

W. S. SAMPSON.  
Lime-Kilns.

No. 149,415.

Patented April 7, 1874.

Fig. 3

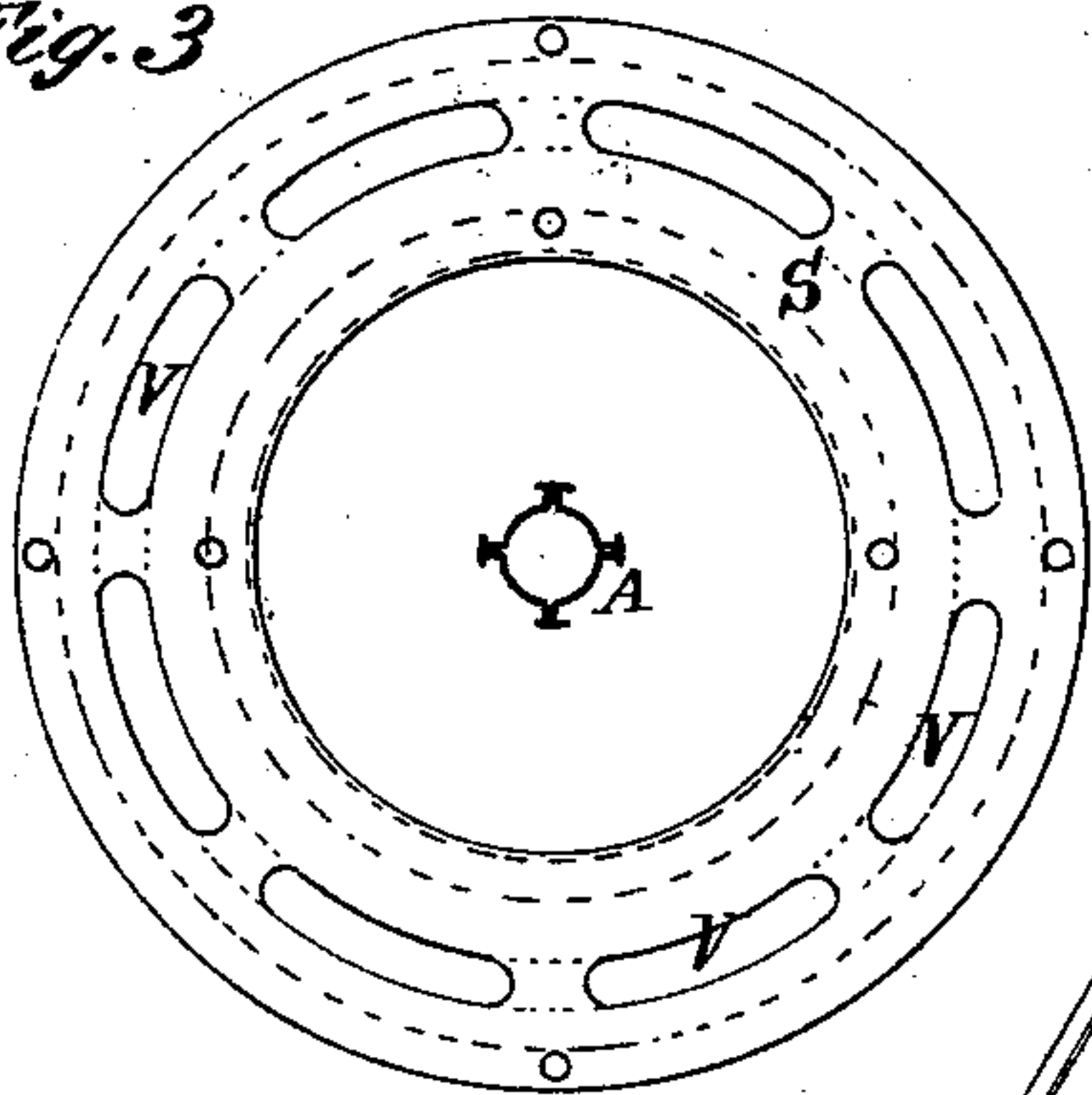


Fig. 2

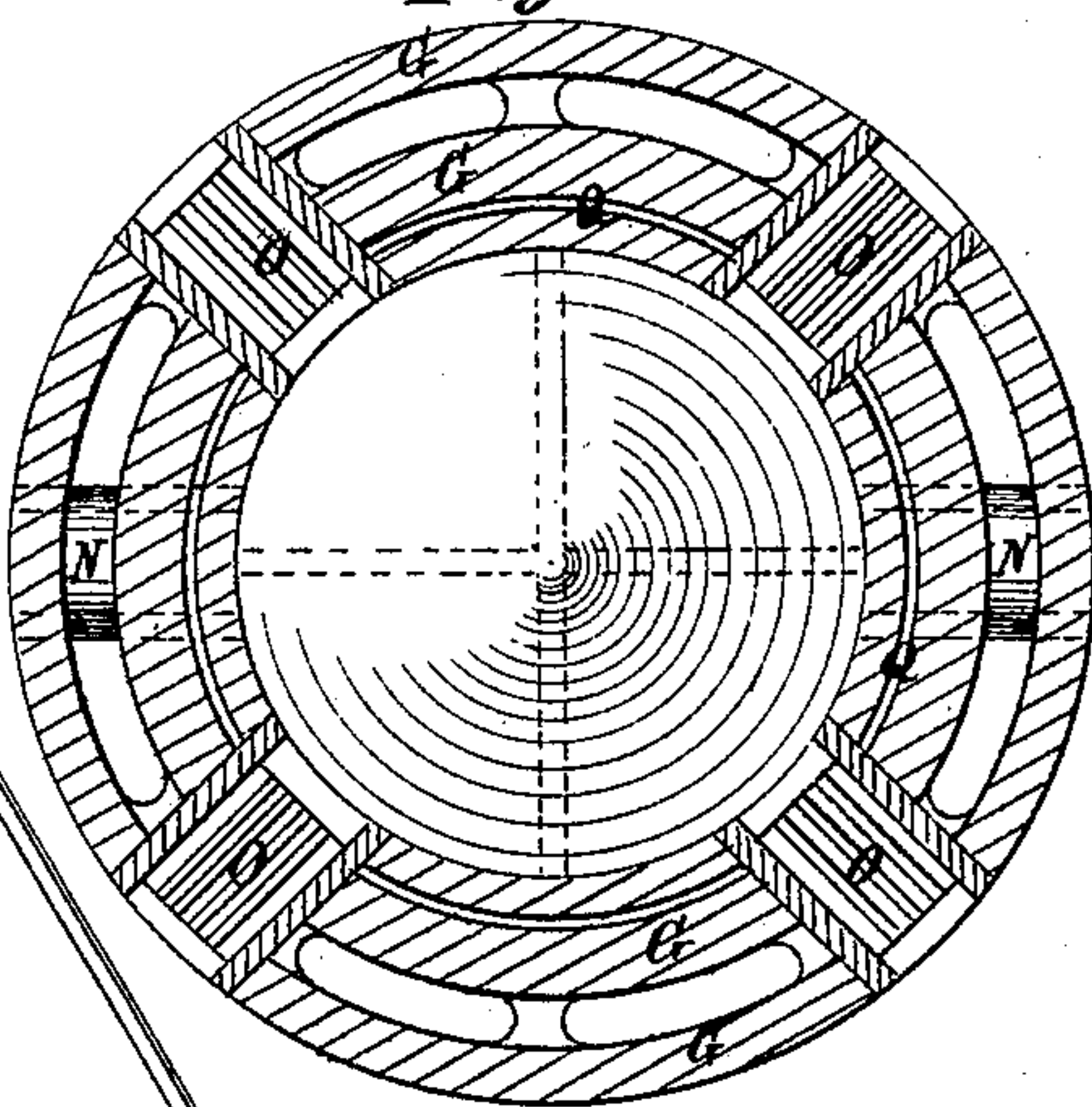
