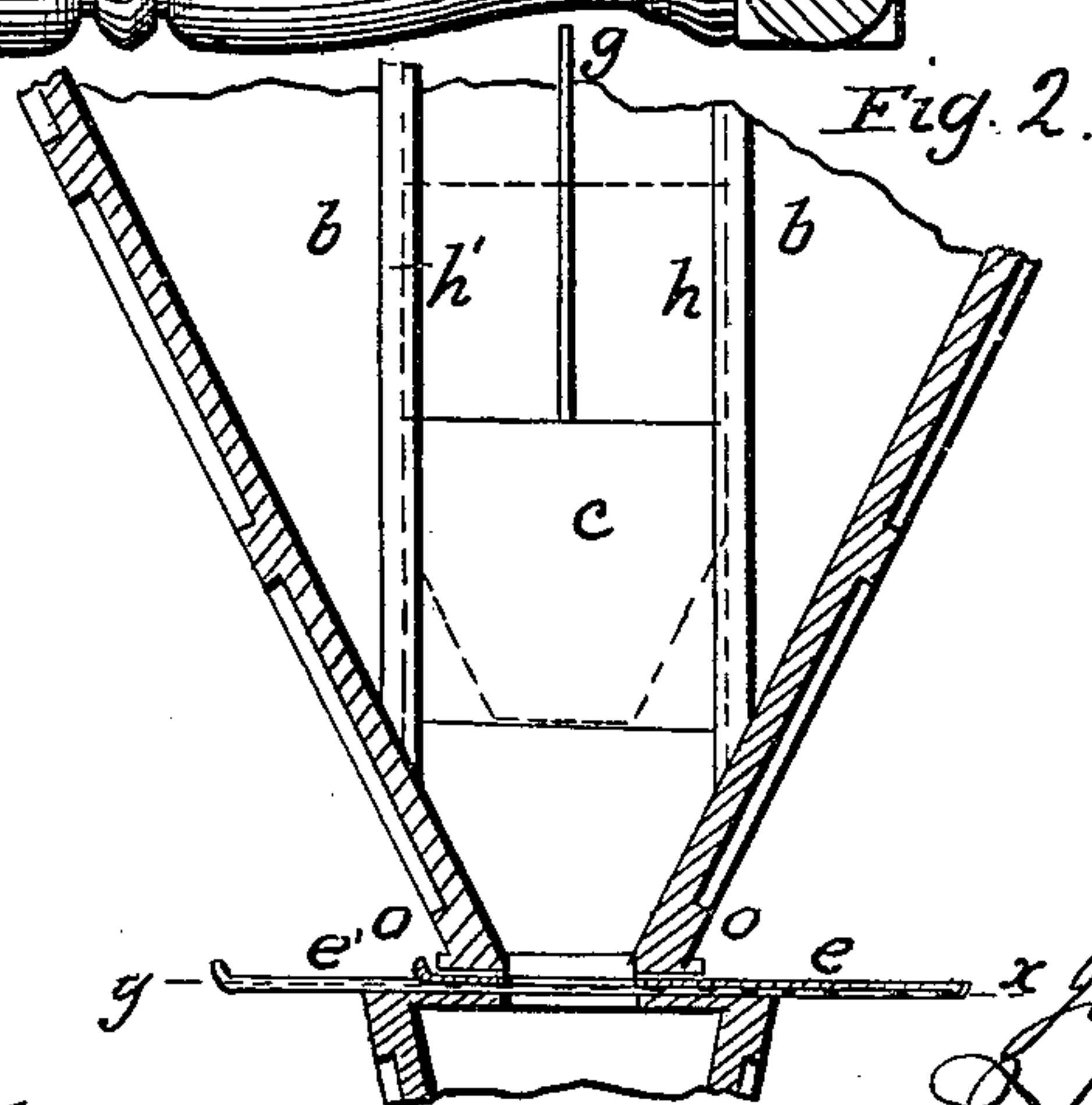
