

(No Model.)

3 Sheets--Sheet 1.

R. SCHNEIDER.

GRINDING MILL.

No. 249,106.

Patented Nov. 1, 1881.

FIG. 1.

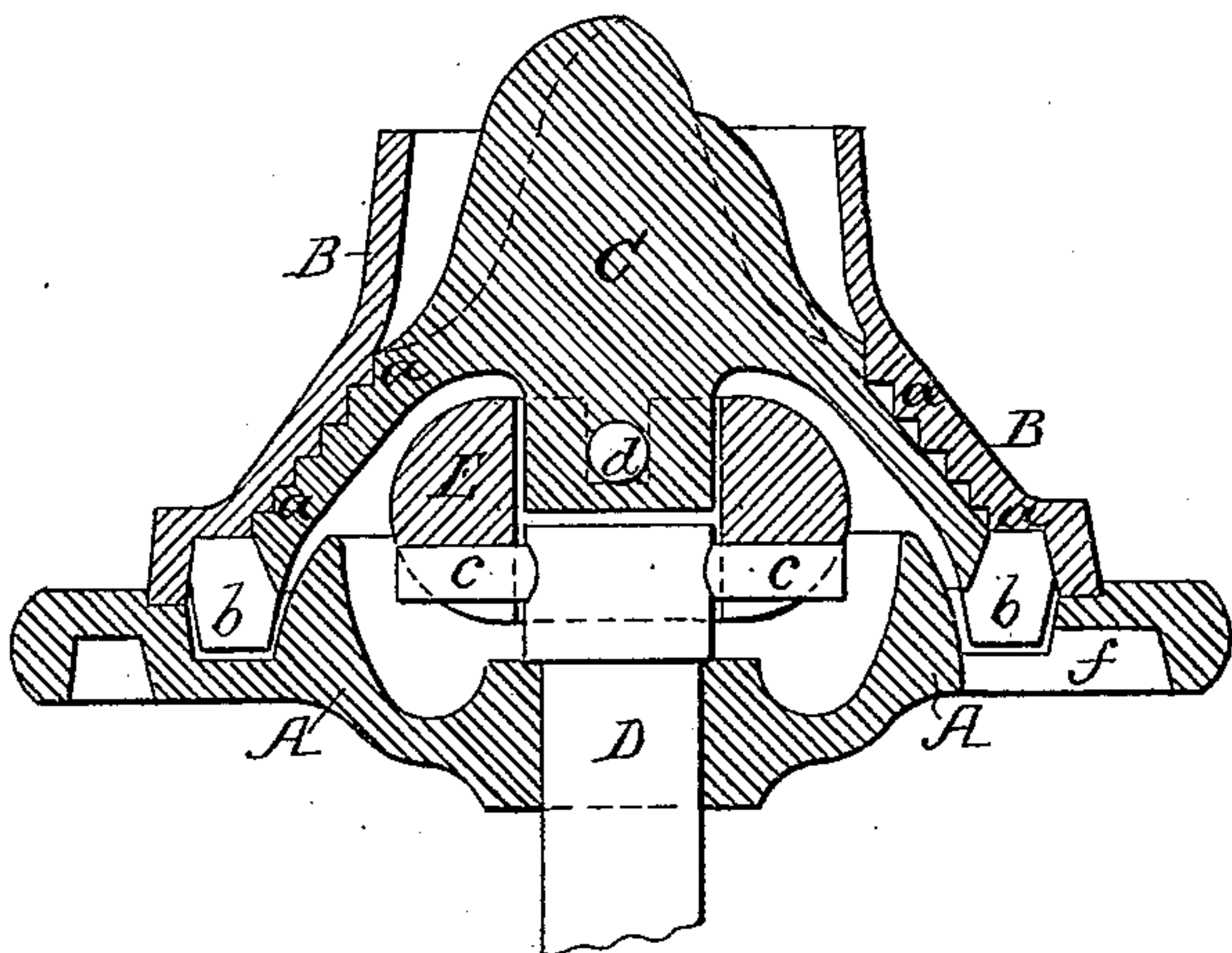


FIG. 2.

