

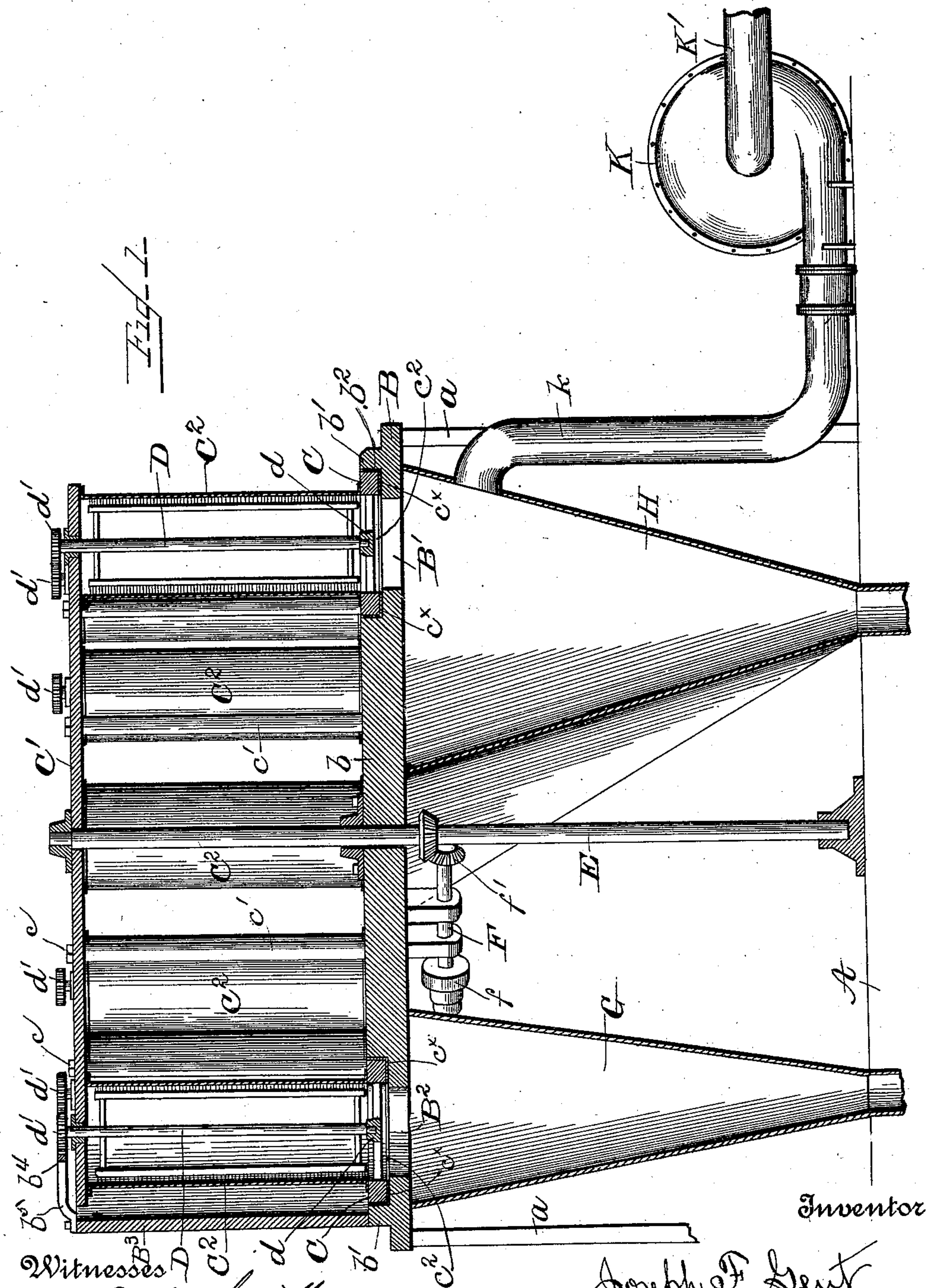
(No Model.)

2 Sheets—Sheet 1.

J. F. GENT.  
DUST COLLECTOR.

No. 531,414.

Patented Dec. 25, 1894.



