No. 631,030. Patented Aug. 15, 1899.

E. L. SMITH.

COTTON CLEANER AND FEEDER.

(Application filed May 19, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

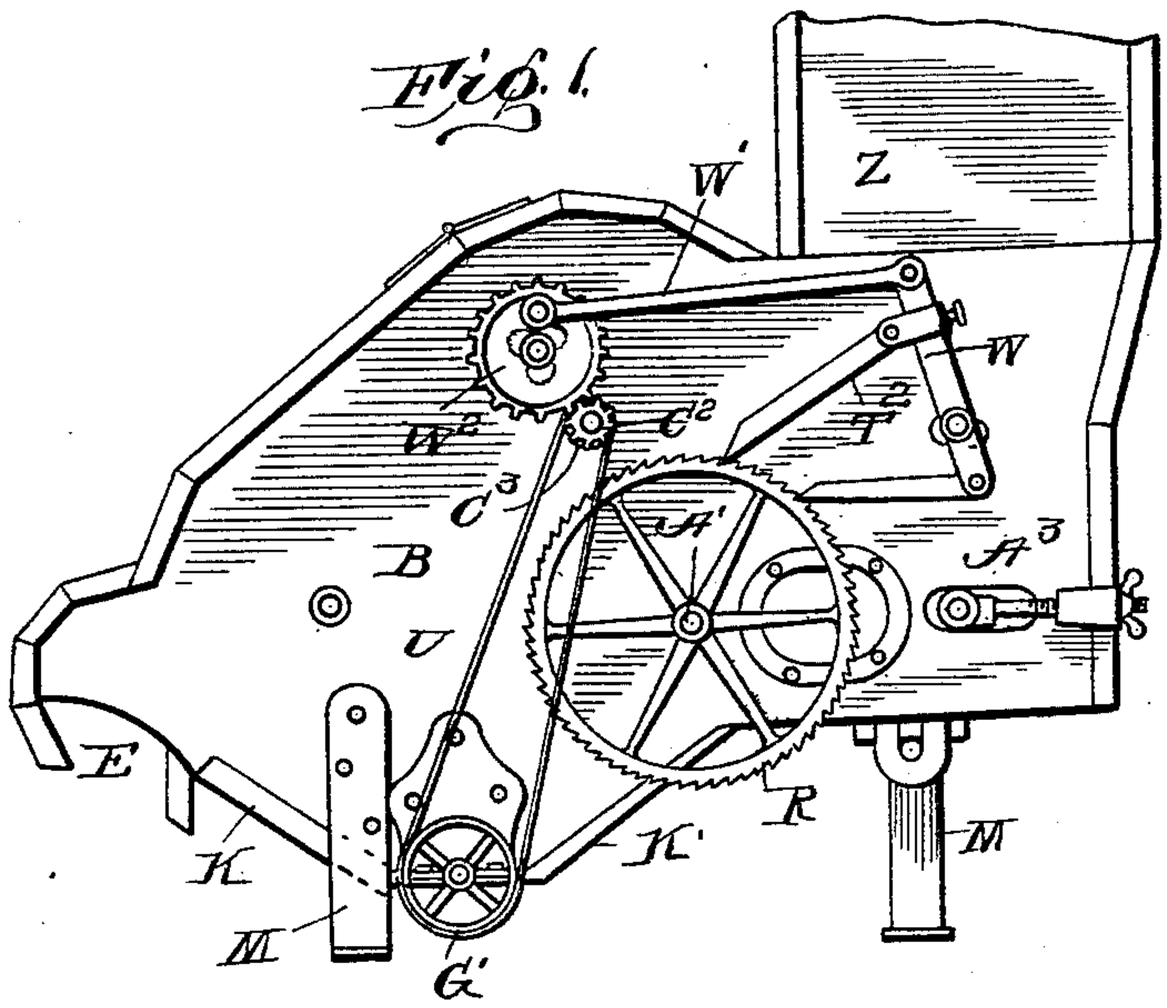

Fig. 2.

