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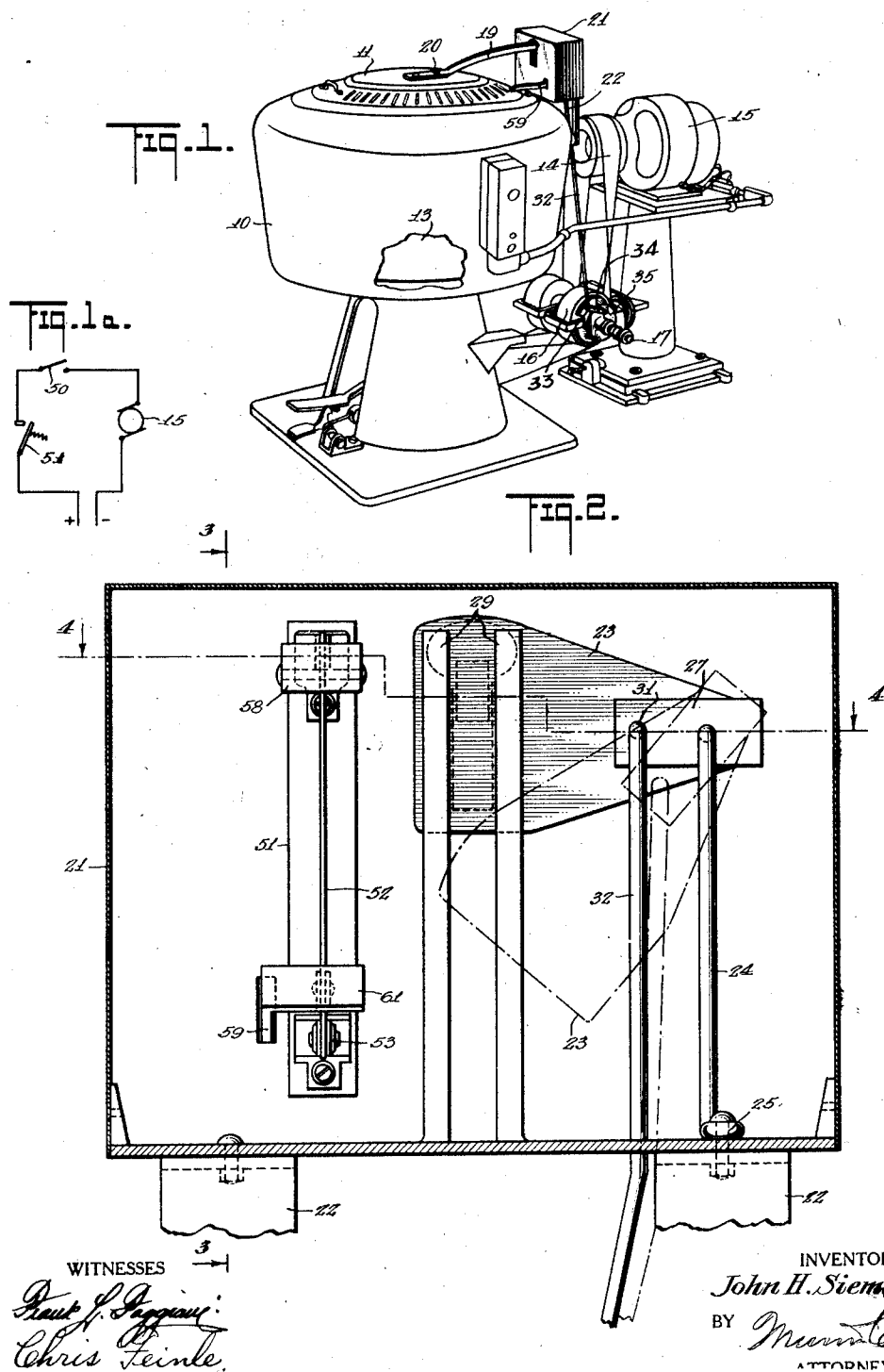
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J. H. SIEMANN