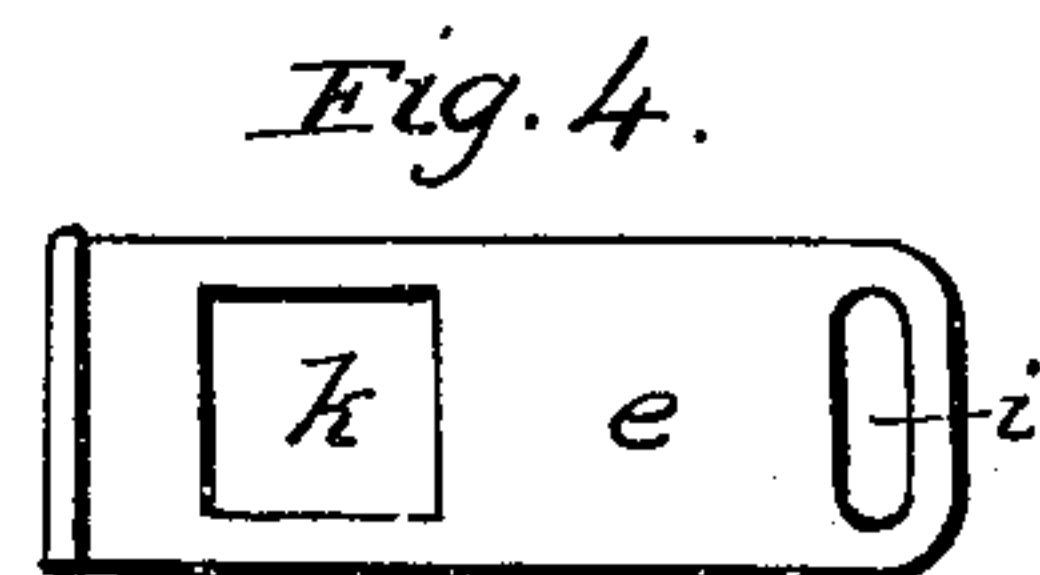
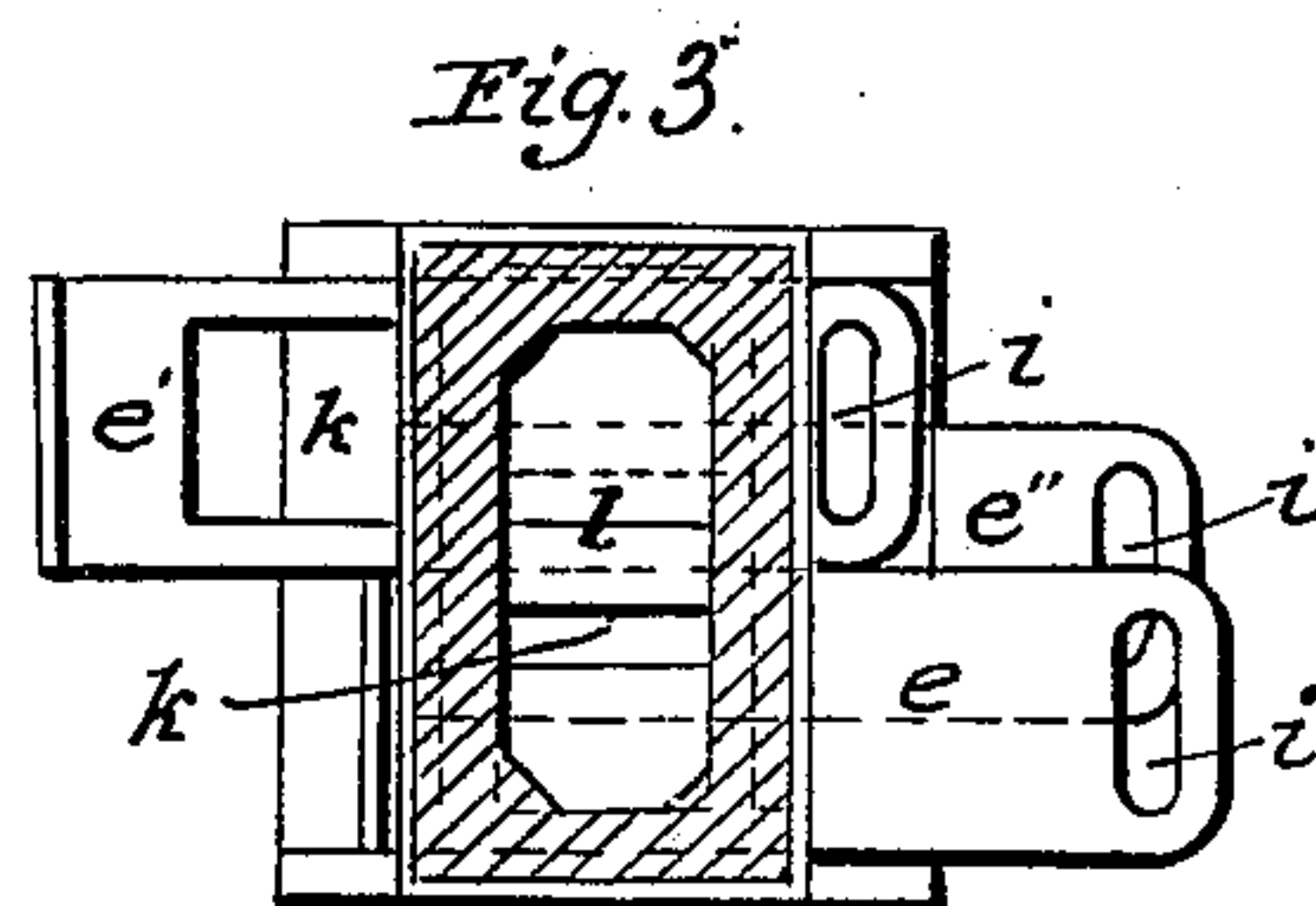
