

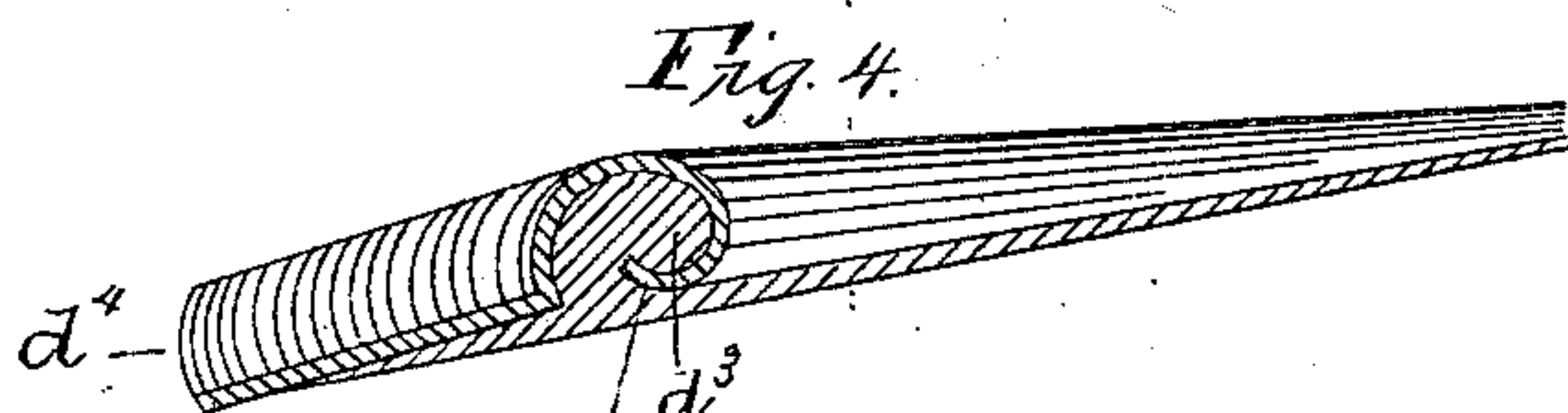
