

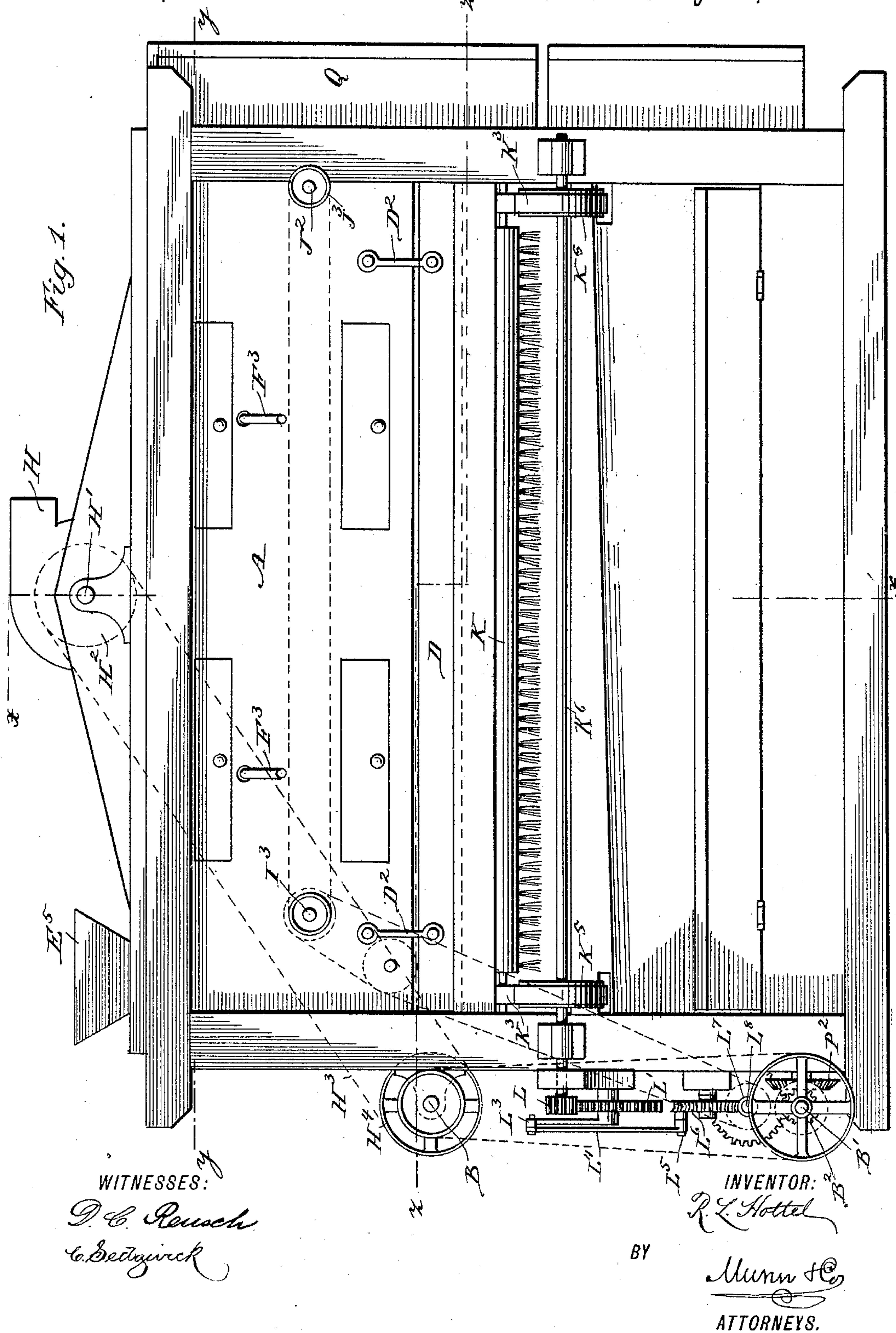
(No Model.)

5 Sheets—Sheet 1.

R. L. HOTTEL.
MIDDLINGS PURIFIER.

No. 432,876.

