

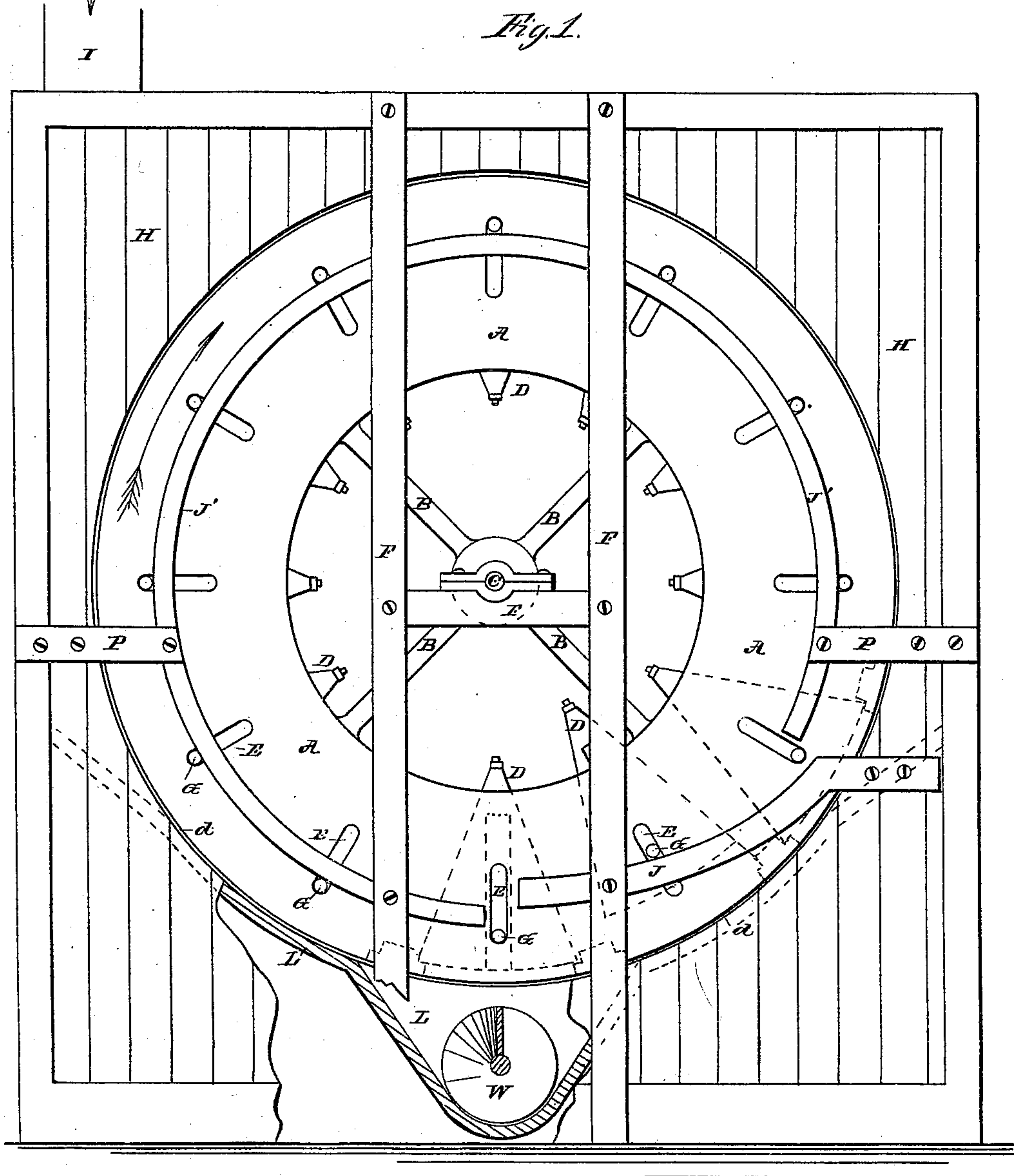
(No Model.)

2 Sheets—Sheet 1.

N. W. HOLT.
DUST COLLECTOR.

No. 250,813.

Patented Dec. 13, 1881.



WITNESSES.
L. B. Townsend
W. C. Adams.

