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S. ODAJIMA

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SPINNING CENTRIFUGAL MOTOR ARRANGEMENT

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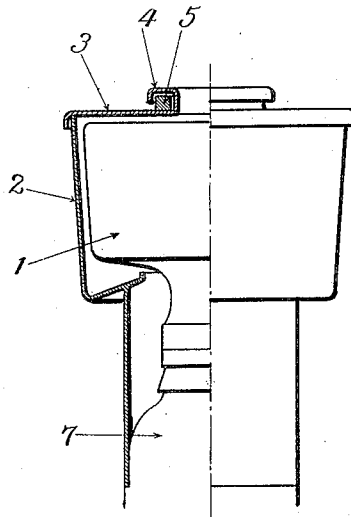


FIG I

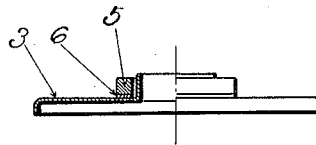


FIG II

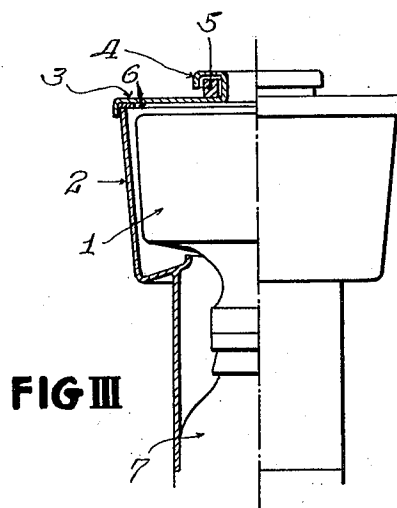


FIG III

INVENTOR
SHUZO ODAJIMA
BY
Richards & Geier
ATTORNEYS

UNITED STATES PATENT OFFICE

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SPINNING CENTRIFUGAL MOTOR
ARRANGEMENTShuzo Odajima, Toba-Machi, Shima-Gun, Japan,
assignor to Kobe Seiko-Sho, Ltd., Fukiai-ku,
Kobe, JapanApplication June 23, 1934, Serial No. 732,853
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3 Claims. (Cl. 117-27.5)

This invention relates to spinning centrifugal motor arrangements, wherein a movable and revolving ring of proper weight is placed on the lid of the case covering the motor.

5 An object of this invention is to provide a device of this type capable of controlling vibrations of the motor and case for the purpose of saving in the consumption of electrical power.

10 As it is well known, air disturbances created by the revolutions of the pot are powerful enough to increase the consumption of electrical power while operating a spinning centrifugal motor. If the pot is covered by a case provided with a lid, similar to the pot in shape but a little larger in size, so that a narrow space is left around the pot, the consumption of electrical power is reduced in a remarkable degree for the reason that the volume of air, which is disturbed by the revolutions of the pot, is limited to that confined within the case. However, such arrangements render the operation of the motor unstable due to the following reasons:

15 If the pot is covered with a case, it is practically impossible to provide a free space of the same dimensions between the covering case and the pot, so that various currents of air will be produced around the pot by its revolutions and, naturally, the pressure upon one part of the covering case and lid will be different from that upon another part, which will cause the case and lid to start vibrating, vertically and horizontally. Vibrations thus caused increase gradually, eventually involving the motor itself in vibrations, and make it impossible to keep the motor further in operation.

20 In order to control such vibrations, a lid of heavy weight may be used, or the case and lid may be connected with some external fixture, but both these methods are, in practice, quite inconvenient for spinning purposes in view of the fact that it is frequently necessary to remove the lid from the motor in operation. Another method is to avoid the use of the lid or to make holes on the side walls of the case in order to render air pressure uniform all around the pot, but this method does not succeed in lessening the volume of air disturbed by revolutions of the pot, or in saving a consumption of electric power.

