

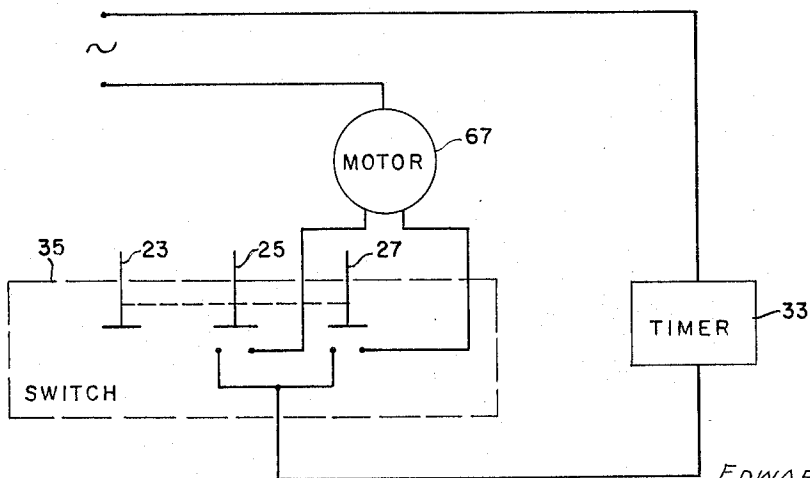
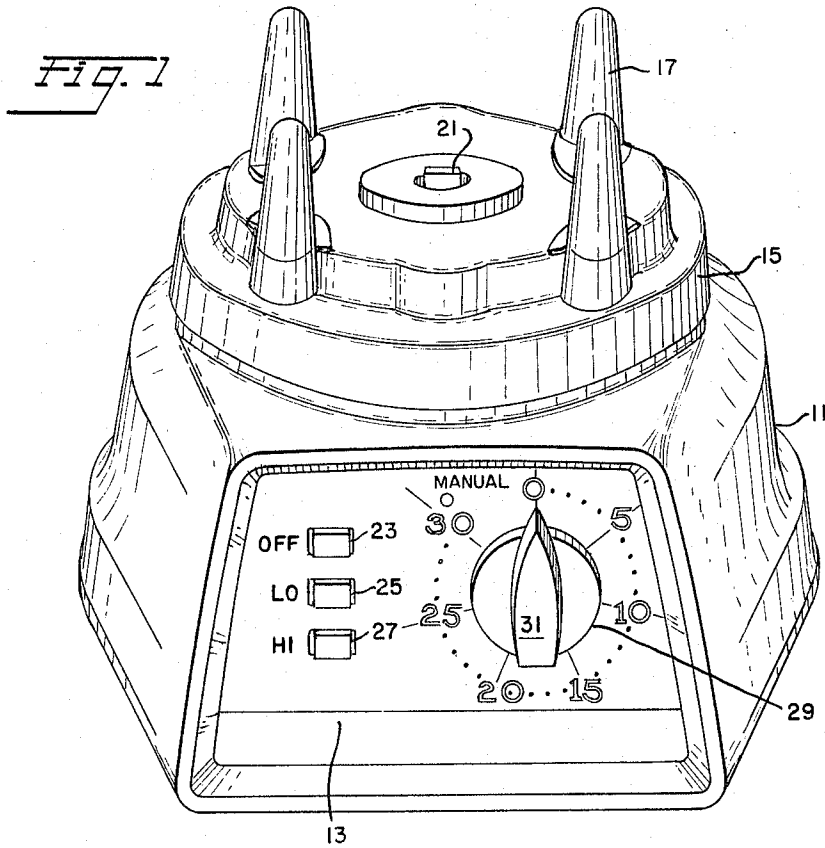
Nov. 29, 1966

