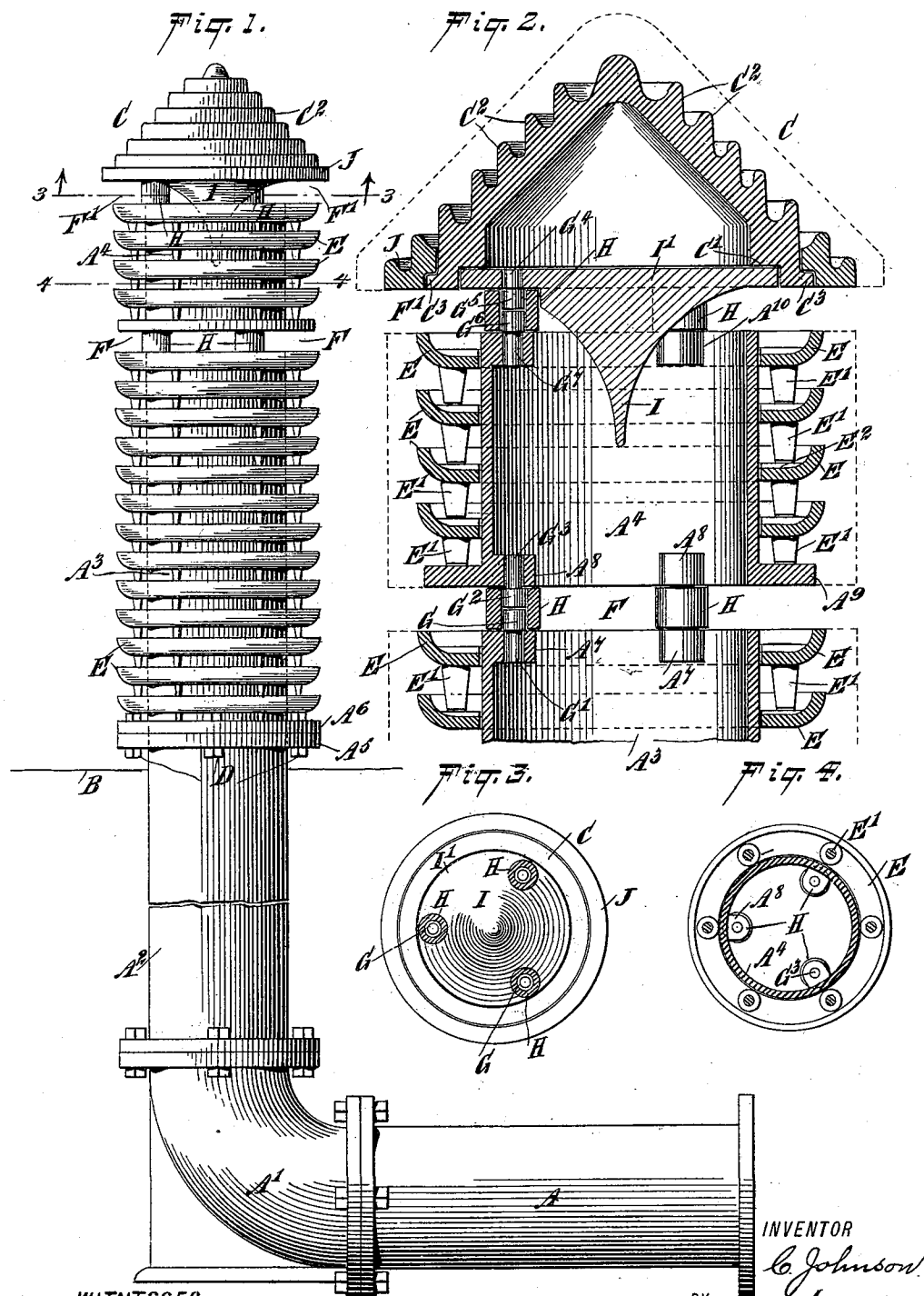


(No Model.)

C. JOHNSON.
CENTER BLAST PIPE FOR FURNACES.

No. 556,633.

Patented Mar. 17, 1896.



WITNESSES:

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CHARLES JOHNSON, OF RUTLAND, VERMONT.

CENTER-BLAST PIPE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 556,633, dated March 17, 1896.

Application filed October 24, 1895. Serial No. 566,700. (No model.)

To all whom it may concern:

Be it known that I, CHARLES JOHNSON, of Rutland, in the county of Rutland and State of Vermont, have invented a new and Improved Center-Blast Pipe for Furnaces, of which the following is a full, clear, and exact description.

The invention relates to blast-furnaces such as shown and described in the Letters Patent of the United States, No. 541,759, granted to me June 25, 1895.

The object of the present invention is to provide a new and improved center-blast pipe arranged to permit an equal distribution of the air through a tuyere-opening into the heated fuel in the stack and to permit of conveniently and quickly repairing burned parts of the pipe.

The invention consists of a pipe and a series of dished rings held on said pipe one above the other, each ring being provided with pins engaging an adjacent ring for supporting the rings one above the other around the pipe.

