

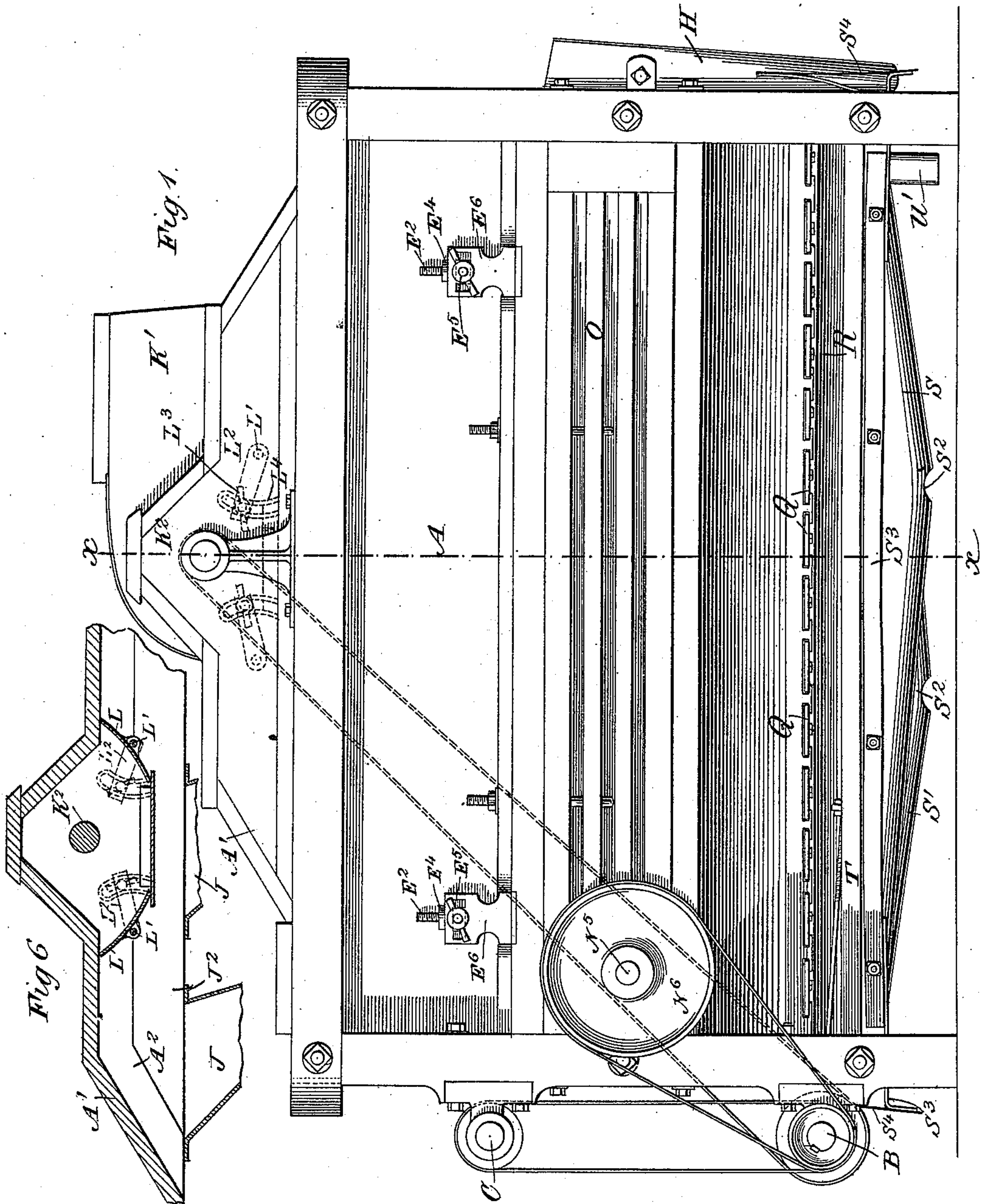
(No Model.)

3 Sheets—Sheet 1.

J. A. WAHLSTROM.
MIDDLINGS PURIFIER.

No. 417,453.

Patented Dec. 17, 1889.



WITNESSES:

Paul Johse
C. Sedgwick

INVENTOR:

INVENTOR:
J. A. Wahlstrom

BY

Munn & Co

ATTORNEYS.