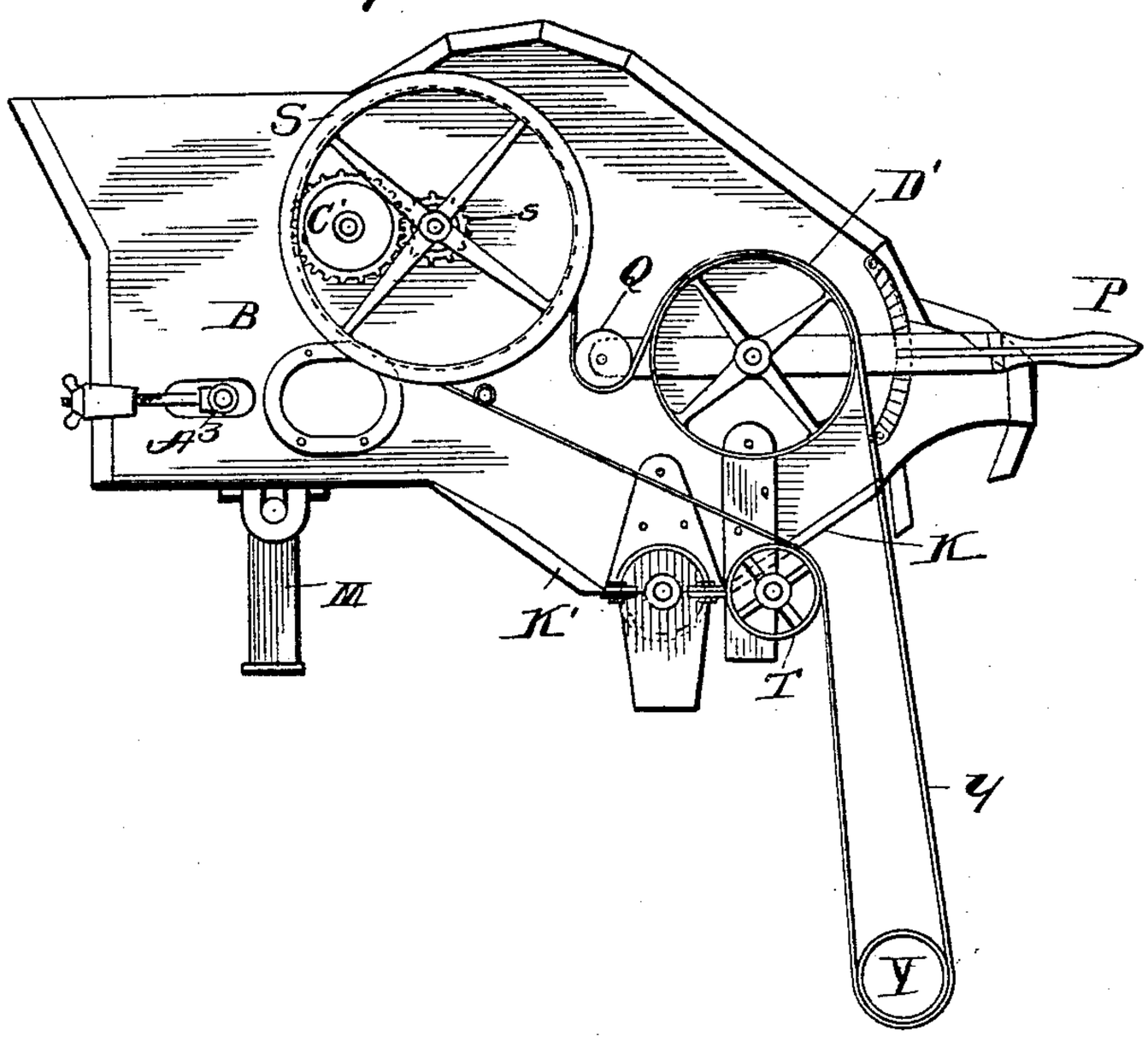

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Fig. 3.