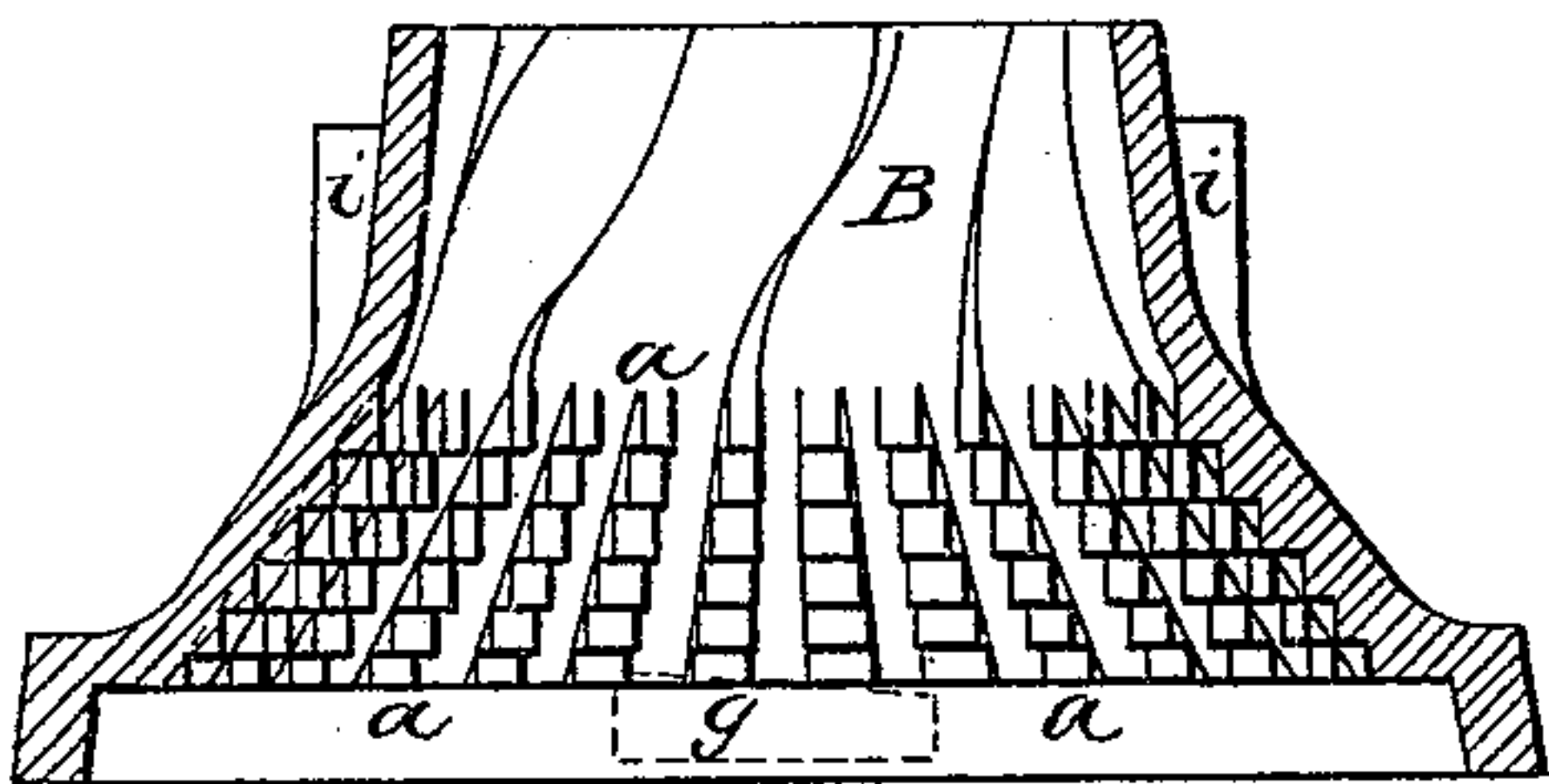
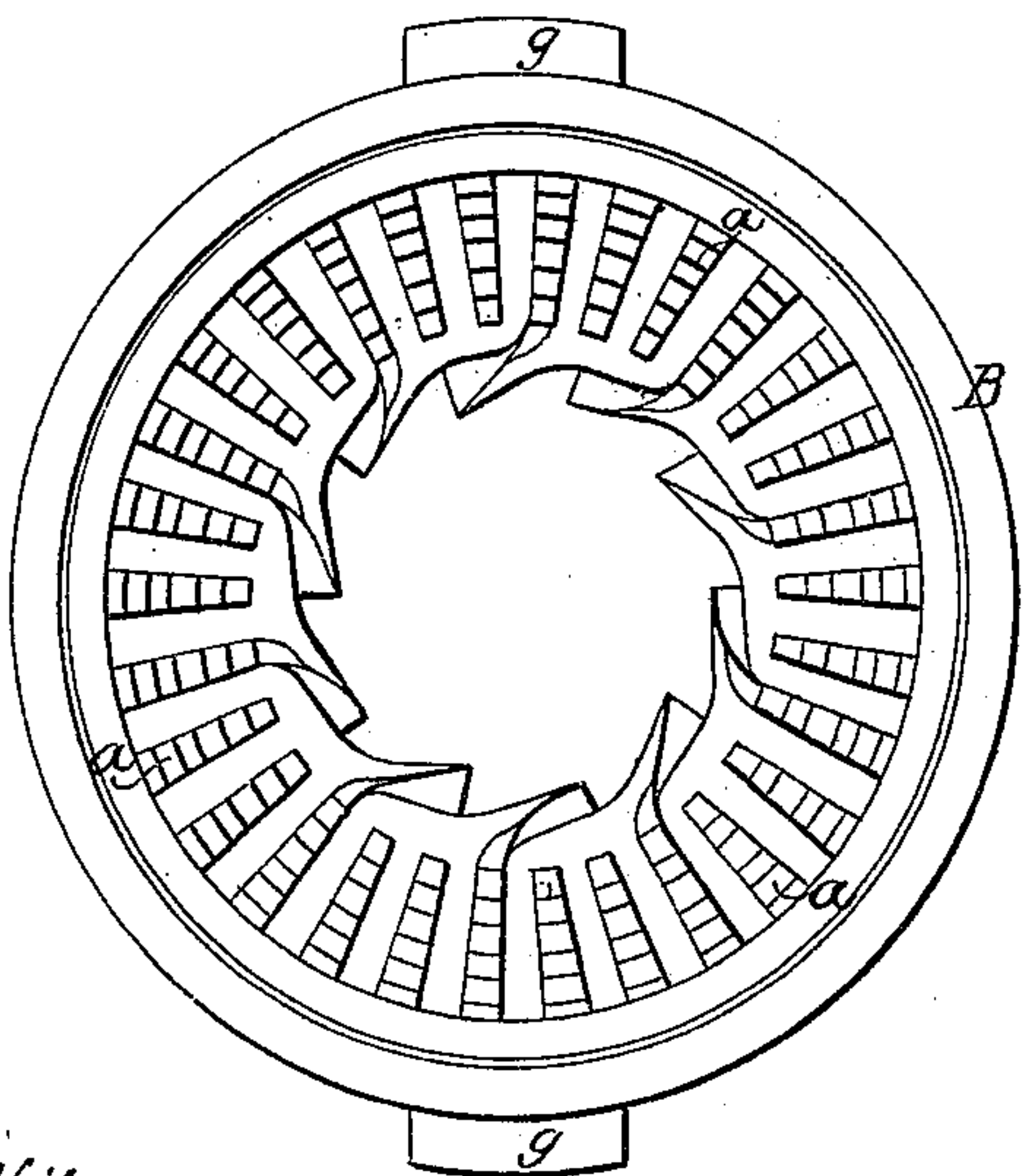


FIG. 3.