E. J. DOYLE ETAL
BLENDER CONTROL WITH MECHANICAL COUPLING BETWEEN
SWITCH MECHANISM AND TIMER DRIVE

3,288,951

Filed June 22, 1964

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INVENTORS

EDWARD J. DOYLE
RICHARD M. PUSTINGER

Fig. 5

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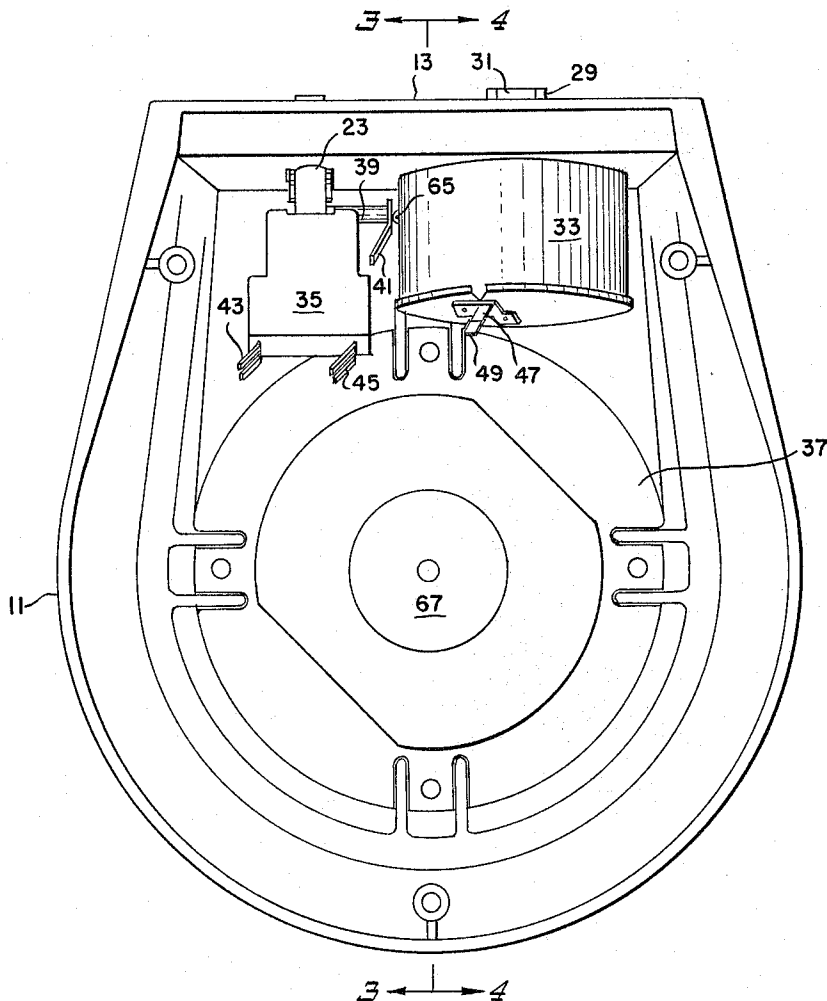


Fig. 2

INVENTORS

EDWARD J. DOYLE
RICHARD M. PUSTINGER

Nov. 29, 1966

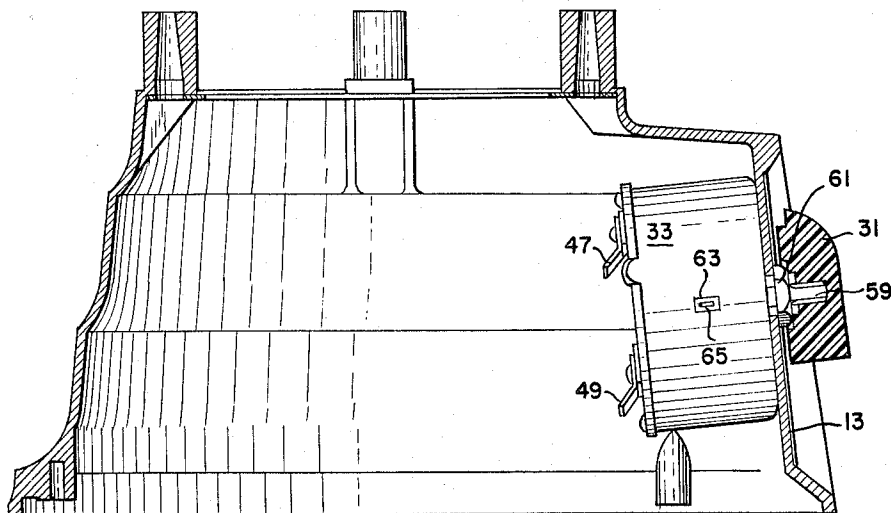
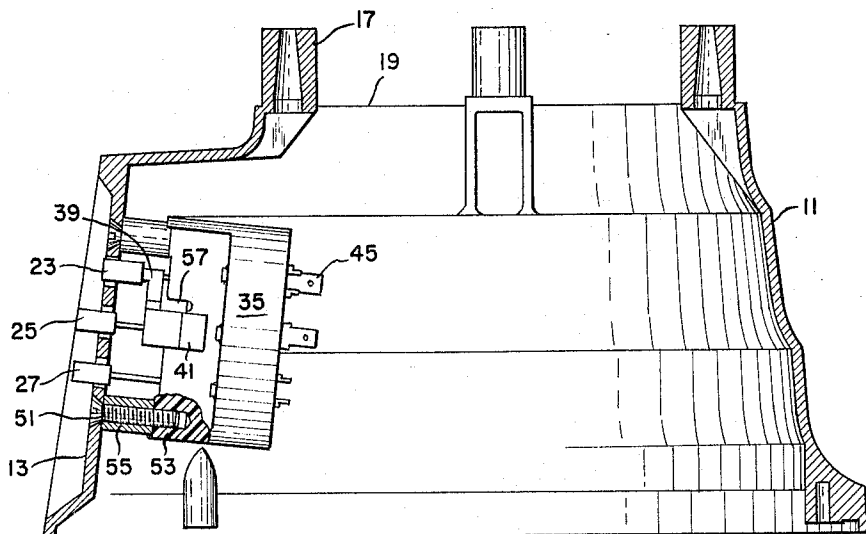
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3 Sheets-Sheet 3



