L. E. GAISSER.

MILL.

APPLICATION FILED JUNE 13, 1908.

932,543.

Patented Aug. 31, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

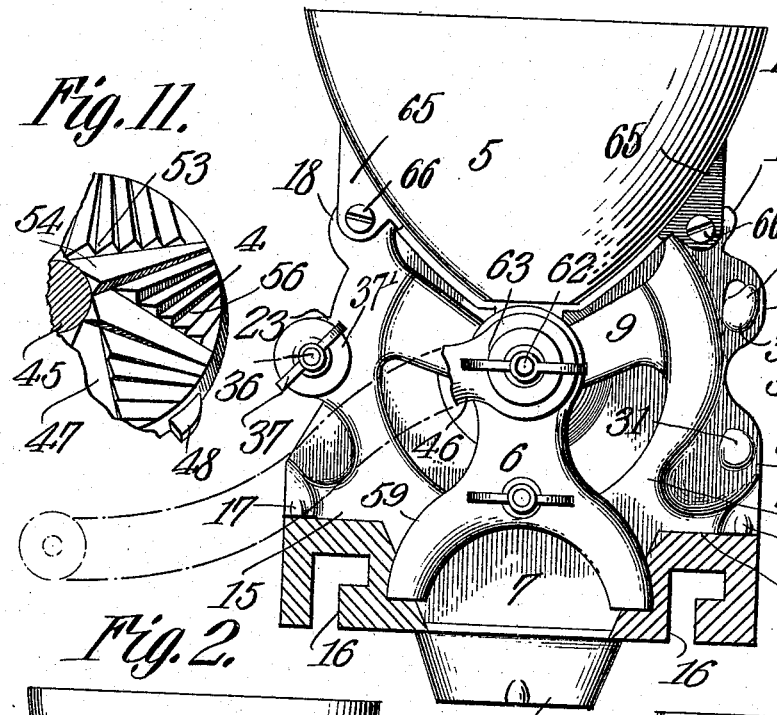


Fig. 11.

Fig. 10.

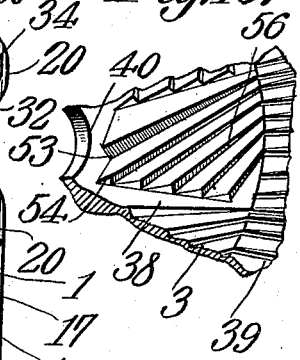


Fig. 2.

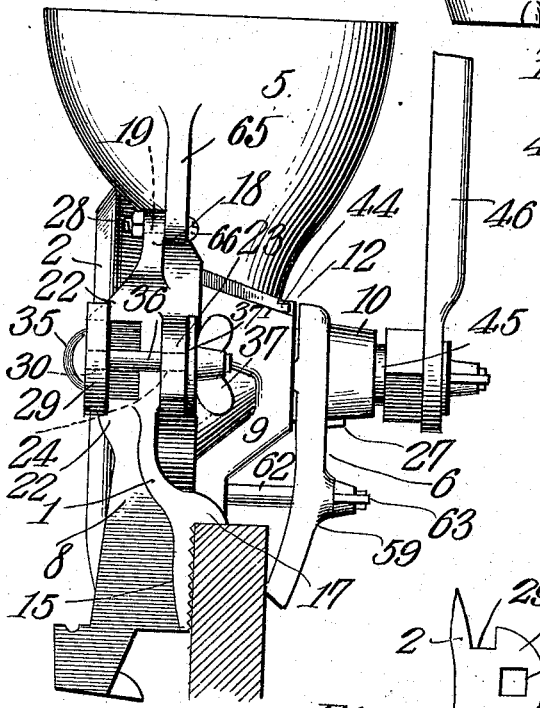
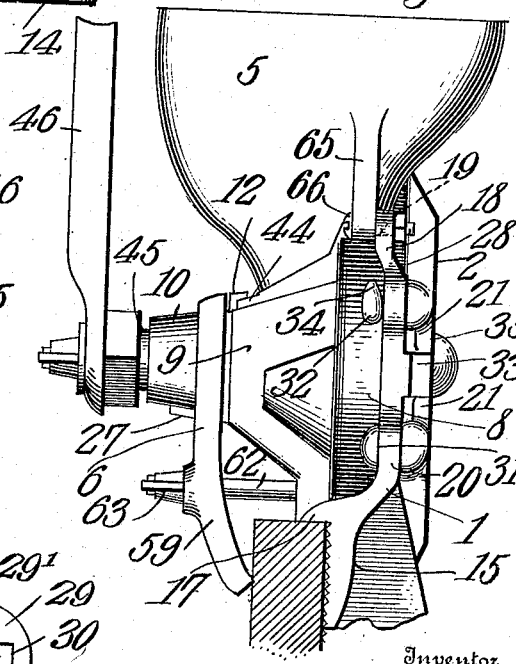