Patented July 22, 1890.



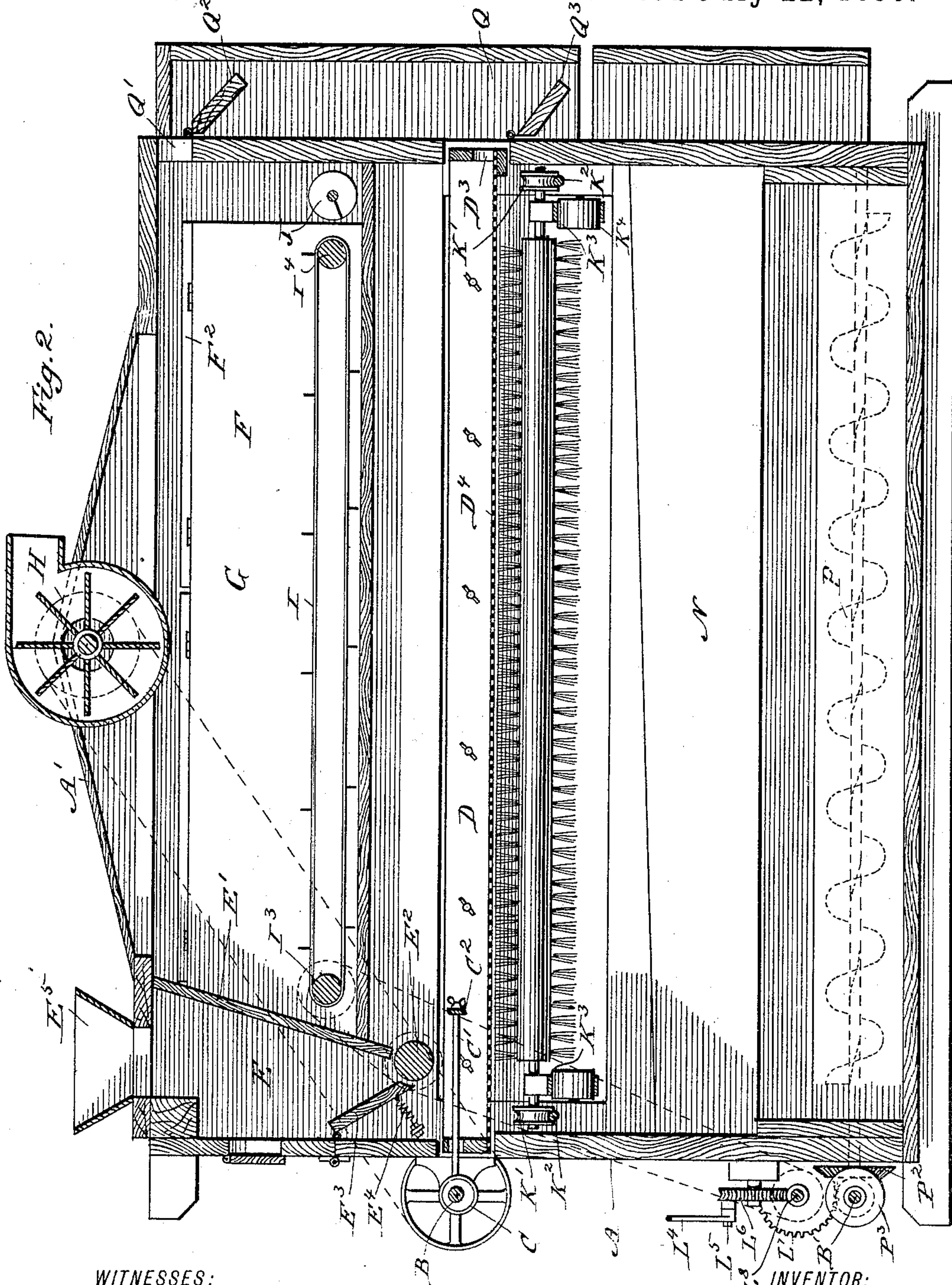
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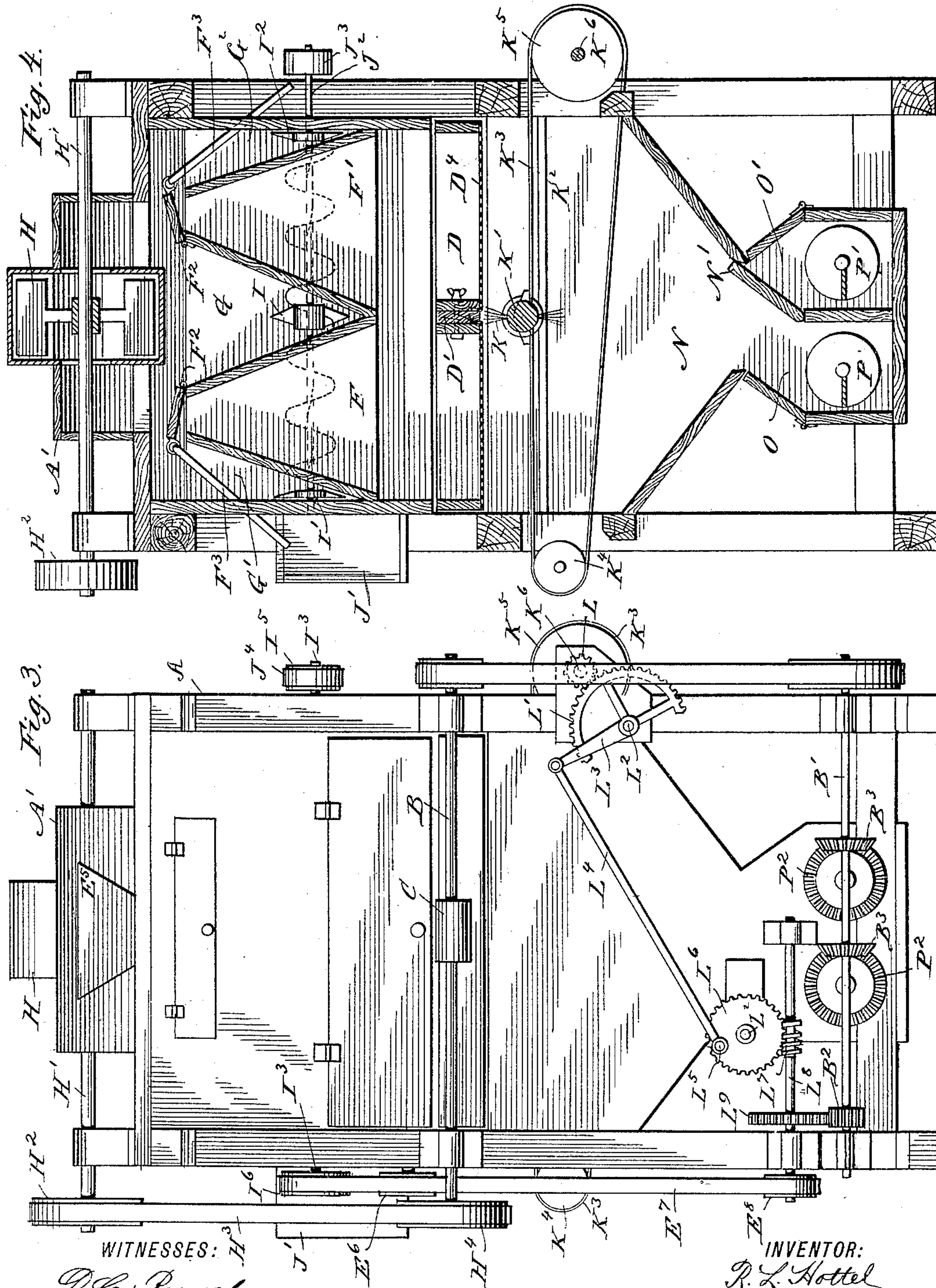
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WITNESSES:
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C. Sedgwick

