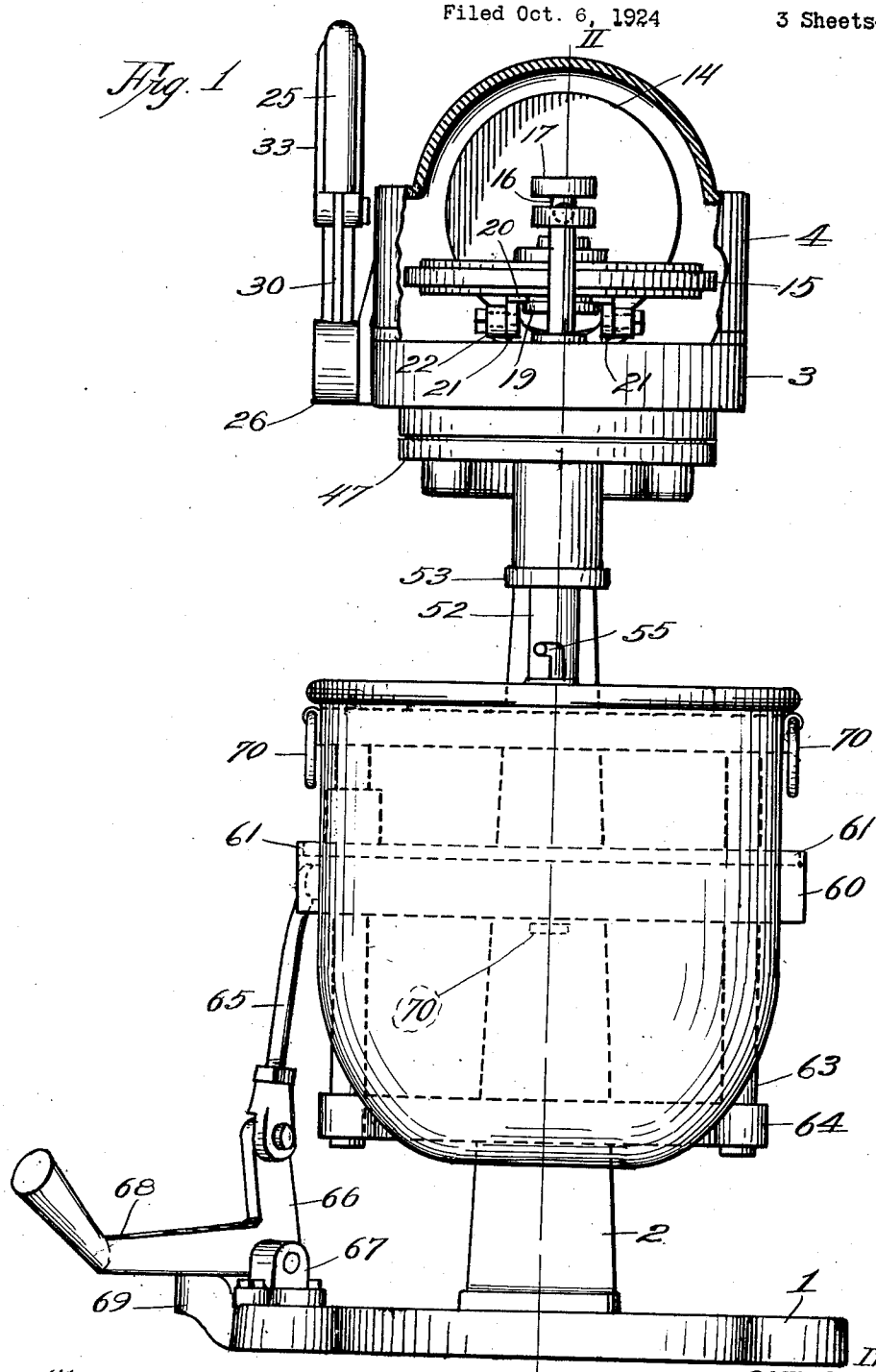
Nov. 24, 1925. 1,562,704

W. J. KEVAN

BEATING AND MIXING MACHINE

Filed Oct. 6, 1924 3 Sheets-Sheet 1

Fig. 1



Witness:
R. C. Hamilton

Inventor;
Wm. J. Kevan.
By Thorpe & Gerard
attys.

