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Patented Apr. 17, 1900.

R. J. GASSLEIN.

APPARATUS FOR GRINDING AND SIEVING PULVERIZABLE SUBSTANCES.

(No Model.)

(Application filed June 9, 1899.)

2 Sheets—Sheet 1.

Fig. 1.

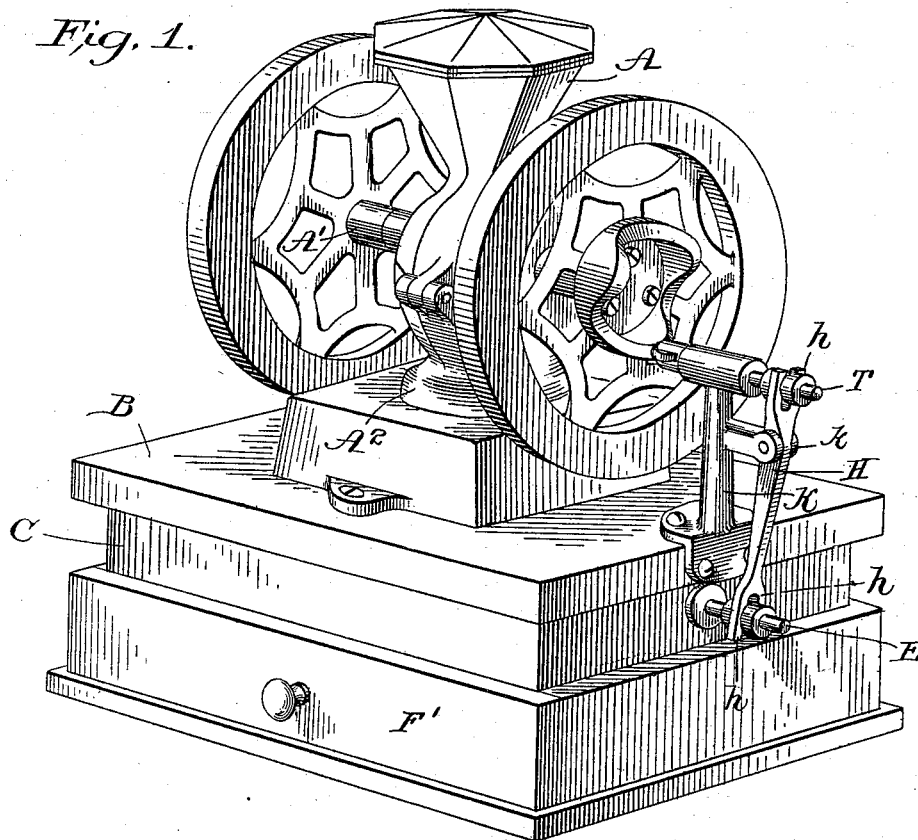
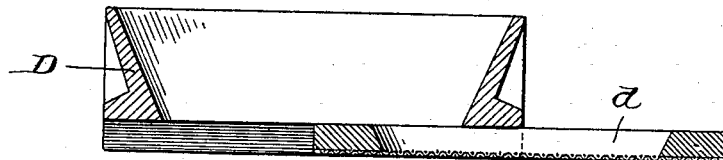


Fig. 4.



