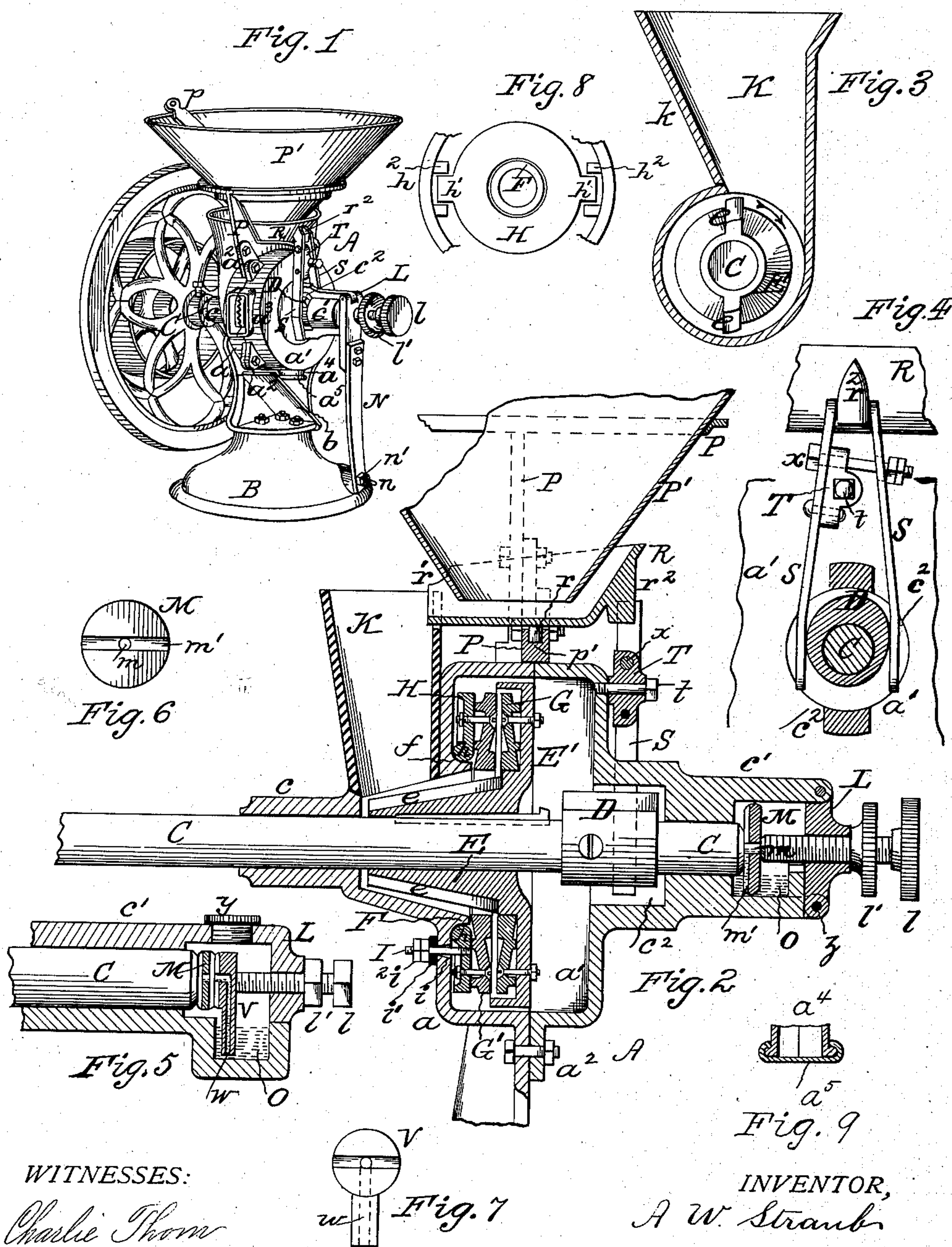


(No Model.)

A. W. STRAUB.
GRINDING MILL.

No. 322,400.