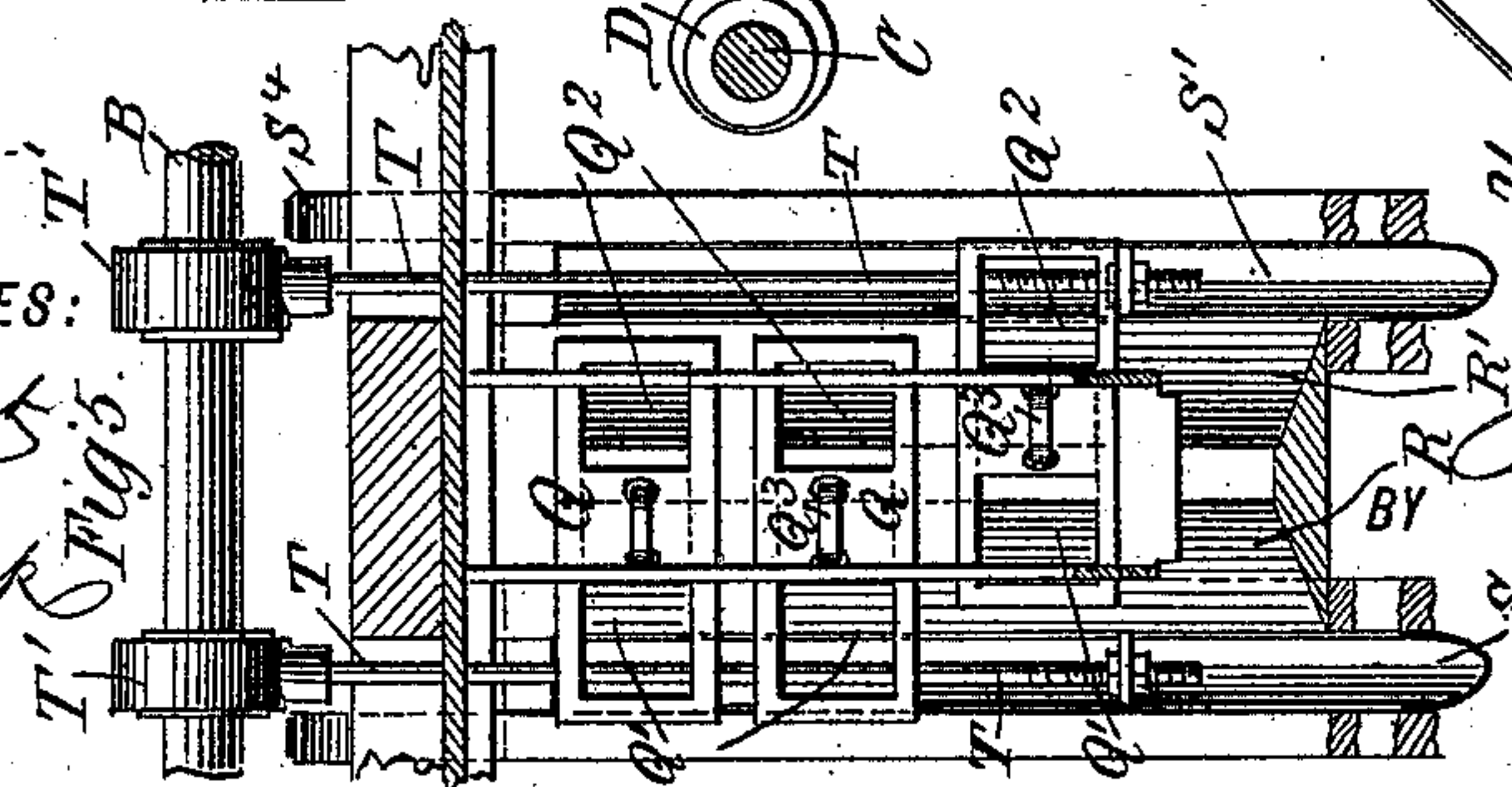
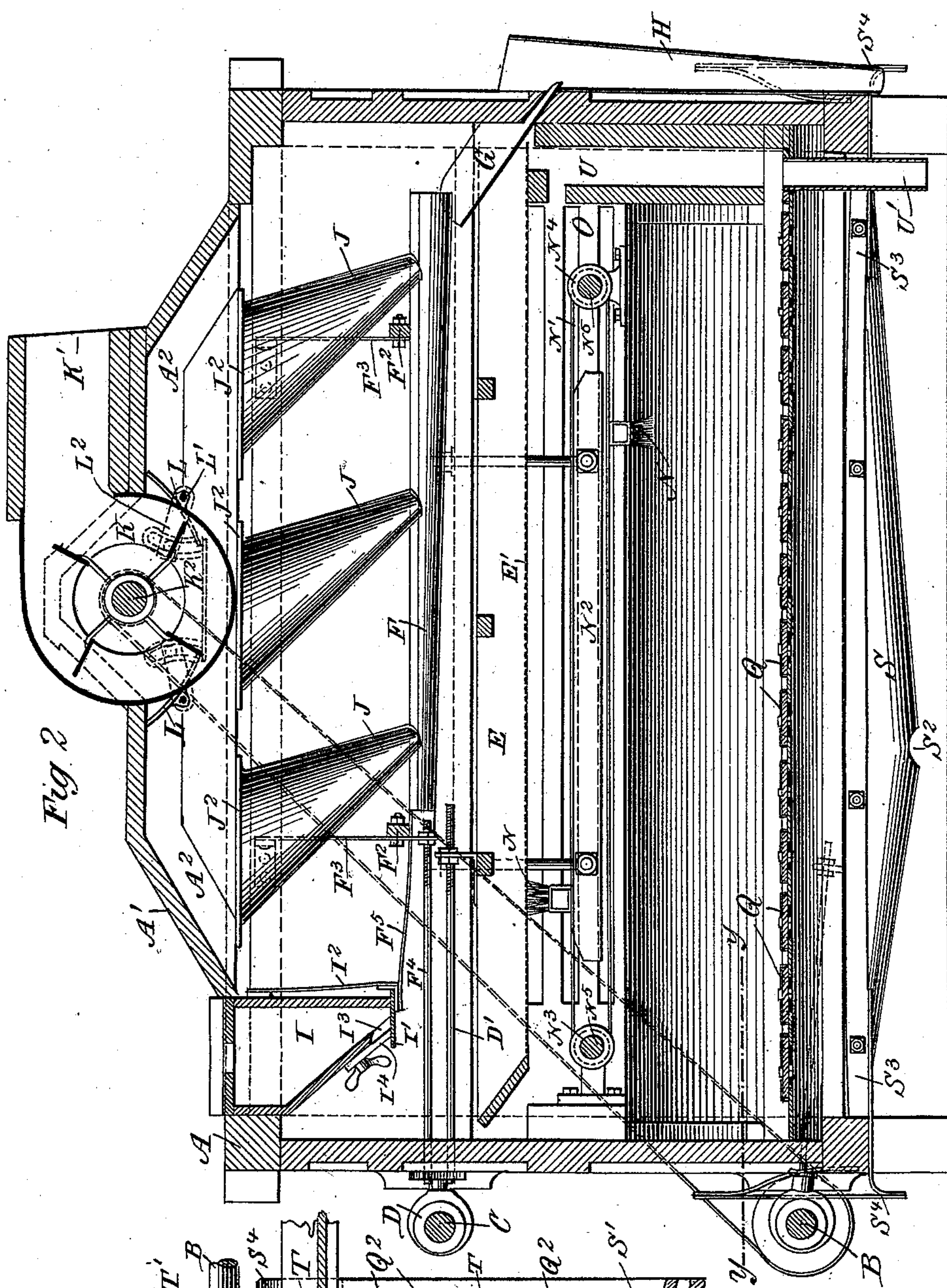
