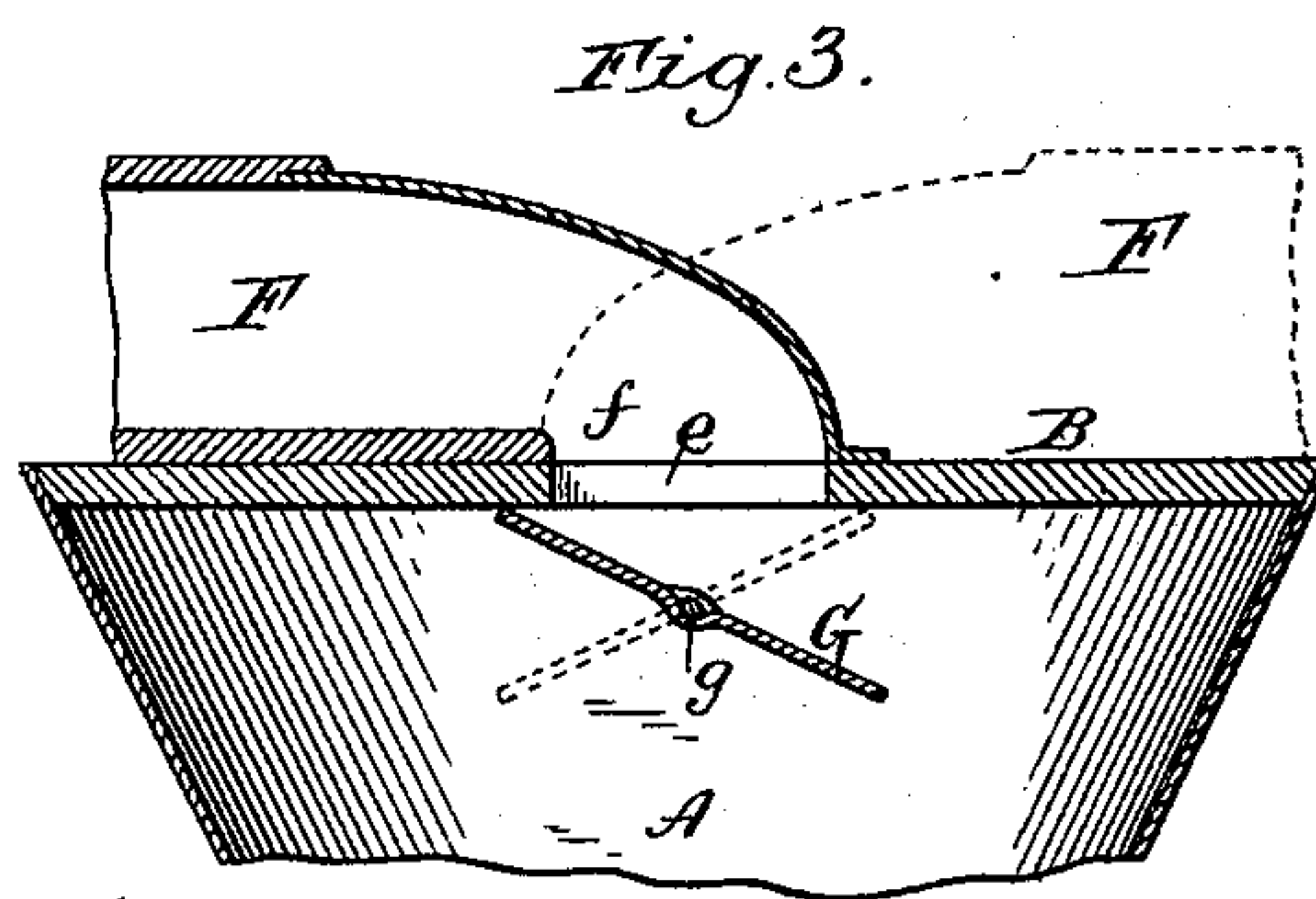
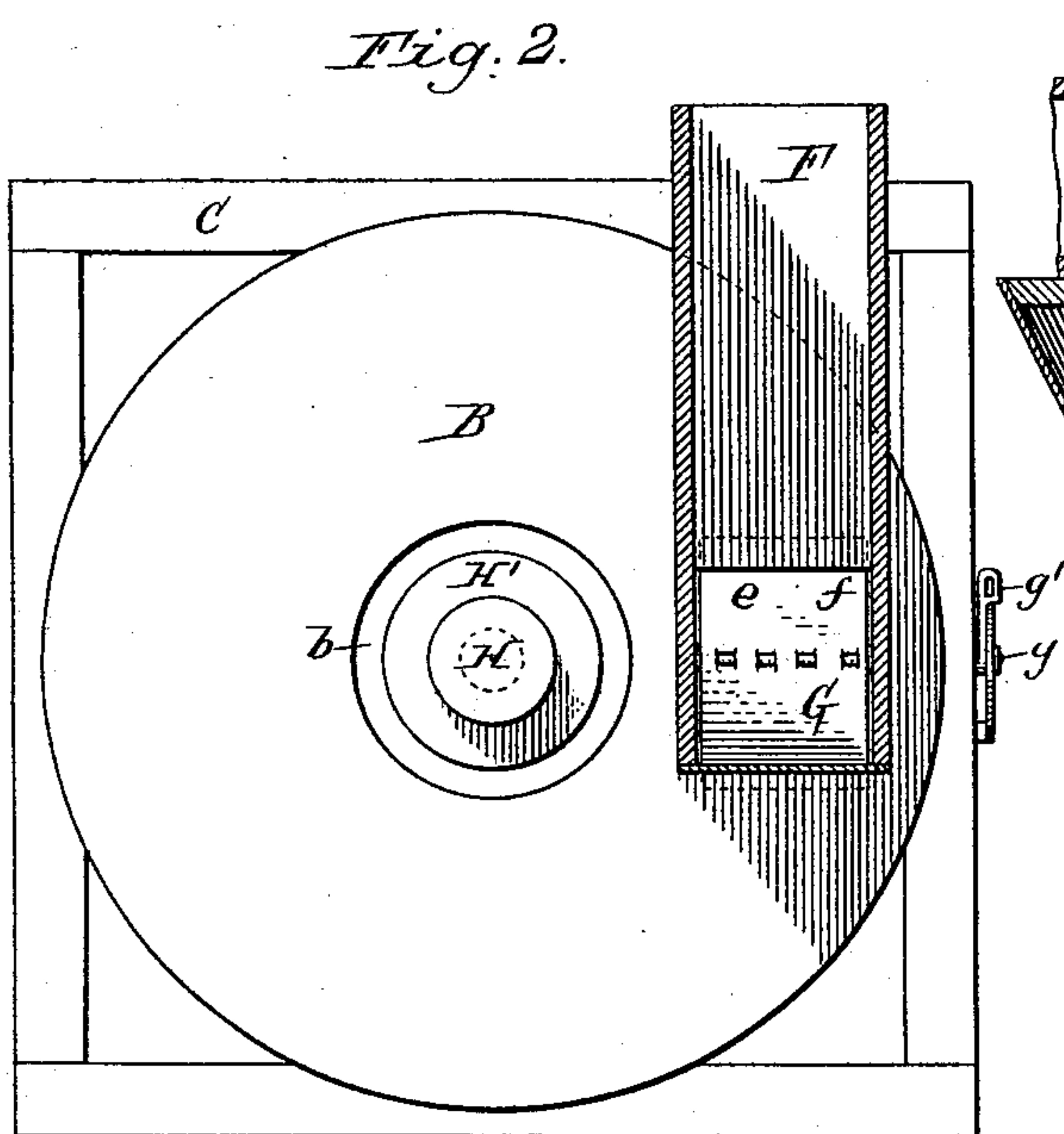
