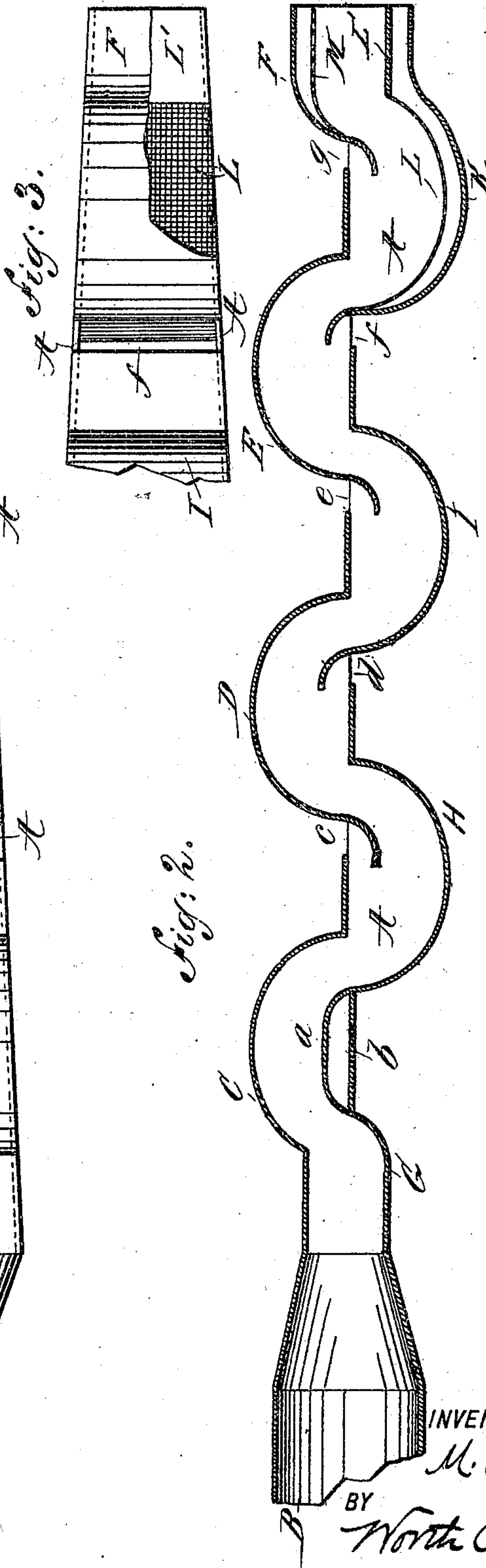
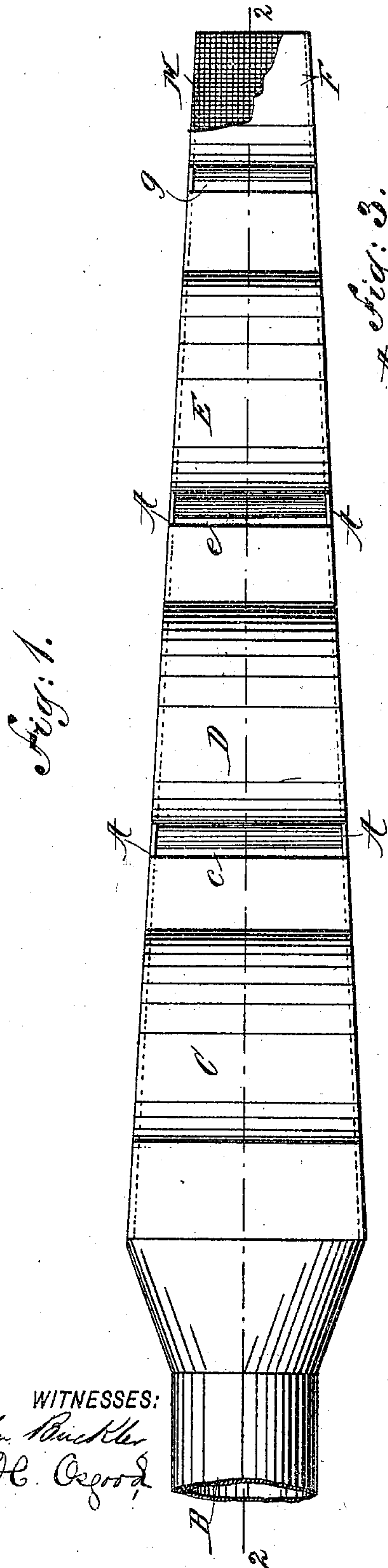


(No Model.)

M. F. GALE.  
DUST COLLECTOR AND SEPARATOR.

No. 502,071.

Patented July 25, 1893.



**WITNESSES:**

John Buckler  
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# UNITED STATES PATENT OFFICE.

MOSES F. GALE, OF BROOKLYN, NEW YORK.

## DUST COLLECTOR AND SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 502,071, dated July 25, 1893.

Application filed February 11, 1893. Serial No. 461,899. (No model.)

