

March 1, 1932.

C. RINGWALD

1,847,227

MIXING AND AGITATING MACHINE

Filed June 23, 1930

2 Sheets-Sheet 1

FIG. 1

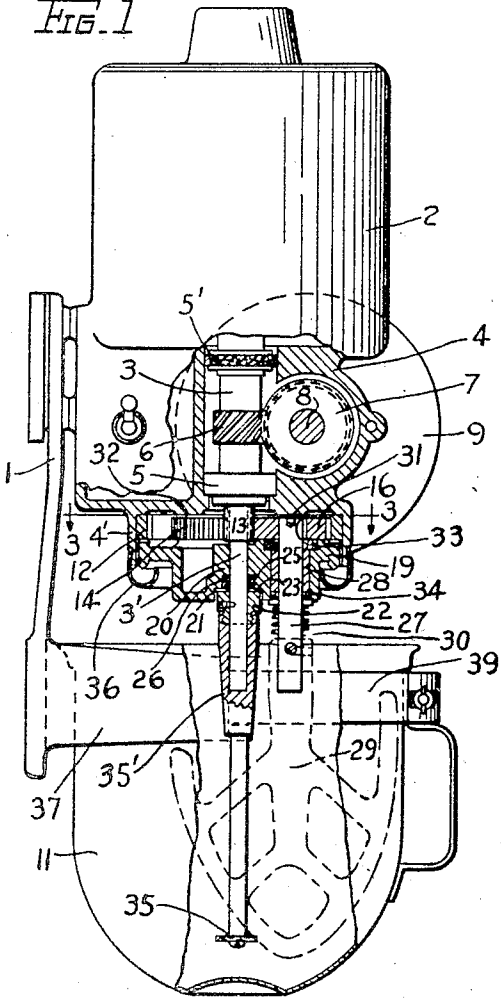


FIG. 2

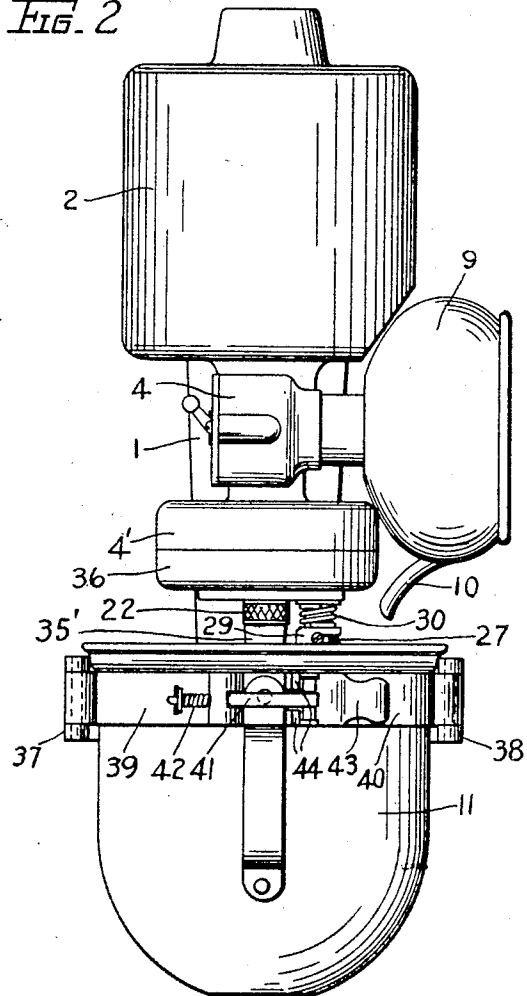
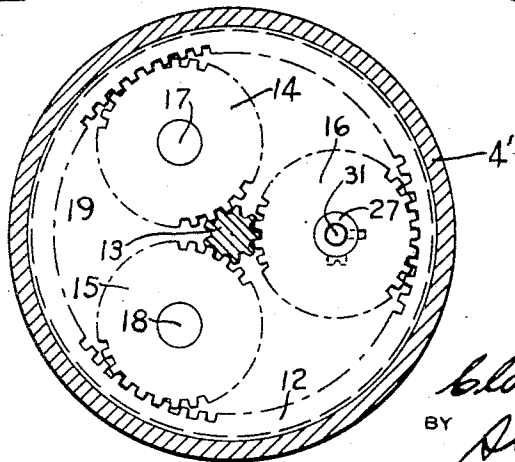


