

(No Model.)

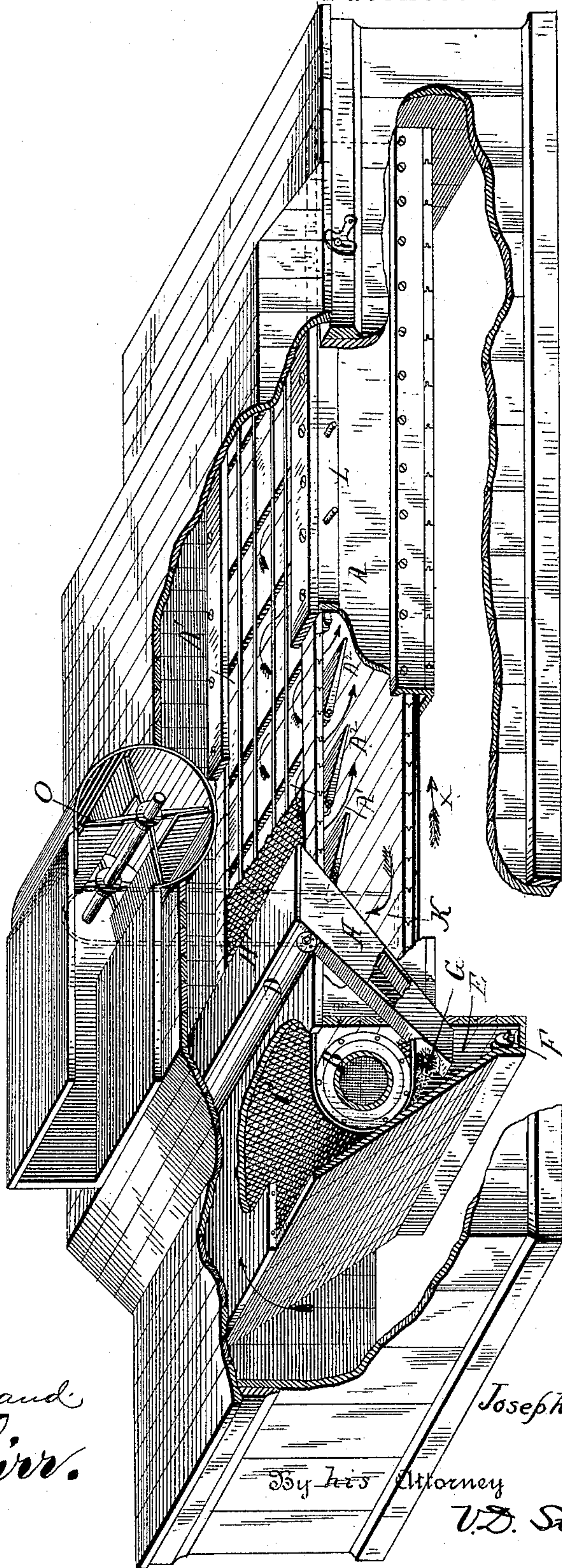
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J. H. WEEKS.  
DUST COLLECTOR.

No. 395,801.

Patented Jan. 8, 1889.

Fig. 1.



Witnesses,  
Frank L. Curand  
J. B. McGirr.

Inventor,  
Joseph H. Weeks.

By his Attorney

V. D. Stockbridge.

(No Model.)

