

J. Mattison,
Feed Regulator.

No. 99,926.

Patented Feb. 15. 1870.

Fig. 1.

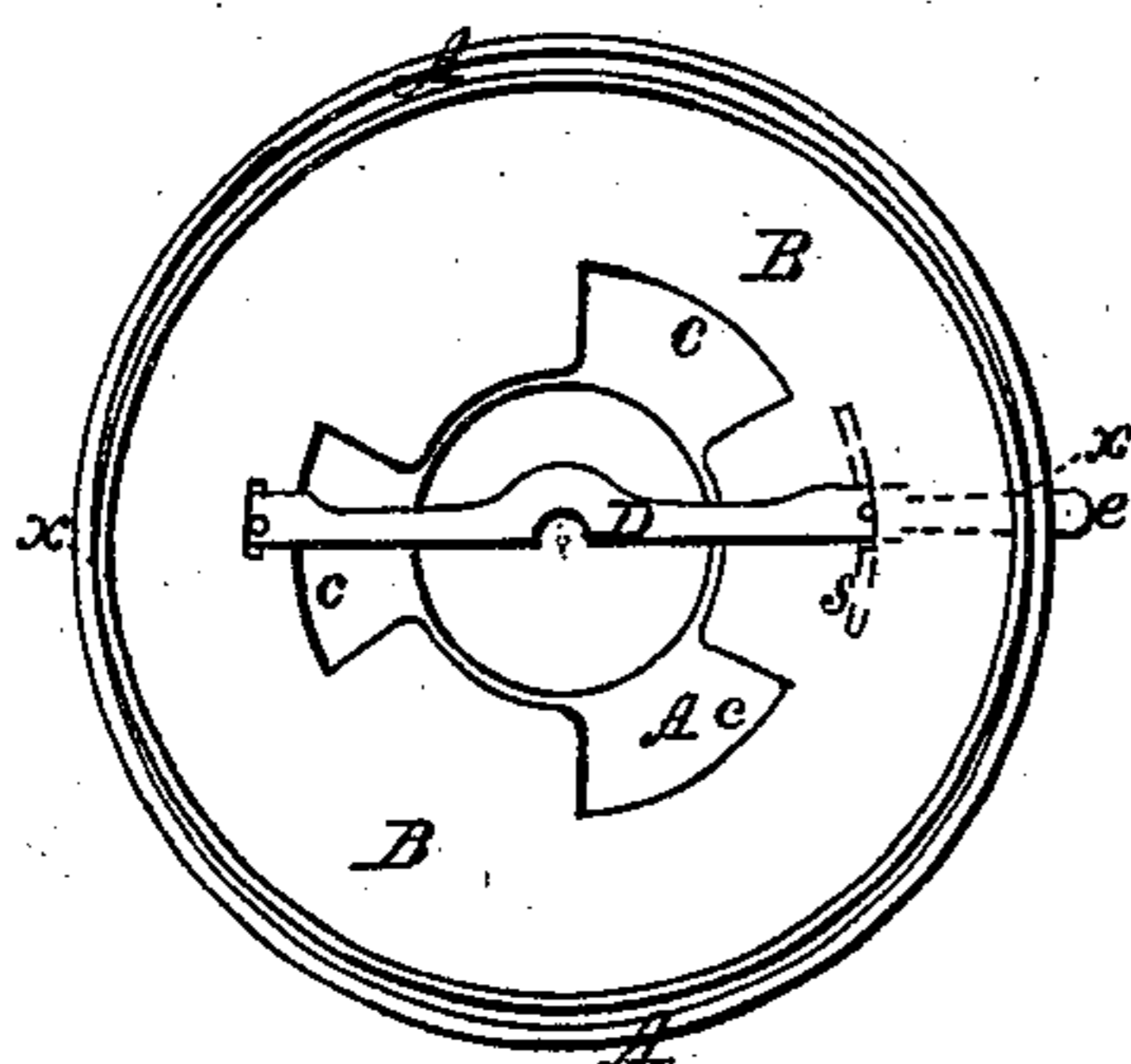


Fig. 3.