Patented July 14, 1885.



WITNESSES:
Charlie Thom
A. M. Long.

INVENTOR,
A. W. Straub
By S. J. VanStavoren
ATTORNEY.

UNITED STATES PATENT OFFICE.

AMBROSE W. STRAUB, OF PHILADELPHIA, PENNSYLVANIA.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 322,400, dated July 14, 1885.

Application filed June 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, AMBROSE W. STRAUB, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Grinding-Mills, of which the following is a specification, reference being had therein to the accompanying drawings, wherein—

10 Figure 1 is a perspective of a grinding-mill embodying my invention. Fig. 2 is a broken longitudinal vertical section of same, drawn to an enlarged scale. Fig. 3 is a detail section of feed-tube and cutters for cobs of corn. 15 Fig. 4 is a broken elevation, partly sectional, of feed-shoe, damsel, and operating mechanism. Fig. 5 is a sectional view of modified form of bearing or box for the end of the spindle and of oiling mechanism therefor. 20 Figs. 6 and 7 are respectively elevations of a revolving and a non-revolving cast-metal or other button, which serve as oiling devices for the end of the spindle. Fig. 8 is a broken elevation of a modification of seat or ring for the bed-stone, and Fig. 9 is a broken detail section. 25

My invention has reference to the grinding-mill for which United States Letters Patent were issued to me on the 27th day of June, 30 1882, and has for its objects to improve the construction of the mill-case; to provide the bed-stone with a universal joint and means for preventing it rotating; to provide the feed-shoe with a noiselessly-acting damsel; an inclined chute-board for the bottom exit-opening of the mill-case; a self-oiling button for 35 the lubrication of the mill spindle or journal, and an improved feed-trough for the corn-cob cutters, whereby a better, more effective durable, and inexpensive mill is produced, the parts of which are more readily and quickly 40 secured together and removed from one another to gain access to the grinding plates or disks, for repairs or other purposes.

45 My invention accordingly consists of the novel combinations, constructions, and arrangements of parts, as hereinafter more particularly described and claimed.

50 In the drawings, A represents the mill-casing, which is composed of two halves or sections, a a' , bolted together at a^2 , and provided with one or more lateral exit-openings, a^3 , and

a bottom opening, a^4 . These openings are provided with removable or slip covers a^5 , (more plainly shown in Fig. 9,) which are made of 55 tin or sheet metal, so that they may be closed when the ground chop or other material is not discharged therethrough. In Fig. 1 the bottom opening, a^4 , is represented as closed, and the lateral opening a^3 uncovered, from 60 which the discharge is to take place.

The section a is secured to or formed integral with the base-plate B, which has an inclined chute-board, b , located beneath the opening a^4 , for conducting the ground chop 65 away from the mill when it is discharged from said opening. Said section a is provided with a bearing, c , for the spindle C, and c' is another or end bearing therefor formed on the section a' . The bearing c' is cut away at c^2 , as more plainly shown in Fig. 4, to provide a clearance for the cam or eccentric D, secured to the spindle C.

E represents a conical sleeve firmly attached to the spindle, so as to revolve therewith. 75 Said sleeve carries the cob-cutting knives e e and a flange, E' , to which is bolted the running stone or disk G.

Upon the interior wall of the section a is an annular flange, F, having a turned concave 80 seat, f , for the finished, beaded, or rounded edge h of the tramming-ring H, to which is bolted the bed-stone or disk G' , as plainly shown in Fig. 2.

I represents the tramming-screws for ring 85 H, of which there may be three or more, as desired. They pass through openings i in the end of section a , and are provided with rubber or elastic washers i' and jam-nuts i^2 . By adjusting the latter the ring H is trammed to 90 cause the disk G' to line with the disk G, while the provision of the elastic washers i' and the universal joint or rounded seat of ring H permits the latter and disk G' to yield in every direction to the disk G under the vary- 95 ing grinding-pressures; hence their grinding-faces are always in perfect line with each other.

