

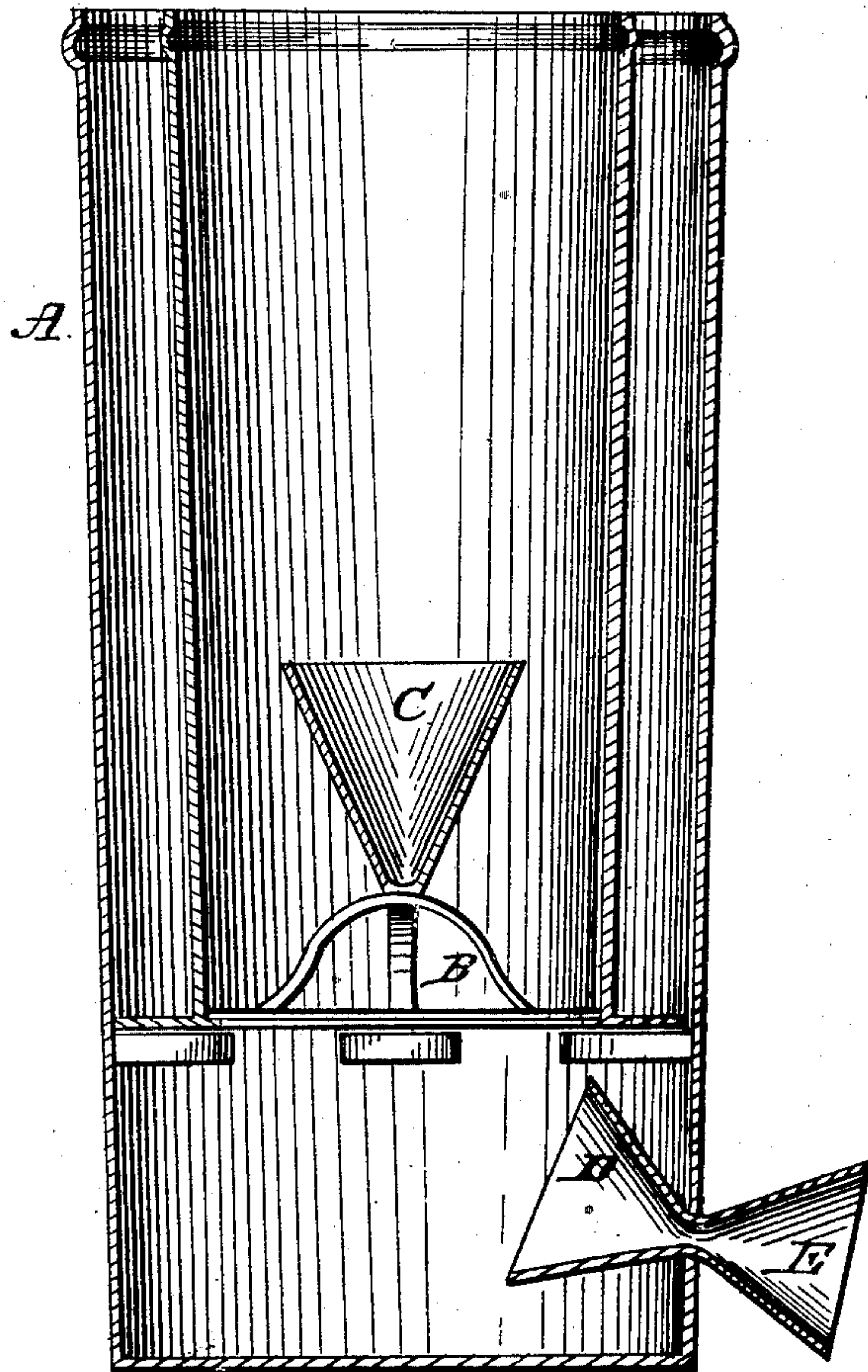
B. H. WASHINGTON.