25 By experiment I found that if the proper part of the lid was pressed, for instance, by a finger, the vibrations of the case could easily be controlled. I fixed on the lid a proper weight and investigated the result of my experiment by changing a position of the fixed weight on the lid and found that the weight, which could not

control vibrations when it was on a part where shocks were severe, could control vibrations when it was fixed to a part where the shocks were slight, i. e. to a part close to the shaft. From this experiment, I found that a lighter weight will serve this purpose if the same be fixed exactly at the center of vibrations upon the surface of the lid. The center of vibrations may technically be said to coincide with the center line of the axis of the motor, but it is practically impossible to make the center of vibrations to coincide exactly with the center line of the axis of the motor, and, therefore, it is hardly possible to fix the weight upon the center of vibrations on the lid even after such center has been determined.

15 Another experiment was carried out in the following manner:

I placed a freely movable weight upon the surface of the lid and found that while the case was vibrating, the weight, being unable to rest there, started to carry out turning movements on the lid toward the center of vibrations and finally rested in a certain position upon the lid, when the vibrations of the lid and case gradually subsided, resulting in a smooth operation of the motor.

20 In the above experiment, when vibrations of the case were brought about again by a pressure from the exterior, the free weight on the lid started to move against the new center of vibrations and arriving there controlled forthwith the new vibrations. It was also established that a free weight which could control such vibrations was less in weight than the fixed weight employed in the preceding experiment.

25 Judging from the result of these experiments, if the case is vibrated, the free weight on the lid starts to move by itself toward the center of vibrations and having arrived there it controls the vibrations of the case. If the case is vibrated again by some other causes, it appears that the free weight moves by itself, seeking the proper position to control such vibrations.

30 In accordance with this invention, which is based on the above mentioned facts, a movable and revolving weight is placed on the lid of the case covering the pot in such manner as to be caused by the vibrations of the case to carry out movements seeking the center of vibrations.

35 This invention will be better understood from the following detailed description and the accompanying drawing, in which:

Fig. 1 shows a front view of a vertical section of a portion of the spinning centrifugal motor.

Fig. 2 shows a vertical section of a portion of

the lid with some elastic material under the ring.

Fig. 3 shows a front view of a vertical section of a portion of the spinning centrifugal motor, wherein elastic material is placed between the 5
brim of the case and the back of the lid.

In Figure 1, 1 is a pot and 2 is a case covering the pot and similar to the pot in shape but a little larger in size, allowing a narrow space around the pot. 3 is a lid of the case having a 10
flange 4 which holds a ring 5 of proper weight and which permits the ring to move and revolve freely within the flange. 7 is the body of the motor to which the case 2 is attached.

Since the ring 5 is capable of moving and revolving in the flange 4 which is provided on the 15
lid 3 of the case 2, when a difference in air compression at certain places within the case causes the case to start vibrating or causes the lid to carry out vibrations or turning movements, the ring 20
is unable to rest at the position where the shocks are severe, and commences by itself to move and to turn towards the center of vibrations; the ring stops moving after having reached this center. Since the ring moves by itself to the most effective 25
position for controlling vibrations or turning movements of the case or lid, a ring of lighter weight may be used for controlling such vibrations, than in the case where a lid of heavy weight is employed. To secure a maximum efficiency, 30
it is advisable to insert some elastic material 6 under the ring 5, as illustrated in Figure 2, for

the reason that when an elastic material is inserted between the ring 5 and the lid 3, the ring moves not only quietly but also smoothly, since it is not involved in vertical movements in conjunction with the lid, even if the lid is caused 5
to move up and down.

The effect is the same if an elastic material 6 is inserted between the back of the lid and the brim of the case covering the pot.

I claim:

1. In a spinning centrifugal motor device, in 10
combination with a pot, a case covering at least a part of said pot, a lid connected with said case, a flange upon said lid, and a movable and revolving ring freely mounted upon said lid and adapted 15
to be held by said flange.

2. In a spinning centrifugal motor device, in combination with a pot, a case covering at least a part of said pot, a lid connected with said case, a flange upon said lid, a movable and revolving 20
ring freely mounted upon said lid and adapted to be held by said flange, and a layer of elastic material situated between said ring and said lid.

3. In a spinning centrifugal motor device, in combination with a pot, a case covering at least 25
a part of said pot, a lid connected with said case, a flange upon said lid, a movable and revolving ring freely mounted upon said lid and adapted to be held by said flange, and a layer of elastic material situated between said lid and said case.

SHUZO ODAJIMA.