

(No Model.)

2 Sheets—Sheet 1.

W. P. INGHAM.

CONSTRUCTION OF BLAST FURNACES, SHAFTS, CHIMNEYS, &c.

No. 528,480.

Patented Oct. 30, 1894.

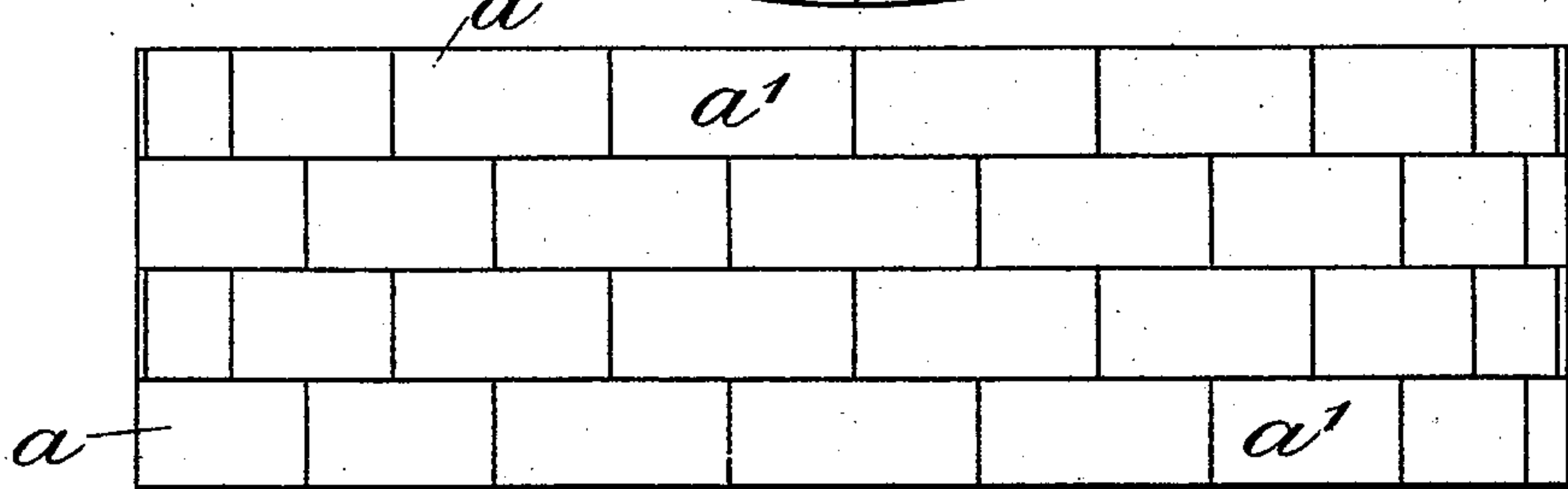
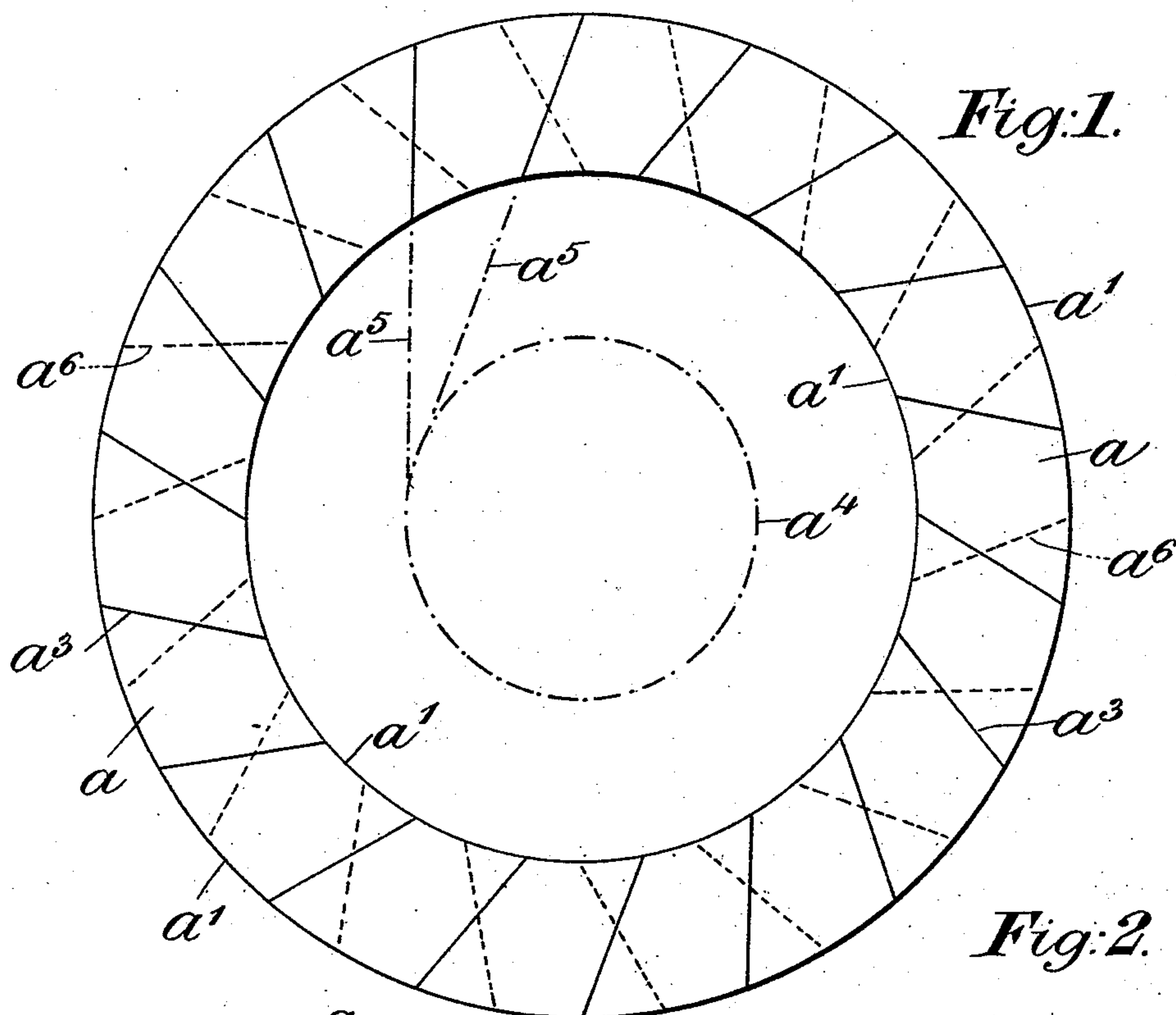
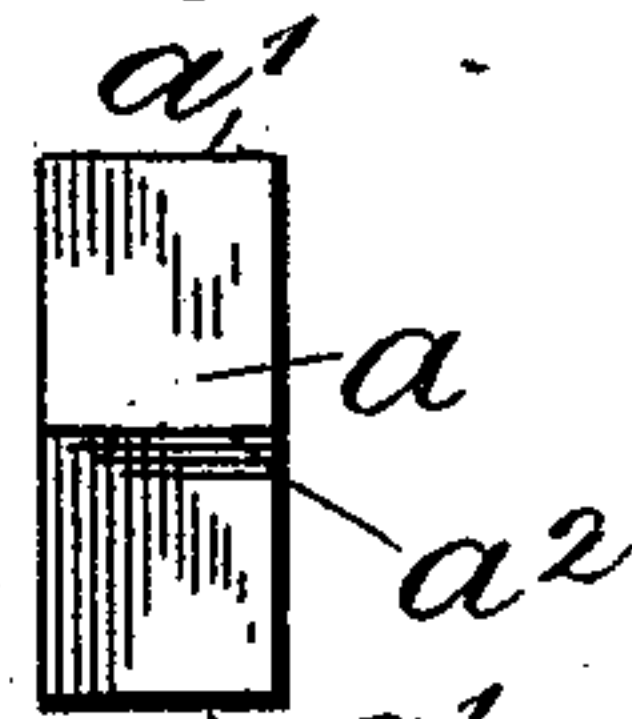