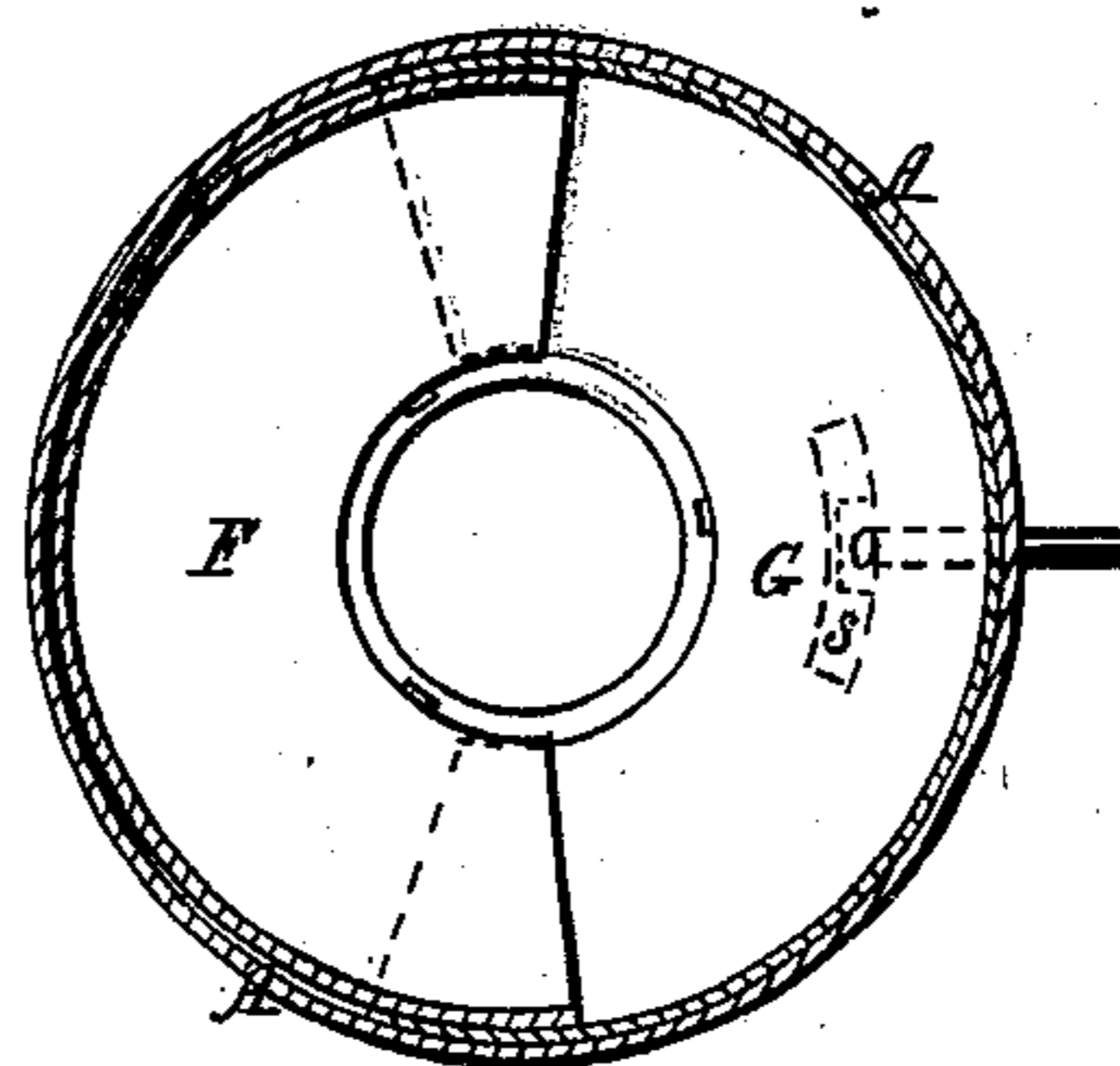


Fig. 2.

