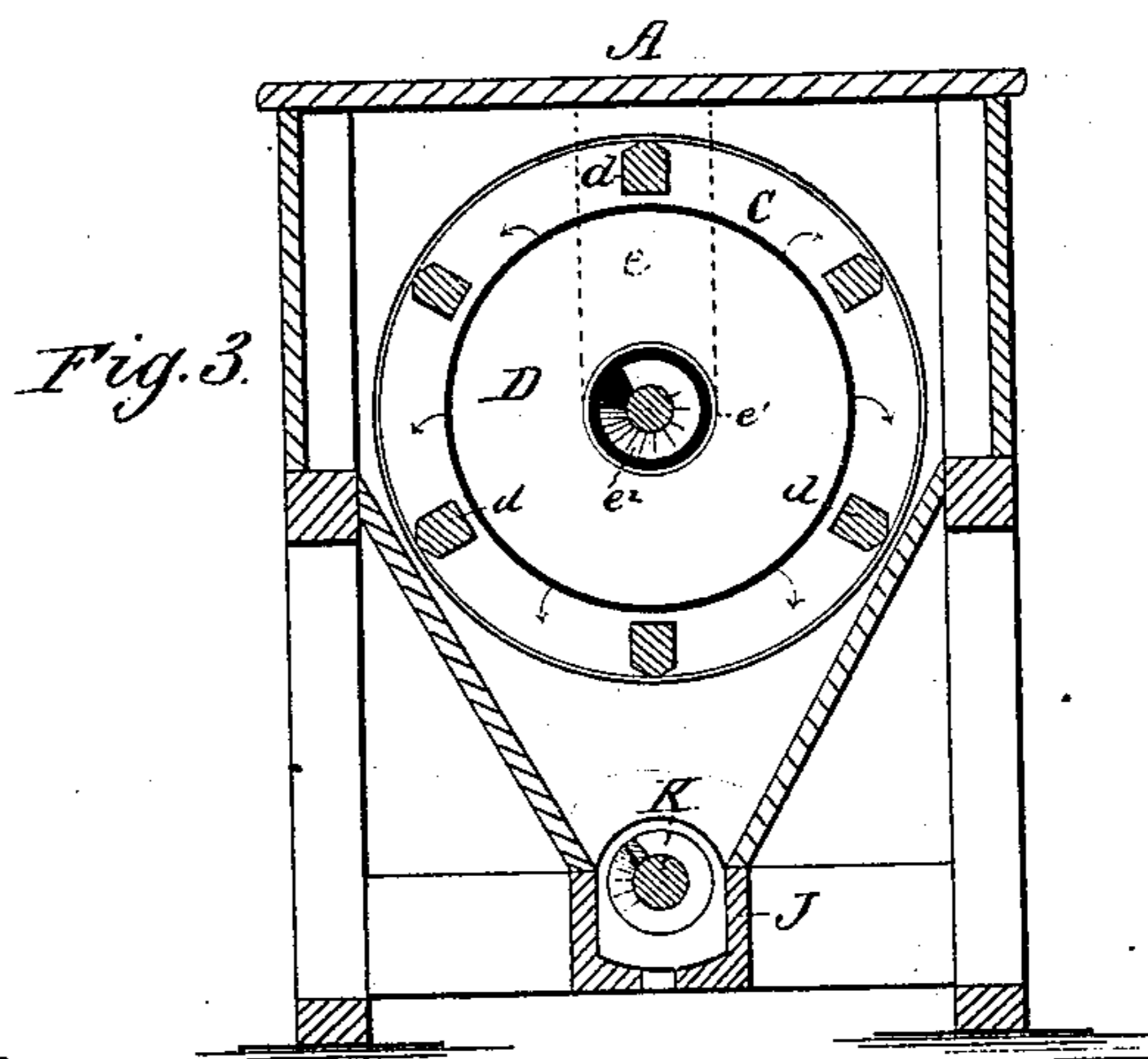
