July 22, 1958 G. A. BATSON ET AL 2,844,239

COVER LOCK AND CENTRIFUGAL SWITCH CONTROL THEREFOR

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Fig. 1.

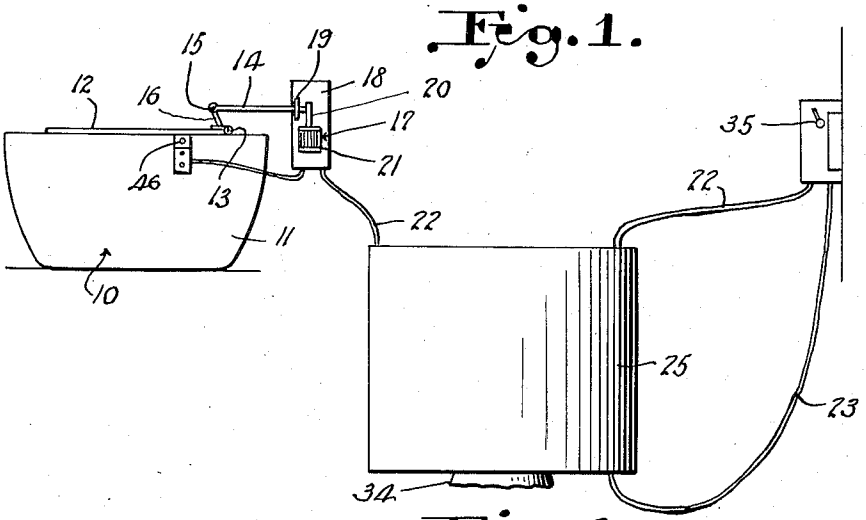


Fig. 3.

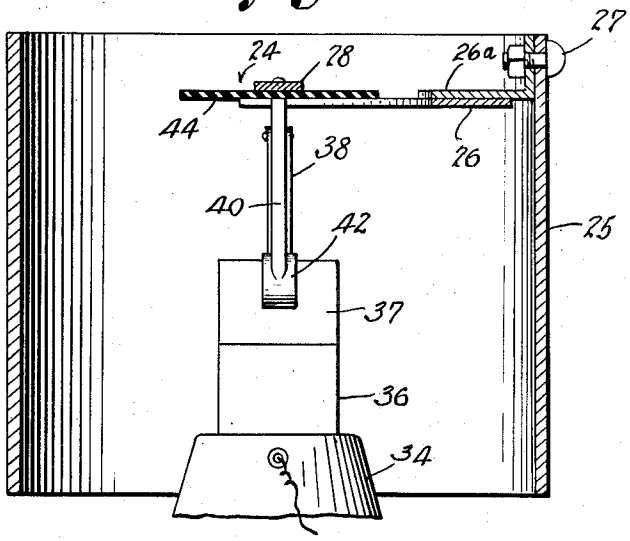
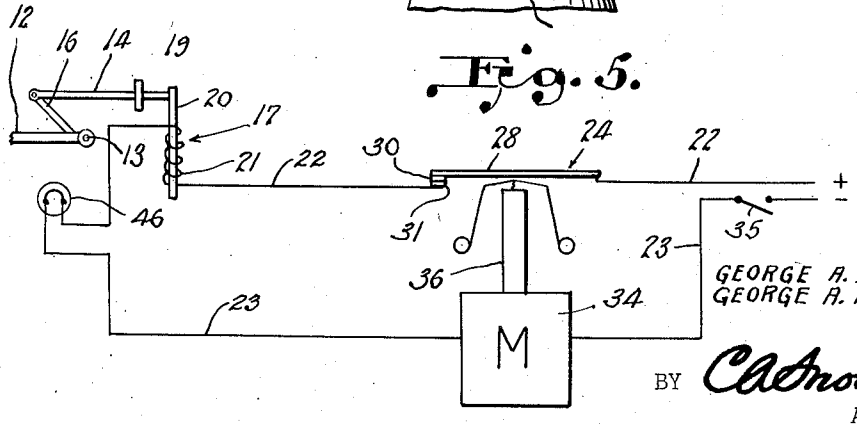


Fig. 5.



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Fig. 2.