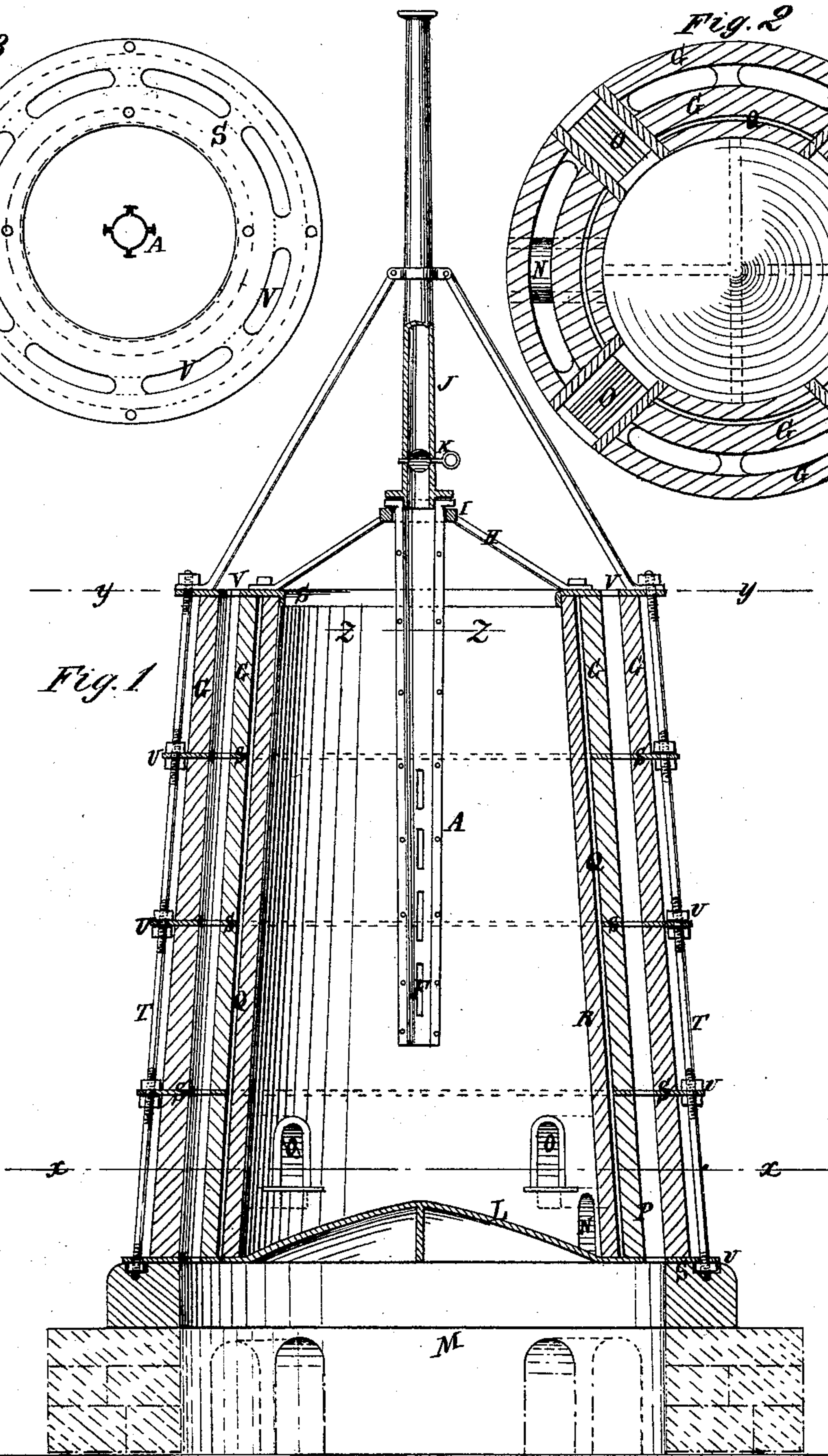
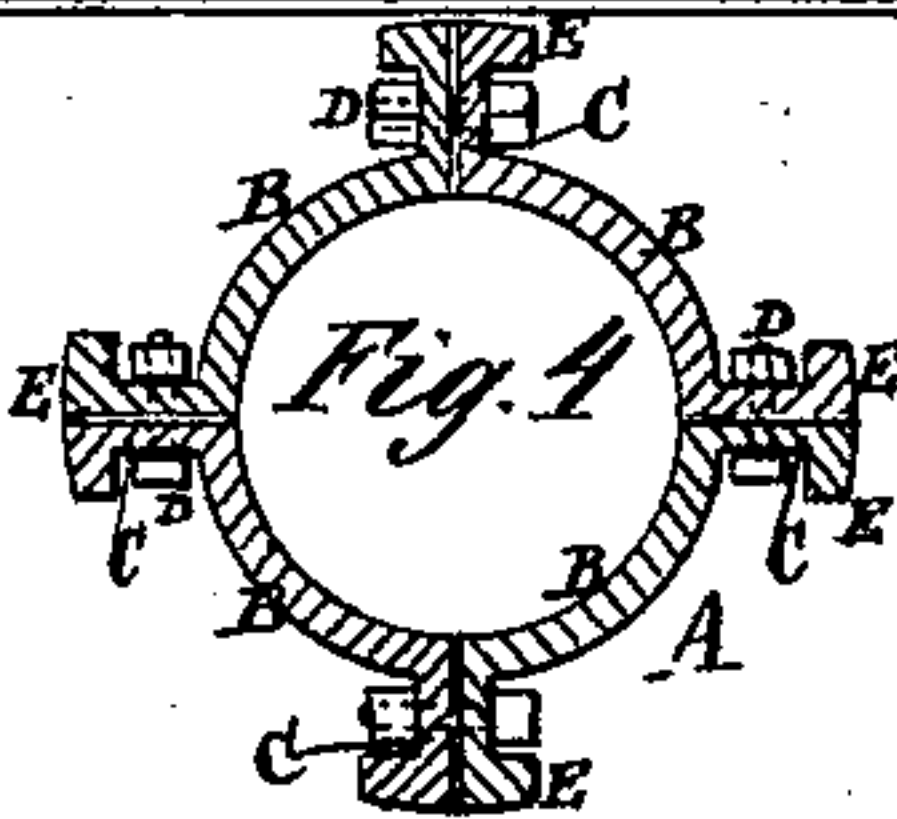


