

No. 651,926.

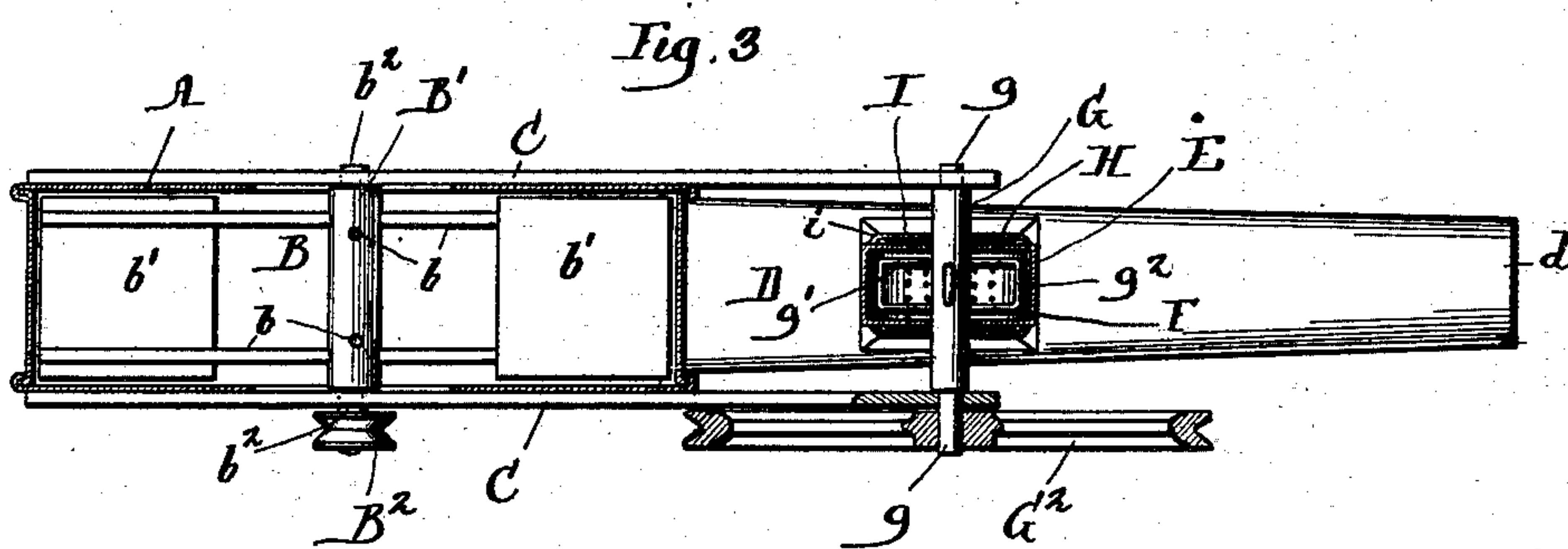
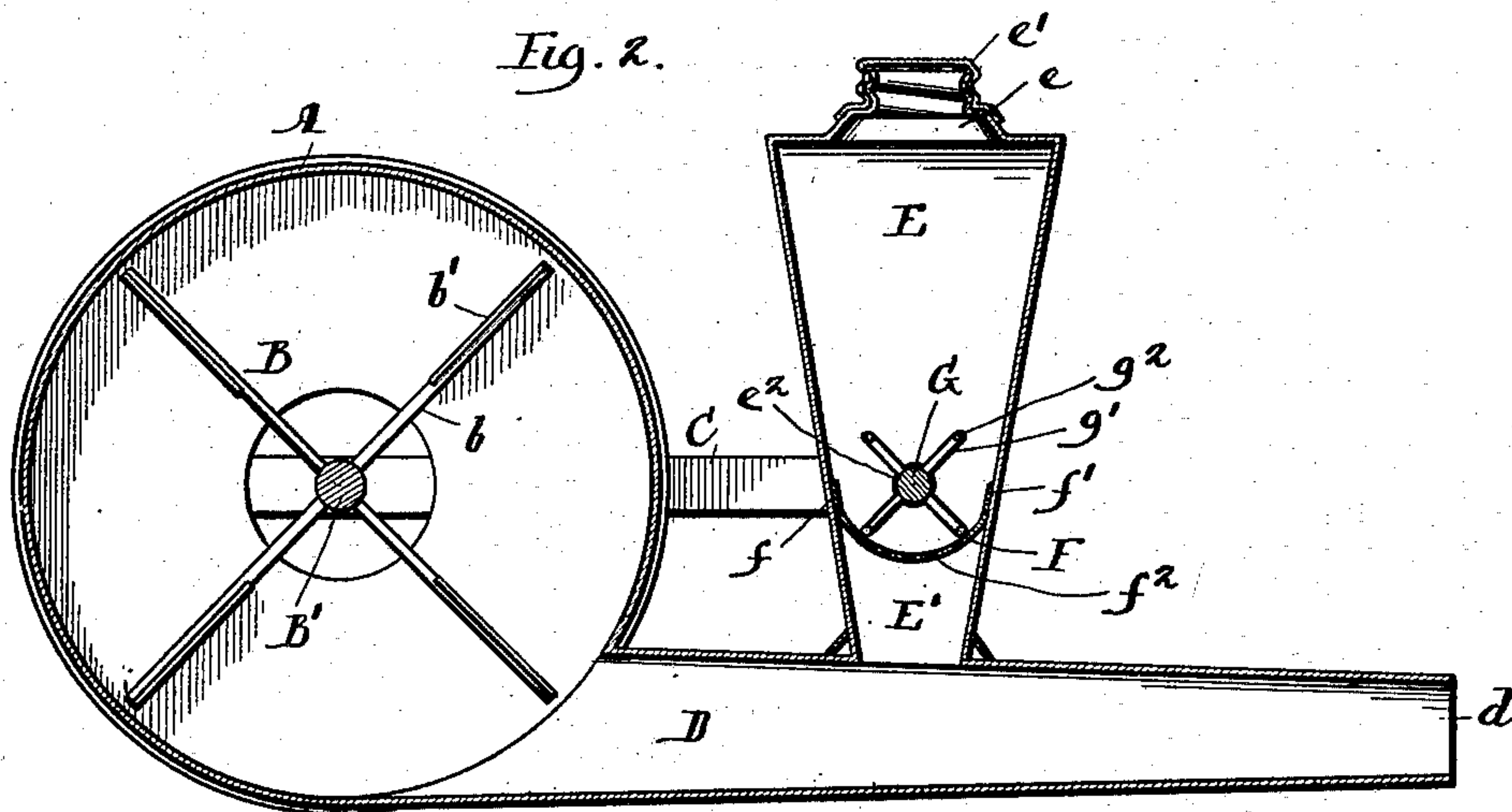