FIG. 3



INVENTOR

Clarence Ringwald
BY Staley & Erlich

ATTORNEYS

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C. RINGWALD

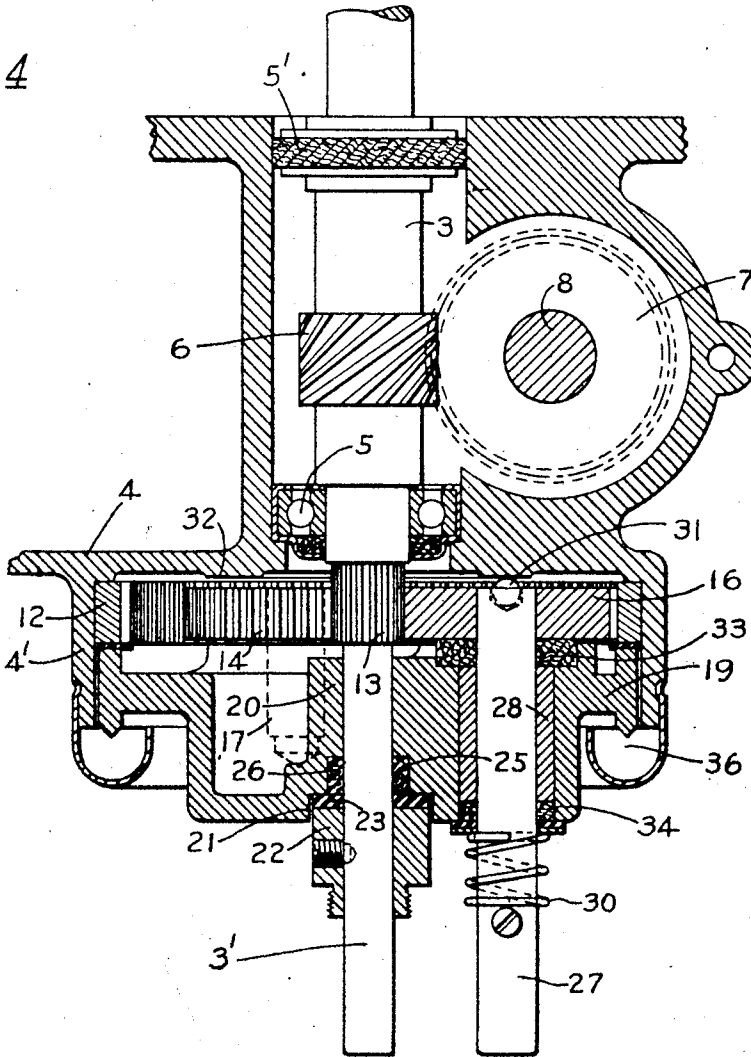
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FIG. 4



INVENTOR

Clarence Ringwald

BY

Staley & Melch

ATTORNEYS

UNITED STATES PATENT OFFICE

CLARENCE RINGWALD, OF NORTH HAMPTON, OHIO, ASSIGNOR TO ROBBINS & MYERS, INC., OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO

MIXING AND AGITATING MACHINE

Application filed June 23, 1930. Serial No. 463,139.

This invention relates to electrically-driven mixing and agitating machines for drinks, food and the like.

One of the objects of the invention is to provide two separate stirrers adapted to be installed separately in a common receptacle, with provision for operating one as a high-speed stirrer and the other as a low-speed stirrer; a further and more specific object being to provide for connecting the high-speed stirrer directly to the motor shaft and for connecting the low-speed stirrer to the motor shaft through speed reduction gearing; a still further and more specific object being to provide for revolving the low-speed stirrer not only upon its own axis but also about the axis of the high-speed stirrer.

A further object of my invention is to provide improved means for supporting the food stirrer to reduce friction and facilitate the lubrication of the relatively removable parts.

Further objects will appear from the accompanying description and claims.

In the accompanying drawings:

Fig. 1 is a view partly in side elevation and partly in vertical section.

Fig. 2 is a front elevation.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is an enlarged vertical section of some of the parts shown in Fig. 1.

Referring to the drawings, 1 represents a suitable supporting bracket, the upper end of which is connected with an electric motor 2, preferably of the two-speed type, having one end of its shaft 3 depending vertically. The lower head of the motor has a housing 4 through which the shaft extends, the shaft being journalled in ball bearings 5 and there being a lubricant retaining washer 5' placed about the shaft near the upper end of the housing. That portion of the shaft within the housing is provided with a worm 6 which drives a worm wheel 7 on a laterally-extending horizontal shaft 8. This shaft 8 is for the purpose of driving an implement such as a food chopper or juice extractor, a juice extractor being connected therewith in the present case, the bowl of which is represented at 9 which has a spout 10 which is arranged to discharge in the receptacle 11.

The under side of the housing 4 has an annular extension 4' in which is supported a stationary internal ring gear 12. A reduced extension 3' of the motor shaft has fast there-to a pinion 13 which meshes with a plurality of gears three in number in the present case, indicated at 14, 15 and 16, each of these gears also meshing with the ring gear 12. The two gears 14 and 15 are loosely mounted upon studs 17 and 18 projecting upwardly from an annular head 19 which projects into the housing extension 4', but is slightly spaced therefrom so as to be out of frictional engagement therewith. This head has a central hub portion 20 through which the extension 3' of the motor shaft 3 extends, the lower end of the hub being recessed as at 21 to receive a supporting bearing 22 which is connected to the shaft by a set screw with a fiber washer 23 preferably interposed between the bottom of the recess and the upper end of the bearing. The hub also has another recess 25 to receive suitable lubricant retaining material 26 such as wool yarn.

