No. 648,486. Patented May 1, 1900.

H. P. CROCKETT.

ROTARY DUST COLLECTOR.

(Application filed May 4, 1899.)

(No Model.) 3 Sheets—Sheet 1.

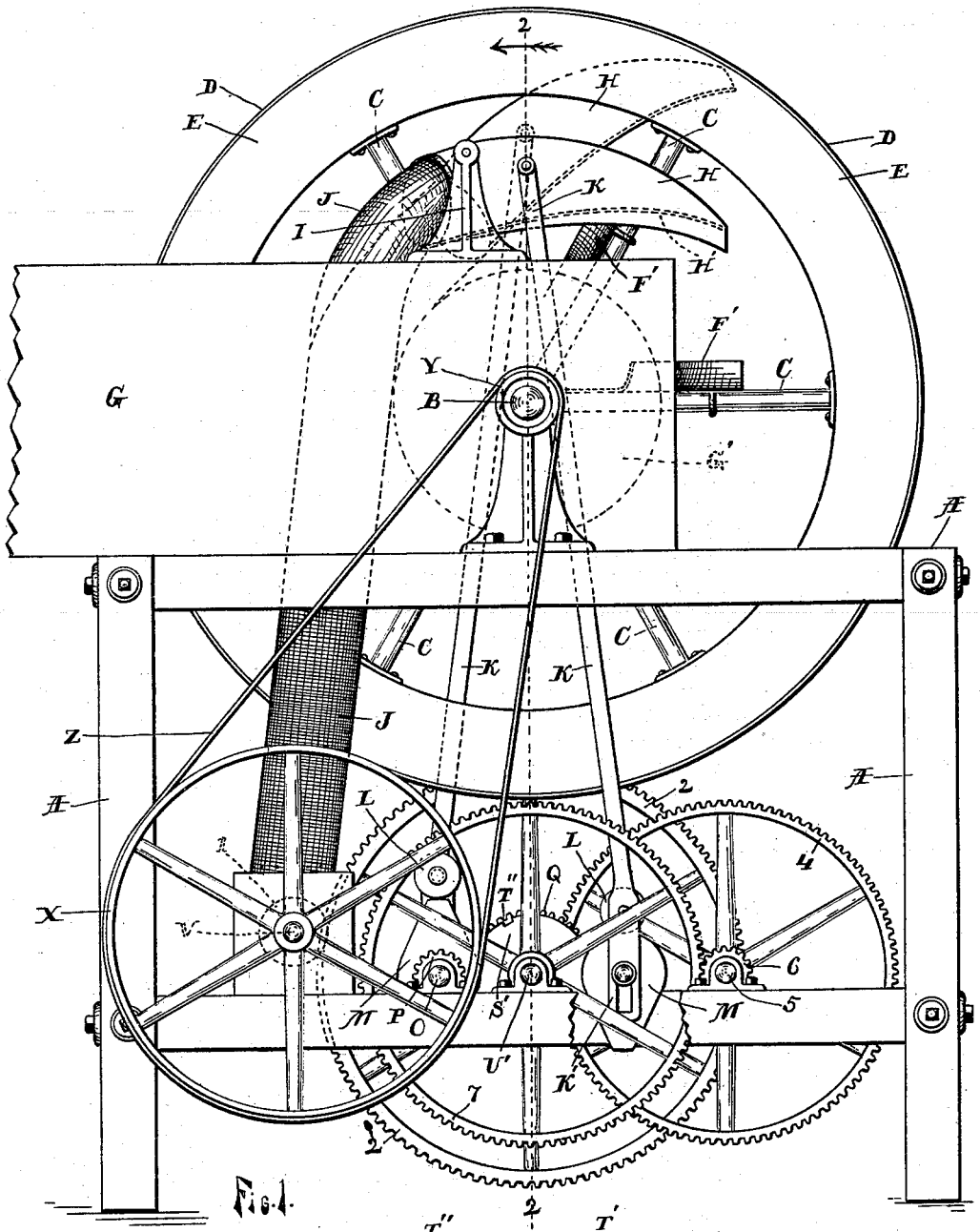

Fig. 1.

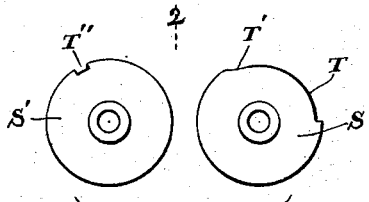

Fig. 6.

