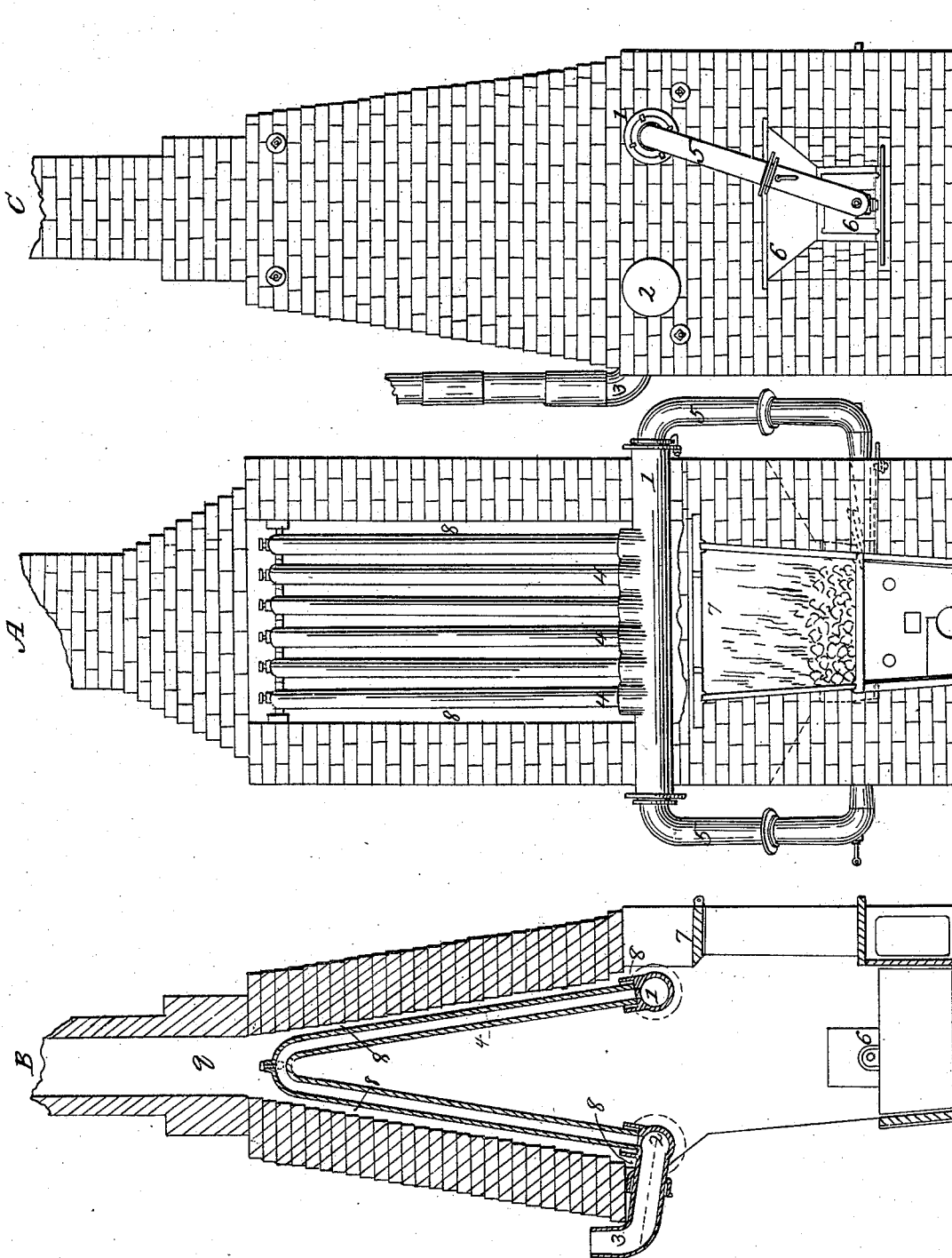


P. A. SABBATON.
Making Iron Direct.

No. 3,922.

Patented Feb. 24, 1845.