INVENTOR.
Noah W. Holt
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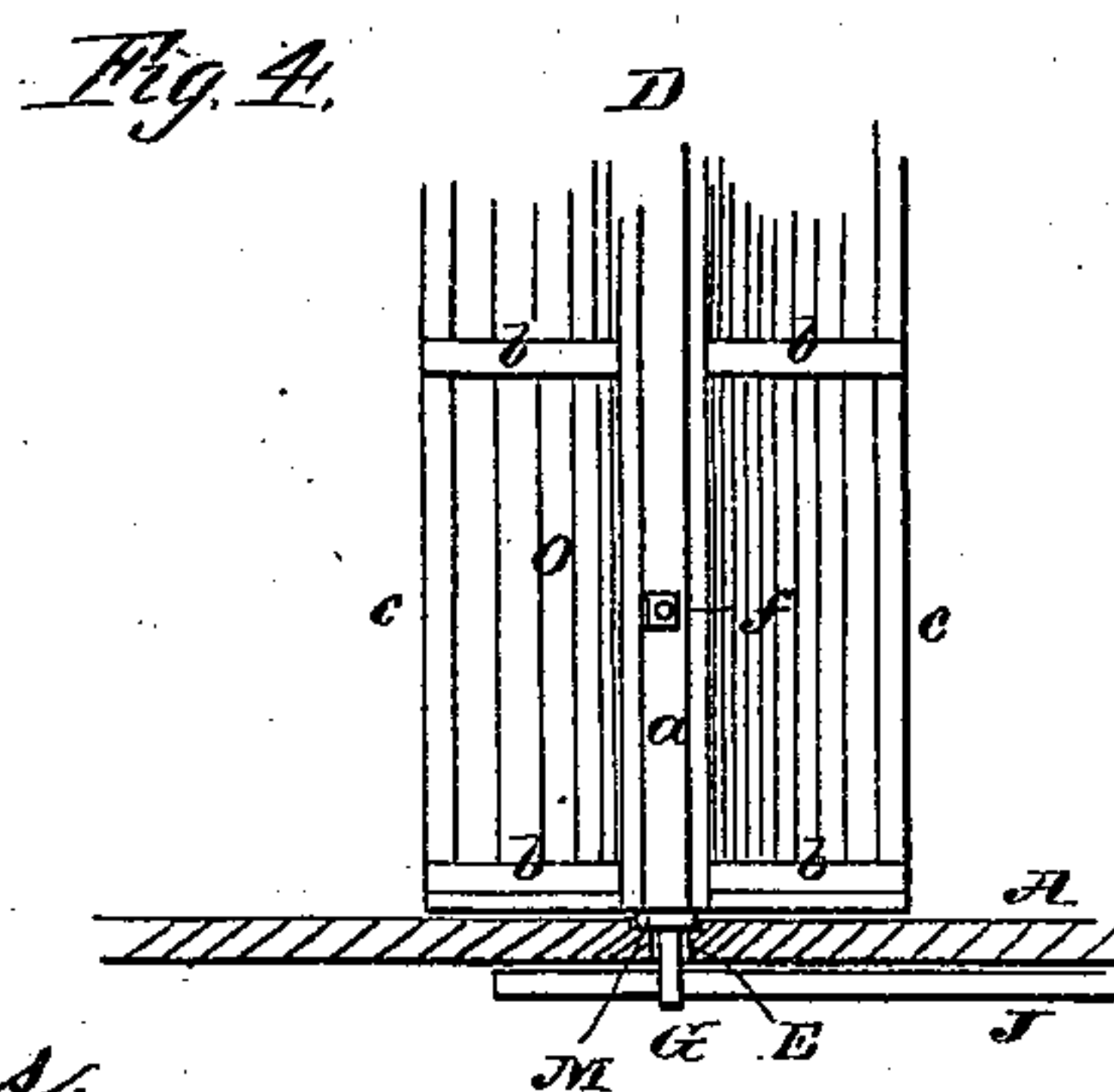
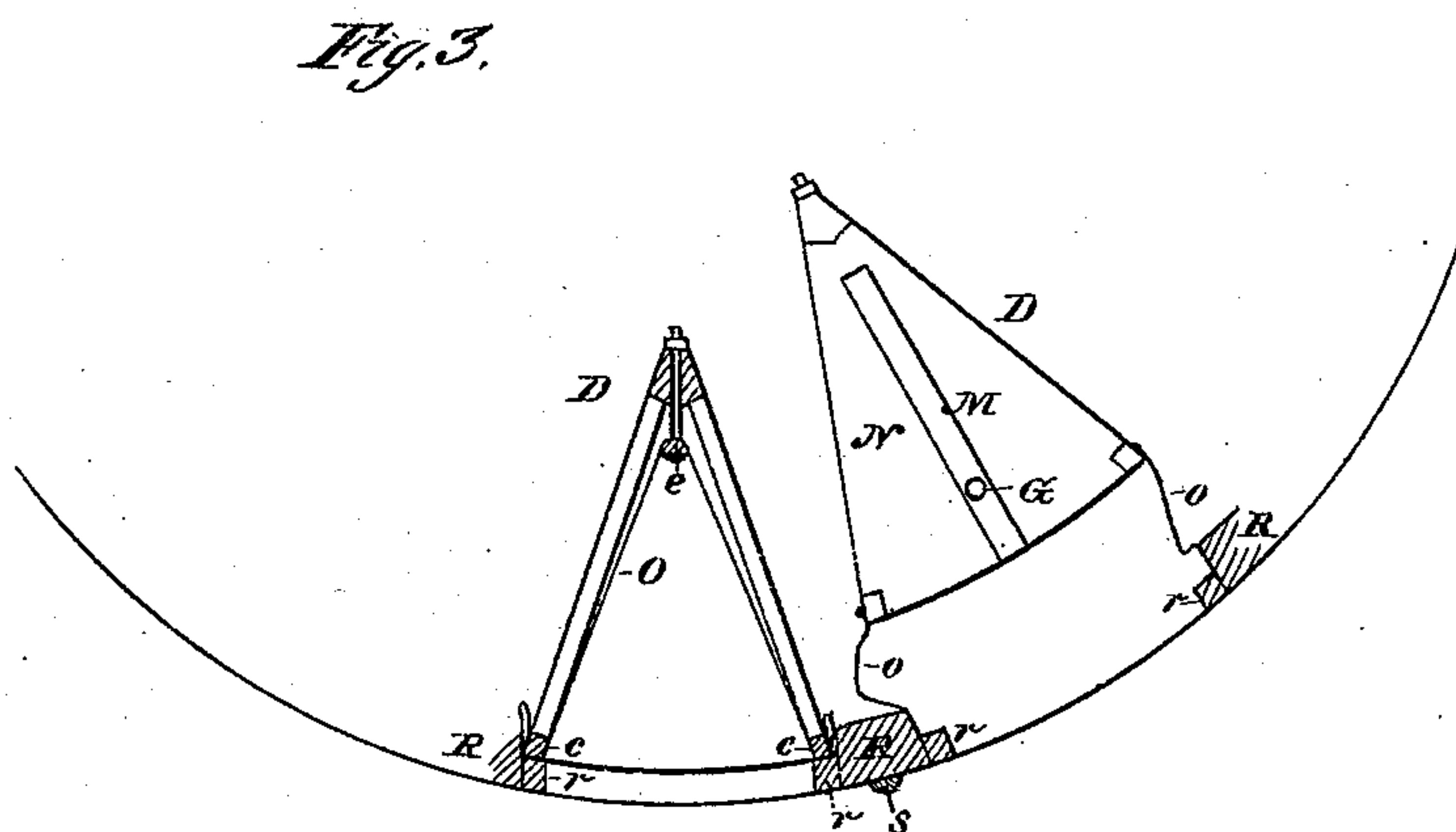
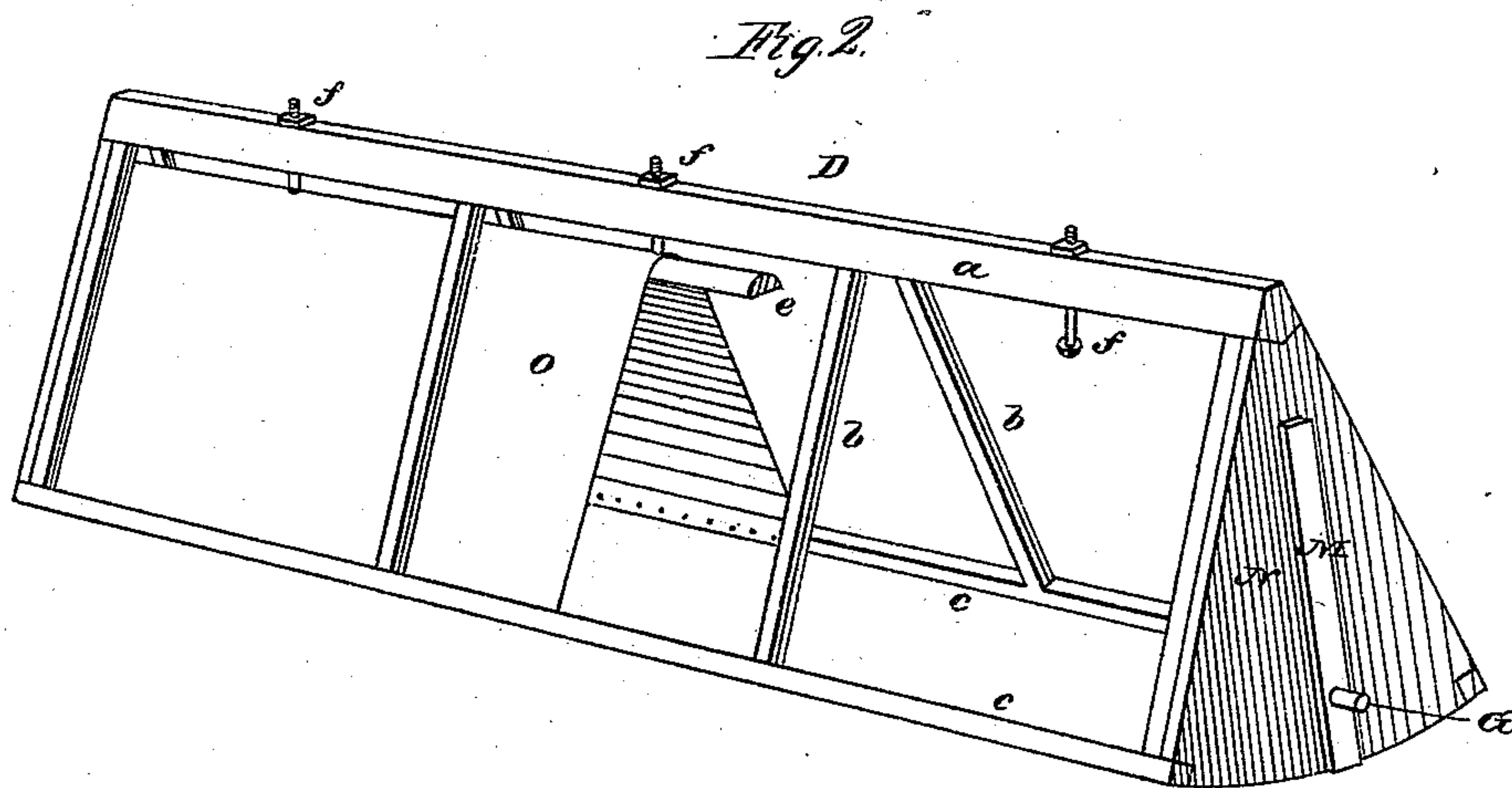
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UNITED STATES PATENT OFFICE.

