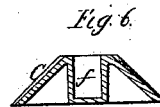
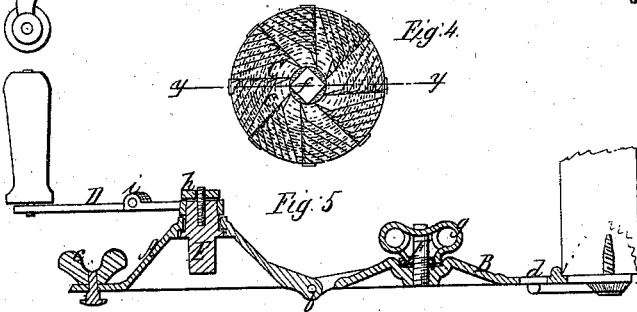
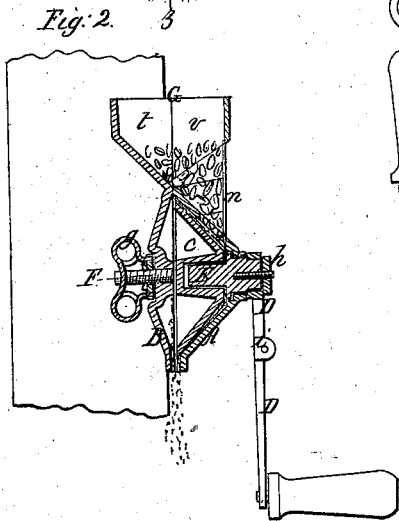
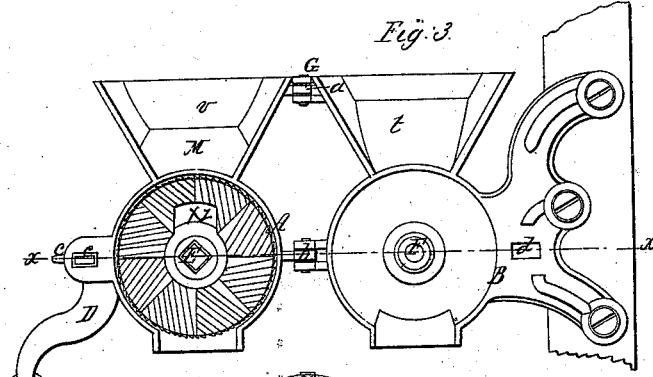
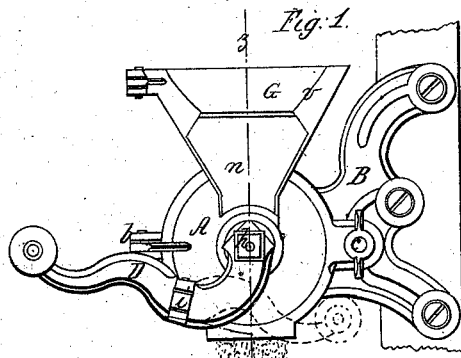


A. J. & G. W. M. Vandegrift.

Coffee Mill.

N^o 103,106.

Patented May 17, 1870.



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ANDREW J. VANDEGRIFT AND GEORGE W. M. VANDEGRIFT, OF CINCINNATI, OHIO.

Letters Patent No. 103,106, dated May 17, 1870.

IMPROVEMENT IN GRINDING-MILLS.

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

To all whom it may concern:

Be it known that we, ANDREW J. VANDEGRIFT and GEORGE W. M. VANDEGRIFT, of the city of Cincinnati, county of Hamilton and State of Ohio, have invented new and useful Improvements in Mills for Grinding Coffee, Spices, &c; and we do declare the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making a part of this specification, in which—

Figure 1 is a front elevation of the device, as constructed with our improvements.

Figure 2 is a vertical broken section taken in lines *x x*, fig. 1.

Figure 3 is an elevated view of the device, standing open, for the purpose hereinafter described.

Figure 4 is an elevated view of the conical grinding-nut.

Figure 5 is a horizontal broken section, taken in lines *x x*, fig. 3.

Figure 6 is a horizontal broken section of the conical grinding-nut, taken in lines *y y*, fig. 4.

Similar letters of reference indicate corresponding parts in the several figures.

Mills of this class have heretofore been imperfect in not having been constructed in a manner to render them susceptible of being conveniently opened and closed, and not having been provided with a jointed crank, capable of being folded up, for convenience in packing, &c., and in not having been provided with a temper-screw, constructed and arranged so that it should be effectually prevented from working loose.

