

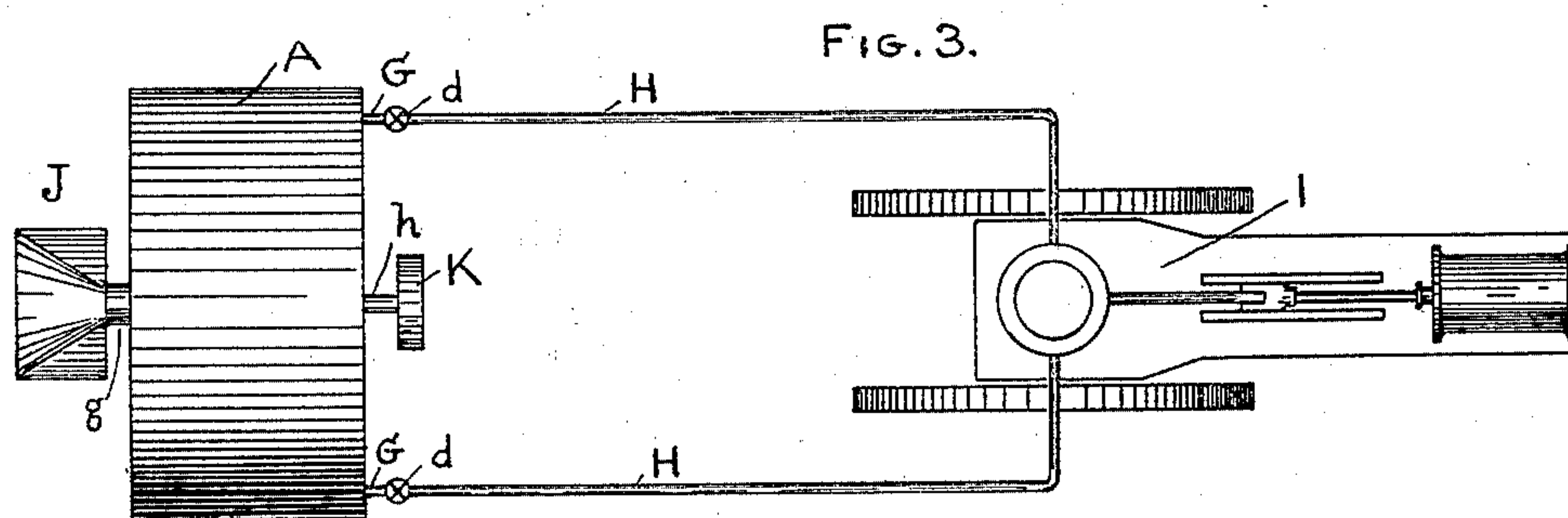
