

No. 646,490.

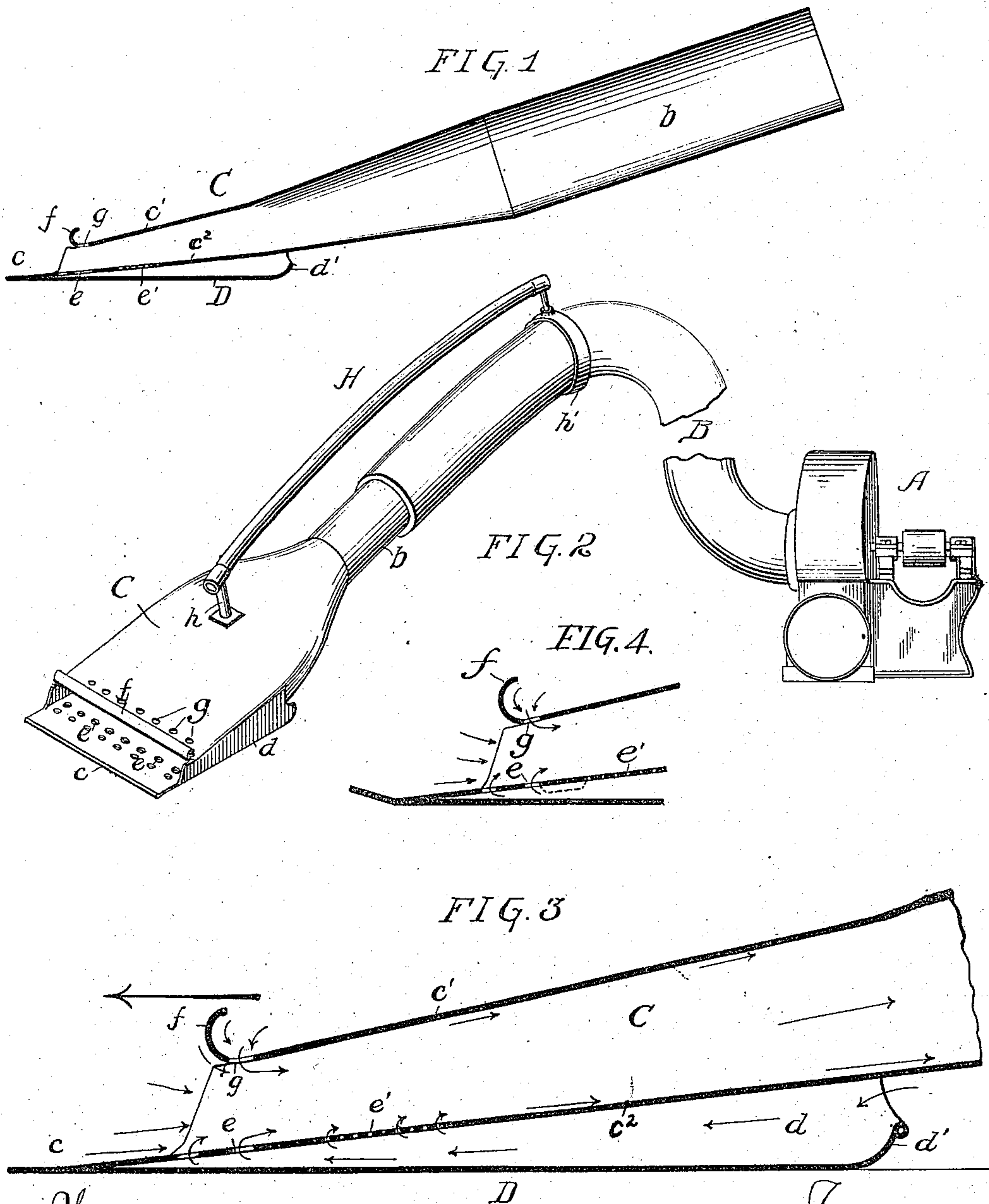
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H. A. DEERY.

MOUTHPIECE FOR PNEUMATIC CONVEYERS.

(Application filed Nov. 12, 1897. Renewed Feb. 7, 1900.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

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MOUTHPIECE FOR PNEUMATIC CONVEYERS.

SPECIFICATION forming part of Letters Patent No. 646,490, dated April 3, 1900.

Application filed November 12, 1897. Renewed February 7, 1900. Serial No. 4,414. (No model.)

To all whom it may concern:

Be it known that I, HARRY A. DEERY, a citizen of the United States, and a resident of the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Mouthpieces for Pneumatic Conveyers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming
10 part of this specification.

My invention relates to certain improvements in conveyers, and has reference more especially to the inlet box or mouth situated at the inlet end of the conveyer-pipe, as more
15 fully set forth hereinafter.

In the accompanying drawings, Figure 1 is a sectional elevation of the inlet end of a pneumatic conveyer constructed in accordance with my invention. Fig. 2 is a perspective
20 view of the same, illustrating also a suction-fan connected thereto by means of the flexible pipe or tube; and Fig. 3 is a sectional elevation, drawn to an enlarged scale, to illustrate more clearly the operation of the device. Fig. 4 represents a slight modification
25 of construction shown in Fig. 3, the forward lip *c* being bent upwardly.