*To all whom it may concern:*

Be it known that I, MOSES F. GALE, of Brooklyn, county of Kings, and State of New York, have invented certain new and useful

5 Improvements in Dust Collectors and Separators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention relates to that class of devices called dust collectors and which are employed primarily to collect dust and other materials from a moving current of air, permitting the air to escape before the dust is finally

15 discharged.  
The principal objects of my invention are to reduce the cost of construction of these machines and to produce a simple, cheap and efficient device which will automatically collect and deliver the dust free from the air blast as in other forms—and also to provide

20 a simple attachment by which the volume of dust or material may be divided, the larger or coarser particles from the smaller, as, for instance, saw dust from shavings, and these separately discharged.  
To accomplish all of this and to secure other and further advantages in the matters of construction, operation and use, my improve-

30 ments involve certain new and useful arrangements or combinations of parts and particular features of invention, all of which will be herein first fully described and then pointed out in the claims.  
35 In the drawings Figure 1 is a plan view of my improved apparatus as it appears when the axis is placed horizontally, a portion of the plate at the end being broken out to show the perforated piece below it. Fig. 2 is a sectional view on a plane through line 2—2 of

40 Fig. 1. Fig. 3 is a plan showing a portion of the under side of the device in position as in Fig. 2, a part of the imperforate plate being broken away to uncover the perforated plate at this part.

45 In all the figures like letters of reference, wherever they occur indicate corresponding parts.  
The device being in horizontal position, as

erably of sheet metal, and these are imperforate and sustain the top and bottom plates or sections.

B is the inlet for the blast of air carrying 55 the dust or other material. The top and bottom plates are fashioned and bent as indicated so that the curved axis of the channel inclosed by them extends alternately on one side and the other of a central straight line. 60

As shown the top is made up of four principal sections C. D. E. F. and the bottom of the same number, G. H. I. K., all of which bear a certain similarity. The dust laden blast entering at B is deflected to one side of the central 65 straight line by section G and then back by section C upon section H, from whence it is directed upon section D—and so on throughout its curved path to the discharge end. The number of changes in direction to be afforded 70 will depend upon the nature of the material to be operated upon and the velocity with which it is required to be delivered, and the number of sections in the top and bottom plates may be varied accordingly. The interval *a* between sections G and H is closed 75 in any suitable way either by extending the two sections so that they will come together or by a plate as *b* separately applied for the purpose. Between the remaining sections are 80 openings *c. d. e. f. g.*, the margin of one section extending into the space between the plates and beyond the margin of the preceding section, as shown. The current deflected from section C upon section H enters a wider and 85 larger space, the material being driven hugging section H and follows its curve while some of the air blast is intercepted by the inwardly extending portion of section D and allowed to pass out through opening *c*. From 90 section H the current is directed upon section D, a further portion of the air blast being delivered through opening *d*, thus further reducing the volume of air in the apparatus; and so on, at each change of direction, 95 a quantity of air is discharged through openings *e. f. g.*, and these openings may, if desired, be so numerous that the force of the blast at the extremity of the device will be completely destroyed. The material being 100 carried by the blast is always driven against the curved plates and beyond or past the air



openings or outlets, so that none of it, or practically none of it escapes through these openings. From the delivery end of the apparatus the material may be carried or deposited as  
5 may be desired.

As will be observed in Figs. 1 and 3 the walls A are gradually inclined toward each other from the inlet portion. This serves to contract the space through which the current  
10 can pass in such a way as to create a slightly-increasing back pressure as the delivery end is approached and therefore to facilitate and complete the outflow of superfluous air through the openings provided for the purpose.  
15

The apparatus may be used in any position, vertical, horizontal or inclined and with either face or side uppermost, and is therefore well adapted to conform to any location in which  
20 it may be required to be placed. It occupies but very little room, is cheap and easy to construct, and has no parts to get out of order.

In many instances it is desirable to separate the coarser and finer particles of the dust or  
25 material before it is delivered—as, for example saw-dust from shavings. To provide for this I apply a perforated plate or netting as L at a little distance from the inside of section K and join this with a final partition L'.  
30 The material strikes the netting L, the finer particles passing through it and out beneath it and the partition L', while the coarser particles follow over the top of the netting and partition and out in a separate current. I  
35 find that this one netting is not always sufficient to complete the desired separation and in such instances I employ a second netting M through which the fine particles escaping past the piece L are driven by the force of  
40 their projection. This confines the coarser particles to the central stream and produces a second stream of the finer particles beneath section F. The three streams may be led away separately in any desired way. The  
45 nettings or perforated pieces are of course made to suit the work to be performed. They may be omitted if not required or either or both may be employed as circumstances will suggest.

50 It is not necessary that the different sections of the apparatus follow each other in a direct

course as shown, for the axis may be bent or turned to suit any location.

Having now fully described my invention, what I claim as new herein, and desire to secure by Letters Patent, is—

1. In an apparatus of the character herein set forth, the oppositely disposed curved sections following one after the other leaving air outlets between adjacent sections, each section following an air outlet being smaller than the preceding section the margin of one section extending inwardly beyond that of the one preceding it, substantially as shown and described. 65

2. In an apparatus of the character herein set forth, the oppositely disposed curved sections following one after the other leaving air outlets between adjacent sections, the inwardly projecting margins in advance of the air outlets, and the side plates contracted from the inlet toward the outlet, the parts being arranged and combined substantially as shown and described. 70

3. In an apparatus of the character herein set forth, the curved sections with air outlets between them and the side plates inclosing a channel for the passage of the dust laden blast, the channel being enlarged at points opposite each air outlet, the curved sections having margins extended into the enlarged portions of the channel, the parts being combined and arranged substantially as shown and described. 75

4. The herein described apparatus consisting of the oppositely disposed and gradually contracted curved sections leaving air outlets between them, the upper and lower nettings or perforated pieces and the imperforate partition located in one section of the apparatus, the parts being combined and arranged to separate the dust into three streams, substantially in the manner and for the purposes set forth. 85

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses. 95

M. F. GALE.

Witnesses:

W. J. MORGAN,  
WORTH OSGOOD.