Witnesses:

Harry Smith  
James F. Tobin

FIG. 4.

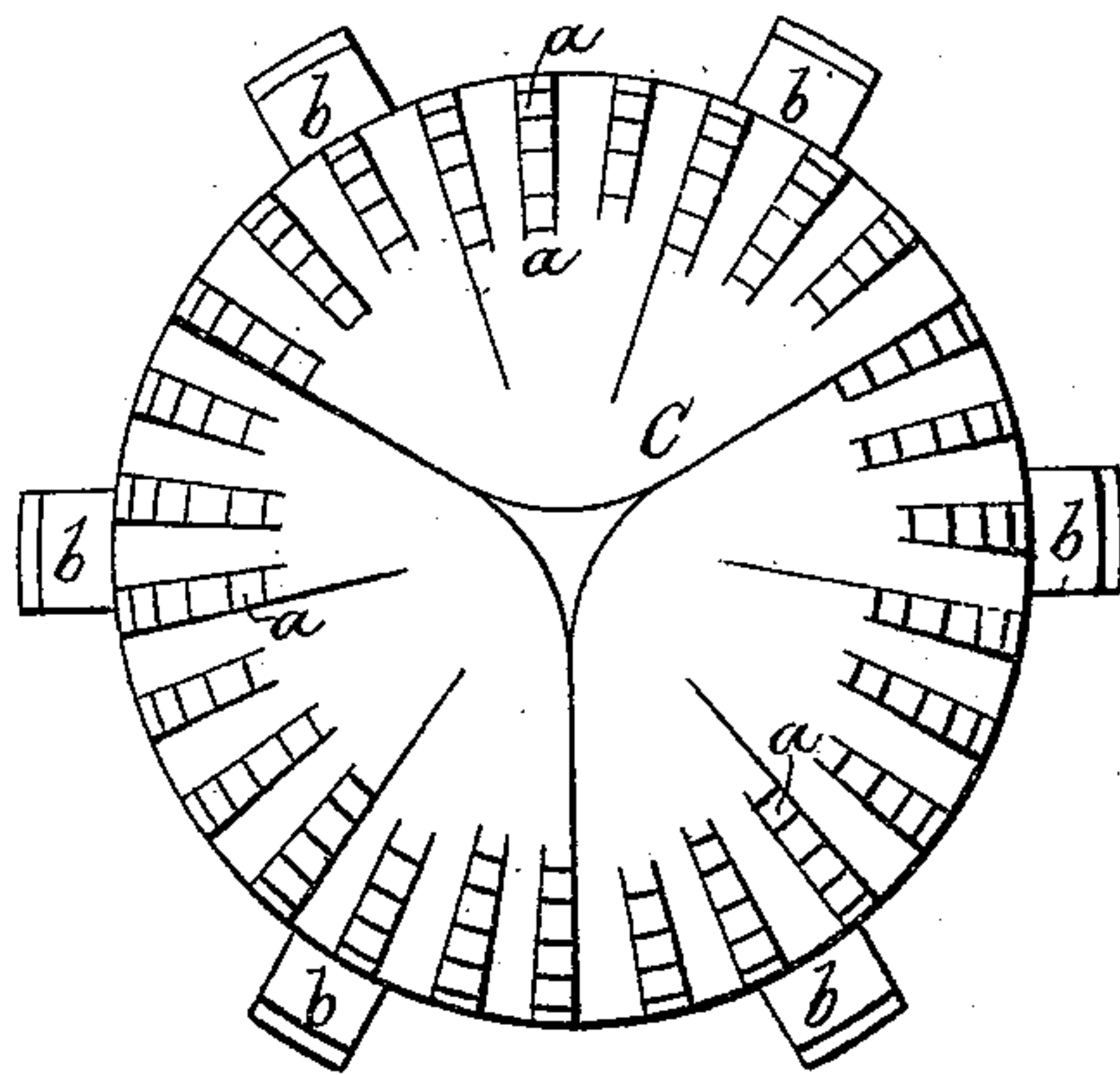


FIG. 5.