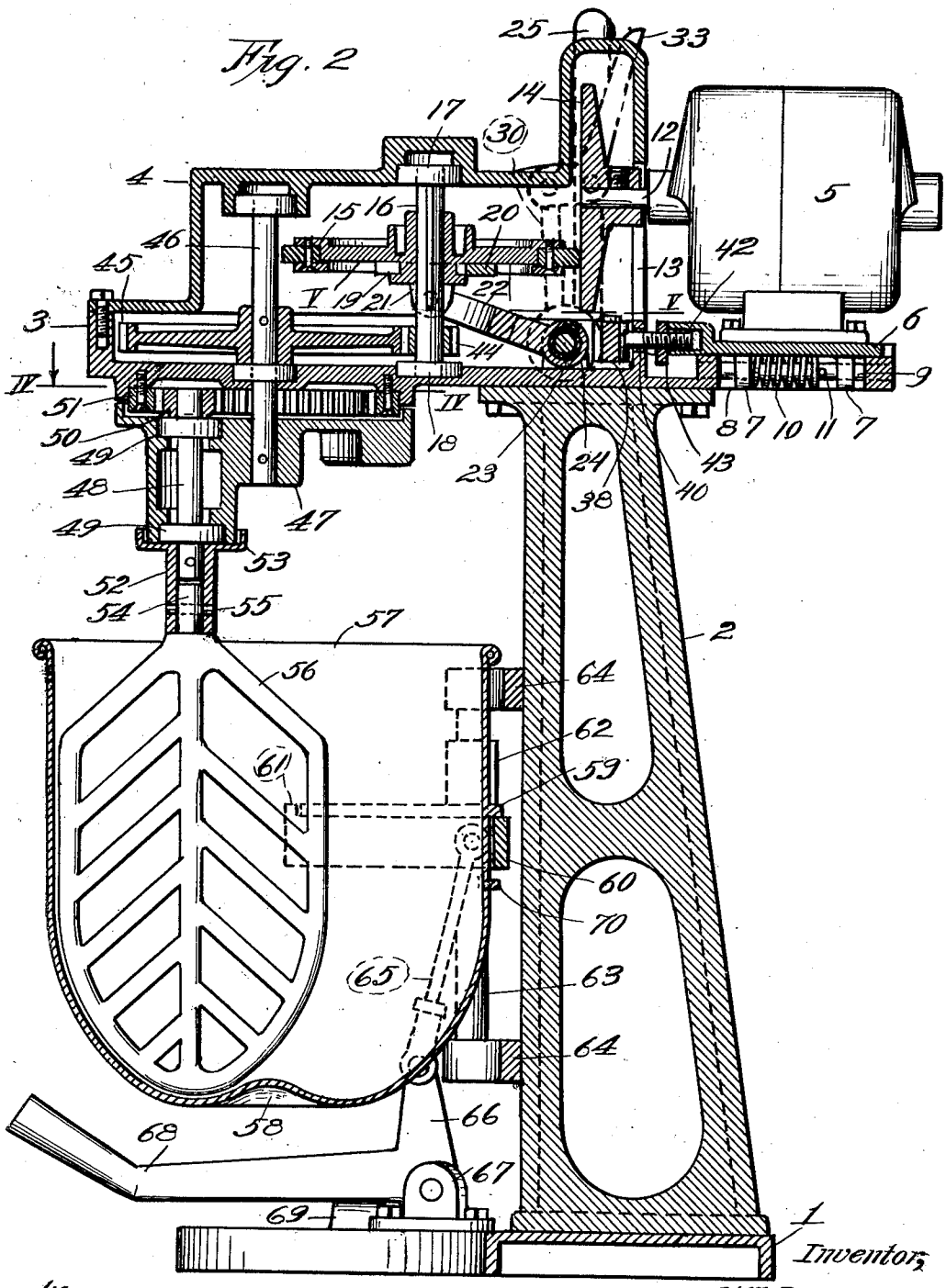
Nov. 24, 1925. 1,562,704

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BEATING AND MIXING MACHINE

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Fig. 2



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Nov. 24, 1925. 1,562,704

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BEATING AND MIXING MACHINE

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Fig. 3

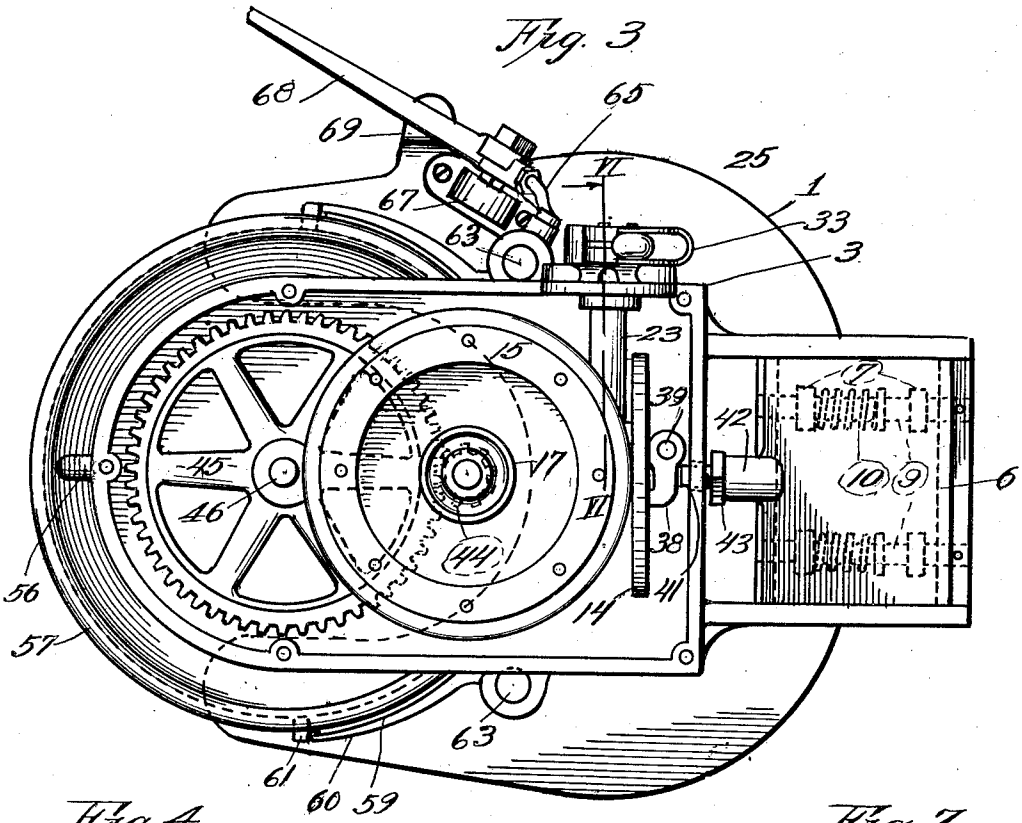


Fig. 4

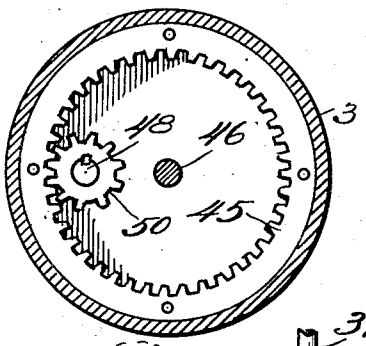


Fig. 6

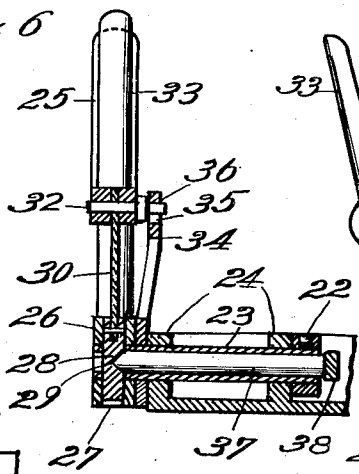


Fig. 7

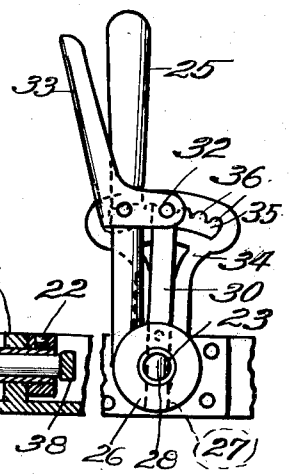
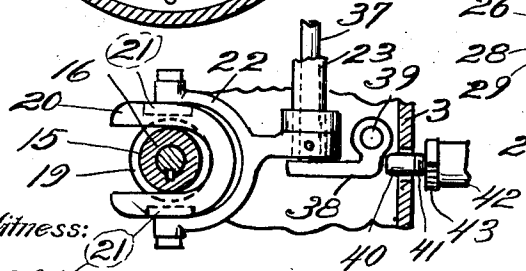


Fig. 5



Witness:

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By Thorpe Sprague

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Patented Nov. 24, 1925. 1,562,704

UNITED STATES PATENT OFFICE.

WILLIAM J. KEVAN, OF KANSAS CITY, MISSOURI.

BEATING AND MIXING MACHINE.

Application filed October 6, 1924. Serial No. 741,960.

To all whom it may concern:

Be it known that I, WILLIAM J. KEVAN, a citizen of the United States, and a resident of Kansas City, county of Jackson, State of Missouri, have invented a certain new and useful Improvement in Beating and Mixing Machines, of which the following is a complete specification.