LAUNDRY MACHINE LOCKING MECHANISM

Filed Oct. 29, 1925

4 Sheets-Sheet 1



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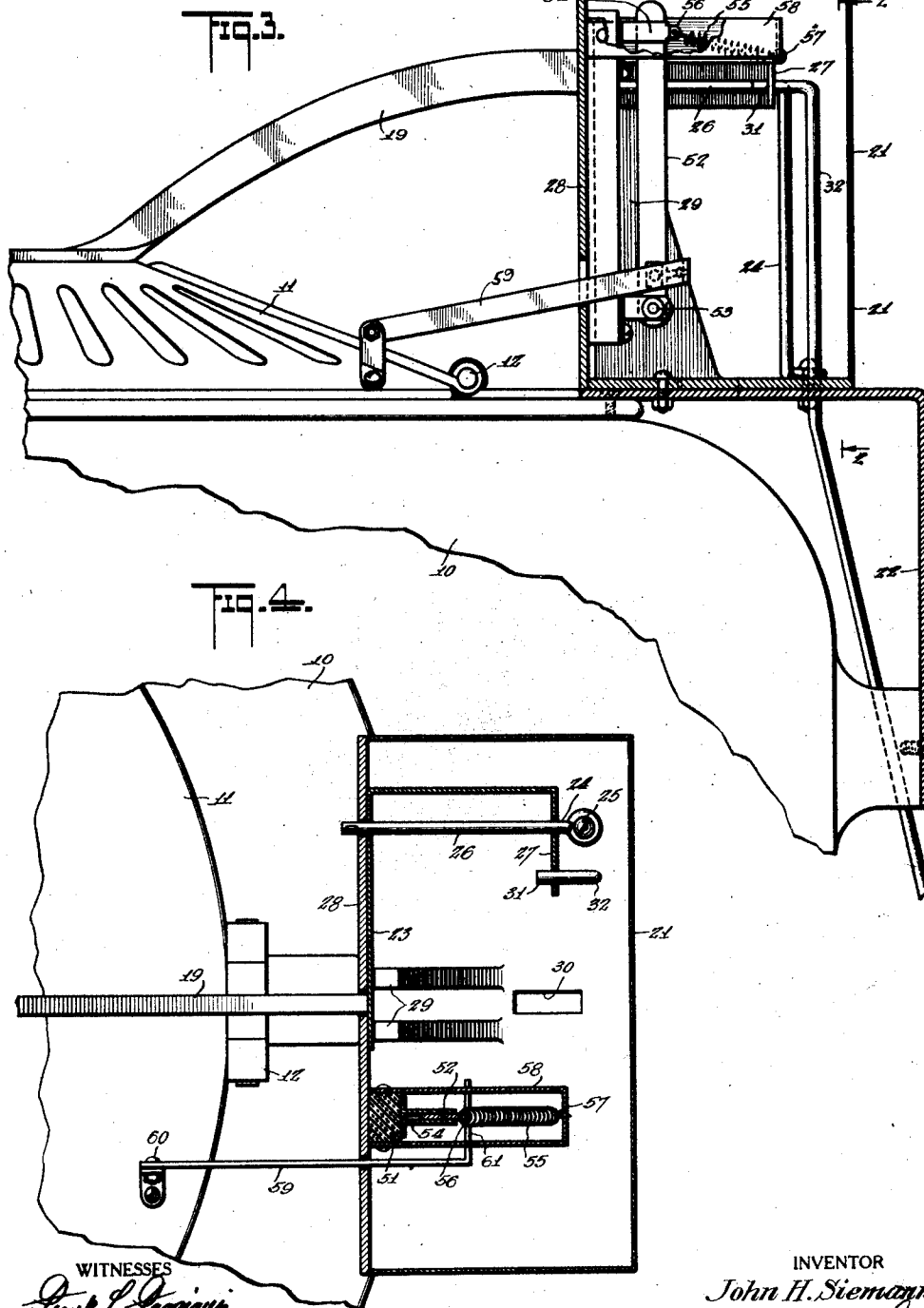
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J. H. SIEMANN

LAUNDRY MACHINE LOCKING MECHANISM

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4 Sheets-Sheet 2



WITNESSES
Frank J. Faggiano
Chris Feinle

INVENTOR
John H. Siemann
BY *Munn & Co.*
ATTORNEYS

Feb. 14, 1928.