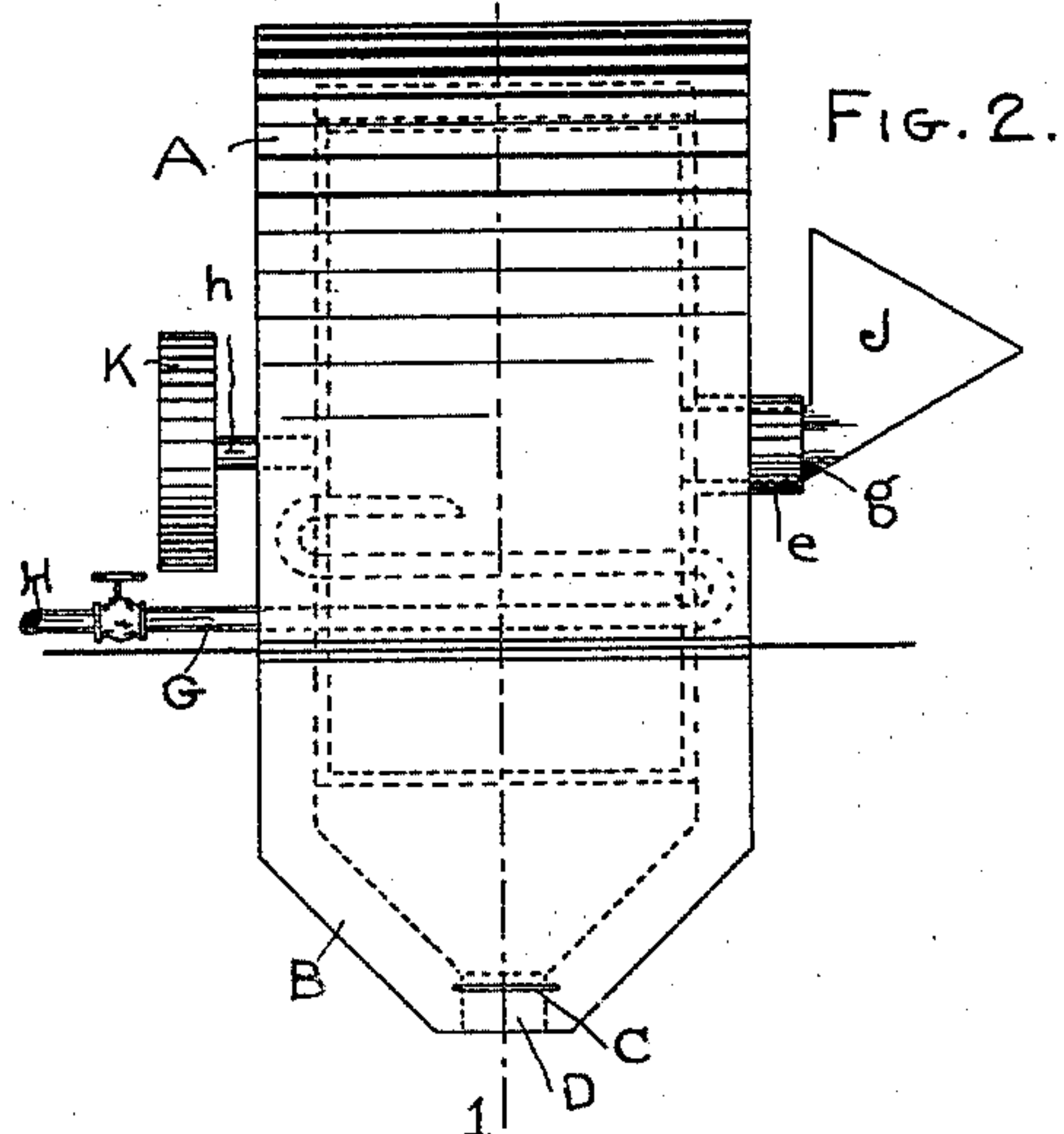