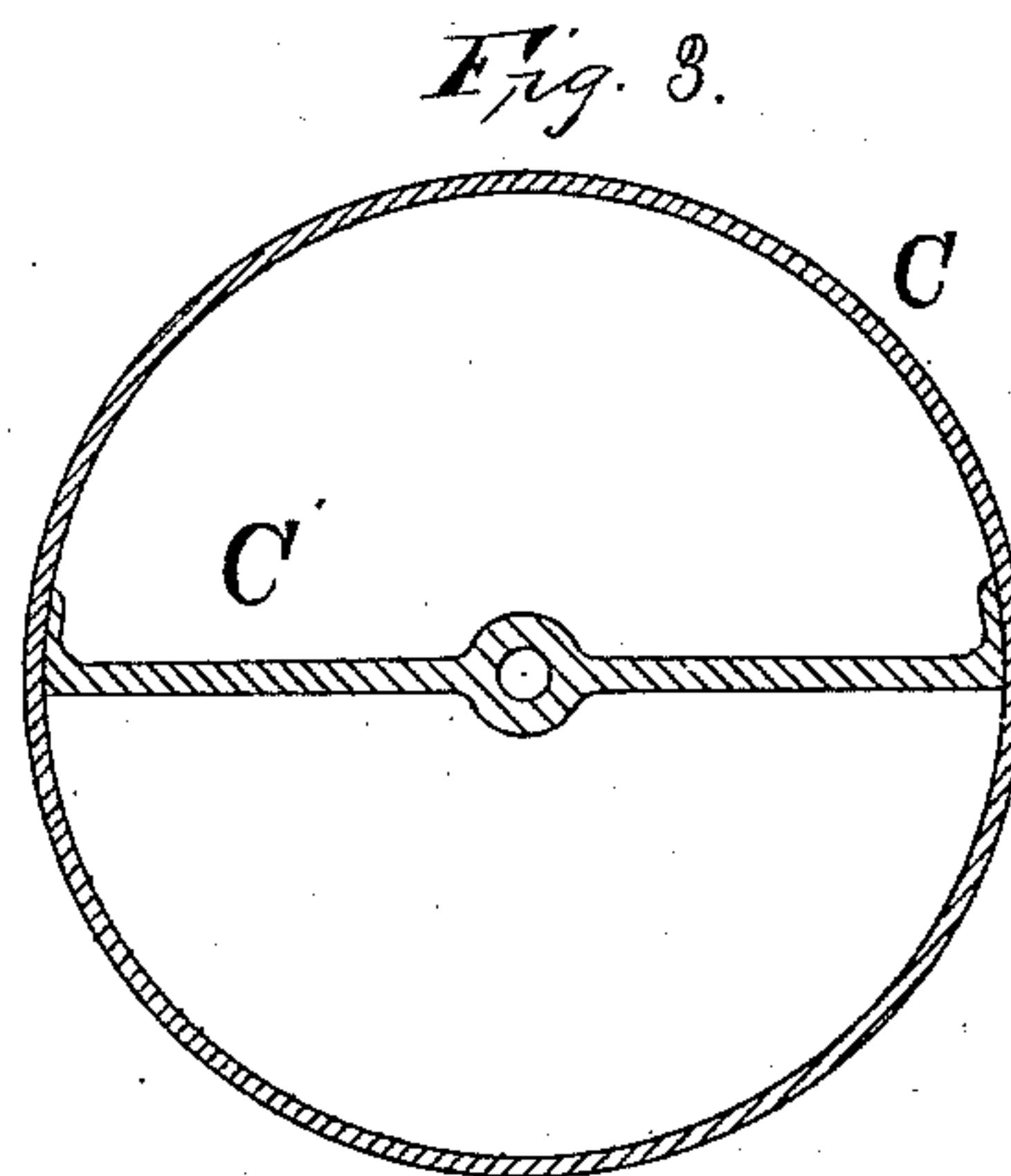
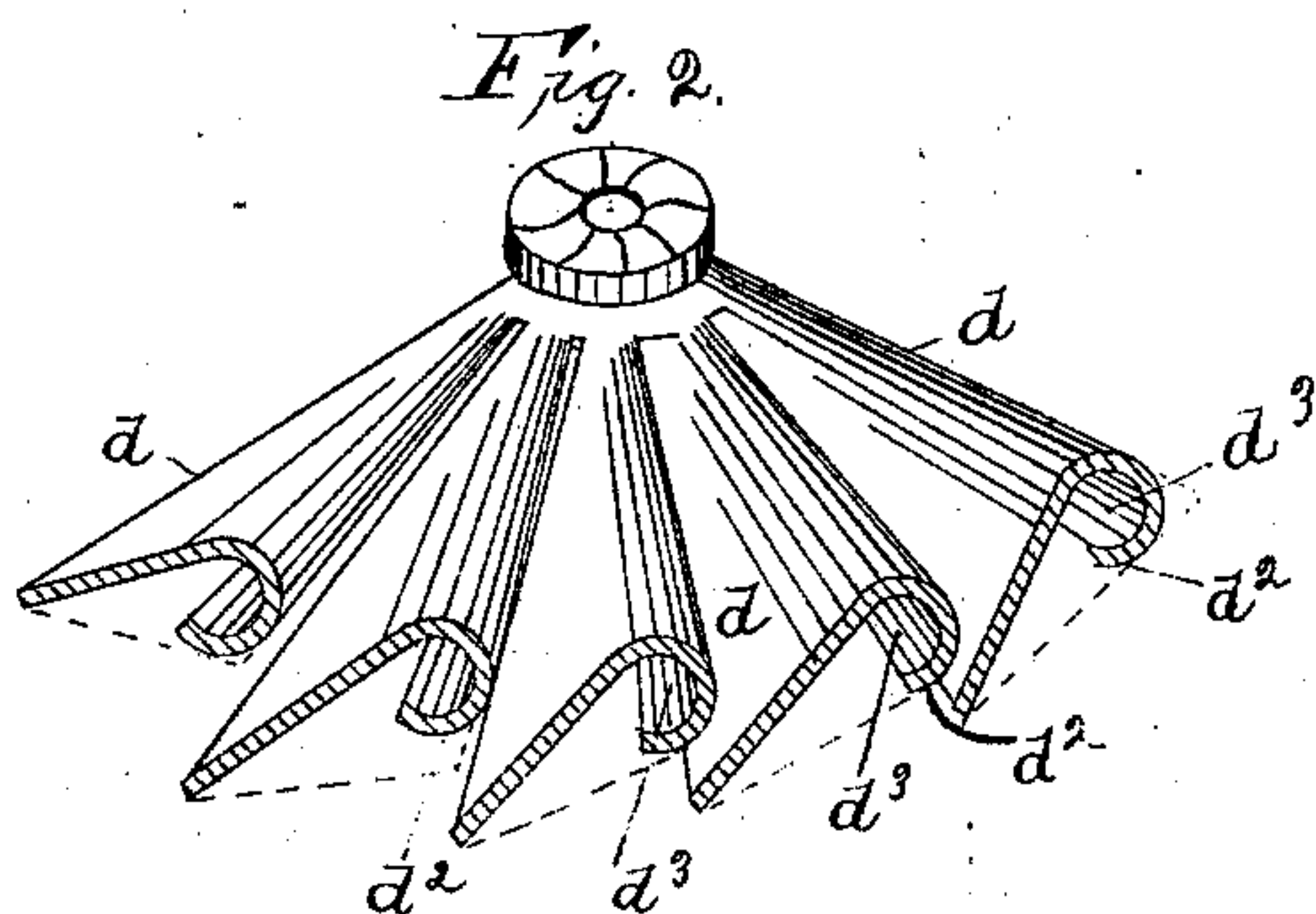