Inventor

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2

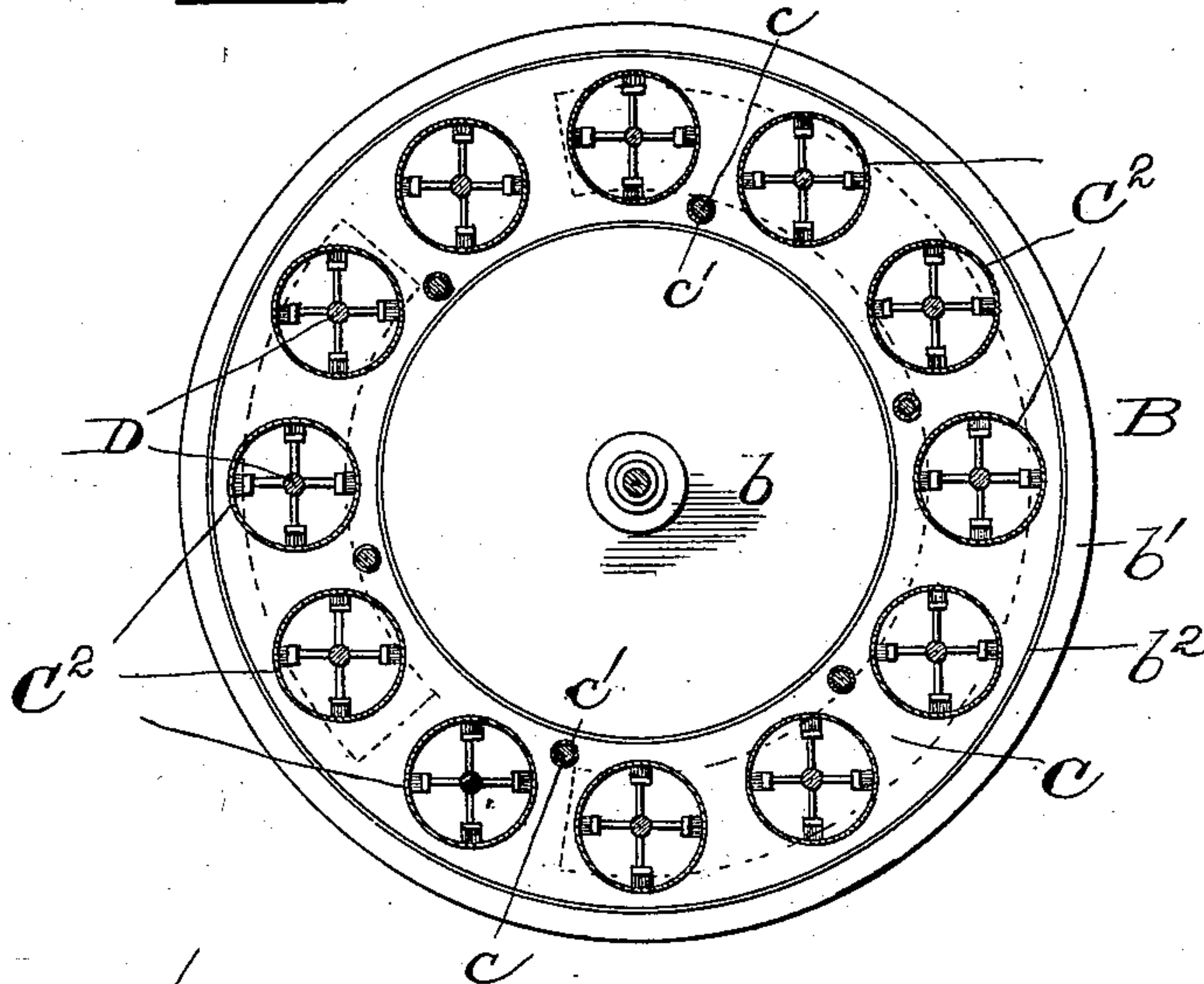
