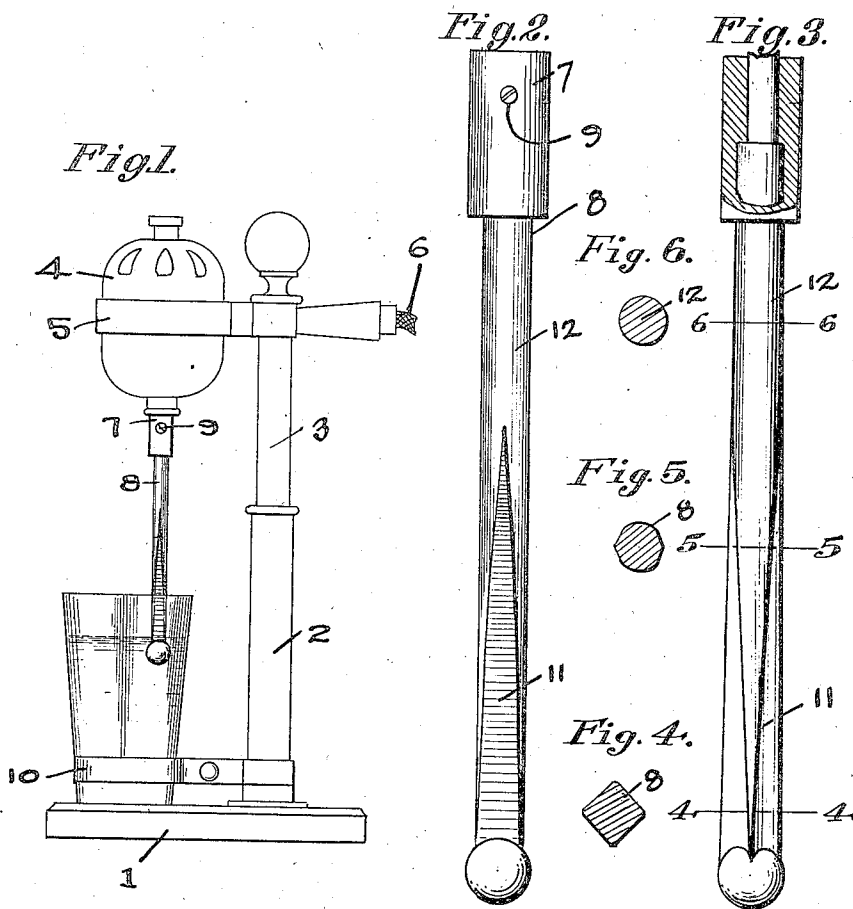


H. G. LEVY.
MIXING DEVICE AGITATOR.
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1,416,100.

Patented May 16, 1922.



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MIXING-DEVICE AGITATOR.

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Specification of Letters Patent. Patented May 16, 1922.

Application filed March 14, 1921. Serial No. 451,937.

To all whom it may concern:

Be it known that I, HENRI G. LEVY, a citizen of the United States, and a resident of the city and county of San Francisco, State of California, have made a new and useful invention—to wit, Improvements in Mixing-Device Agitators; and I do hereby declare the following to be a full, clear, concise, and exact description of the same.

10 This invention relates particularly to agitators for mixing fluids, semi-fluids or solid ingredients.

An object of this invention is to provide an agitator that will thoroughly intermix the ingredients into which it is placed and especially with reference to fluids, will thoroughly aerate the same.

A further object of the invention consists in adapting any standard mixing apparatus to achieve in a measure certain of the results of a device constructed according to this invention, by placing the agitator shaft of the mixing device eccentric to the axis of the container of articles to be mixed. A further object of the invention is to provide an instrument or an agitator of this character that will be superior in point of simplicity, inexpensiveness of construction, positiveness of operation and facility and convenience in use and general efficiency. Other objects and advantages will appear as this description progresses.

In this specification and the annexed drawings, the invention is illustrated in the form considered to be the best, but it is to be understood that the invention is not limited to such form, because it may be embodied in other forms, and it is also to be understood that in and by the claims following the description, it is desired to cover the invention in whatsoever form it may be embodied.

In the accompanying one-sheet of drawings,

45 Figure 1 represents a side elevation of a typical mixing device having an agitator shaft constructed in accordance with my invention applied thereto.

50 Figure 2 represents an enlarged side elevation of my improved agitator shaft.

Figure 3 represents a side elevation of Figure 2 showing in detail the method of connecting the agitator shaft to the mixing device revolving mechanism.

Figure 4 represents a cross-section taken 55 through Figure 3 on the line 4—4.

Figure 5 represents a cross-section taken through Figure 3 on the line 5—5.

Figure 6 represents a cross-section taken 60 through Figure 3 on the line 6—6.

In detail the construction illustrated in the drawings comprises a platform 1 having a standard 2 securely mounted thereon and provided with a projecting arm 3 slidably retained therein and movable relative there- 65 to and with a revoluble mechanism 4 thereon. The revoluble mechanism 4 is secured to the arm 3 by the clamping member 5 or other similar attaching means and is connected through the energy conveying means 70 6 to any source of supply. Although I have shown and described an electrically operated motor, I do not wish to be understood as limiting myself to this particular type of mover for the reason that it would be clearly 75 within the purview of this invention to utilize fluid or gaseous means on appropriate apparatuses for the purpose of obtaining a similar rotary result. Furthermore I do not wish to limit myself to the particular type 80 of mixing machine shown for the reason that there are many modifications of similar devices that suggest themselves within the purview of this invention. The source of energy is connected with the moving mechanism 4 by any suitable switch or valve controlling mechanism (not shown) according to the medium used, in an obvious manner. The revoluble mechanism 4 is provided with an extended shaft member 7 to which an 90 agitator shaft 8 is adapted to be secured by the screw means 9 or any other suitable and equivalent method. In conformity with the usual practice in the construction of motors of this kind, the agitator shaft projects 95 from the underside of the revolving mechanism and the axis thereof lies substantially parallel to that of the supporting standard. The supporting standard 2 adjacent the platform 1 is provided with spring fingers 100

10 that are adapted to detachably engage and hold in substantially a rigid vertical position the container holding the ingredients to be mixed.