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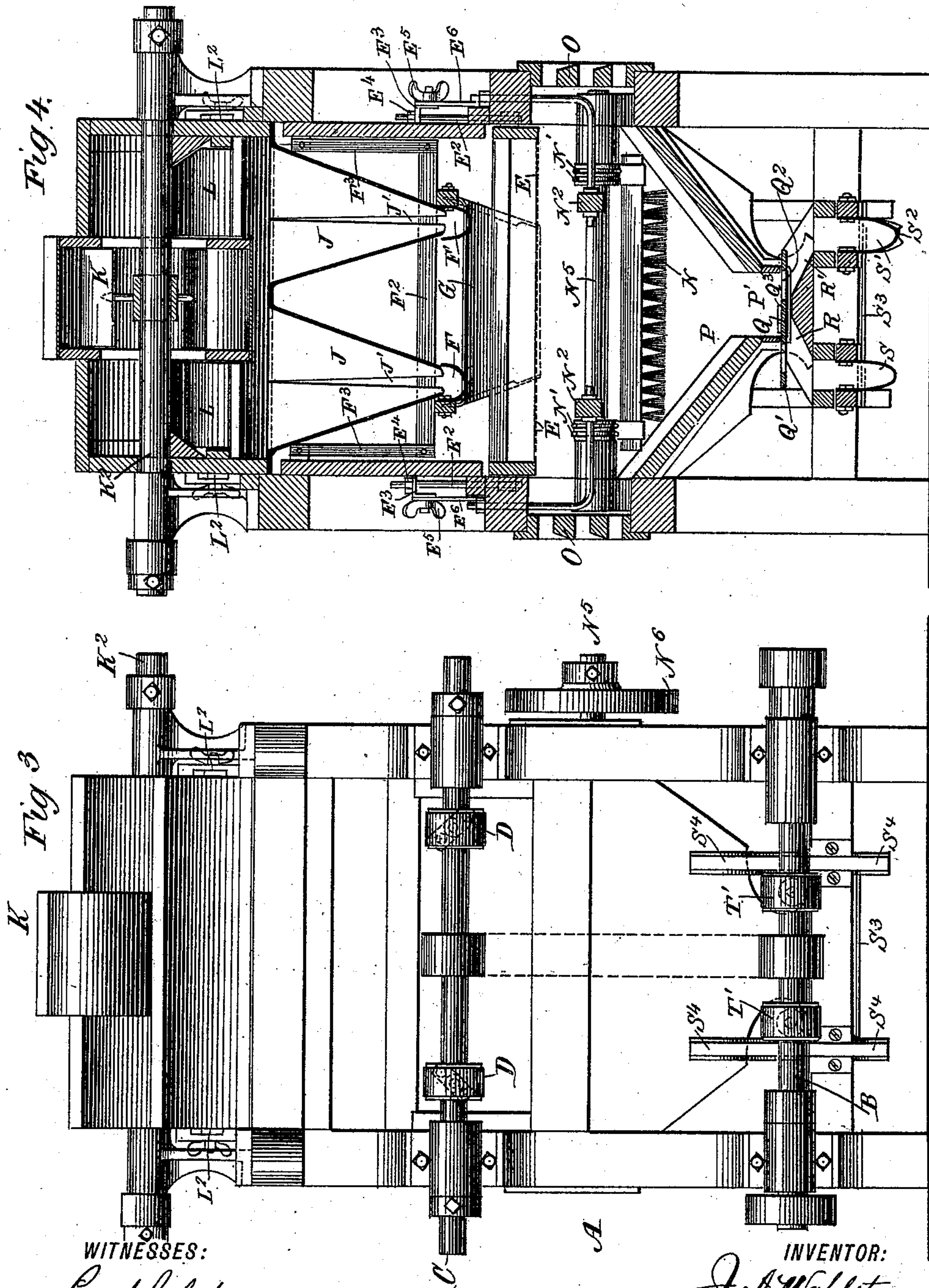
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UNITED STATES PATENT OFFICE.