The apparatus is intended for the removal of all classes of finely-divided material of moderate weight—such as light refuse, chips,
30 sawdust, grain, meal, &c.—which may be intermingled with air, and is particularly adapted for the removal of a top layer or layers of such material—as, for instance, the removal
35 of accumulations of foreign matter from the upper surface of large filters—where it is desired that such material be removed without disturbing the sand or similar material which forms the filter-bed.

Referring to the drawings, A represents an exhaust-fan connected by a flexible or sectional conveyer-pipe B of any ordinary construction to the piped end *b* of the inlet-box C, the inlet-box being flattened and of much
45 greater width than the conveyer-pipe, assuming a shovel-like form, as shown in Fig. 2. The lower forward end of the inlet is in the form of a thin blade *c*, which may readily slide and be pushed under the material to be
50 removed and facilitates its entrance to the inlet. As the inlet-box is to be moved around by hand and it may on some occasions be

desirable to alter the inclination of the box, while still maintaining the lower edge of the box in a horizontal line, the forward lip *c* is
55 formed of sheet metal, which may be slightly bent to effect this object. Immediately under the lower plate of the inlet-box is a horizontal plate D, which forms a base for the box and is adapted to travel in a horizontal
60 line at the lower level of the layer of the material to be removed and forms a base and support for maintaining the box in proper position as it is traveled forward into the material. Side plates *d* at each edge of the
65 box serve to form, with the plate *c*² and D, a space or compartment for the passage of air from the open rear end and also act to prevent the entrance of any material into said space or compartment. The rear edge of the
70 plate D has a slight upward curve, as *d'*, which will prevent the entrance of any material to said compartment if at any time it becomes necessary to withdraw the inlet-box to the rear.

In the lower plate of the inlet-box are a series of openings *e*, which place said box in communication with the compartment below it, and a further series of smaller openings *e'*
75 may also be provided in said plate as additional air-passages in the event of the clogging of the openings *e*.

The upper plate *c'* of the inlet-box terminates at a point somewhat to the rear of the plate *c*² in an upwardly and rearwardly
85 curved flange *f*, and in said plate *c'* at a point immediately to the rear of the flange are formed a series of openings *g*, through which air may pass to the interior of the box.

The conveyer-pipe between the inlet-box
90 and the suction-fan may be of rigid or flexible material; but in all cases I prefer to employ a flexible tube or connection with the pipe-section *b* of the inlet-box, so that said box may be freely moved into the path of the
95 material to be conveyed away. As a convenient means of operating the box I employ an elongated handle or bar H, connected at one end by a socket *h* to the box and at the opposite end by a ring *h'* to the flexible pipe-section,
100 the handle being preferably of sufficient length to permit the operator to conveniently grasp it and manipulate the box.

In operation the exhaust-fan is operated

to induce a blast of air into the mouth of the inlet-box and through the openings *e e'* and *g* from the bottom and top of the box, and the latter is then traveled in the direction of the large arrow, Fig. 3, in the path of the material being moved. The forward lip *c* will act to guide the material into the mouth of the box, at which point it will meet the blast of air induced by the fan into the mouth of the box and will become thoroughly intermingled therewith and drawn up through the conveyer-pipe to the point of discharge. The lower portion of the material will meet a blast of air entering through the openings *e*, and the upper portion of the material will meet a second blast of air entering through the opening *g*. The effect of these air-currents, traveling as they do between the surfaces of the box and the top and bottom of the body of material being operated upon, will keep such material from contact with the surfaces of the box, avoiding undue friction and clogging and keeping the material practically suspended in a central position without danger of such contact with the sides of the box or conveyer-pipe as would tend to retard the operation.

It is clear that small openings may also be provided, if desired, in the sides of the box for the induction of side currents of air, although these are not in all cases desirable, owing to the danger of clogging and choking from contact with material.

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

1. An inlet-box for conveyers, comprising upper and lower perforated plates, and a base-plate arranged to form with the lower plate

a compartment or passage for the introduction of air, substantially as specified. 40

2. An inlet-box for conveyers, comprising in combination, a lower plate having a forwardly-extending flange or lip and perforated at a point to the rear of the forward edge of said flange or lip, a base-plate having an upwardly-curved rear end and forming with said lower plate a compartment for the passage of air to the perforations of the plate, and an upper perforated plate having a flanged forward edge, substantially as specified. 45 50

3. A movable inlet-box for conveyers comprising a lower plate, *c*², having perforations, *e*, a base-plate, *D*, side plates, *d*, forming with the plate, *c*², and the base-plate a compartment for the passage of air through said perforations, an upper plate, *c'*, having perforations, *g*, and an upwardly-extending flange, *f*, situated at the forward end of said plate, *c'*, substantially as specified. 55 60

4. An inlet-box for conveyers comprising an open mouth and rear tube, forwardly-protruding lower lip, a lower longitudinally-disposed channel, the upper and lower walls of the box each having perforations provided at or near their forward edges for permitting and directing a current of air inwardly along the length of the inner surfaces of said walls, the said perforations in said lower wall opening into the said lower longitudinally-disposed air-channel, substantially as described. 65 70

In witness whereof I have hereunto set my hand this 10th day of November, A. D. 1897.

HARRY A. DEERY.

Witnesses:

EDMUND S. MILLS,
JNO. E. PARKER.