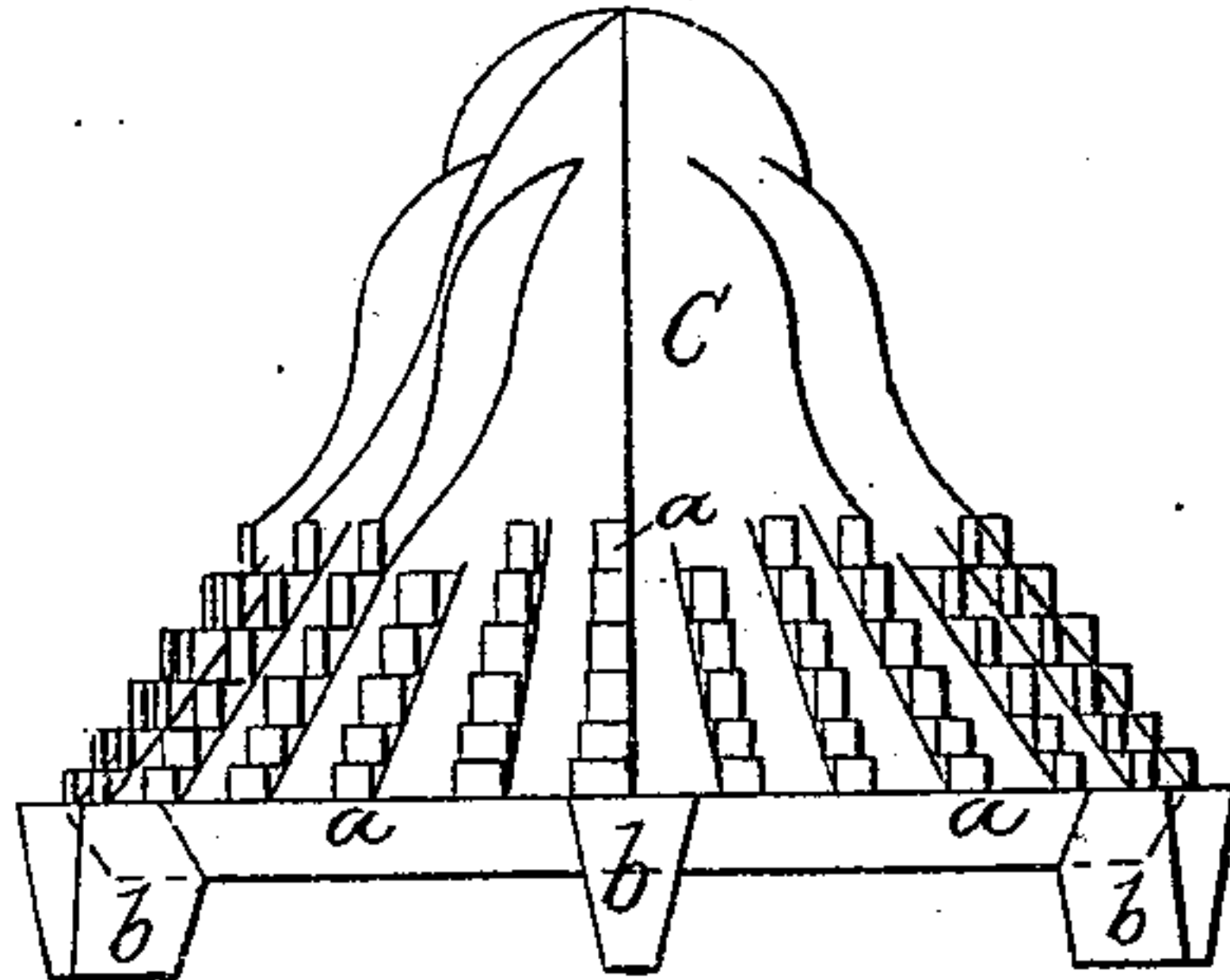
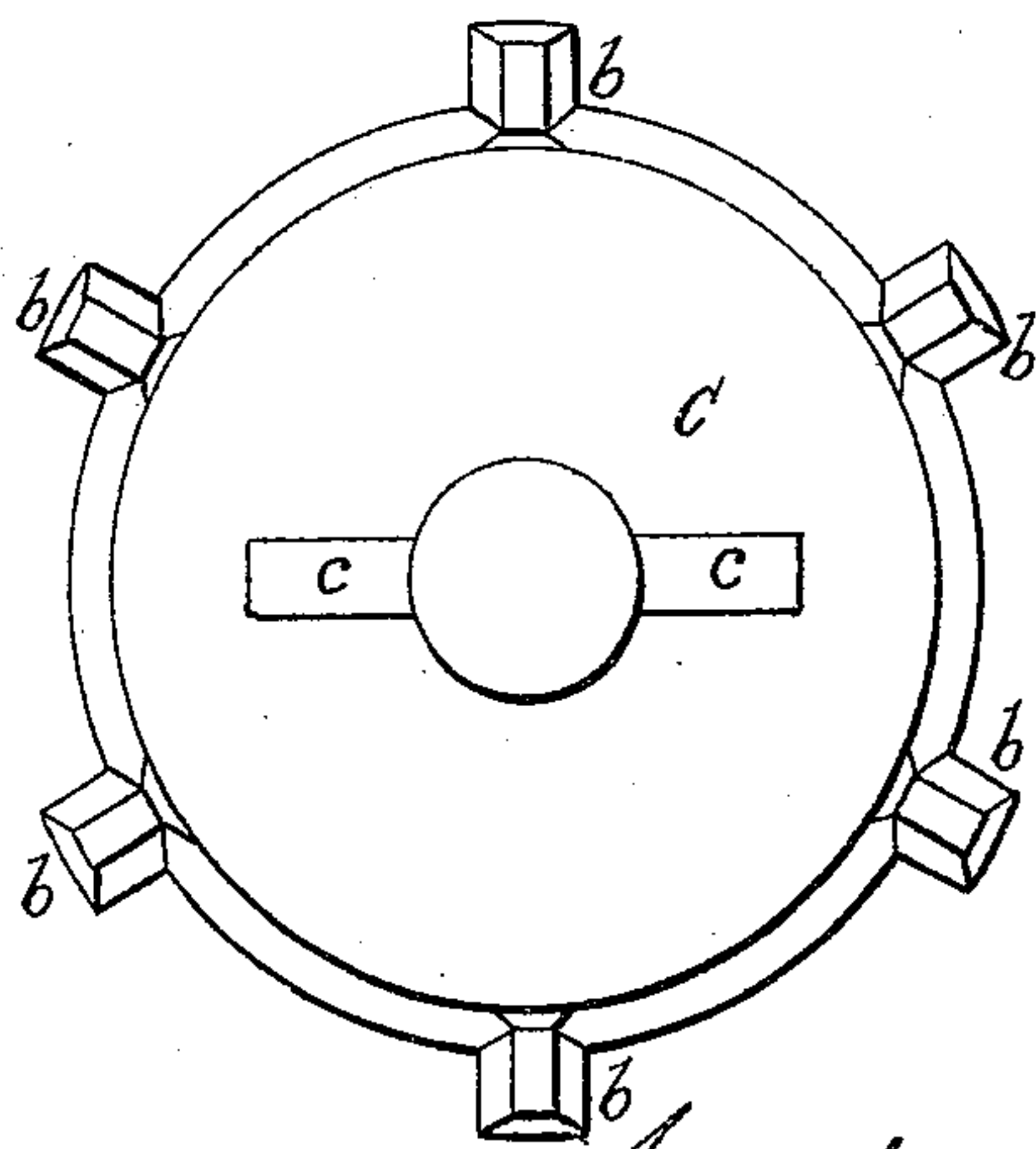


FIG. 6.