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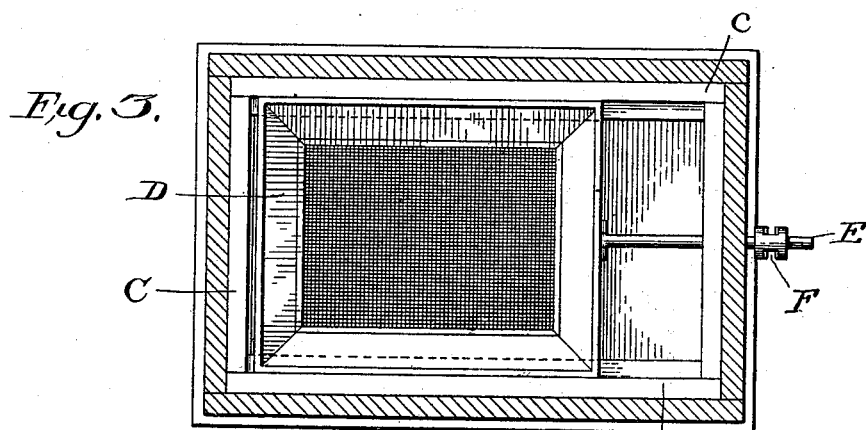
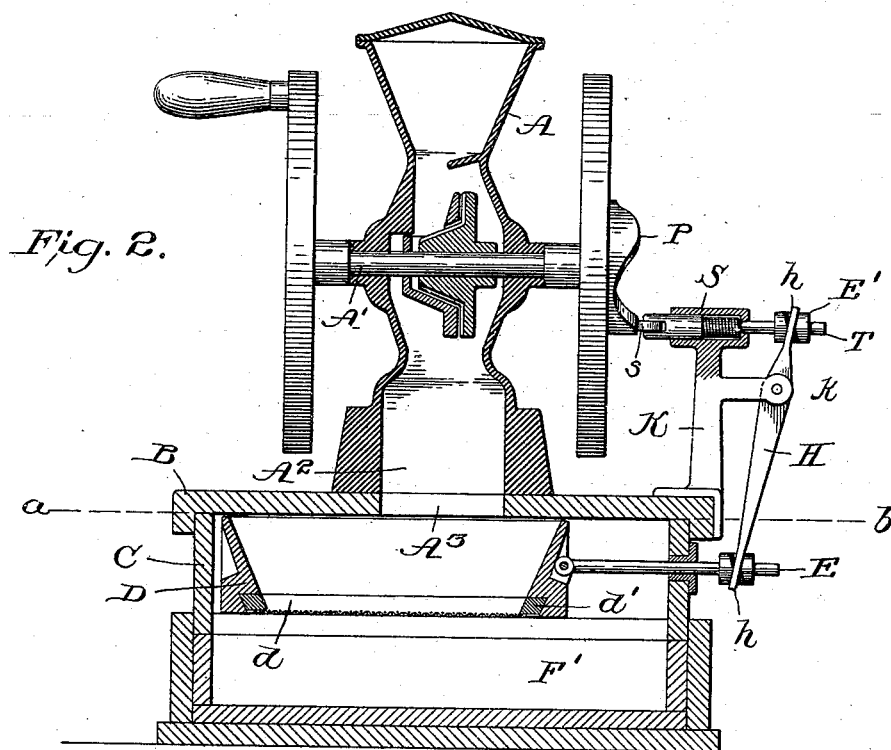
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2 Sheets—Sheet 2.



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APPARATUS FOR GRINDING AND SIEVING PULVERIZABLE SUBSTANCES.

SPECIFICATION forming part of Letters Patent No. 647,746, dated April 17, 1900.

Application filed June 9, 1899. Serial No. 719,922. (No model.)

To all whom it may concern:

Be it known that I, RICHARD J. GASSLEIN, a citizen of the United States, residing in the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Grinding and Sieving Pulverizable Substances, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a combined grinding and sieving apparatus, and has for its object the provision of mechanism in a unitary structure actuated from a single shaft and operating in unison of time for consecutively grinding and sieving pulverizable substances, such as drugs or solid chemicals, whereby the said operations may be conducted in immediate succession, the mill delivering the pulverized substance to the sieving devices, obviating handling in transit, avoiding the usual dust therefrom, and producing a great saving of labor and more uniform and cleanly product.

To these ends my invention consists of the combined mechanisms in one unitary structure and in some of the details thereof, as hereinafter described and claimed.

In the drawings illustrating my invention, Figure 1 is a perspective view of the apparatus, showing the connecting actuating mechanism between the grinding and sieving devices. Fig. 2 is a sectional view thereof; Fig. 3, a plan view below, the line *a b* of Fig. 2, of the sieving mechanism and part of the mechanism which reciprocates the same; and Fig. 4 is a detached sectional view of the interior sieve-frame.

The apparatus hereinafter described is especially adapted as a drug-mill to grinding and sieving pulverizable drugs, and hence is shown as of comparatively small dimensions; but it is obvious that it may be of size to be driven by power and for other purposes than grinding pulverizable drugs.

Mounted upon a suitable base (indicated at B) is an ordinary grinding-mill A, driven by a revolving main shaft A' and having a discharge outlet or neck A², delivering the ground material through an opening A³ in the supporting-base B, which is located upon the housing C of the sieving-frame and in such

relation to the latter as to deliver the ground material at all times to the reciprocating sieving-frame D, mounted within said housing.

