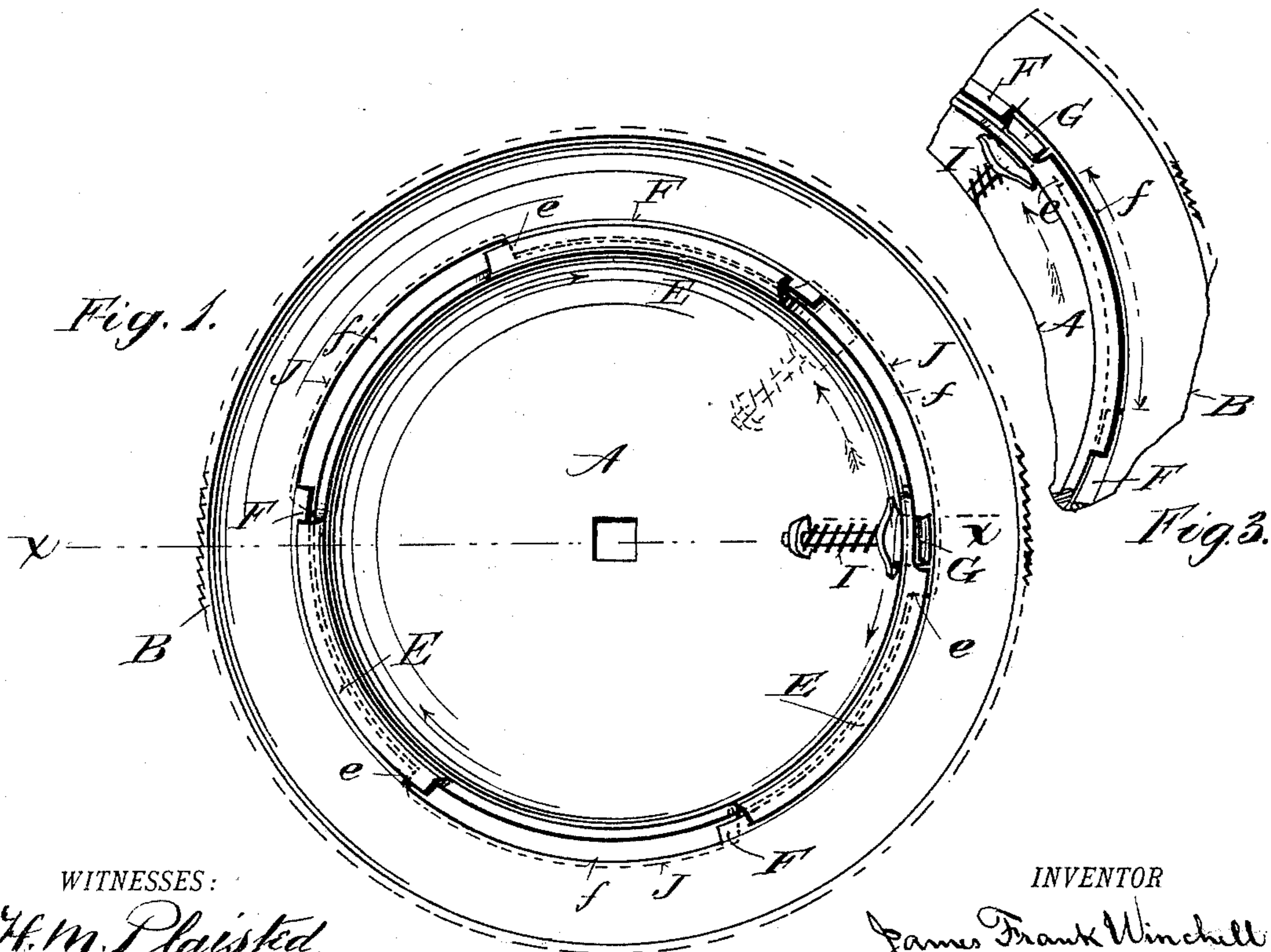