Inventor:

Robert Schneider  
by his attorneys,  
Howson and son

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FIG. 9

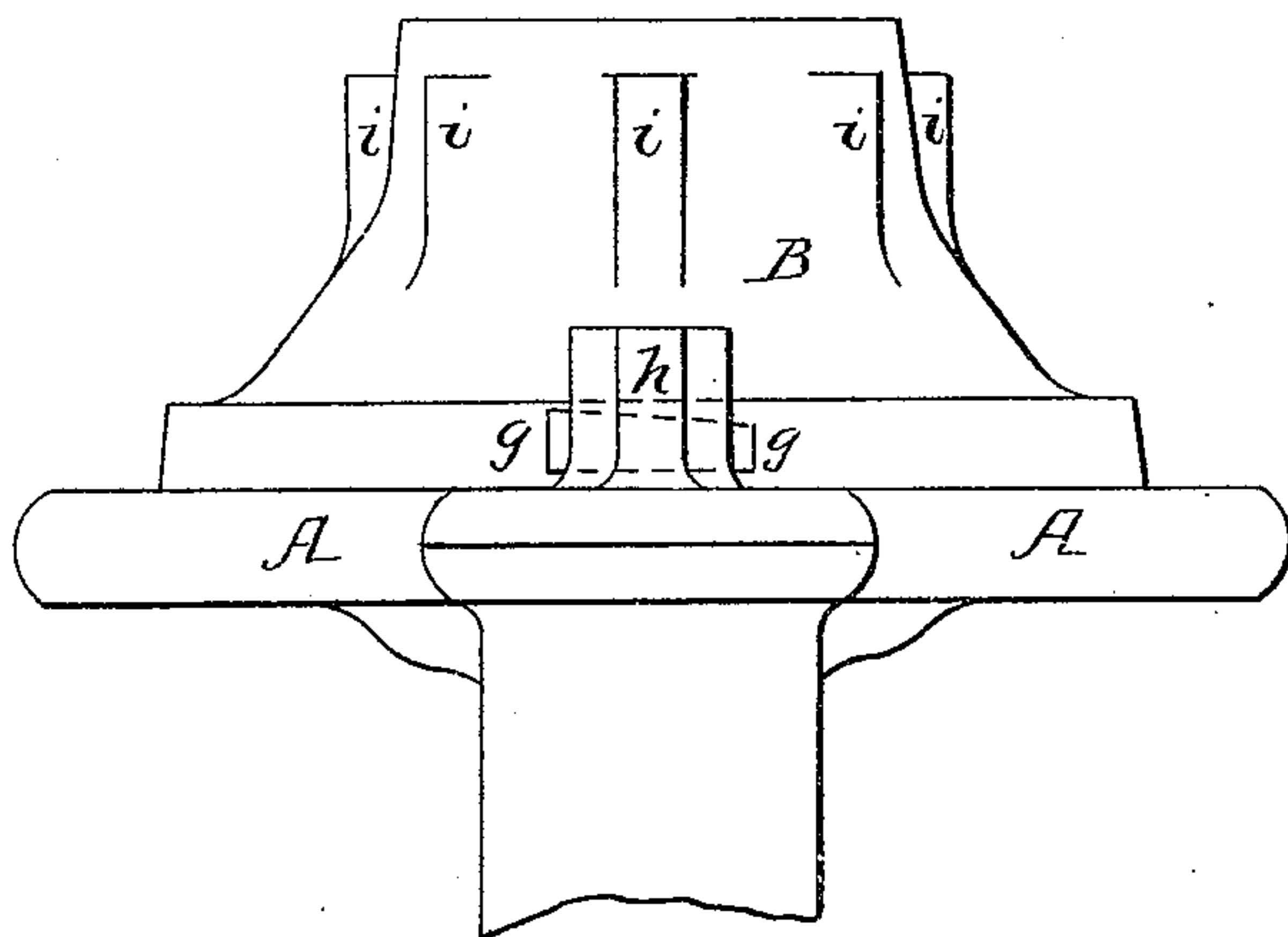


FIG. 7.