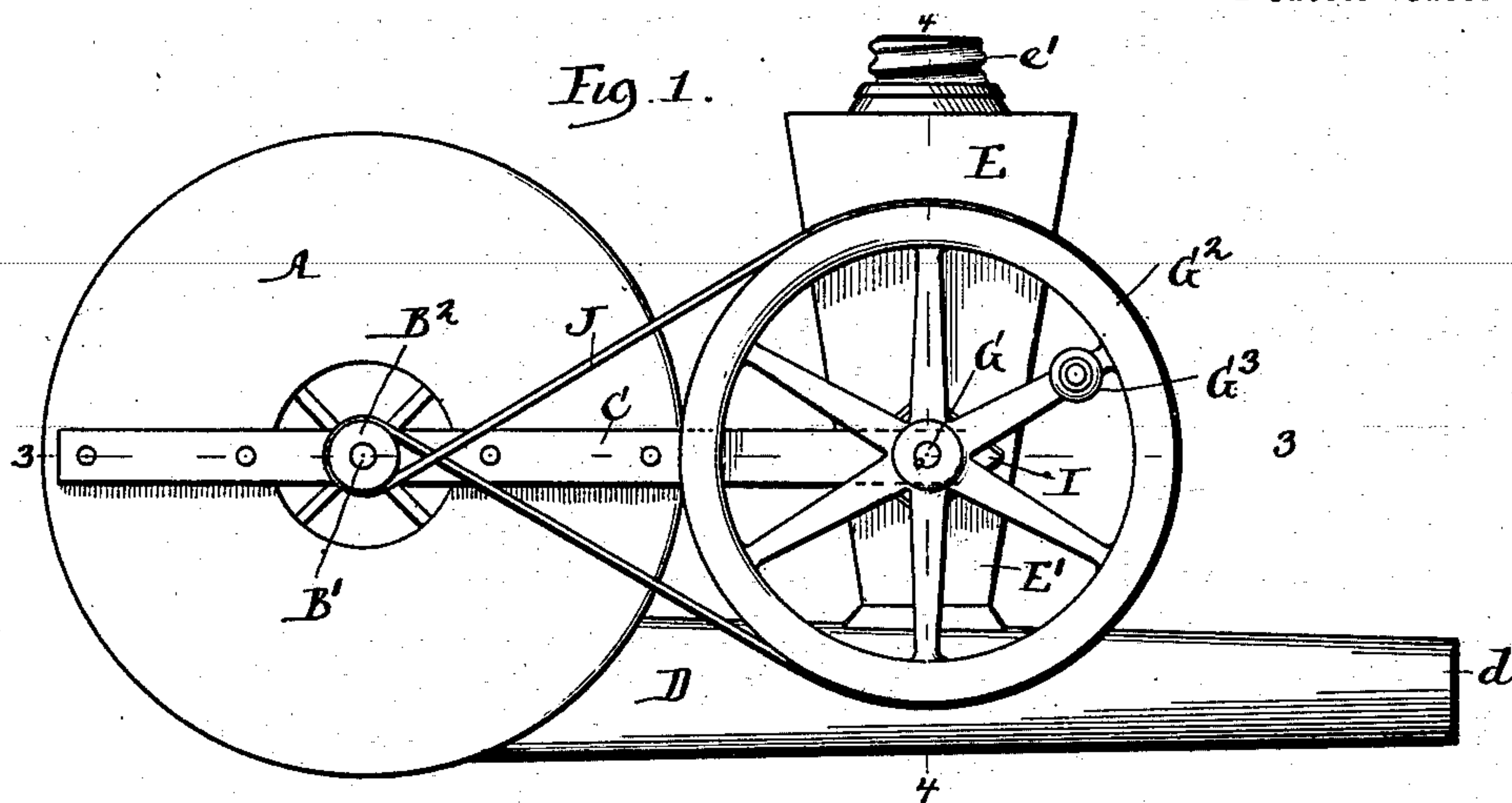
Patented June 19, 1900.