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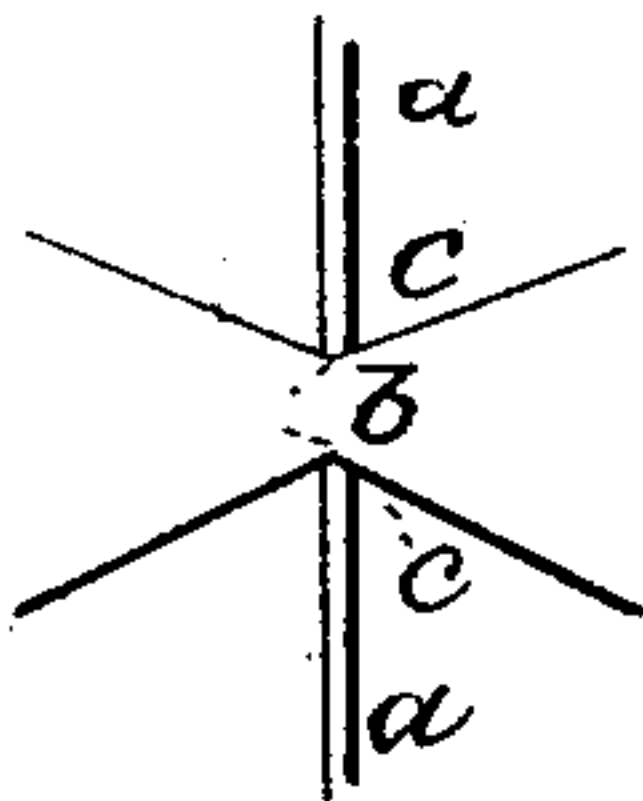
No. 11,914.

Patented Nov. 7, 1854.