5 As a further improvement in my invention, I have mounted the spring fingers 10 relative to the standard 1 and to the axis of the agitator shaft so that when the ingredient container is placed within the spring
10 fingers, the axis of said container will be placed slightly eccentric to the axis of the agitator shaft. This has been done for the reason that in all of the present types of standard mixing apparatuses, the axis of the
15 agitator shaft is substantially concentric with the axis of the container holding the ingredients to be mixed. As a result, when the agitator shaft commences to revolve, the centrifugal action thereof causes the ingre-
20 dients to be thrown away therefrom and to swirl around the sides of the container, and said agitator shaft itself is not immersed or otherwise actually engaged in mixing the ingredients. By placing the axis of the
25 agitator shaft eccentric to the axis of the container, the swirling effect to a certain degree is eliminated.

Cylindrical agitator shafts when revolving, present no surface to which particles
30 of the ingredients could attach and as a result such a shaft revolves freely without any ingredients clinging thereto or disturbed thereby. A continuation of the rotary action tends to throw the ingredients into a
35 swirling mass around and away from said shaft. It is the object of this invention to overcome difficulties noted in the ordinary circular agitator shaft, by providing an agitator as shown in Figures 2 and 3, wherein
40 the portion 11 thereof is either polygonal or trigonal in cross-section, and where hereinafter used, polygonal will mean the equivalent of trigonal and may consist of either three, four, six or eight, etc. sides, which
45 portion is adapted to be introduced into the ingredients to be mixed. The polygonal portion of the agitator shaft may extend over a portion thereof either greater or less than one-half of its entire length according
50 to the efficiency desired. The remaining portion 12 of the said shaft is substantially circular and merges into the flattened portion for the purpose to be hereinafter described. A spherical nosing 14 is provided
55 on the tip of the shaft 8, the same being of a width equal to the greatest width of the shaft 8, for the purpose of engaging the sides or bottom of the ingredient container.

The agitator shaft thus described operates in the following manner when introduced into ingredients to be mixed:

Assuming that the nosing 14 were resting on the bottom of a container and the axis of the agitator shaft portion 8 set eccentric-

ally to the axis of the container, the revolu- 65
ble mechanism would be started in motion to commence the rotary action of the agitator shaft. The particles of ingredients adjacent the polygonal or trigonal portion 11
70 would be in contact therewith and for the reason that the width across the sides of the polygonal or trigonal portion would be less than the width across the corners thereof, particles of the ingredients would strive to
75 stay in contact with the sides thereof during the rotary action. As a result such particles would be continuously displaced by the centrifugal action and in being thrown off
80 would be struck by the slightly wider corners of said flattened portion, tending to thoroughly intermix the said ingredients. The polygonal or trigonal shaft likewise
presents a greater frictional surface in revolving than a circular one and in its cen-
85 trifugal action would tend to create a pulsating air current action which at intervals would permit the ingredients to return and engage the said shaft. Thus a portion of
the agitator shaft as shown more thoroughly intermixes the body of the ingredients, while
90 the normal level of the ingredients would contact with the circular portion of the shaft, and, as previously described with reference to ordinary types of agitator shafts,
95 would be thrown away therefrom with a slight swirling action which is effectual for the purpose of preventing splash losses of ingredients.

Having thus described this invention, what I claim and desire to secure by Letters 100
Patent is:

1. A mixing device comprising in combination a rotary mechanism and an agitator shaft connected at one end therewith, said shaft comprising a polygonal portion merging 105
into a circular portion and a spherical member on the end of said shaft.

2. A mixing device comprising in combination a rotary mechanism and an agitator shaft connected at one end therewith, said 110
shaft comprising a polygonal portion merging into a circular portion; and means on said mixing device whereby said shaft may be disposed eccentrically to the axis of a container of articles to be mixed and a spherical 115
member on the end of said shaft.

3. An agitator for mixing devices such as described comprising a shaft having a polygonal portion merging into a circular portion and a spherical member on the end of 120
said shaft.

4. An agitator for mixing devices such as described comprising a shaft having a polygonal portion, adapted to be introduced 125
into ingredients to be mixed, and merging into a circular portion, contiguous to the normal level of said ingredients and a spherical member on the end of said shaft.

5. An agitator shaft for mixing devices comprising a spherical end portion equal to the greatest width of said shaft, said shaft having a polygonal portion thereon greater
5 than one half the length of said shaft and merging into a circular portion of the remainder of said shaft.
6. An agitator shaft for mixing devices comprising a spherical end portion equal to
10 the greatest width of said shaft, said shaft

having a trigonal portion thereon greater than one half the length of said shaft and merging into a circular portion of the remainder of said shaft.

In testimony whereof, I have hereunto 15 set my hand at San Francisco, California, this 5th day of March, 1921.

HENRI G. LEVY.

In presence of—

LINCOLN V. JOHNSON.