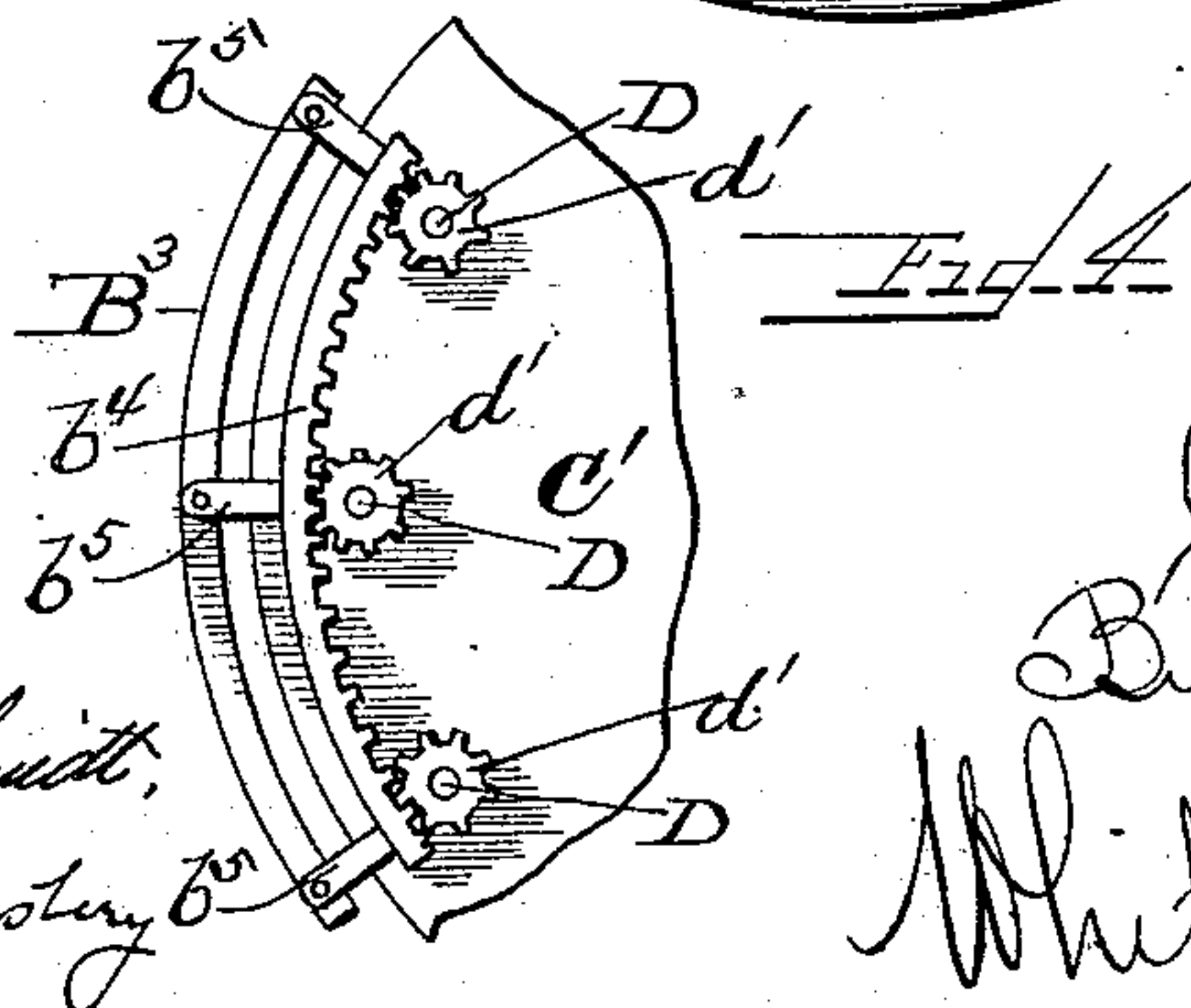
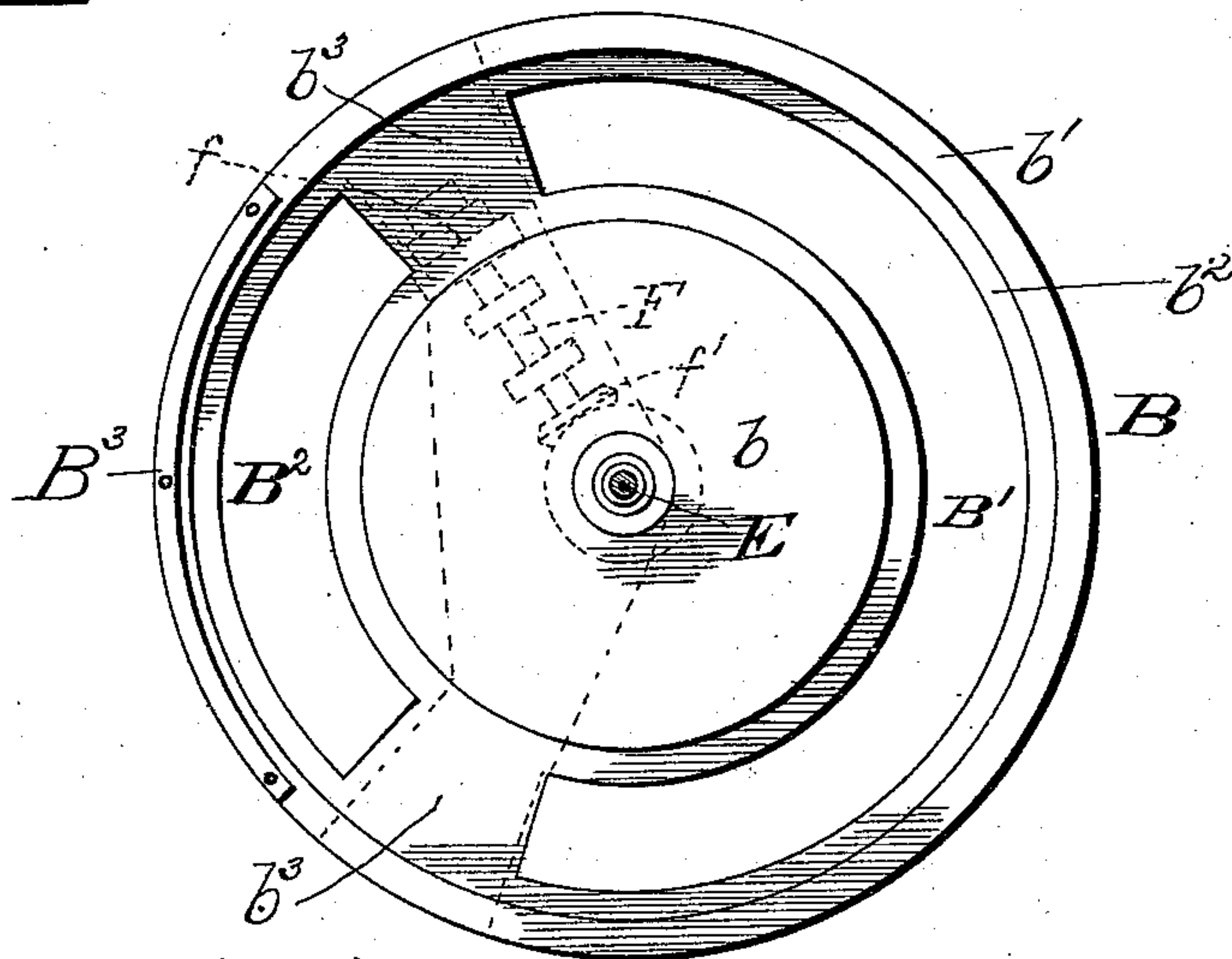


