

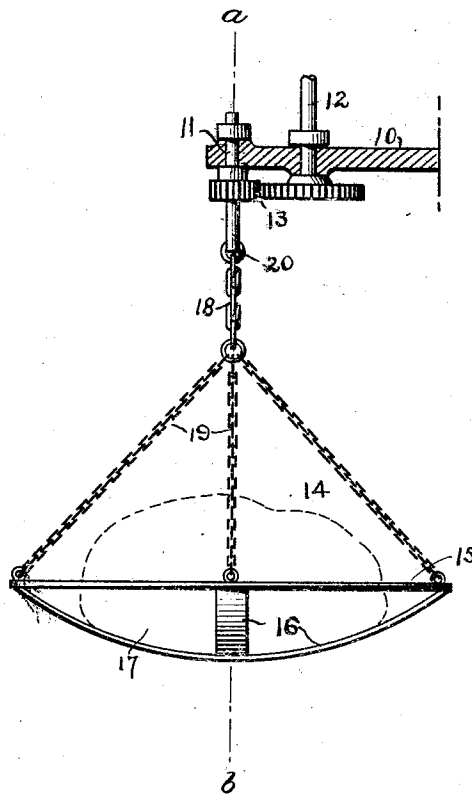
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K. G. KARSTEN

CENTRIFUGAL MACHINE

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CENTRIFUGAL MACHINE.

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To all whom it may concern:

Be it known that I, KARL G. KARSTEN, a citizen of the United States, and resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Centrifugal Machines, of which the following is a specification.

The invention relates in general to a centrifugal machine of the class of such machines which are intended to subject a sustained body to centrifugal action, and the invention particularly relates to such a machine for use in whirling from the body under treatment, liquids or solid particles or parts which adhere to or constitute part of the body or group of bodies under treatment.

Further defining the utility of such a machine it is suggested that the showing in the present disclosure may be suitably modified if necessary so that the machine may be utilized for whirling clothes, vegetables, or other wet articles for the purpose of drying or cleaning the same from adhering foreign matter. It is obvious that with smaller openings than illustrated the illustrated device may be used to rearrange the constituents of a conglomerate mass, such as the separation or rearrangement of ingredients in matte and other plastic ores, or in the form illustrated the device may be used for the purpose of breaking up a mass or body into its constituent parts, such for instance as the separation of dates individually from a mass of the same.

Centrifugal machines as at present constructed usually include a container or receptacle for the articles to be treated, and which receptacle is carried by and rigidly attached to a rotating shaft which imparts the necessary rotary motion to the container. In these known constructions the axis of rotation is fixed, and means must be provided for maintaining the articles under treatment at the axis of the machine otherwise the article as a whole would be subject to the centrifugal force developed and would move off the supporting container. Any such movement out of the machine is prevented in these old structures by some screen or stop arrangements, which especially in high speed machines must be strong and therefore of bulky form in order to retain the enclosed mass. Obviously such screens

or stops add materially to the cost of construction of the machine and also to the cost of operation.

Accordingly, one of the objects of the invention is to provide a simple form of centrifugal machine which can receive massive articles to be treated without any necessity for exercising particular care that it or they be deposited in line with any set axis of rotation, which will function efficiently without any necessity for the use of securing means, screens or other forms for stops for preventing bodily movement of the body under treatment from the whirling support.

Broadly, I attained this invention by providing a pendulous form of container for the article to be treated and which container will be free to shift its position so as to bring the center of mass of the article to be treated automatically into position in the vertical line containing the point of suspension of the container. The container is then rotated by any suitable driving mechanism as is usual in centrifugal machines independent of any shifting of the center of mass of the whirled article or articles in the container.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the drawings the figure is a view in side elevation showing a preferred embodiment of the invention largely in diagrammatic form.

In the drawings there is disclosed a support 10 which carries a driving shaft 11 driven from some suitable driving mechanism indicated generally by the shaft 12 connected to the shaft 11 by means of intermeshed gearings 13. There is provided a container 14 which in so far as the invention is concerned may be simply a flat support, but in order to illustrate a form which possesses the additional function of causing the supported article to fall gravitationally is shown as a basket so as to provide a concaved or conical support for the article to

be treated. In the specific form illustrated the container includes a peripheral ring 15 and broad strips 16 depending from the ring and intersecting at the point which will normally be the axis of rotation indicated by the line $a-b$. These strips are spaced apart to provide openings 17 between the strips for permitting the discharge of the particles thrown off from the whirling mass. The container is connected to the shaft 11 by means of a flexible connection provided by the chain 18 and from which chain extends a plurality of supporting chains 19. It is appreciated that the pivotal mounting of the chain 18 provides a universal joint between the container and its support.

In operation it will be understood that the vegetables, dates, clothes or other articles or masses to be whirled are positioned in the container and, as is usual with pendulous bodies, the container when not rotating will swing horizontally about the point 20 as a pivot so as to bring the center of mass of the article into the vertical line $a-b$.

By means of the driving mechanism illustrated the pendulous container is rotated at such a speed as will throw off the water or other particles or parts adhering to the mass held in the container. Due to the concave configuration of the container, the same can be readily loaded to bring the center of mass of the contents in the vertical line $a-b$. In cases where the bottom of the container is flat, it may happen that the body and the container shift off center and the stop of the float bottom become sufficient to dump the body. This can be avoided by making the bottom concave with a radius of curvature not less than the distance from the bottom to the point of suspension. This will insure the retention of the body on the bottom irrespective of the shifting of the container away from the vertical axis $a-b$. The mass in changing its configuration under the centrifugal action developed will tend to shift the container and in this way the mass will be maintained with its center of mass in the line $a-b$ even though the

mass be changing its center of mass, its configuration and its size.

As the device, with its contents, will swing at all times to lower its center of mass, the centrifugal action will not effect a bodily movement of the contents and in those cases where the contents is a single body, the container may be simply a flat platform.

Of course in those cases where a selective action of the parts to be thrown off is to be provided, the device illustrated may be provided with a suitable screen or stop at the periphery of the container.

While I have shown and described, and have pointed out in the annexed claims, certain novel features of my invention, it will be understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

Having thus described my invention, I claim:

1. In a machine for separating adhering particles from a unitary body, the combination of a container for the body having a freedom of movement in all horizontal directions, a pendulous suspension for the container a support for the suspension mounted for rotary movement about a vertical axis and means for rotating the support thereby to cause the container to rotate about a vertical axis while free to swing laterally thereby to bring the center of mass of its contents in said vertical axis.

2. A centrifugal machine for whirling adhering particles off from a unitary body, said machine including a container for the body to be treated, said container having two degrees of rotational freedom about axes at right angles to each other, and means for spinning the container about a vertical axis.

Signed at New York city, in the county of New York and State of New York this 1st day of December, A. D. 1921.

KARL G. KARSTEN.