Sept. 22, 1953 A. L. HALL 2,652,983

PULVERIZER AND MIXER

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FIG. 1.

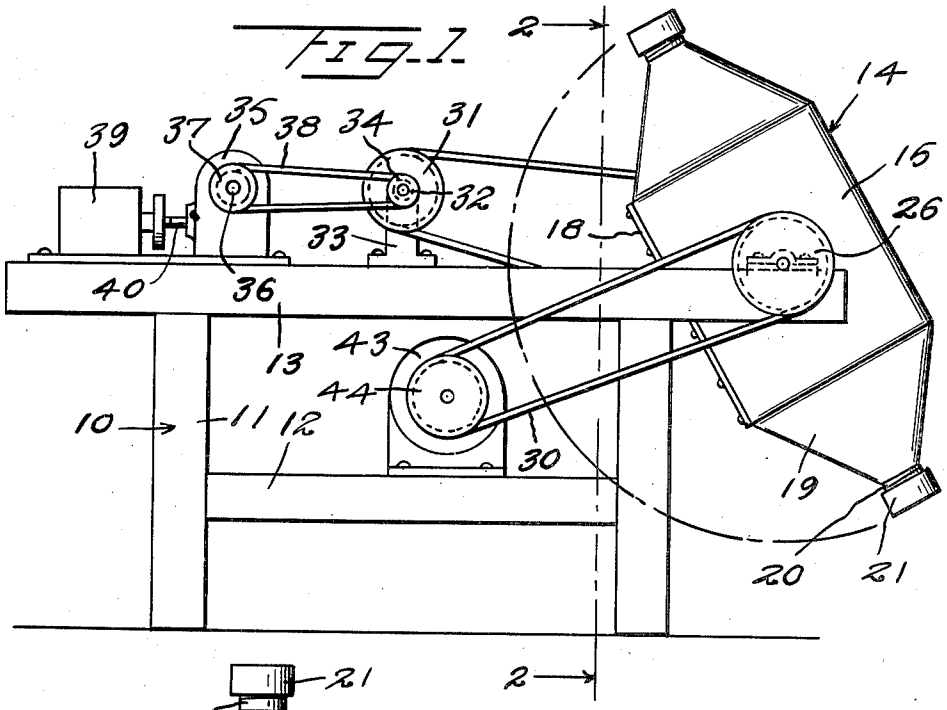
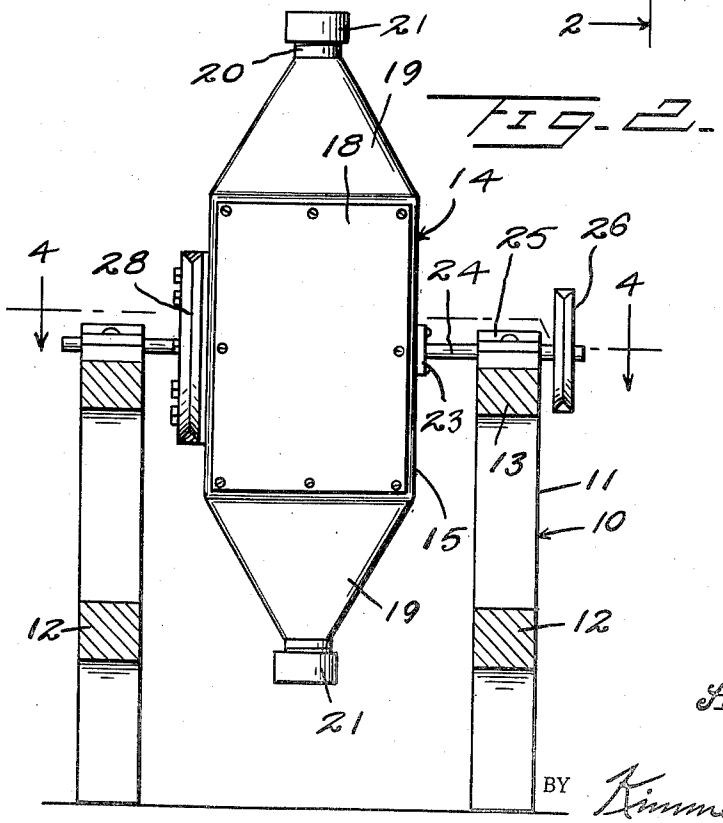


FIG. 2.



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Fig. 4.

