

Title of Patent

Multipurpose Machine For Sieving “Ogi” Slurry

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Abstract

A multipurpose machine for sieving ‘Ogi’ (ground corn slurry) and other applicable grain slurry comprises the sieving container (003) which receives water from an external water unit (012) and the slurry ‘Ogi’ to be sieved through a hopper. Sieving is achieved by an arrangement of vibration and sifting mechanism (013) which is electrically driven (009) by a motor. Depending on the type of ground grain slurry, interchangeable assembly of sieving arrangement are applied within the sieving unit to account for the multipurpose usage of the machine.

Description

FIELD OF THE INVENTION

The present invention relates to a machine for sieving “Ogi” (ground corn slurry) and in extension other similar grain slurry by interchanging the sifting mechanism within the sieving compartment.

BACKGROUND

In Nigeria and many parts of Africa, the nutritional value of “Ogi (ground soaked corn in slurry form) cannot be overstated. It is a major staple food and the most popular weaning food for children between 3-6 months. Over the years the processing (sieving) of Ogi has been done manually with little or no technological improvement.

The traditional “Ogi sieving procedure leaves much to be desired. Traditional sieving operation is labour intensive, time consuming, and constitute a point of contamination and loss of nutrient. Moreover, the operation is not standardized, as sieves of different apertures are utilized. presently, little or no information exist on the use of mechanical means or machine in the sieving of “Ogi. Thus, the “Ogi sieving equipment, which minimizes excessive use of water, nutrient losses, contamination and time-cycle of “Ogi production becomes important.

The *objective* of the “Ogi sieving machine is to improve the quality of the product and reduce the boredom and time involved in the process. The machine will also enhance the easy dewatering of “Ogi mash into a low moisture cake, which may be dehydrated, pulverized and packaged into low density polyethylene. Production of dehydrated “Ogi powder from maize, millet and sorghum will enhance the increased consumption of these local staples and, enhance their convenient utilization. This newly developed “Ogi sieving machine brings about much *improvement* over the manual sieving “Ogi.

SUMMARY OF THE INVENTION

An object of the invention is to overcome at least some of the drawbacks relating to the traditional methods discussed above.

The “Ogi sieving machine is made up of the following six units. The slurry container, the mixing unit, the sieving unit, the reservoir, vibration assembly and the base frame. The slurry container is a cylinder which serves as the receiving unit for the slurry “Ogi and water mixture to be sieved. At the commencement of the sieving operation, the “Ogi and water mixture flows from the slurry container into the mixing unit. The mixing unit which is a cylinder serves as compartment where water from an external source flows through a sprinkler and mixes with the “Ogi for ease of sieving as it enters into the sieving unit.

The introduction of water is to continuously wash the slurry “Ogi mixture in the sieving unit thereby preventing quick clogging of the sieving membrane. The sieving process takes place in the sieving unit agitated by electrically driven motor. The sieved “Ogi filtrate is deposited in the “Ogi reservoir while the filtrate cake remains as residue on the surface of the sieving membrane. There is the allowance for dismantling the sieving unit and removing the filtrate cake while the

filtered “Ogi is allowed to settle down in the “Ogi reservoir. The base frame prevents the “Ogi sieving machine from touching the ground thereby preventing the rusting of the filtrate unit.

BRIEF DESCRIPTION OF THE DRAWINGS

Having thus described the invention in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

FIG. 1 shows a flow chart of “Ogi slurry sieving technology according to one embodiment of the present invention.

FIG. 2 is an isometric view of the “Ogi slurry sieving machine according to one embodiment of the present invention.

FIGS. 3 is a picture plate of the “Ogi sieving machine of the isometric view of FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

The present inventions now will be described more fully hereinafter with reference to the accompanying drawings, in which some examples of the embodiments of the inventions are shown. Indeed, these inventions may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided by way of example so that this disclosure will satisfy applicable legal requirements. Like numbers refer to like elements throughout.