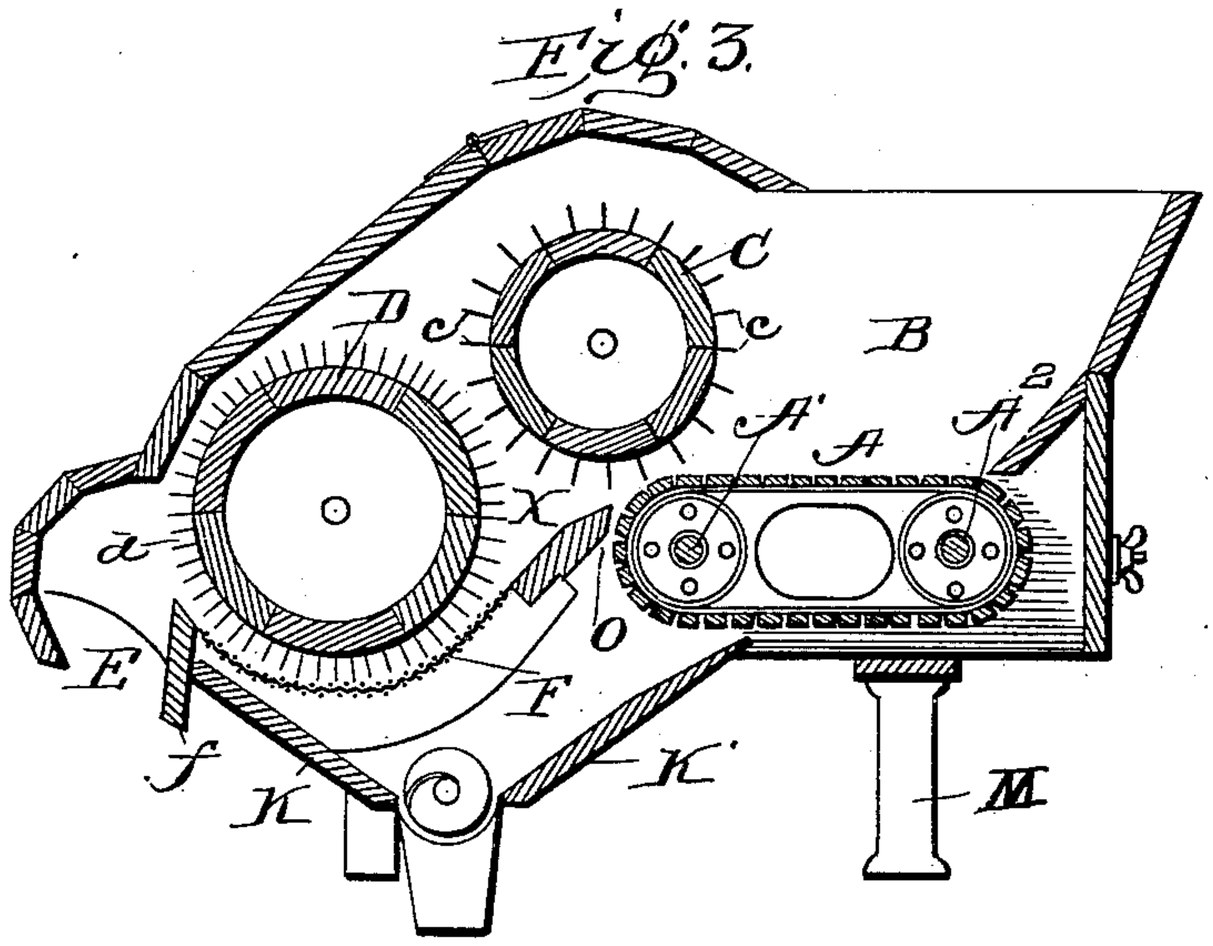

Fig. 4.