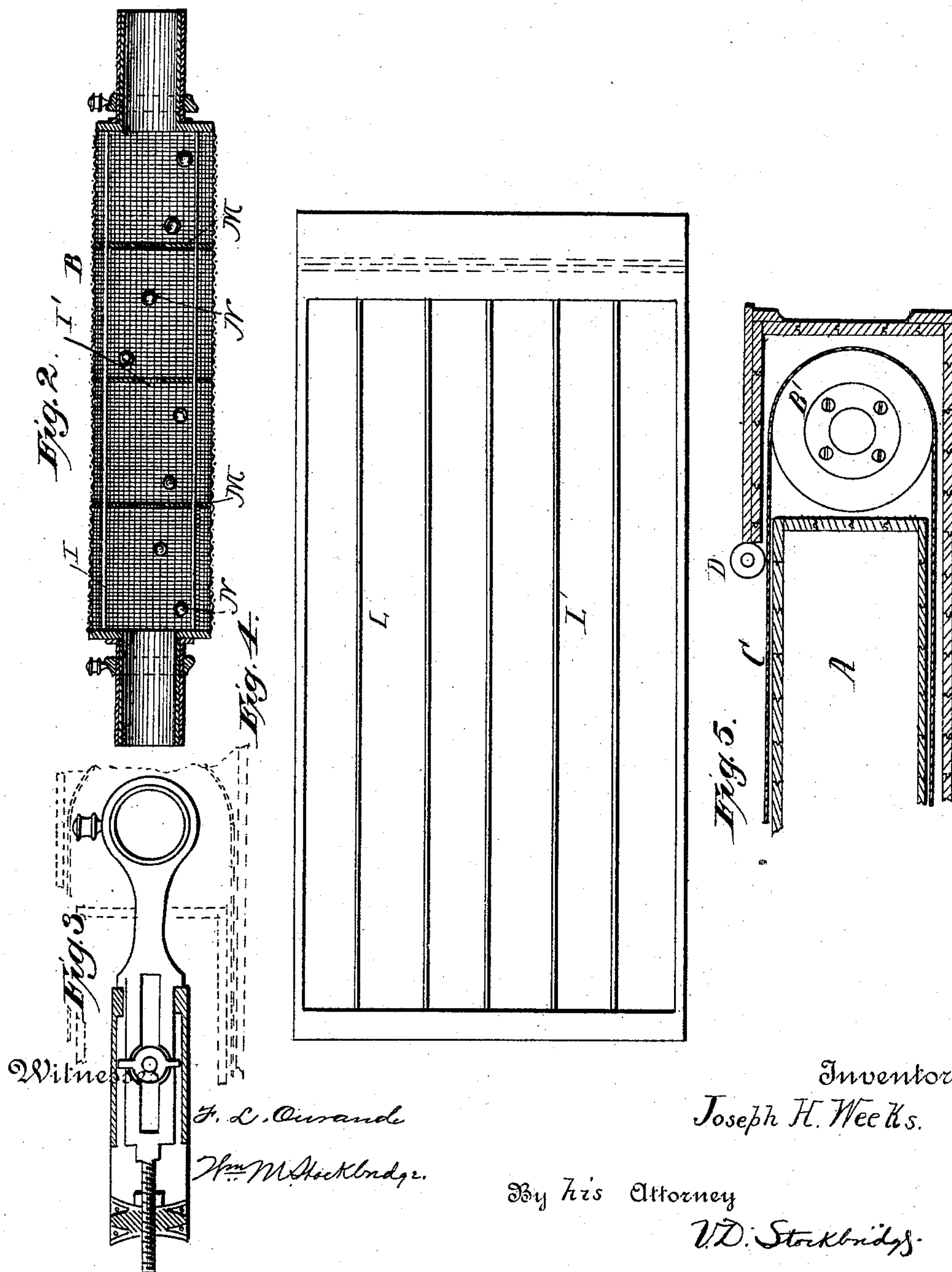
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Witness

F. L. Curande

Wm. M. Stockbridge

Inventor,  
Joseph H. Weeks.

By his Attorney

W. D. Stockbridge



(No Model.)