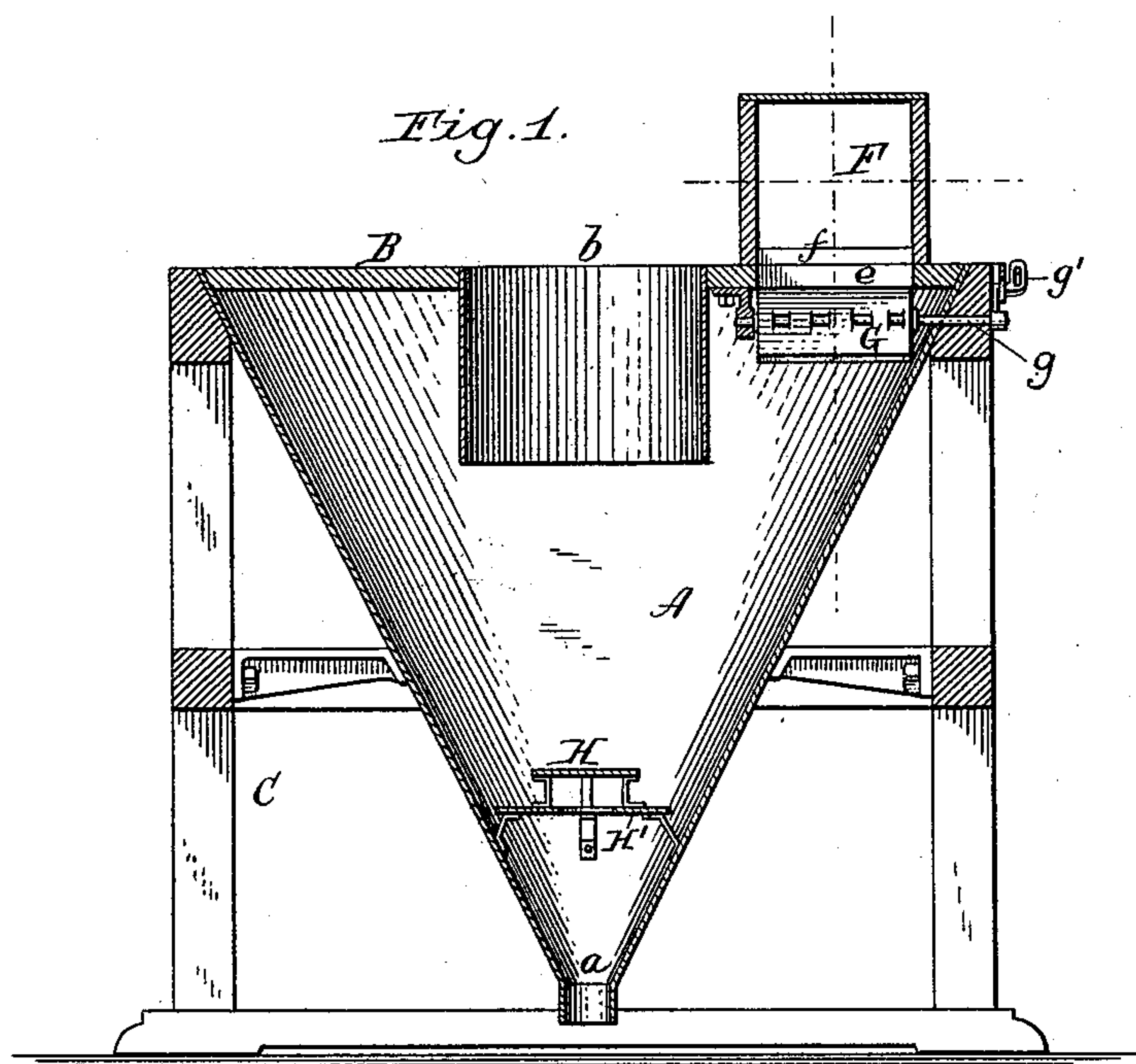