The invention also consists of certain parts and details and combination of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is an enlarged sectional side elevation of part of the same. Fig. 3 is a sectional plan view of the same on the line 3 3 of Fig. 1, and Fig. 4 is a similar view of the same on the line 4 4 of Fig. 1.

The improved center-blast pipe for furnaces is made in sections, comprising the sections A, A', A², A³ and A⁴, of which the section A' is connected with a wind-box to permit the air-blast to pass through the pipe A into the stack, as hereinafter more fully described. The section A' is in the form of an elbow and connects with the vertically-disposed section A², passing through the bottom B of the stack and supporting at its upper end the section A³, which extends in the center of the stack, as plainly indicated in Fig. 1. The upper section, A⁴, is arranged a suitable distance above the top of the section A³, and above the section A⁴ is arranged a cap C. The sec-

tions A² and A³ are connected with each other by external flanges A⁵ and A⁶, respectively, firmly held together by bolts D.

The sections A³ and A⁴ are provided with an external covering, and for this purpose I mount on each section a series of dished rings E, of which the lowermost ring E rests directly on the top of the heads of the bolts D, as is plainly shown in Fig. 1. The remaining rings E are each provided on their under side with pins E', and said rings, with the exception of the lowermost ring on the section A⁴, are adapted to rest on a small projection E², formed inside of the next lower dished ring, as will be readily understood by reference to Fig. 2, and the several rings E are held suitable distances apart. Said rings are filled with a non-combustible material, such as plumbago, asbestos, &c.

The adjacent ends of the sections A³ and A⁴ are placed suitable distances apart to form a tuyere-opening F, and in order to hold the said sections in alignment and one above the other I provide the upper end of the section A³ with inwardly-extending apertured lugs A⁷ engaged by the reduced ends G' of pins G, on which are set similar pins G² held with their reduced ends G³ in apertured lugs A⁸ extending inwardly from the lower end of the pipe-section A⁴. Collars H inclose the registering ends of the pins G G², so that the ends of the pipe-sections A³ and A⁴ are placed a distance apart corresponding to the length of the collars, and at the same time the pins are securely held in position to insure a proper alignment of the pipe-sections A³ and A⁴.

The lower end of the section A⁴ is provided with an outwardly-extending annular flange A⁹, on which rests the pins E' of the lower ring E for the section A⁴. The upper end of the section A⁴ forms with the lower end of the cap C a tuyere-opening F' similar to the tuyere-opening F previously mentioned, and the cap C is provided on its under side with a cone I extending centrally into the upper end of the section A⁴, so that the air-blast passing up the section A⁴ is deflected by the cone I, so as to readily pass into the tuyere-opening F', to be equally distributed in the tuyere-opening in the stack.

The cone I is fitted with its base I' into an annular recess C', formed in the cap C, the lat-

ter being preferably made conical with annular grooves or ridges C² for receiving and holding plumbago, asbestos or other similar non-combustible material. The base I' of the cone I is adapted to receive the reduced ends G⁴ of pins G⁵ extending downwardly and resting on similar pins G⁶, engaging with their reduced ends G⁷, apertured lugs A¹⁰ projecting inwardly from the upper end of the pipe-section A⁴. The cap C is formed near its lower end with an annular flange C³, adapted to be engaged by the annular flange of a ring J, the bottom of which is flush with the underside of the cap C, as indicated in Fig. 2. Collars H, like those previously described, inclose the registering ends of the pins G⁵ and G⁶.

Now it will be seen that by the arrangement described the center-blast pipe is fully protected against the high heat within the stack of the furnace, and in case part of the non-combustible material forming the covering or one of the rings E or projections on the cap C is injured then that part can be readily removed and replaced without replacing an entire pipe-section.

By the employment of the cone I depending into the upper end of the section A⁴ the air is equally and properly distributed to the tuyere-opening F', so as to insure a uniform heat within the melting-zone and insure complete combustion. By employing different lengths of pins and collars H the size of the tuyere-openings F F' may be increased or diminished, as may be required.

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

1. A center-blast pipe for furnaces, com-

prising a pipe, and a series of rings surrounding said pipe and separated one from the other by pins, substantially as shown and described.

2. A center-blast pipe for furnaces, provided with a pipe, and a series of dished rings fitted on said pipe and each provided with pins engaging the adjacent ring, so that the several rings are disposed one above the other and held a suitable distance apart, substantially as shown and described.

3. A blast-pipe provided with a series of superposed removable rings loosely surrounding the pipe, and spaced from each other, substantially as described.

4. A blast-pipe made in sections located in axial alignment and forming tuyere-openings between them, the sections being provided with apertured lugs at their adjacent ends, pins having reduced portions engaging said lugs, and enlarged portions fitted between the lugs, and collars inclosing the enlarged portions of the pins, substantially as described.

5. A center-blast pipe for furnaces, provided with a conical cap formed in its underside with a recess, and a cone fitted with its base into said recess, substantially as shown and described.

6. A center-blast pipe for furnaces, provided with a conical cap formed in its underside with a recess, a cone fitted with its base in said recess, and a protecting-ring held on an annular flange on the base of said cap, substantially as shown and described.

CHARLES JOHNSON.

Witnesses:

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CARLE H. HAZELTON.