Dec. 4, 1923. 1,475,978

F. WESTERMAN

BEATER

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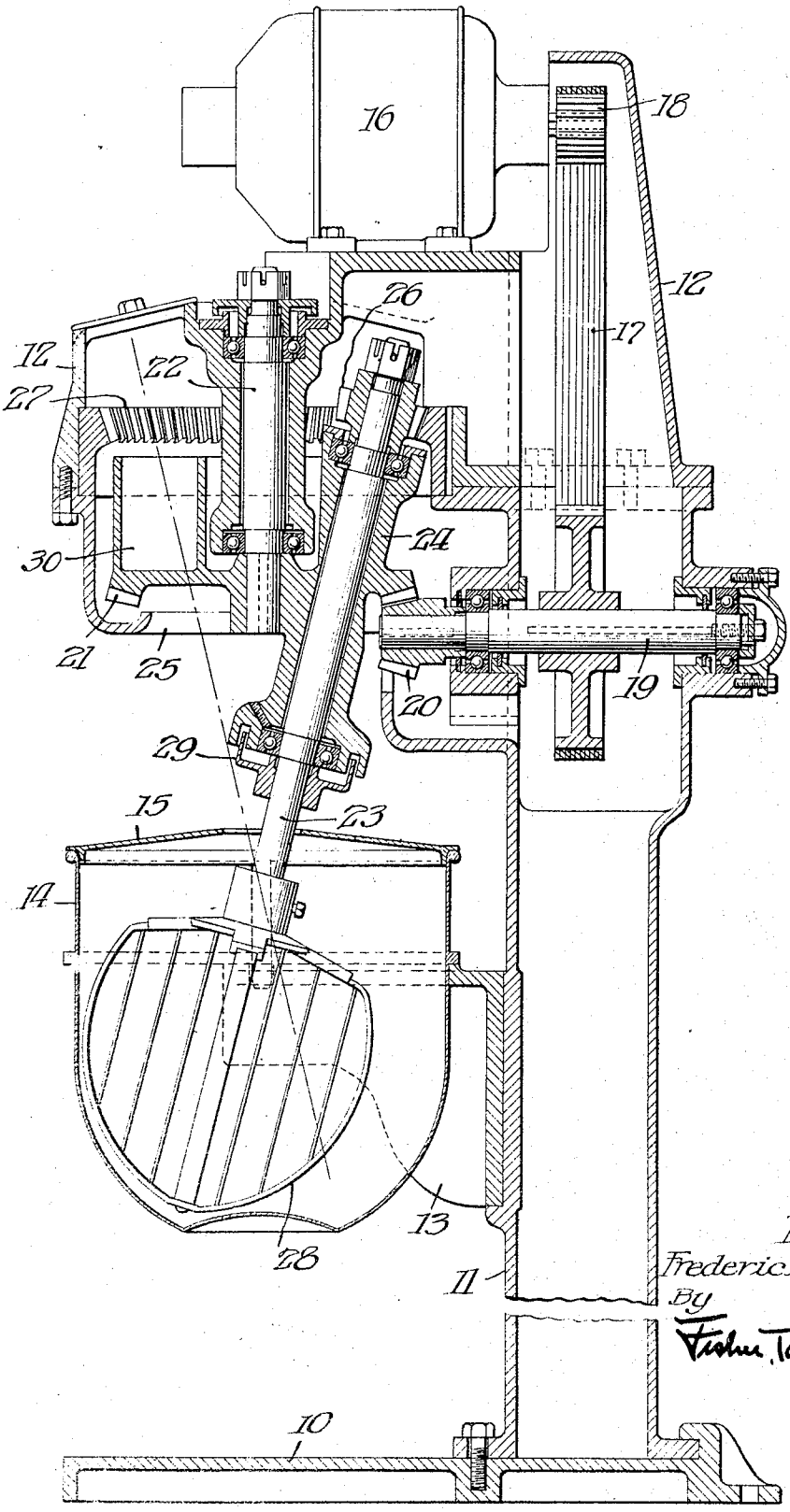

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UNITED STATES PATENT OFFICE.

FREDERICK WESTERMAN, OF CHICAGO, ILLINOIS.

BEATER.

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To all whom it may concern:

Be it known that I, FREDERICK WESTERMAN, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Beaters, of which the following is a specification.

This invention relates to apparatus for agitating, mixing, beating or whipping liquids, or semi-liquids, but more particularly to such as is used by bakers, confectioners and other makers of food products.

The primary object of the present invention is to provide a simplified and improved apparatus of this class which will efficiently operate upon large masses of material.

The many other objects and advantages of my improved apparatus will be better understood by reference to the following specification when considered in connection with the accompanying drawing illustrating a selected embodiment thereof, in which:—

The figure is a central vertical section of the beater.

Referring to the drawing, the beater mechanism is mounted upon a base 10, hav- an upright standard or post 11 secured thereto. A housing 12 is bolted upon the upper end of this standard.