H. MACMICHAEL.
POWDER DISTRIBUTER.

(Application filed Nov. 30, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
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Inventor:
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2 Sheets—Sheet 2.

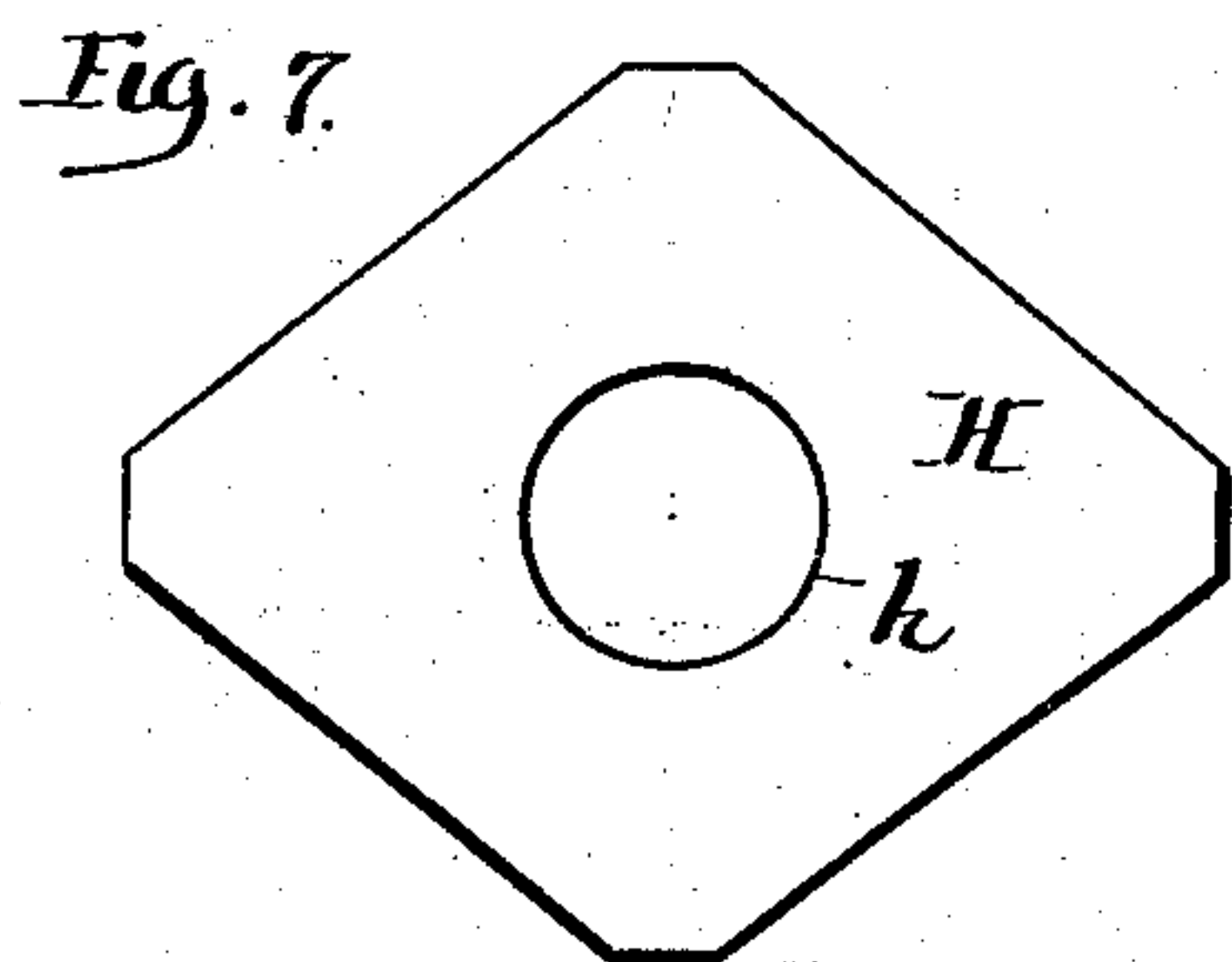
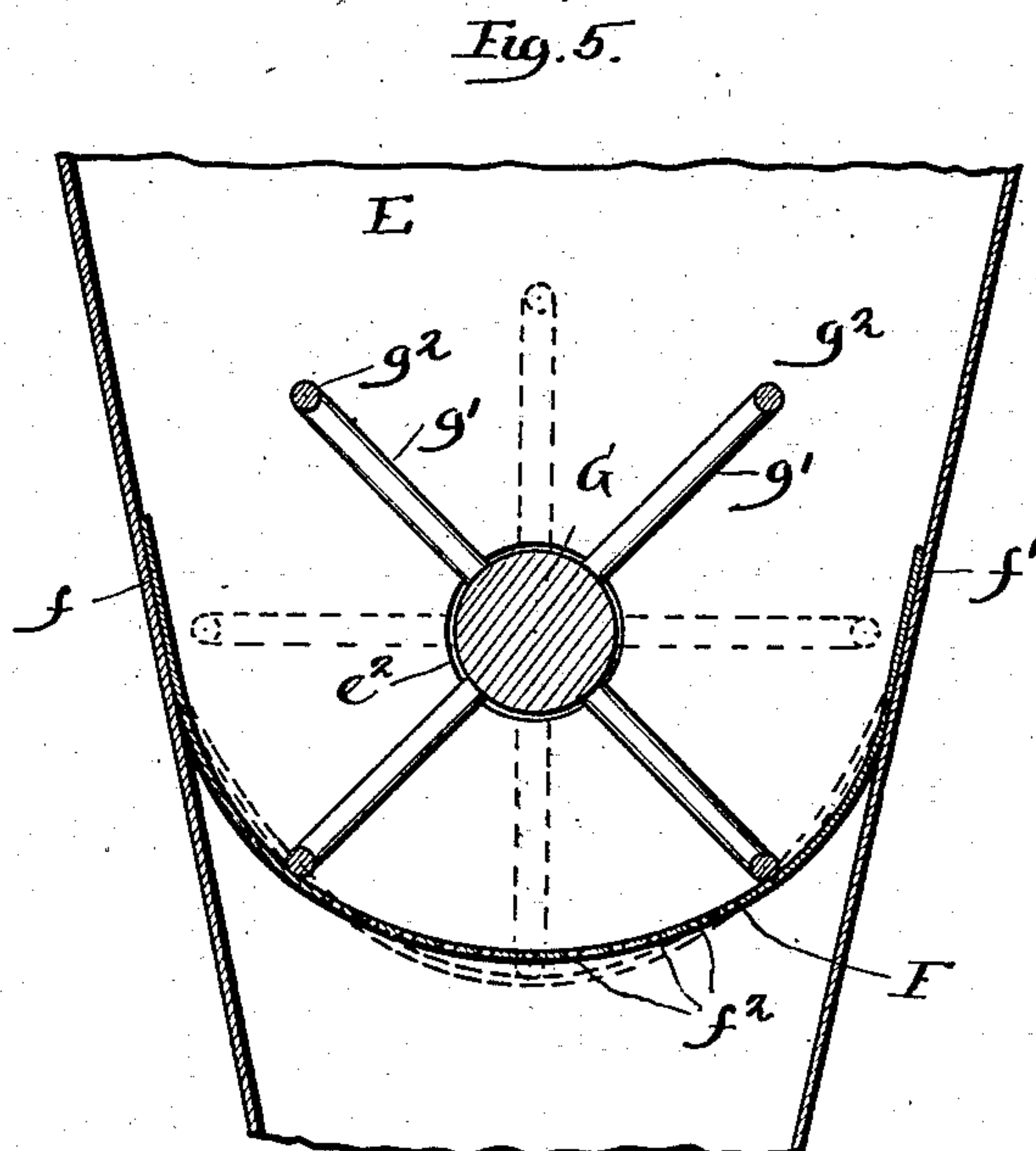
