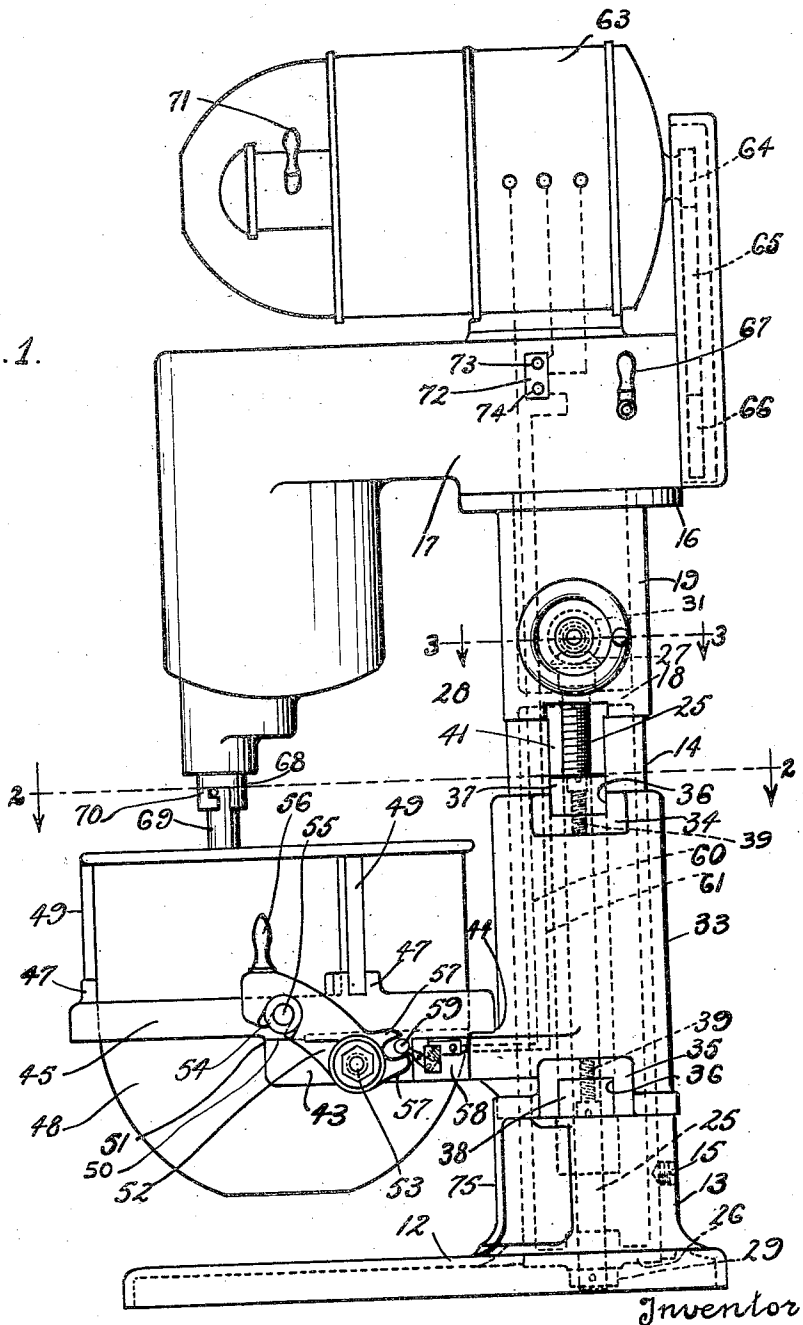
Aug. 12, 1930. F. P. GLOSH 1,772,944

ELECTRICAL UTILITY MACHINE

Filed May 5, 1928 2 Sheets-Sheet 1

Fig. 1.