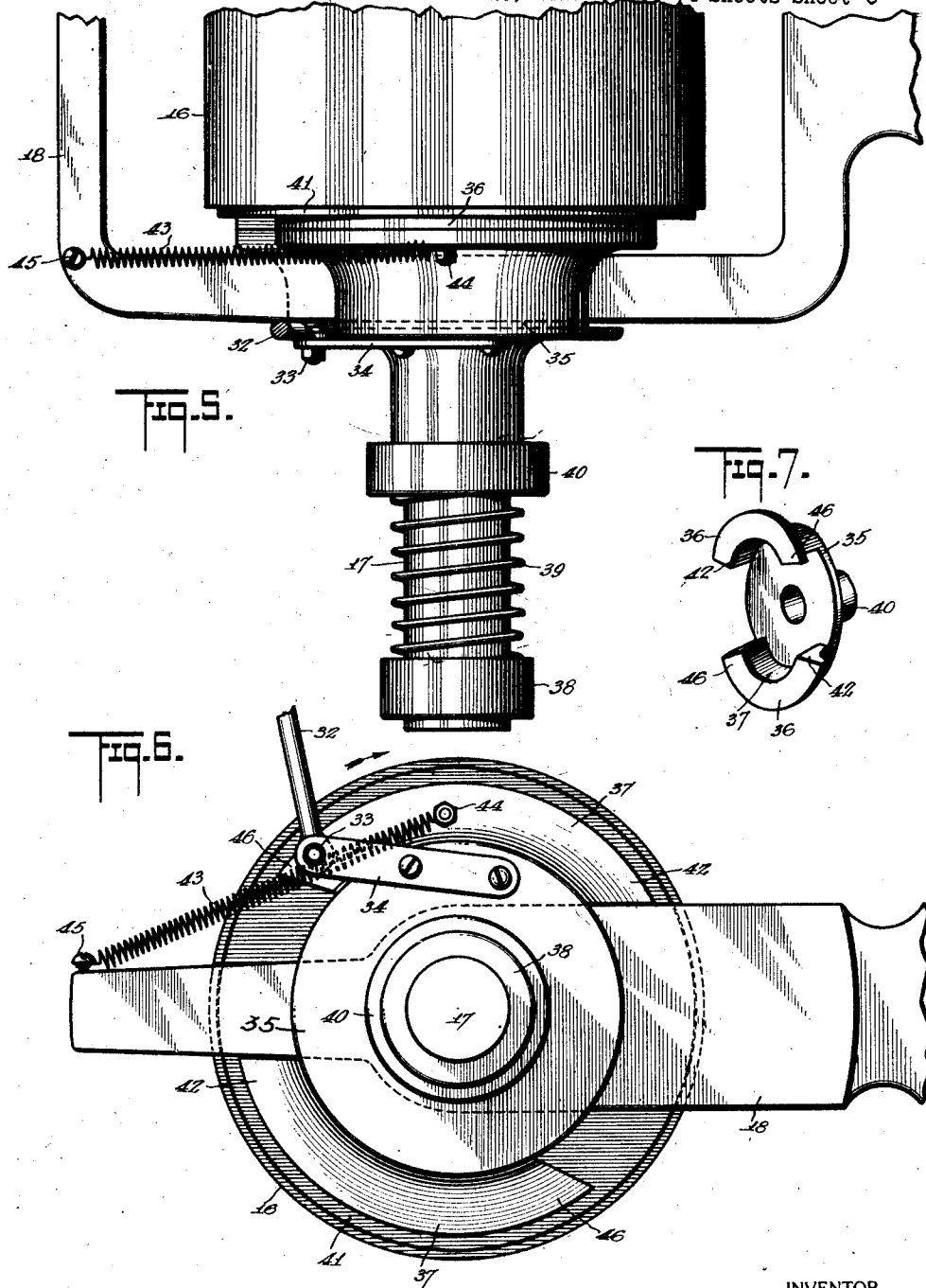
J. H. SIEMANN

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LAUNDRY MACHINE LOCKING MECHANISM

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4 Sheets-Sheet 3



WITNESSES

Frank J. Duggan
Chris Heine

INVENTOR

John H. Siemann
BY *Mumford*
ATTORNEYS

Feb. 14, 1928.

