

(No Model.)

H. B. FELDMANN.

HOPPER FOR PULVERIZING MACHINES.

No. 274,090.

Patented Mar. 13, 1883.

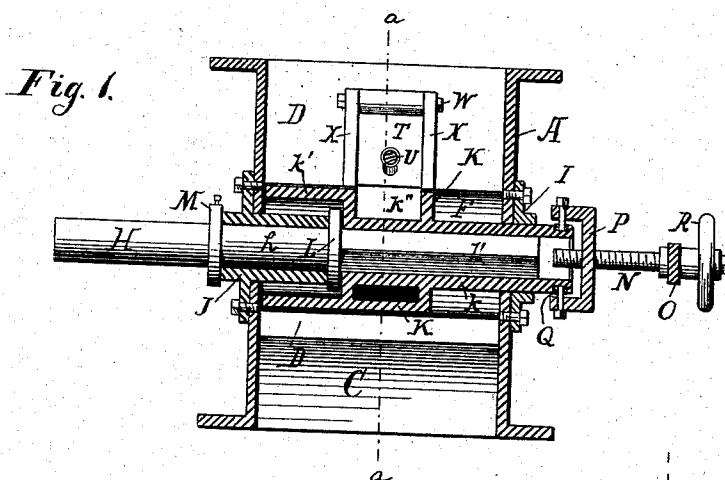


Fig. 2.

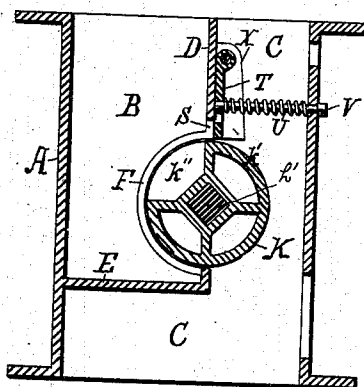


Fig. 3.

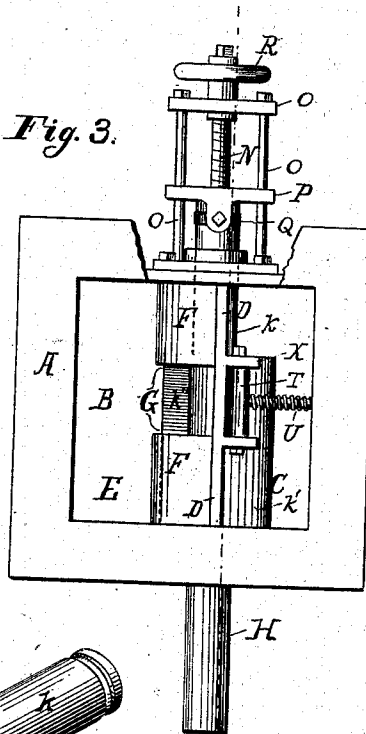
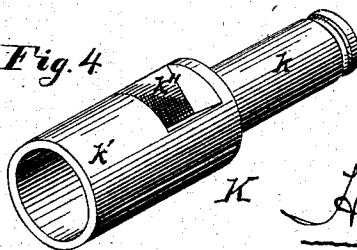


Fig. 4.



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WITNESSES:

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HERMANN B. FELDMANN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
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HOPPER FOR PULVERIZING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 274,090, dated March 13, 1883.

Application filed November 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, HERMANN BERNHARD FELDMANN, of the city and county of Philadelphia, and State of Pennsylvania, have invented certain Improvements in Hoppers for Pulverizing-Machines, of which the following is a specification.

My invention is applicable for general use, as a hopper, with any class of devices to which hoppers, as such, are applied. It is, however, especially designed for employment in connection with a certain novel pulverizing-machine invented by William Henry Thompson, of Islington, county of Middlesex, Kingdom of Great Britain, and patented to him in and by Letters Patent of the United States, No. 249,489, dated November 15, 1881.

The object of my invention is to produce an automatic hopper provided with adjustable feeding appliances of such construction as to be adapted to feed a quantity of material predetermined according to the set of said appliances.

