

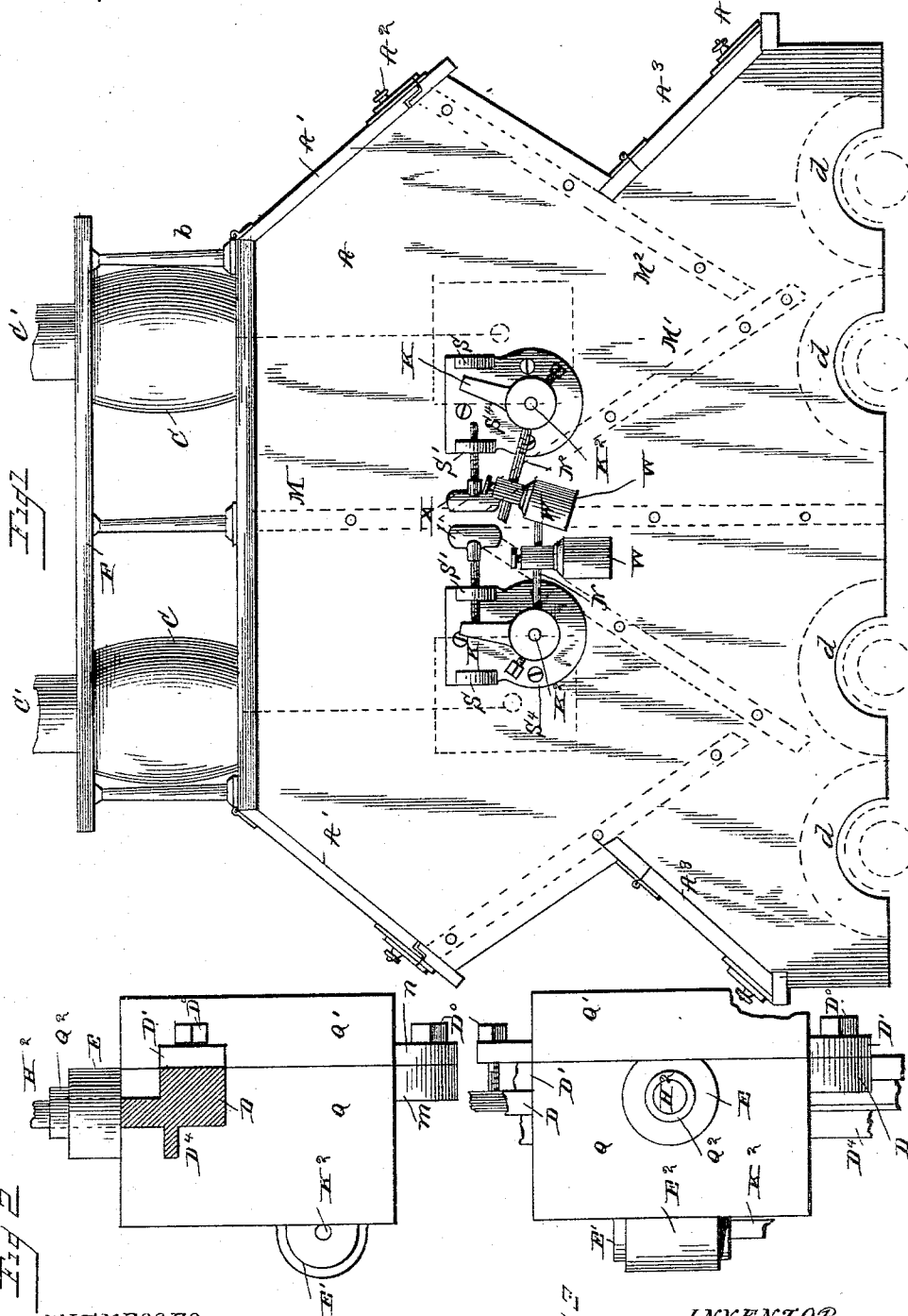
(No Model.)

3 Sheets—Sheet 1.

J. DAWSON.
FEED REGULATOR.

No. 399,187.

Patented Mar. 5, 1889.



WITNESSES.

F. L. Curand
J. W. Weaver.

INVENTOR,

James Dawson
per *Thophilus Weaver*
Attorney.