Fig. 1



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN LIMEKILNS.

Specification forming part of Letters Patent No. **149,415**, dated April 7, 1874 ; application filed February 7, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM S. SAMPSON, of the city, county, and State of New York, have invented a new and Improved Lime and Cement Kiln, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claims.

Figure 1 is a vertical section through the middle of the kiln and the flue. Fig. 2 is a horizontal section on line *x x*. Fig. 3 is a horizontal section on line *y y*, and Fig. 4 is an enlarged horizontal section of the flue on line *z z*.

Similar letters of reference indicate corresponding parts.

A represents the flue, which, in this example, is made of four sections, B, of cast-iron, with flanges C on the outside, bolted together by bolts D, said flanges having a flange, E, at their outer edges for the protection of the bolts. The outer edges of flanges C and the flanges E also serve to hold the stones off from the sides of the flue for providing space for combustion. They also reduce the friction of the mass of stones when they settle down. F represents slots in the flue, distributing the draft along the tube. The flue is suspended from the top of the walls G by rods H and a collar, I, the arrangement being such that it is enabled to swing in its support to some extent, so that in case the charge presses against it more in one direction than another it will be free to move and relieve the portion packing against it without undue strain on its supports, and the flue is tapered from the top down, so that the charge will have less tendency to bind against it, and because it is not needful to have the capacity as great in the lower portion. J is a pipe which may be

added to the top, if necessary, to increase the draft. K is a damper in said pipe, that may be employed for regulating the draft. L is the metal bottom plate, with an air-chamber, M, below it, for cooling the lime at the bottom to facilitate the handling of it for packing. This plate is elevated in the middle portion, to shoot the lime toward the arches N, through which it is withdrawn—also for strengthening it. O represents the furnaces a little above the arches for withdrawing the lime as in other kilns. P represents the air-space in the wall G for cooling it. Q represents the narrow dead-air space between the fire-brick lining R and the walls G, for allowing the lining to expand. S represents the bond-plates, dividing the wall G horizontally into vertical sections. They are made a little larger than the wall, to project sufficiently for receiving the tie-rods T, which extend from one to the other, and have nuts V, for tightening them up from time to time. These plates have slots *v*, coinciding with the air-space P, for allowing free circulation of the air. The bottom plate L forms the lower bond-plate. The improvements are alike applicable to kilns for lime, cement, or plaster.

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

1. The combination of sections B of a pendant air-flue, having flanges C E, with the bolts D, as and for the purpose described.

2. The combination described of the plates L S and tie-rod T with a horizontally-divided kiln, as and for the purpose specified.

WM. S. SAMPSON.

Witnesses:

A. P. THAYER,  
T. B. MOSHER.