INVENTOR:
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BY
Munn & Co.
ATTORNEYS.

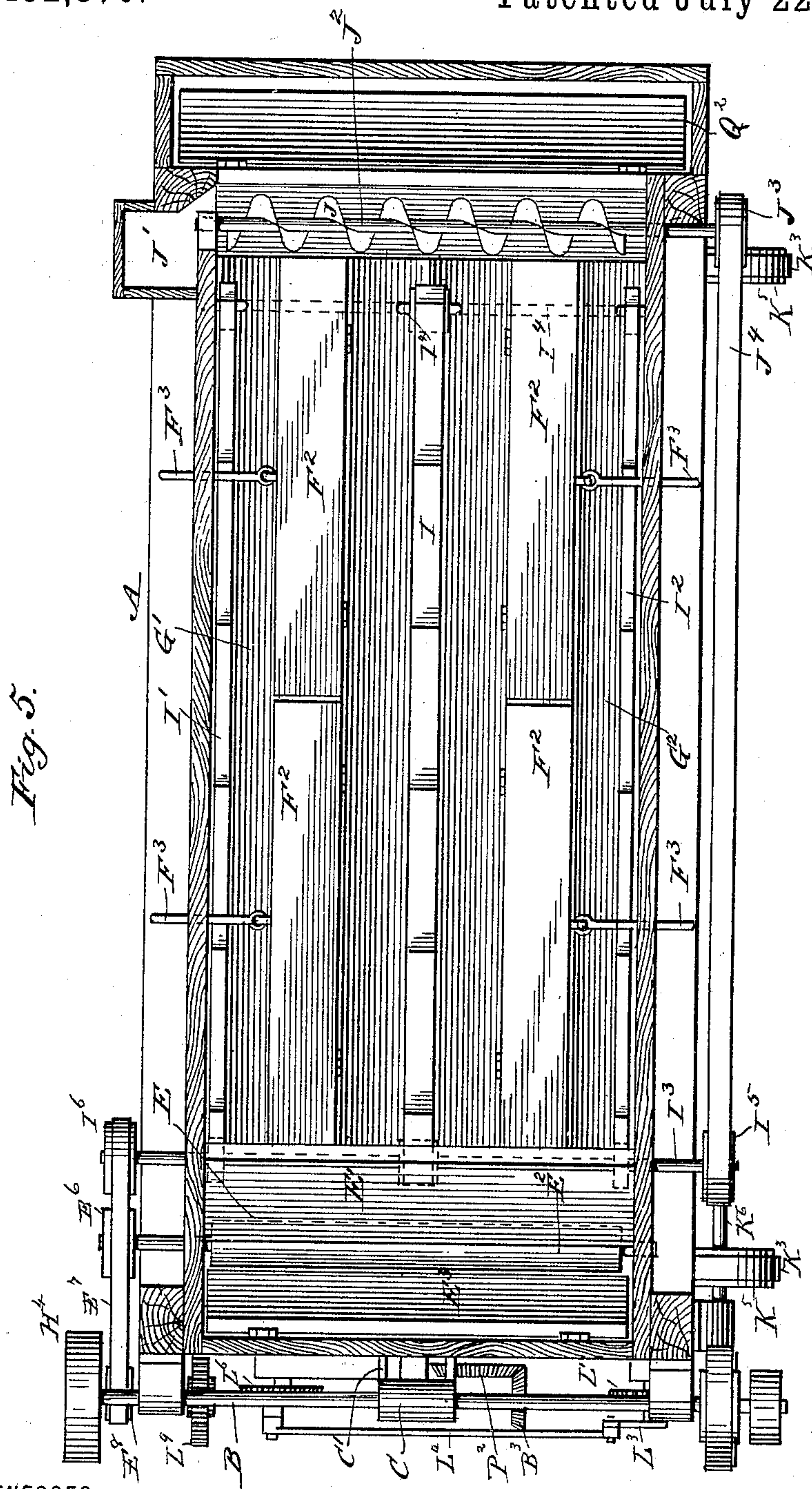