This invention relates to beating and mixing machines for cream, batter and other liquid or semi-liquid substances, and has for its object to produce an efficient machine of this character, making provision for accomplishing through a single control mechanism, the triple function of establishing or breaking a driving connection, effecting a change in the speed of the driven elements of such connection, and locking the driving connection in or out of operative condition.

A further object is to provide for such relative adjustments of the beater or agitator element and the mixing vessel, as shall effect scraping contact between them or permit of the ready removal of the vessel from and its return to operative position.

With these general objects in view, the invention consists in certain novel and peculiar features of construction and combinations of parts as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawings, in which:—

Figure 1 is a view partly in front elevation and partly broken away, of a beating and mixing machine embodying the invention.

Figure 2 is a vertical section taken on the line II—II of Figure 1.

Figure 3 is a top plan view of the machine with the hood or cap of the housing and the driving mechanism omitted.

Figure 4 is a horizontal section on the line IV—IV of Figure 2.

Figure 5 is a horizontal section on the line V—V of Figure 2.

Figure 6 is a vertical section on the line VI—VI of Figure 3.

Figure 7 is a side view of the mechanism shown by Figure 6.

Referring now to the drawings in detail, where like characters identify corresponding parts in the figures, 1 indicates a suitable base and 2 a standard erected thereon. 3 and 4 respectively indicate the bottom and top of a housing, the bottom being rigidly secured in any suitable manner upon the standard. An electric motor 5 or its equivalent is secured upon a base plate 6 resting slidingly on the bottom of the housing at the rear of the cap thereof, and provided with depending lugs 7 within a slot or opening 8 in the bottom of the housing, the lugs fitting slidingly on a pair of supporting pins 9 extending longitudinally of the housing across opening 8. A coil spring 10 is mounted on each rod 9 and bears at its front end against one of the lugs 7 of the slidable plate or support 6 and at its rear end against a pin 11 extending through the corresponding rod 9, the arrangement being such that said springs tend to move the plate and the motor forwardly. The shaft 12 of the motor projects through a slot 13 in the cap of the housing and is equipped within the latter with a friction drive wheel 14.