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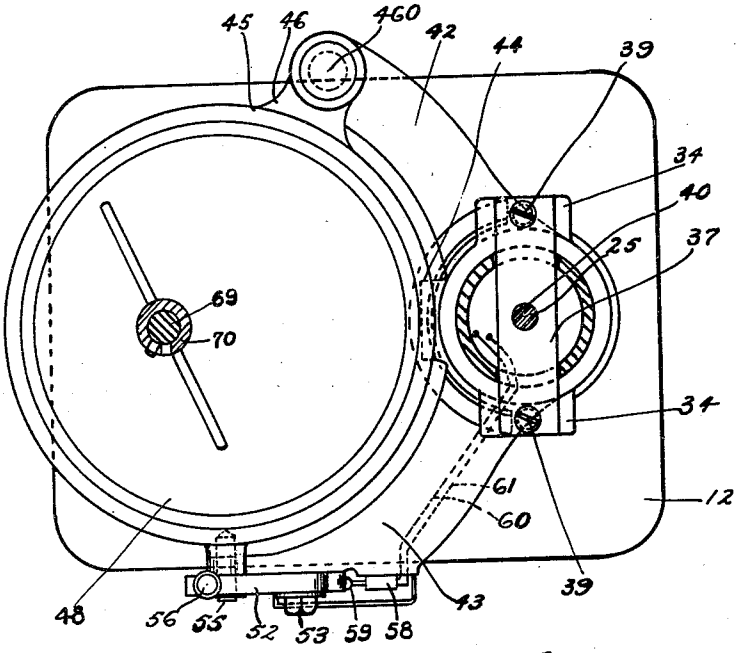


Fig. 2.

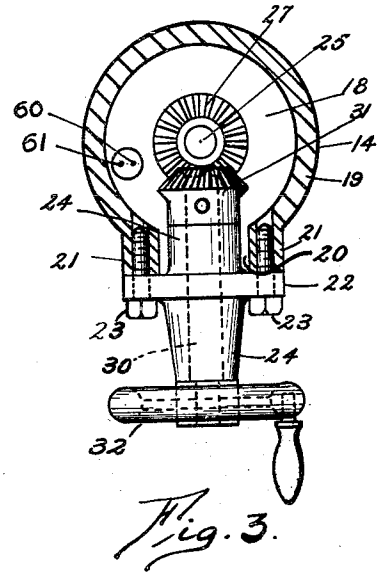
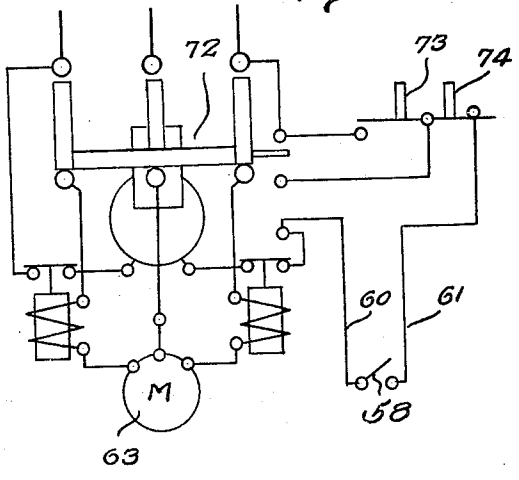


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE

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ELECTRICAL UTILITY MACHINE

Application filed May 5, 1928. Serial No. 275,383.

This invention relates to a mixing unit and has for an object the provision of a device of this character which is for general use.

Another object is to provide a device of the class referred to which is electrically driven and which has embodied therein means to effectively preclude injury to person or machine due to power actuation of the device while the parts are improperly positioned.

Another object of the invention is to provide the combined mechanical and electrical interlock for a device of this kind which renders it impossible to remove the mixing bowl without shutting off the power drive.

Another object is to provide an interlock of this kind which may be rendered inoperative when the device is to be used for other than mixing purposes.

Another object is to provide a device of this kind wherein the mixing bowl may be readily removed and inserted in operative position.

These and other objects are attained by the means described herein and disclosed in the accompanying drawings, in which:

Fig. 1 is a side elevational view of the mixer of the invention, parts being shown in dotted lines.

Fig. 2 is a cross sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a cross sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a wiring diagram for the electrical control showing a conventional start push button type electrical starting switch connected with the interlock of the invention.

The structure of the device is especially designed to provide parts that are individually simple and easy of fabrication and assembly.

The base 12 has a short upright integral sleeve 13 into which a hollow column 14 seats and is secured against rotation by set screw 15. The upper end of the column 14 has a flange 16 upon which a mixer head unit 17 is secured. Below flange 16 the column is provided with an interior transverse web 18. As shown in Figs. 1 and 3 the column is enlarged above web 18 to provide an elevating gear box 19 having an opening 20 provided with spaced projection 21 and closable by a bearing plate 22 by cap screw 23 extending through the plate into said projection. The plate carries integral bearing bosses 24 extending in alignment from opposite sides thereof. An elevating screw 25 is journalled in web 18 at the top and in web 26 which forms a closure for the bottom of the column. A bevel gear 27 has a hub 28 which is pinned or otherwise fixed to the upper end of screw 25 and supports said screw on web 18. An anti-friction collar 29 is pinned to the screw below web 26 and holds it against longitudinal movement in the column. It will be noted that the column and screw may be readily assembled on the bench to form a complete unit for facile mounting in the base.