Fig. 3.



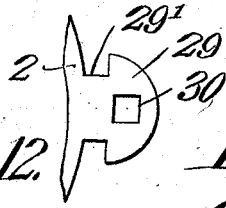


Fig. 12.

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3 SHEETS—SHEET 2.

Fig.4.

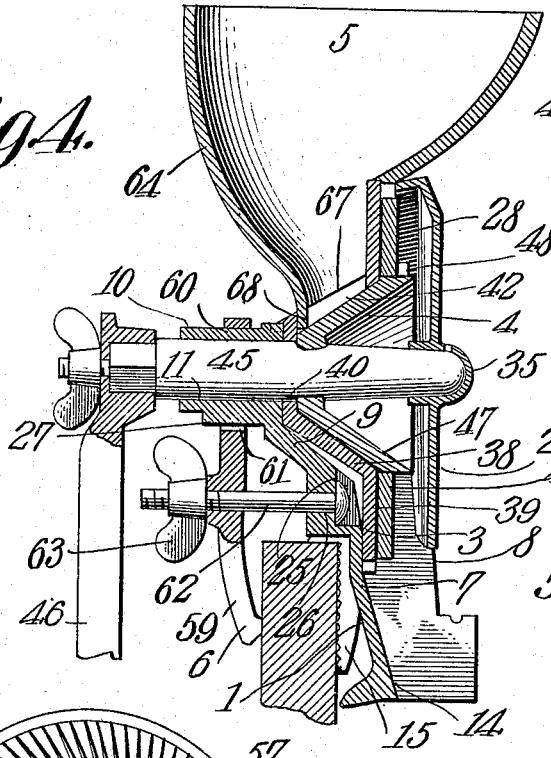


Fig.7.

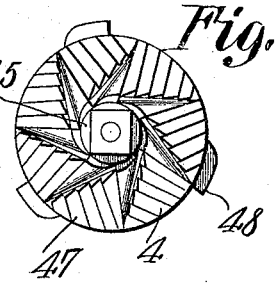


Fig.8.

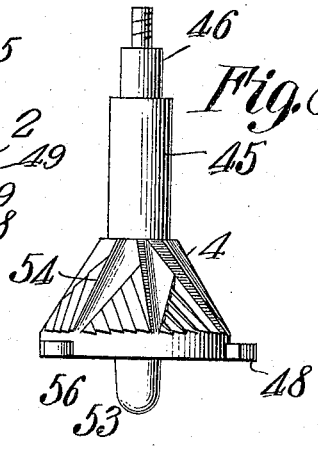


Fig.5.

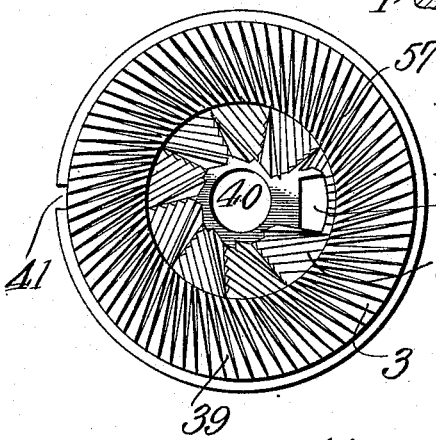


Fig.9.