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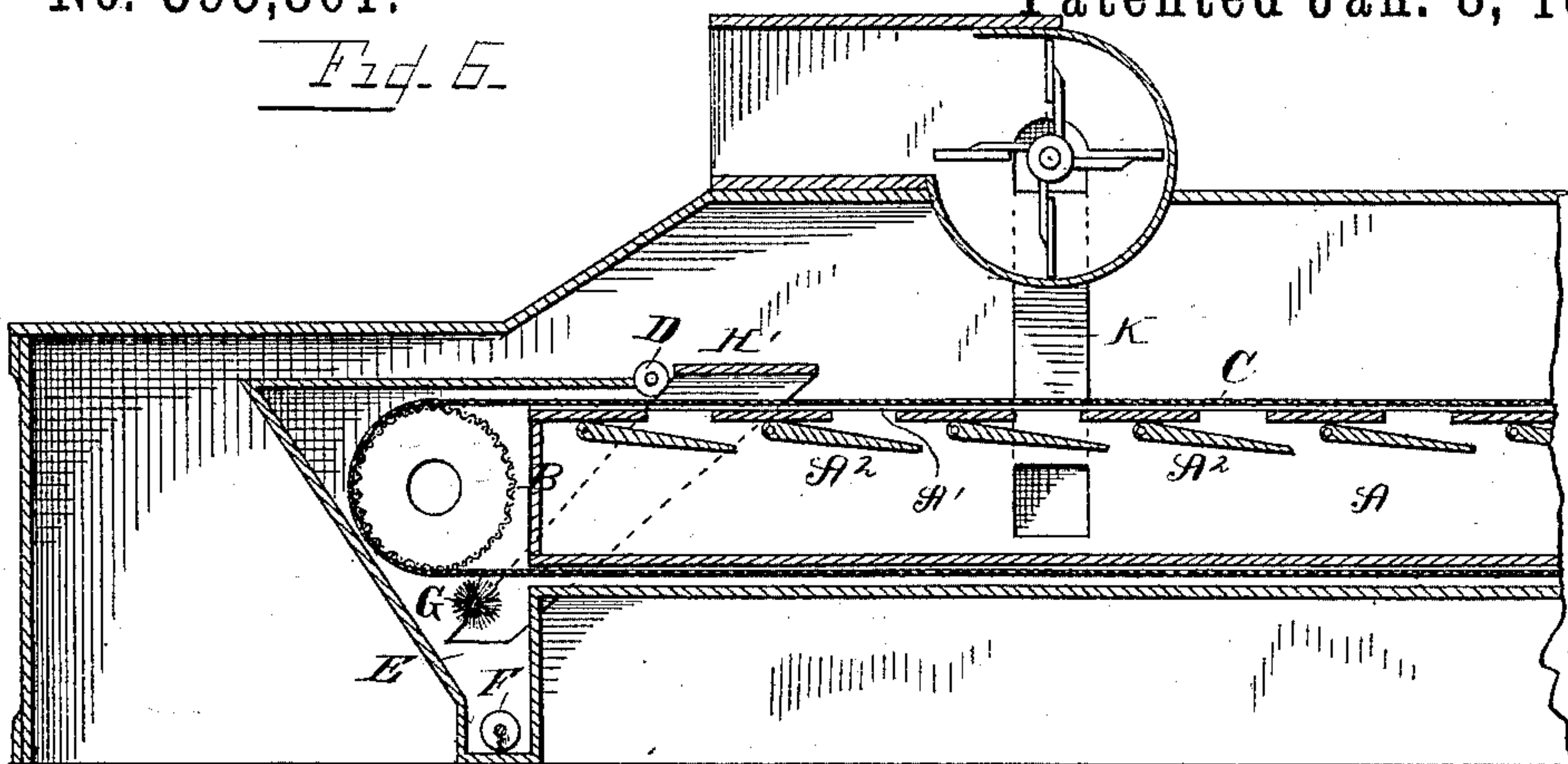
J. H. WEEKS.

DUST COLLECTOR.