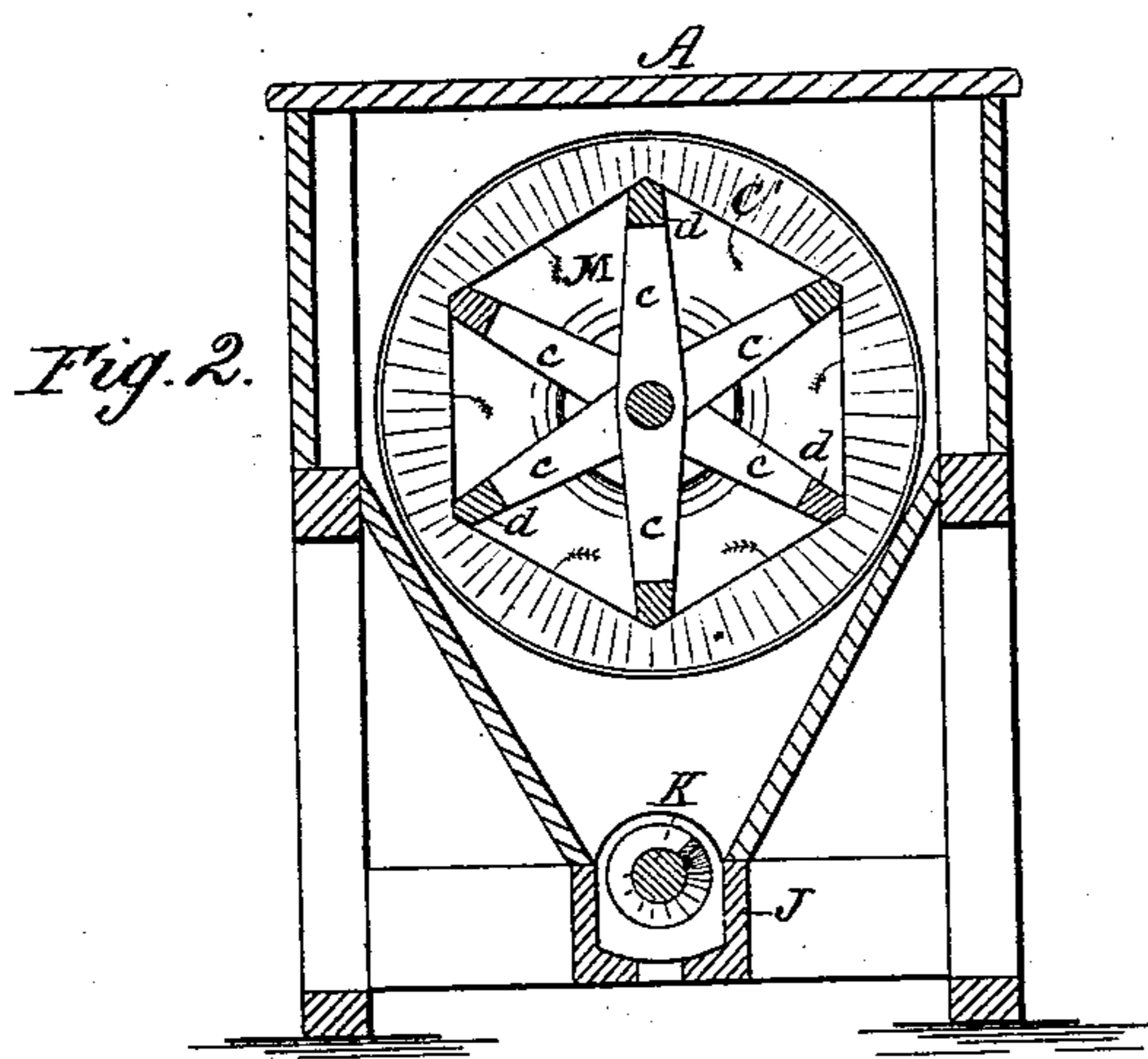
