J. E. SHANK.

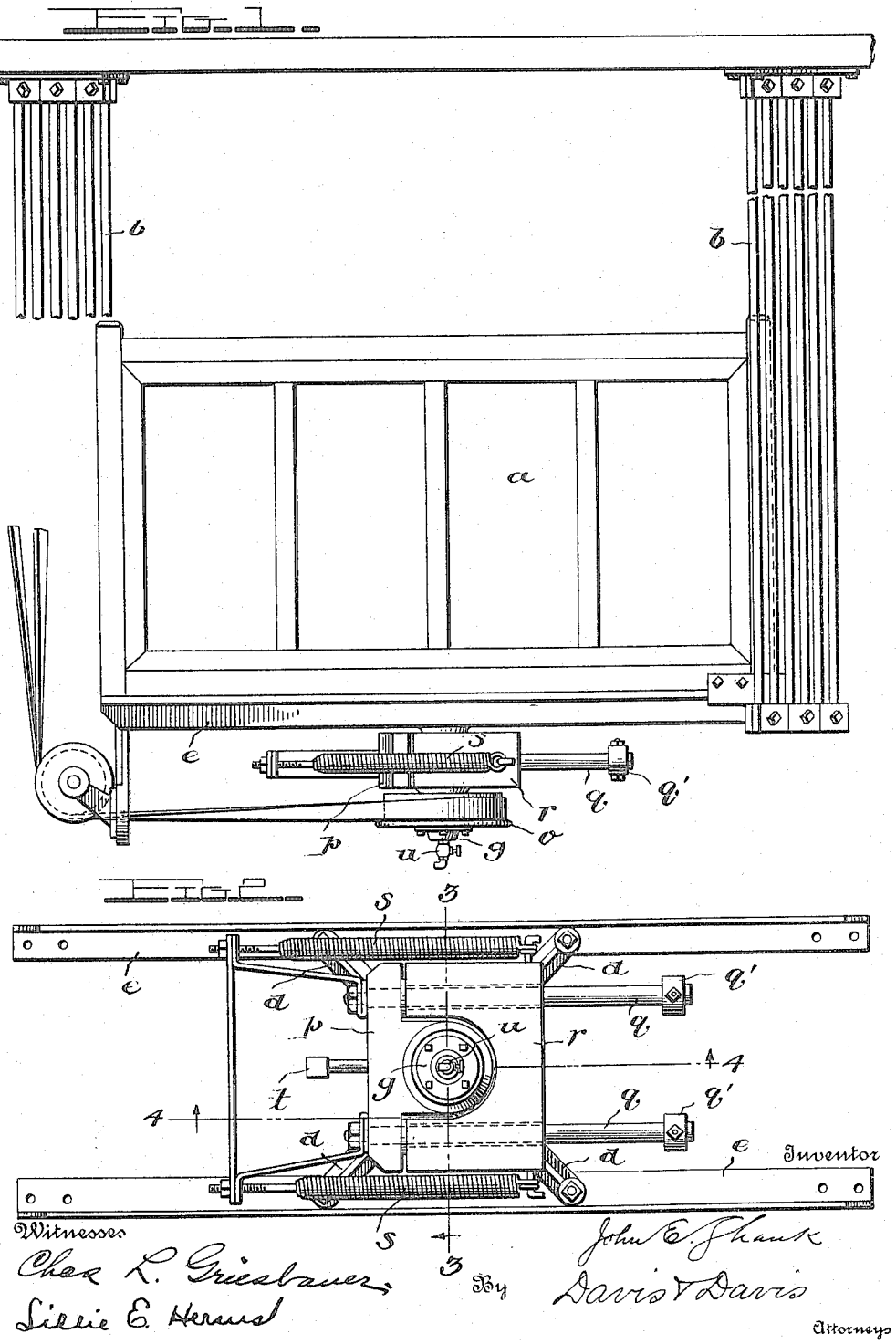
GYRATORY SIFTER.

APPLICATION FILED AUG. 26, 1914.

1,128,729.

Patented Feb. 16, 1915.

2 SHEETS—SHEET 1.



Witnesses:

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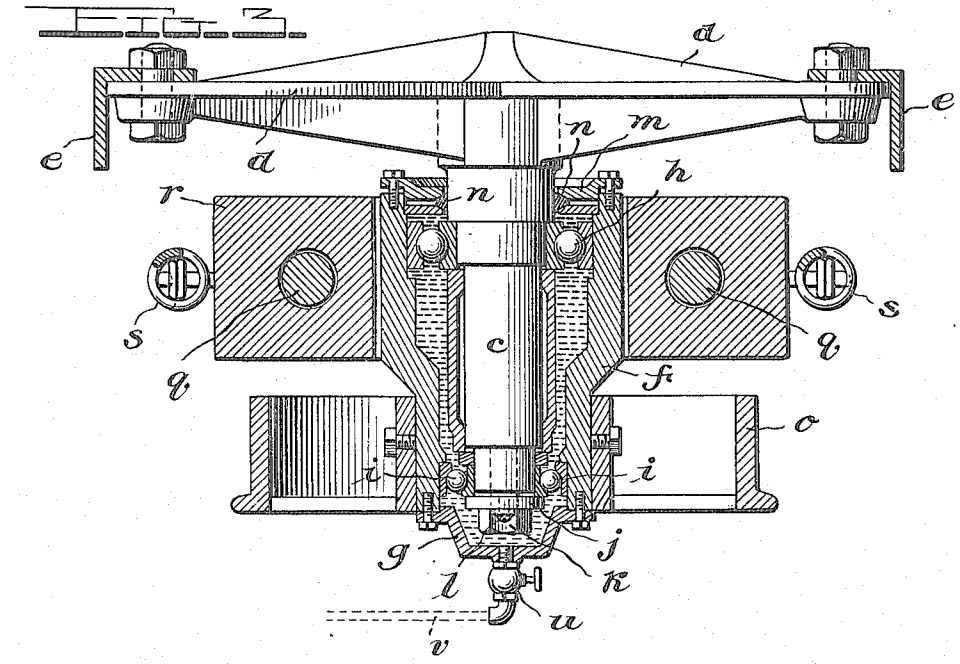
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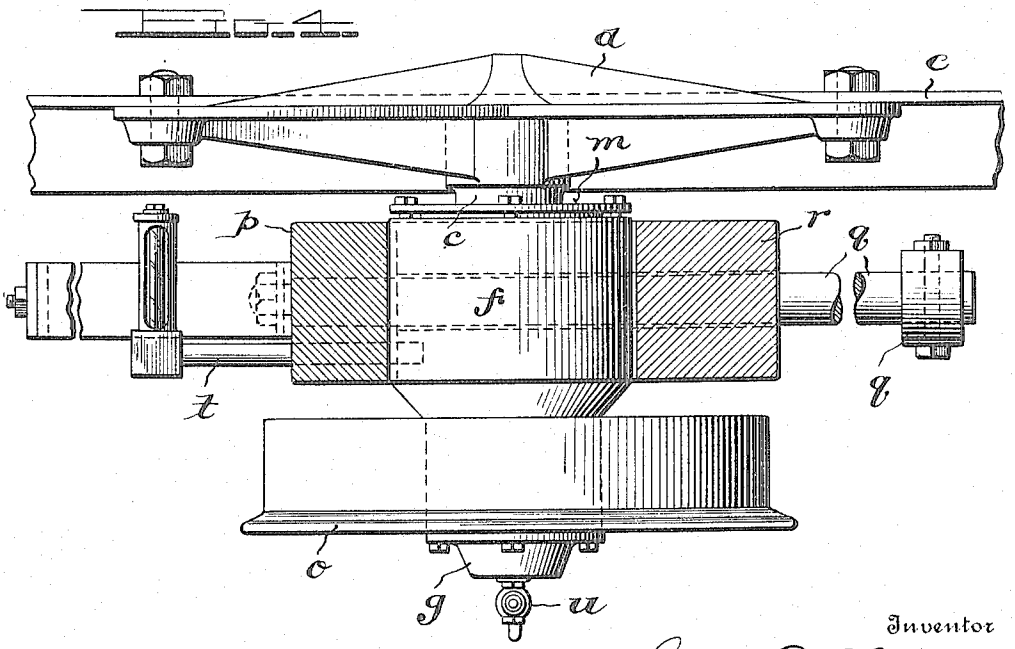
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UNITED STATES PATENT OFFICE.

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GYRATORY SIFTER.

1,128,729. Specification of Letters Patent. Patented Feb. 16, 1915.

Application filed August 26, 1914. Serial No. 858,731.

To all whom it may concern:

Be it known that I, JOHN E. SHANK, a citizen of the United States of America, and a resident of Salem, county of Roanoke, State of Virginia, have invented certain new and useful Improvements in Gyratory Sifters, of which the following is a full and clear specification, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation of my invention applied to a well known form of sifter box; Fig. 2 a bottom plan view of the gyratory devices removed from the sifter box; Figs. 3 and 4 are transverse sections taken at right angles to each other of the gyratory devices, parts of the devices being shown in side elevation, and the lines of the respective section being shown in Fig. 2.

This invention has relation to that type of flour sifter in which the sifter box is flexibly suspended by means of suitable rods, and the box is given a lateral gyratory movement by means of a mechanism driven by means of a belt running on a pulley below the sifter box.

The object of this invention is to improve and simplify the gyratory devices, as more fully hereinafter set forth.

In the drawing, *a* designates a sifter box of the usual construction and *b* the usual rods for flexibly suspending said box. Centrally depending from the sifter box is a shaft or axle *c*, this shaft being preferably formed integral with a spider *d* which is rigidly bolted to angle irons *e* fastened rigidly to the bottom of the sifter box.

