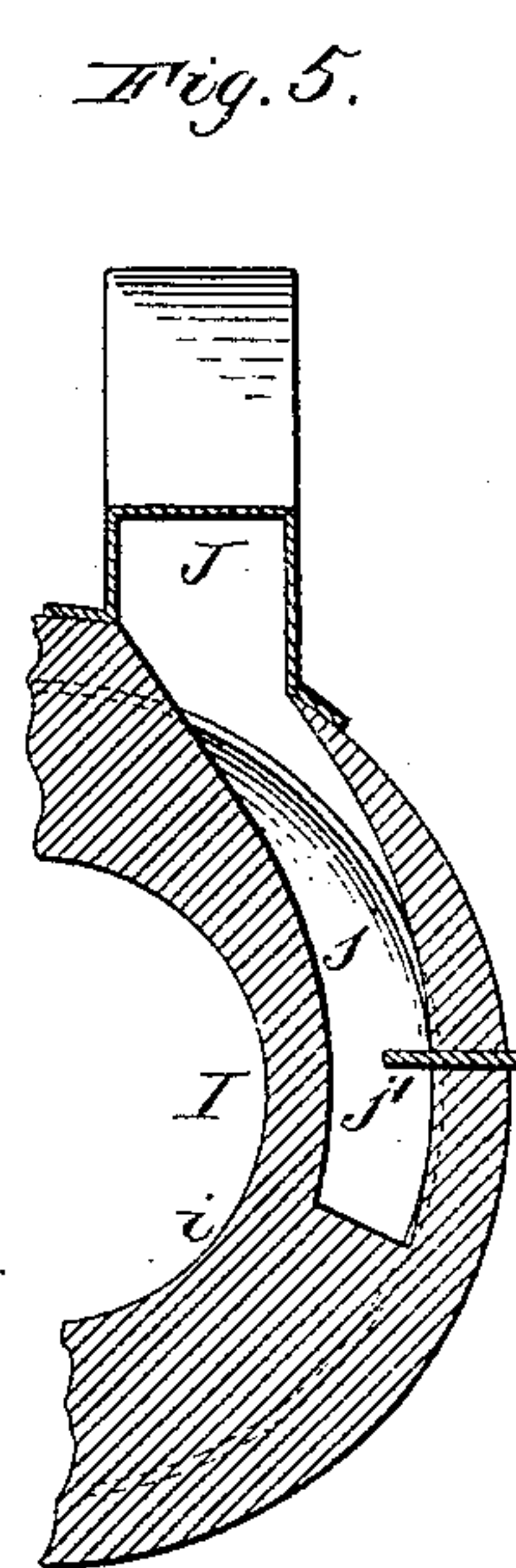