The gear 16 is connected with a spindle 27 which projects through a suitable bushing 28 inserted in a bore of the head 19, the lower end of this spindle being adapted to have connected therewith a suitable stirrer 29 by an ordinary bayonet connection, a coil spring 30 being preferably interposed between the head and the upper end of the stirrer to retain it in position. A ball thrust bearing 31 is interposed between the upper end of the spindle 27 and the housing, the housing being provided with an annular rib 32 to form a track for the ball. The housing 19 is recessed about the spindle to provide a pocket for lubricant retaining material such as wool yarn as indicated at 33 and a lubricant retaining felt washer 34 is also confined about the spindle at the place where it leaves the housing.

A suitable form of stirrer 35 is connected to the motor shaft extension 3', this connection being preferably made by screw-threading the lower reduced end of the bearing member 22 to receive the screw threads of an enlarged sleeve-like portion 35' connected to the upper end of the stirrer 35.

By this arrangement it will be seen that the stirrer 35 can be operated at the speed of the motor, while the other stirrer 29 may be revolved on its own axis at a speed less than the motor through the reduction had in the gearing described and may also revolve around the axis of the motor shaft. Further, the gears 14, 15 and 16 act to centralize the head 19 within the housing extension 4' to keep the periphery of the annular head out of contact with the interior wall of the housing extension so as to eliminate the necessity of lubrication at that point, as that is a place which cannot be successfully lubricated, at least three gears being necessary for the purpose, although if desired a greater number may be employed. When the head revolves, it finds a bearing solely upon the bearing member 22 on the motor shaft which is a point which can be readily and successfully provided with lubricant.

There is removably attached to the lower portion of the housing an annular sheet metal channel member 36 to catch any drippings of lubricant which may find their way between the head and the housing although as no lubricant is purposely supplied at that point due to the construction described the amount of lubricant which finds its way there to is exceedingly small and will be caught and retained by the channel 36, which channel may be removed from time to time for cleaning purposes.

The bowl is held in position by a pair of rigid curved arms 37 and 38, preferably integrally attached to the supporting bracket 1, and by a pair of flexible straps 39 and 40, pivotally connected with the rigid arms. These arms and straps encircle the bowl, the free ends of the straps being connected by a link 41 which has a yieldable connection with the arm 39 through the coil spring 42 and which has pivotally connected with the other end a cam lever 43 adapted to engage the out-turned end 44 of the arm 40.

It will be understood that but one of the stirring devices will be installed at a time, these stirring devices being readily removed and attached when it is desired to replace one by the other.

Having thus described my invention, I claim:

1. In a device of the character described, an electric motor and its shaft, a pinion connected with said shaft, a revoluble head, a spindle rotatably mounted in said head, a fixed internal ring gear, an intermediate gear fast to said spindle and meshing with said pinion and ring gear to revolve the spindle upon its own axis and move the same about the axis of said shaft, a pair of stirrers, means for removably connecting one stirrer directly to the motor shaft, and means for connecting the other stirrer to said spindle.

2. In a machine of the character described,

an electric motor and its shaft, a head supported by said shaft for independent rotation relative thereto, a housing surrounding said head but out of contact therewith, a stationarily-mounted internal gear, a pinion connected with said shaft, a series of at least three intermediate gears rotatably mounted on said head and meshing with said pinion and stationary gear, and a stirrer connected to rotate with one of said intermediate gears.

3. In a machine of the character described, an electric motor and its shaft, a head supported by said shaft for independent rotation relative thereto, a housing surrounding said head but out of contact therewith, a stationarily-mounted internal gear, a pinion connected with said shaft, a series of at least three intermediate gears rotatably mounted on said head and meshing with said pinion and stationary gears, a spindle connected with one of said intermediate gears, and a stirrer removably connected with said spindle.

4. In a machine of the character described, an electric motor and its shaft, a stirrer directly connected to said shaft, an annular head supported by said shaft for independent rotation relative thereto, a housing surrounding said head but out of contact therewith, a stationary internal gear mounted in said housing, a pinion connected with said shaft, a series of at least three intermediate gears rotatably mounted on said head and meshing with said pinion and stationary internal gear, and a second stirrer connected to rotate with one of said intermediate gears.

5. In a device of the character described, an electric motor and its shaft, a pair of stirrers, means for removably connecting one of said stirrers directly to said shaft to rotate at motor speed, speed reduction gearing including a pinion connected with said shaft, a fixed gear, and an intermediate gear meshing with said pinion and fixed gear and rotating at less than motor speed about said shaft and about its own axis, and means for removably connecting the other of said stirrers to said intermediate gear for rotation at the same speed therewith.

In testimony whereof, I have hereunto set my hand this 17th day of June, 1930.

CLARENCE RINGWALD.