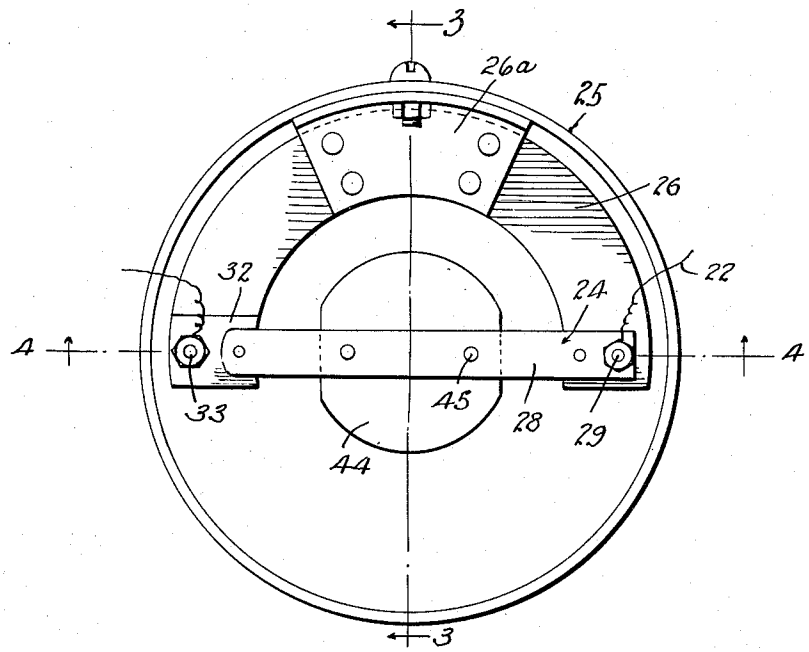
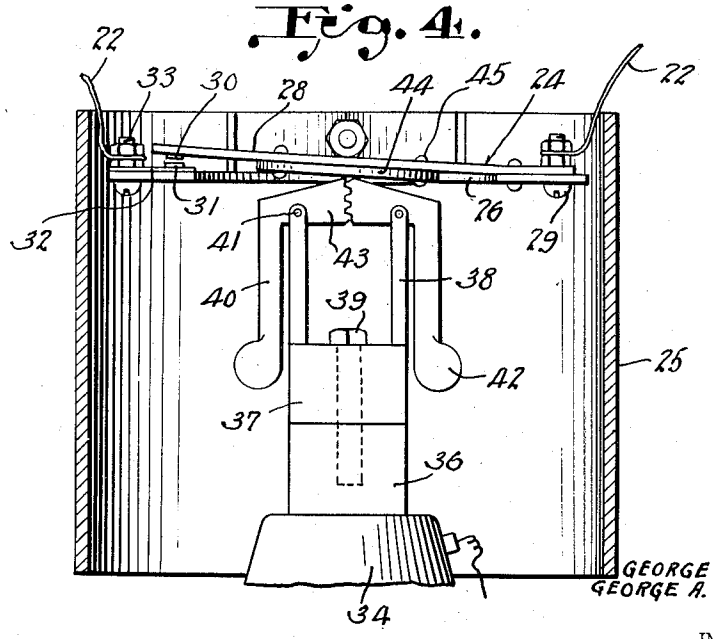


Fig. 4.



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COVER LOCK AND CENTRIFUGAL SWITCH CONTROL THEREFOR

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Application June 26, 1956, Serial No. 594,007

1 Claim. (Cl. 192—136)

This invention relates to an extractor having a lid, and automatically operable means for locking the lid when the extractor is in operation, and for releasing the lid when the extractor is at rest.

An object of the invention is to provide in an extractor, means for locking the lid when the extractor is in operation, with a signal in circuit with the locking means so that the position of the locking means may be determined at a point remote from the extractor.

Another object of this invention is to provide an electromagnetic locking means for an extractor in a normally closed circuit, with a centrifugally operated means for breaking the circuit when the extractor is inoperative.

A further object of this invention is to provide in combination with an extractor having a hinged lid, an electromagnetic locking means for the lid, with a normally closed and centrifugally operated switch in circuit with the locking means, the stopping of the extractor and stopping of the centrifugal means effecting an opening of the switch and release of the locking means whereby the lid may be raised.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings:

Figure 1 is a detail side elevation of a governor switch constructed according to an embodiment of this invention.

Fig. 2 is a plan view of the switch structure.

Fig. 3 is a vertical section taken on line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2.

Fig. 5 is a diagrammatic view showing the electric circuit embodied in this invention.

Referring to the drawings, the numeral 10 designates generally a conventional structure which is preferably of the centrifugal type and embodies a receptacle 11 having a lid 12 hinged as at 13 on the upper portion of the receptacle 11.