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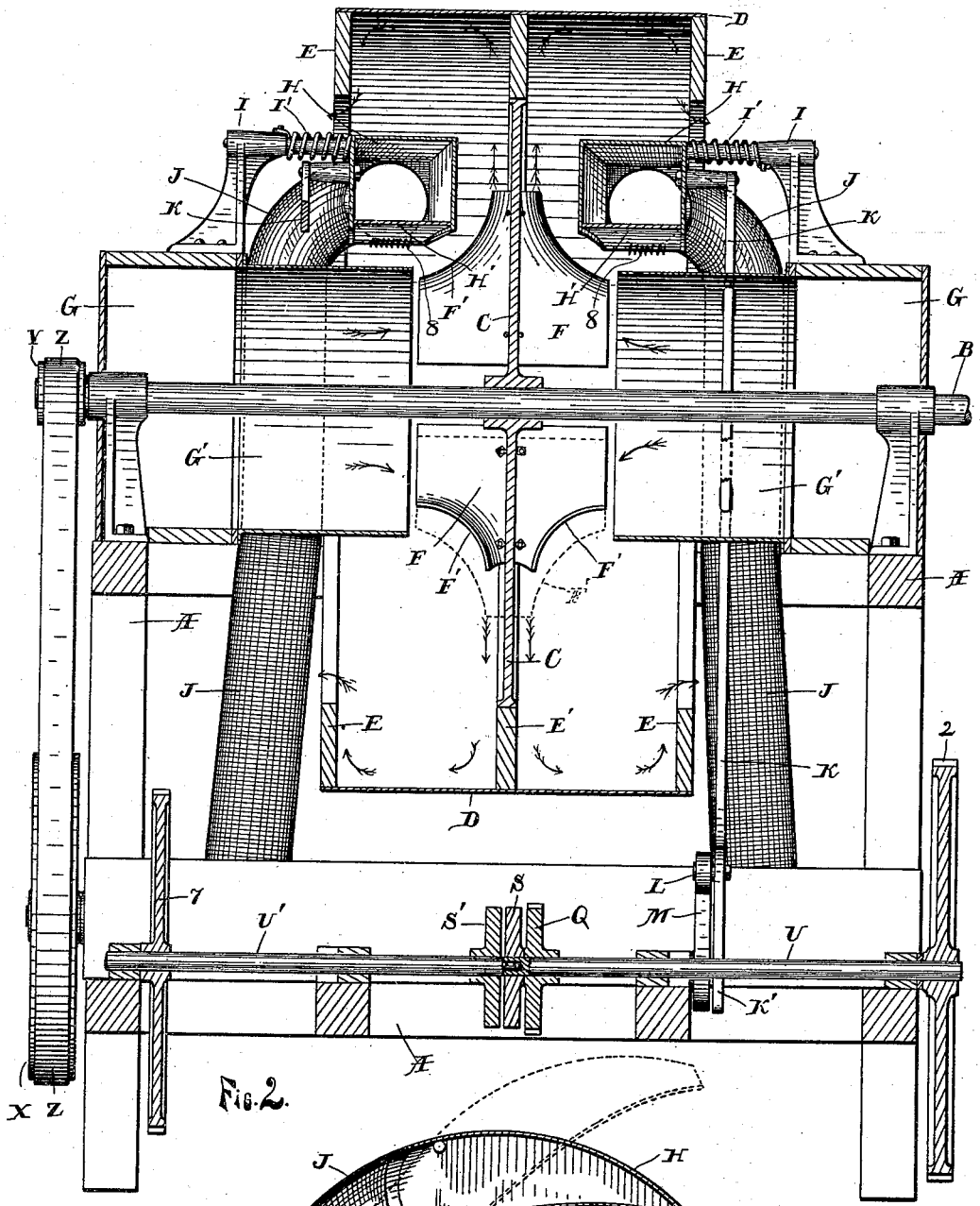

Fig. 2.

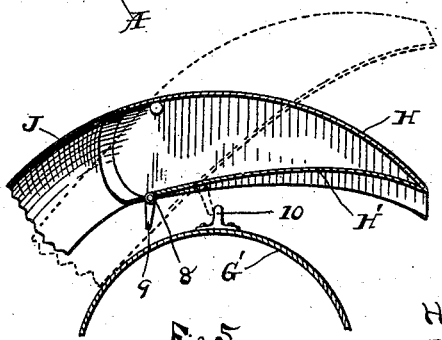

Fig. 5.