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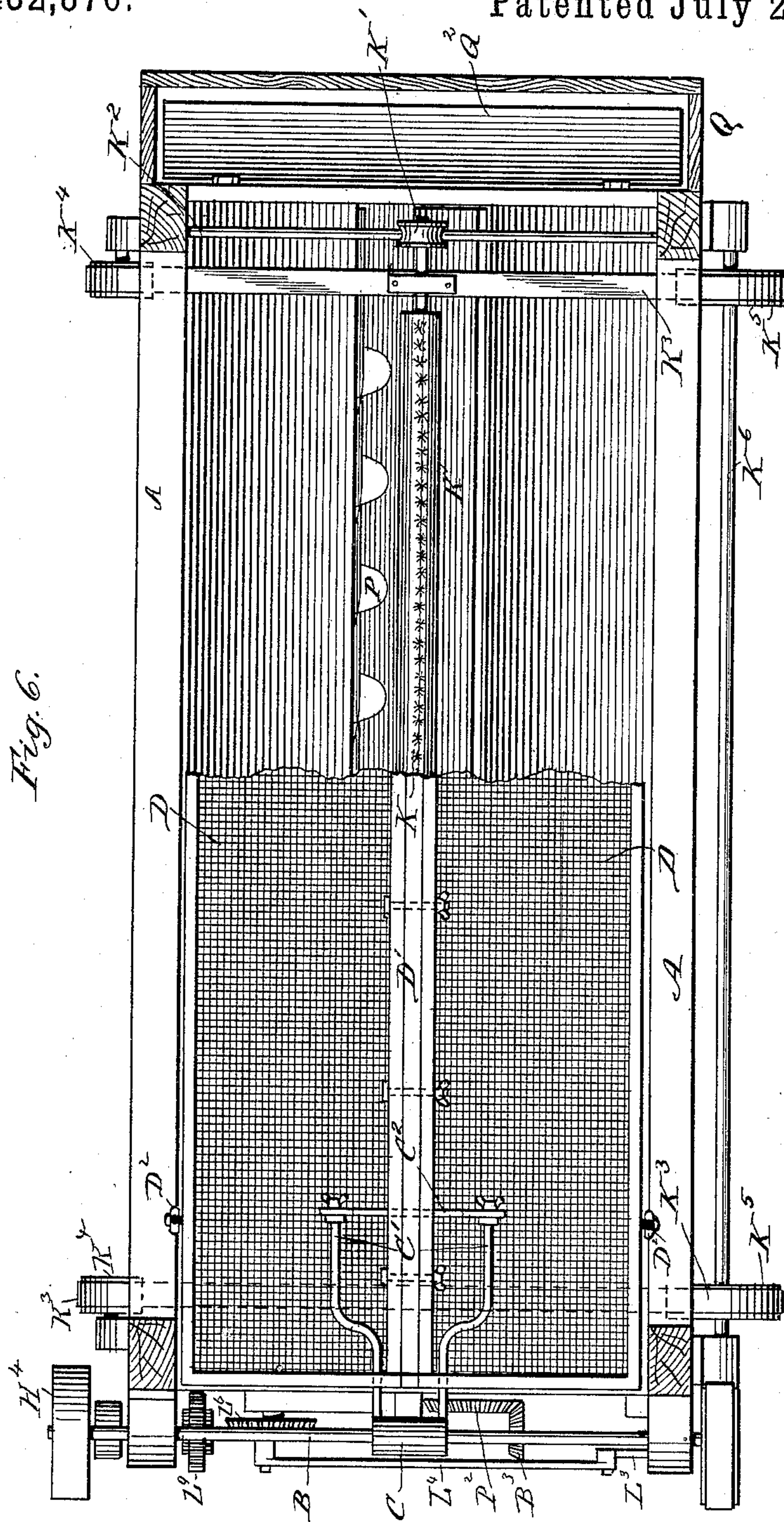
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UNITED STATES PATENT OFFICE.