Fig. 3



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# UNITED STATES PATENT OFFICE.

JOSEPH F. GENT, OF COLUMBUS, INDIANA.

## DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 531,414, dated December 25, 1894.

Application filed September 18, 1894. Serial No. 523,337. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH F. GENT, a citizen of the United States, residing at Columbus, in the county of Bartholomew and State of Indiana, have invented certain new and useful Improvements in Dust-Collectors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in dust collectors and consists in the novel features of construction and combination of parts hereinafter fully described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention and said invention is fully disclosed in the following description and claims.

Referring to the said drawings: Figure 1 is a sectional view of my improved dust collector. Fig. 2 is a top plan view of the machine drawn to a reduced scale with the top plate removed. Fig. 3 is a plan view of the bottom plate of the machine. Fig. 4 is a detail view showing the rack and pinions for driving the cleaning brushes.

In the drawings A represents the bed upon which the machine rests and *a a* represent posts or columns which support the bottom plate B of the machine. This bottom plate is preferably of circular form and is provided with a raised central portion *b* circular in form as shown in Figs. 1 and 3. The said bottom plate is also provided with an annular flange *b'* around its outer edge forming an annular groove or recess *b<sup>2</sup>* between said flange and the circular raised portion *b*.

Above the bottom plate B is supported a revoluble drum constructed preferably in the following manner: In the annular recess of the bottom B is located an annular base plate C and at a suitable distance above said base plate is a circular top plate C' of substantially the same diameter as the base plate, said parts being rigidly united by suitable bolts so as to form a rigid frame.

I prefer to employ bolts *c* passing through tubular sleeves or collars *c'* as shown in Fig. 1 which hold the parts the desired distance apart and at the same time connect them rigidly together.

The annular base plate is provided with a series of holes *c<sup>2</sup>* preferably circular in form which open into cylindrical dust chambers C<sup>2</sup> formed preferably of cloth or wire gauze of suitable firmness secured to the inner edges of said holes and to the top plate C' which closes them at the top. I have shown the drum provided with twelve of these dust chambers but a greater or less number may be employed if preferred.

Within each of the dust chambers C<sup>2</sup> is a vertical shaft D mounted in a step bearing *d* supported by a spider or bracket at the bottom of the chamber and in a bearing in the top plate C' and said shaft D carries a series of brushes preferably four (see Fig. 2) which are adapted to engage the walls of dust chamber and brush the dust therefrom. The shafts D extend above the top plate C' and are provided with pinions *d'*.

The bottom plate B is provided with a slot B' which is slightly narrower than the annular recess *b<sup>2</sup>* of said plate and extends nearly two thirds of the way around said recess as shown in Fig. 3 and a second slot B<sup>2</sup>, similar to the slot B' is formed in said annular recess but of less extent leaving solid portions or bridges *b<sup>3</sup>* between the adjacent ends of said slots B' and B<sup>2</sup>. In practice I prefer to form the slot B<sup>2</sup> of such extent as to allow three of the dust chambers to be above it at a time, the solid portions *b<sup>3</sup>* each being of slightly greater width than a single dust chamber, leaving the remaining dust chambers above the slot B'.

Adjacent to the slot B<sup>2</sup> I provide the bottom plate B with an exterior wall or casing B<sup>3</sup> which supports at its upper edge a rack *b<sup>4</sup>* secured thereto by bracket arms *b<sup>5</sup>* in position to engage the pinions *d'* of the brush shafts D (see Figs. 1 and 4) as the drum carrying the dust chambers is rotated. The first one or two teeth of this rack are slightly shorter than the others in order to enable the pinions to come into mesh therewith without jar or strain.

E represents the central shaft of the drum, secured rigidly to the top plate C' and mounted in a bearing in the bottom plate B and a step bearing in the bed A of the machine. Motion may be imparted to the drum in any de-



sired way. In this instance I have shown a counter shaft F provided with a stepped driving pulley  $f$  and a bevel pinion  $f'$  engaging a similar pinion on the shaft E as shown in Figs. 1 and 3, the stepped or cone driving pulley enabling the operator to drive the drum at any desired speed. Beneath the slot  $B^2$  of the bottom plate B is a dust receiving or discharging hopper G into which the dust from the dust chamber is deposited, and conveyed to any suitable point. Beneath and communicating with the slot  $B'$  is an air receiving hopper H from which the heavier particles of foreign matter may be conveyed to any desired point. Communicating with the hopper H, is a pipe  $k$  which leads from an air forcing device or blower K and discharges preferably horizontally into said hopper. A pipe  $K'$  conducts the air to be cleansed from dust and foreign materials into the fan or blower K.

In order to prevent the escape of air around the circular base plate C of the drum, the lower side and vertical edges of said plate are covered with sheep skin, or other packing material as indicated at  $c^x$  Fig. 1.

The operation of my improved dust collector is as follows: When the blower K is in operation the air laden with dust and foreign matter is discharged from pipe  $k$  horizontally into the hopper H or substantially at right angles to the axis of the dust chambers  $C^2$  and the heavier particles of foreign matter will drop at once into the hopper and be carried off. The air then passes upward into all of the dust chambers situated above the slot  $B'$  with which the hopper H communicates and escapes through the cloth or wire sides of the dust chambers leaving the dust on the inner sides of the walls of said chambers. The operation of the shaft E will cause the drum carrying the dust chambers to revolve and bring one after another of said dust chambers above the slot B, when the pinion  $d'$  of the brush shaft D of each chamber will be instantly engaged by the rack  $b^4$  and cause the rotation of the brushes which will brush the dust from the cloth walls and cause it to fall into the hopper G, from whence it is conducted away. The cleaning of the chambers continues while each chamber traverses the entire length of the slot B, three of said chambers being above said slot at a time as before stated. The operation is thus continuous, and the drum will be driven at a greater or less speed according to the air to be cleaned from dust. The more dust there is in the air being cleaned, the more rapidly will it be necessary to rotate the drum. The object of the bridges  $b^3 b^3$  is to prevent the air from passing from the receiving hopper H to the discharging hopper G which would prevent the dust from settling in the receiving hopper. The sides of the annular base plate of the drum and the bottom of said plate between the openings being covered with sheep