The bearing plate 22 has a short crank shaft 30 journalled in bearing bosses 24 and secured against reciprocation by bevel gear 31 at one end and bull-wheel 32 at the other end. This structure also provides a completely assembled unit for ready mounting on the elevating gear box 19. Obviously the bevel gears 27 and 31 mesh when the units are assembled. The hub of the bull-wheel may be adjusted on shaft 30 to properly mesh the gears.

An elevating sleeve 33 is adapted for telescoping or slidable movement over the hollow column 14 and is provided at its top with outwardly projecting lugs 34 and at its bottom with similar lugs 35. As will be noted in Fig. 2, these lugs 34 and 35 are in pairs, extending in alignment, on parallel diameters of the sleeve. Each pair of lugs has aligned seats 36 therein for receiving the projecting ends of blocks 37 and 38 which are secured in their seats by any suitable means such as screws 39. The blocks 37 and 38 have aligned threaded bores 40 for receiving the threads on elevating screw 25 so that rotation of the screw by means of bull-wheel 32 effects raising and lowering of the elevating sleeve 33 on column 14. The column has a pair of guide slots 41 to preclude rotary movement of the elevating blocks.

The elevating sleeve has a pair of arms 42 and 43 extending outwardly adjacent the lower end and also an intermediate boss 44.

A bowl receiving ring 45 has a hinge lug 46 of ample dimension which bears on the end of arm 42 where it is pivotally mounted on a heavy stud or pintle 460. The ring is also provided with two or more notched lugs 47. The mixing bowl 48 has keys 49 extending vertically downward on its outer circumference for engagement in the notches in lugs 47 thereby supporting the bowl in the ring and precluding rotary movement therein.

As is best shown in Fig. 1 the bowl receiving ring 45 has on its lower face a lug 50 which rests upon the forward end of arm 43. When the ring is in the position shown with the lugs resting upon the ring supporting arms and boss all strain is taken off of the stud or pintle 460, the hinge lug 46 having its bearing at all times on the arm 42.

Means are provided to latch the bowl receiving ring in the position shown, in Fig. 1, both for the purpose of positioning the bowl relative to the mixer paddle hereinafter described and for relieving the pintle 460 of the weight of the ring, bowl and contents. The latching means thus precludes swinging of the bowl receiving ring and bowl about the pivotal mounting when in its operative position.

The latching means is also adapted to cooperate with other mechanism of the device to serve as part of a combined mechanical and electrical inter-lock for insuring safety to the person of the operator and to preclude damage to the machine through inadvertence.

As shown in Figs. 1 and 2 a bell crank lever 52 is pivotally mounted at 53 on the arm 43 adjacent the end thereof and has a notch 54 in its lower edge adapted to pass over a pin 55 formed on or integral with the ring 45. A suitable handle 56 permits facile manipulation of the bell crank lever 52 for locking and unlocking the ring 45 in and from operative position. A fork or yoke 57 is formed on the opposite end of bell crank 52. An electric switch 58 of any suitable type, commonly referred to as a limit switch, is spring actuated to a normally open position and is operable by a pivotally mounted lever 59 which is raised to close the switch by the lower portion of yoke 57 when the bell crank lever 52 is moved to the position shown in Fig. 1 mechanically locking over the pin 55. Wires 60 and 61 are adapted to be electrically connected and disconnected by means of the limit switch 58. The wires 60 and 61 and switch 58 are cut into or thrown into series with the stop terminal of a one station push-button type start and stop switch such as are readily purchasable in the open market and the details of which form no part of the present invention. In Fig. 4 there is shown a conventional wiring diagram for such one station start and stop switch with the normally open limit switch 58 connected thereto.