Arranged horizontally within the housing is a friction wheel 15, the same being keyed to turn with and slide upon a vertical shaft 16 journaled as at 17 and 18 in the housing, and said wheel 15 is adapted to engage peripherally with the front face of the drive wheel 14 and be rotated by the latter. The hub of the wheel 15 at its lower end is provided with a circular groove 19 engaged by a slidable fork 20 so that the latter may slide but not turn or rotate with the wheel, and said plate is provided at opposite sides of shaft 16 with a pair of depending ears 21 pivotally connected to the tines of a rocker fork or arm 22 secured upon a transversely extending sleeve 23 journaled in upstanding lugs 24 of the bottom of the housing. A hand lever 25 has an axial opening receiving one end of sleeve 23, and the head or pivoted end 26 of said lever which is mounted on said sleeve as stated, is provided with a radial opening which likewise extends through the sleeve and is indicated at 27 (Figure 6). Fitting slidingly in said opening is a plate 28 provided with a V-shaped notch 29 in axial alinement with the sleeve when the machine is operating or is in condition to be operated. The slide plate is connected by a link 30 to the toe end of a lever pivoted at 31 to the hand lever 25, the connection between the link and the toe of said lever being in the form of a pin 32 which projects at one end beyond the side of said lever, which has a grip portion or handle 33, so that by simultaneously grasping lever 25 and the grip lever 33, and

applying compression, the latter will be operated and thus impart downward sliding movement to the slide plate 28 to dispose the cam notch 29 thereof eccentrically with respect to the axis of sleeve 23, for a purpose which is presently explained. A fixed sector or bracket 34 is provided with an arcuate slot 35 into which the pin 32 projects, and the upper wall of said slot is provided with a series of notches 36, with any one of which said pin at its projecting end, may engage for the purpose of locking the said slide plate in the position shown by Figure 6, and incidentally locking the lever 25 against accidental operation.

Arranged slidingly in sleeve 23 is a rod 37 having a conical or pointed end normally engaging in cam relation with the notch 29 of slide plate 28, so that downward movement of said slide plate shall impart longitudinal sliding movement to the said rod. An angle lever 38 pivoted as at 39 on the bottom of the housing, has its free end disposed in the path of movement of rod 37 so that when the latter is forced endwise as stated the angle lever is operated and applies pressure on a rod or adjusting screw 40 extending through an opening 41 in the housing. The rod or screw is fitted at its rear end in a socket portion 42 of the slidable base plate or support 6, and a nut 43 mounted on said rod or screw and bearing against the front end of said socket portion transfers pressure applied on said rod by lever 38 to the socket portion for the purpose of repressing the spring-actuated support 6 and the motor thereon, this action serving to withdraw the drive wheel 14 from driving contact with the driven wheel 15. In practice it is desired that the movement of the slide plate 28 shall be so limited that the cam relation of its notch with the pointed rod 37 will never be broken so that the power of the springs 10 shall be instantly available to reelevate the slide plate 28 and thus instantly relock the same to sector and incidentally lock the lever 25 against accidental operation, and in this connection it should be noted that the parts are so proportioned that the driving wheel is restored to driving relation with the driven wheel before the relocking of the parts mentioned is fully accomplished, it being understood that the tread portion of the driven wheel is of compressible material so that the reengagement of said wheels shall not prevent the proper relocking action mentioned.