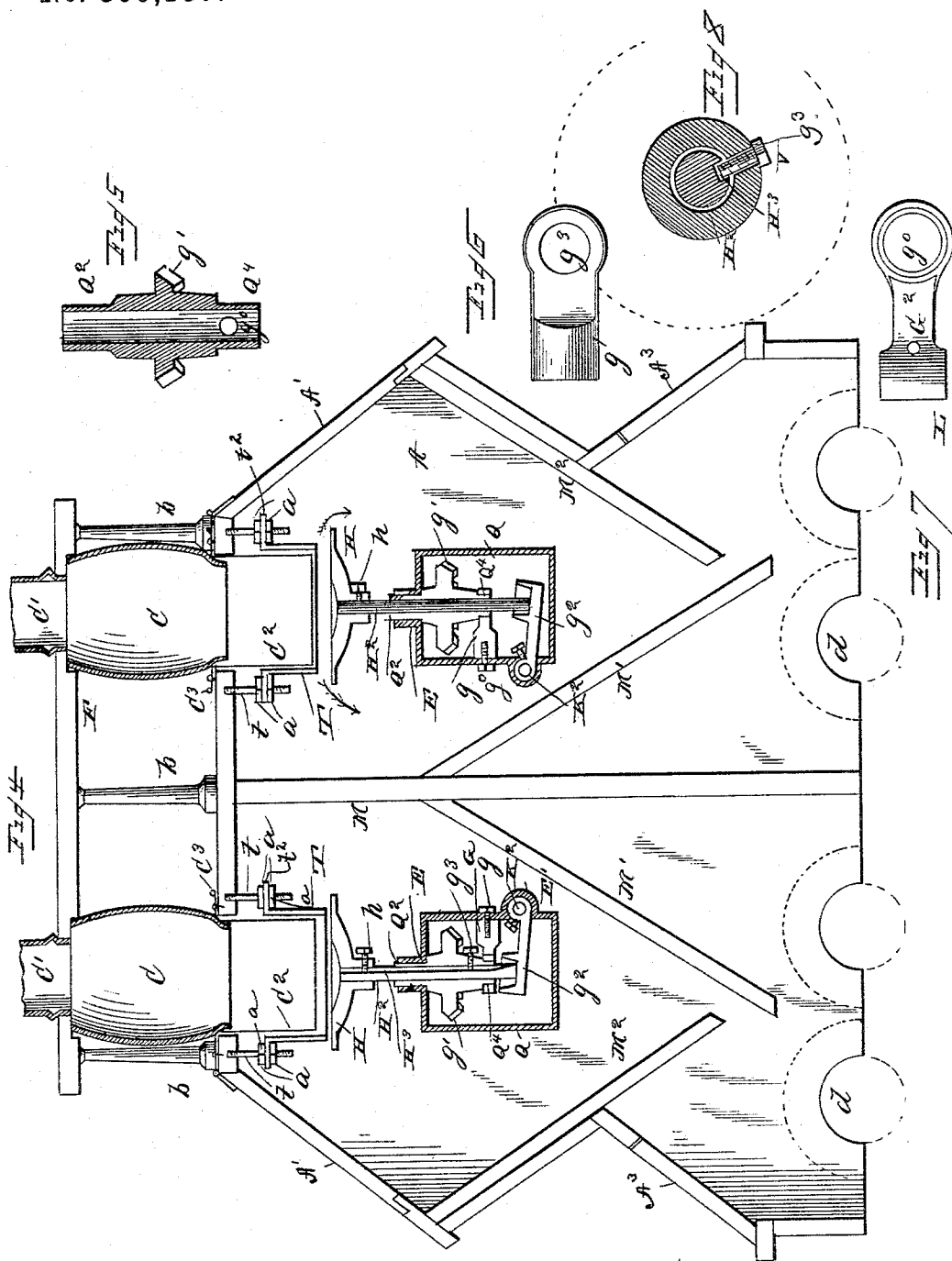
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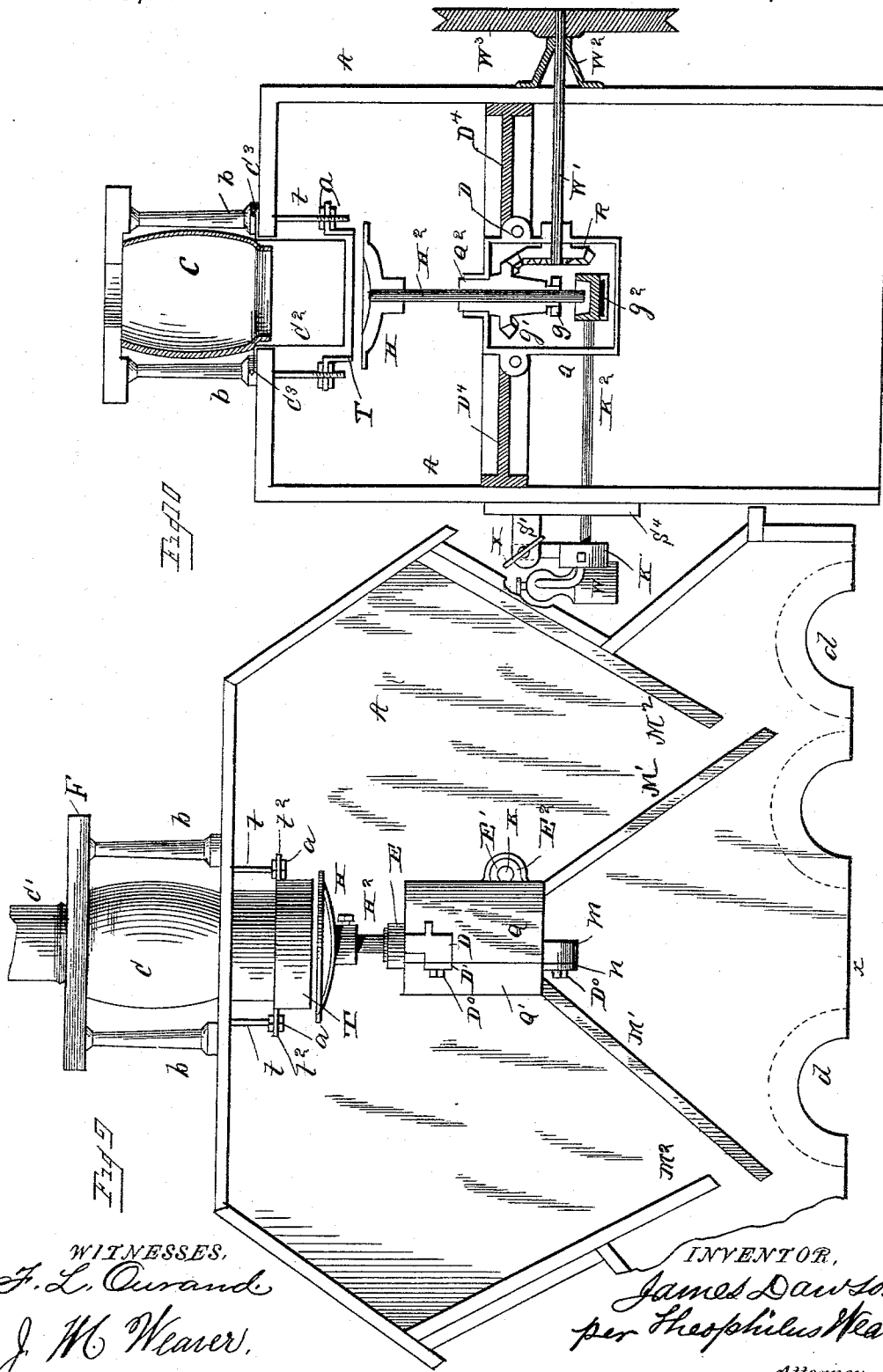
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UNITED STATES PATENT OFFICE.