K represents the feed-tube for the corn-cobs, which is bolted or otherwise secured to 100 the section a , and inclines backwardly therefrom. Said feed-tube is provided with a laterally-inclining side, k , (see Fig. 3,) to cause the cobs of corn to feed into the mill on the

downward cut of the knives *e e*, and the latter act to further draw or feed the cobs downward at every cut.

The bearing *c'* is provided with a hinged bridge-tree, *L*, which carries a temper-screw and jam-nut, *l* and *l'*, respectively. Said screw abuts against a metallic button, *M*, which in turn impinges against the end of shaft *C*, so that by adjusting said screw the degree of fineness of the grinding may be varied as desired. The lower end of said bridge-tree is secured to a plate or other spring, *N*, attached to the base *B* by a screw, *n*, and jam-nut *n'*. By adjusting the latter the tension of the spring *N* is varied to provide a more or less yielding bridge-tree, *L*, for the spindle *C*. The button *M* revolves with said spindle, and is formed with a central aperture, *m*, and one or more diametrical grooves, *m'*. Said button rotates within an oil-well, *O*, formed in the box or bearing *c'*, as shown in Fig. 2, so that, as the button revolves, a suction is created in the aperture *m* and that part of the groove *m'* covered by the end of the spindle, to raise the oil from well *O* through said groove and to said aperture, from whence it gradually finds its way along the spindle to bearing *c'* and lubricates said parts.

P represents a bail or holder for the hopper *P'*, which is provided with a suitable cut-off valve, *p*. The bail *P* is bolted to the casing, as shown, and has a socket, *p'*, as indicated in Fig. 2, for the pivot *r* of the shaker or feed-shoe *R*, the end *r'* of which projects into the tube *K*. The opposite end of said shoe is formed with a stud, *r²*, which is embraced by the upper ends of bars *S S*. One of the latter is riveted to a block, *T*, pivoted at *t* to the section *a'*, and the other bar *S* is bolted to said block, as shown at *x*, Fig. 4. Said bars extend downwardly until their lower ends enter the cut-away portions *c² c²* of bearing *c'*, and embrace the eccentric *D*. The bars *S S*, therefore, form the damsel for the shoe *R*, and by adjusting the bolt *x* said bars are drawn toward each other until their lower ends loosely clamp the eccentric *D*, and their upper ends tightly hug the stud *r²* of shoe *R*, the result whereof is, that there is no lost motion between the movement of the feed-shoe and the damsel. Consequently as the eccentric *D* rotates it noiselessly oscillates the damsel and feed-shoe.

If desired, the bearing *c'* may be arranged as shown in Fig. 5, wherein it is provided with a stopple, *y*, for closing an opening in the top of bearing *c'*, through which oil is supplied to the well *O*, and the bridge-tree or end *L* is fixed or unyielding.

Between the button *M* and the screw *l* is interposed another button, *V*, which is stationary, and is provided with a tubular leg, *w*, which extends down into the oil-well *O*, and through which oil is sucked up to the button *M*, and thence to the shaft *C*, as above described.

Any tendency of the button *V* to rotate is

checked by the impingement of its tube *w* against the sides of well *O*, it being made small enough laterally to prevent such rotation.

If desired, the spring *N* may be dispensed with, and the bridge-tree *L* connected at its lower end to the bearing *c'* by a wooden pin, *z*, as shown in Fig. 2, so that when by accident a nail or other hard foreign substance passes between the grinding-disks the resultant undue pressure will cause the wooden pin to break and permit the bridge tree to yield to effect a separation of said disks and allow such substance to pass out from between the same without injuring their grinding-surfaces. Said disks may be of any suitable material or have any desired dress; but I prefer to construct and dress them as shown and described in my said patent. When said ring *H* is provided with the tramming-screws *I*, the latter also serve as a means to prevent the disk *G'* from rotating; but when said screws are not used the ring *H* is formed with lugs *h'* and the casing with lugs *h²*. Between the latter are located the lugs *h'*, when the ring *H* is upon its seat, as shown in Fig. 8, and thereby retain said ring in such position that it and the disk *G'* cannot revolve, although perfectly free to move laterally from the seat *f*.