NOAH W. HOLT, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES R. KNICKERBOCKER, OF JACKSON, MICHIGAN.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 250,813, dated December 13, 1881.

Application filed April 16, 1880. (No model.)

To all whom it may concern:

Be it known that I, NOAH W. HOLT, of Chicago, State of Illinois, have invented certain new and useful Improvements in Dust-Collectors; and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to dust-collectors for flouring-mills, and is intended as an improvement upon the devices shown in my now pending application filed January 26, 1880.

The invention consists, generally, in a dust-collecting reel having its dust-collecting cloth mounted on separately movable sections or parts of the reel-frame, and in the combination, with a reel or rotating dust-collector of this description, of mechanism whereby the several parts may be gradually lifted from their ordinary position and let fall to jar off the dust.

It further consists in the several devices and features of construction hereinafter set forth, and pointed out in the claims.

In the drawings, Figure 1 is a general elevation of the apparatus. Fig. 2 is a detached view of one of the movable sections of the reel-frame with the cloth partly removed. Fig. 3 is a view of one of the movable sections of the reel partially lifted, and of another just after it has fallen back into place, the former being in full end view and the latter in transverse vertical section; and Fig. 4 is a top view of one of the movable sections in proper relation to the head of the reel, and also in relation to the lifting-guide.

H is a rectangular housing, having the inlet I, connecting with the purifiers.

A is one of two reel-heads flush with the side of the housing at both ends, and having the large central opening shown. The heads are supported by the arms B from the shaft C, and are otherwise connected by the longitudinal rails R R. (Seen in section in Fig. 3.)

D is one of the segmental skeleton-frames or movable sections of the reel, provided with end pieces or heads N, and adapted to set into the general reel-frame described between ad-

jacent rails, R, and between the heads A. After inserting the frames D the cleats *r* are applied and secured to hold the frames in place. The sections D have a short radial movement within the reel-heads A, and they are guided in this movement by the cleats M on the heads N, which run closely yet freely in correspondingly radial grooves in the inner faces of the said reel-heads. The heads A are radially slotted at E E, and pins G protrude through these slots from the heads N of the segmental frames D.

At both ends of the reel are located guides J and J', supported from the housing H or frame-work F in proximity to the heads A. The guides J are eccentric to the reel, and are placed, as shown, to successively raise the movable segmental sections D as they approach the lowest point in their revolution in the reel by engagement with the protruding pins G, and to let them fall at that point. The concentric guides J' are placed to hold the movable sections D outward within the reel as they are carried upward and over.

The several sections D are provided with a clothing, O, (seen in Figs. 2, 3, and 4,) tacked to the lower rails, *c c*, of the skeleton-frame, and centrally drawn up into the frame by the rail *e*, over which the clothing is laid without being fastened in any way. The rail *e* is provided with adjustable supports, and when it is moved outward by the adjustment of said supports the clothing O will be equally strained on each side of said beam, because, not being fastened to said beam, it can slide across it to equalize the strain on each side. When suspending-bolts *f f* are employed to support the rail *e* holes are cut in the clothing sufficiently large to permit the bolts to pass without confining the cloth or preventing its free movement over said rails to equalize the strain, as set forth. Practically, however, the difference in capacity of the cloth to stretch on the two sides of the rail will be very little, and the rail *e* will at all times be enabled to sway sufficiently far to equalize the strain. It is evident the rails may be supported and adjusted without using supports which require the cloth to be perforated. The ends of the cloth are also tacked to the inner faces of the heads N.

Loose strips of cloth *o* are also tacked to the rails *c c* and to the adjacent rails *R*, said strips being wide enough to allow of the radial movement of the frames *D*. The material of the clothing *O* is of flannel or, preferably, of coarse cotton goods—as, for example, the grade known as “cheese-cloth.” Said clothing so applied cuts off the exterior space about the reel and within the housing from the interior of the reel, except to the passage of air through the meshes of the cloth.

Beneath the reel is located a worm, *W*, in a longitudinal trough, *L*, preferably wider at the top than the distance between the rails *R*. Said trough has the lateral wings *L'* in proximity to the rails *R*, each wing being wider than the distance between adjacent rails. The rails are provided with longitudinal closing-strips *s*, which brush upon the wings *L'*, and thereby cut off the trough *L* from the general space about the reel within the housing.