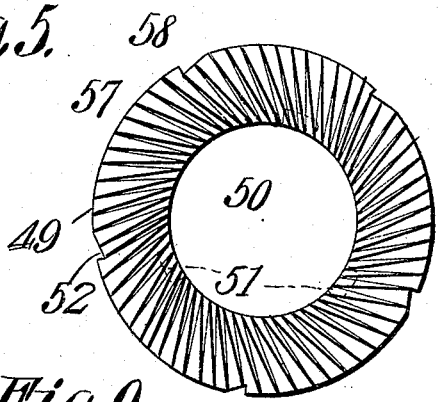
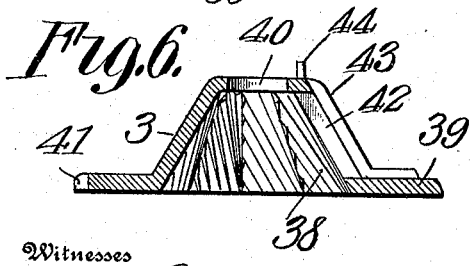


Fig.6.



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932,543. Patented Aug. 31, 1909.

3 SHEETS—SHEET 3.

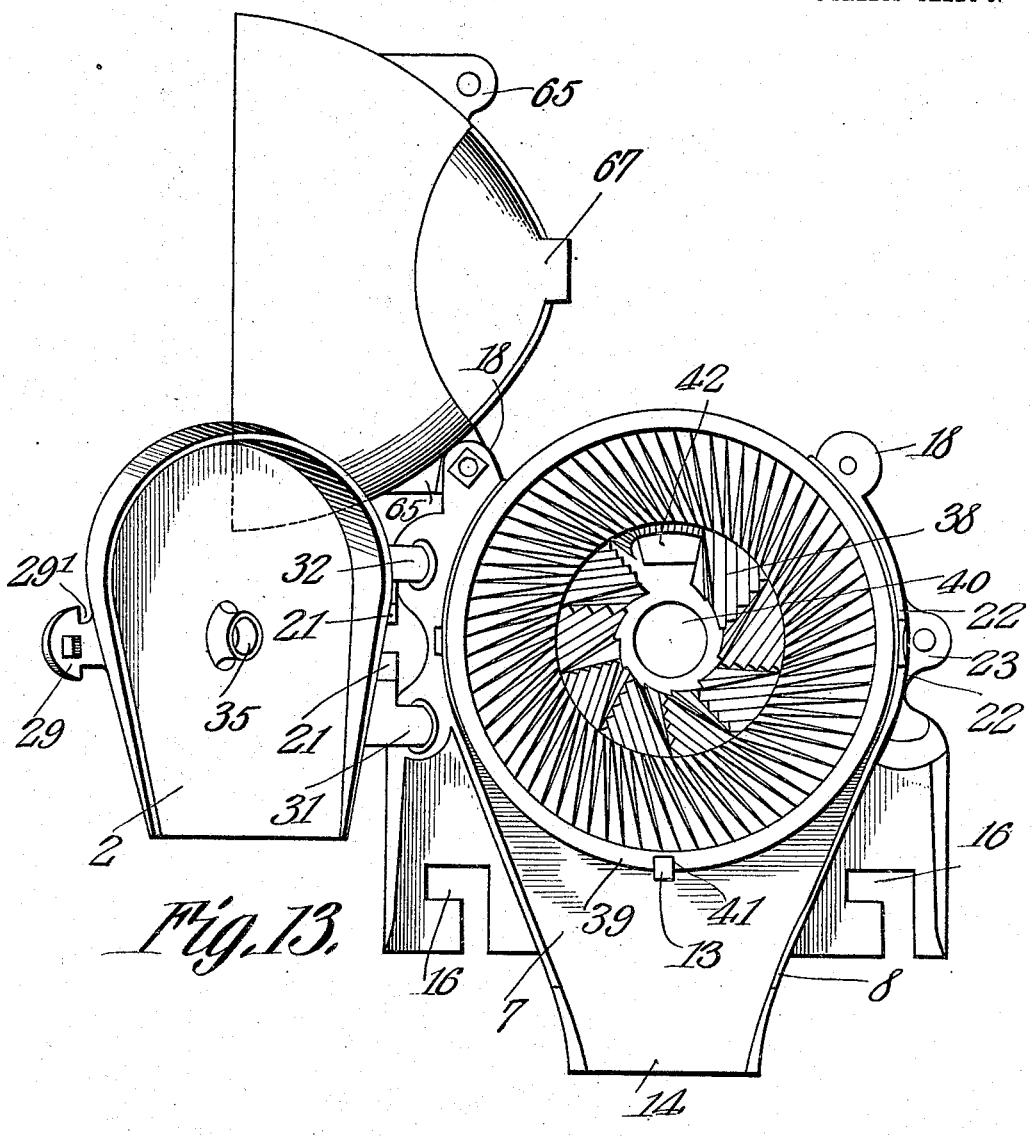

Fig. 13.