J. H. SIEMANN

1,659,474

LAUNDRY MACHINE LOCKING MECHANISM

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FIG. 8.

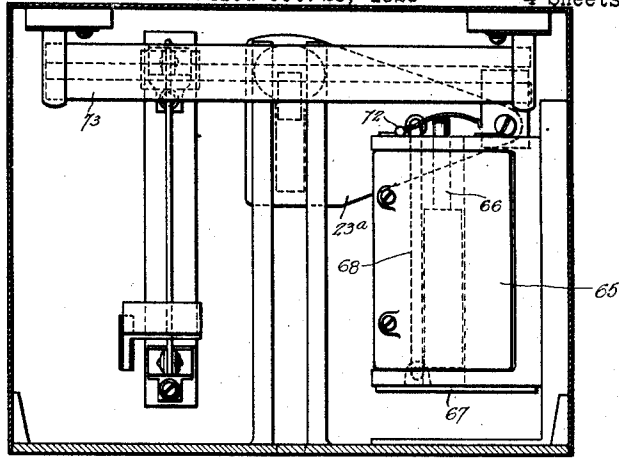


FIG. 9.

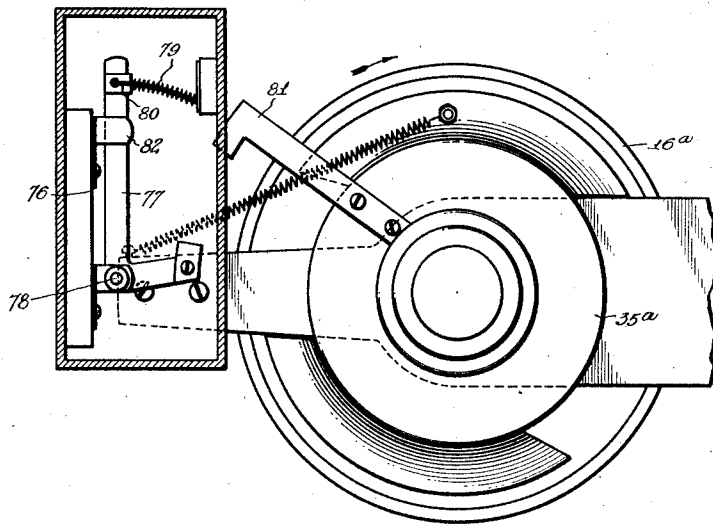
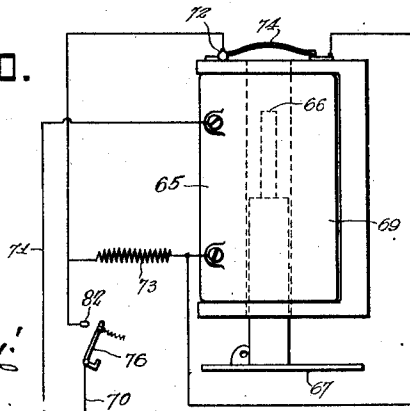


FIG. 10.



WITNESSES
Paul J. Pappas
Chris Smith

INVENTOR
John H. Siemann
BY *Munn Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN HENRY SIEMANN, OF BROOKLYN, NEW YORK.

LAUNDRY-MACHINE-LOCKING MECHANISM.

Application filed October 29, 1925. Serial No. 65,566.

This invention relates to a laundry machine locking mechanism, and has especial reference to a mechanism for locking a door of an outer cylinder of a laundry machine in a closed position while the machine is in operation and for releasing the door to be moved to an open position only when the machine is not in operation.

The principal object of the present invention is to provide a laundry machine with certain safeguards to the end that an operator will not be able to open the door of the outer cylinder of the machine while the same is in operation to avoid possible injury to the operator, and which makes it necessary for the operator to cease the operation of the machine before the door of the outer cylinder of the machine may be opened, and to close the door before the machine can be put in operation.

Another object of the present invention is to provide an efficient and effectual mechanism especially adapted for a laundry machine known as an extractor for carrying out the results hereinabove mentioned.