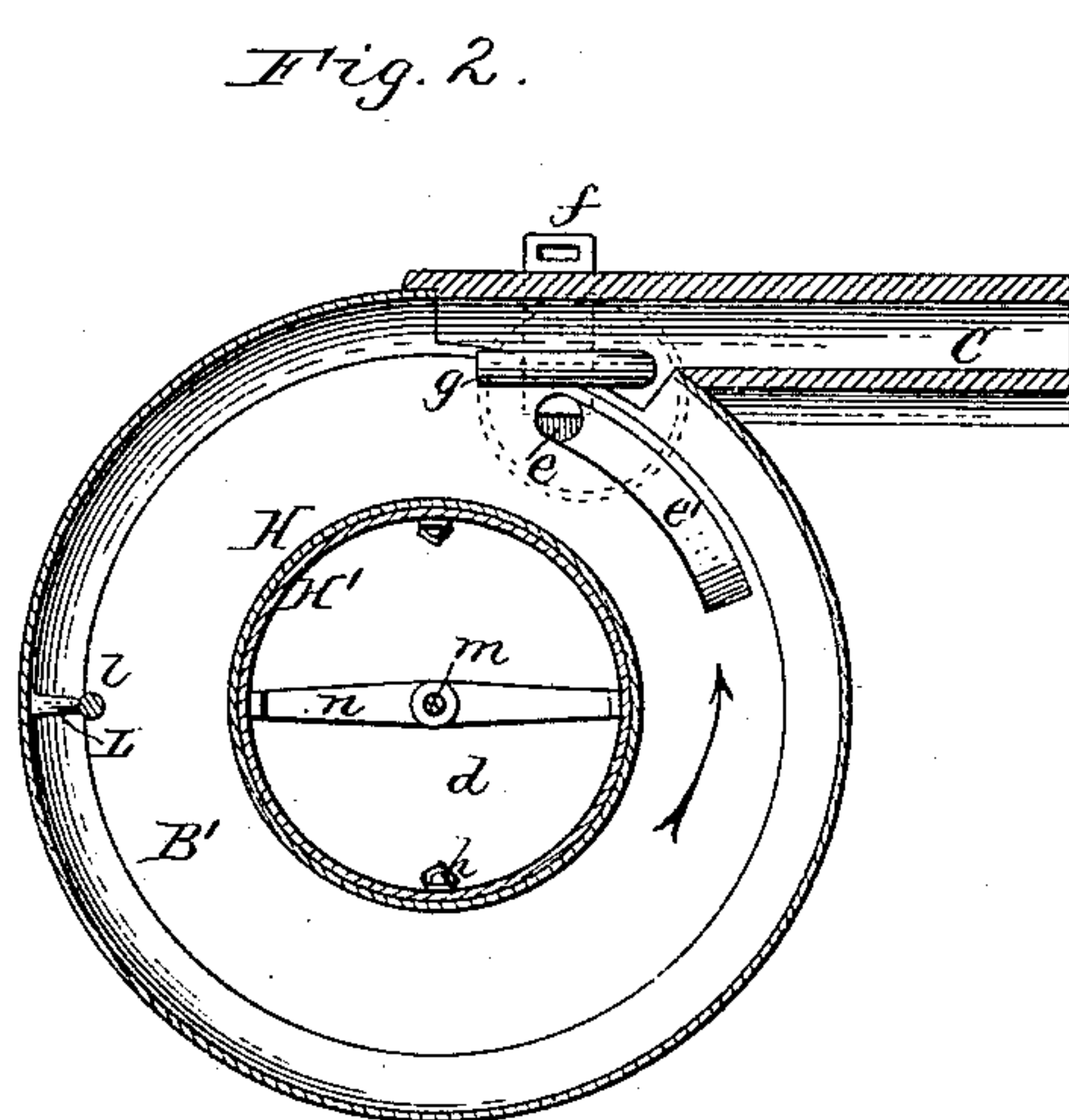
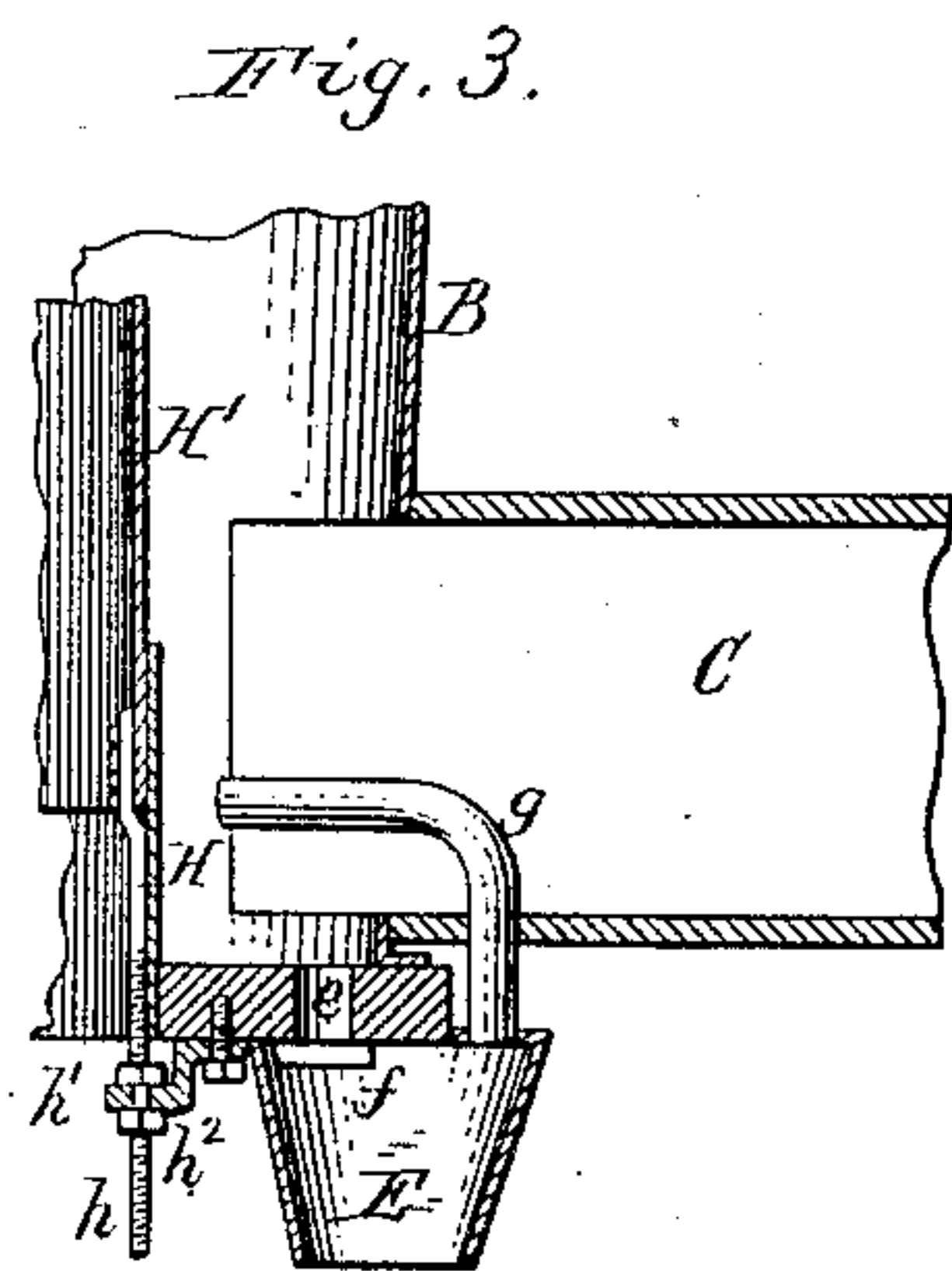