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932,543. Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed June 13, 1908. Serial No. 438,433.

To all whom it may concern:

Be it known that I, LOUIS E. GAISSER, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Mill, of which the following is a specification.

This invention has relation to mills and it consists in the novel construction and arrangement of its parts as hereinafter shown and described.

The object of the invention is to provide a hand mill especially adapted to be used for grinding grain, and the mill consists primarily of a fixed grinding member, which coöperates with a rotating grinding member. Means is provided for shifting the rotating grinding member toward and away from the fixed grinding member and both of the grinding members are provided with furrows and burs of peculiar configuration which especially adapts the surfaces of the said grinding members for the purpose of disintegrating grain. The said grinding members are supported by parts of peculiar configuration which form a casing, a receiving and a delivery device. And means is carried by the inclosing parts for attachment to a fixed object.

In the accompanying drawings, Figure 1 is a side elevation of the mill. Fig. 2 is an edge elevation of the same, Fig. 3 is an elevation looking at the opposite edge of the same. Fig. 4 is a transverse sectional view of the mill. Fig. 5 is a plan view of the fixed grinding member used in the mill. Fig. 6 is a transverse sectional view of the fixed grinding member. Fig. 7 is a plan view of a portion of the rotating grinding member used in the mill. Fig. 8 is a side elevation of the portion of the rotating grinding member shown in Fig. 7. Fig. 9 is a plan view of another portion of the rotating grinding member used in the mill. Fig. 10 is a detail enlarged view of a portion of the fixed grinding member, and Fig. 11 is a detail enlarged view of a portion of the rotating grinding member. Fig. 12 is a detail view of a portion of the supporting plate and its perforated lug. Fig. 13 is an elevation of that side of the machine opposite to the one disclosed in Fig. 1, the hopper and the backing plate being shown shifted out of their normal positions, and the rotatable grinding member being removed.

The mill consists of the supporting plate 1, the backing plate 2 which is hingedly connected with the supporting plate 1, the fixed grinding member 3 which is held by the supporting plate 1, the rotating grinding member 4 which is adapted to be moved toward and away from the grinding member 3 under the influence of the backing plate 2, as will hereinafter appear, the hopper 5 which is mounted upon the upper portion of the supporting plate 1, the clamp 6 which is carried by the supporting plate 1.

In addition to the parts above enumerated in general, the lower portion of the supporting plate is formed into a kind of a chute which will be hereinafter explained.

The supporting plate 1 is of peculiar configuration, and consists of the intermediate portion 7 which is bounded at its edges by the curved flanges 8. The spider or tripod 9 is joined with the intermediate portion 7 and constitutes the upper intermediate part of the plate 1. The said spider 9 is provided with a box 10, which in turn is provided with a shaft bearing 11. The lug 12 is formed at the upper edge portion of the spider 9, and the lug 13 is formed upon a median vertical line through the lower intermediate portions of the said plate 1. The portion 7 of the plate 1 is curved laterally and forms at its lower end a chute 14 which is virtually an opening between the lower ends of the flanges 8. The corner portions 15 are located beyond the lower outer sides of the flanges 8 and are provided with the slots 16 which are adapted to receive bolts whereby the said plate 1 may be attached to a fixed object. The plate 1 is provided upon its side opposite to that upon which the flanges 8 are mounted, with the shoulders 17, which are adapted to rest upon the upper edge of a supporting object such as a box. The lugs 18 are formed at the upper ends of the flanges 8, and said lugs are provided with bolt perforations 19. The eyes 20 are formed upon the outer side of one of the flanges 8 of the plate 1 and are adapted to receive hinge pintles mounted upon the backing plate as will be hereinafter described. The lug 21 is formed upon the flange 8 at a point between the two eyes 20, and the spaced lugs 22 are formed upon the edge of the other flange 8. The space between the lugs 22 is in alinement transversely across the plate 1 with the lug 21