(No Model.)

O. M. MORSE.
DUST COLLECTOR.

No. 403,770.

Patented May 21 1889.



Chas. J. Buchheit.
Theodore L. Popp. Witnesses.

O. M. Morse Inventor.
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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. 403,770, dated May 21, 1889.

Application filed October 14, 1886. Serial No. 216,285. (No model.)

To all whom it may concern:

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

This invention relates to a dust-collector which consists, essentially, of a circular separating-case provided with a tangential inlet-spout, by which the dust-laden air is introduced into the separating-case in such manner that the air is caused to assume a rotary motion in the separating-case, whereby the dust particles are driven to the periphery of the whirling body of air. A dust-collector of this kind is described and shown in an application for Letters Patent of the United States filed by me March 31, 1886, Serial No. 197,307.

One object of my invention is to connect the dust-supply spout with the separating-case in a simple manner, and so that the spout can be readily reversed on the case, thereby enabling the machine to be set up either right-handed or left-handed, as may be required.

Another object of my invention is to intercept the air-current which enters the separating-case through the dust-discharge opening and to turn this air-current outwardly and into the whirling body of air, thereby bringing any dust particles which may be suspended in said ascending air-current under the influence of the whirling body of air, whereby they are driven to the circumference of said body and again commingled with the stream of dust which is discharged from the case.

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

In the accompanying drawings, Figure 1 is a vertical section of a dust-collector provided with my improvements. Fig. 2 is a top plan view of the machine, with the air-inlet spout in horizontal section. Fig. 3 is a vertical section of the upper portion of the machine, taken in part through the air-inlet spout and in part through the middle of the separating-case.

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

A represents the separating-case, consisting of a conical shell having an opening, *a*, at its apex, through which the dust is discharged, and having its large end closed by a head, B, which is provided with a central opening, *b*, through which the purified air escapes.