In order to provide a means whereby the lid 12 will be locked in closed position, when the extractor 10 is operating, we have provided a locking means which includes a locking bar 14 which is hingedly connected as at 15 to an obliquely angled arm 16 fixed to the lid 12 adjacent the hinge 13. A solenoid generally indicated at 17 is mounted on a support 18 and the support 18 includes a guide 19 through which the locking bar 14 slidably engages. The solenoid 17 includes a core 20 which is slidable within the coil 21. The core 20 is normally disposed in a position below the adjacent end of bar 14 when solenoid 17 is deenergized. When solenoid 17 is energized and lid 12 is closed core 20 will be raised upwardly to a position confronting the adjacent end of bar 14 so that this bar will be held against sliding movement to the

right as viewed in Fig. 1. Solenoid 17 is interposed in an electric circuit, as shown in Fig. 5. This electric circuit embodies conductors 22 and 23 connected at one end to a source of electric current supply. A normally closed switch generally indicated at 24 is interposed in conductor 22 and switch 24 includes a cylindrical housing 25 which has a bracket 26a of substantially L-shape, secured by fastening means 27 to the inner side thereof, which carries a cap 26 of semi-annular shape, which has secured thereto a resilient contact carrier 28 which includes a terminal 29 connected to conductor 22. The carrier 28 has a contact 30 secured to the free end thereof which is disposed in confronting position to a fixed contact 31 carried by a plate 32. A second terminal 33 is secured to the plate 32 and is connected to conductor 22. Conductor 22 is connected to one side of coil 21 and the other side of coil 21 is connected to conductor 23. A motor 34 is interposed in conductor 23 and a manual switch 35 is interposed in conductor 23. The motor 34 may be the same motor which operates extractor 10 and motor 34 includes a shaft 36 which is disposed within the lower portion of housing 25. Shaft 36 has secured thereto a block 37 having a pair of upwardly projecting arms 38 extending therefrom and block 37 is fixed to shaft 35 by means of a bolt 39. A pair of L-shaped centrifugal arms 40 are pivotally attached as at 41 to the upper end of the arms 38 and the centrifugal arms 40 are provided with weights 42 on the long vertical sides thereof which in the inoperative position of shaft 36, are disposed closely adjacent the block 37. The centrifugal members 40 include confronting and interengaging toothed segments 43 which are disposed below an insulating plate 44 fixed by fastening means 45 to the contact carrier 28. An indicator light 46 is interposed in conductor 23 between motor 34 and solenoid 17 so that a signal will be given when switch 24 is disposed in closed normal position.

In the use and operation of this device, when the motor 34 is inactive, the centrifugal arms 40 will be disposed in vertical position and at this time the toothed segments 43 will be disposed in contact with plate 44 so as to raise contact carrier 28 upwardly to a circuit breaking position. When the switch 24 is in circuit breaking position solenoid 17 will be deenergized and core 20 may gravitatingly drop downwardly to a bar releasing position below the adjacent end of bar 14. At this time the lid 12 may be raised upwardly so as to permit filling or removal of the material from receptacle 11.

When receptacle 11 is filled with material which is to be subjected to centrifugal or extracting action, lid 12 is closed after receptacle 11 is filled and the operator for the extractor is set in operation. The motor 34 may be the same motor which operates the extracting means in extractor 10 or may be a separate motor which is in circuit with the motor operating extractor 10. As soon as switch 35 is closed motor 34 will operate rotating shaft 36 and cause centrifugal arms to swing outwardly and thereby release carrier 29 for downward movement to circuit closing position. When contacts 30 and 31 engage each other, the circuit is completed to solenoid 17 and core 20 is raised upwardly to bar locking position, as shown in Figs. 1 and 5. The lid 12 is thereby locked and signal member 46 is energized until the circuit to the extractor has been broken. When the circuit to the extractor is broken and the extractor slows down to substantially a stopping position, centrifugal members 40 will swing downwardly and inwardly to a circuit breaking position, as shown in Fig. 4.

It will be understood that the switch structure herein disclosed may be used on any motor driven device having a lid or door closed during operation of the device.

What is claimed is:

A centrifugal locking switch for use with an extractor

including a hinged lid, said locking switch comprising an obliquely angled locking arm fixed to said lid, a laterally movable lid locking bar pivotally connected at one end to said arm, a solenoid coil disposed adjacent the other end of said bar, a solenoid core movable upon energization of said coil to a position to block sliding movement of said bar, an electric circuit for said coil, a motor in said circuit, a shaft rotatable by said motor, a pair of supporting arms carried by said shaft, a pair of L-shaped centrifugal arms each having its short leg pivotally connected to the upper extremity of one of said supporting arms at an intermediate point, the long legs of said centrifugal arms being normally vertically disposed when said motor is deactuated, a weight at the lower free end of each long arm, the inner end of each short arm being arcuate, interlocking teeth in the outer face of each arcuate end, the upper edges of said short arm being upwardly inclined to form a point when said L-shaped centrifugal arms are at rest, a switch in said circuit including a resilient switch arm positioned above said point, normally held in open position when said motor is deenergized, energization of said motor causing said rotation of said L-shaped arms to cause said weights to pivot the short legs of said L-shaped arms to align their upper edges horizontally, permitting closure of said circuit to energize said solenoid coil and lock said lid against opening.

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