JAMES DAWSON, OF HARRISBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO JOHN H. DAWSON, OF SAME PLACE.

FEED-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 399,187, dated March 5, 1889.

Application filed May 9, 1888. Serial No. 273,309. (No model.)

To all whom it may concern:

Be it known that I, JAMES DAWSON, a citizen of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented a new and useful Feed-Regulator, of which the following is a specification.

My invention is a device for feeding roller grist-mills, and it is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a double feed-hopper for a double roller-mill with my invention mounted therein. Fig. 2 is a similar view of one of the inclosing-casings; Fig. 3, a top view of the same with braces and other parts broken away; Fig. 4, an elevation of the double feed-hopper and of my feed device mounted therein; Fig. 5, a longitudinal section of the tubular gear-shaft with the bevel-gear thereon for guiding and rotating the distributor-shaft; Fig. 6, a plan view of the lower bearing for said bevel-gear shaft; Fig. 7, a plan view of the arm for sustaining thereon the distributor-shaft; Fig. 8, a cross-section of said tubular shaft with the distributor-shaft loosely keyed therein; Fig. 9, a plan view of a double hopper provided with a single feed device adapted to feed the stock to two pairs of rolls; Fig. 10, a plan, partly in section, of my invention made by a plane passed through the driver and distributor shafts.

Similar reference-letters refer to similar parts throughout the several views.