The object of our invention is to remedy these defects, and to produce a mill that can be readily opened, in such a manner as to expose its internal parts, so that the same may be brushed off or washed, as the case may require, after grinding one substance and before grinding another, in order to prevent the mixing of particles of the former with the latter, and to provide an efficient mode of preventing the regulating or temper-screw from working loose by the action of the base of the grinding-nut upon its point, when the mill is in operation, and also to provide a crank more suitable to be applied to coffee-mills and other like implements than has been heretofore in use, and also to provide a mode of casting the hopper and the body of the mill together, and, at the same time, to cast the opening for the passage of the substance from the hopper into the grinding device, without the necessity of using a dry sand-core.

To enable others skilled in the art to fully understand and construct our invention, we will proceed to describe it.

We construct the body of our mill in two parts, A and B, figs. 1, 2, 3, and 5, A forming the front, and B

forming the back part of the mill, the two being joined together by suitable hinges *a* and *b*; and to provide a ready means of opening and closing the mill, we have provided a thumb-latch or catch, *c*, figs. 1, 3, and 5, said latch being fitted in a suitable projection on part A, figs. 1, 3, and 5, and being provided with an oblong head, as shown plainly in figs. 3 and 5, to fit in a suitable slot, *d*, figs. 3 and 5, provided for the purpose in part B, figs. 3 and 5, so that, when the mill is closed, the oblong head of the latch passes through said slot, and the latch being given one quarter turn, the head is turned vertically across the slot, and the mill is held firmly shut, as shown in figs. 1 and 2.

One of the important improvements in our mill is the construction of the grinding-nut C, figs. 2, 4, and 6, in such a manner that, when the mill is opened, as shown in figs. 3 and 5, the nut C can be taken out, as shown in figs. 4 and 6, without deranging any of the other parts of the mill.

To effect this object, we construct the grinding-nut, not as has heretofore been the practice, with a projection on it, to extend through the front of the mill, for the attachment of the crank, but as a separate casting, in construction independent of said portion; and, in place of that projecting part, for the attachment of a crank, we have constructed a short shaft, E, figs. 2, 3, and 5.

This short shaft is provided with a collar, which fits in a suitable recess in the inside of the concave, or part A of the mill, as shown plainly in figs. 2 and 5, and passing through the front of part A, terminates in a square form, for the attachment of a crank, which is done in the usual way by a nut, *h*, the collar forming a shoulder on the inside, and the crank forming a corresponding shoulder on the outside, as shown plainly in figs. 2 and 5.

It will be seen that shaft E is held firmly in its place, independent of the grinding-nut, and to form an attachment between shaft E and the grinding-nut we have formed a square hole or mortise, *f*, in grinding-nut C, figs. 2, 4, and 6, and have formed the inner end of shaft E, figs. 2, 3, and 5, square, so that, when grinding-nut C is placed in its place, the square end of said shaft fits in the square hole or mortise in grinding-nut C, as shown plainly in fig. 2.

We have also provided an improved regulating-screw, F, figs. 2 and 5, which we construct with a square shank.

This screw is provided with a friction-washer, S, figs. 2 and 5, which, having a square hole in its center, fits on the square shank of screw F, and rests in a recessed seat in the back of the mill.

To hold this friction-washer firmly in its seat, we have constructed a wire spring, *g*, figs. 2 and 5, which

passes through the end of the shank of screw F, having its ends curved and properly formed to fit in cavities provided for the purpose in friction-washer S.

This wire spring answers a twofold purpose, forming the spring to press upon the friction-washer, and at the same time, a convenient means for turning the screw with the fingers.

It will be readily understood that the pressure of this spring against the washer, holding it firmly against its seat, is an effective elastic medium for producing friction to prevent the temper-screw from working loose by the action of the base of grinding-nut C against the point of said screw, when the mill is in operation.

Our improvement in crank D, figs. 1, 2, 3, and 5, consists in the construction of said crank with a hinged joint, *i*, figs. 1, 2, and 5, to render it capable of being folded, as shown by dotted lines in fig. 1.

The object of this arrangement is to economize space in packing for shipment, &c., and also that the crank may be folded up out of the way when not in use.

We are aware that folding cranks have been used in tape-line reels, and, perhaps, in some other small instruments, but in such instances the handle of the crank has folded to the center, and fitted in a chamber or cavity formed for the purpose in the end of the shaft, upon which the crank was attached. Such a construction is not practical in the majority of cases where cranks are used, and where the convenience of folding under various circumstances is desirable.