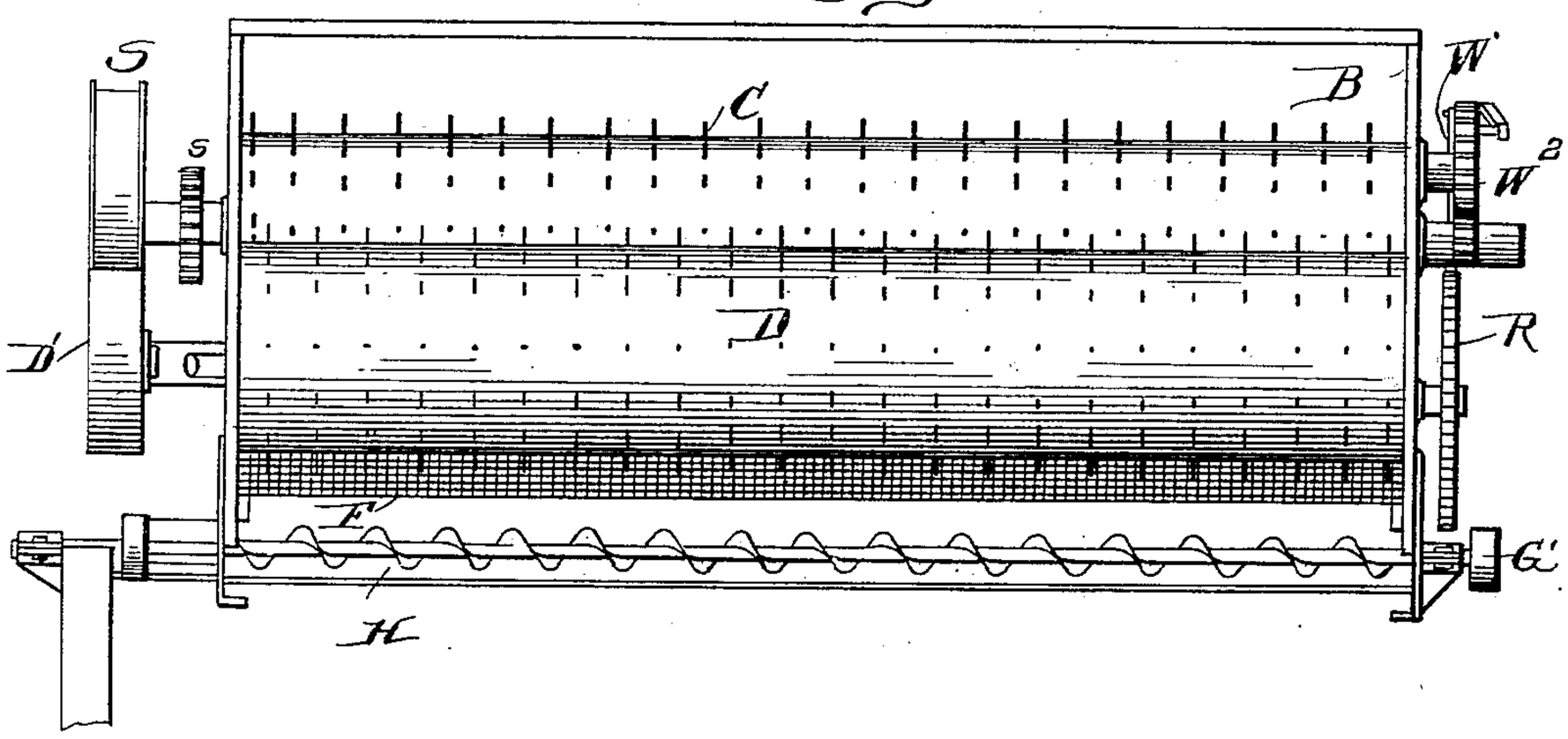

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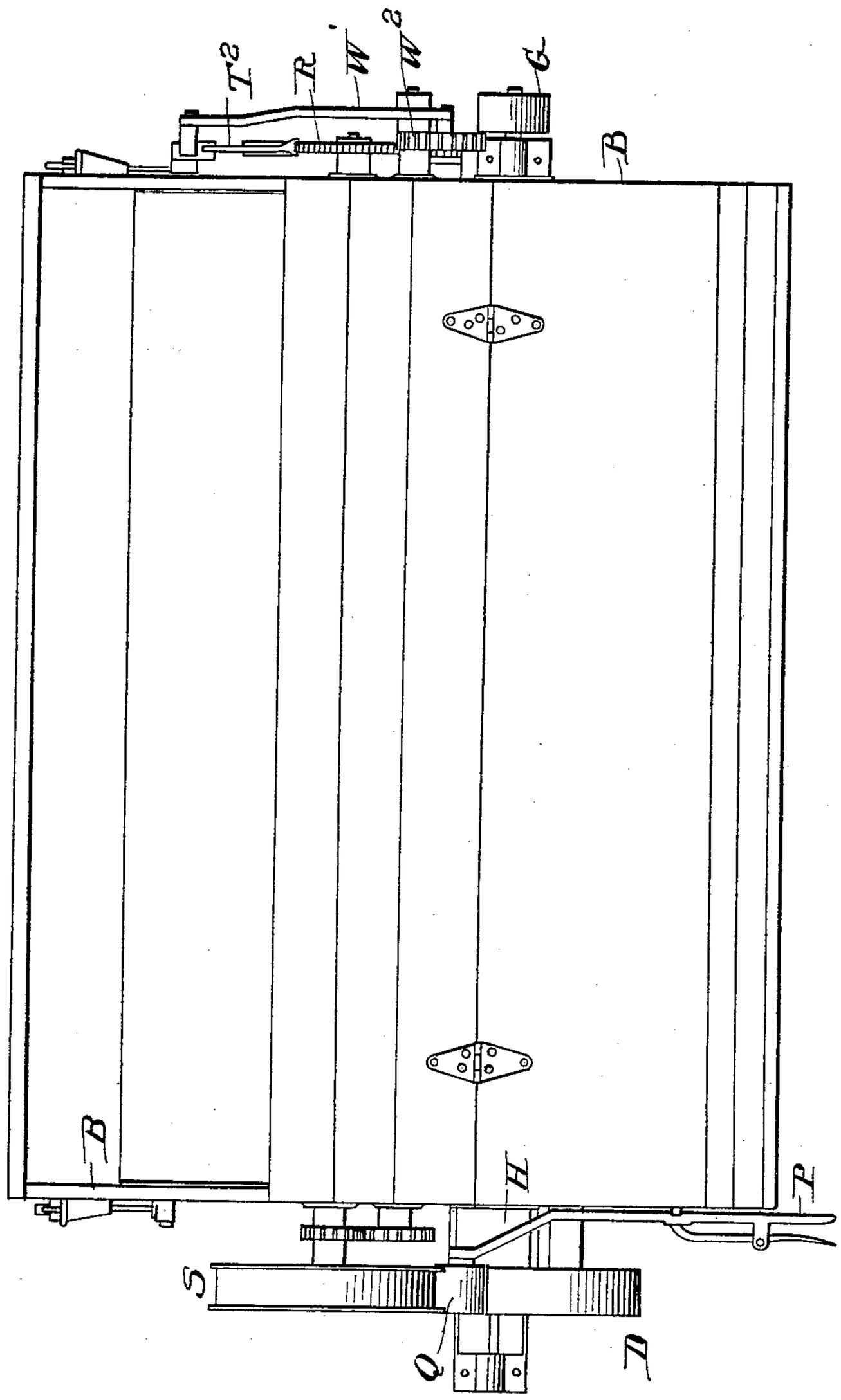
Fig. 5.



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UNITED STATES PATENT OFFICE.

EMMETT L. SMITH, OF BIRMINGHAM, ALABAMA, ASSIGNOR TO THE SMITH SONS GIN AND MACHINE COMPANY, OF SAME PLACE.