Secured upon the shaft 16 below the driven wheel 15, is a gear pinion 44 meshing with a larger gear wheel 45 secured upon a vertical shaft 46 journaled in any suitable manner in the bottom and cap of the housing, and secured upon said shaft below the housing is a frame 47, equipped eccentrically of shaft 46 with a parallel shaft 48 journaled as at 49 and provided at its upper end with a small gear wheel 50 meshing with an internal stationary gear wheel or ring 51 secured to and underlying the housing, as shown clearly in Figure 2. A sleeve 52 has an enlarged socket end 53 fitting around the lower end of the part of frame 47 containing shaft 48, the said sleeve being pinned to the lower end of shaft. A short shaft or stem 54 fits in the lower end of sleeve 52 and has a bayonet slot connection at 55 with said sleeve and is equipped below the latter wtih a skeleton or equivalent beater or agitator 56 standing within a vessel 57, which vessel has a central dome like portion 58 on its bottom to form a circular channel within which the beater is adapted to travel at its lower end, which end and the bottom of the vessel are contoured so that the beater may likewise and at the same time rotate around its own axis. The operation of the beater is planetary in character and being common in the art need not be further detailed, it being understood of course that the rotation imparted to frame 47 causes pinion 50 to travel around upon the stationary internal gear 51 and be incidentally revolved thereby around its own axis.

The vessel is formed with a horizontal external rib 59 somewhat shorter by preference than half of the circumference of the vessel, and said rib is adapted to rest upon a correspondingly formed or arcuate bar 60 provided at its ends or extremities with upstanding lips 61 abutting the end extremities of rib 59 for the purpose of affording such support to the vessel that the latter cannot slide off the arcuate bar, but must be first lifted in order to clear said lips. The arcuate bar is provided with a vertical sleeve 62 and with the latter, fits slidingly on a pair of suitably spaced vertical rods 63 secured to the ends of a pair of horizontal bars 64 secured rigidly to the frame or standard in any suitable manner. A link 65 in conjunction with a member 66 to which it is pivoted, constitutes a toggle connection between the arcuate bar 60 and a fixed point of the base 1, the fixed point being preferably in the form of a bracket 67 bolted upon the base, and the member 66 of said toggle connection is provided with a lever 68 operating the toggle and thereby disposing the vessel in its normal operative position and maintaining it in such position, the downward movement of said lever being arrested when the vessel is properly located, by the underlying lug 69 of the base. When it is desired to lower the vessel to inoperative position with relation to the agitator, the lever 68 is swung upward until the pivotal connection between the toggle members has passed the plane of the pivotal points of the opposite ends of said members. As this is accomplished the

weight of the vessel will continue the movement of the lever, the vessel descending a distance sufficient to permit the short shaft or stem 54 of the agitator to be drawn from the sleeve 62, as will be readily apparent. In this connection it will be noted that the parts should be so proportioned that when the pivotal point uniting the toggle members occupies the same plane as the pivotal points at the opposite ends of said members, the vessel occupies such position that there is scraping contact between it and the lower end or portion of the agitator, the latter being capable of use therefore in scraping batter or the like from the side walls and the bottom of the vessel. This may be done just after the beating operation is completed and either before or after the contents of the vessel have been removed.

The general operation and control of the machine is as follows: Assuming that the machine is at rest and it is desired to operate the same, the person in control grasps and applies pressure on the lever 35 and grip handle 33 and operates the latter. This operation as explained, causes the slide plate 28 to repress the rod 37 and hence repress the motor as already described. The lever 25 is then operated if it is desired to adjust the friction wheel 15 to a different point, this being effected through the operation of the sleeve 23, the rocker arm 22 and the slide 20, as hereinbefore explained. The motor is set in operation and the rotation of the wheel 14 imparts rotation to wheel 15, and from the latter the power is transmitted through gear pinion 44 to wheel 45. The shaft of said wheel turns the frame 47, and the rotation of said frame causes the agitator to travel circularly within the vessel. At the same time the small gear wheel 50 travelling with the agitator in the direction mentioned, operates upon the teeth of the stationary gear 51 and is caused to rotate thereby around its own axis and hence imparts corresponding rotation to the agitator. The bodily circular travel in conjunction with the rotation around its own axis of the beater effects a very thorough and efficient mixing operation in the case of batter or the like, or a beating or whipping operation in the event the vessel contains cream or the like. After this operation is finished, the lever 68 is raised as hereinbefore explained, and establishes a scraping relation between the vessel and agitator and later lowers the latter so that the removal and cleansing of both the beater and vessel may be facilitated.