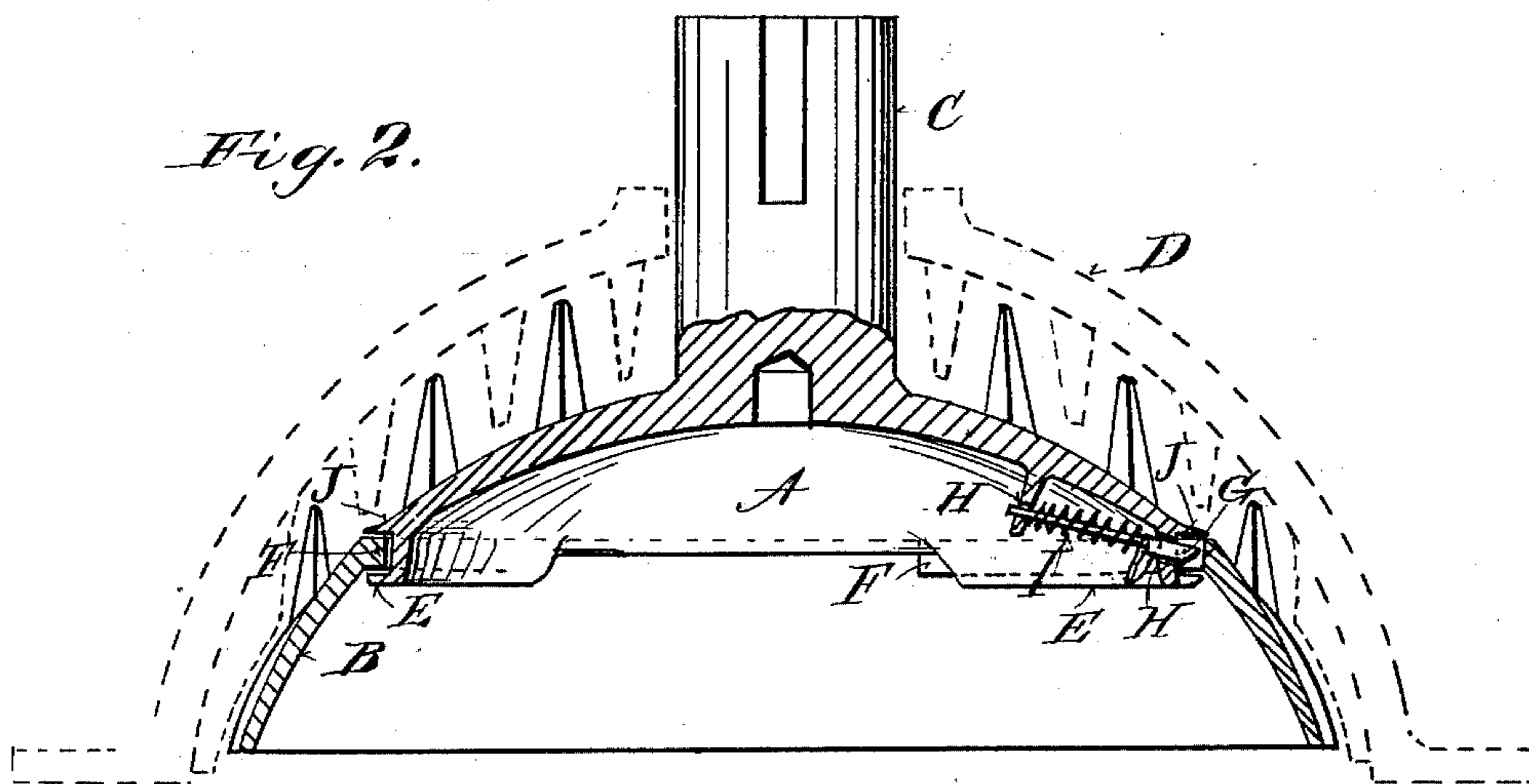