With the foregoing and other objects in view the invention resides in the particular provision, relative disposition, and operation of the parts hereinafter fully described and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a laundry machine known as an extractor with the present invention incorporated therein.

Fig. 1^a is a diagrammatic view showing certain features of the invention.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 3 and looking in the direction indicated by the arrows.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2 and looking in the direction of the arrows, a portion of the outer cylinder and its door of the extractor being shown.

Fig. 4 is a horizontal sectional view taken on the line 4—4 of Fig. 2 and looking in the direction indicated by the arrows.

Fig. 5 is a fragmentary plane view illustrating the driven element of the driving mechanism of the machine and the clutch member which coacts with the driven element, and the parts associated with the

clutch member which serve for controlling the locking and releasing action of the mechanism.

Fig. 6 is an end elevation of the means shown in Fig. 5.

Fig. 7 is a perspective view of the clutch member.

Fig. 8 is a sectional view similar to Fig. 2 and showing a modification of the means employed for actuating the obstructor of the mechanism.

Fig. 9 is a sectional elevation of the control means of the modification.

Fig. 10 is a diagrammatic view of the electromagnetic means of the modification.

As before stated the present invention contemplates the locking of a door of an outer cylinder of a laundry machine against movement while the machine is in operation and to require an operator to stop the machine from operating before such outer door can be opened. In the present instance the invention is shown embodied in a laundry machine known as an extractor, such as the one shown in Fig. 1. A machine of the type shown includes an outer cylinder or drum 10 having a cover or door 11 which is hingedly connected as at 12 so as to be movable from a horizontal closed position to a substantially vertical opened position. The extractor also includes an inner rotary basket 13 which is driven by a driving mechanism provided for that purpose, the same being generally indicated at 14. The driving mechanism 14 in the present instance includes an electric motor 15 which serves for rotating the basket 13 by virtue of the intervention of suitable pulleys and a belt.

The mechanism of the present invention is combined and operates in conjunction with one of the pulleys of the driving mechanism 14, and in the present instance it is one of the idler pulleys 16 which rotates on a fixed shaft 17 supported by a fixed bearing bracket or frame 18. The mechanism of the present invention includes a locking and releasing means, which, in the present instance, includes an arm 19 slightly arcuate and having one end attached as at 20 to the door 11 and the opposite end thereof is freely movable through the walls of a casing 21 when the free end of said arm is not obstructed. The casing 21 may be of any suitable con-

struction and is attached to the cylinder 10 by the use of suitable brackets 22. An obstructor 23 is employed and is pivotally mounted within the casing 21, the pivotal mounting of the obstructor 23 being effected by virtue of the use of a member 24 attached to the bottom of the casing as at 25 and having a portion 26 horizontally disposed which constitutes the pivot for the obstructor. The obstructor in the present instance is formed with an extension 27, and said portion 26 extends through said extension 27 and the main part of the obstructor which moves adjacent the wall 28 of the casing 21. The obstructor 23 is adapted to move across the free extremity of the arm 19 and is backed up by abutments 29 rising from the bottom of the casing 21; the arm 19 moving between said abutments and through an opening 30 in the bottom of the casing when the door 11 is moved to an opened position. The free end of the extension 27 has connected thereto, as at 31, one end of a rod 32 whose opposite end is connected, as at 33, to an arm 34 attached to a member 35 of a friction control means. The friction control means in the present instance beside the member 35 includes the shaft 17 on which the member 35 is rotatable, friction plates in the form of pieces of leather 36 attached respectively to the arcuate portions 37 of the member 35, a collar 38 secured to the shaft 17, a spring 39 which encircles a portion of the shaft 17 between the collar 38 and a boss 40 on the member 35. The spring 39 constantly exerts a pressure to maintain the leather pieces 36 in frictional engagement with a side plate 41 of the pulley 16. It will now be understood that when the pulley 16 is rotating in the direction indicated by the arrow in the operation of the machine to rotate the basket 13, the member 35, due to the frictional engagement of the leather pieces 36 with the plate 41 and the force of the rotary motion of the plate 41 on said leather pieces 36, will be moved in the same direction. However, the member 35 will be limited in its movement by virtue of the ends 42 of the portions 37 respectively engaging portions of the frame 18, as shown most clearly in Fig. 6. When the member 35 is in the position shown in Fig. 6 the obstructor 23 will be in an obstructing position, as shown in Fig. 2, the door will be in a closed position, and the arm 19 will have its free end obstructed thus preventing the door 11 from being moved to an opened position. A reversing means in the form of a spring 43 is employed for reversing the movement of the member 35 when the pulley 16 ceases to rotate. One end of the spring 43 is attached, as at 44, to a portion of the member 35 and the opposite end of the spring is attached, as at 45, to a portion of the frame 18. It will, therefore, be understood that when the