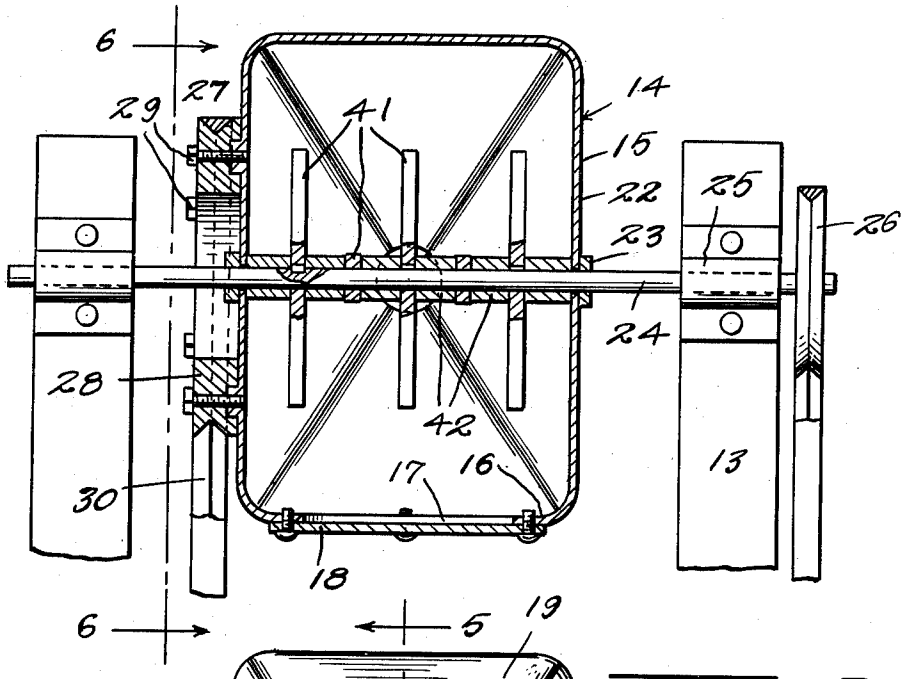
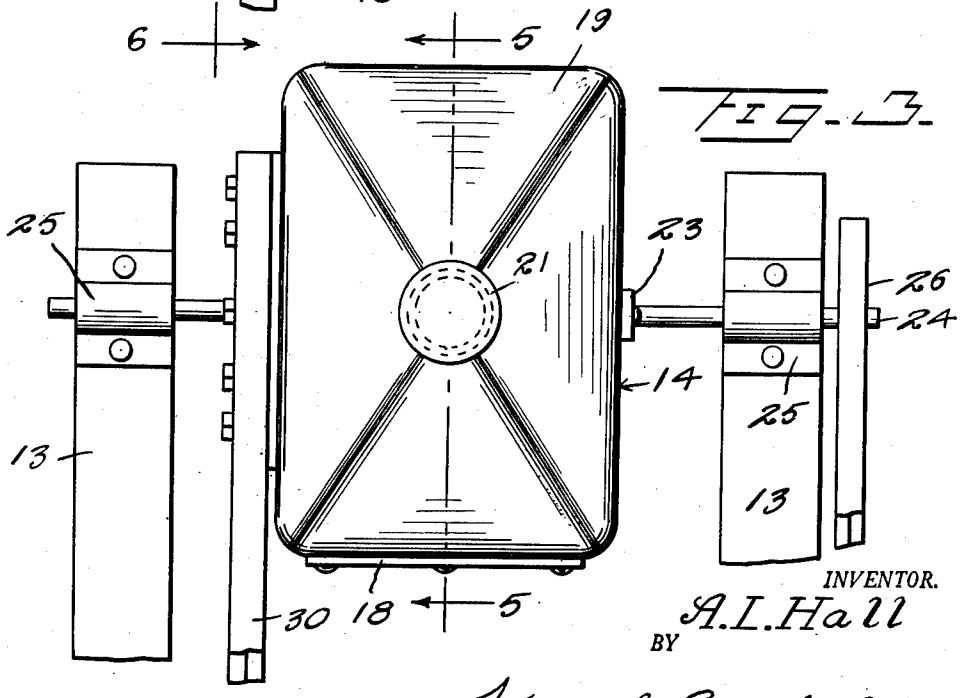


Fig. 3.