A preferred form of a convenient embodiment of my invention is hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a central vertical front sectional elevation of a hopper conveniently embodying my invention, it being a view taken from the right-hand side of Fig. 2. Fig. 2 is a central vertical side sectional elevation of the same, taken on a plane projected on the line *a a* of Fig. 1. Fig. 3 is a top plan view of the same, and Fig. 4 is a view in perspective of the pocket-cylinder.

Similar letters of reference indicate corresponding parts.

In the drawings, A is the casing of the hopper, it being any suitably-shaped inclosing-case divided into a receiving-chamber, B, and a discharging-chamber, C, which latter is supposed to be in communication with the apparatus to be fed. This division is conveniently effected by means of a vertical diaphragm, D, and a horizontal diaphragm, E, which connect, as shown. The vertical diaphragm is horizontally divided to form a horizontal slot of the breadth of the casing, and is provided with two semi-cylindric shells, F, which are

set sufficiently apart to form between them a vertical slot or opening, G, through which the material fed into the receiving-chamber passes, by means of the revolving pocket, to the discharging-chamber, as hereinafter explained.

H is a driving-shaft horizontally journaled in the casing by means of a tubular gland, J, and connected with the casing in such position as to cause the setting of the pocket-cylinder K, with which said shaft is equipped, to the extent of half the breadth of the latter within the semi-cylindric shells, as clearly shown in Fig. 2. The pocket-cylinder K (shown detached from its shaft in Fig. 4) is composed of a sleeve, *k*, the interior of which is conformed to the shaft, as hereinafter described, and the exterior of which is cylindric, and of a cylindric enlargement, *k'*, within which is formed a scoop, take-up, or pocket proper, *k''*. The shaft H is cylindric throughout that portion of its length, *h*, which finds a bearing in the tubular gland J, and beyond that portion the extremity *h'* of said shaft is of square or angular sectional outline, and is fitted within the sleeve *k* of the pocket-cylinder, which sleeve is internally conformed to the external conformation of the squared extremity *h'* of the shaft, so as to be free to slide lengthwise upon said shaft, but to be compelled to rotate in fixed connection therewith. The sleeve of the revolving pocket is journaled in the bearing I, applied to the side of the hopper.

L is a fixed collar upon the shaft, intermediate between its cylindric portion and squared extremity.

M is an adjustable collar upon said shaft, exterior to the gland in which the shaft revolves.

By reference to the drawings it will be observed that the hollow cylindric enlargement *k'* of the pocket-cylinder is of sufficient diameter to fill to the extent of half its breadth the semi-cylindric shells of the vertical diaphragm, and also to embrace the inwardly-projecting portion of the tubular gland J and the fixed collar on the shaft. When the driving-shaft and pocket-cylinder, in their combined relationship, are introduced into the hopper they are journaled in such relation with re-

spect to the casing and to the semi-cylindric shells formed in the vertical diaphragm thereof that the common axis of the shaft and of the pocket-cylinder coincides with the axis of the semi-cylindric shells and lies in the plane of the vertical diaphragm, all as well represented in the drawings. When introduced in this position, and when motion of rotation has, by any suitable means, been applied to the driving-shaft, the latter and the revolving pocket-cylinder rotate together as a connected whole. The pocket-cylinder is, as described, adapted to be moved lengthwise with respect to the shaft, or from side to side with respect to the casing, without such motion in any wise affecting the revolution of said pocket-cylinder. The pocket proper, *h''*, in the set of parts represented in the drawings, is in line with the vertical opening *G* between the semi-cylindric shells, so that when material to be fed is introduced into the receiving-chamber of the hopper and the revolving-pocket, through its cylinder and the shaft, is caused to rotate said material is taken up or caught by said pocket, and in such quantity as the latter will hold is, in the revolution thereof, carried through the vertical opening into the discharging-chamber and therein discharged. In the set of the parts represented the discharging or feeding capacity of the hopper is that of the pocket itself. Where, however, it is desired to feed less than the quantity ordinarily contained by the pocket, the pocket-cylinder is drawn endwise with respect to the shaft, hopper, and vertical opening between its semi-cylindric shells, so that just so much of the pocket proper as is desired shall face the vertical opening between the shells. This lateral adjustment of the pocket is conveniently accomplished by means of an adjusting-screw, *N*, which is feathered, free for rotation in a yoke or frame, *O*, erected horizontally from the right-hand side of the hopper, and by the further means of a yoke-collar, *P*, connected by a feather-connection, *Q*, with that extremity of the sleeve of the pocket-cylinder which projects beyond the bearing *I*, and threaded upon the adjusting-screw. The yoke *O*, abutting against the side of the hopper and preventing lengthwise movement to the adjusting-screw which is feathered therein, occasions, upon the rotation of said adjusting-screw, through the instrumentality of the yoke-collar, threaded upon the latter, the endwise movement of the pocket-cylinder in one or the other direction.