ROBERT L. HOTTEL, OF CEDARVILLE, CALIFORNIA.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 432,876, dated July 22, 1890.

Application filed August 29, 1889. Serial No. 322,347. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. HOTTEL, of Cedarville, in the county of Modoc and State of California, 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 and very effective in operation.

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 claim.

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 sectional side elevation of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a transverse section of the same on the line xx of Fig. 1. Fig. 5 is a sectional plan view of the improvement on the line yy of Fig. 1, and Fig. 6 is a similar view of the same on the line zz of Fig. 1.

The improved middlings-purifier is provided with a casing A, of suitable construction, and having on one end suitable bearings for carrying the transversely-extending shaft B, connected with suitable machinery for imparting a rotary motion to the same.

On the driving-shaft B is secured an eccentric C, connected by two eccentric-rods C' with the transversely-extending rod C², fastened in the middle of the beam D' of the bolt or shaker D, supported on its sides by links D², pivoted on the sides of the casing A, as is plainly shown in Fig. 1.

At one end of the bolt or shaker D, opposite the outlet D³, is located the feed-hopper E, provided with a fixed side E', slightly inclined, as is plainly shown in Fig. 2, and leading onto a transversely-extending roller E², on which presses the lower end of a hinged side E³, pivoted to the inside of one end of the casing A. A spring or springs E⁴ hold said hinged side E³ in contact with the roller E², thus regulating the feed of the middlings to be purified and introduced in the hopper E through a spout E⁵, arranged on the top.

Directly above the shaker or bolt D are ar-

ranged two longitudinally-extending chambers or channels F and F', open at the bottom and adapted to be opened or closed at the top by hinged doors F², connected at their free ends with rods F³, extending downward through the sides of the casing A, so as to permit of opening or closing the doors F² from the outside. The channels F and F' form on their outsides V-shaped dust-settling chambers G G' G², extending longitudinally and connected with each other and also at the top with the exhaust-fan H, of any approved construction, and provided with a shaft H', carrying on one end a pulley H², over which passes a belt H³, also passing over a pulley H⁴, secured on the main driving-shaft B, so that when the latter is rotated the said fan H is set in motion.

In the chambers G, G', and G² are held endless-carrier belts I, I', and I², respectively, passing over suitable pulleys secured on the shafts I³ and I⁴, extending transversely and mounted to turn in suitable bearings in the sides of the casing A. The carrier-belts I, I', and I² discharge at their rear ends onto a conveying-screw J, extending transversely and leading into a spout J', discharging on the outside. The conveying-screw J is provided with a shaft J², carrying on one outer end a pulley J³, over which passes an endless belt J⁴, also passing over a pulley I⁵, secured on the shaft I³, previously mentioned, so that when the latter is rotated the several belts I, I', and I² are set in motion, and at the same time the conveying-screw J rotates, and the dust moved forward by the said belts is transported transversely into the discharge-spout J'.

On the under side of the bolt or shaker cloth D⁴ operates a revolving brush K, mounted to travel transversely and provided at its ends with grooved rollers K', mounted to travel on transversely-extending bars K², held in the sides of the casing A. The ends of the brush K are also rigidly connected with endless belts K³, each passing over pulleys K⁴ and K⁵, the pulleys K⁵ being secured on a shaft K⁶, carrying on one outer end a pinion L, meshing into a segmental gear-wheel L', mounted to turn on a stud L², secured on one end of the casing A. The segmental gear-wheel L' is provided with an arm

L³, pivotally connected by a pitman L⁴ with a crank-pin L⁵, formed on one face of a worm-wheel L⁶, mounted to turn on one end of the casing A, and driven by a worm L⁷, secured on a shaft L⁸, extending transversely and mounted to turn in suitable bearings on the end of the casing A. The gear-wheel L⁹ is secured on the said shaft L⁸, and meshes into a pinion B², secured on the shaft B', driven from the main driving-shaft B by a suitable belt and pulleys.