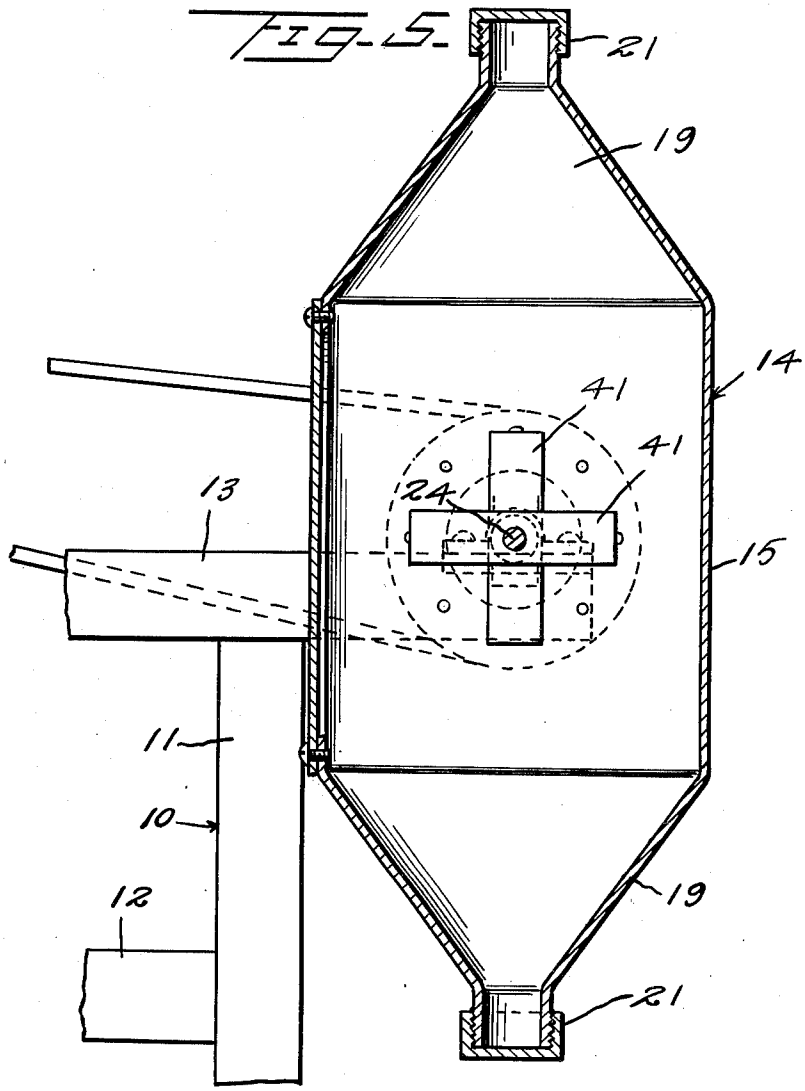
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Filed Jan. 28, 1952 3 Sheets-Sheet 3

Fig. 5.



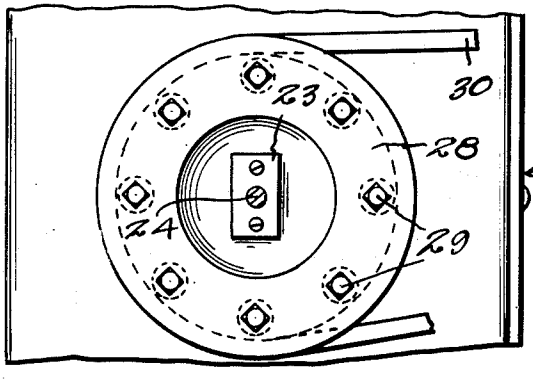


Fig. 6.

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Patented Sept. 22, 1953

2,652,983

UNITED STATES PATENT OFFICE

2,652,983

PULVERIZER AND MIXER

Arthur L. Hall, Memphis, Tenn.

Application January 28, 1952, Serial No. 268,578

1 Claim. (Cl. 241—98)

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This invention relates to a combined pulverizer and mixer.

An object of this invention is to provide a combined pulverizer and mixer in the form of a rotatable housing with a plurality of beaters rotatably disposed in the housing with means for rotating the beaters at a speed different than the speed of rotation of the housing.

Another object of this invention is to provide a pulverizer and mixer which is formed of an oblong housing having tapered opposite ends forming receivers adapted to receive the ground material when the device is in a vertical inoperative position.

A further object of this invention is to provide a pulverizer and mixer wherein the beaters or pulverizing blades are adapted to be rotated independently of the rotation of the housing and in either the same or opposite direction.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claim.