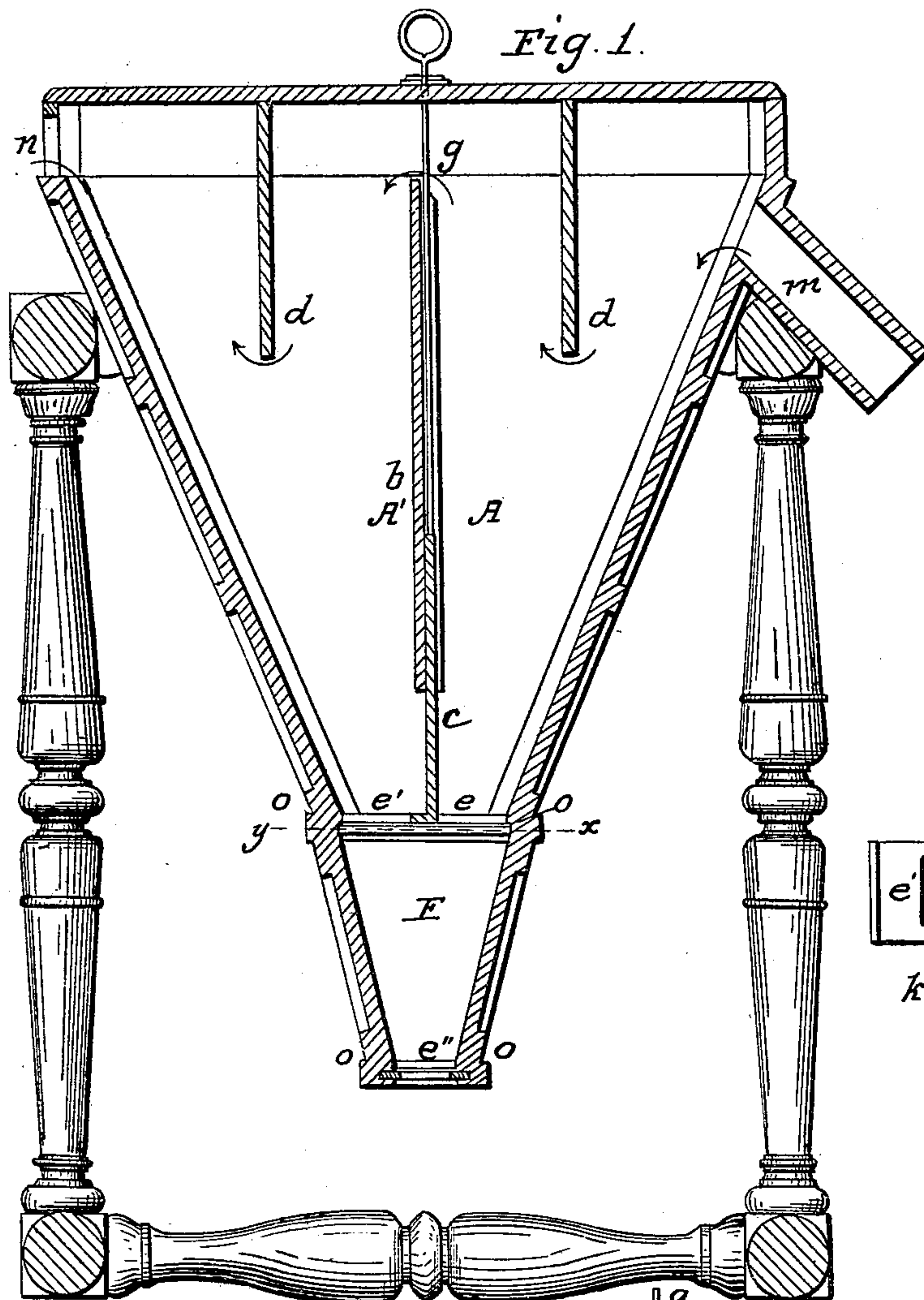