JOHN A. WAHLSTROM, OF WAKEFIELD, NEBRASKA.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 417,453, dated December 17, 1889.

Application filed July 20, 1889. Serial No. 318,127. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. WAHLSTROM, of Wakefield, in the county of Dixon and State of Nebraska, have invented a new and Improved Middlings-Purifier, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved middlings-purifier which is simple and durable in construction, very effective in operation, and purifies the middlings with very little waste, at the same time producing middlings of a higher grade.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a sectional end elevation of the same on the line xx of Fig. 1. Fig. 5 is a sectional plan view of part of the improvement on the line yy of Fig. 2, and Fig. 6 is a sectional side elevation of the valves for the fan.

The improved middlings-purifier is provided with a suitably-constructed casing A, on one end of which is mounted the main driving-shaft B, connected with suitable machinery for imparting a rotary motion to the shaft B. The main driving-shaft B is connected by a belt and pulleys with a second shaft C, also mounted to turn in suitable bearings in the end of the casing A and carrying eccentrics D, having their eccentric-rods D' extending to the inside of the casing A and connected with the shaker or bolt E, provided on its bottom with the usual cloth E'. The frame of the bolt E is supported on either side by rods E², passing loosely through plates E³, on the top of which rest nuts E⁴, screwing on the upper ends of the said rods E². The plates E³ are held longitudinally adjustable by bolts and nuts E⁵ on standards E⁶, secured on the outside of the frame, as is plainly shown in Figs. 1 and 4. By adjusting the nuts E⁴

the bolt E may be raised or lowered, and by adjusting the plates E³ longitudinally the said bolt may be adjusted longitudinally forward or backward, as desired.

Directly above the bolt E are located two inclined dust-conveying troughs F and F', connected with each other by transversely-extending bars F², connected with the lower ends of springs F³, secured at their upper ends to the inside of the casing A on the sides of the same. One of the transverse bars F² is connected near its ends by rods F⁴ with the eccentrics D, so that the rotary motion of the shaft C, operating said eccentrics D, imparts a shaking motion to the troughs F. The latter discharge at their lower ends into a spout G, passing through one end of the casing A and discharging onto the spout H, arranged on the outside of one end of the casing A, as is plainly shown in Fig. 2. The troughs F are also connected at their upper ends by rods F⁵ with the bottom I', held loosely on the under side of the hopper I, in which the material is placed. The bottom I' is supported by springs I² from the back of the hopper I, as is plainly shown in Fig. 2.

In the front of the hopper, near the bottom I, is arranged the usual opening I³, adapted to be opened and closed by an adjustable gate I⁴, serving to regulate the amount of the material passing through the opening I³ onto the shaking bottom I' and from the latter into the interior of the casing A. It is understood that the bottom I' has the same shaking motion as the troughs F on account of being rigidly connected with the same.

Into the dust-troughs F F' lead the lower ends of the dust-catchers J, preferably six in number, and two being placed alongside each other, as is plainly shown in Figs. 2 and 4. Each dust-catcher J is preferably the shape of an inverted cone and slightly inclined, having at its front an upwardly-extending slot J', which is wide at the bottom and narrows toward the top, as shown in Fig. 4. Each set of dust-catchers J is secured on a transversely-extending plate J², forming, with the cover A', a channel A², leading to the sides of the fan K, of any approved construction, and provided with the outlet K', held on the cover A'.

The fan-wheel K is provided with the usual shaft K², rotated from the main driving-shaft B by a belt or other suitable means.

The channel A², leading to the sides of the fan-wheel K, can be opened and closed by gates L, secured on the shafts L', mounted to turn in the sides of the cover A', and each provided on one outer end with a crank-arm L², held adjustably by a bolt and nut L³ in a segmental arm L⁴, fastened on the outside of the cover A'. By adjusting the gates L the amount of air passing through the fan K can be conveniently regulated.

On the under side of the bolt E operate a number of brushes N, secured on endless belts N', and adapted to travel, when in their uppermost position, over the horizontally-extending guide-rods N², adapted to be vertically adjusted so as to press the brushes with more or less force into contact with the under side of the bolting-cloth E'. The endless belts N' pass over suitably-grooved pulleys N³ and N⁴, fastened in transversely-extending shafts N⁵, mounted to turn in suitable bearings in the casing A. The outer end of one of the shafts N⁵ carries a pulley N⁶, connected by a belt with a suitable pulley on the main driving-shaft B, so that when the latter is rotated the endless belts N' are caused to travel and move the brushes N against the under side of the bolting-cloth E'.

In the sides of the casing A are arranged longitudinally-extending slats O, forming openings sufficiently large to admit air to the under side of the bolting-cloth E'.