mounted upon the opposite flange 8. The lug 23 is formed at one edge of the plate 1, and lies substantially under or adjacent the space between the lugs 22. The lug 23 is provided with a perforation 24. One of the legs of the spider 9 is provided near its point of junction with the intermediate portion 7 of the plate 1, with a shoulder or off-set 25, which is provided with a perforation 26. The bearing box 10 is provided at its under outer side with a rib 27.

The backing plate 2 is substantially saucer-shaped and is bounded along the major portion of its edge by the flange 28. The said flange 28 increases in height or depth from its ends toward its middle and is adapted to lie snugly against the inner surfaces of the flanges 8, mounted upon the supporting plate 1. The backing plate 2 is provided at one side with the lug 29, which in turn is provided with a perforation 30, and the notches 29′ for the reception of the lugs 22. At its opposite side the backing plate 2 is provided with the hinge pintles 31 and 32. The material at the side of the plate 2 and between the pintles 31 and 32 is cut away as at 33 and the cut-away portions form a recess for the reception of the lug 21 mounted upon one of the flanges 8 of the plate 1. The pintle 32 is provided with an elongated end portion 34 which is adapted to enter the upper eye 20 provided upon the plate 1, and the pintle 31 is adapted to enter the lower eye 20 provided upon the plate 1. The backing plate 2 is provided at its middle with a socket 35 and the clamping bolt 36 is adapted to pass through the perforation 30 of the lug 29, and the perforation 24 of the lug 23. The wing nut 37 is screw-threaded upon the clamping bolt 36, as is also the locking disk 37′.

The fixed grinding member 3 is made in one piece and consists of the central frusto-conical portion 38 which is surrounded by the flange portion 39. The surfaces of the portions 38 and 39 are provided with furrows of peculiar configuration which will be described hereinafter. The portion 38 of the fixed grinding member 3 is adapted to nest within the leg portions of the spider 9, and the said portion 38 of the said grinding member is provided with a perforation 40 which is adapted to register with the bearing 11 in the box 10. The member 3 is provided at the lower portion of its edge with a recess 41 which is adapted to receive the lug 13 mounted upon the portion 7 of the supporting plate 1, and the portion 38 of the said member 3 is provided at a point diametrically opposite from the recess 41 with an opening 42. The said opening 42 is surrounded by the flange 43 which is located upon the exterior surface of the portion 38 of the member 3. The spaced lugs 44 are also mounted upon the exterior surface of the portion 38 of the member 3, and are adapted to receive between them the lug 12 which is formed upon the middle portion of the spider 9 of the supporting plate 1.

The rotating grinding member 4 consists of a spindle 45, which is journaled at one end in the socket 35 provided in the backing plate 2, and at its opposite end portions in the bearing 11 provided in the box 10. The crank handle 46 is attached to the projecting end of the spindle 45. The said spindle 45 is provided at a point intermediate of its ends with the hollow conical portion 47 which is provided at its periphery with the spaced lugs 48. The said portion 47 is provided upon its outer surface with a series of furrows and burs which will be hereinafter explained. The detachable ring 49 forms a portion of the rotating grinding member 4, and consists of an annulus with a central opening 50 adapted to fit snugly about the periphery of the conical portion 47 carried by the spindle 45. The ring 49 is provided at the edge of the opening 50 therein, with a series of shoulders 51 which are adapted to engage the lugs 48 carried by the conical portion 47 of the spindle 45. The face of the ring 49 is also provided with a series of furrows and burs hereinafter to be explained, and the said ring 49 is provided at its outer edge or periphery with a series of notches 52.