A bracket 13 is mounted on this standard to receive and support the usual fluid holding receptacle 14, and any suitable means may be provided to firmly position the receptacle thereon during the operation of the beater. A cover 15 is preferably provided for the receptacle 14.

The beater apparatus in the present embodiment is actuated by a motor 16 mounted upon the housing 12. A silent drive chain 17 operatively connects the motor shaft 18 with the main driving shaft 19 supported in suitable bearings in the upper portion of the standard 11. A bevel gear 20 on the outer end of this shaft 19 meshes with a gear 21 on the lower extremity of a short vertical shaft 22 mounted in the housing 12. A shaft 23 is revolubly mounted in an elongated hub 24 formed integral with the gear 21, and this shaft has its axis disposed at an angle to the axis of the shaft 22. The axes of these shafts 22 and 23 preferably intersect at a point below the open lower end 25 of the housing.

A bevel gear 26 is secured upon the upper extremity of the shaft 23 and this gear is adapted to roll upon a ring gear 27 fixed within the housing as this shaft is revolved about the axis of the shaft 22 in the manner to be hereinafter described. A paddle 28 of any suitable type is secured upon the lower extremity of the shaft 23. An oil pan 29 is preferably secured upon the shaft 23 below the end of the hub 24. A receptacle 30 is provided on the gear 21 to receive a deposit of lead to counterbalance the shaft 23 and the hub 24.

In the operation of the apparatus the shaft 19, driven from the motor 16, imparts a rotary movement to the shaft 22 through the medium of the gears 20 and 21. The rotation of the gear 21 causes the shaft 23 to describe a double cone as the axes of the shafts intersect at a point intermediate the ends of the shaft 23. The revolution of the shaft 23 causes the gear 26 to roll on the ring gear 27 and this imparts a positive rotation to the shaft. It will thus be evident that a combined rotation and conical movement is imparted to the paddle.

One of the important features of the present invention is the absence of gears or other paddle operating or supporting mechanism within or on the fluid receptacle. The combined movement of the paddle is produced by mechanism relatively remote from the fluid receptacle. This movement also permits the receptacle to be practically closed during the beating operation as the common apex of the cones is preferably located at substantially the point where the paddle shaft passes through the recepacle cover. In other words the axes of the shaft 22 and the beater shaft 23 intersect substantially at the top of the vertical axial center of the receptacle 14, whereby the bodily movement of the beater shaft is very slight where it passes through the cover 15, and therefore only a comparatively small opening is required in the cover to accommodate the beater shaft. The bodily movement of the beater shaft within the receptacle 14 is in a conical orbit having its apex at the intersection of the shafts 22 and 23. The entire apparatus is exceedingly simple in construction and mode of operation.

I am aware that the form and arrangement of the parts may be very materially altered without departing from the spirit

of my invention, and I reserve the right to make all such as fairly fall within the scope of the following claims.

I claim as my invention:

1. A beating apparatus comprising a receptacle having a cover provided with a central opening, a beater shaft set oblique to the vertical and entering the receptacle through the opening in the cover, a paddle on the shaft and in the receptacle, and means above and independent of the cover for supporting and rotating the shaft on its axis and also for bodily moving the shaft in a conical orbit having its apex substantially at the opening in the cover.

2. A beating apparatus comprising a receptacle, a vertical shaft spaced centrally above and supported independently of the receptacle, a beater shaft disposed obliquely to the vertical and supported independently of the receptacle, the axes of the two shafts intersecting substantially at the top of the vertical axial center of the receptacle, and operating means associated with the two shafts and located above the top of the receptacle to impart axial rotation to the beater shaft and also a bodily movement in a conical orbit having its apex at the intersection of the two shafts.

3. A beating apparatus comprising a receptacle, a substantially vertical driving shaft disposed centrally above the receptacle, a power driven gear on said shaft and above the receptacle, a beater shaft journaled in and carried by the gear on the vertical shaft and disposed obliquely to said shaft, the axes of the vertical and oblique shafts intersecting at substantially the top of the vertical axial center of the receptacle, a paddle carried by the beater shaft and working in the receptacle, a fixed toothed rack concentric with the vertical shaft and above the top of the receptacle, and a gear on the oblique shaft and in mesh with the toothed rack to rotate the oblique shaft axially.

4. In a beating apparatus, the combination of a standard, a receptacle carried by the standard, a bracket projecting laterally from the standard above the receptacle, a vertical drive shaft mounted in the bracket and disposed centrally above the receptacle, a gear mounted on the drive shaft, a power shaft mounted upon the standard and provided with a gear in mesh with the gear of the vertical shaft, a stationary internal gear mounted upon the bracket and concentric with the vertical shaft, a beater shaft journaled in and carried by the gear of the vertical shaft, disposed obliquely to the vertical with its axis intersecting the axis of the vertical shaft at substantially the top of the vertical axial center of the receptacle and also projecting above and below the gear on the vertical shaft, a beater carried by the beater shaft and working within the receptacle, and a gear fixed to the beater shaft and in mesh with the fixed internal gear.

FREDERICK WESTERMAN