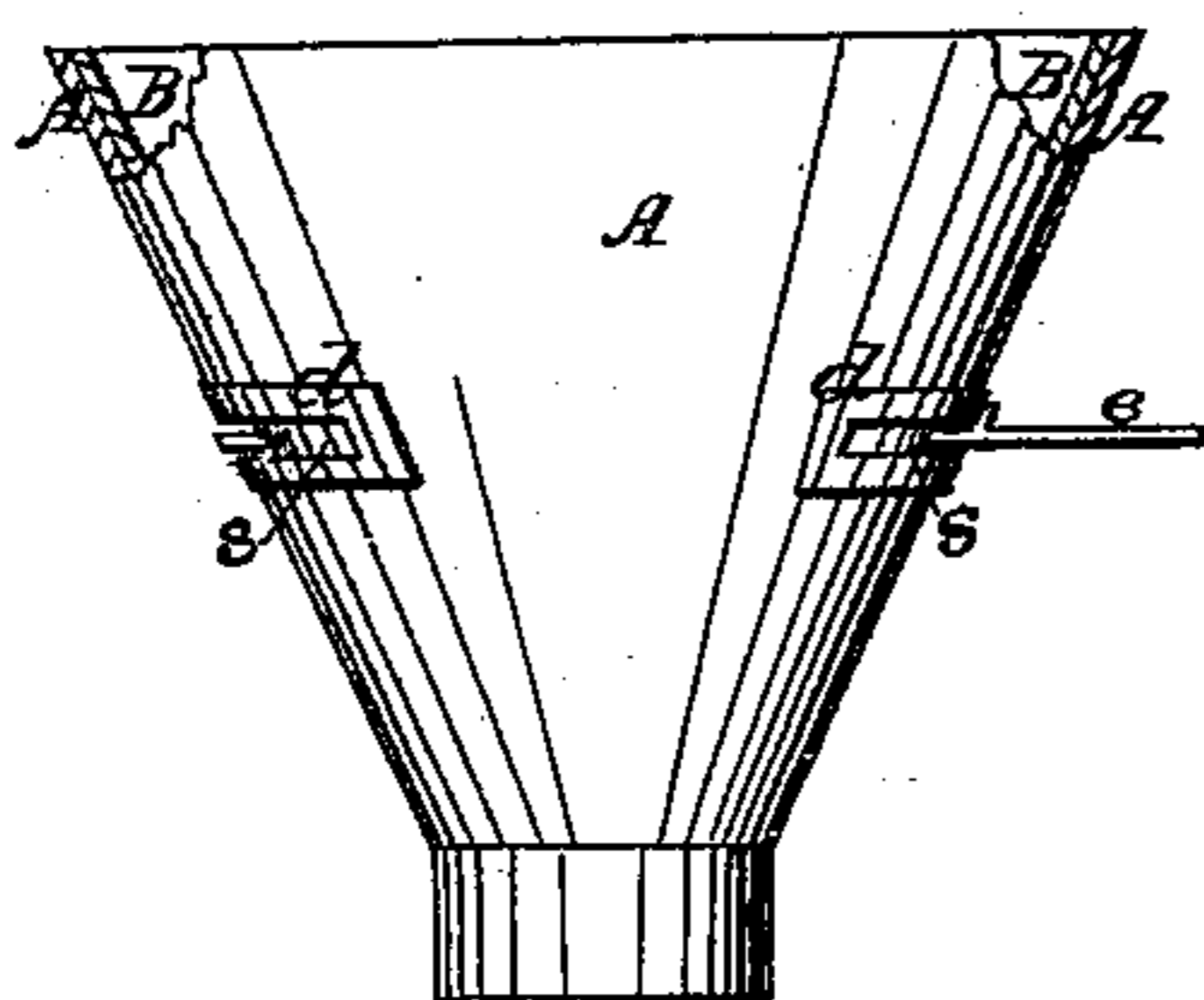
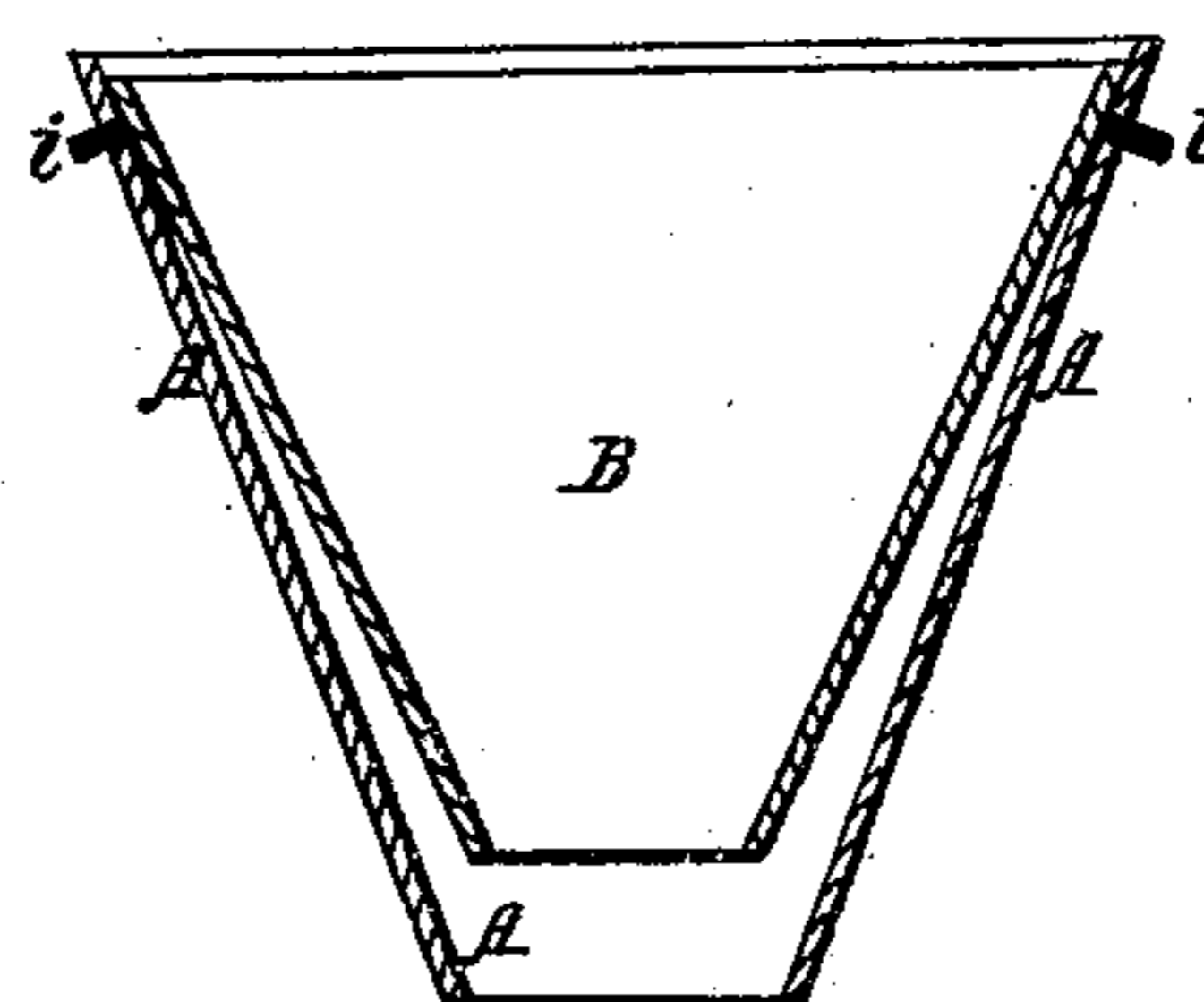