The furrows and burs located upon the conical portion of the fixed grinding member 3, and the conical surface of the portion 47 of the spindle 45, are of like configuration and a description of one will answer for both forms. As shown in Figs. 10 and 11 of the drawings, the furrows 53 have greater transverse area toward the pointed ends of the portion 38 and the part 47, than they have at the larger ends thereof, and that the transverse dimensions of the intervening burs is reversed. The area of the parts 38 and 47 is divided by the longer burs 54, and in the spaces between the said burs 54 the shorter burs 56 are located. The said burs 56 are pitched at angles to each other and also at an angle to the burs 54, and are disposed substantially spirally about the surfaces upon which they are located, while the burs 54 are substantially in radial relation to the parts upon which they are mounted. By reference to Figs. 5 and 9 of the drawings, it will be seen that the furrows 57 provided in the surfaces of the flange portion 39 of the fixed grinding member 3 and the rings 49 are larger at their inner ends than at their outer ends, and that the intervening burs 58 are reversed in their transverse dimensions. It will thus appear that the material which is taken in by the furrows at their larger ends is gradually reduced in diameter as it passes toward the smaller ends of the furrows, and when it is delivered from the

smaller ends of the furrows it is disintegrated or reduced in transverse dimensions. The edges of the burs which lie between the furrows coöperate with each other in reducing or grinding the material as above described. A clamp arm 59 is provided with a perforation 60 which is adapted to receive the box 10. The said perforation 60 is provided at its lower side with a recess 61 which is adapted to receive the rib 27 formed at the lower side of the said box 10. The perforation or opening 60 is of sufficient diameter to permit the arm 59 to slip longitudinally along the box 10, but the rib 27 coöperating with the recess 61 holds the said arm 59 against rotary movement with relation to the box 10. The clamp bolt 62 passes transversly through the opening 26 in the shoulder 25 of the supporting plate 1, and also through a perforation provided in the clamping arm 59. The wing nut 63 is screw-threaded upon the said clamping bolt 62. The hopper 64 is provided at its sides with lugs 65, and the securing bolts 66 pass through perforations provided in the said lugs 65, and also through the perforations 19 in the lugs 18 mounted upon the plate 1. The hopper 64 is provided at its lower end with an outlet 67, and at one edge of the outlet the tongue 68 is formed, and said tongue enters the opening 42 provided in the fixed grinding member 3. The lower end of the said hopper is held in place by the flange 43 mounted about the opening 42 in the said fixed grinding member 3.

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

1. In a mill a plate having a bearing box, a support-engaging clamp arm slidably mounted upon the box, a clamp bolt connecting the plate and the arm, the plate being provided with support-engaging portions coöperating with and disposed opposite to the clamp arm, a fixed grinding member supported by the plate, a rotating grinding member journaled in the bearing-box, and a backing plate hinged to the first mentioned plate and bearing against the rotating grinding member.

2. A mill comprising a plate having an open intermediate portion, a frusto-conical grinding member fixedly seated in said portion and having a flanged feed opening, a pivotally supported hopper mounted on the plate and normally registering with said opening and bearing on said flanges, and a frusto-conical grinding member revolubly mounted within the fixed grinding member.

3. A mill comprising a plate having a projection thereon, a grinding member detachably mounted upon the plate and engaging said projection and held against rotation thereby, said member comprising a central, frusto-conical portion and a flange portion, there being a feed opening within the frusto-conical portion of the grinding member, and a revoluble grinding member coöperating with the fixed member and comprising a frusto-conical central portion and a ring portion detachably secured to said central portion.

4. A mill comprising a plate having flanges constituting an outlet chute, there being a projection upon the plate and within the chute, a grinding member detachably engaging and held against rotation by the said projection, said member comprising a central frusto-conical portion and a flange portion, there being a feed opening within the frusto-conical portion, and a revoluble grinding member constituting a frusto-conical portion projecting into and coöperating with the corresponding portion of the fixed grinding member, and a ring detachably secured to said frusto-conical portion of the revoluble member and coöperating with the flange portion of the fixed member, a backing plate hingedly connected to the first mentioned plate and having side and top flanges bearing on the plate, said backing plate being spaced at its lower edge from the grinding members, there being a socket within the backing plate, and a spindle revolubly mounted within the first mentioned plate and projecting into the socket, said spindle and the revoluble grinding member being movable together.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

LOUIS E. GAISSER.

Witnesses:
CHARLES HERRMANN,
WM. L. BRUEGGEMANN.