The hopper-casing A is built with offsets in the ends thereof, wherein are located doors A' A', which are provided with the latches A'. The doors are for inspecting various parts—the chutes M' M' and their delivery to the several sets of rolls arranged below the marginal cuts d in the lower part of the hopper-casing. On top of said casing is the frame F, secured thereon by supports b, for retaining thereon glass receivers C. These receivers are formed with contracted ends and inserted in seats therefor at the top and bottom of said frame at openings through it. Within these receivers C conduits C' are fitted for introducing the feed or stock. At their bases the receivers C rest in the collars C² at the head of the sleeves C³, which depend from said col-

lars. The said sleeves reach down nearly onto the distributor-disks H when the latter are fully elevated, as shown on the left of Fig. 4 and in Fig. 9. As the lower ends of said sleeves may not come to a level with the distributor-disks, which rotate horizontally, I therefore supplement the sleeves C³ by the lower sleeves, T, which are supported adjustably from hangers t, about three to each lower sleeve. The hangers are screwed into the wood-work above, and have their depending ends screw-threaded to receive the lugs t² on the lower sleeves, which are adjusted by the nuts a. The lower sleeves may thus come almost in contact with the distributor-disks.

The distributor-disks H are made to rotate uniformly and normally discharge therefrom by centrifugal action, and the shafts H² thereof reciprocate vertically to regulate the quantity discharged. The chutes M' M' converge fixedly along a line which is parallel with the opening between the paired rolls and a little distance above the line where the grinding begins. The fall of the stock from the distributor-disk is in a circle; but the said chutes are directed to gather the material along the diameter of that circle which is parallel to said line in equal deposits at all cross-sections of that line, thus causing an even line of feed along the whole length of the rolls. In Fig. 4 is shown supported the inclosing-casing formed of sections Q and Q', having the opposite arms D¹, which are attached by means of bolts to the side walls of the hopper-casing, as shown in Fig. 10. In a bearing, W², on the hopper-casing, and in the wall of said inclosing-casing, is journaled the driver-shaft W', having thereon the pulley W³, and on its inner end, within the inclosing-casing, the bevel-wheel R, as shown. Said bevel-wheel intergears with the similar wheel, g', having the hollow shaft Q² Q', having its upper journal, Q², shouldered to bear in and against the top of the inclosing-casing, and having its lower journal, Q¹, supported in and on the bracket g, as shown. The hollow shaft is confined constantly at its bearings by said bracket g, secured to the wall of said casing inside by the screw g⁰, as shown. Within said hollow shaft is vertically supported the

shaft H^2 of the distributor-disk, which rests upon the swinging arm g^2 , fixed to the horizontal axle K^2 , as shown.

Shaft H^2 is formed with a longitudinal groove, H^3 , therein, in which slides freely the point of the set-screw g^3 , for imparting to said shaft the rotary movement of the wheel g' , while it allows said shaft H^2 to be adjusted vertically for raising and lowering the distributor-disk H , which it rotates, it being secured rigidly thereon by screw h . One end of the axle K^2 is journaled in the abutment E' on the inclosing-casing, and the other end is extended parallel but opposite to shaft W' and journaled in plate S^4 on the exterior of the hopper-wall, as shown in Figs. 1 and 10.

On the outer end of the axle K^2 is rigidly secured the arm K , which is arranged to swing or play between the projections S and S' , formed on the plate S^4 . The projection S' is provided with the transversely-arranged thumb-screw X , whereby the arm K may be adjusted and the distance of the disk H from sleeve T varied.

Suitable weights, W , are suspended on said rods, as on scale-beams, and may be adjusted to cause the arms K to be at rest when the feed is coming through the conduit regularly or normally, but to swing and stand in reversed position against the projection S when the feed is coming through onto the distributor-disk too fast for perfect distribution. When the quantity of feed is coming onto the same normally, the said arms are in position as shown in Fig. 1 at the left side of the view, the arm K then resting against the end of the screw X , which is adjustably inserted in the projection S , and when the quantity of the feed is abnormal or above the right quantity said arm will be swung to stand as shown on the right side of said view.