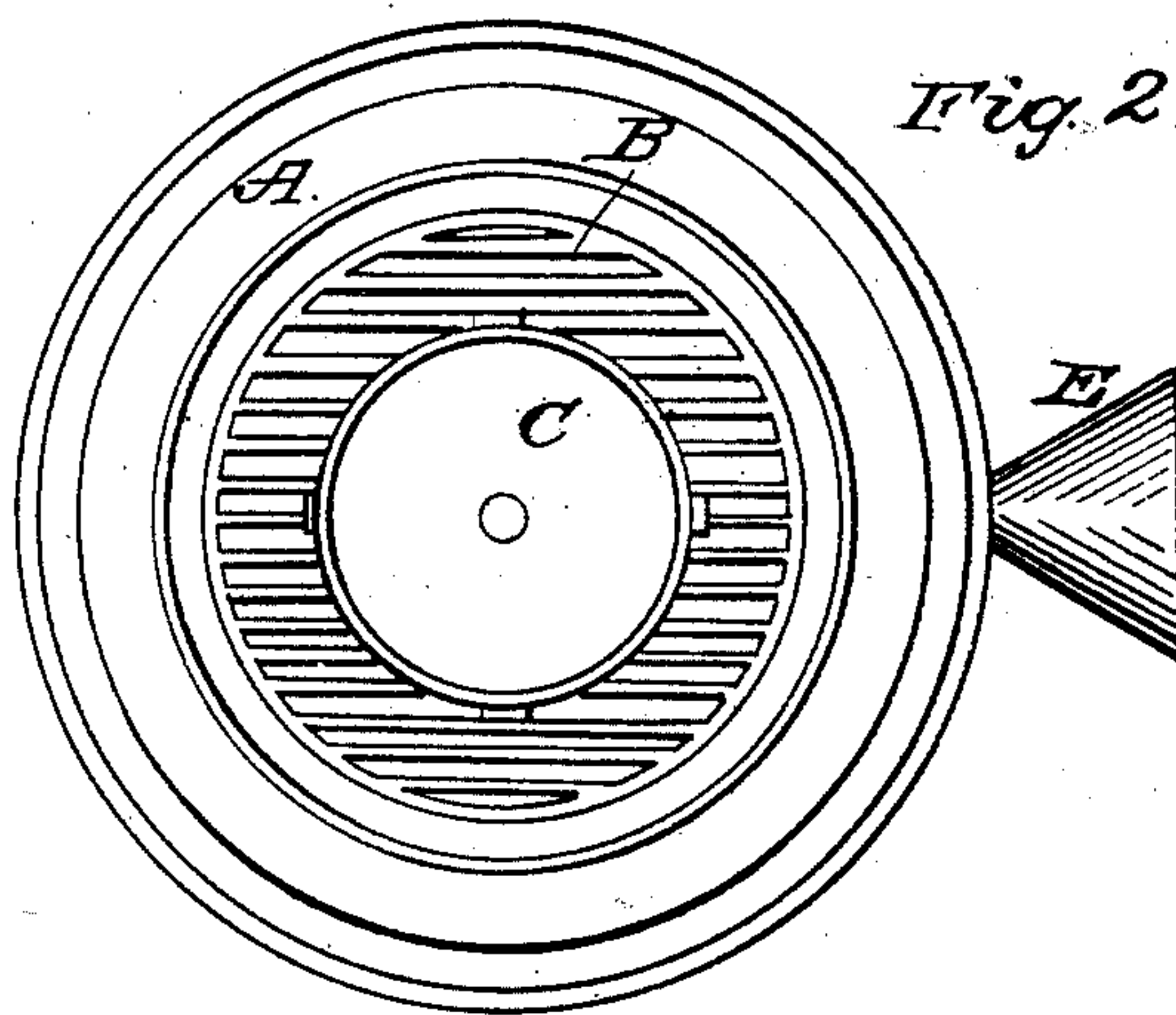
*Fig. 1.*



*Fig. 3.*



*Fig. 2.*



# UNITED STATES PATENT OFFICE.

B. H. WASHINGTON, OF HANNIBAL, MISSOURI.

MEANS FOR DIRECTING THE BLAST IN FURNACES.

Specification of Letters Patent No. 11,914, dated November 7, 1854.

*To all whom it may concern:*

Be it known that I, B. H. WASHINGTON, of Hannibal, in the county of Marion and State of Missouri, have invented a new and  
5 Improved Blast-Furnace; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

10 Figure 1, is a vertical section of a furnace with my improvement applied to it. Fig. 2, is a plan or top view of ditto. Fig. 3, is a diagram illustrating the principle upon which the invention is based.

15 Similar letters of reference indicate corresponding parts in the several figures.

The nature of my invention consists in the employment or use of two hollow cones or funnels connected at their apexes and inserted in the casing of the furnace under-  
20 neath the fire grate. One of the cones or funnels being within the casing, and the other without. The blast passes into the furnace through the cones or funnels in the proper or natural direction, viz: in a spiral  
25 manner, and in the form of the cones above mentioned.

To enable others skilled in the art to fully understand and construct my invention, I  
30 will proceed to describe it.

A, represents a furnace, and B, is its fire grate. C, is an inverted cone placed just above the grate B, as shown clearly in Fig. 1.

35 D, E, are hollow cones or funnels, joined at their apexes and inserted in the casing of the furnace below the fire grate B. One of the cones or funnels D, is within the casing, and the other without, see Fig. 1.

40 The blast is admitted into the furnace through the hollow cones or funnels in a spiral manner, and in a conical form which is the natural direction.

Fig. 3, will illustrate the natural direction or form of the blast, let (a), represent the casing of a furnace, and (b), the aperture through which the blast is admitted, the aperture not being provided with cones. The direction of the blast is indicated by  
50 the dotted lines (c), (c). It will be seen

that it contracts upon entering the aperture and gradually expands after it has passed through it. Now the aperture (b), by not being provided with an external cone E, and having no object or device to serve as  
55 a guide to the blast, an eddy will be formed around the aperture, and much friction occasioned in the passage of the blast through the aperture. By having the external cone or funnel E, the blast will be  
60 properly directed through the aperture in its natural course.

It seems to be a law of nature that air in strong drafts, arranges itself in two spiral inverted cones, as most persons must have  
65 observed by the form of dust, leaves, or other light materials which mark its course. Now, by the application of the cones D, E, the air is given the proper direction at once, and enters with but comparatively little friction,  
70 the two apexes of the cones being connected it can pass through as nature shows is best, that is, that the air should pass directly without obstruction or change of direction from the external cone to the inner  
75 one in a spiral manner. Independent of the increased quantity of air passed through, it being thrown out in the form of an expanding cone, would have the advantage of causing a more equable diffusion of it, and  
80 a more useful combustion, than where it was confined to one spot.

The above invention has been practically tested, and a gain of 24 per cent. is the result.  
85

I do not claim the inner cone D, separately, for that, or its equivalent, has been previously used, but

What I claim as new, and desire to secure by Letters Patent, is:  
90

The employment or use of the two hollow cones or funnels D, E, for the purpose as herein shown, said cones or funnels being applied as described, or in any other way to produce the desired effect.

B. H. WASHINGTON.

Witnesses:

W. P. OUSLEY,  
L. B. WILKES.