(No Model.)

J. F. WINCHELL.
SWEEP MILL.

No. 509,417.

Patented Nov. 28, 1893.



WITNESSES:
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SWEEP-MILL.

SPECIFICATION forming part of Letters Patent No. 509,417, dated November 28, 1893.

Application filed February 2, 1893. Serial No. 460,705. (No model.)

To all whom it may concern:

Be it known that I, JAMES FRANK WINCHELL, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Sweep-Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in sweep mills, having special reference to the attachment of the dome-plate and grinding ring, whereby the former may be lifted off from the latter, and whereby the dome-plate may be rotated backward some distance without operating the grinding ring or disconnecting the two members, the peculiar advantages of which construction and arrangement will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings on which like reference letters indicate corresponding parts: Figure 1, represents an under side view of a grinding ring and dome-plate engaged therewith, by my construction; Fig. 2, a sectional view on the line $x x$ of Fig. 1, the matching stationary portion of the mill being indicated by dotted lines; and Fig. 3, a portion of the ring and dome-plate in plan view, similar to Fig. 1, with the dome-plate turned backward to take up slack between the members.

In ordinary forms of sweep mills, the dome-plate is adapted to be inserted within the grinding ring from below, and various expedients for connecting the said members are employed, which render their disconnection more or less troublesome. Especially is this arrangement of the dome-plate objectionable from the difficulty of removing the parts. In my construction the dome-plate A, is adapted to be inserted from above, and engaged with the grinding ring B by a simple device, easily manipulated, cheap in construction, and affording peculiarities of operation especially advantageous in this style of mill. Such peculiarities will be hereinafter pointed out.

The power is applied to the dome-plate at the head C, in the ordinary manner in this style of mills, whereby the rotation of the dome-plate and the grinding ring B is effected.

The stationary or matching parts of the mill, indicated by the dotted lines at D, remain stationary and, conjointly with the rotating parts, effect the breaking up and final grinding of the material delivered to the mill.

The dome-plate is provided with a series of outwardly extending flanges or lugs E, which engage with corresponding inward flanges or lugs F, on the grinding ring, which overlap the former as shown in the figures, to prevent disengagement of the parts.

In Fig. 1 the direction of rotation of the dome-plate is shown by the arrows, and the ring is rotated in the same direction by the engagement of the shoulder e of each lug E with a portion of the flange F which forms a shoulder. Such shoulders constitute driving points for the grinding ring.

Between the flanges F are cut-away portions or openings f , of the ring, which are larger than the lugs E and allow of the disengagement of the dome-plate and ring when the said lugs E are opposite the openings f . This matching position of the parts is prevented by a fastening device which allows of a partial backward rotation of the dome-plate, and a corresponding separation of the shoulders e from their driving points on the ring, and permits a certain amount of slack, or distance through which the dome-plate must be rotated on again starting before it will act on the grinding ring. The advantage of this will presently appear. This fastening device consists of a spring bolt G, slidingly fitted in slot-
ted guides H, of the dome-plate, and maintained in outward position by a spring I, as shown in Figs. 1 and 2. As will be seen from Fig. 2, this bolt does not insert its head under any projecting lip or flange of the grinding ring to maintain the parts in engagement by hooking under any portion thereof, but is adapted simply to prevent the extreme backward rotation of one member with regard to the other, and thus prevent their disengagement, by preventing their assuming the matching position before mentioned. As seen from Fig. 3, the head of the spring bolt G impinges against the end of one of the flanges F when the dome-plate is rotated from the position shown in Fig. 1, backward to the position shown by the dotted lines representing

the bolt in Fig. 1. This position is shown by full lines in the partial plan view, Fig. 3, where it will be seen that the lug E still extends past a portion of the inward flange F.