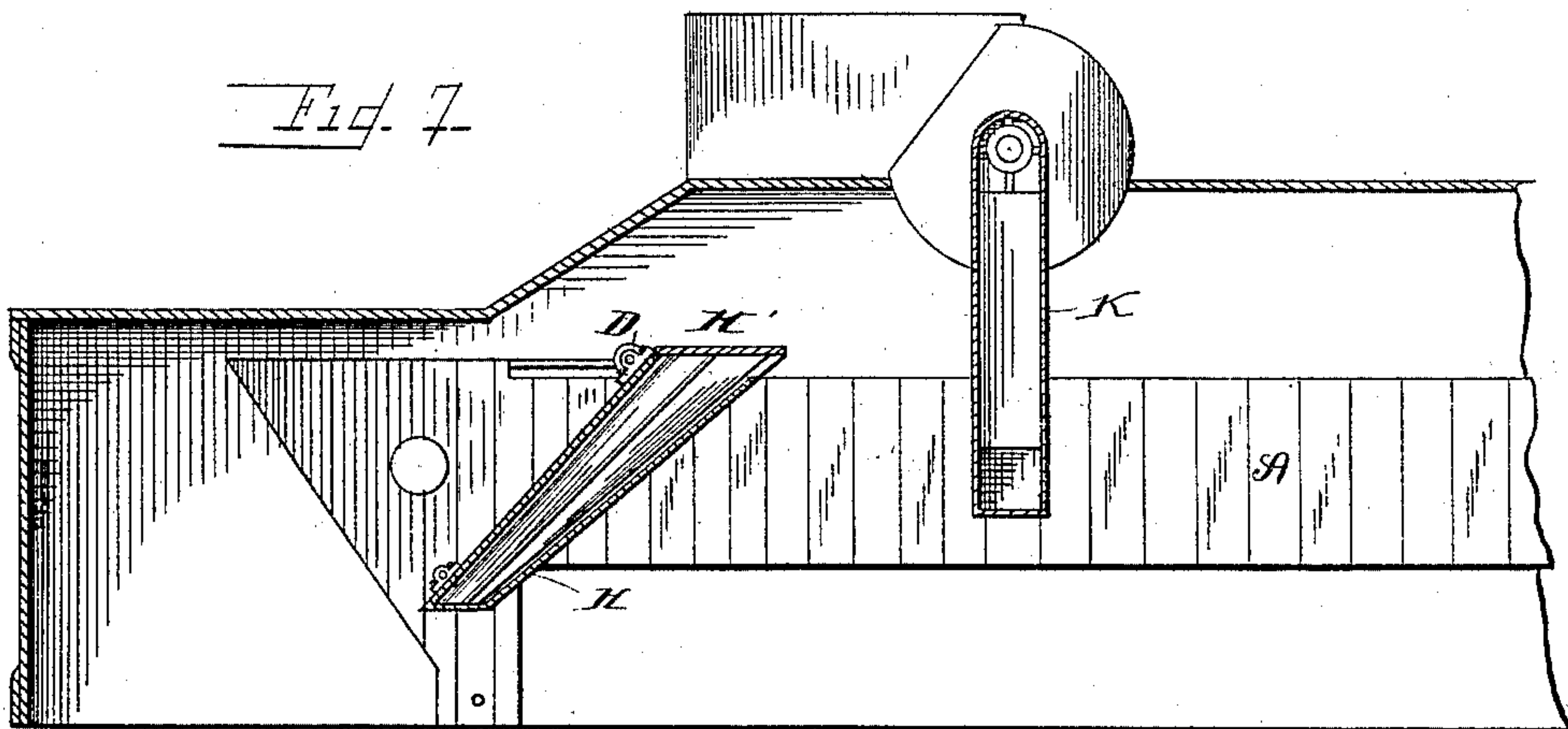
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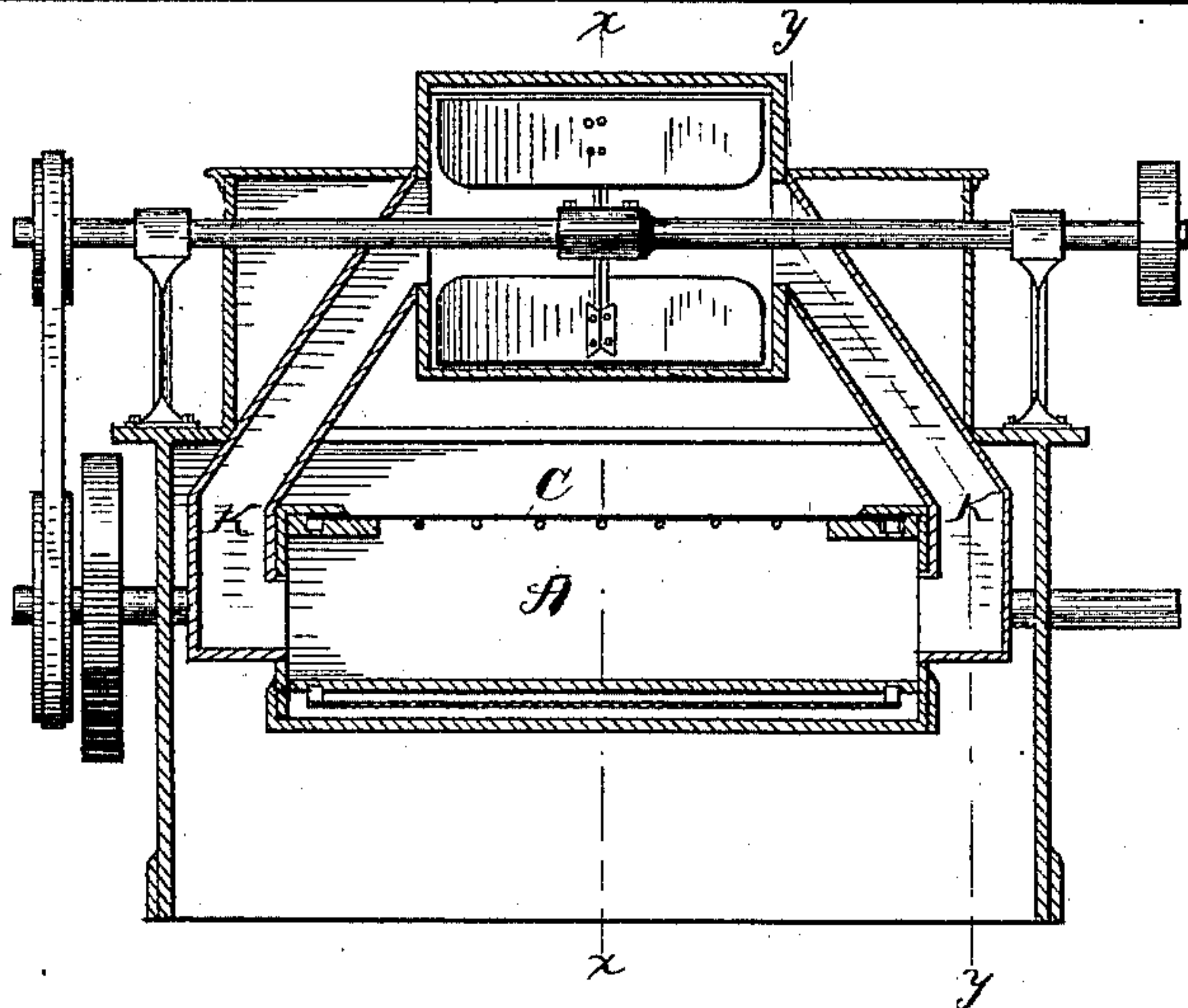
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