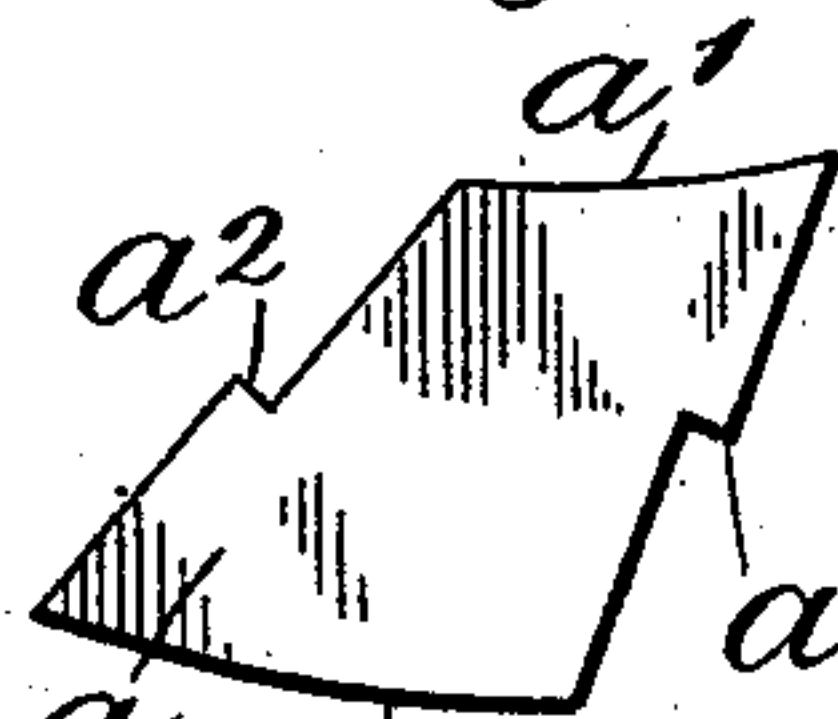
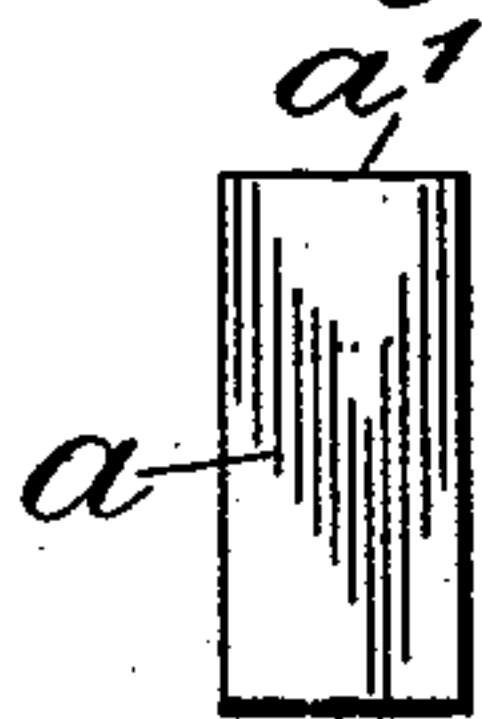
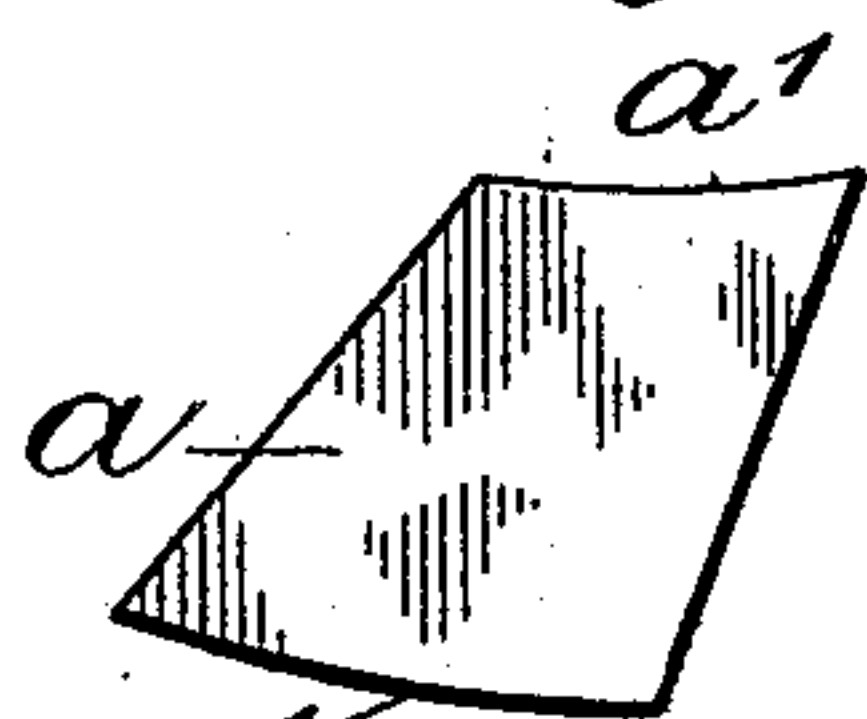


