

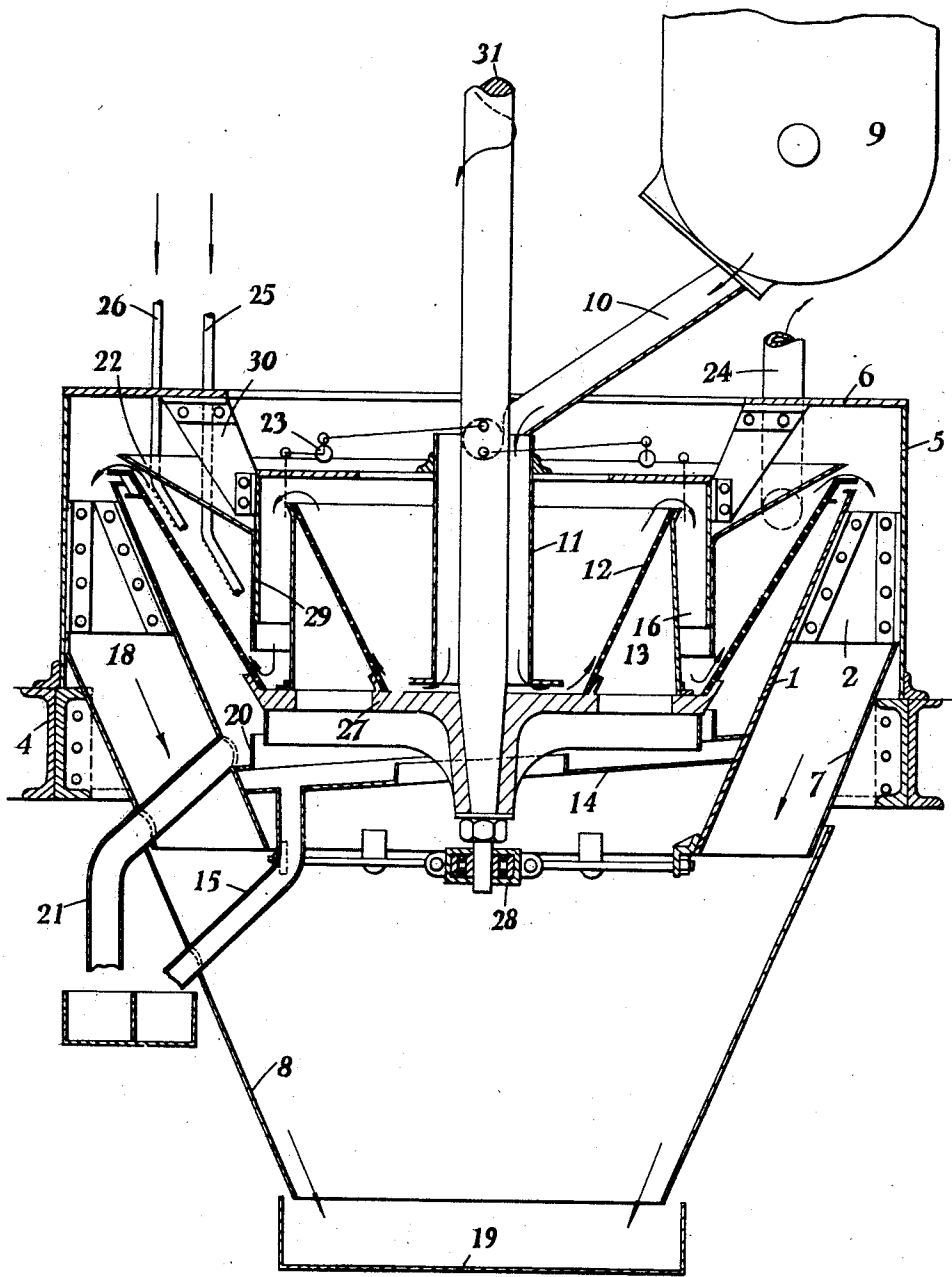
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CENTRIFUGAL SEPARATOR

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CENTRIFUGAL SEPARATOR

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The centrifugal machines hitherto used for separating granular or like finely divided materials possess a marked disadvantage in that they work intermittently i. e. such machines must be stopped periodically for example every seven minutes for recharging. After charging a machine runs for four minutes, and in all is idle for five hours out of twenty-four.

The initial consumption of power for these machines is 25-30 horse-power and owing to their intermittent action this amount of power is required every few minutes.

The present invention contemplates a centrifugal machine which shall be capable of working continuously and economically and shall be simple in construction. This machine is provided with conical drums composed for example of two concentric conical perforated drums mounted upon a transverse plate said plate having apertures arranged in that part of its area traversing the annular space between said drums.

As will be appreciated hereinafter such a machine is particularly useful for freeing materials such as sugar from finely divided impurities, since the sugar is compelled to follow a long path during which it may be thoroughly bleached or otherwise treated.

The raw material is fed in axially of the machine and the operation is continuous. Little attention is needed, and five machines may easily be tended by a single operative.

Another advantage of this improved machine is its low initial consumption of power. This is about 12 horse-power, the average consumption being only 8 horse-power owing to the continuous action of the machine.

One embodiment of the centrifugal machine according to the present invention is illustrated by the appended drawing which is a vertical sectional view of the machine.

The casing 1 of the machine is provided with brackets 2 connecting it to a cylindrical outer cover 5 provided with a lid 6. The outer cover 5 is fixed to a stationary frame 4 of the machine by means of a ring 3. To the outer cylindrical cover 5 is fixed a conical drum 7 from which depends a basket or hopper 8.