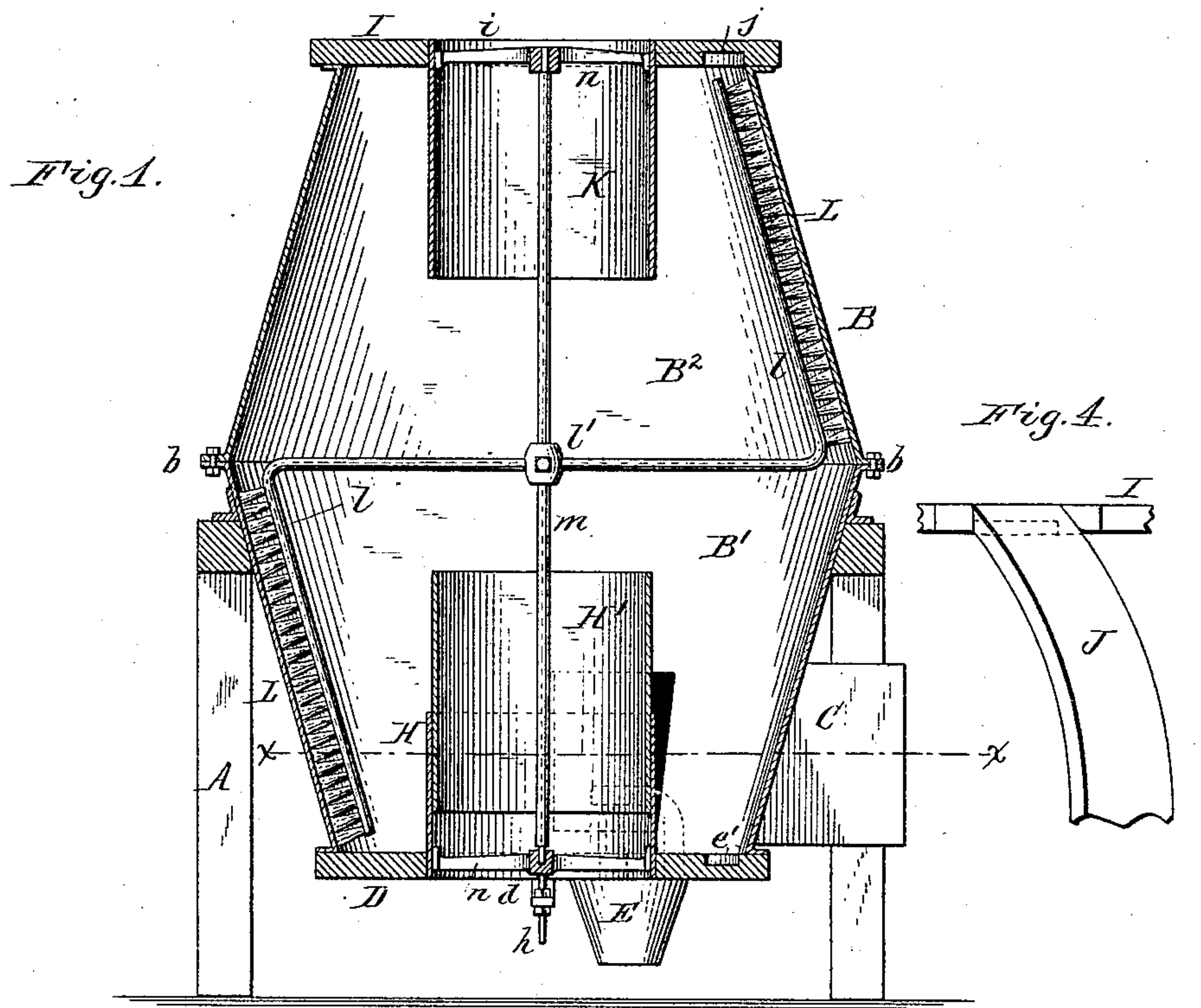