We therefore claim an improvement over the construction referred to in making a crank that will fold, so that the handle shall fold across or past the center, into any convenient and otherwise unoccupied space.

We also construct an improved hopper, G, figs. 1, 2, and 3, which is formed out of an inverted hollow cone, having its sides cut away, so that the inverted base which forms the top of the hopper shall assume a flatted or oblong form.

The apex of the cone is also cut away, to admit of its being attached in two halves, *v* and *t*, figs. 2 and 3, to the respective parts A and B of the body of the mill, the half *t* of the hopper forming a part of part B, figs. 1 and 2, of the body of the mill, and half *v* of the hopper forming a part of part A of the body of the mill. In order to admit of part *v* of the hopper being cast with and forming a part of part A of the body of the mill, without the necessity of using a dry sand core in casting feed-opening X, for the passage of the substance to be ground from the hopper to the grinding device, we have cut away a sufficient portion of the front part of part *v* of the hopper, and formed the sides tapering toward the front, to give the proper draught for drawing the sand forming the mold, to form the conical front A of the body of the mill, while the upper portion of the interior of part *v* of the hopper is formed in the opposite half of the mold, with the interior of part A of the mill. We are thus enabled to cast the two parts A and *v* in a green sand mold, the parting being made in the sand, as shown by dotted lines in fig. 2, so that feed-opening X for the substance to be ground to pass through from the hopper to the grinding device is cast in the conical shell of the grinding device, by a simple parting, as shown.

Then, to complete the construction of the hopper, the opening left in its front, for the purpose described, must be closed. This we do by the insertion of a plate, *n*, figs. 1, 2, and 3, of sheet-brass or other suitable metal.

This plate is cut in a form to conform to the shape of the opening, and is inserted by springing it outward

in the middle, and inserting the two ends, the plate being sufficiently long to allow the upper end to catch against the inside of the casting, and the lower end, in like manner, inside of the casting at the bottom; the plate then, being allowed to assume its natural position, lays close to the casting, and closes the opening neatly, and, at the same time, answers another purpose, being used as a card-plate, bearing trade-mark, &c.

Our mill, thus constructed, is operated as follows:

The mill is first secured by being screwed firmly to an upright surface, as shown in figs. 1, 2, 3, and 5. The substance to be ground is placed in hopper G, and the grinding-nut C, being put in motion by the rotation of crank D, which transmits its motion to grinding-nut C through the medium of short shaft E, shown plainly in fig. 2, the substance passing from hopper G, through feed-opening X, into the grinding device, is crushed and ground, and passes from the mill through a suitable discharge-opening at the bottom, (see fig. 2.)

To regulate the degree of fineness, the temper-screw F in the back of the mill is turned so as to move in, and its point being in contact with the base of grinding-nut C, moves said grinding nut forward, bringing its grinding-surface closer to the concave surface of the front part of the grinding device, thereby grinding the substance finer; but, if it is desired to grind the substance coarser, the screw is turned back, and, in either case, the wire spring *g* attached to the temper-screw, having its ends fitted in cavities in the back of friction-washer S, and the square shank of said temper-screw playing freely back and forth through the square hole in said washer, holds the washer firmly against its seat, producing a sufficient amount of friction to prevent the temper-screw from working loose by the action of the base of the grinding-nut against its point, when in motion. If, after having ground one substance, it is desired that another substance should be ground without having particles of the former substance mixed with it, it is only necessary to unlatch the mill and open it, as shown in figs. 3 and 5, and take out the grinding-nut, as shown in figs. 4 and 6, and brush or wash the internal parts which thus stand exposed, as the case may require; then replace nut C, and close the mill and latch it, as shown in figs. 1 and 2, and it is again ready for use.

We have thus described our invention as constructed in the form known as a side mill. Our improvements can be equally applied to other forms.

Having thus fully described the construction and operation of our invention,

What we claim therein as new, and desire to secure by Letters Patent, is—

1. The combination and arrangement, in a grinding-mill, of the hinged parts A and B and the latch *c*, as and for the purpose substantially as described.
2. The grinding-nut C, constructed as described, in combination with revolving shaft E and its operating-crank, substantially as described.
3. The combination of temper-screw F, spring *g*, and washer S, when constructed and arranged to operate in the manner substantially as described and set forth.
4. The combination and arrangement of the plate *n*, with part *v* of the hopper G, as and for the purpose set forth and described.

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GEO. W. M. VANDEGRIFT.

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