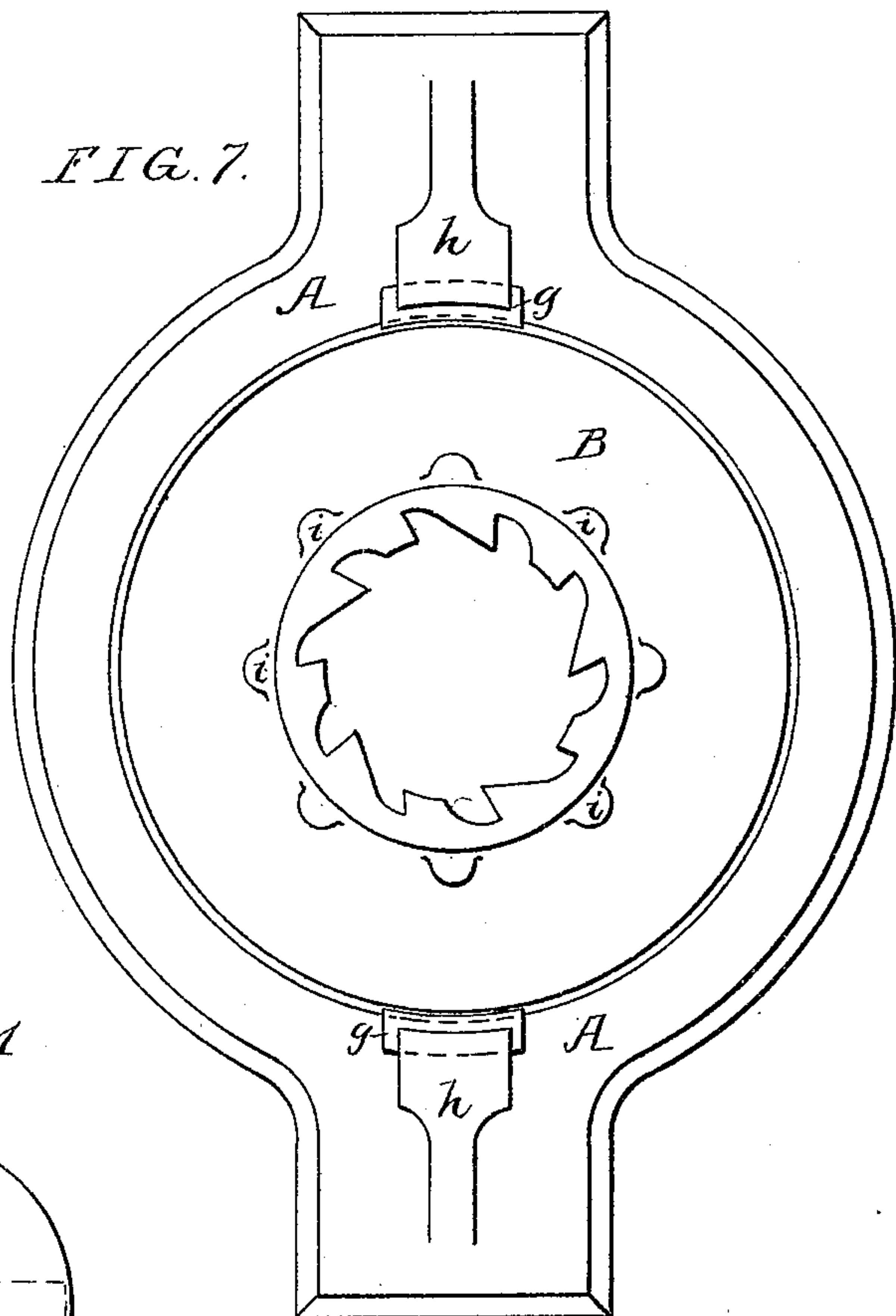
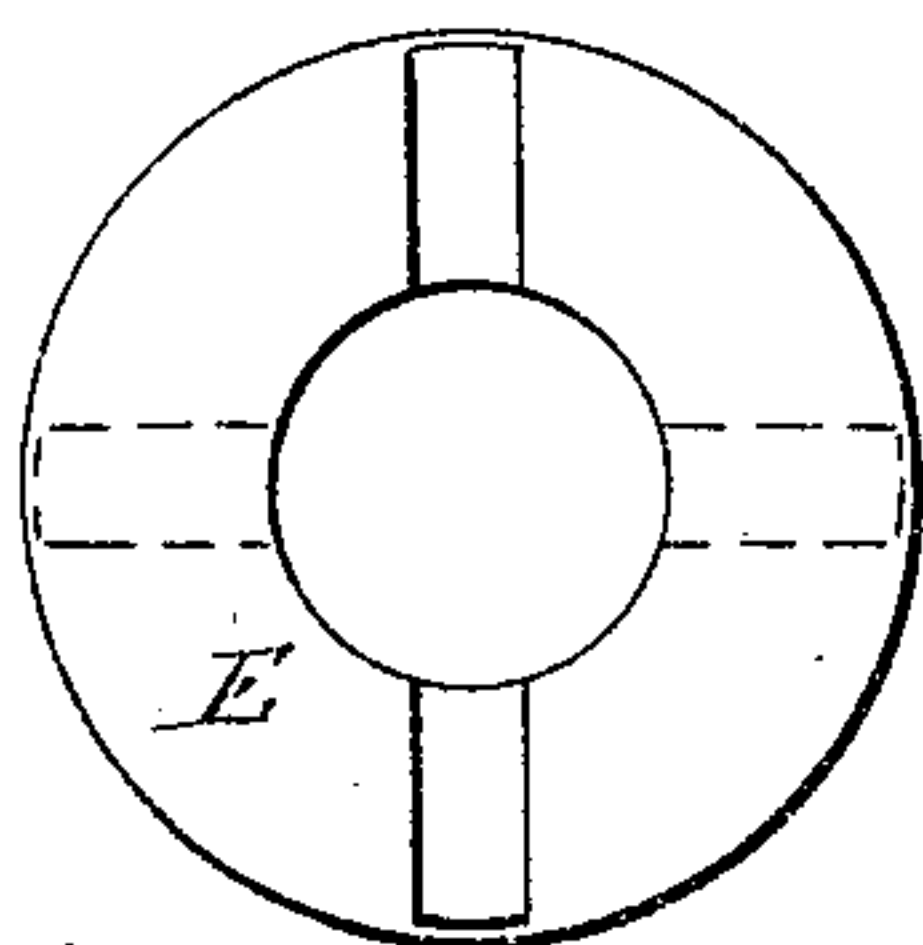


FIG. 11



Witnesses.

James F. Tobin.  
Harry Smith

Inventor.  
Robert Schneider  
by his Attorneys  
Howson and Co.

(No Model.)

3 Sheets—Sheet 3.

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GRINDING MILL.

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FIG. 10.