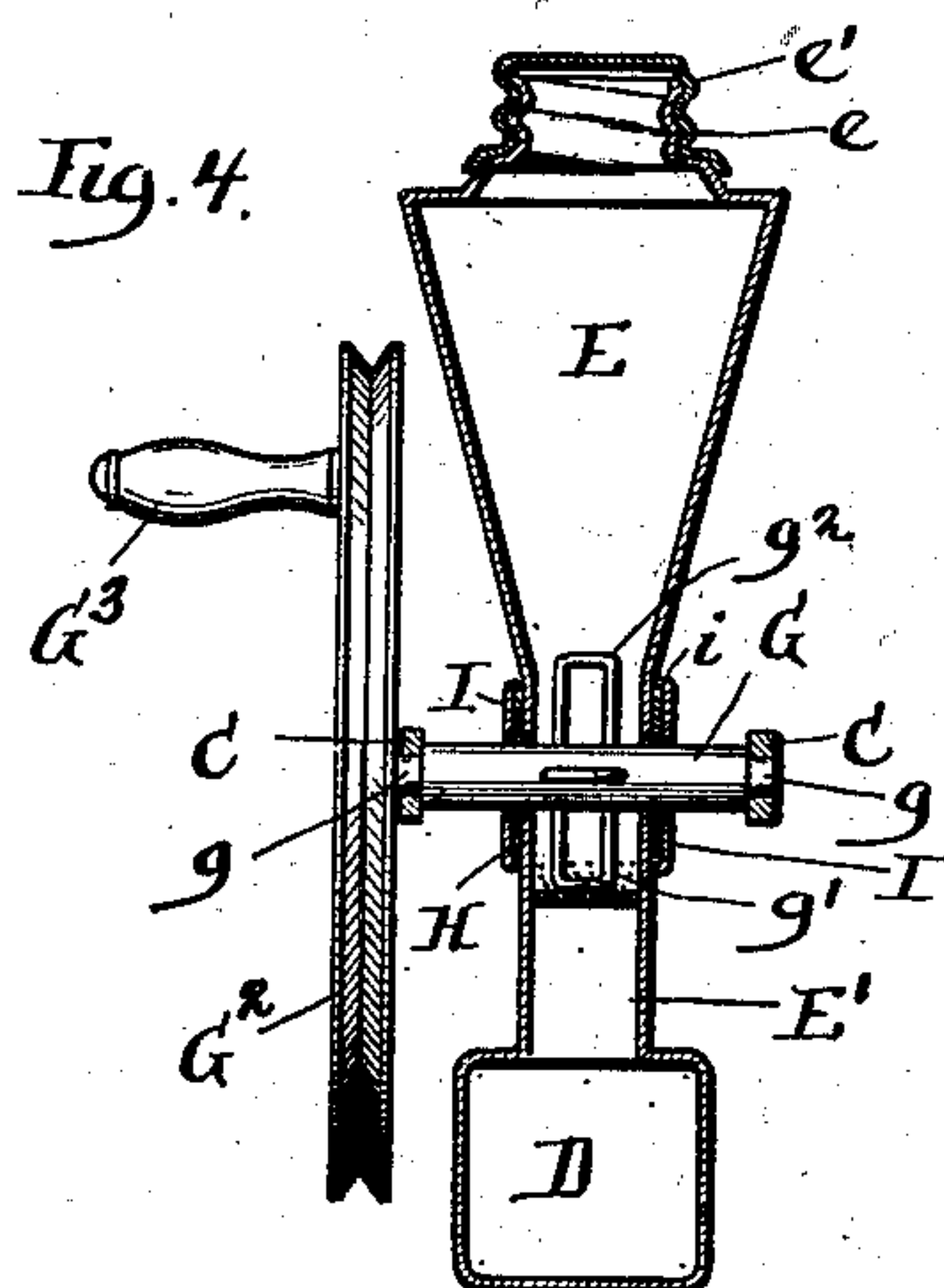
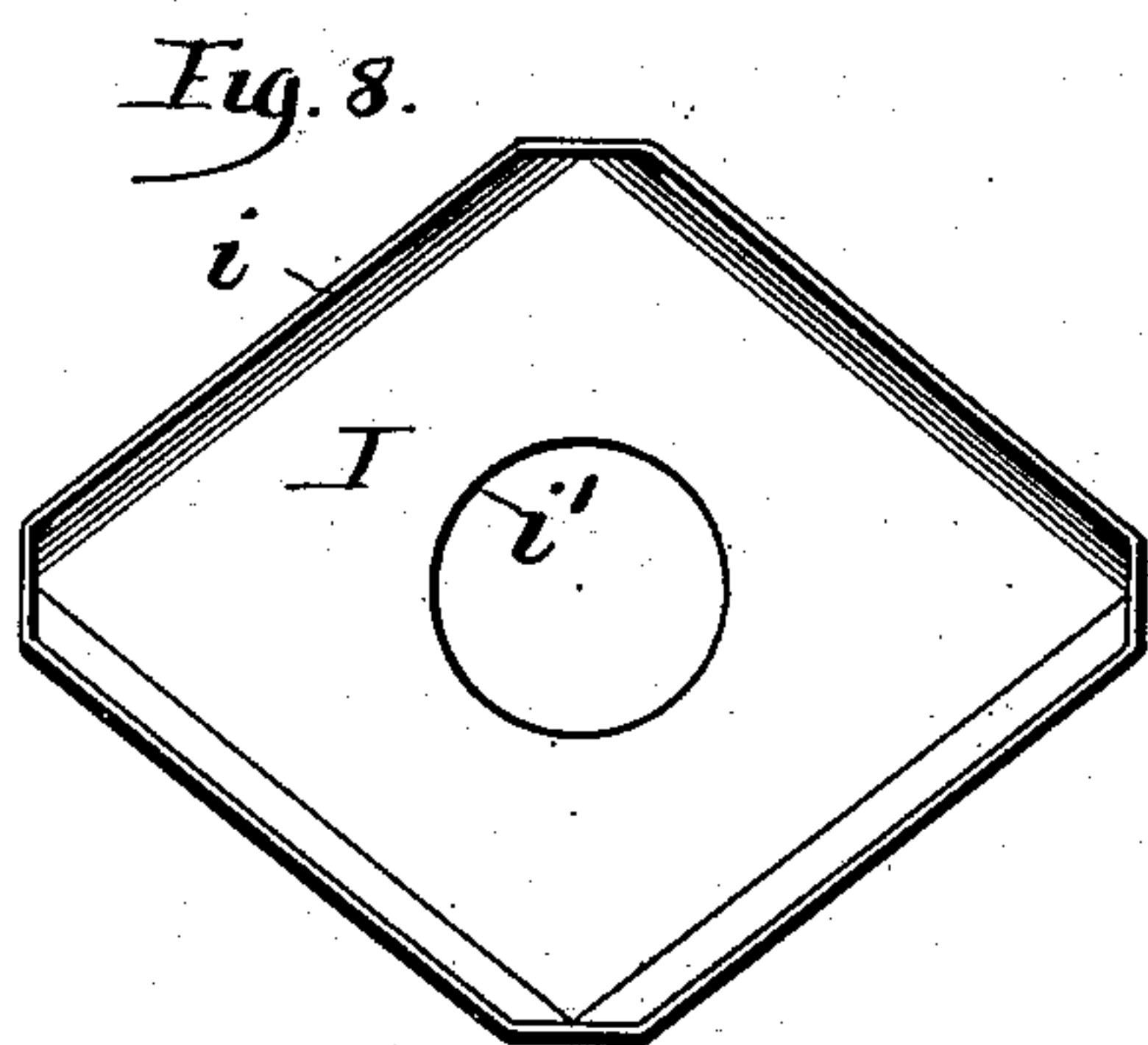
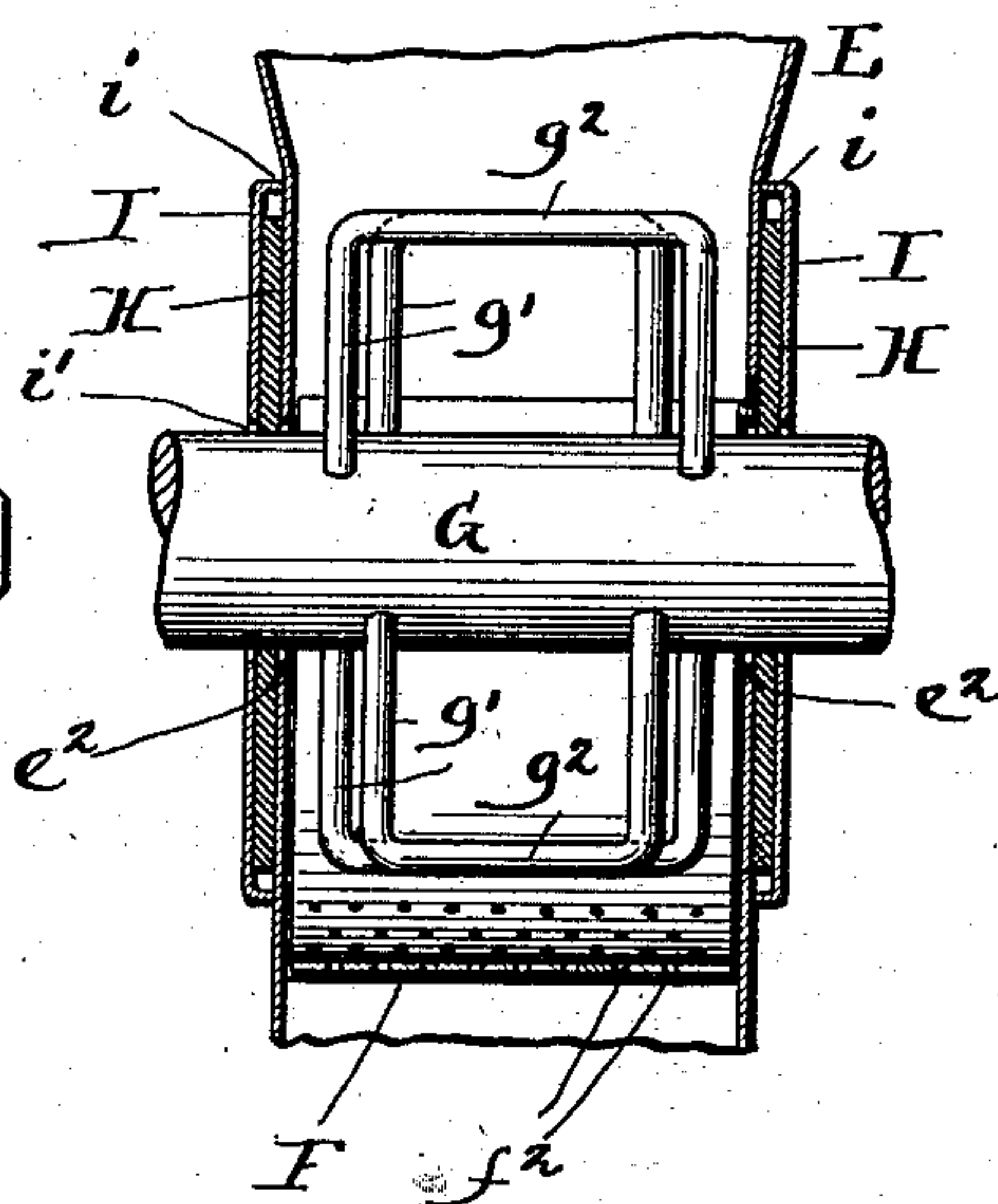