The mixer head unit 17 is in the form of a hollow housing in which suitable power transmission shafts and gearing are mounted for power drive connection from a variable speed electric motor 63 which is secured on the unit 17 directly over the top of column 14. Sprocket 64 on the motor shaft drives through chain 65 to turn a sprocket 66 to actuate the transmission mechanism (not shown) in the mixer unit 17. A suitable clutch (not shown) in unit 17 is operable by clutch lever 67 and serves to disconnect the motor drive from the transmission. Mixer shaft 68 is rotated and also revolved in an orbit in the manner well understood by those versed in the art. The mixing paddle stem 69 is retained in a suitable socket in mixer shaft by any suitable means such as by a pin and bayonet slot connection 70 as shown. The length of the paddle is such that when the kettle or bowl 48 is in the lowered position (as in Fig. 1), the paddle may be inserted and removed from the shaft. The sleeve 33 is then raised by means of hand wheel 32 until the bottom of the bowl is closely adjacent the lower end of the paddle.

The motor 63 is of the variable speed type and is regulated by means of regulator handle 71. In this way a suitable range of speeds may be had without change speed gearing in the mixer unit 17. The motor may be one of this type purchasable in the open market wherefore its structural details are unnecessary to this description.

The push button start and stop switch 72 has a "start" button 73 and a "stop" button 74. This switch is so arranged that whenever the circuit is broken, either by means of the "stop" button or by opening of switch 58, the motor can be again energized only by depressing "start" button 73. Whenever lever 52 is raised the switch 58 automatically breaks the circuit through wires 60 and 61. The breaking of this circuit instantly deenergizes the motor 63 and the switch 72 automatically assumes "off" position. It will be noted that if a careless operator attempts to remove the bowl when the mixer paddle is power actuated by the motor he will automatically shut off the power by raising the latching lever 52 which holds ring 45 in position. Likewise if the ring and bowl are carelessly moved toward operative position but are improperly positioned the lever 52 of the latching means will be held in a raised position by pin 55. The circuit through limit switch 58 will remain broken so that movement of the "start" button will be ineffective. This will immediately direct attention to the fact that the parts are not in position for safe operation.

Wires 60 and 61 are safely disposed beneath arm 43 and are of sufficient length and flexibility to permit of the movement of sleeve 33 on the column. The wires are carried through the hollow interiors of the column,

the elevating gear housing and the mixer unit.

As shown in Fig. 1, a splash guard 75 depends from the lower forward portion of the sleeve to protect the column against substance that may be splashed from the bowl.

The device may readily be arranged so that the mixer shaft and paddle may be removed and replaced with food chopper mechanisms or any other desired kitchen appliance. In such other uses it may be desirable to dispense with the mixing bowl 48. The lever 52 may then be positioned so as to keep the limit switch 58 closed in order to control the power entirely by means of the start and stop button station. The hazard to person and machine is usually slight with devices other than the cake mixer so that there is little reason for requiring the operation of the limit switch when the bowl and mixer are out of use.

It will thus be noted that the device of the invention is of universal application to appliances requiring motive power for their operation. The device is therefore of great utility in hotel kitchens as well as in baker shops and other places.

What is claimed is:

1. A kitchen utility machine comprising a base, a column, an electrical driving unit on the column overhanging the base, a bowl receiving means vertically adjustable on the column, a control switch mechanism controlling the driving unit, a mechanical latch for positioning the bowl receiving means relative to the driving unit and a limit switch connected in electrical series with the control switch and movable to open and closed positions as the latch is moved to open and closed positions.

2. In combination a hingedly mounted receiving means capable of movement to operative and inoperative positions, an electrical driving unit mounted above the receiving means, a control switch for the driving unit, a mechanical latch for holding the receiving means in an operative position and movable to release the receiving means and a limit switch adapted for movement upon actuation of the latch in such manner as to render the control switch inoperative when the latch is open.

3. A utility machine of the class described comprising a column, an elevating sleeve comprising a pair of arms adjustable on the column, a bowl receiving means mounted for horizontal pivotal movement on one of said arms, a mechanical latch on the other of said arms, means on the bowl receiver for engagement by the latch to retain the receiver in an operative position, an electrical drive means supported above the arms and comprising a control switch and a limit switch connected with the control switch and mounted on the arm which carries the latch and operable thereby and adapted to render the control switch inoperative when the latch is open.

In testimony whereof, I have hereunto subscribed my name this 1st day of May, 1928.

FREDERICK P. GLOSH.