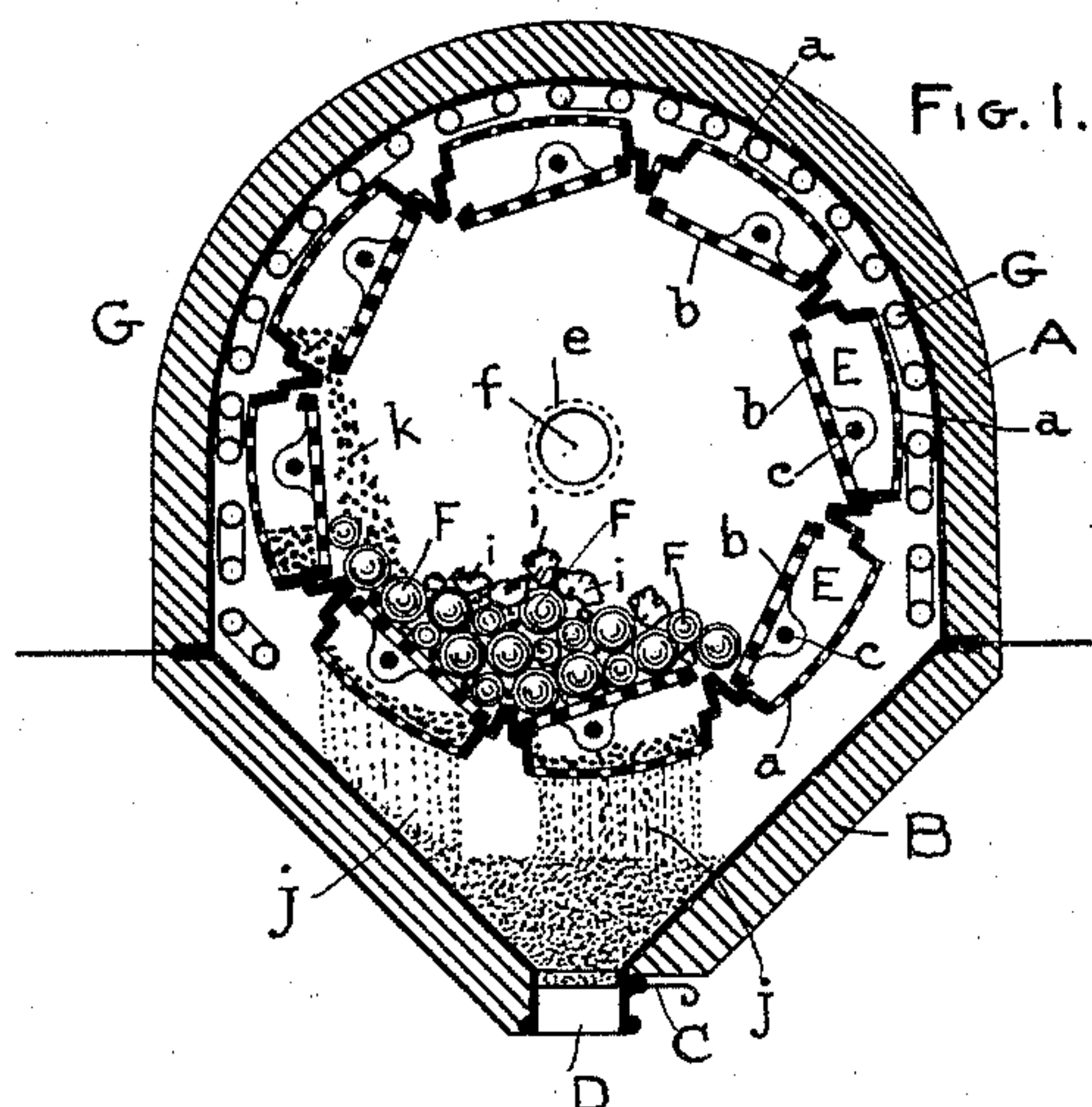
(No Model.)

