

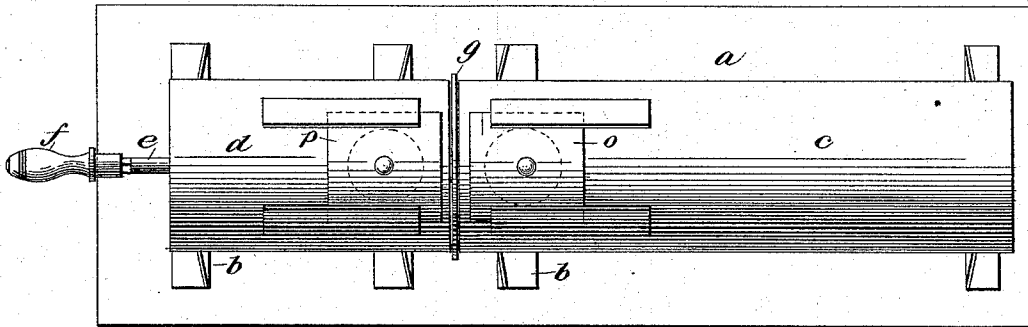
(No Model.)

O. MILLARD.  
POWDER MIXING DEVICE.

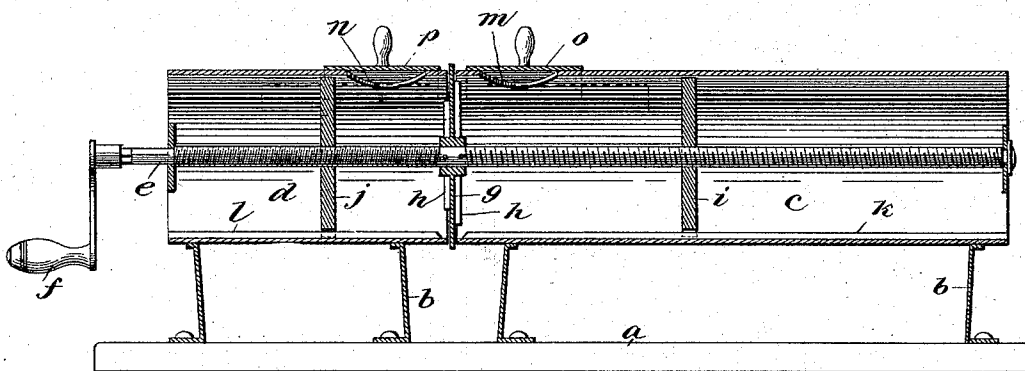
No. 573,473.

Patented Dec. 22, 1896.

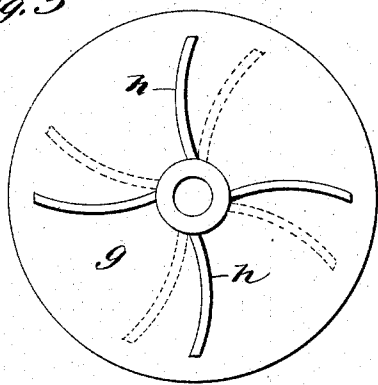
*Fig. 1*



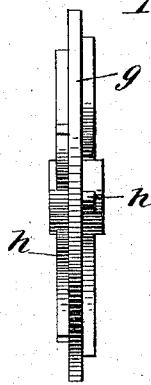
*Fig. 2*



*Fig. 3*



*Fig. 4*



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# UNITED STATES PATENT OFFICE.

ORSON MILLARD, OF FLINT, MICHIGAN.

## POWDER-MIXING DEVICE.

SPECIFICATION forming part of Letters Patent No. 573,473, dated December 22, 1896.

Application filed June 24, 1896. Serial No. 596,730. (No model.)

*To all whom it may concern:*

Be it known that I, ORSON MILLARD, a citizen of the United States, residing at Flint, in the county of Genesee and State of Michigan, have invented a certain new and useful Improvement in Machines for Mixing Powders, of which the following is a full, clear, and exact description.

The object of this invention is to provide a machine or apparatus in which may be stored quantities of different kinds of pulverulent matter which are to be mixed in the same or different proportions for use.

Effervescing powders of various sorts which comprise mixtures of different kinds of chemicals frequently deteriorate when exposed to the atmosphere, and this deterioration is especially noticeable in humid atmospheres in proportion to the hygroscopic character of the chemicals.

In illustration of the object of my invention and for purposes of this specification, but without limiting my invention thereby, I will describe my invention as applied to the use of baking-powder, which is composed principally of cream of tartar and bicarbonate of soda. These chemicals I arrange in compartments and separate them from one another by means of a solid rotary disk which operates within a discharge-opening which is common to the two compartments, and I provide means whereby the chemicals may be fed from their compartments to the discharge device in regulated quantities. The chemicals are preserved within these compartments between the common discharge device and the respective feeding devices at all times ready for use, and the chemicals, being separated from one another in the compartments, are preserved from atmospheric deterioration, which would ensue were they mixed.

Having thus stated generally the principle of my invention, I will proceed now to describe the best mode in which I have contemplated applying that principle, and then will particularly point out and distinctly claim the part, improvement, or combination which I claim as my invention.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a plan view. Fig. 2 is a longitudinal sec-

tion. Fig. 3 is a face view of one side of the discharging device, and Fig. 4 is an edge view thereof, these last two figures being on an enlarged and exaggerated scale, the better to illustrate the construction.