5 When the bolt G, however, is sprung back by the hand, a further backward rotation of the outward lug E of the dome-plate opposite its matching opening *f* in the ring, will allow the dome-plate to be lifted off. The head of the
10 bolt G is chamfered, as indicated in the figures, so that on replacing the dome-plate the chamfered edge will strike the ring and spring back the bolt of its own accord. These openings *f* are protected from the feed by upper
15 flange projections J, Fig. 2, which are indicated by dotted lines in Fig. 1.

Referring to Fig. 3, in which the dome-plate has been rotated backward till the bolt G strikes the flange F, it will be seen that the
20 shoulder *e* has been separated from its driving point on the adjacent flange F, a distance nearly equal to the length of the opening *f*. This distance is shown by the arrow heads in the figure, and represents the amount of slack,
25 or the distance that the dome-plate must turn forward, before it again operates the ring. The advantage of this partial rotation of the rotating members is this: Should the mill be
30 stopped while there is grain in it, as by the voluntary act of the horse, or for some special purpose, it is always difficult to start up again if the driving or power strains are gradually brought into action; and this is so, even
35 though the amount of material in the mill only be small. With this arrangement, however, the dome-plate may be turned backward and then started forward again, effecting a sudden shock upon the grinding ring
40 which will overcome the clogging tendency of the contained inert grain or material. This point is of great practical importance. In other words, a portion of the rotating mechanism may be reversed readily, which could
45 not easily be done if the same were rigidly connected, as is ordinarily the case. The fastening bolt prevents the extreme backward rotation of the dome-plate and obviates any danger of accidentally separating the same from the ring. I wish to be understood as
50 claiming broadly this sliding connection of the rotatable members, as above described.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

55 1. In a sweep mill, the combination with a dome-plate having a flange or lug extending downward and outward and forming a shoulder at one end, and a grinding ring having a matching opening for said flange or lug, and
60 an inward-extending flange slidably engaged by said flange of the dome-plate and impinging on the shoulder thereof, whereby the ring may be rotated in unison with the plate in

the forward direction, and whereby a certain amount of downward movement is allowed 65 without acting on said ring.

2. In a sweep mill, the combination with a rotatable dome-plate constituting the driving member, and a grinding ring matching there-
70 with, the said members being provided with a series of interlocking outward and inward flanges respectively, and one of the members having intercepting shoulders to drive the other forward, and a clearance-space allow-
75 ing a backward movement, a spring-operated fastening device to limit said backward movement and maintain the parts in locking position.

3. In a sweep mill, the combination with a rotatable dome-plate provided with outward 80 flanges, of a matching grinding ring having inward flanges, and openings between the latter flanges to allow the removal of the dome-plate, a shoulder on one flange engag-
85 ing with the end of another flange to effect simultaneous rotation of the parts, and a spring-operated bolt mounted on one member and adapted to engage with the other member when said shoulder and flange are
90 separated, whereby the dome-plate may be reversely rotated to nearly its disengaging position, substantially as and for the purpose described.

4. In a sweep mill, the combination with a dome-plate having downward and outward 95 extending-flanges and a grinding-ring having inward-extending flanges adapted to be slid into locking engagement with the said dome-plate flanges, of a fastening device consisting
100 of a spring-actuating bolt mounted in the dome-plate and extending outward into the path of the grinding ring flanges, to effect a lateral engagement therewith, and constitute a sliding connection of the parts in their op-
105 erative position.

5. In a sweep mill, the combination with a dome-plate having a flange or lug extending downward and outward and forming a shoul-
110 der at one end, and a grinding ring having a matching opening for said flange or lug, and an inward extending flange slidably engaged by said flange of the dome-plate and imping-
115 ing on the shoulder thereof, whereby the members will rotate simultaneously in one direction, and a laterally acting fastening device carried by the dome plate and extending out-
120 ward into said opening of the grinding ring to check the extreme backward sliding of the member, and the disengagement of the respective flanges.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES F. WINCHELL.

Witnesses:

WARREN M. MCNAIR,
H. M. PLAISTED.