(No Model.)

O. M. MORSE.
DUST COLLECTOR.

No. 452,554.

Patented May 19, 1891.



Chas. J. Buchheit.
Theodore L. Popp. } witnesses.

O. M. Morse Inventor.
By Wilhelm Honner.
Attorneys.

UNITED STATES PATENT OFFICE.

ORVILLE M. MORSE, OF JACKSON, MICHIGAN, ASSIGNOR TO THE KNICKERBOCKER COMPANY, OF SAME PLACE.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 452,554, dated May 19, 1891.

Application filed June 9, 1886. Serial No. 204,685. (No model.)

To all whom it may concern:

Be it known that I, ORVILLE M. MORSE, of Jackson, in the county of Jackson and State of Michigan, have invented new and useful
5 Improvements in Dust-Collectors, of which the following is a specification.

This invention relates to a dust-collector in which a tapering chamber or case is employed for separating the dust from the air by the
10 whirling or gyrating motion of the body of air, which drives the dust particles against the inner side of the separating-case and at the same time causes them to move toward its smaller end. A machine of this kind is
15 described in an application for Letters Patent of the United States filed by me March 31, 1886, Serial No. 197,307.

The principal object of the present invention is to construct a machine of this kind
20 whereby two grades of dust slightly different in size or specific gravity are discharged separately. Other objects of my invention are to make the air-outlet guard adjustable and to provide a suitable cleaner for the separating-
25 case.

My invention consists to these ends of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved dust-collector. Fig. 2 is a horizontal section in line *xx*, Fig. 1. Fig. 3 is a vertical section through the air-inlet spout and the adjacent dust-discharge. Fig. 4 is a perspective view
35 of the upper dust-discharge spout. Fig. 5 is a horizontal section through the upper dust-discharge passage.

Like letters of reference refer to like parts in the several figures.

40 A represents the stationary frame of the machine.

B represents the separating chamber or case, supported in the frame A and composed of two conical or tapering compartments B'
45 B², joined together with their large ends at *b* and having their axis arranged vertically.

C represents the horizontal spout through which the dust-laden air enters the lower portion B' of the separating-chamber in a tan-
50 gential direction.

D represents the cover or head which closes the lower small end of the lower portion B' of the separating-chamber, and which is provided with a central opening *d* for the escape of the purified air and a discharge-opening *e*
55 for the heavy dust located near the periphery of the head. The latter is preferably provided on its upper side with a groove *e'*, leading to the opening *e* in the direction in which the air gyrates in the separating-chamber. 60
(Indicated by the arrow in Fig. 2.)

E represents a hopper or spout secured to the head D below the opening *e* for the reception of the heavy dust. The opening *e* is preferably provided with a slide *f*, as represented in Figs. 2 and 3, whereby the size of
65 the opening can be regulated.

g represents a bent air-pipe or siphon arranged in the air-inlet spout C near its mouth and communicating at its lower end with the
70 hopper E, so that an excess of air discharged through the opening *e* into the hopper E can return through the pipe *g* into the chamber B. This siphon is, however, not necessary except when a comparatively heavy air-pressure is
75 maintained in the chamber B.