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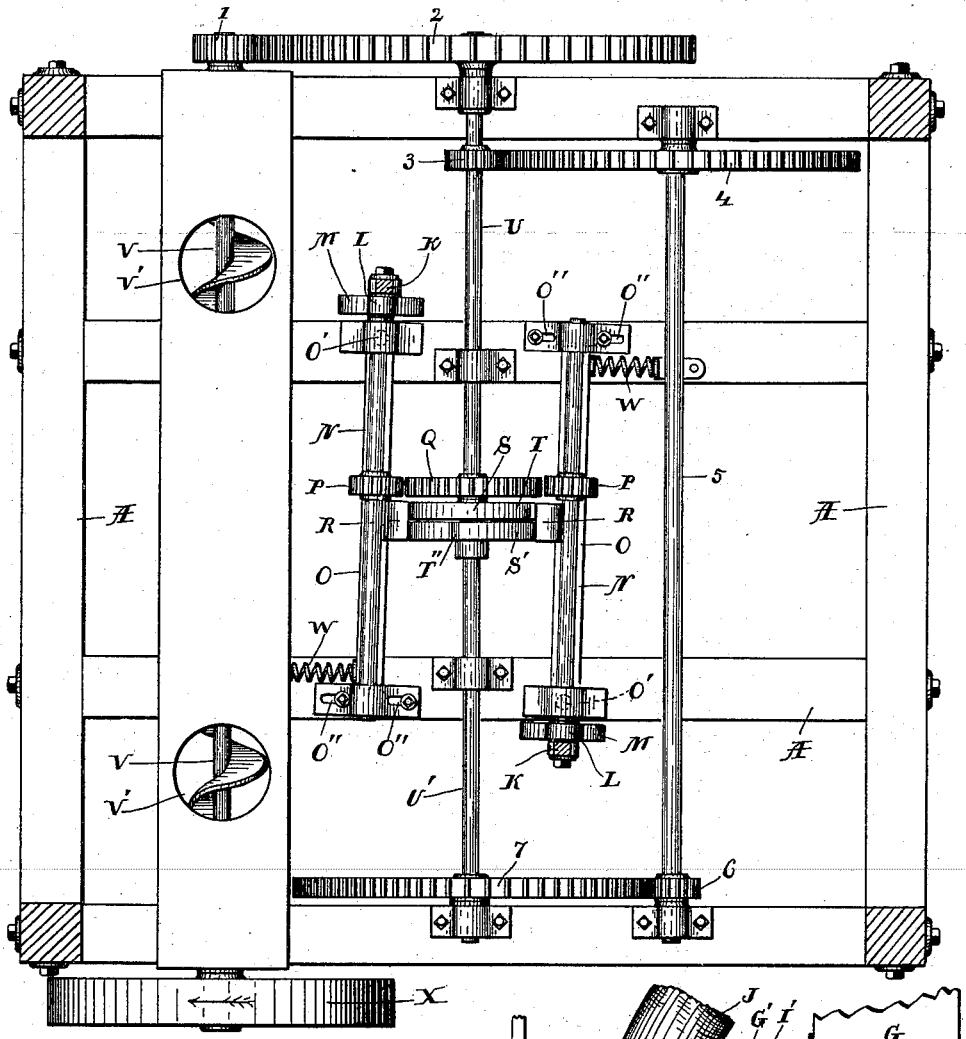

Fig. 3.

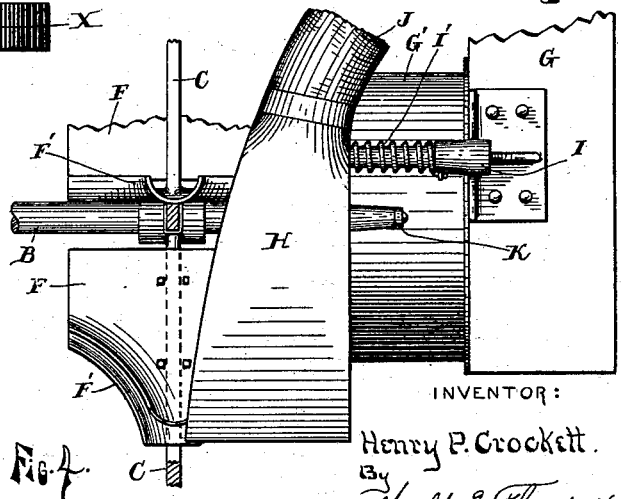

Fig. 4.

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UNITED STATES PATENT OFFICE.

HENRY P. CROCKETT, OF JACKSON, MICHIGAN.