The sieving apparatus consists of a housing C, the essential features in which are that it shall be of a greater length than the reciprocating sieve-frame, to allow for the length of stroke desired, and that it shall have parallel side ribs *c c*, which provide a track-mounting for the reciprocating sieve. Said sieve D consists of a suitable frame composed of upright or inclined sides, the opposite long sides thereof being interiorly grooved or slotted, as at *d'*, at the base to enable a wire or other sieving-plate *d* to be easily slipped into and removed from such grooved or slotted frame, and thereby enable the apparatus to sieve coarse or fine, as may be desired. To one of the short sides of the sieving-frame D is attached a rod E, which projects through an aperture in the side of the housing C and is provided on its end with a connecting-clutch F for the rocking lever H.

The connecting actuating devices consist of a cam-faced plate P, mounted upon the shaft which directly drives the grinding-plates, and said cam-plate may have as many cam-faces as are desired to increase thereby the rapidity of reciprocation of the sieve-frame D. In the drawings the cam-plate is shown with three such cam-faces. Upon a suitable standard K, mounted upon the supporting-frame and having an arm *k*, is pivoted the rocking lever H, which has a forked end *h*, in which the clutch F of the sieve-rod E is held in such manner as to adjust itself to the relative change of position of said parts when the rod E is drawn in and out thereby. A like forked end *h* is provided on the upper end of the rocking lever H to connect in like manner with a second and similar clutch on one end of a rod T, said rod being of greater diameter at its inner end, which latter part is mounted in a housing S, formed at the top of the standard K, with a spiral spring surrounding part of said rod T within the housing, so as to maintain said parts normally in the relative position shown in Fig. 1. The other or free end of said rod T is provided with a wheel *s*, journaled in its bifurcated end, said wheel bearing against the cam-face of the cam-wheel P. The housing for the

sieving device may be closed or open at base and may be provided with a drawer, as shown.

The operation of the device is as follows:

The substance to be pulverized and sieved 5 being delivered to the hopper in the grinding-mill motion is imparted to the grinding devices through the fly-wheel A' or in any other suitable way and the material ground delivered, through the discharge-outlets A² and A³, 10 directly to the reciprocating sieving-frame in the housing C. Such motion being imparted to the main shaft, upon which the grinding devices are mounted and by which they are actuated, said rotary motion is thereby im- 15 parted to the cam-faced wheel P, and through the same to the little wheel s, journaled in the bifurcated end of the spring-controlled rod S, which in turn imparts a swinging motion to the rocking lever H, the lower end of which 20 being connected with the sliding rod E, secured to the sieving-frame, said frame is thereby reciprocated on the track c c in the housing C, said reciprocation being necessarily in unison of time with the rotary movement of 25 the grinding-shaft. The cam devices employed in grinding-mills for adjusting the grinding-faces to grind fine or coarse being employed, the sieving-frame may be adjusted in the same way by sliding out the sieving- 30 mesh d, as shown in Fig. 4, and inserting a finer or coarser mesh, as may be desired, the ground and sieved material being finally delivered into the drawer F' or other suitable receiving-receptacle.

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

1. A machine for consecutively grinding and sieving pulverizable substances by one continuous operation, comprising grinding de- 40 vices delivering the ground product directly to the sieving device, the main shaft of the machine operating the grinding devices, a cam-faced wheel actuated by said shaft, a slid- 45 ing rod normally held in contact with said wheel and adapted to be reciprocated thereby, a sieve receiving the ground product, and connections between said sliding rod and said sieve for transmitting the reciprocatory move- 50 ment of the former to said sieve; substantially as described.

2. In combination with reciprocating sieving devices, of a frame or housing over the same, a grinding-mill mounted on said hous- 55 ing and having a discharge-outlet delivering the ground material to the sieving-frame, a main shaft carrying and actuating the grinding devices, a cam-faced wheel mounted on and revoluble with said grinding-shaft, a spring-controlled reciprocating rod suitably 60 mounted in a standard on said housing, one end of said rod carrying a wheel, a rocking lever having forked ends, one thereof connected with and actuated by said spring-controlled rod, and the other thereof connected 65 with and actuating to reciprocate a sliding sieving-frame; substantially as described.

In testimony whereof I have hereunto affixed my signature this 6th day of June, A. D. 1899.

RICHARD J. GASSLEIN.

Witnesses:

WALTER C. PUSEY,
H. T. FENTON.