COTTON CLEANER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 631,030, dated August 15, 1899.

Application filed May 19, 1899. Serial No. 717,491. (No model.)

To all whom it may concern:

Be it known that I, EMMETT L. SMITH, a citizen of the United States, and a resident of Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Cotton Cleaners and Feeders; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in machines such as are primarily designed for use in cleaning, evening, and feeding uniformly cotton as it comes from the field to gins or like machinery adapted to handle the cleaned product.

The invention has for its object to provide a simple compact arrangement which may be conveniently placed directly on or located above a cotton-gin and which will effectually separate from the body of cotton any hard locks of immature cotton, pebbles, nails, sand, and the like before the cotton reaches the gin or other machine for operating upon it.

Referring to the accompanying drawings, Figure 1 is an end elevation looking at the left-hand end of the machine embodying my present improvements. Fig. 2 is a similar view looking at the opposite end of the machine. Fig. 3 is a vertical cross-sectional view taken from front to rear intermediate the ends. Fig. 4 is a front view with the top and front boards of the machine removed, so as to show the internal mechanism. Fig. 5 is a top plan view.

Like letters of reference in the several figures indicate the same parts.

The machine is provided with a casing B, preferably of the shape shown, having at the rear an entrance-opening through which the cotton may be fed by hand or through which the cotton may be fed by an automatic supply-duct, such as indicated in Fig. 1 at Z, and at the lower side the casing is provided with downwardly-extending feet or supporting projections M M, which are primarily adapted to rest upon the top of the ginning-machine and support the cleaner and feeder. Within the casing B and at the rear side thereof in position to form the bottom of the hopper into which the cotton is dumped there is provided a traveling apron or belt A, running horizontally over rollers A′ A^2, the roller A^2 being mounted in adjustable bearings A^3, whereby the tension of the belt may be adjusted or belts of a different character substituted should occasion require. At the forward end of the belt A, above the level of the same, there is journaled a spiked cylinder C, the spikes *c* of which travel in proximity to the front end of the belt and are adapted to engage and take up cotton, &c., carrying it over the cylinder and dropping it upon or allowing it to be taken therefrom by a second spiked cylinder D, which runs in the reverse direction and is preferably of somewhat larger diameter than the cylinder C and has a greater number of spikes or teeth *d*. Curving around beneath the cylinder D and just out of contact with the spikes *d* is the wire-cloth screen or foraminous plate F, the forward edge of which is supported by a cross-bar *f* near the discharge-opening and the rear edge of which is supported by a cross-bar X. This cross-bar X lies in proximity to the belt A and preferably extends well into the angle between the belt A and the spiked cylinder C, a space O, however, being left between the sharpened end of the cross-bar X and the belt A for a purpose which will be presently explained. Beneath the screen and forward end of the belt A there is arranged a hopper, preferably formed by the bottom boards K K′ of the casing, which converge toward each other and terminate in a central trough, in which works a transversely-arranged screw conveyer G, adapted to carry off transversely and discharge, through a spout H at one side of the machine, the dirt and refuse eliminated from the cotton by the action of the cleaning and feeding machine.

The discharge-aperture E for the cleaned cotton is preferably located over the gin-hopper or entrance to the gin, and in order to give motion to and control the operation of the several mechanisms just described the following instrumentalities are preferably employed:

Referring to Fig. 2, Y indicates a pulley driven from any suitable source of power and preferably located on the saw-shaft of the gin. A belt *y*, running around this pulley Y, passes over a pulley or drum D′ on the shaft