Fig. 3.

Fig. 4.

Fig. 6.

Fig. 7.



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William Porritt Ingham
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(No Model.)

2 Sheets—Sheet 2.

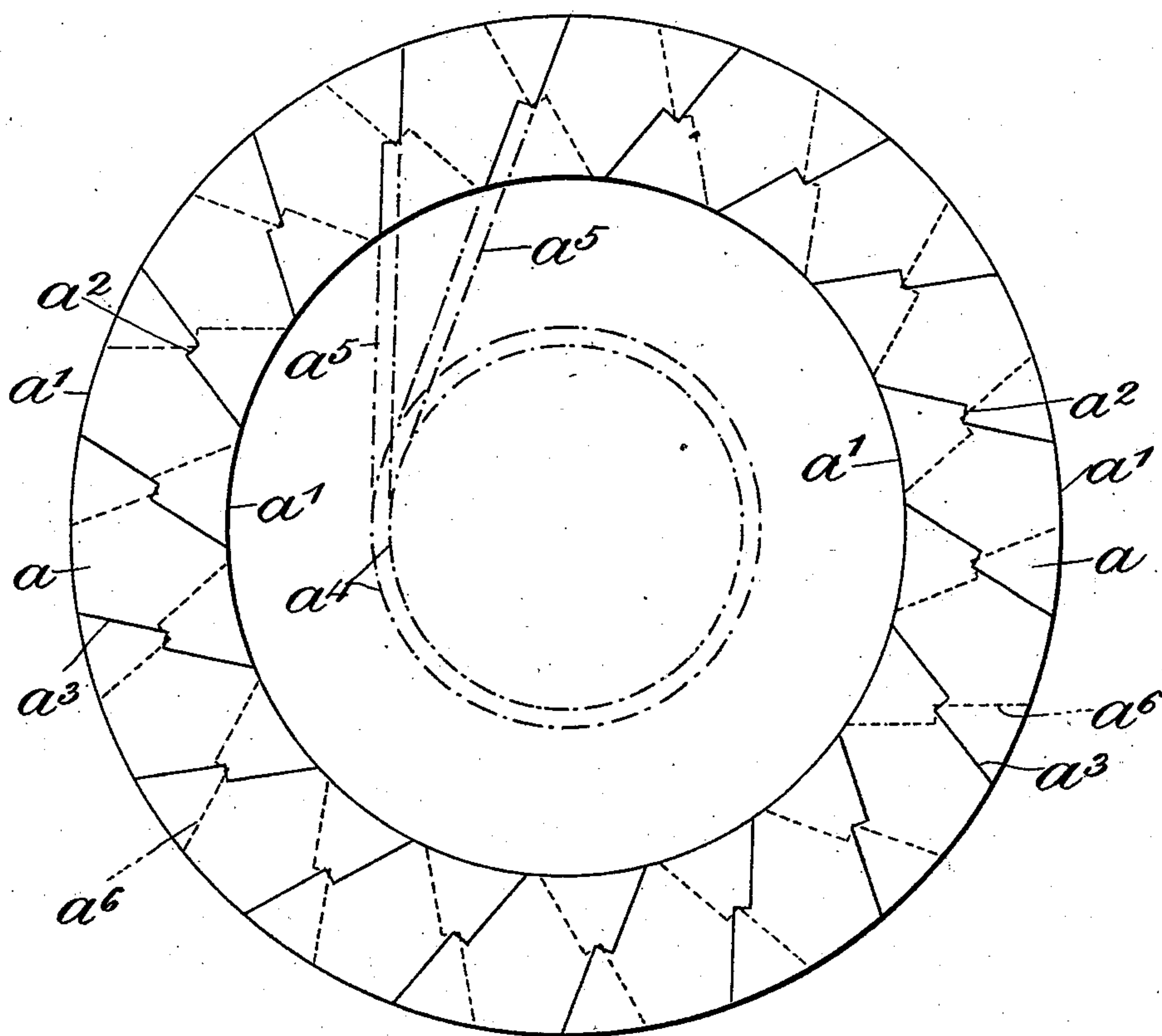
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Fig: 5.



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UNITED STATES PATENT OFFICE.

WILLIAM PORRITT INGHAM, OF MIDDLESBROUGH, ENGLAND.

CONSTRUCTION OF BLAST-FURNACES, SHAFTS, CHIMNEYS, &c.

SPECIFICATION forming part of Letters Patent No. 528,480, dated October 30, 1894.

Application filed December 16, 1893. Serial No. 493,863. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PORRITT INGHAM, engineer, a subject of the Queen of Great Britain, residing at Middlesbrough-on-Tees, in the county of York, England, have invented certain new and useful Improvements in the Construction of Blast-Furnaces, Shafts, Chimneys, or Like Structures and in Bricks or Blocks to be Employed Therein, of which the following is a specification.