The feed-roller E² of the hopper E, as well as the shaft I³, are both driven by an endless belt E⁷, passing over a pulley I⁶, on the said shaft I³, and also over a pulley E⁶ on the feed-roller E². The said belt E⁷ also passes over a pulley E⁸, secured on the shaft L⁸, previously mentioned, so that when the main shaft B is rotated a rotary motion is imparted to the shaft B', and the latter imparts a rotary motion to the shaft L⁸, which, by the aforesaid connection, turns the feed-roller E² and the shaft E³, so that the several conveying-belts I, I', and I², and the conveyer-screw J, are set in motion. When the shaft L⁸ is rotated, the worm L⁷ slowly turns the worm-wheel L⁶, which, by its connection by the pitman L⁴, imparts an oscillating motion to the segmental gear-wheel L', whereby the shaft K⁶ is turned forward and backward so that the belts K³ move transversely forward and backward, thereby carrying the brush K transversely under the bolt-cloth D⁴, the brush revolving by traveling with its grooved rollers K' on the track-rods K². The stock on the bolt D, passing through the said bolt-cloth D⁴, falls onto the inclined sides of the hopper N, adapted to discharge into the longitudinally-extending troughs O O', adapted to alternately connect with the lower end of the said hopper N by longitudinally-extending gates N'. (Plainly shown in Fig. 4.)

In the troughs O and O' are arranged the conveying-screws P and P', respectively, the shafts of which are provided at one outer end with the bevel gear-wheels P², meshing into bevel-pinions B³, secured on the shaft B'. When the latter is rotated, as previously described, the conveying-screws P and P' are set in motion, and the stock is conveyed in the troughs O and O', respectively, to one end of the same to be finally discharged in the usual manner. The opening D³ in the bolt D is adapted to discharge into a spout Q, leading downward at one end of the casing A. The upper end of the spout Q is connected by an aperture Q' with the upper parts of the settling-chambers G, G', and G², and gates Q² and Q³ are held adjustably in the said spout—one below the opening Q' and the other below the end of the shaker D.

The operation is as follows: When the machine is set in motion, the fan H creates a draft in the dust-settling chambers G G' G² and in the channels F F' when their top por-

tions F² are opened. The air passes into the interior of the casing through the bolt-cloth D⁴, through the bolt D, and then to the channels F and F'. The middlings from the hopper E pass evenly through the hinged side E³, over the feed-roller E², into one end of the bolt or shaker D, which shakes the middlings, and at the same time the current of air passing upward through the bolt separates the stock and lighter particles, which latter are carried upward through the openings F and F' into the chambers G, G', and G², and from the latter are drawn into the fan H and ejected by the same. The heavier particles settle in the bottoms of the chambers G G' G² and are carried forward to the conveyer-screw J by the carrying-belts I, I', and I². As the sides of the channels F and F' are inclined, as is plainly shown in Fig. 4, all the particles settle in the bottoms of the chambers G G' G², and are readily carried forward by the belts I, I', and I², respectively. The brush K, traveling transversely on the underside of the bolt-cloth D⁴, keeps the latter open, so that the stock can readily pass through the bolt-cloth into the hopper N, and from the latter into either of the troughs O or O', according to the position of the gate N'. The stock is moved forward by the conveyer-screw P or P' in the said trough O or O', respectively. The tailings from the shaker or bolt D pass through the end D³ into the spout Q, and from the latter to the outside. The action of the fan H also produces an upward current of air in the spout Q, so that the tailings of the middlings passing into the said spout from the shaker D are aspirated.

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

The combination, with the casing having a transverse hopper across one end, a transverse conveyer across its opposite end, and a shaker or bolt upon which said hopper discharges, of the Λ -shape imperforate channels or chambers F F', extending from the inner well of the hopper to the said conveyer and abutting at their lower inner longitudinal edges to form the central V-shape dust-settling chamber, the opposite lower longitudinal edges of the channels F F' engaging the side walls of the casing and forming dust-settling chambers G' G², parallel with chamber G, valved openings along the apexes of the channels F F' and longitudinal conveyers in the bottoms of the dust-settling chambers and delivering to the said transverse conveyer, and the suction-blower above said channels or chambers, substantially as set forth.

ROBERT L. HOTTEL.

Witnesses:

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