H represents the tubular guard secured to the head D in the opening *d*, and projecting upwardly into the chamber B.

H' is a sleeve fitted loosely in the guard H
80 and attached to the head D by screws *h*, passing through ears *h'* and held by screw-nuts *h²*, as represented in Fig. 3, so that the sleeve can be raised and lowered for regulating the escape of the purified air from the chamber B. 85

I represents the head or cover which closes the upper small end of the upper portion B² of the chamber B. The head I is provided with a central opening *i* for the escape of the purified air and a tangential passage *j*, through
90 which the light dust is discharged into a spout J.

K represents a tubular guard secured in the opening *i*. The passage *j* may also be provided with a suitable slide *j'*. 95

L represents brushes or wipers bearing against the inner sides of the two compartments B' B² of the separating-chamber and attached by arms *l* and a hub *l'* to a vertical shaft *m*, which is journaled in bridge-trees *n* 100

n, secured in the openings *d* and *i* of the heads D and I. The brushes L are so light that they are rapidly rotated by the whirling body of air.

The dust-laden air enters the lower compartment B' of the separating-chamber B in a tangential direction and assumes a whirling or gyrating motion in the said chamber. The dust particles are driven to the periphery of the whirling body and are separated according to their specific gravities. The heavy particles descend in the lower compartment B' and escape through the opening *e*, while the lighter particles rise into the upper compartment B² and escape through the passage *j* and spout J. By raising or lowering the sleeve H' the distance between the inner ends of the tubular air-outlets is reduced or increased, as may be necessary to effect the desired separation. When it is inconvenient to discharge the purified air at both ends of the machine, one of the air-discharges may be omitted. This dust-collector effects a separation of the fine flour from the bran particles, both of which materials compose the dust discharged from middlings-purifiers.

I do not wish to claim in this application any of the features of this machine except those specifically pointed out in the claims, and reserve the right to claim all other patentable features in certain other applications filed by me, to wit: Serial No. 197,307, filed March 31, 1886, Serial No. 204,684, filed June 9, 1886, Serial No. 247,430, filed August 20, 1887, and Serial No. 247,540, filed August 22, 1887.

I claim as my invention—

1. In a dust-collector, a separating-chamber composed of two compartments tapering in opposite directions and provided with a tangential inlet, an air-outlet, and at opposite ends with discharge-orifices for two grades of separated material, substantially as set forth.

2. In a dust-collector, a separating-chamber composed of two tapering compartments joined together at their large ends and provided with a tangential inlet-spout, an air-outlet, and at their small ends with dust-discharge orifices, substantially as set forth.

3. In a dust-collector, the combination, with a separating-chamber composed of two compartments tapering in opposite directions and provided at opposite ends with peripheral dust-discharge orifices and having a central opening for the escape of the purified air, of a tangential inlet-spout, substantially as set forth.

4. The combination, with the tapering separating-compartments B' B², joined together at their large ends, of the heads D I, provided, respectively, with dust-discharges *e j*, central openings *d i* for the escape of the purified air, and a tangential air-inlet spout C, substantially as set forth.

5. The combination, in a dust-collector, of a circular separating-chamber, a tangential inlet for the dust-laden air, an outlet for the dust, and an adjustable discharge-tube for the purified air, substantially as set forth.

6. The combination, with the separating-chamber B, having a tangential inlet, dust and air discharges, and a hopper E, of the return air-pipe *g*, connecting the hopper E with the chamber B, substantially as set forth.

7. The combination, with a tapering dust-collecting chamber having a tangential inlet and air and dust discharges, of a wiper bearing against the inner side of said chamber, a shaft arranged axially in said chamber, and an arm connecting the wiper with the shaft, substantially as set forth.

8. The combination, with the tapering separating-chamber provided with a tangential air-inlet and having an escape-opening for the purified air in the small end of the separating-chamber, of a tubular guard secured in said opening, and a dust-discharge outside of said guard, substantially as set forth.

Witness my hand this 5th day of June, 1886.

O. M. MORSE.

Witnesses:

C. H. BENNETT,
C. H. HIGDON.