This invention relates to improvements in the construction of blast furnaces, shafts or chimneys, or like structures and in bricks or blocks to be employed therein.

In the construction of blast furnaces and other structures built of bricks or blocks it has hitherto been customary to form the blocks in plan of a tapered shape, the sides of each block being formed in continuation of radial lines drawn from the center or axis of the structure, but this method of construction does not form a structure that will resist much internal pressure.

Now the object of my present invention is to form the bricks or blocks and to lay the courses in such manner that they will more effectually interlock and afford a more perfect bond than heretofore both in relation to each other and to adjacent courses. For this purpose, in lieu of forming the bricks or blocks of a shape having sides radiating from the center or axis of the structure I form the sides thereof so that the joints between the bricks take a direction tangential to an imaginary circle struck from such axis or center, that is to say, they form tangents to a circle of convenient size struck from the center or axis of the structure while the ends of the bricks are shaped to the form of the structure. In laying the bricks or blocks I cause the direction of the tangential lines of one course to be reversed with relation to those of the next adjacent course, so that such lines cross each other.

In order that the said invention may be more clearly understood and readily carried into effect I will proceed, aided by the accompanying drawings, more fully to describe the same.

In the drawings—Figure 1 is a plan of a portion of a blast furnace or shaft constructed

according to the present invention. Fig. 2 is a side elevation thereof. Fig. 3 is a plan of one of the bricks or blocks separately, and Fig. 4 is a side view thereof. Fig. 5 is a similar view to Fig. 1 but representing a slight modification in the form of the bricks or blocks. Fig. 6 is a plan of one of the bricks or blocks separately, and Fig. 7 is a side view thereof.

In the several figures like parts are indicated by similar letters of reference.

Referring to Figs. 1 to 4 a represents the bricks or blocks which instead of being formed as heretofore of a shape having sides radiating from the center or axis of the structure have their sides shaped in such manner that the joints a^3 between the bricks or blocks take a direction tangential to an imaginary circle struck from such axis or center, that is to say, they form tangents to an imaginary circle a^4 of convenient radius struck from the center or axis of the structure as indicated by the dotted lines a^5 in Fig. 1, while the ends a' of the bricks or blocks are shaped to the contour of the structure which might be circular as represented in the drawings or square or many-sided, as will be readily understood.

In building up the structure the bricks or blocks are laid in such manner that the direction of the tangential lines forming the joints a^3 of one course are reversed with relation to those of the next adjacent course so that such lines cross each other at the joints as represented by the full lines a^3 and the dotted lines a^5 in Fig. 1.

In the example given at Figs. 5, 6 and 7 the bricks or blocks a are formed in such manner as to give an additional bond between adjacent bricks or blocks and which for some purposes might be an advantage. For this purpose, the bricks or blocks a are at their sides formed with shoulders a^2 facing in opposite directions and which interlock with corresponding shoulders upon adjacent bricks or blocks and thereby form an additionally secure bond or lock between the same.

By the means hereinbefore described, I obtain a more perfect lock or bond between meeting bricks or blocks and between adjacent courses than heretofore, and I am thus

enabled to obtain greater stability to the structure with little or no increase in the cost thereof.

What I claim is—

5 1. A blast furnace, a shaft or chimney or like structure formed of bricks or blocks shaped in such manner that the joints between the same take a direction tangential to an imaginary circle struck from the center or
10 axis of the structure; substantially as herein shown and described.

2. A blast furnace, a shaft or chimney or like structure formed of bricks or blocks shaped in such manner that the joints be-
15 tween the same take a direction tangential to an imaginary circle struck from the center or axis of the structure; the bricks or blocks being laid in such manner that the tangential lines of one course are reversed with relation
20 to those of the next adjacent course, substantially as herein shown and described.

3. A brick or block to be employed in the construction of blast furnaces, shafts or chim-

neys and the like, at its ends shaped to the contour of the structure to be erected, and at its sides tapered or shaped to form tangents to an imaginary circle struck from the center or axis thereof, substantially as herein shown and described.

4. A brick or block to be employed in the construction of blast furnaces, shafts or chimneys and the like at its ends shaped to the contour of the structure to be erected and at its sides generally tapered or shaped to form tangents to an imaginary circle struck from the center or axis thereof, and provided with shoulders at its sides facing in opposite directions, substantially as herein shown and described.

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