It is a hand-wheel or thumb-screw device for the convenient actuation of the adjusting-screw. Where the material fed into the receiving-chamber of the hopper is of practically uniform size it fills into the pocket, and is readily discharged thereby. To guard, however, against the taking up by the pocket of a stone, for instance, of larger size than it could safely discharge through the horizontal open-

ing in the vertical diaphragm in which the pocket-cylinder is set, I have formed said opening with a vertical enlargement, *S*, which I have guarded by means of a door, *T*, controlled by a spiral spring, *U*, and spring-rod *V* in the manner shown in the drawings. The door is hung upon an axial rod, *W*, and is framed between two webs, *X*, erected from that side of the vertical diaphragm which faces the discharging-chamber. The door opens into the discharging-chamber, and by its construction, as above described, operates to open automatically, should the pocket take up a substance larger than it can discharge without opening the door, and to allow the passage of said substance, subsequently automatically closing after its discharge.

Having now described the construction of a form of parts conveniently embodying my invention, I desire to state that many minor mechanical changes may be made in the construction and arrangement of said parts without departing from the principles of construction had in view. Thus, the pocket-cylinder may be feathered upon the shaft, instead of being conformed to a shaft the extremity of which is not of circular outline. If, moreover, it be desired, the shaft itself may be arranged to move endwise in connection with the pocket-cylinder, and in such instance the two members be made as one.

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

1. In a hopper, the combination of an enclosing-casing, a vertical diaphragm provided with a horizontal opening and with two semi-cylindric shells, so disposed as to leave an open space between them, a horizontal diaphragm, a pocket-cylinder provided with a pocket, and a central shaft, upon which said pocket-cylinder is mounted, and by which it is revolved, substantially as set forth.

2. In a hopper, the combination of an enclosing-casing, a vertical diaphragm provided with a horizontal opening and with two semi-cylindric shells, so disposed as to leave an open space between them, a horizontal diaphragm, a pocket-cylinder provided with a pocket, a central shaft, upon which said pocket-cylinder is mounted, and by which it is revolved, and means for moving said pocket-cylinder side-wise with respect to the opening between the semi-cylindric shells, so as to enable the adjustment and presentation of a given area of pocket to the open space between said shells.

3. In a hopper, in combination with a receiving-chamber, a discharging-chamber, and a revolving pocket-cylinder containing a pocket, a diaphragm provided with an opening or enlargement and dividing the hopper into the two chambers named, and a spring-controlled gate controlling said opening, substantially as set forth.

4. The combination of the hopper-casing,

shaft, tubular gland, pocket-cylinder, and bearing for the latter, substantially as set forth.

5 5. As a means of enabling the sidewise adjustment of the pocket-cylinder, the following devices in combination: the casing of the hopper, the sleeve of the pocket-cylinder, the adjusting-screw, the yoke, the yoke-collar, and the feather-connection between said yoke-collar and said sleeve, substantially as set forth.

In testimony whereof I have hereunto signed in my name this 4th day of November, A.D. 1882.

HERMANN BERNHARD FELDMANN.

In presence of—

J. BONSALL TAYLOR,
W. C. STRAWBRIDGE.