The stock on the bolt E passes onto the inclined sides P, arranged in the lower part of the casing A and leading to the trough P', in the bottom of which are held a series of gates Q, mounted to slide transversely in suitable bearings formed on the under side of the said trough P'. Each of the gates Q is provided with the two openings Q' and Q², adapted to discharge into the inclines R and R', respectively, held centrally below the trough P' and leading to the conveying-troughs S and S', respectively, having a forward and backward sliding motion. Each trough S and S' is provided with an opening S² in its lowermost part to discharge the stock. Each of the gates Q is provided in its middle with a lug Q³ to prevent the gate from being drawn too far. When one of the openings Q' or Q² registers with its corresponding incline R or R', the other opening is disconnected, so that the stock passes through the registering-opening down its incline into the respective conveying-trough S or S'. The conveying-troughs S and S' are preferably of the shape shown in the drawings, having a bottom inclined from two sides, one of the sides being longer than the other, as is plainly shown in Fig. 1, so that the two openings S² of the two troughs are placed a suitable distance apart, as shown. The two troughs S and S' are secured in a

frame S³, supported on springs S⁴, attached to the ends of the casing A. Eccentric-rods T are also connected with the said frame S³, and are fastened on the eccentrics T', secured on the main driving-shaft B. When the latter is turned, the trough-frame S³, carrying the said two troughs S and S', is moved forward and backward—that is, the troughs receive a shaking motion similar to that of the bolt E. The end of the bolt E discharges into a channel U, formed on one end of the casing A and leading to a spout U', discharging on one end of the casing A, as shown in Figs. 1 and 2.

The operation is as follows: When the feed-hopper I has been charged and the gate I' adjusted and the machine is set in motion by rotating the shaft B, the stock passes out of the feed-hopper I onto the bottom I', which moves the material into the interior of the casing A, in which it is taken up and distributed through the upper part of the casing A by the air sucked in between the slats O and passes upward to the fan K by the suction of the latter. The dust and other impurities pass upward on account of their lightness, and finally settle into the top or wide ends of the dust-catchers J, which lead the dust into the troughs F, and as the latter receive a shaking motion the dust moves in the said conveying-troughs F until it is finally deposited in the spout G, discharging into the exterior spout H, leading to the floor. As the forward sides of the dust-catchers are slotted vertically, a free and unobstructed entrance for the dust is provided, and the shape of the slots prevents their being clogged by dust or particles of bran. The slots J' are widest at the bottom, where the draft is not so great, and contracted at their upper ends, where the draft is strongest, so that only the dust will be drawn therethrough. The rear closed sides of the dust-catchers incline forwardly, and thus the dust is permitted to slide freely down into the dust-spouts, there being insufficient draft at said rear sides to prevent the ready descent of the dust. The draft in the interior of the casing A is regulated by the gates L by adjusting the crank-arms L² on the sides of the casing A. The stock passing onto the bolt E passes through the cloth E' in the usual manner, the cloth being constantly cleaned by the traveling brushes N, the stock passing downward onto the inclined sides P and finally passing into the trough P', from which it may be discharged into either of the two troughs S or S' by changing the gates Q, as previously described. The discharge from the end of the bolt E passes into the channels U and from the latter into the troughs U', leading to the outside.

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

1. The combination, in a middlings-purifier, with the parallel reciprocating troughs, of longitudinally-aligned conical collectors

opening at their lower smaller ends into said troughs and having their forward sides provided with slots J', substantially as set forth.

2. The combination, with the casing A, having a cover A', the air-channel A² within the cover, and the blower or fan communicating with said channel or passage, of the pairs of conical dust-collectors J, slotted in their forward sides, each pair having a transverse plate J², said plates forming the bottom of said air-channel, the parallel reciprocating dust-troughs F, into which the lower smaller ends of the collectors discharge, and the shaking screen under said troughs, substantially as set forth.

3. In a middlings-purifier, the combination,

with the shaking screen, the trough below the same, gates in the bottom of the trough, oppositely - extending inclines below the trough, and slides, of a reciprocating frame S³, having parallel troughs S S' secured within said frame, and having their bottoms inclined toward their discharge-openings S², which openings are a suitable distance apart, springs S⁴, supporting the frame S³, a shaft having eccentrics, and rods T, operated thereby and connected with the frame S³, substantially as set forth.

JOHN A. WAHLSTROM.

Witnesses:

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I. M. BELKNAP.