Fig. 6.



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UNITED STATES PATENT OFFICE.

HUGH MACMICHAEL, OF CHICAGO, ILLINOIS, ASSIGNOR TO EDWARD
McMORRAN, OF SAME PLACE.

POWDER-DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 651,926, dated June 19, 1900.

Application filed November 30, 1898. Serial No. 697,836. (No model.)

To all whom it may concern:

Be it known that I, HUGH MACMICHAEL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Powder-Distributers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

10 This invention relates to apparatus for applying powdered sulfur or like material on plants.

The object of the invention is to provide an improved, simple, and durable apparatus, 15 whereby the material may be rapidly and efficiently applied.

The invention consists in the various novel features of construction hereinafter described, illustrated in the accompanying 20 drawings, and more particularly defined by claims at the conclusion hereof.

In the drawings, Figure 1 is a view in side elevation of a powder-distributer embodying my invention. Fig. 2 is a central vertical 25 longitudinal section thereof. Fig. 3 is a view in horizontal section, taken on line 3 3 of Fig. 1. Fig. 4 is a vertical transverse section taken at line 4 4 of Fig. 1. Fig. 5 is a detail view upon an enlarged scale, being a longitudinal 30 section of a portion of the hopper, its bottom, and the agitator. Fig. 6 is a central transverse vertical section of the parts shown in Fig. 5. Fig. 7 is a detail view of the packing for the agitator-shaft. Fig. 8 is a detail view 35 of one of the plates secured to the side of the hopper for retaining the packing around the shaft-opening.

A denotes a suitable fan-casing containing a fan B, mounted upon a shaft B', whereby 40 the fan is rotated. Fan B comprises radial arms *b* and wings *b'*. Horizontal bars C are rigidly secured to the side walls of the fan-casing A and are provided with bearings to receive the reduced ends *b*² of fan-shaft B' and secure such shaft against end play. Tan- 45 gentially from the bottom of the fan-casing A leads a wind-trunk D, which is slightly tapered to form a nozzle *d* at its outer terminal and to more efficiently direct the blast.

50 A hopper E, designed to contain a quantity of the material to be applied, is mounted

above wind-trunk D, wherewith it is connected by a spout E', which is somewhat elongated to permit falling material to disperse. The top of hopper E is provided with an opening *e*, through which the material is introduced, and said opening is closed by a removable screw-cap *e'* to prevent the material from being blown out by back currents of air from the wind-trunk. A curved bottom F, formed 60 of a rectangular strip of flexible sheet metal, has its straight ends secured to the end walls of the hopper, as at *f* and *f'*, and is provided with perforations *f*² in suitable number through which the material descends from 65 hopper E into spout E' and wind-trunk D, whence it is expelled by the blast. Hopper E at that portion thereof where the bottom is secured is preferably of rectangular shape, as shown. 70

Supporting-bars C, which are rigidly secured to fan-casing A and on each side thereof, are extended to points alongside of the hopper adjacent the hopper bottom and are provided thereat with bearings to receive the reduced 75 ends *g* of an agitator-shaft G, which is arranged transversely to the hopper and extended therethrough. Reduced ends *g*, resting in said supporting-bars, secure the shaft G against end play. Said shaft passes freely 80 through openings *e*² in the sides of the hopper. Within the hopper shaft G has rigidly secured thereto a series (preferably four) of arms or loops formed of heavy wire. Said arms comprise radial sides *g'* and the trans- 85 verse connecting portions or strips *g*². To prevent the material in hopper E from working out through shaft-openings *e*², a sheet of packing H, preferably of the shape shown in Fig. 7 and having an opening *h*, which fits 90 snugly around shaft G, is secured to the hopper adjacent each opening *e*² by plate I. The edges *i* of said plate are bent inwardly and soldered or otherwise secured to the hopper sides, and thus securely hold packing H 95 against rotation with shaft G and against the sides of the hopper.

Fan-shaft B' projects through one of the supporting-bars C and has secured thereto a small grooved belt-pulley B². Agitator-shaft 100 G projects in like manner and has secured thereto a large belt-pulley G². A crossed

belt J serves to impart revolution to pulley B² and fan-shaft B' when pulley G² is operated. A handle G³ is conveniently attached to pulley G².