pulley 16 ceases to rotate, the force of the rotary motion of the plate 41 on the leather pieces 36 will be removed, and as a consequence the member 35 will be subjected to the influence of the spring 43 to bring the ends 46 of the portions 37 respectively in contact with portions of the frame 18 to limit the movement of the member 35 in a direction opposite to the direction in which it moves with the pulley 16. When the member 35 is moved by the spring 43 the obstructor 23 will be moved to the position shown in dot and dash lines in Fig. 2 to a non-obstructing position and, therefore, permitting the door 11 to be moved to an opened position.

The driving mechanism 14 is controlled by a switch 50 which is in circuit with the motor 15. By closing the switch 50 the motor will be started and the basket 13 will be rotated, and by opening the switch 50 the current to the motor will be cut off to cease the rotation of the basket 13 which is usually brought to a standstill after the current to the motor has been cut off by the use of suitable brakes. In order that the circuit to the motor 15 will be kept open while the door 11 is in an opened position there is provided a switch 51 also electrically connected in circuit with the windings of the motor 15. The switch 51 is of the single blade type, the blade 52 being pivotally connected as at 53 at one end, and its opposite end being movable between contacts 54. The switch 51 is arranged within the casing 21 and is attached to the wall 28. A spring 55 is employed for moving the blade 52 to a circuit breaking position, one end of the spring being attached, as at 56, to the blade 52 and the opposite end of the spring being attached, as at 57, to a bracket 58 attached to the base of the switch 51. An arm 59 is employed for holding the blade 52 in circuit closing position when the door 11 is in a closed position, as shown most clearly in Fig. 3. One end of the arm 59 is pivotally connected as at 60 to the door 11 and the opposite end of the arm has an angularly disposed portion 61 engageable with the blade 52 and insulated therefrom. It follows, that when the door 11 is moved to an opened position the arm 59 will move with it and, therefore, permit the spring 55 to function to move the blade to a circuit breaking position. When the door 11 is moved to a closed position the portion 61 will move the blade to its circuit closing position. Then upon the closing of the switch 50 the basket 13 will be in operation, the obstructor will be in an obstructing position, and the door 11 will be locked in a closed position.

The mechanism of the present invention described hereinbefore is applied under special conditions, that is to say, the conditions presented due to the particular driving