I have described that the oil is fed to the journal through the grooves *m'* by suction; but in addition thereto it is obvious that the grooved sides of the button *M* collect oil which is by centrifugal force thrown off of said button as it revolves. Such oil is thereby deposited upon the journal or on the sides of its box, from whence it finds its way to the spindle or journal.

What I claim is—

1. The grinding-mill casing *A*, composed of sections *a a'*, having lateral and bottom exit-openings, *a³ a⁴*, shaft-bearings *c c'*, the base-plate *B*, and an inclined chute or plate, *b*, interposed between base *B* and opening *a⁴*, substantially as shown and described.

2. A grinding-mill casing composed of sections *a a'*, having shaft-bearings *c c'*, exit-openings *a³ a⁴*, slip or removable covers *a⁵* for said openings, base-plate *B*, and inclined chute *b*, substantially as shown and described.

3. In a grinding-mill, the combination of casing-section *a*, having central spindle-opening, with inwardly-projecting annular flange *F* and seat *f*, ring *H*, having beaded eye-edge *h*, bed-stone *G'*, and tramming-screws *I*, secured to plate *H* and extending through the wall of section *a*, substantially as shown and described.

4. The combination of casing *A*, composed of sections *a a'*, having bearings *c c'*, spindle *C*, conical sleeve *E*, and cutters *e*, and the rearwardly-inclining feed-trough *K*, having laterally-inclining side *k*, substantially as shown and described.

5. The combination of casing *A*, having shaft-bearings *c c'*, bed-stone *G'*, the feed-tube

K, spindle C, conical sleeve E, provided with cutters *e* and flange or plate E', and attached running-stone G, substantially as shown and described.

5 6. The combination of casing A, having feed-tube K, journal-bearings *c c'*, and exit-openings, the axially-yielding non-rotating bed-stone G', the spindle C, sleeve E, provided with cutters *e* and plate E', and the running-
10 stone G, substantially as shown and described.

7. The combination, with casing A, grinding-disks G G', shaft C, and eccentric D, of a pivoted feed-shoe having a stud, r^2 , a pivoted damsel between said stud and eccentric, and
15 an adjustable device for clamping the damsel tightly to said stud and loosely to said eccentric, substantially as shown and described.

8. In a grinding-mill, the combination of a feed-shoe, a spindle having an eccentric or
20 cam, a pivoted damsel composed of two bars having open or separated ends, and an adjusting-screw for clamping one of said ends to the feed-shoe and the other to the spindle cam or eccentric, substantially as shown and de-
25 scribed.

9. The combination of casing A, bail P, having socket p' , the feed-shoe R, having pivot r and stud r^2 , the bearing *c'*, cut away at $c^2 c^2$,

spindle C, eccentric D, and pivoted clamping-bars SS, substantially as shown and described. 30

10. In a grinding-mill, the combination of spindle C and bearing *c'*, having hinged or pivoted bridge-tree L, provided with temper-screw *l*, jam-nut l' , spring N, and tension de-
35 vices *n* and n' , substantially as shown and described.

11. In a grinding-mill, the combination of a casing, A, having a fixed grinding-disk and a bearing, *c'*, provided with temper-screw *l* and oil-well O, spindle C, having rotary grinding-
40 disk, and an oiling-button, M, having aperture *m* and groove m' in oil-well O, and adapted to the end of spindle C, as and for the purpose set forth.

12. In a grinding-mill, a damsel composed
45 of a pivoted block, a fixed and a loose bar, and an adjusting device for moving the loose bar to and from the fixed bar, substantially as and for the purpose set forth.

In testimony whereof I affix my signature 50
in presence of two witnesses.

AMBROSE W. STRAUB.

Witnesses:

S. J. VAN STAVOREN,
CHAS. F. VAN HORN.