C represents the stationary frame, in which the separating-case A is supported.

e represents an opening formed in the head B near the periphery of the case A for the introduction of the dust-laden air into the case.

F is the spout through which the dust-laden air is conducted to the case A, and which is provided in its bottom with an opening, *f*, arranged at or near the end of the spout and coinciding with the opening *e* in the head B.

The spout F rests on the head B, and its upper wall is preferably curved downwardly near the end of the spout to impart a downward and tangential direction to the air-current which enters the case A through the openings *e* and *f*. The entering air-current is further deflected tangentially by a deflecting-plate, G, arranged in an inclined position in the separating-case A underneath the opening of the dust-supply spout F. When the machine is not required to be made reversible, this deflecting-plate can be rigidly secured in the case; but when the machine is made reversible the plate is preferably pivoted in the case by a central pivot, *g*, so that the plate can be inclined in either direction.

In the arrangement of the dust-supply pipe represented in the drawings in full lines the air-current in the machine runs with the sun. When the air-current is required to run in an opposite direction, the spout F and the deflector G are reversed, as represented in dotted lines in Fig. 3. The deflector G is secured in position by any suitable locking device—such, for instance, as a set-screw passed through the handle *g'*, attached to the pivot *g*.

The whirling motion of the air in the separating-case causes a light air-current to enter the case centrally through the dust-discharge orifice *a*, while the dust escapes in an opposite direction in the form of an annular stream which incloses this entering current. The latter ascends axially through the case,

and escapes finally with the purified air through the opening *b*. Sometimes this ascending current carries fine dust particles with it and into the outgoing current of purified air. In order to avoid this difficulty, the case *A* is provided with a deflector, *H*, arranged in the axis of the case above the dust-discharge opening *a*, by which the ascending air-current is intercepted and turned outwardly into the whirling body of air, the force of which is greatest nearest the inner surface of the case. The deflector *H* causes the ascending current to commingle with the whirling body, whereby any dust particles contained in the ascending current are again brought under the influence of the whirling body and driven to the circumference of the same. This avoids all liability of the ascending current carrying dust particles into the outgoing current of purified air. An annular deflector, *H'*, may be secured in the case below the central deflector, *H*, for the purpose of checking the action of the whirling body of air in the lower portion of the separating-case and effecting a more intimate mingling of the ascending current with the whirling body of air.

My improved dust-collector is especially desirable for collecting dust in flour-mills and the shavings in planing-mills; but it may be used for various other purposes.

I do not wish to claim in this application any patentable features of the machine herein described and illustrated except those which are specifically set forth in the claims, and I reserve the right to claim all other patentable features in certain other applications for patent filed by me—to wit, Serial No. 197,307, filed March 31, 1886, and Serial No. 204,684, filed June 9, 1886.

I claim as my invention—

1. The combination, with the peripheral wall of the separating-case, of a head applied to one end of said wall and provided with an opening near the periphery thereof, and an external tangential inlet-spout communicating with said opening and delivering the dust-

laden air into the case through said opening in the head thereof, substantially as set forth.

2. The combination, with the peripheral wall of the separating-case, of a head applied to one end of said wall and provided with an opening near the periphery thereof, an external inlet-spout communicating with said opening, and a deflector arranged within the separating-case opposite said opening and deflecting the entering current tangentially, substantially as set forth.

3. The combination, with the peripheral wall of the separating-case, of a head applied to one end of said wall and provided with an opening near the periphery thereof, an external inlet-spout communicating with said opening, and a reversible deflector arranged within the separating-case opposite said opening, substantially as set forth.

4. The combination, with the tapering separating-case having an imperforate peripheral wall and provided with an external tangential inlet-spout, a central opening for the escape of the purified air at its large end, and a dust-discharge opening at its apex, of a deflector arranged centrally within the separating-case below the air-inlet spout and above the dust-discharge opening, whereby the air-current entering the case through the dust-discharge opening is intercepted, substantially as set forth.

5. The combination, with the tapering separating-case provided with an external tangential inlet-spout and having a central opening for the escape of the purified air at its large end and a dust-discharge opening at its small end, of a central deflecting-disk, *H*, and an annular deflector, *H'*, arranged one above the other within the separating-case below the air-inlet spout and above the dust-discharge opening, substantially as set forth.

Witness my hand this 11th day of October, 1886.

ORVILLE M. MORSE.

Witnesses:

C. H. HIGDON,

C. R. KNICKERBOCKER.