ROTARY DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 648,486, dated May 1, 1900.

Application filed May 4, 1899. Serial No. 715,513. (No model.)

To all whom it may concern:

Be it known that I, HENRY P. CROCKETT, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Rotary 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 improvements in rotary dust-collectors; and its object is to provide the same with certain new and useful features hereinafter more fully described, and particularly pointed out in the claims.

My invention consists, essentially, in providing a rotary cylinder having annular heads and adapted to separate the dust from the air, pipes opening into the axis of said cylinder to convey the dust-laden air thereto, scoops in the interior of the cylinder to remove the accumulated dust therefrom, means for conveying away the dust taken up by the scoops, and means for operating these various parts, as will more fully appear upon reference to the accompanying drawings, in which—

Figure 1 is an end elevation of a device embodying my invention; Fig. 2, a vertical section of the same on the line 2 2 of Fig. 1; Fig. 3, a plan view of the lower part of the machine; Fig. 4, a detail showing one of the scoops in plan view, together with some of the adjacent parts; Fig. 5, a longitudinal vertical section of one of the scoops, and Fig. 6 a detail of the wheels S and S′.

Like letters and numerals refer to like parts in all of the figures.

A represents the frame of the machine, and B the main shaft, driven by any suitable means. Near the middle of this shaft is attached a spider C, to the periphery of which spider is secured the middle head E′ of the cylinder D, which cylinder is also provided with a similar head E at each end. Said heads are annular in form, having large central openings. In the axis of the outer heads are air-pipes G′, concentric with the shaft B and opening toward each other at their inner ends and connected at their outer ends with the pipes G, arranged at right angles thereto and outside the cylinder D. These latter pipes may be joined outside the machine and connected to any source of dust-laden air to be operated upon.

To the arms of the spider C are attached fans F, the outer sides of which fans are narrowed toward the middle and made concave on the forward sides, as at F′, whereby they draw the air in from the pipes G′ and discharge the same radially at the middle of the cylinder, whence the air divides and flows outward against the outer heads E E and thence escapes through the axial openings therein. The air also receives a rotary motion from the action of the fans and cylinder, which centrifugally separates the particles of dust from the air and deposits them upon the inside of the cylinder D, from whence they are removed by scoops H, arranged within the cylinder at each side of the narrow portion of the fans F and in such position that when out of action the air escapes freely between the same and the inner edge of the annular heads E, and when in action the forward end of the scoop rises and approaches close to the inner surface of the cylinder and takes up any dust accumulated thereon, the flap H′ opening and allowing the dust to enter the scoop, together with a current of air, which air distends the tube J and carries the dust down the same into the conveyer. Each scoop is pivoted to a support I, mounted on the air-pipe G, and is yieldingly held out of action by a spring I′ and periodically moved into operative position by a connecting-rod K, pivoted thereto and extending downward and having a slotted lower end K′ engaging the end of a shaft N, on which shaft is mounted a cam M, engaging a roll L, journaled on the connecting-rod K. Said scoops are each provided with a flap H′ to close the same when out of action, which flap is hinged and held closed by a spring-hinge S, consisting of a combined spring and hinge, as usually constructed for such purpose, and is opened when the scoop moves into operative position by means of an arm 9, projecting from the flap to engage a stop 10 on the pipe G′. Extending from the rear end of each scoop is a tube J of suitable fabric, which tube extends diagonally outward through the openings in the head E and thence downward to an opening V′ in the casing of the conveyer V. Each

scoop is narrowed toward the rear and terminates in a suitable collar for attaching the tube J, as shown in Fig. 4.

The conveyer V is operated by a pulley X, connected by a belt Z to a pulley Y on the shaft B.