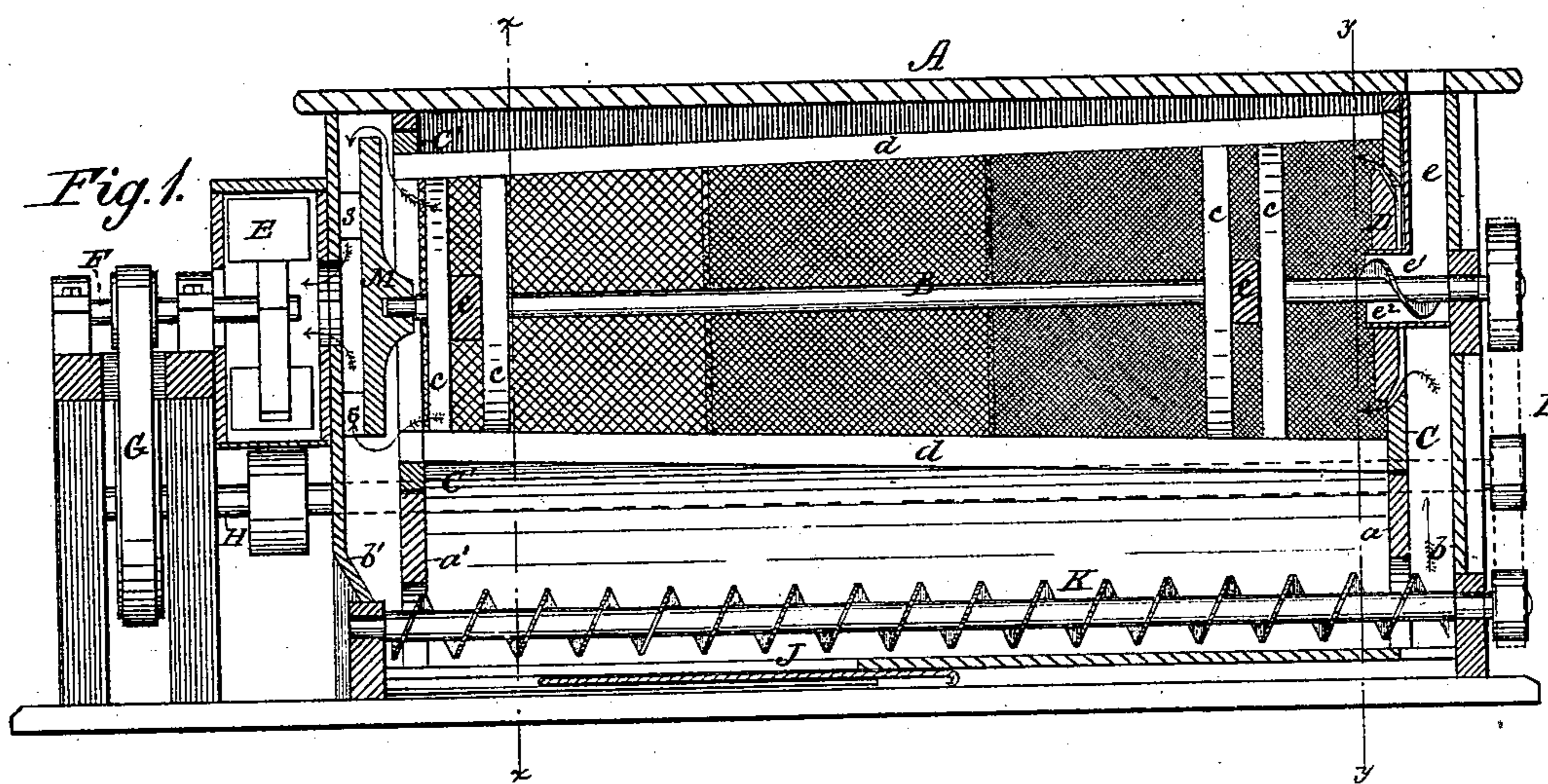