Witnesses.

*S. A. Tauberschmidt,*  
*Wm. M. Stockbridge*

Inventor.

*Jos. H. Weeks.*  
*by V. D. Stockbridge*  
*Attorney.*



# UNITED STATES PATENT OFFICE.

JOSEPH H. WEEKS, OF BATTLE CREEK, MICHIGAN, ASSIGNOR OF ONE-HALF  
TO MARVIN C. ADAMS, OF INDIANAPOLIS, INDIANA.

## DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 395,801, dated January 8, 1889.

Application filed August 9, 1887. Serial No. 246,494. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. WEEKS, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, 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 relates to means for collecting dust and other impurities contained in the atmosphere of a compartment, passage, or chamber, and for conveying the same to proper receptacles; but it is principally intended to be combined with middlings-purifiers to collect and remove the dust therefrom, but obviously it may be used wherever impurities and dust are required to be removed from a chamber or passage.

The invention consists in certain novel features in the construction and arrangement of parts, all as hereinafter described.

In the drawings forming a part of this specification, Figure 1 is a perspective view of a middlings-purifier case with a portion of the top and front broken away, showing my improved dust-collector arranged therein. Fig. 2 is a section through the perforated or wire-covered drum. Fig. 3 is a side view, partly in section, of the roller-bearing, showing the means for adjusting the same to take up slack in the apron. Fig. 4 is a top view of the frame on which the apron runs. Fig. 5 is a section through the end of the box or trunk, showing the roller at the opposite end of the machine, around which the apron passes. Fig. 6 is a vertical section through line *x x*, Fig. 8. Fig. 7 is a vertical section on the line *y y*, Fig. 8. Fig. 8 is a vertical section through fan-shaft and air-trunks.

The box or trunk A is made in any desired shape to conform to the purifier-case to which it is to be applied, having its sides, bottom, and ends made tight, and with cross-boards on its upper side separated so as to leave intervening openings or spaces, A'. At each end of this box or trunk are arranged rollers or drums B B', the roller B' at one end being of any desired form or construction, while

that shown at B is provided with openings or perforations or covered with a wire-gauze, as shown in Figs. 1 and 2. An endless apron or dust-collecting surface, C, passes around these drums or rollers within the box or trunk and forms the covering for the upper portion of the trunk, and is exposed within the machine in its movements around the rollers only on the upper face of the trunk or box. This apron is preferably made of canton-flannel or similar material, having strips of leather sewed or otherwise secured to its edges on one or both sides, as shall be found desirable. Near each end of the box or trunk, and near or in front of each roller or drum, is arranged a roller, D, which serves to hold the apron down upon the face of the trunk and prevent the air from passing beneath the cloth into the trunk or box, except downwardly through the cloth between said rollers D D. Below the openings A', and within the box or trunk, are arranged valves A<sup>2</sup>, with their shafts passing through the sides of the box, and provided with suitable quadrants and thumb-screws for adjusting and holding the valves at any desired angle.

The supporting-frame on which the apron or dust-collecting surface rests is shown in Fig. 4, and consists of a rectangular frame, with rods or wires L L running lengthwise thereof, which support said apron in a manner that will be readily understood.