skin or other suitable packing, no air will be permitted to pass under the drum from one hopper to the other. I may also cover the bridges  $b^3 b^3$  with packing if found desirable.

It will thus be seen that each of the dust chambers as it passes onto one of the bridges  $b^3$  has the blast therethrough cut off entirely so that it can have the dust contained therein discharged into the hopper G. As soon as a dust chamber passes over the other bridge  $b^3$  it is again exposed to the blast from the hopper H but as each bridge is of greater width than one of the blast chambers, each chamber has its communication with the dust receiving hopper cut off by passing onto the bridge  $b^3$  before it can again come into communication with the hopper H.

What I claim, and desire to secure by Letters Patent, is—

1. In a dust collector the combination with the horizontally revoluble drum carrying a series of dust chambers, of a receiving hopper having a discharge opening at its lower end, located beneath said drum and communicating with one or more of said dust chambers, an inlet pipe discharging horizontally into said hopper, a discharging hopper separate from the receiving hopper located beneath said drum, revoluble brushes in said dust chamber, means for moving said dust chambers successively from the receiving hopper over the discharging hopper and means for rotating said brushes while the dust chambers are above said discharging hopper, substantially as described.

2. In a dust collector the combination with the horizontal revoluble drum carrying a series of dust chambers open at their lower ends, a rotary brush located in each of said chambers for engaging the walls thereof and provided with an operating pinion, a receiving hopper, an inlet pipe discharging into said hopper perpendicularly to the axes of said dust chambers, a discharging hopper, a rack supported adjacent to said receiving hopper in position to engage all the pinions of the brush shafts of said dust chambers, substantially as described.

3. In a dust collector, the combination with the bottom plate provided with an annular recess, an aperture communicating with the air inlet and an aperture communicating with the dust discharge hopper, of a horizontally revoluble drum having a portion engaging said annular recess and provided with a series of dust chambers open at their lower ends, revoluble brushes located in said dust chambers and provided with operating pinions and a rack rigidly supported adjacent to the dust receiving hopper and adapted to engage the pinions of said brushes, substantially as described.

4. In a dust collector, the combination with the bottom plate provided with an annular recess, an elongated slot communicating with the receiving hopper and an elongated slot



communicating with the dust discharging hopper, of a horizontal revoluble drum having a portion engaging said annular recess and carrying a series of dust chambers open at their lower ends, revoluble brushes in said dust chambers provided with operating pinions, an air receiving hopper located beneath said bottom plate an air inlet pipe and an air forcing device discharging into said hopper horizontally, a dust receiving hopper located beneath said bottom plate and a rack supported from said bottom plate in position to engage said brush operating pinions, substantially as described.

5. In a dust collector the combination with the stationary bottom plate provided with an opening communicating with an air blast and an opening communicating with a receiving hopper, of a revolving drum located above said plate and carrying a series of dust chambers open at their lower ends, said openings being adapted to pass over the openings of said stationary plate, said plate having solid portions or bridges between said openings of greater width than one of said blast chambers to prevent air from passing from said air

inlet to said receiving hopper, substantially as described.

6. In a dust collector the combination with the stationary bottom plate provided with two slots, of a revolving drum provided with a series of dust chambers open at one end, said open ends being adapted to pass over said slots and bridges, a receiving hopper located beneath one of said slots, an air blast connected therewith and a discharging hopper located beneath the other of said slots, said bottom plate being provided with solid portions or bridges of greater width than one of said dust chambers, between the adjacent ends of said slots and said drum having an air tight packing engaging said bridges to prevent the air from passing from the blast pipe into said discharging hopper, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH F. GENT.

Witnesses:

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J. D. KINGSBERRY.