At the left of Fig. 1 the swinging arm K rests against the point of the screw X . On the right of the same view said arm has swung to the opposite side. Accordingly as said arm moves the shaft K^2 is raised or lowered, therefore also the arm g^2 , attached to said shaft, and as said arm rises or falls the distributor-disk is adjusted to shut off or to increase the feed. The feed device is therefore automatic, for if the feed is coming by way of the sleeve C^2 in ordinary quantity the arm K will swing to the position shown on the right of Fig. 1; but if by some irregularity an extraordinary weight or quantity of feed come suddenly down said sleeve the distributor-disk H will be pressed lower and the opening above it will be enlarged to quickly let more stock pass to relieve the emergency, and this change of feed will be indicated both by the position of the arm K , standing as on the right of Fig. 1, and also by the visible filling up of the transparent receiver C on the same side. Thus the miller is at once apprised of the matter that needs his attention. The automatic action is therefore for protection against the choking or filling up the conduits

and other machinery. This arrangement is therefore a safety device to further good milling. The hard dry grain causes less difficulty than soft grain or middlings or stock that runs in bulky masses. My device remedies such difficulty by promptly apportioning to each portion of the rolls equal parts of the work, thus lessening the task for each part.

In Figs. 1 and 4 the feed-hopper is shown and indicated vertically divided by the partition M , and my feed device is duplicated, so that one device is in each division for grinding different kinds or grades of stock in the two mills arranged in one frame.

In Fig. 9 the double hopper has the partition removed and only one feed device is used, located in the place of the partition or vertically at the head of the chutes M' . This arrangement is for a double mill, in which the same kind of stock is fed to two pairs of rolls by one of my devices. The distribution here is also approximately equal and complete throughout the whole length of both sets of rolls.

The inclosing-casing Q Q' is made of a larger section, Q , in which the rotary parts are located and journaled, and of a smaller section, Q' , which is secured to said other section by bolts D^0 through lugs on the sections, and said section Q' may be removed for inspection of the works without disturbing them. The works may all be lubricated exteriorly or without opening said lid by oiling the journal Q^2 and the shaft H^2 , journaled in the shaft Q^2 .

The weights W on the rods N are of proper size when adjusted midway on the rods to rest unmoved till the receivers C are about half-filled, as will occur in feeding normally of a given kind of stock. When heavier or lighter stocks are fed, the weights are adjusted to carry said receivers normally about half-filled. The instant, then, a greater run of feed occurs the receivers fill up higher, and said weights are overbalanced and the distributor-disks H are automatically lowered and opened to let more stock come onto the rolls. When the normal travel or run of the feed again is attained, the status of the weights and of the receivers is again resumed. The miller may, therefore, at any time tell by a glance by inspecting the receivers whether the feed is normal. The distributor-disks need have no peripheral curb, as they are saucer form on top, as shown, and freely spray the stuff in circles, and the fixed chute-boards M' M^2 gather the deposit evenly on a line of feed in which the amount of deposit is the same at all cross-sections.

I claim—

1. In a feed-regulator for roller-mills, the combination of feed-hopper having sides inclined equally to the line of deposit of the feed parallel to and along the whole length of the rolls, the main sleeve C^2 , added sleeve T , attached adjustably by hangers exterior to said sleeve and both depending from the hop-

per-top, and the rotating disk H directly under said sleeves, an axle journaled in the casing and provided with a swinging arm supporting said disk, and means for yieldingly securing said axle, rendering the disk vertically self-adjusting, substantially as set forth.

2. In combination with the inclosing-casing Q Q', provided with the arms D¹ and secured equidistantly to the hopper-walls, the intergearing bevel-wheels g' and R, journaled in said casing, the tubular shaft Q² Q⁴, secured to said wheel g', the driver-shaft W', which is extended through the hopper-wall, having the bearing W² thereon and carrying the wheel R, the vertically-sustained shaft H², keyed loosely in the tubular shaft of wheel g', with the disk H, secured rigidly on the shaft, substantially as and for the purposes set forth.

3. In combination with the inclosing-casing Q Q', the intergearing wheels g' R, the vertically-guided rotary shaft H², the distributor H on said shaft, and the shaft K², provided with the arm g², and means for sustaining said

shaft thereon, said wheels and arm being inclosed in the casing, in whose walls they have their bearings, substantially as and for the purposes set forth.

4. In combination, the casing Q Q', provided with the arms D¹, for attaching it in mid-hopper, the bracket g, secured in said casing, the hollow gear g', journaled in the casing and in said bracket g, the distributor-disk H on the shaft H², one end of which is guided in said hollow gear, and having an internal grooved connection to permit vertical adjustment therein, the driving-shaft W', with its bevel-wheel R, intergearing with said hollow gear, the arm g², on which the shaft H² rests, and the rock-shaft K², oppositely poised, with the weight W hung thereon and limited in its throw, substantially as and for the purposes shown and described.

JAMES DAWSON.

Witnesses:

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THEOPHILUS WEAVER.