WHELPLEY & STORER.

Ore Separator.

No. 53,718.

Patented April 3, 1866.



Witnesses:

Thomas Clarke
H. Hays Tucker

Inventors:

James D. Whelpley
Jacob D. Storer

UNITED STATES PATENT OFFICE.

JAMES D. WHELPLEY AND JACOB J. STORER, OF BOSTON, MASS.

IMPROVED APPARATUS FOR SEPARATING ORES.

Specification forming part of Letters Patent No. 53,718, dated April 3, 1866.

To all whom it may concern:

Be it known that we, JAMES D. WHELPLEY and JACOB J. STORER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improved Dust-Chamber; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perpendicular section. Fig. 2 is a similar section at right angles to the section of Fig. 1. Fig. 3 is a plan at the line *xy*, Figs. 1 and 2. Fig. 4 is a plan of the slide-valves.

Our invention consists in the use of a secondary hopper opening into a main hopper and into the open air by slide-valves, so that the main hopper may be emptied into it and then closed while the secondary hopper is being emptied; in a double main hopper for precipitating dust of different gravities, either as two qualities or as but one, at the discretion of the miller, as in the separation of fine metal from the pulverized ore; in a peculiar construction of slide-valve and its dust-tight packing.

Others skilled in the art can make and use our invention by observing the following description of its construction and operation:

A large covered hopper is constructed of the form of a truncated pyramid, as represented in Fig. 1, which is divided into two cavities, *A A'*, by partitions *b*, reaching from nearly the top of said hopper to nearly the bottom of the same. The opening between the lower part of partition *b* and the bottom of said hopper may be closed by door *c*, sliding in rabbeted guides *h h'*, and raised or depressed by rod *g*, operated from outside the hopper. Partitions *d d'* extend from the cover of the hopper toward the bottom of the same, and air charged with dust is admitted by pipe *m* and discharged by outlet *n*.

On entering the hopper the momentum of the air is destroyed by impinging on partition *d*, but the pressure of the constantly-increasing volume of air carries it through the hopper. The heavier particles of dust in suspension are deposited by the combined influence of gravity and inertia at the bottom of cavity

A, while the lighter particles are carried forward over partition *b* into cavity *A'*, where a second deflection takes place. A second and lighter quality of dust is deposited in cavity *A'*. To insure perfect precipitation other hoppers are added, and the air still charged with dust is sent through them, depositing a finer and lighter quality in each successive cavity.

A secondary hopper, *F*, is placed at the bottom of the main hopper, and separated from it by two slide-valves, *e e'*, one opening into cavity *A*, the other into cavity *A'*. At the bottom of hopper *F* is a similar slide-valve, *e''*, allowing the discharge of the dust received from the main hopper, and this whole apparatus is supported by a stout frame.

If it is desired to collect two qualities of dust, the door *c* is lowered, as shown in Fig. 1; if but one quality, it is raised, as shown in Fig. 2.

The slide-valves *e e' e''* are constructed, as shown in Fig. 4, with a hole, *k*, of the same size and shape as the open area of the bottom of the cavity it terminates, and a hand-hole, *i*, or other suitable device, to draw the valve back and forth. The bottom of the hopper to which these slide-valves are applied is made as smooth as possible, and a dust-tight joint is formed by fastening strips of felt, *o*, to said bottom by a suitable adhesive substance, (shellac being the best now known, though common glue will answer tolerably well,) on which felt packing said slides move. If two qualities of dust have been collected, door *c* being depressed, valve *e''* being closed, valve *e* is opened, and the contents of cavity *A* is discharged into secondary hopper *F*. Valve *e* is then closed and valve *e''* opened, and the first or heavier quality of dust discharged into a suitable receptacle, such as a barrel. Valve *e''* is then closed, valve *e'* opened, and the contents of cavity *A'* discharged into secondary hopper *F*. Valve *e'* is then closed, valve *e''* opened, and hopper *F* discharged into a different receptacle, the first having been removed. Door *c* being open, the two qualities of dust will be precipitated together, both valves *e e'* will be opened together, and cavities *A A'* will be emptied at the same time, yielding a mixture of the heavier and lighter qualities.

When it is desirable to clean the dust-chamber, the valves *e e' e''* may all be opened, and

the chamber blown out by air not charged with dust, or washed with water.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The secondary hopper, in combination with the main hopper, and opening into it and into the open air by valves, to be employed alternately, substantially as described.

2. The door *c* and its rod *g*, in combination with partition *b*, substantially as and for the purpose described.

3. The valves *e e' e''*, constructed with their openings *k* of the same size and shape as the open area of the bottom of the cavity to be closed, in combination with the bottom of the hopper and the dust-tight felt packing, substantially as described.

JAMES D. WHELPLEY.

JACOB J. STORER.

Witnesses:

THOS. WM. CLARKE,

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