To periodically raise the scoops H into operative position, each cam M is mounted on a shaft N, journaled in a yoke O, pivoted at O′ at one end and movably secured at the other end by bolts passing through slotted openings O″ O″. These yokes are arranged at opposite sides of a gear Q, mounted on a shaft U, rotated by gears 1 and 2, connecting the shaft with the conveyer V, and each shaft N is provided with a pinion P, adapted to engage the gear Q. A spring W presses the movable end of each yoke toward the said gear to engage the pinion with the same. On each yoke is a fin R, which engages the rims of wheels S and S′ and holds the yoke back, with the spring W compressed and the pinion P out of engagement with the gear Q, except as hereinafter described. The wheel S is mounted on the same shaft as the gear Q and rotates therewith and is provided with a reduced portion T, terminating in an incline T′. The wheel S′ is provided with a notch T″ and is mounted on a shaft U′, journaled in line with the shaft U, rotating independently and much slower than the shaft U and actuated by the latter through a train of gears 3, 4, 6, and 7 and the shaft 5. Whenever the notch T″ is opposite the fin R on one of the yokes and the reduced portion T also comes opposite the same, the yoke is permitted to move inward and engage the pinion P with the gear Q. This rotates the shaft N and cam M and raises the scoop H to operative position, while the roll L is on the larger part of the cam. When the cam has made one revolution, the incline T′ engages the fin R and forces the yoke back, and the pinion moves out of engagement with the gear, where it remains until the notch in the slow-moving wheel S′ again coincides with the reduced portion of the other wheel and both are opposite the fin on the yoke. The other scoop operates alternately in like manner.

From the foregoing description the operation of my device will be readily understood.

The centrifugal action separates and accumulates the dust upon the interior of the cylinder D, which dust is periodically removed by the scoops H and conveyed by the tubes J and conveyer V out of the machine to any convenient receptacle. The time intervening between the actions of the scoops may be determined at pleasure by proportioning the train of gearing that actuates the wheels S and S′.

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

1. The combination of a rotative cylinder having an annular head, a pipe in the axis of the cylinder to convey air and dust to the same, a non-rotating scoop in the interior of the cylinder to take up the dust accumulated therein, and means for conveying the dust away from the scoop, substantially as described.

2. The combination of a rotative cylinder having an annular head, a pipe in the axis of the cylinder to convey air and dust to the same, a fan opposite the opening of the pipe to drive the air outward against the interior of the cylinder, a scoop near the inner periphery of the cylinder to remove the dust therefrom, and a tube extending from the scoop through the opening in the head of the cylinder, substantially as described.

3. The combination of a rotative cylinder having annular heads, pipes opening oppositely in the axis of said cylinder, a fan between the pipes to drive the air against the interior of the cylinder, scoops pivoted within the cylinder and adapted to periodically approach the inner surface of the same to remove the dust therefrom, means for conveying the dust away from the scoops, and means for oscillating the scoops on their pivots, substantially as described.

4. The combination of a rotative cylinder having annular heads, pipes opening oppositely in the axis of said cylinder, fans having reduced outer ends and concave forward faces, scoops in the cylinder at each side of said fans and adapted to periodically approach the inner surface of the cylinder and remove the dust therefrom, and means for conveying the dust away from the scoops, substantially as described.

5. In combination with a rotative cylinder adapted to collect dust on its interior surface, a scoop pivoted within said cylinder, a tube extending from said scoop to outside of said cylinder, a conveyer connected to said tube, a spring and connecting-rod attached to said scoop, to move the same, a cam engaging and operating the connecting-rod, and means for periodically rotating said cam, substantially as described.

6. In combination with a rotative cylinder adapted to collect dust on its interior surface, a scoop pivoted within the interior of the cylinder and at a distance from its periphery, a connecting-rod extending from said scoop and longitudinally movable to turn the scoop to operative position, a flap to close the scoop, a spring to close the flap, an arm projecting from the flap, a stop to engage said arm to open the flap, and means for operating the connecting-rod, substantially as described.

7. In combination with a cylinder adapted to collect dust upon its inner surface, a scoop pivoted within the cylinder having a tube extending outside the cylinder, a rod pivoted to the scoop at one end and longitudinally movable, a cam-wheel mounted on a rotating shaft to operate the rod, a pinion on the shaft, a rotating gear to engage the pinion, a movable yoke supporting the shaft, a fin on the yoke, a rotating wheel having a reduced portion

and an incline engaging said fin, and a second slower-rotating wheel having a notch in its periphery and also engaging said fin, and a spring pressing the yoke toward said wheels, substantially as described.

8. In combination with a dust-collecting rotative cylinder, and scoops pivotally mounted within the same, rods pivoted to said scoops, cams actuating said rods and mounted on shafts journaled on movable yokes, springs to move said yokes, a rotating gear-wheel, pinions on said shafts to engage said wheel, fins on said yokes, a slowly-moving wheel engaging said fins and having a notch in its periphery to alternately receive said fins, and a faster-moving wheel also engaging said fins and having a reduced portion to permit the fins to pass into the notch of the other wheel and an incline to force the fins out of said notch, substantially as described.

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

HENRY P. CROCKETT.

Witnesses :

WILLIS E. SHELDEN,

LUTHER V. MOULTON.