The drum B is arranged outside the box or trunk in a chamber, E, in the bottom of which and under the roller is arranged a conveyer-screw, F, and in the chamber is also arranged a brush, G, moving by any suitable means in contact with the apron as it passes around the drum B, and by means of said brush the dust is completely removed from the apron and deposited in the conveyer-trough. Communicating with the chamber E and upon each side are arranged spouts H, extending upward on an incline, with a board, H', extending from one to the other over the apron, to deflect the air passing through the drum into the machine down upon the apron.

The bearings for the drum B extend out through the frame and are constructed in such manner that they may be lengthened or shortened, and they are provided with wire-



covered caps, over each of which is arranged a movable cap or lid to regulate the amount of air admitted to the drum. The bearings in which the drum B is mounted are made adjustable, as shown in Fig. 3, so that the apron can be kept at the proper tension to insure its proper movement. The drum is divided into a series of compartments, the dividing walls M M being held or secured by means of rods I, connected to the heads of the drum and passing through said walls. In said compartments are placed balls or other loose bodies N N, which act in the revolution of the drum against the face thereof to loosen the dust upon the cloth. The dividing walls are provided with suitable openings, I', to permit the putting in or withdrawal of the balls or knockers, as occasion shall require. The exhaust-fan chamber connects with the box or trunk upon each side by spouts K. (Shown in dotted lines in Fig. 1.)

The valves A<sup>2</sup>, before referred to, are arranged under the openings A', and by changing the angles of said valves the volume of air passing through the cloth may be changed and regulated as shall be found desirable.

In practice the dust-collector above described is arranged above the shaker of a middlings-purifier within a casing, substantially as shown, space being left around the air-trunk for the dust-laden air to rise from the shaker to the space above the trunk, to be drawn thence through the apron at the top of said trunk, cleansed of its dust, and discharged to atmosphere.

The operation of the device is as follows: Power being applied to either one of the rollers from fan-shaft or otherwise, the apron is caused to travel around the same in the direction of the arrow X. Movement is communicated to the fan and brush by suitable belting from the main driving-shaft of the machine. As the surface of the apron or dust-collector is exposed in the machine between the rollers D, the dust from the middlings is collected thereon and is caused to adhere thereto until it reaches the drum B, at which point the current of air passing through the drum from the inside to the outside of the cloth to spouts H H loosens the dust. The operation, in connection with the balls or knockers and the brush acting on the surface, removes all the dust from the apron, from whence it drops into the conveyer-trough and is carried by the conveyer to any suitable receptacle.

By arranging the dust-collecting surface in the manner described it will be seen that the dust will tend to settle thereon by gravity, and that only a light downdraft will be required to cause it to adhere to the apron, and,

as it is not forcibly drawn into the meshes of the cloth, it can be easily cleaned and removed therefrom at the conveyer. It will also be seen that the exhaust-fan acts not only to cause the dust to collect on the cloth, but acts to cause a counter draft to assist in removing or cleaning the cloth at the point of discharge.

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

1. The combination of an exhaust-fan, a dust-collecting apron, an air-trunk having exhaust-air passages leading from the trunk to the fan-case, and a chamber outside the trunk having exhaust-air passages leading from said chamber to the upper surface of the apron, substantially as described.

2. The combination of a casing, a rectangular air box or trunk located within the casing and having exhaust-passages leading from below its top to the fan-case and inlet-openings through the top only, a dust-collecting apron, and an exhaust-fan, substantially as described.

3. The combination of a rectangular air-trunk, a dust-collecting apron, an open perforated or wire-covered drum, a compartment or chamber for said drum, air-passages leading from the compartment, and a fan for exhausting air through the drum from the compartment, substantially as described.

4. The combination of the dust-collecting apron, the perforated drum, the exhaust acting from the inner side of the drum, and the balls, operating substantially as and for the purpose set forth.

5. The combination of the box or trunk having inlet-openings through the top only, valved openings arranged in the top of the box or trunk, the endless dust-collecting apron, and an exhaust from within the trunk, substantially as set forth.

6. The combination of the box or trunk having inlet-openings through its top only, the endless dust-collecting apron, the exhaust-fan, and the air-passages communicating with the interior of the box, substantially as set forth.

7. The combination of the trunk, the fan, the perforated drum, the conveyer-trough, and the air-spouts communicating with the conveyer-trough and opening on the dust-collecting apron, substantially as and for the purpose set forth.

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

JOSEPH H. WEEKS.

Witnesses:

H. P. HOOD,  
M. CARSTEN.