5 The casing and hopper are constructed, essentially, of sheet metal. An apparatus constructed of heavy parts is objectionable. Supporting-bars C suffice to sustain all the revoluble parts of the apparatus. Therefore
10 it is possible to construct the casing and hopper of thin sheet metal, and the necessity of using heavy braces to prevent the disalignment of the driven shafts and pulleys is avoided. Straps or loops commonly used for secur-
15 ing the apparatus to the body of the operator are unnecessary, because the apparatus is light and can be conveniently held by the supporting-bars.

The agitator-arms disintegrate and stir the
20 material within the hopper and cause the material to be supplied through perforated bottom F to spout E' in a uniform, constant, and finely-divided stream. The agitator-arms are made of varying widths to better stir
25 the material within the spout. Much difficulty has been experienced in the use of perforated plates or bottoms through which the material was fed, and particularly when small perforations were employed, because the ma-
30 terial would become lodged in the small perforations and adhere to the bottom, and thus prevent the further supply of material to the spout. Such difficulty has been entirely over-
35 come by the peculiar arrangement of agitator and perforated bottom of the present invention. The curved bottom is free at its sides, and its central portion is arranged to project slightly and normally into the path of the
40 agitator-arms. As the agitator is revolved the transverse strips g² not only scrape or sweep but also distend the flexible bottom, as shown in dotted lines in Fig. 5, and cause its rapid vibration. Such distension and vi-
45 bration loosen and dislodge any material tending to adhere to the bottom or the perforations therein. Such arrangement permits the use of small perforations, and, moreover, the material need not be carefully pulverized before it is introduced into the hop-
50 per. This feature is decidedly advantageous and constitutes an important feature of this invention.

In operation the turning of handle G³ causes the fan to revolve and concurrently operates
55 the agitator, stirring up the material in the hopper and causing it to fall in a constant, uniform, and finely-divided stream through the spout and into the wind-trunk, where it is expelled through the nozzle and sprayed
60 and distributed over the plants.

The details of the construction may be varied without departing from the spirit of the invention.

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

1. The combination of a blast-fan and its

casing and the wind-trunk leading therefrom, of a hopper above said wind-trunk and lead-
ing thereto, a shaft extended transversely 70 through the said hopper, an agitator actuated thereby, supporting-arms secured to each side of the fan-casing and projected alongside of said hopper and independent thereof and hav-
ing bearings for the fan-shaft and said agita- 75 tor-shaft therein and suitable mechanism for concurrently driving said fan-shaft and said agitator-shaft.

2. In a powder-distributor the combination with a blast-fan and its casing and the wind- 80 trunk leading therefrom, of a hopper above said wind-trunk and leading thereto, a flexible perforated rectangular curved bottom plate within said hopper, having its ends se-
cured to the hopper sides and its curved sides 85 free to permit the vibration of said bottom plate, an agitator arm or arms rigidly secured to a transverse shaft and arranged to distend said bottom plate and driving mechanism whereby said fan-shaft and said agitator arm 90 or arms are concurrently driven.

3. In a powder-distributor the combination with a blast-fan and its casing and the wind- trunk leading therefrom, of a hopper above
said wind-trunk and leading thereto, a flexi- 95 ble perforated rectangular curved bottom plate within said hopper having its ends se-
cured to the hopper sides and its curved sides free to permit the vibration of said bottom plate, supporting-bars secured to each side of 100 the fan-casing and projected alongside of said hopper and independent thereof, a fan-shaft and an agitator-shaft journaled in said sup-
porting-bars, said agitator-shaft being ex- 105 tended transversely through said hopper, arms secured to said agitator-shaft, arranged to distend the said bottom plate and suitable mechanism for concurrently driving said fan-
shaft and said agitator-shaft.

4. In a powder-distributor the combination 110 with the blast-fan and its casing and the wind-trunk leading therefrom, of a hopper above said wind-trunk and leading thereto, a shaft extended transversely through said hopper,
an agitator arm or arms carried thereby, sup- 115 porting-bars secured to each side of the fan-casing and projected alongside of said hop-
per and independent thereof, the said bars having bearings for the fan-shaft and said agitator-shaft therein, plates secured at each 120 side of said hopper through which said agita-
tor-shaft passes, packing between said plates and the side walls of said hopper, a flexible perforated rectangular curved bottom plate within said hopper, having its ends secured 125 to the hopper sides and its curved sides free to permit the vibration of said bottom plate, an agitator arm or arms rigidly secured to said agitator-shaft, and driving mechanism whereby said fan and said agitator-shaft are 130 concurrently driven.

5. The combination of the blast-fan and its casing, and the wind-trunk leading there-
from, of a hopper above said wind-trunk, and

leading thereto, a shaft extended transversely through said hopper, an agitator actuated thereby, supporting-bars secured to each side of the fan-casing and projected alongside of
5 said hopper, and having bearings for the fan-shaft and said agitator-shaft therein, plates secured at each side of said hopper through which said agitator-shaft passes, packing be-
tween said plates and the side walls of said hopper and suitable mechanism for concurrently driving said fan-shaft and said agitator-shaft.

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