The base *a* may be of any approved construction, such as a piece of board having spring-stands *b*, upon which are mounted two vessels *c* and *d*, which are of different capacity. I have shown this variation in capacity as accomplished by making the vessels of the same diameter, but of different lengths, but it is obvious that the same object may be attained by making the two vessels of the same length, but of different diameters. The opposite ends of these vessels have bearings for a rotary shaft *e*, to which may be applied a crank-handle *f* for manual operation. Upon this shaft *e* is fixed a disk *g*, the said disk being arranged between the adjacent ends of the two vessels *c* and *d* and serving to close these adjacent ends of the said vessels. In order to assist in the closing of these ends of the two vessels, I provide the spring-stands *b*, and these spring-stands are so set that their springiness tends to crowd the two vessels toward one another.

Within the internal diameter or diameters of the vessels *c* and *d* and upon opposite faces of the disk *g* are arranged the radial ribs or projections *h*, and I prefer to give to these projections or ribs a curve, as shown more especially in Fig. 3, the full lines in that figure representing the ribs upon one side of the said disk and the dotted lines representing the ribs or projections on the opposite side of said disk.

The shaft *e* has on opposite sides of the disk *g* screw-threads running in different directions, and these screw-threads engage complementary screw-threads in the interiors of disks *i*, *j*, so that as the said shaft is rotated these disks *i* and *j* will be moved toward the disk *g*. In order to prevent the said disks *i* and *j* from rotating, and hence to insure their travel on the shaft, I provide the fins *k*, *l*, which take into notches in the edges of the disks *i* and *j*.

The vessels or receptacles *c* and *d* are provided with openings *m*, *n*, which are respectively provided with covers *o*, *p*.

If the receptacles *c* and *d* be of the same

diameter, but of different lengths, and it be desired to feed a greater quantity of material from the larger receptacle than is fed in the same time from the smaller receptacle, then  
 5 the screw-thread upon which the disk *i* travels will be of quick pitch relatively to the pitch of the screw-thread upon which the disk *j* travels, and I have thus shown the shaft *e*.

In the drawings, in Fig. 2, the disks *i, j* are  
 10 shown as advanced toward one another from the extreme opposite ends of their respective vessels, but it will be understood that if the vessels are to be filled in the first instance these disks will be run out to the opposite  
 15 ends of their respective vessels and be advanced toward one another from those ends as the material is discharged for use.

The vessels *c* and *d*, hereinbefore and hereinafter referred to as "compartments," are  
 20 supplied with the materials to be used through the openings *m n*, and then such openings are closed by their covers *o* and *p*. While the apparatus is not in use the material is kept in as near air-tight condition as the fit  
 25 of the disks or followers *i* and *j* and the disk *g* will permit, and this is, for practical purposes, air-tight, since the disks *i* and *j* may be made to fit within the compartments *c* and *d* quite tight, and the spring-stands *b* crowd  
 30 the adjacent ends of these compartments against the disk *g*.

By rotating the shaft *e* the disks or followers *i, j* force the materials in their respective  
 35 compartments toward the disk *g*, and at the same time the said disk *g* is rotated and its projections or ribs *h* loosen the materials, and there being sufficient vibration of the compartments during such rotation of the  
 40 shaft there is enough space made between the adjacent ends of the said compartments and the disk to permit the thus-loosened materials to fall out and intermingle in a receptacle that may be placed beneath the disk *g* to receive them. In this way a fresh mixture of  
 45 the materials may be obtained at each period of use, and so the full strength of the respective materials may always be had.

While I have shown the disks or followers or chasers *i* and *j* moved by screw-threads on  
 50 the shaft *e*, and prefer that construction, yet it is within my invention to move said devices *i, j* toward one another by means of springs or other devices, as is common with apparatus employing similar expedients for progressively and automatically ejecting the contents  
 55 of a vessel.

What I claim is—

1. In a machine for mixing powders, the

combination with separate compartments, which are to contain substances to be mixed, 60  
 of a rotary shaft, a disk placed on said shaft and between said compartments and rotating with said shaft, and means to move the substances toward opposite sides of said disk, substantially as described. 65

2. In a machine for mixing powders, the combination of separate compartments, a rotary shaft arranged therein, a disk rotating with said shaft, and followers moved toward one another by said shaft, substantially as 70 described.

3. In a machine for mixing powders, the combination of two compartments, a rotary shaft arranged therein, a disk having projecting ribs on opposite faces, and arranged 75 between the adjacent ends of said compartments, and rotated by said shaft, and means to feed the contents of the said compartments toward said disk, substantially as described.

4. In a machine for mixing powders, the 80 combination of two compartments, a rotary shaft arranged in said compartments and having screw-threads thereon of different pitch in the respective compartments, a disk arranged upon and rotating with said shaft, 85 and followers arranged upon the said shaft within the respective compartments, and operated by the screw-threads on said shaft to cause the said followers to approach the said disk at different speeds, substantially as de- 90 scribed.

5. In a machine for mixing powders, the combination with separate compartments in which the ingredients of a mixture are separately contained, a shaft arranged in said 95 compartments, a disk revolving with said shaft and having a close fit with the adjacent ends of said compartments, and followers for moving the ingredients toward opposite sides of the disk to be by it discharged, substan- 100 tially as described.

6. In a machine for mixing powders, separate compartments for containing the powders, a shaft arranged within said compart- 105 ments, a disk rotating with said shaft and arranged between the adjacent ends of said compartments, means to feed the powders toward said disk, and spring-stands adapted to move the said compartments toward one another, substantially as described. 110

In testimony whereof I have hereunto set my hand this 22d day of June, A. D. 1896.

ORSON MILLARD.

Witnesses:

MARK W. STEVENS,  
 EDWIN O. WOOD.