(No Model.)

H. T. CASE.
Middlings Purifier.

No. 236,549.

Patented Jan. 11, 1881.



WITNESSES:

W. W. Hollingsworth
Edw. W. Byrnes.

INVENTOR:

H. J. Case

~~BY~~

ATTORNEYS.

UNITED STATES PATENT OFFICE.

HENRY T. CASE, OF GREEN SPRING, OHIO.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 236,549, dated January 11, 1881.

Application filed April 10, 1880. (No model.)

To all whom it may concern:

Be it known that I, HENRY TRACY CASE, of Green Spring, in the county of Seneca and State of Ohio, have invented a new and Improved Middlings-Purifier; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section. Fig. 2 is a vertical transverse section through the line $x x$, and Fig. 3 a vertical transverse section through the line $y y$.

My invention relates to an improved construction of middlings-purifier; and it consists in the peculiar construction and arrangement of a cone-shaped or tapering reel in connection with a suction-fan and feed-rig, whereby the stock is carried up the incline of the reel by a light draft of air from the head to the tail or smaller portion of the reel.

It also consists in the means for distributing the air uniformly through the same, as hereinafter fully described.

In the drawings, A represents the case of the purifier, whose ends are made with two walls, $a b a' b'$, which form flattened chambers at each end of the reel. In bearings in the ends is arranged the horizontal reel-shaft B, upon which are fixed, in diametrical pairs, the radial arms c , carrying the inclined longitudinal bars d , over which is stretched the reel-cloth, the mesh of the cloth being finest at the large end and increasing in size to the coarsest mesh, which is at the smaller end of the reel. The bars d of the reel at the larger end are fixed to a ring, C, which swivels in a corresponding opening in the inner wall, a , of the end of the casing. At the other end of the reel the bars d converge toward the shaft and pass inside of and are held by an encompassing ring, C', whose inner surface is formed with a polygonal periphery, in the angles of which the bars d rest, while its outer and circular periphery fits and turns in a circular opening in the wall a' . At the larger end of the reel, and between the walls a and b , is arranged a feed-rig consisting of a vertical spout, e , terminating in a short horizontal tube, e' , in which revolves a stirrer, e^2 , fixed on the reel-shaft, and by which the stock is fed to the interior of the reel. Fitting upon the short tube

e' is a detachable head, D, whose periphery approaches the ring of the reel, but leaves an annular opening, through which the air passes from the hollow end of the casing to the interior of the reel, the detachable head and annular orifice serving to distribute the air uniformly to the full cross-section of the reel. The bottom of the chamber between the walls $a b$ is left open, so that the air may freely rise and gain access to the interior of the reel. At the other or smaller end of the reel is arranged a suction-fan and case, E, which fan is fixed upon an independent shaft, F, run by pulleys, and a belt, G, from a counter-shaft, H, which, in turn, is belted at I to the reel-shaft at the opposite end. This suction-fan communicates through an opening in the other end wall, b' , with the space between the walls $a' b'$, and serves to draw off the light impurities from the small end of the reel, while the heavier middlings drop through the reel-cloth and are directed by the inclined sides of the casing to a trough, J, below, in which rotates a spiral conveyer, K, the trough being provided with holes and slides throughout its length according to the number of variations in the size of mesh of the reel-cloth, so that the different grades may be separated.

The front end of the reel-shaft, it will be seen, is journaled in a bearing in the outer wall of the case, while the other end is journaled in a bridge-tree, M, arranged between the walls $a' b'$. This bridge-tree or head serves to close the small end of the reel except a narrow annular space outside of the ring or curb, through which the air escapes to the fan. This bridge-tree is supported by blocks or strips s , and as the air escapes from the tail end of the reel it passes over and around the edges of the bridge-tree, then down through the opening into the fan-chamber, as indicated by the arrows. This, it will be seen, causes the air to be uniformly discharged from the reel in an annular sheet, and at the same time the bridge-tree acts as an obstruction to the direct draft to fan and causes the larger particles to be dropped in the tailings, thus preventing this stock from being carried into the dust-room.

In the operation of the device the stock is carried forward from the head of the reel to the tail end by a light current of air, and is

discharged at said tail end. The reel-shaft is set on a level, and as this makes the inclined bottom of the reel a rising path instead of a gravitating or falling one for the stock, the material would drop back out of the large end of the reel if it were not for the air-current upon which I rely to effect the travel of the stock. By thus feeding the stock up an incline I am enabled to use a stronger blast to effect the separation of the impurities, as the heavier particles are not so easily affected by the blast when going up the incline as they are when going down the same, while the lighter particles are readily carried off by the stronger blast, and the separation thus better effected. Another point is the gradual change from a light to a strong current as the blast is contracted by the small end of the reel, where the separation of the larger particles takes place.

Having thus described my invention, what I claim as new is—

1. The combination of a tapering reel having a horizontal shaft, a feed-rig arranged at the larger end of the reel, and a suction-fan arranged at the smaller end of the reel, where-

by the feeding of the stock is effected up the incline by the air-blast, substantially as described.

2. The combination, with a tapering reel having a horizontal shaft and having the coarsest cloth at its smaller end, of a suction-fan arranged at the smaller end of the reel, whereby the blast is made more powerful at the smaller end for the separation of the larger impurities, as described.

3. The combination, with the case having double ends *a b*, and a feed-rig between, provided with a short tube, *e*, of the reel and the detachable head *D*, forming an annular air-let for uniform distribution of air, as described.

4. The bridge-tree *M*, combined with the reel and the fan-chamber, and interposed between the same, so as to close in the end of the reel and obstruct the direct draft to the fan, but leave an annular discharge-opening, as described.

HENRY TRACY CASE.

Witnesses:

C. W. STORER,
ENOS GROVER.