Rotatably supported on shaft *c* is a tubular hub *f* whose lower end is closed by a removable cap *g*, this cap serving to entirely inclose the depending shaft. Near the upper end of the hub, a ball bearing *h* is arranged to receive radial thrusts and at the lower end of the hub is arranged another ball bearing *i* constructed to not only receive the radial thrusts but also to support the hub upon the shaft. The inner raceways of these bearings are removably locked upon the shaft by means of a disk *j* which is fastened removably to the extreme end of the shaft by means of a nut *k*, this nut being locked against rotation by a suitable removable lock plate *l*. The upper end of the hub is closed by a suitable packing device *m* which is removably bolted to the upper end of the hub and carries a packing ring *n* which bears against the shaft *c*. The hub thus constitutes in itself a cup for holding a lubricant, the lubricant being run into the cup in sufficient quantity to bring the level thereof to a point above the upper bearing *h*, thus submerging both the bearings.

Affixed to the lower part of the hub is a belt wheel *o*, by means of which the device is driven in the usual manner, and affixed to and integral with the upper part of the hub is a stationary counter-weight *p*, and mounted upon rods *q* carried by said stationary counter-weight is a movable counter-weight *r*, this movable counter-weight being normally held in position by a retractile spring *s*. Adjustably affixed to the ends of rods *q* are stops *q'* which can be set at different points on the rods *q*, thereby regulating the amount of gyration of the sifter box. The counter-weights and their connected parts are so proportioned in weight that when the machine is at rest they practically balance each other, as is usual in this type of apparatus.

It will be observed that when the wheel *o* is driven in the usual manner, the movable counter-weight *r* will, by centrifugal force, overcome the tension of the springs *s* and thereby be caused to move outwardly until it is stopped by the stops *q'* on the rods *q*, and when the rotation of the wheel decreases in stopping the machine, the counter-weight will return to its central position. The construction is such, as will be obvious, that the gyratory movement of the sifter box will be started and stopped without jar, thus reducing to a minimum the vibration of the mill structure.

It will be observed also that with my device a thorough oiling at all times is assured, thus insuring light and noiseless running of the apparatus. It will be seen that the packing device at the upper end of the hub not only prevents dust entering the oil chamber, but also prevents centrifugal force from throwing out the oil from the upper rim of the hub.

A suitable sight gage *t* is applied to the oil chamber to enable the attendant to determine the level of the oil in the oil chamber. An elbow pet-cock *u* is affixed to the cap *g* so that at any time desired the oil chamber may be drained and refilled through the bottom of the oil chamber, a suitable pipe, shown in dotted lines at *v*, being temporarily

connected to the pet-cock for this purpose. By means of this arrangement, it will be seen also that the bearing may be cleaned out with gasolene or other cleaning agent at any time by simply flooding it up through the pet-cock.

It will be seen also that an advantage in my device is that it can be applied to any of the sifter boxes of this type now in use, and it will be seen also that I avoid not only placing supports upon the floor underneath the sifter box, but I also avoid employment of shafts depending from overhead structures.

My device is exceedingly compact and practically frictionless, and moreover it does away with mounting a rotary shaft in the sifter box, thereby utilizing to the fullest extent the entire bolting surface of the sifter box.

Having thus described my invention, what I claim is:

1. In an apparatus of the class set forth, the combination of a sifter box and means for suspending it, a stationary shaft rigidly depending from the bottom of the box, a hub inclosing the lower end of this shaft, internal bearings supporting this hub upon the shaft, a cap closing the lower end of said hub, thereby constituting the hub an oil cup or chamber, a driving wheel affixed to the hub, a stationary counter-weight affixed to the hub and a spring-actuated counter-weight, for the purposes set forth.

2. In combination with a sifter box and suspending means therefor, a shaft rigidly depending from the bottom of the box, a hub surrounding the depending part of the shaft, a bearing at the upper end of the hub and a bearing at the lower end thereof, one of these bearings being a supporting or thrust bearing to maintain the hub upon the shaft and yet permit it to rotate freely thereon, a driving wheel affixed to the hub at its lower end, a counter-weight affixed to the upper end of the hub at one side thereof, and a radially movable spring-actuated counter-weight arranged at the other side of the hub and supported on the stationary counter-weight.

3. In combination with a sifter box and suspending means therefor, a shaft rigidly depending from the bottom of the box, a hub surrounding the depending part of the shaft, a bearing at the upper end of the hub and a bearing at the lower end thereof, one of these bearings being a supporting or thrust bearing to maintain the hub upon the shaft and yet permit it to rotate freely thereon, a driving wheel affixed to the hub at its lower end, a counter-weight affixed to the upper end of the hub at one side thereof, and a radially movable spring-actuated counter-weight arranged at the other side of the hub and supported on the stationary counter-weight, means above the upper bearing for covering the upper end of the hub, a movable cap for closing the lower end of the hub and inclosing the lower end of the shaft, whereby the interior of the hub is converted into an oil chamber which entirely surrounds the shaft to a point above its upper bearing, and means whereby oil may be run into and drawn off from said oil chamber.

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

JNO. E. SHANK.

Witnesses:
G. F. MOYER,
J. L. GARST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."