of spiked cylinder D, thence around a tightener-pulley Q, which is manually controlled through the medium of a handle P, so as to tighten or loosen the belt in starting or stopping the machine. From the tightener-pulley Q the belt passes around a relatively large pulley S, journaled on the side of the machine, and from this pulley S it is carried to the pulley Y, preferably, however, passing over an idler T, which gives it proper direction. The pulley S carries a spur or gear wheel *s*, meshing with a second and preferably somewhat larger gear-wheel C′ on the shaft of the spiked drum C. On the opposite end of the machine the shaft of the drum C carries a small gear-wheel C^2 and a small pulley C^3, over the latter of which a belt U passes. The belt U drives a pulley G′ of the screw conveyer G, thereby giving motion to the latter in a proper direction to carry off the trash, &c. The apron A derives its motion, which is preferably a shogging movement, through the medium of a ratchet-wheel R, mounted on the shaft of its forward roller A′ outside of the casing and adapted to be operated upon by a pair of pawls T^2, adjustably mounted on a pivoted lever W, whereby the wheel R is advanced by the movement of the lever W in either direction. The lever W is oscillated by means of a pitman W′, connected at its forward end to a crank-pin on a gear-wheel W^2, journaled on the side of the casing and meshing with the gear-wheel C^2, before described.

In operation the belt *y* imparts movement to the spiked drum D and through the relatively large pulley S and gear-wheels *s* and C′ a reverse movement to the spiked drum C, the movement of the latter, however, being slow with respect to the movement of the drum D. The rotation of the drum C through the connections on the opposite end of the machine drives the apron or conveyer A with an intermittent movement for advancing the cotton into contact with the drum C and also through the belt U operates the screw conveyer G with a continuous but slow movement for carrying off the accumulation of dirt, trash, &c.

When the machine is in operation, the cotton is carried forward by the belt or conveyer A and is brought into contact with the spiked drum C, and by the latter it is picked up and carried over and separated or shaken loose somewhat and dropped upon the more-rapidly-rotating spiked drum D. By the latter it is still further loosened up and distributed evenly over the cylinder, being carried by the said cylinder down and around over the screen and finally discharged at E continuously and in a practically uniform quantity. Any hard locks of immature cotton, pebbles, nails, &c., which may be in the cotton will not be readily picked up by the spikes on the feeding-drum C, but will gravitate to the bottom and will pass forward on the belt A and be discharged through the opening O down into the trash box or hopper, there to be finally conveyed out to the side by the screw conveyer G. Any sand, dirt, &c., not discharged in this way will be effectually shaken out of the cotton by the action of the cylinder D as it loosens up the balls or locks of cotton and will be allowed to drop by gravity through the screen F into said trash-box while the purified cotton is carried forward, as before described.

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

1. In a cotton feeder and cleaner, the combination with the casing having the entrance and discharge openings, the continuous feeding belt or apron arranged beneath the entrance-opening, the spiked drum for elevating the cotton away from said feeding-belt, the spiked drum rotating in the opposite direction for receiving the cotton from said first-mentioned drum and the screen arranged beneath the second spiked drum, of the trash-box extending from beneath the forward end of the feeding-belt to a point beneath the screen and a transversely-arranged conveyer for discharging the accumulations of trash at one end of the machine; substantially as described.

2. In a cotton feeder and cleaner, the combination with the casing having the entrance and discharge openings at back and front of the machine respectively, the horizontally-arranged continuously-feeding belt located beneath said entrance-opening, the rotary spiked cylinder lying in proximity to the forward end of said belt and above the plane of the same for elevating the cotton, a second spiked cylinder of larger diameter located in advance of and below the first-mentioned spiked cylinder, whereby the cotton dropping from the first-mentioned cylinder drops upon the second cylinder, a circularly-arranged screen arranged beneath the second cylinder, a transverse screen-supporting bar located in the angle between the feeding-belt and first-mentioned cylinder with a trash-opening between said bar and belt and a trash-box located beneath the belt and screen with a transverse conveyer for carrying the accumulations of trash off to one end of the machine; substantially as described.

3. In a cotton feeder and cleaner, the combination with the casing, the feeding-belt, the two spiked cylinders of different diameters, the screen, the trash-box and the transverse trash-conveyer, of a driving mechanism embodying the pulleys D′ S and G′, the train of gears *s*, C′ and C^3, the belts *y* and U and a belt-tightener for the belt *y*; substantially as described.

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