To guard against any possibility of the vessel tilting under the beating or mixing operation which is exceedingly rapid, and particularly when a stiff batter is being worked, the vessel has an external rib 70 underlying and spaced from the arcuate bar and adapted to abut the latter in the event the vessel starts to tilt with the lips 61 as the fulcrum point. The said rib therefore guards against the rib 59 sliding over the said lips regardless of the resistance offered by the batter to the agitator.

From the above description it will be apparent that I have produced a machine of the character mentioned which embodies the features of advantage set forth as desirable in the statement of the objects of the invention, and which is susceptible of modification within the spirit and scope of the appended claims.

I claim:

1. In a machine of the character described, a drive wheel, a driven wheel for peripheral engagement with a face of the drive wheel, means to adjust the driven wheel to shift its relationship with the drive wheel to a point nearer to or further from the center thereof, means for locking the adjusting means at the desired point of adjustment, a slide actuated to move in one direction by unlocking movement of the locking means, and yieldingly-actuated means for restoring the slide to its initial position as the locking means secures the adjusting means at the desired point of adjustment.

2. In a machine of the character described, a drive wheel, a driven wheel for peripheral engagement with a face of the drive wheel, means to adjust the driven wheel to shift its relationship with the drive wheel to a point nearer to or further from the center thereof, means for locking the adjusting means at the desired point of adjustment, a slide actuated to move in one direction by unlocking movement of the locking means, yieldingly-actuated means for restoring the slide to its initial position as the locking means secures the adjustng means at the desired point of adjustment, and means actuated by said yielding means to effect power-transmitting engagement between the drive and driven wheels.

3. In a machine of the character described, a support, a motor slidable back and forth thereon, a wheel movable with and driven by the motor, a shaft extending diametrically with respect to the said wheel, a wheel on the said shaft for peripheral engagement with the face of the first wheel, a lever, a rocker arm rotatable with the lever, means for translating operation of the rocker arm into radial adjustment of the second wheel with respect to the first wheel, a plate slidable relative to the lever, a rod having a cam-relation to the said plate and movable endwise in one direction by said plate when the same slides in one direction, and means actuated by slidable adjustment of the motor in one direction, for causing the said rod to return to initial position and force the slide plate back to its initial positon.

4. In a machine of the character described, a support, a motor slidable back and forth thereon, a wheel movable with and driven by the motor, a shaft extending diametrically with respect to the said wheel, a wheel on the said shaft for peripheral engagement with the face of the first wheel, a lever, a rocker arm rotatable with the lever, means for translating operation of the rocker arm into radial adjustment of the second wheel with respect to the first wheel, a plate slidable relative to the lever, a rod having a cam-relation to the said plate and movable endwise in one direction by said plate when the same slides in one direction, means actuated by slidable adjustment of the motor in one direction, for causing the said rod to return to initial position and force the slide plate back to its initial position, and means for locking the lever against accidental movement when the said wheels are in power-transmitting engagement.

5. In a machine of the character described, a support, a motor slidable back and forth thereon, a wheel movable with and driven by the motor, a shaft extending diametrically with respect to the said wheel, a wheel on the said shaft for peripheral engagement with the face of the first wheel, a lever, a rocker arm rotatable with the lever, means for translating operation of the rocker arm into radial adjustment of the second wheel with respect to the first wheel, a plate slidable relative to the lever, a grip-lever on the first-named lever, a link pivotally connecting the slidable plate and grip-lever, means for locking the slide plate in normal position and the first-named lever in any desired adjusted position, a rod having a cam-relation to said plate and movable endwise by the latter when the lever is unlocked by actuation of the grip-lever and said link, and yielding means for adjusting the motor to press the wheel thereof sidewise against the other wheel and for causing reverse movement of the rod to restore the slide plate to normal position and thereby effect the locking of the first-named lever against accidental movement.

In witness whereof I hereunto affix my signature.

WILLIAM J. KEVAN.