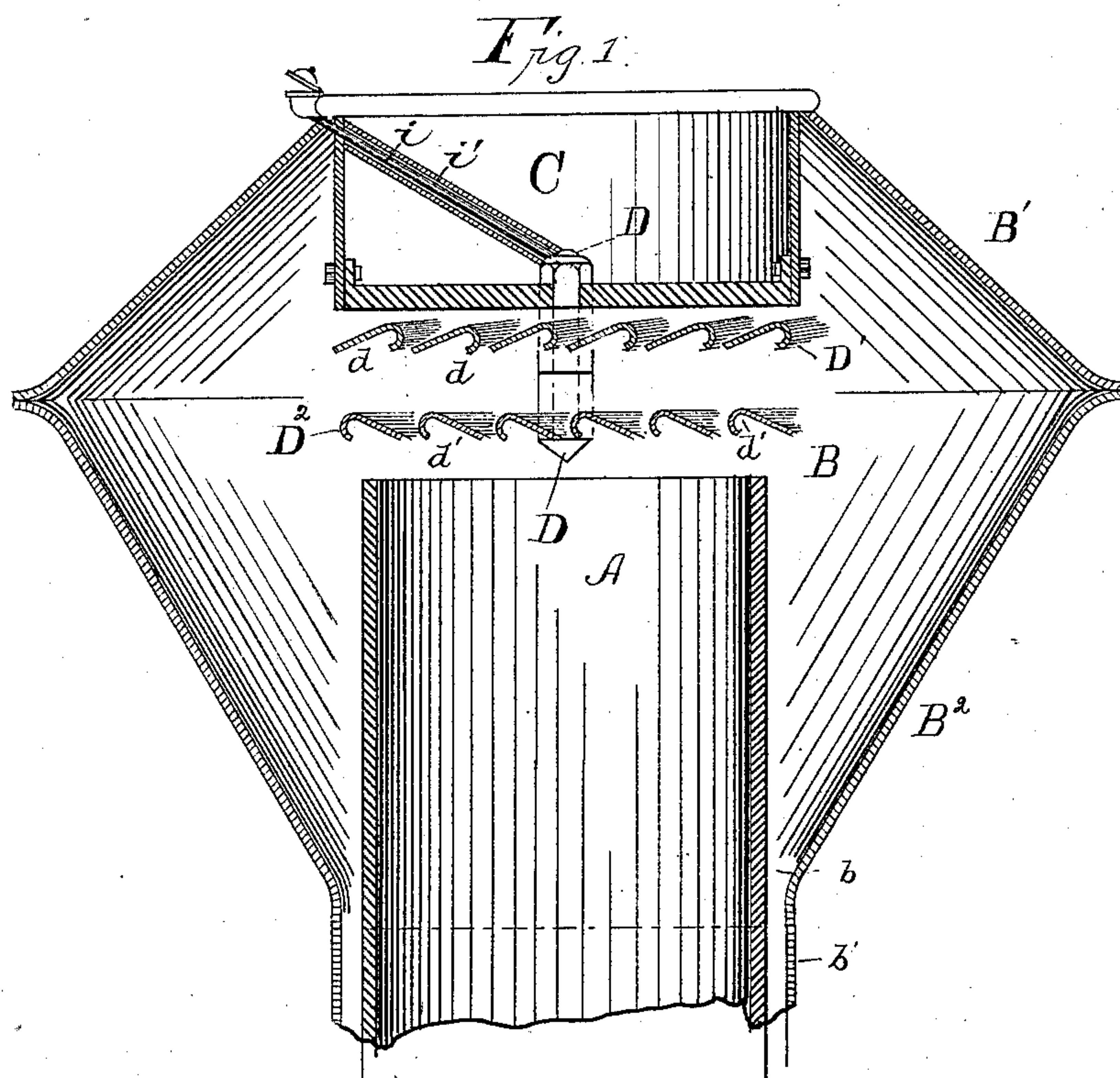
(No Model.)