The operation of the machine so constructed is obvious. The reel is slowly rotated in the direction of the arrow, Fig. 1. The clothing *O* of the several movable sections *D* of the reel, except that of, say, three sections at the bottom, is exposed to the blast from the purifier within the housing *H*, and, finding escape only through central openings in the reel-heads *A*, the air is forced through the clothing *O* and deposits its dust on its outer surface. As the reel turns the sections *D* are successively lifted by the eccentric guides *J*, and are suddenly let fall over the trough *L*. Said sections *D* in falling strike and are stopped by the rails *r*, the effect of which is to jar off the dust previously accumulated on its clothing *O*. The trough being cut off from the blast by the closing-strips *s* bearing on the broad wings *L'* of the trough, said trough is a still-air space, in which the dust detached falls and settles. It is carried out by the worm-conveyer *W*.

The reel may be advantageously run from the worm-shaft, the two being connected by suitable gearing. I have found that in a six-foot reel the speed should be about one turn in two minutes, making a relative speed between the worm and reel shafts of, say, eighty to one, giving forty revolutions per minute to the worm. A reel of the diameter mentioned and twelve feet long is adapted to take the blast and collect the dust from twelve to twenty purifiers.

It is plain that the reel may have its axis vertical, and that the sections *D* may have a vertical movement. In that case said sections *D* will be without heads on their lower ends, and they should be shorter than the distance between the reel-heads *A*. Slack clothing, *o*, should be applied at both ends of the sections *D*, connecting their ends with the reel-heads. A stationary guide corresponding with *J* placed beneath the reel will serve to raise the sections *D* successively, and the guide *J'* will be dispensed with.

For a single purifier the collector-reel will be about two feet in diameter, and may be located on the purifier. Employing the vertical reel the conveyer may be dispensed with and a spout used leading from the still-air space, into which the dust is deposited from the collector-cloth *O*.

Having thus described my invention, I claim—

1. The combination of a dust-collecting reel having the cloth-bearing parts constructed in separately-movable sections, and mechanism, substantially as described, for moving said sections successively as the reel is rotated.

2. The combination of the following elements, namely: cloth-bearing parts made in sections movable independently of each other, a rotatory reel for supporting and carrying said cloth-bearing parts, a housing which directs the dust-laden air to the cloth or cloths, mechanism, substantially as described, for successively operating the movable cloth-bearing sections to detach the dust, and a still-air chamber, substantially as set forth.

3. The series of cloth-bearing sections or frames adapted to rotate around a common axis, and to move independently of each other toward and from said axis, in combination with the filtering-cloths respectively attached to said sections or frames, and arranged to form filtering-chambers, which are open at their outer sides for the escape of dust, substantially as set forth.

4. In combination with the separately-movable sections of the rotatory reel, a lifting-guide whereby the sections may be successively raised and dropped, substantially as set forth.

5. In combination with a rotatory dust-collecting reel having separately-movable sections mounted therein, the guides *J'*, concentric with said reel, and the eccentric guides *J*, adapted to control and operate the movable sections, substantially as set forth.

6. The combination of the separate rotatory cloth-bearing sections or frames provided with the pins *G* and with the guides *M*, which hold the sections in proper positions radially, the reel having ways to receive the guides *M*, and the stationary guides *J* and *J'*, substantially as set forth.

7. In a dust-collector, a series of chambers, each of which is movable independently, and has two of its sides covered with filtering-cloth, and has an open side through which dust-laden air is first admitted and the dust is afterward discharged, in combination with supporting and operating mechanism for each of said chambers, adapted to support it in position to receive dust-laden air-currents, and to move it to another position and adjust it independently of the others to remove the dust, substantially as set forth.

8. In a dust-collector, the combination, substantially as set forth, of the following elements, namely: a rotatory supporting-reel, a series of cloth-bearing frames mounted sepa-

5 rately and loosely in said reel, a series of separate filter-cloths attached to the separate frames, and a series of tension-adjusting devices respectively attached to the separate frames.

10 9. In a dust-collector, two or more separately-movable cloth-bearing frames, the separate tight filtering-cloths stretched upon said frames respectively, a housing surrounding the frames and adapted to direct a current of dust-laden air through the filter-cloths, and the separate flexible cloths arranged to prevent the

continuous air-current from interfering with the proper discharge of the dust while the frames are being moved independently of each other, substantially as set forth. 15

In testimony that I claim the foregoing as my invention, I affix my signature in presence of two witnesses.

NOAH W. HOLT.

Witnesses:

M. E. DAYTON,
JESSE COX, Jr.