The material which has to be worked by the machine is fed from a distributor 9 through a pipe 10 into the main feeding pipe 11 and falls to the centre of a star-plate 27 from which it is thrown under the action of the centrifugal force upon the inclined perforated walls of an inner drum 12. These walls are covered by a metal sieve or made of perforated metal sheets so that the first rejection passes through this sieve into a chamber 13 and falls via the apertures in the star plate upon its sloped bottom 14 passing thence through the pipe 15 into a tank. The material which does not pass through the apertures moves upwards along the inclined walls of the drum 12 and falls over its upper edge upon the bottom of a chamber 16, from which it is thrown again under the action of the centrifugal force upon the inclined walls of the outer rotating drum 17 made also in form of a sieve and moves upwards, meeting a current of bleaching agent and also, if desired, a current of steam.

After having reached the upper edge of the drum 17 the material falls through the chamber 18 and basket or hopper 8 on to a conveyor, for example a Creis transporter or a screw-conveyor 19. The second rejection passes through the walls of the drum 17 into the chamber 20 and thence through a pipe 21 into the tank.

A conical ring 22 serves for regulating the thickness of the layer of material leaving drum 17, said regulation being effected by means of a lever mechanism 23. The conical ring also prevents any penetration of steam into the chamber 18. The vapours are sucked out from the machine by an exhauster through the pipe 24. The bleaching agent is fed in by a pipe 25, the steam being fed in through the pipe 26.

The spindle 31 is located by an upper ball bearing (not shown) said spindle being driven in any convenient manner, for example by a pulley or directly by a motor. The lower ball bearing 28 prevents any lateral oscillations of the spindle. The cylindrical casing 29 suspended from the lid 6 by

means of sheet iron brackets 30 constitutes the chamber 16.

What I claim is:—

1. A centrifugal separator for granular and powdered materials consisting of a casing, a rotor therein comprising a transverse plate, a plurality of concentric conical sieve drums mounted thereon, there being apertures in said plate disposed in the annular area thereof lying between said drums, means for feeding material into one of said drums, and means whereby the plate is rotated.

2. A centrifugal separator for granular and powdered materials consisting of a casing, a rotor therein comprising a transverse plate, a plurality of concentric conical sieve drums mounted thereon, there being apertures in said plate disposed in the annular area thereof lying between said drums, means for continuously feeding the materials to be treated on to the centre of said plate, and means whereby the plate is rotated.

3. A centrifugal separator for granular and powdered materials consisting of a casing, a rotor therein comprising a transverse plate, a plurality of concentric conical sieve drums mounted thereon, there being apertures in said plate disposed in the annular area thereof lying between said drums, means for feeding material into one of said drums, means for regulating the rate of flow of said materials through the separator, and means for rotating the plate.

4. A centrifugal separator for granular and powdered materials comprising a casing, a spindle rotated by a driving means, a circular plate attached thereto, a plurality of concentric conical drums having perforated walls mounted co-axially with said spindle on and above said plate, the least diameter of the outer drum being greater than the greatest diameter of the inner drum, both drums being by rims attached to said plate, a vertical cylindrical impervious plate surrounding the inner drum of a diameter equal to the greatest diameter of said inner drum, there being perforations in said horizontal circular plate disposed in the annular area thereof lying between the lower rims of said inner drum and said impervious cylindrical plate, and means for feeding material to be treated into one of said drums.

5. A centrifugal separator for granular and powdered materials comprising a casing, a rotor therein comprising a transverse plate, a plurality of concentric conical sieve drums mounted thereon, there being apertures in said plate disposed in the annular area thereof lying between said drums, means for feeding material into one of said drums, means whereby the material which passes through the wall of one drum is discharged separately from the material which passes through the wall of another drum, and means whereby the plate is rotated.

6. A centrifugal separator for granular and powdered materials comprising a casing, a rotor therein comprising a transverse plate, a plurality of concentric conical sieve drums mounted thereon, there being apertures in said plate disposed in the annular area thereof lying between said drums, means for feeding material into one of said drums, means whereby a treating fluid is passed into one of said drums and means whereby the plate is rotated.

7. A centrifugal separator for granular and powdered materials comprising a casing, a rotor therein comprising a transverse plate, a plurality of concentric conical sieve drums mounted thereon, there being apertures in said plate disposed in the annular area thereof lying between said drums, means for feeding material into one of said drums, means whereby a treating fluid is passed into one of said drums, means whereby the fluid is exhausted from said drums, and means whereby the plate is rotated.

8. A centrifugal separator for granular and powdered materials comprising a casing, a rotor therein comprising a transverse plate, a plurality of concentric conical sieve drums mounted thereon, there being apertures in said plate disposed in the annular area thereof lying between said drums means for feeding material into one of said drums, means whereby a plurality of fluids may be passed into one of said drums, and means whereby the plate is rotated.

9. A centrifugal separator for granular and powdered materials comprising a casing, a rotor therein comprising a transverse plate, a plurality of concentric conical sieve drums mounted thereon, there being apertures in said plate disposed in the annular area thereof lying between said drums, means for feeding material into one of said drums, means whereby a plurality of fluids may be passed separately into one of said drums, and means whereby the plate is rotated.

10. A centrifugal separator for granular and powdered materials comprising a casing, a rotor therein comprising a transverse plate, a plurality of concentric conical sieve drums mounted thereon, there being apertures in said plate disposed in the annular area thereof lying between said drums, means for feeding material into one of said drums, means whereby a plurality of fluids may be passed separately into one of said drums, means whereby the fluids are exhausted from the drum, and means whereby the plate is rotated.

In testimony whereof I have signed my name to this specification.

WŁADYSŁAW ZEŁEŻNIAK.