FIG. 1 illustrates the flow diagram showing the different stages of the sieving technology of the machine, while the component by component description of the “Ogi” sieving machine is given with reference to FIG. 2 and 3.

The Frame (001) is the structural part of the vibration sieving machine that withstands torsion, bending, twisting and gives shape, rigidity and supports the weight of the whole equipment. The vibration sieving machine frame consists of the following: Base Frame, Electric motor frame/ Agitator Frame. The flat surface top is covered with steel plate with a central hole through which

a mechanical stirrer is passed. The spring houses containing the suspension springs are attached to a flat plate which carries the sieving unit (003) in its center and fixed to the base frame. The electric motor frames supports and carries the weight of an electric motor (009) welded vertically on one side of the base frame. The motor frames also supports and carry the agitator frame.

The water supply unit (012) is a separate unit which is mounted on a water stand. The water supply unit comprises of water container and water stand. The water container has a lid, a tap attached to the base and connected to the sieving container via a water hose.

The filtration of the "Ogi" slurry, processes is carried out in the sieving unit. The sieving unit (003) is made up of the following; sieving container, sieving cover, sieving mesh and mechanical stirrer. The sieving container is cylindrical in shape and tapered at the exit end. About some meters towards the tapered end is the arrangement of sieving mesh, and rubber packing bolted on a circular flat ring in the sieving container. Externally on the sieving container is a circular ring and flat bar with drilled holes (4 pieces) welded on the container. The ring prevents the fabricated container from sliding into the vibrating disc plate and the flat bar provide rigidity when bolted on the vibrating disc plate. The sieving cover is centrally opened to prevent direct contact with the revolving agitator.

The spout (002) is cylindrical in shape with a tapered end. Externally about few millimeters from top, it has a circular ring that goes round which prevent the spout from going into the base frame and two pieces drilled flat bars for bolting the spout on the base frame.

The vibrating disc plate (013) is circular in shape and centrally opened for the positioning of the sieving assembly. Underneath, is the arrangement of spring housing (four pieces) with centrally drilled hole for bolting of the spring. The vibrating disc plate supports the sieving unit and on it, is the fitting of the vibrator bearing/offset circular disc that provide the shaking via a shaft and electric motor.

The motor mechanism (009) provides the required torque for vibration as well as driving torque for the agitator. It comprises the arrangement of electric motor, driver pulley, driven pulley, belt,

agitator bearing, bearing house, driver shaft, driven shaft, vibrator bearing and offset circular disc for eccentric movement. The electric motor is mounted vertically on the electric motor frame, and coupled onto a driver shaft that is connected to the vibrator bearing via an offset circular disc fitted in the vibrator bearing; the vibrator bearing is attached on the vibrating disc plate. The driver pulley is connected to the driver shaft and the driven pulley fitted on the driven shaft that runs vertically to the driver shaft at some distance away in the agitator frame. The driven shaft is centrally drilled supports the agitator (made of shaft of smaller diameter to the driven shaft), horizontally. Half length of the drilled shaft is the drilling of holes for keys. The belt connects driven pulley and driver pulley together, the driver pulley is much smaller than the driven pulley to bring about speed reduction for the agitation.