UNITED STATES PATENT OFFICE.

PAUL A. SABBATON, OF READING, PENNSYLVANIA.

IMPROVEMENT IN HOT-BLAST BLOOMERY-FORGE FIRES.

Specification forming part of Letters Patent No. 3,922, dated February 24, 1845.

To all whom it may concern:

Be it known that I, PAUL A. SABBATON, of the borough of Reading, in the county of Berks and State of Pennsylvania, have invented a new and useful Improvement in the Manner of Constructing a Hot-Blast Bloomery-Forge Fire; and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawings, Figure A is a front view of my bloomery-Forge fire and chimney, showing the manner in which the hotblast-pipes are combined therewith, the mason-work above the mantel being removed for the purpose of showing the arrangement of these pipes in the interior of the chimney. Fig. B is a vertical section through the chimney and fire-place from front to back, showing the horizontal and siphon pipes, the former in transverse section and the latter in elevation. Fig. C is a side view of the chimney or stack, showing the arrangement of the pipes that convey the heated air from the front horizontal pipe to the tuyere, and also that through which the air from the blowing apparatus is conveyed to the heating-tubes.

In each of these figures where the same parts are represented they are designated by the same numbers.

Nos. 1 and 2 are the main front and back horizontal pipes, into the latter of which the pipe No. 3 conveys the cold air from the blowing apparatus.

Nos. 4 4 are a series of siphon or inverted-U pipes, which extend across the chimney from front to back and connect the front and back horizontal pipes together. From the ends of the front horizontal pipe proceed the pipes 5 5, which convey the heated air to the tuyeres.

No. 6 are the tuyere-holes.

No. 7 are the mantel-plates, above which in Fig. A the mason-work is removed, as before stated.

Nos. 8 8 represent a space between the hotblast pipes and the interior of the stack.

No. 9 is the flue above said pipes.

In the manner of arranging the pipes for obtaining the hotblast, as herein represented

and described, I do not claim that there is anything new or of my invention, I having in this particular adopted a system of pipes for heating the air, first used in England, and known under the name of "Neilson's pipes" for the hotblast.

My improvement consists, simply, in the manner in which I have combined these pipes with the bloomery-Forge fire or chimney.

I am fully aware that there is not any novelty in the mere application of the hotblast to the bloomery-Forge, this having been carried into operation in a great variety of ways; but I have, as I verily believe, so combined the hotblast-pipes with said forge-fire as to obviate the several objections which have in practice been found to interfere with those erected prior to my carrying my plan into operation. In most instances the air has been heated in an arch erected at the tunnel-head of a furnace, within which head pipes have been arranged in a manner substantially the same with that herein described; but in this case, as well as under some other arrangements, besides the necessity of erecting an expensive arch of fire-brick, the plan itself has not answered the purpose intended. The particles of ore and of cinder which have been prevented from escaping have been found to fill up the openings in the arch, to obstruct the draft, and to adhere to the pipes in such quantity as in a short time to prevent the air that passes through them from being duly heated. In a few days' use only, as I have repeatedly experienced, they are thus rendered incapable of heating the air to such a degree as to produce any useful effect. In my plan it will be seen that the heating-pipes are in close proximity with the bloomery-fire, and that I dispense entirely with the arch, while I give to my chimney such a form as to produce all its anticipated benefits without its cost or inconveniences.

Having thus fully described the nature of my improvement in the manner of applying the hotblast to the bloomery-Forge fire, I do hereby declare that I do not make any claim to the applying of the hotblast thereto, nor do I make any claim to the form or combination

of the pipes for heating the air, this being the same with numerous others which have been long known and used; but

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

The manner in which I have combined said pipes with the bloomery-forge fire by placing them within the chimney immediately over said fire, which chimney is formed in the man-

ner herein described and represented, so as to effect the desired object without the use of an arch or of any analogous structure. To this particular combination and arrangement I limit my claim.

PAUL A. SABBATON.

Witnesses:

WILLIAM BETZ,
HENRY BINDLY.