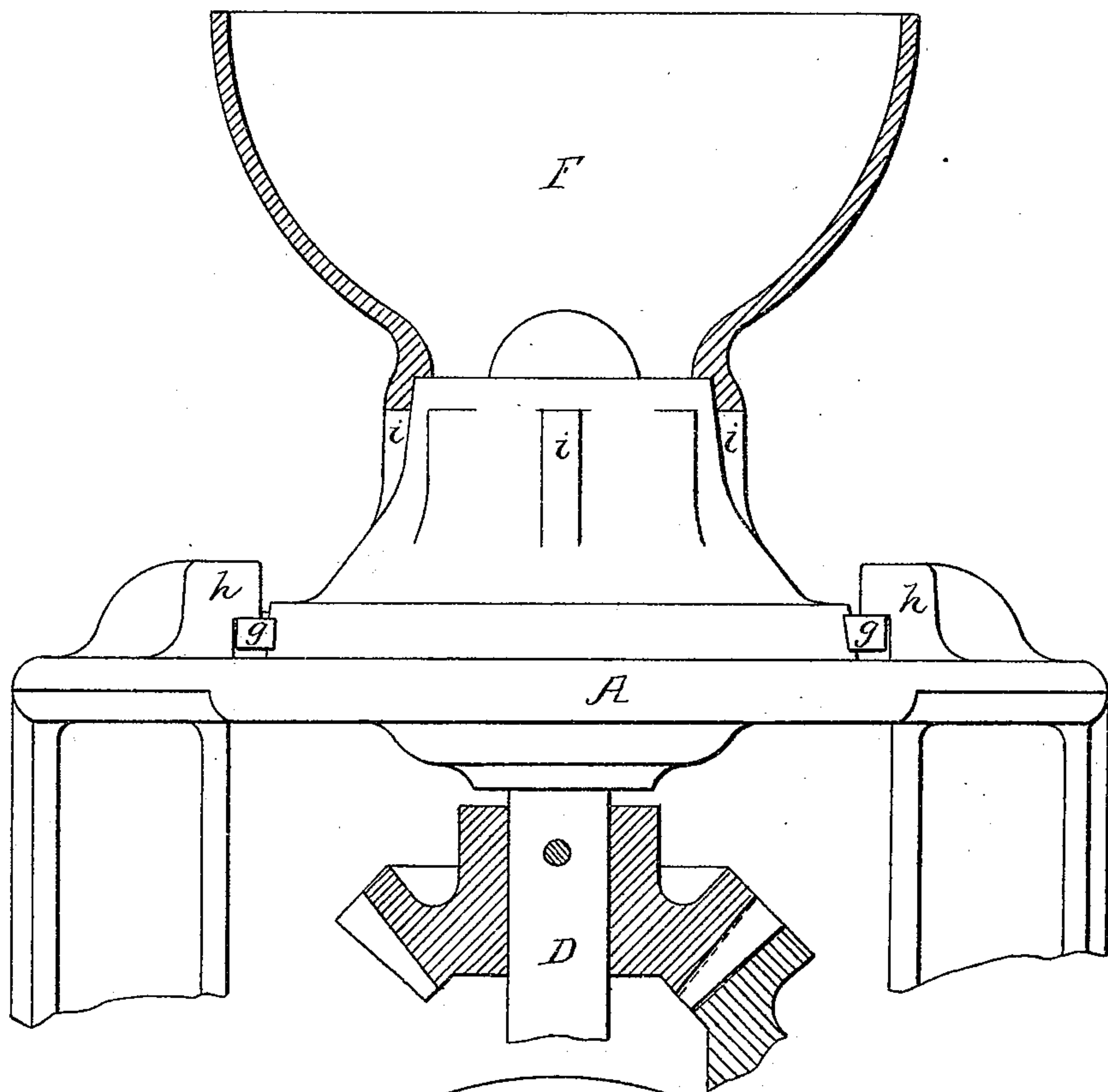
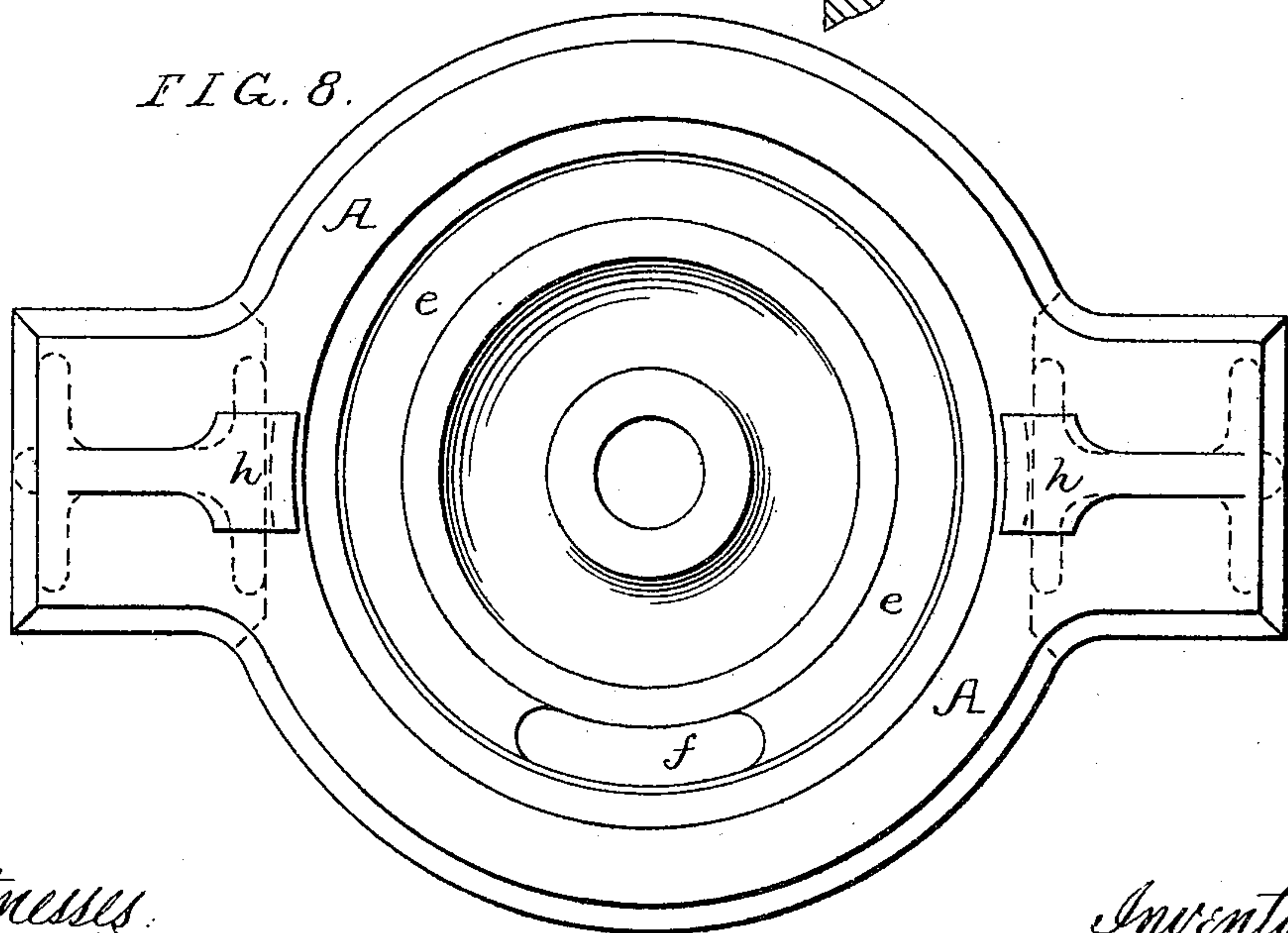


FIG. 8.