Fig. 4.



Witnesses,

W. Burris
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Atty.

United States Patent Office.

JUDSON MATTISON, OF OSWEGO, NEW YORK.

Letters Patent No. 99,926, dated February 15, 1870; antedated February 5, 1870.

IMPROVEMENT IN FEED-HOPPERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JUDSON MATTISON, of Oswego, in the county of Oswego, and State of New York, have invented a new and useful Improvement in Feed-Hoppers for flour and starch-packers, grist-mills, and other machines; and I do hereby declare the following to be a full and exact description of my invention, reference being had to the accompanying drawings forming a part of this specification, in which—

Figure 1 is a top or plan view, and

Figure 2, a side elevation of one form of my improved feed-hoppers;

Figure 3, a plan view of a modification thereof; and

Figure 4, a vertical central section of yet another form of my said invention.

Similar letters indicate like parts in all of the figures.

The nature of my invention consists in the combination of an inner movable vibrating or oscillating funnel, lining plate or frame, with a stationary, conical hopper or feeding funnel for delivering dry, granulated, or pulverized substances into any desired receptacle or machine, so that the vibration of the inner lining plate or funnel shall operate, in connection with the exposed inner surface of the stationary hopper, to prevent a close packing and clogging of the material placed therein, and insure its regular and rapid delivery as required.

The tendency of granulated substances in passing down through a contracting passage, such as is found in a conical funnel, is not only to cling to the sides, and thus impede delivery therefrom, but also to form an arch, which, if undisturbed, will quickly resist and support the ordinary pressure and weight of the superimposed mass, and thus arrest its delivery. In view of these facts it has been found necessary, especially in feeding or delivering starch, flour or other finely-pulverized materials, and even with such coarser particles as grain, to agitate the mass, and thus prevent the formation of an arch, or an adhesion of the material to the sides of the hopper. To this end various devices have been invented and used for shaking the hopper itself, and different forms of stirrers have also been employed to revolve upon a shaft within the hopper.