INVENTORS

EDWARD J. DOYLE
RICHARD M. PUSTINGER

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3,288,951

BLENDER CONTROL WITH MECHANICAL COUPLING BETWEEN SWITCH MECHANISM AND TIMER DRIVE

Edward J. Doyle, Avon, Conn., and Richard M. Pustinger, Tolland, Mass., assignors to Dynamics Corporation of America, New York, N.Y., a corporation of New York
Filed June 22, 1964, Ser. No. 376,804
6 Claims. (Cl. 200—35)

This invention relates generally to an automatic control for an electric blender and more specifically to a time control for such a device.

Electric blenders are in common use today both domestically and commercially. Such devices are equipped with the necessary power and associated equipment to provide a complete blending of foods or beverages or other materials as opposed to the mere mixing of ingredients as accomplished by the standard mixer. Additionally, the blending operation is normally accomplished in a matter of seconds, with fairly precise timing being required to obtain the correct blend and consistency of the particular materials being treated. The blending operation occurs so rapidly, with the blades rotating at such a high rate of speed, that overblending is very likely to occur if the operator relies merely upon visual inspection of the materials being blended.

Therefore, the instruction books which accompany the blender normally contain specific blending times for each of the items used in a particular recipe. Such times are given in seconds for the reasons discussed above.

The average person is not able to attain a very high degree of accuracy in estimating times and must rely on some timing means or risk spoiling the materials for the particular desired purpose. This means that the normal blender available today is not a truly precise machine without a timer which must be purchased separately.

Additionally, the use of an ordinary timer alone for the purpose of closing the electric circuit to the motor is not satisfactory for use with blenders. The reason for this is that such timers close the circuit the moment that they are moved from the "off" position. Since blending operation are performed in a matter of seconds, it will be obvious that such timers are not accurate.

Accordingly, it is an object of this invention to provide a control for the motive means of a blender which includes a precise means for providing a variable time of operation of the motive means.

A further object of the invention is to provide a timing means for a blender motor which is intercoupled with the on-off switch for the motor.

A still further object of this invention is to provide a blender motor with intercoupled timer and on-off switch located within the base of the blender.

These and other objects of the invention will become apparent from the following description taken in conjunction with the drawings wherein:

FIG. 1 is a perspective view of one form of base incorporating the motor, timer and on-off switch combination of the present invention;

FIG. 2 is a plan view of the base of FIG. 1 with the jar support removed;

FIGS. 3 and 4 are views taken along the lines 3—3 and 4—4 of FIG. 2 with the motor removed for purposes of clarity; and

FIG. 5 is a schematic showing of the electrical circuitry of the present invention.

Turning now more specifically to the drawings, FIG. 1 illustrates a preferred form of a base 11 extending outwardly at one portion thereof with a terminating front face member 13. The base is provided with an upper platform 19 surrounded by a jar support member 15 with

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upstanding finger members 17 for supporting a blender jar (not shown). Coupling member 21 is driven by the motor shaft whereby the mating coupling of the blade in the jar may join therewith.

Two controls appear on the front face of the blender. A push button on-off switch comprises the three button control of "OFF" and the speed control buttons "LO" and "HI." The basic switch may be available commercially and is modified for the present operation as will be described. The timer consists of a rotatable disc 29 having an indicator knob 31 integral therewith. The indicia on the face provides timer setting information with the knob being turned clockwise to the desired time, in seconds, of blender operation.

Turning now to FIGS. 2—4, it will be seen that the switch housing 35 and the timer housing 33 are located substantially adjacent to each other with the buttons of the switch and shaft 59 of the timer extending through the face 13. A lock nut 61 or the like may be used to maintain the timer in position with knob 31 being press fit or otherwise secured to the shaft 59.