In the drawings—

Figure 1 is a detailed side elevation of a combined pulverizer and mixer constructed according to an embodiment of this invention,

Figure 2 is a sectional view taken on the line 2—2 of Figure 1,

Figure 3 is a plan view of the mixer element,

Figure 4 is a sectional view taken on the line 4—4 of Figure 2,

Figure 5 is a sectional view taken on line 5—5 of Figure 3, and

Figure 6 is an elevation taken on line 6—6 of Figure 4.

Referring to the drawings, the numeral 10 designates generally a supporting or base frame structure which includes upright supporting legs 11 connected together by lower connecting members 12. The legs or supporting members 11 have fixed on the upper ends thereof, upper horizontal frame bars 13 which, as shown in Figure 1, project substantially beyond at least one end of the frame structure. A housing, generally designated as 14, is rotatably disposed at one end of the frame structure 10 and is formed of a polygonal body 15, which in transverse section is rectangular, and one wall 16 of the body 15 is formed with an opening 17 which is closed by means of a closure plate 18. A similar opening and a similar closure means may be formed if desired on the wall of the body opposite to wall 16, thus constituting two openings, one on each side of the drum, for inspecting and cleaning.

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The body 15 has extending from the opposite ends thereof tapered funnel shaped members 19 terminating in a cylindrical neck 20 having a cap 21 threadably mounted thereon. The opposite side walls 22 of the body 15 have bearings 23 fixed thereto through which a supporting shaft 24 rotatably engages. The shaft 24 is journaled in bearings 25 carried by the frame bars 13, and one end of the shaft 24 has fixed thereon a grooved pulley 26. One side wall 27 of the body 15 has fixed thereto a ring shaped grooved wheel 28 which is fixed to the wall 27 by bolts or fastening members 29. An endless belt 30 engages about the pulley or wheel 28 and also engages about a grooved pulley 31 mounted on a shaft 32.

The shaft 32 is journaled in bearings 33 carried by the upper frame bars 13, and shaft 32 also has fixed thereon a pulley 34. A speed reducing unit 35 of conventional construction is carried by the frame 10 rearwardly of the shaft 32, and a shaft 36 constituting a driven shaft extends from the speed reducing unit 35 and has a grooved pulley 37 fixed thereto. An endless belt 38 is trained about the pulleys 34 and 37.

A power member 39 is carried by the frame 10, and the drive shaft 40 of the power member 39 is coupled to the speed reducing unit 35. Shaft 24 constitutes a beater or blade carrying shaft, and a plurality of beater or pulverizer blades 41 are fixed on the shaft 24 within the body 15. The blades 41 are spaced apart by means of spacer sleeves 42, and preferably the blades or beaters 41 are disposed in right angularly disposed pairs, as shown in Figure 5.

A second power member 43 is carried by the frame 10 below the upper bars 13 and includes a driving pulley 44 about which the belt 30 engages. The belt 30 provides a substantially direct coupling between the power member 43 and the beater shaft 24 so that shaft 24 may rotate at a speed substantially greater than the speed of rotation of the housing 14. It will be understood that shaft 24 may rotate either in the same or in the opposite direction relative to the rotation of housing 14.

In the use and operation of this device, the material which is to be pulverized or formed into powder is discharged into the housing 14 with the housing 14 substantially vertical, as shown in Figure 5, at which time the uppermost cap 21 is adapted to be removed. Power member 39 will rotate housing 14 in one direction at a relatively slow speed, whereas power member 43 will rotate beater shaft 24 at a relatively high rate of speed, and the direction of rotation of shaft 24 may be either the same as the direction of the rotation of

housing 14 or may be the opposite direction. As the housing 14 rotates, the material will be tumbled from one end to the other, it being understood that the speed of rotation of housing 14 is slow enough to prevent the material from being retained in the tapered ends 19 by centrifugal force.

I do not mean to confine myself to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claim.

What is claimed is:

A pulverizer and mixer comprising a base frame, a housing formed of a central body of substantially square cross section and having rectangular sides and tapered substantially four sided pyramidal ends, a cap removably mounted on each end, the sides of said central body forming the bases of the end pyramids, a shaft rotatably carried by said frame passing horizontally through the center portion of said central body and loosely engaging through said frame, whereby the axis of rotation of said body is perpendicular to the length of said housing, a plurality of beater members fixed to said shaft in said housing, means for rotating said shaft, and means for rotating said housing about said shaft at a speed slower than the speed of said shaft, two sides of said central body lying in planes at right angles to said shaft.

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