My invention differs from any of these devices, and by its simplicity as well as efficiency presents, in my opinion, a valuable improvement thereon. It is more especially adapted for use in connection with flour or starch-packing machines, but will undoubtedly be found useful in all manner of mills, and for all general purposes of delivery from funnels.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings—

A designates a conical hopper of the form usually

employed in machines for packing flour, starch, &c., and which is constructed, fixed, and secured upon the framework of the machine in the usual manner.

Within this conical hopper A, I place a second conical hopper or funnel, B, somewhat smaller in diameter, but which may be slightly flattened at opposite points, so as to bear close against the inner surface of the stationary hopper at these opposite points, as shown at *x x*, fig. 1.

The lower portion of this inner movable hopper B is deeply notched, as indicated by the letters *c c*, fig. 1, so as to expose at intervals the inner surface of the stationary funnel A at the bottom thereof.

The inner hopper B is supported within the funnel A, and made to vibrate by means of a bar or rod, D, extending through slots *s*, at opposite points in the stationary hopper A, and corresponding holes in the inner hopper B.

The slotted apertures *s s* in the outer hopper may be covered by slotted supporting or guard plates *d d*, fig. 2, to form proper bearings for the ends of the bar D to move upon. The inner hopper is firmly secured to the bar by keys or other suitable devices. Where a central shaft passes down through the hopper, as usual in packing-machines, the bar is notched or bent centrally to embrace the same, as shown in fig. 1.

The outer end of the bar is extended to form a handle, *e*, but its opposite end is left projecting only far enough to extend into the slot forming its bearing.

A partial rotation of the inner hopper back and forth is effected by means of the handle *e*, as desired. This movement of the inner hopper, by disturbing the arrangement of the particles resting upon those portions of the surface of the stationary hopper A exposed by the notches *c c*, at the bottom of the inner hopper, (see fig. 1,) will prevent any clogging at the bottom of the hopper, and insure a speedy delivery of the material therefrom.

It is not necessary to use a bar, D, extending entirely across the hopper, as supporting pins may be secured to the inner hopper, and project therefrom through the slotted apertures *s s* to support it, one of said pins being extended to form the handle *e*.

The inner hopper B may be made shorter and more tapering than the stationary hopper A, as illustrated in fig. 4, and be swung upon pivot pins *i i* secured at opposite points to the upper portion of the inner hopper B, and passing through apertures in the outer hopper. The oscillation of the inner hopper upon its pivots serving to agitate the lower portion of the contents of the double hopper A B, resting upon the lower portion of the stationary hopper A, will, as before described, loosen and disengage the mass, and insure its speedy delivery.

The movement of the inner hopper B need not be

continuous, but simply intermittent, and it may be effected by hand, or by any suitable mechanical devices.

Instead of using an inner hopper, B, figs. 1 and 4, my invention may be carried out by securing within the stationary hopper A a lining plate, F, fig. 3, curved to conform to the interior of the hopper, and fastened thereto at one point, but which shall cover but one-half of its inner circumference. The remaining portion of the inner circumference of the hopper A is then covered by a secondary lining plate, G, curved likewise to conform thereto, whose edges shall project and extend a short distance under the edges of the stationary lining plate F. This secondary plate is left movable, and a pin is secured centrally thereto, and made to project through a slotted aperture in the stationary hopper, (as in the hopper, fig. 1,) by means whereof the plate is agitated. In some cases the fixed plate F may be wholly dispensed with, reliance being placed upon the exposed surface of the hopper A, as an equivalent for the same, where a movable plate, G, is employed, as set forth.

Although I have described herein leading peculiarities in the form and construction of an inner movable lining funnel or hopper, B or F G, in combination with a stationary feeding hopper, A, I do not limit myself

to these special forms, but contemplate the use of any form of interior lining which permits one portion of the mass contained or passing through the hopper to rest upon a stationary surface, (whether it be the inner surface of the outer hopper A or of a stationary lining, F, within it,) and the remainder upon a movable surface, either continuous in diameter, (as in hoppers B, figs. 1, 2, and 4,) or sectional, (as in lining G, fig. 3.)

Having thus fully described my invention,

I claim therein as new, and desire to secure by Letters Patent—

The combination, substantially as herein set forth, of an inner movable lining plate or surface, with the interior of a stationary feed-hopper, A, or of a stationary lining plate, F, therein, for the purpose of securing the free delivery of flour, grain, or other pulverulent or granulated material therefrom, substantially as herein described.

The foregoing specification of my improvement in feed-hoppers signed by me this 24th day of May, A. D. 1869.

J. MATTISON.

Witnesses:

DELOS GARY,
LESTER C. WRIGHT.