The basic timer may be a known and commercially available device such as is shown in U.S. Patent 2,274,635 issued to M. H. Rhodes. The Rhodes device shows a standard timer with electrical contacts being closed by the action of cams when the dial is rotated clockwise. The timer is also provided with a "hold" position (indicated by "MANUAL" on the face of the device of FIG. 1) which closes the contacts. In the Rhodes device (FIG. 10), the arm is spring biased away from the escapement wheel when the knob is turned counter-clockwise.

In the timer 33 used in the present invention, an additional arm is provided with an extension 65 which passes outwardly of the timer housing 33 through an aperture 63. Therefore, a means is provided for moving the arm through extension 65 into contact with the escapement wheel even though the knob is turned clockwise. If the arm is in such contact with the escapement wheel, the timer mechanism will be inoperative.

The "OFF" button is also provided with an arm 39 secured thereto by means such as spot welding or the like. Arm 39 terminates in a cam plate 41 so arranged that it bears against the arm 65 of the timer when the "OFF" button is depressed. The arm 65 is pushed through the aperture 63 by the cam 41 until it engages the escapement wheel of the timer. Accordingly, as long as the "OFF" button is depressed, the timer is inoperative regardless of the position of knob 31. The switch 35 is of the well-known type wherein depression of any of the three buttons will return the remaining two buttons to their extended position. When the "OFF" button is returned to its extended position, the arm frees the escapement wheel and the timer mechanism commences to operate.

While the various physical terminals 43, 45, 47, 49 have been illustrated, the electrical wires have been eliminated for purposes of clarity.

However, FIG. 5 illustrates schematically the electrical circuitry used in the invention. Although a single speed motor may be used, it is preferred to use a two speed motor for providing a more versatile operation. The motor 67, switch 35 and timer 33 are connected in series so that the contacts of both the timer and the switch must be closed in order to energize the motor. The "OFF," "LO," and "HI" buttons are shown to be linked schematically to indicate the interrelated operation discussed above.

Operation of the blender is extremely simple. After determining the exact time of blender operation for the particular materials, the "OFF" button is depressed, breaking the switch contacts and rendering the timer inoperative by means of the arm 65. The timer knob is then turned clockwise to the desired setting which also

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closes the contacts within the timer. Then, either the "LO" or "HI" button is depressed, closing the switch contacts and returning the "OFF" button to its extended position. The cam 41 moves away from arm 65 and the timer mechanism commences to operate. When the knob reaches "O" the timer contacts open and the motor 67 is deenergized.

If it should be desirable to use the blender without the timer for a particular operation, the timer knob may be turned to the manual position. As explained above, this closes the timer contacts and prevents operation of the timer mechanism. In this position, the motor is controlled solely by the on-off switch.

The present invention provides a compact motor control for the blender wherein the interdependent action of the switch and the timer allows a versatile and accurate operation of the motor.

It is to be understood that the above description and drawings are merely exemplary and that the invention is to be limited only by the scope of the following claims.

What is claimed is:

1. In a blending device, automatic control apparatus for said device comprising,

an electric motor,

an on-off electrical switching device,

a manually settable timing mechanism including a spring drive motor, and electrical contacts mechanically coupled to said spring drive motor,

circuit means for connecting said motor, said switching device and said timing mechanism in series, said timing mechanism closing said electrical contacts when said mechanism is operative, and

mechanical coupling means between said switching device and said timing mechanism for mechanically locking said timing mechanism when said switching device is in the off position.

2. The apparatus of claim 1 wherein said on-off switching device is of the push button type.

3. The apparatus of claim 2 wherein said mechanical

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coupling means comprises a cam secured to said switching device and an arm extending outwardly from within said timing mechanism, said cam moving said arm so as to maintain said mechanism locked when said switching device is in the off position.

4. A control for a motor in a blending device comprising,

an on-off switch,

a manually settable timer mechanism including a spring drive motor, and an electric switch mechanically coupled to said spring drive motor, said timer switch being normally open when said mechanism is inoperative,

and coupling means between said on-off switch and said timer mechanism for mechanically locking said timing mechanism when said on-off switch is in the off position.

5. The control of claim 4 wherein said on-off switch is push button controlled and has an on and off button.

6. The control of claim 5 wherein said coupling means comprises an arm extending from within said timing mechanism and outwardly thereof, and a cam connected to and operated by the off button of said on-off switch, said cam moving said arm so as to prevent operation of said mechanism when said on-off switch is in the off position.

References Cited by the Examiner

UNITED STATES PATENTS

2,274,635	3/1942	Rhodes	200—30
2,782,271	2/1957	Jordan	200—38 X
2,895,547	7/1959	Braski	200—38

FOREIGN PATENTS

599,454	6/1960	Canada.
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BERNARD A. GILHEANY, *Primary Examiner.*

H. M. FLECK, *Assistant Examiner.*