Witnesses.

Harry Smith  
James F. Tobin.

Inventor  
Robert Schneider  
by his attorneys  
Howson and son



# UNITED STATES PATENT OFFICE.

ROBERT SCHNEIDER, OF DÜSSELDORF, GERMANY.

## GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 249,106, dated November 1, 1881.

Application filed January 17, 1881. (No model.) Patented in Germany September 9, 1879.

*To all whom it may concern:*

Be it known that I, ROBERT SCHNEIDER, a subject of the King of Prussia, and residing in Düsseldorf, Germany, have invented certain  
5 Improvements in Grinding-Mills, (for which I have obtained a German patent, September 9, 1879, No. 10,866,) of which the following is a specification.

My invention relates to certain improvements  
10 in grinding-mills, the main objects of my invention being to improve the construction of the grinding-surfaces and facilitate the putting together and taking apart of the mill.

In the accompanying drawings, Figure 1,  
15 Sheet 1, is a vertical section of sufficient of my improved mill to illustrate my invention; Fig. 2, a vertical section of the shell; Fig. 3, an inverted plan of the shell; Figs. 4, 5, and 6, a plan, side view, and inverted plan, respectively,  
20 of the runner; Fig. 7, Sheet 2, a plan view of the shell attached to its frame; Fig. 8, Sheet 3, a plan of the frame-plate; Fig. 9, Sheet 2, a side view of the parts shown in Fig. 1; and Fig. 10, Sheet 3, a side view, partly in section, of the  
25 frame, shell, reservoir, and operating mechanism.

A is the base-plate, which, as indicated in Fig. 10, may be mounted on any suitable frame. To this plate is secured the shell B by means  
30 of wedge-shaped projections *g* on the latter, Figs. 3, 7, 9, and 10, adapted to lugs *h* on the base-plate, the taper of the wedges being in the direction of the motion of the runner C, so that when the runner revolves and tends to turn the  
35 shell the latter will only become more firmly held in place. The runner C is carried and turned by the vertical spindle D, through the medium of the balance-rynd E, a horizontal pin, *c*, on the shaft being adapted to a corresponding groove in the under side of the rynd,  
40 while a pin, *d*, of the runner C is adapted to a groove on the upper face of the rynd, but at right angles to the groove on the under side, so that the runner will be evenly balanced under  
45 all circumstances. The upper portions of the grinding-faces of both runner and shell are provided with coarse teeth, as indicated in Figs. 1, 2, 3, and 5, while the lower portions are provided with radial ascending ribs *a*, each rib hav-  
50 ing a row of step-like teeth, as indicated in the

drawings. The runner C is, however, provided with fewer ribs or rows of teeth than the shell B, in order to prevent possible jamming of the runner in the shell. Thus, as shown in the drawings, the runner has twenty-seven rows, 55 while the shell has thirty. By this unequal arrangement of the teeth only one toothed rib of the runner C can, when in operation, coincide at any one moment with any of the ribs of the shell, so that the power required to drive 60 the mill is less than if the number of ribs on the two grinding-surfaces were even. The rim of the runner C is provided with a series of radial guides, *b*, which are adapted to a corresponding annular recess in the shell B, as 65 shown in Fig. 1. The outer faces of these projections or guides are slightly beveled upward, so that when the runner is adjusted closer to the shell by the vertical adjustment of the spindle D these projections present bearing-faces 70 to come into contact with the shell and prevent the contact of the teeth of the two grinding-faces. These projections *b* have tapering pendant extensions, which, when the mill is in operation, traverse an annular groove or channel, 75 *e*, in the base-plate A, Figs. 1 and 8. The upper part of the channel is inclosed by the shell B and rim of the runner C. As the runner revolves the material from the reservoir F is ground and falls into the channel *e*, the exten- 80 sions of the projections *b* acting as conveyers to carry the material round to be discharged through the elongated opening *f*, which is provided with a detachable discharge-spout.

As already pointed out, the fastening devices 85 *g h* are self-tightening when the machine is in operation. When the mill is stopped, and it is desired to take the mill apart, it is only necessary to reverse the movement of the runner to loosen the shell, which can then be readily 90 removed, ribs *i i* being provided on the outside of the shell, Figs. 2, 7, and 9, to facilitate this operation. The runner and balance-rynd can then be readily removed and the parts cleaned. Thus no tool is required either for 95 taking the mill apart or putting it together again.

I claim as my invention—

1. In a grinding-mill, the combination of the conical runner with the hollow conical shell, 100

both runner and shell having on the upper portions of their grinding-faces a series of coarse teeth, and on their lower portions radial ribs with step-like teeth, all substantially as described.

5 2. In a mill, the combination of the base-plate, having lugs *h*, with a runner and a shell having projections *g*, tapering in the direction of the normal movement of the runner, substantially as set forth.

10 3. The combination of mill-spindle, the base-plate having lugs *h*, with the shell having pro-

jections *g*, and the runner and balance-rynd supported on said spindle, so as to be free for removal when the shell is taken away, all substantially as set forth. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROB. SCHNEIDER.

Witnesses:

JOHANN HEINTGER,  
AUG. HÄRTEE.