G. W. GOETZ.

PROCESS OF AND APPARATUS FOR COMMUNUTING MATERIALS OF A
VISCOUS OR PASTY NATURE.

No. 441,951.

Patented Dec. 2, 1890.



WITNESSES.

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UNITED STATES PATENT OFFICE.

GEORGE W. GOETZ, OF MILWAUKEE, WISCONSIN.

PROCESS OF AND APPARATUS FOR COMMINUTING MATERIALS OF A VISCOUS OR PASTY NATURE.

SPECIFICATION forming part of Letters Patent No. 441,951, dated December 2, 1890.

Application filed June 4, 1890. Serial No. 354,197. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. GOETZ, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain
5 new and useful Improvements in the Process of and Apparatus for Comminuting Material which is of a Viscous, Gummy, or Pasty Nature at Ordinary Temperature; and I do hereby declare that the following is a full, clear,
10 and exact description thereof.

My invention relates to the comminution of material which is of a viscous, gummy, or pasty nature at ordinary temperature; and it consists in a certain process and apparatus
15 for readily and successfully effecting such comminution, as will be more fully set forth hereinafter and subsequently claimed.

In the drawings, Figure 1 is a central vertical section, through the line 1 1 of Fig. 2, of
20 a portion of the preferred means for the convenient carrying out of my said process. Fig. 2 is a side elevation of the device shown in Fig. 1, and Fig. 3 is a plan view of the entire apparatus used in said process.

25 A represents the upper part of a casing, and B the lower part thereof, preferably made of wood and suitably lined, as with metal, the upper part being closed and the lower part provided with a slide C and an opening or
30 chute D beneath the same. This casing has closed sides, within which is located a revolving cylinder composed of a series of perforated sections E E, each section having an outer finely-perforated portion *a* and an inner movable and more coarsely-perforated portion *b*,
35 journaled on a pivot *c* at one side of its center to the end walls of said cylinder, so that said inner portions *b* shall tilt and open at the required time, as hereinafter more fully explained. The interior of this cylinder is further
40 provided with a number of loose balls or rolls F F F, while between the upper portion A of the casing and the outside of said cylinder there is arranged a pipe-coil G, communicating, as shown at H H in Fig. 3, with a refrigerating-machine I, whereby cold brine,
45 ammonia, or any other suitable refrigerating-fluid may be circulated through said pipe-coil G, there being suitable valves or cocks *d* to govern the flow of said fluid. One of the trunnions of said cylinder is hollow, as shown at

e, so as to have an opening *f* into the interior of the cylinder, which opening receives the pipe end *g* of a suitable chute or hopper J, while the other trunnion *h* carries at its outer
55 end a belt-pulley K, by means of which power is communicated to revolve said cylinder.

In carrying my process into effect I start the refrigerating-machine I, whereby the refrigerating-fluid employed is caused to circulate through the pipe-coil G, thereby producing an intense degree of cold within the casing A. The material to be reduced (such as asphaltum, for example) is introduced within
60 the casing and into the revolving cylinder by means of the described chute or hopper J and its pipe end *g*, falling in lumps or masses *i i*, which speedily become chilled and frozen until they are brittle and friable. Power is then
65 applied to the cylinder-pulley K and the cylinder rapidly revolved, when the lumps *i i* become speedily crushed and triturated by the action of the balls or rolls F F, and the reduced product passes through the coarsely-perforated inner portions *b* of the said cylinder
70 and the finer particles pass next through the more finely-perforated outer portions *a* of said cylinder and drop down into the lower part B of the casing, as shown at *j j* in Fig. 1, while those particles which are too coarse to
75 pass through the finely-perforated portions *a* of the cylinder are carried up in the continued revolution of the latter until the inner portions *b* swing open by gravity on their pivots *c* and permit said coarse particles to fall
80 out into the body of the cylinder, as shown at *k* in Fig. 1, to again encounter the balls or rolls F F and be still further comminuted, and so on. The finely-powdered particles can be
85 withdrawn by opening the slide C as needed and intimately mixed, if desired, with any other powdered fine or granulated material, which would be a practical impossibility when
90 the material *i* was in its normal viscous and gummy condition.

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

1. The process of comminuting material which is of a viscous, pasty, or gummy nature,
100 consisting of introducing the same into a closed receptacle, reducing the temperature

until the said material becomes friable, and then subjecting it to motion and attrition, substantially as set forth.

2. The process of comminuting material
5 which is of a viscous, pasty, or gummy nature at ordinary temperature, consisting of introducing said material within a closed casing and circulating a refrigerating medium about said material within said casing, and then sub-
10 jecting said material when in a chilled or frozen condition to attrition against movable inflexible bodies, substantially as set forth.

3. The herein-described apparatus for comminuting material which is of a viscous, gum-
15 my, or pasty nature at ordinary temperature,

consisting of a closed casing, a pipe-coil located therein, a perforated cylinder revolving within said casing, a series of loose balls or rolls within said cylinder, and a refrigerating-machine connected to said pipe-coil, substan- 20
tially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

GEORGE W. GOETZ.

Witnesses:

H. G. UNDERWOOD,
HARRY HYATT.