cams.

I claim—

1. The combination, with the extensible frame *a b* and measuring-boxes, of the covering-plate *g*, discharge-plate *i*, and supporting-rollers *h j*, substantially as and for the purpose described.

2. In a bone-black apparatus, the combination, with a measure-holding frame, of covering and discharging plates therefor, and a cam, *m*, for operating the said plates, substantially as described.

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

EDWARD K. RICHARDS.

Witnesses:

G. W. GREGORY,
L. F. CONNOR.