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DRAWINGS

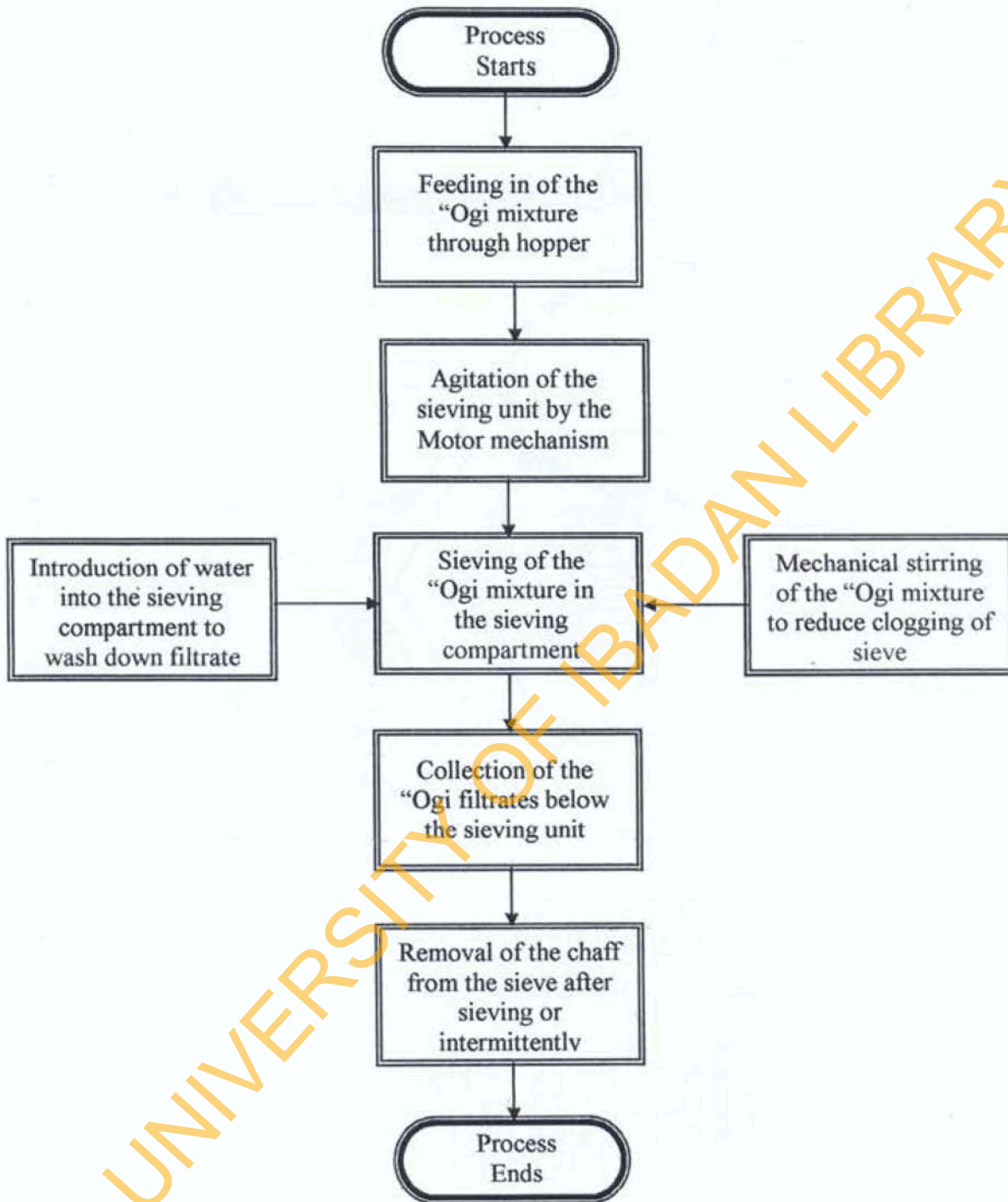


Figure 1: Flow Chart of "Ogi Slurry Sieving Technology

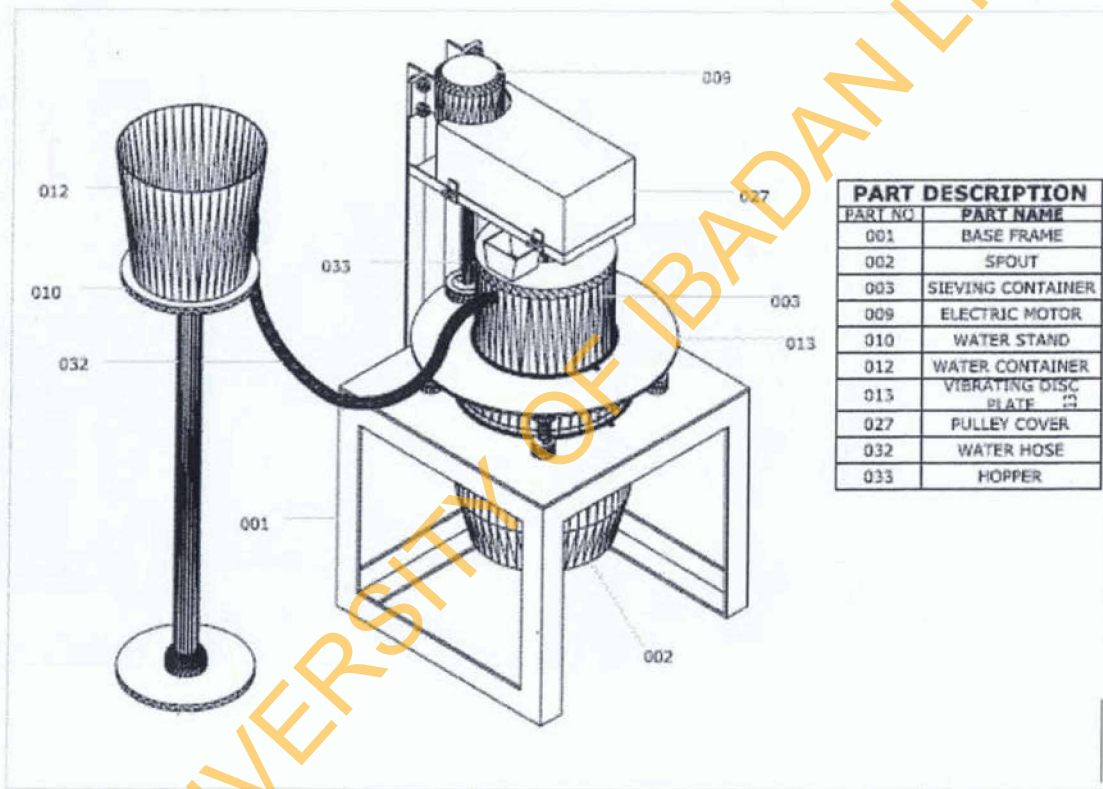


Figure 2: Isometric view of the "Ogi slurry Sieving machine"

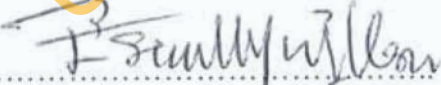



Plate 1: The "Ogi Sieving Machine"

Claims

What we claim are as follows:

1. A machine for sieving 'Ogi' (ground corn slurry) and other applicable grain slurry, said machine comprising:
 2. a supporting main frame made up of base structure, electric motor frame and agitator frame;
 3. a water supply unit comprising elevated water container and water stand
 4. a sieving unit made up of the sieving container, sieving cover and sieving mesh
 5. a spout cylindrical in shape with tapered end. it has a circular ring that goes round which prevent the spout from going into the base frame and two pieces of drilled flat bars for bolting the spout on the base frame.
 6. a vibrating disc plate circular in shape and centrally opened for sieving container assembling .Underneath the disc is the arrangement of spring housing (four pieces) with centrally drilled hole for bolting the springs .The vibrating disc plate supports the sieving unit and on it, is fitted the vibrator bearing and offset circular disc that provide the shaking via a shaft and an electric motor.
 7. a motor mechanism made up of electric motor, driver pulley, driven pulley, belt, agitator bearing, bearing house, driver shaft, driven shaft vibrator bearing and offset circular disc for providing the eccentric movement.
 8. an electric motor mounted vertically on the electric motor frame, and coupled onto a driver shaft that is connected to the vibrator bearing via an offset circular disc fitted in the vibrator bearing; the vibrator bearing is attached on the vibrating disc plate.
 9. a driver pulley connected to a driver shaft and a driven pulley fitted on the driven shaft that runs vertically to the driver shaft at some distance away in the agitator frame .
- a belt connecting driven pulley and driver pulley together.


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