H. M. STAINFIELD.

SPARK ARRESTER.

No. 297,028.

Patented Apr. 15, 1884.



Witnesses:  
J. F. Holden.  
R. E. Grant

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# UNITED STATES PATENT OFFICE.

HARRY M. STAINFIELD, OF BUCYRUS, OHIO.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 297,028, dated April 15, 1884.

Application filed May 2, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY M. STAINFIELD, a citizen of the United States, residing at Bucyrus, in the county of Crawford and State of Ohio, have invented a new and useful Spark-Arrester, of which the following is a specification.

My invention relates to an improvement in spark-arresters; and it consists in placing inside the stack two revolving wheels running in opposite direction around the same post, and in constructions and combinations, all as will hereinafter be described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical section through the upper part of the smoke-stack; Fig. 2, a detail in perspective, showing part of one of the vanes; Fig. 3, a transverse section on line  $xx$  to show the brace for the post, which is not shown in this figure; Fig. 4, a perspective showing one of the blades, with flange  $d^4$  partly broken away.

A represents the stack, which projects into a chamber, B, formed of two truncated cones, B' and B'', joined at their base, and supported from the stack in any desired manner, and having a passage,  $b$ , between it and said stack for the escape of cinders to pipes  $b'$ , leading to a cinder-box. (Not shown.)

From the section B', at a point immediately above stack A, a ring, C, is suspended, for carrying the vanes. This ring is provided with a brace, C', having an opening for the post D, on which the vanes D' and D'' are loosely journaled. These fans are provided with vanes  $d$  and  $d'$ , arranged at such an angle that they will be propelled by the exhaust and draft of the furnace. The blades  $d$  in the upper vane are set at a reverse angle to those,  $d'$ , on the lower blade, so that the draft will revolve them in opposite directions at the same time. By this arrangement the upper vane will catch the cinders missed by the lower vane. Each of the blades are provided with a longitudinal flange,  $d^2$ , which may be curved to form a recess,  $d^3$ , for catching the sparks when the fans are revolved and prevent them from falling into the stack A, and are thrown by the centrifugal action produced by revolving

the vanes into chamber B. The extreme or outer end of each blade may also be provided with a flange,  $d^4$ , which prevents the cinders from striking the inner wall of the chamber B. The speed of the vanes is also accelerated by the draft or exhaust striking the curved portion.

To furnish the hubs of the vanes with a lubricant, an oil-cup, I, is connected with post D by pipe  $i$ , inclosed within a pipe,  $i$ , to protect the inner pipe from the heat by forming a dead-air chamber.

The operation is as follows: The products of combustion passing through stack A revolve the vanes in opposite directions at right angles to the line of draft, so that if any cinders be mingled with the products of combustion the vanes will cut them out and project them into the chamber B, from whence they are conveyed by pipes  $b'$  to a cinder-box or other receptacle.

What I claim as new is—

1. A spark-arrester having two vanes, one above the other, in the line of draft, and loose upon their shaft.

2. A spark-arrester having two revolving vanes loose upon their shaft, the blades on one vane being at a reverse angle to the blades on the other vane, substantially as described.

3. In a spark-arrester, a vane having blades curled upon themselves to form recesses, substantially as described.

4. In a spark-arrester, a vane having blades provided with flanges  $d^2$  and  $d^4$ , substantially as described.

5. In a spark-arrester, a vane having a blade provided with flanges  $d^2$  and  $d^4$ , and a recess,  $d^3$ , substantially as described.

6. In a spark-arrester, the combination of a vane-post and a lubricator located outside the stack and connected with the post by a tube, substantially as described.

7. In a spark-arrester, the combination of a vane-post, a lubricator located outside the stack, and connected with the post by a tube inclosed within a tube, substantially as described.

HARRY M. STAINFIELD.

Witnesses:

J. C. TOBIAS,  
W. C. HUBER.