mechanism employed. It is to be understood that the mechanism of the present invention is not to be limited to the particular application shown and described in Figs. 1 to 7, inclusive, but may be diversely applied to take care of other special conditions due to the employment of other and different types of driving mechanisms. In accordance therewith the modification of the present invention is shown in Figs. 8 to 10, inclusive, in which the mechanism will be similar to that shown in the form of invention shown in Figs. 1 to 7, inclusive, except in the following respects. The obstructor 23^a is operated by an electro-magnet 65, whose magnetizable member 66 carries at the lower end thereof a plate 67 between which and the obstructor 23^a is connected a member 68 so that upon energization of the coil 69 of the electro-magnet 65 the obstructor 23^a will be moved to an obstructing position, as shown in Fig. 8. When the coil of the electro-magnet 65 is deenergized the member 66 will descend and as a result obstructor 23^a will be moved to a non-obstructing position. The coil 69 is connected in series with the windings of the electric motor by conductors 70 and 71. A circuit closer 72 is shunted around the coil 69, and a resistance 73 is connected in the conductor 70. The circuit closer 72 includes a flexible contact member 74 which is movable to make and break the shunt circuit. The coil circuit includes a switch 76. When the switch 76 is closed the current will pass into the coil 69 under full pressure and thus energize the same causing the member 66 to move upwardly, and as a consequence the upper end of the member 66 which carries suitable insulation will flex the member 74, as shown in Fig. 8, to break the shunt circuit. This breaking of the shunt circuit will cause a decreasing pressure to pass through the coil 69 through the resistance 73, thus maintaining the current in the coil at a low pressure and preventing the coil from burning out. The switch 76 includes a blade 77 pivoted as at 78. One end of the blade 77 is acted upon by one end of an extensible spring 79 which encircles a fixed member 80. An arm 81 attached to the member 35^a encounters the angularly disposed end of the blade 77 to move the blade to an open position, and this is accomplished when the member 35^a is returned to its normal position upon the cessation of rotation of the pulley 16^a. When the machine is put in operation by starting the motor, idler pulley 16^a starts to rotate causing member 35^a to move in the same direction releasing the pressure on blade 77 by arm 81 allowing spring 79 to move blade 77 to close the coil circuit through terminal 82. The electromagnet 65 will then be energized and as a result the obstructor 23^a will be moved to an obstructing position. When the idler pulley 16^a ceases to rotate,

member 35^a will return to its normal position causing arm 81 to move blade 77 to an opened position, therefore, causing the deenergization of the electro-magnet 65, and as a result obstructor 23^a will be moved to a non-obstructing position, allowing cover or door 11 to be opened.

What I claim is—

1. In a laundry machine, an outer cylinder having a door, an inner rotary basket, said driving mechanism for rotating said basket, said driving mechanism including a rotary element; an arm on said door, means for guiding the free end of said arm upon the movement thereof in response to the movement of the door, an obstructor mounted for movement across the free end of the arm to prevent the movement of the arm, and means operable in response to the rotary movement of said rotary element to move said obstructor across the free end of the arm to prevent the movement of the door, said means being automatically operable upon the cessation of rotation of said rotary element to move said obstructor from its position across the free end of said arm to permit the movement of the door.

2. In a machine of the class described, an outer cylinder having a hinged cover; an inner rotary cylinder, driving mechanism for rotating said rotary cylinder, said driving mechanism including a driven element, an electric motor, a switch in circuit with the windings of said electric motor; a friction member, locking and releasing means connected to said friction member, said friction member being responsive to the movement of said driven element to actuate said locking and releasing means for locking said door in a closed position, and said locking and releasing means being automatically operable when said driven element ceases to operate for releasing said door to be moved to an open position, and means operable to open said switch to stop said electric motor to cease the operation of said driven element.

3. In a laundry machine having an outer cylinder having a hinged door, door locking and releasing mechanism including an arm carried by said door, a pivotally mounted obstructor capable of being moved to obstructing and non-obstructing positions with respect to said arm, and means for effecting the pivotal movement of said obstructor to the obstructing and non-obstructing positions.

4. In a laundry machine having an outer cylinder having a hinged door, door locking and releasing mechanism including an arm carried by said door, a pivotally mounted obstructor capable of being moved to obstructing and non-obstructing positions with respect to said arm, means for effecting the pivotal movement of said obstructor to the obstructing and non-ob-

structing positions, and means for backing the obstructor when the same is in its obstructing position.

5 5. In a laundry machine having an outer cylinder having a hingedly connected door, an arm carried by said door, an obstructor mounted for movement to obstructing and non-obstructing positions with respect to said arm, coacting members, one of said 10 members being rotatable, the other of said members being turnable in opposite directions and connected to said obstructor and under the frictional influence of the rotatable member while the latter is rotating causing 15 the member to turn in one direction to effect the movement of the obstructor and to maintain the obstructor in the obstructing position, and means which operates after the rotatable member ceases to rotate to cause 20 the return movement of the turnable member to effect the movement of the obstructor to the non-obstructing position.

6. In a laundry machine having an outer cylinder having a hingedly connected door, 25 an arm carried by said door, an obstructor mounted for movement to obstructing and non-obstructing positions with respect to said arm, coacting members, one of said members being rotatable, the other of said 30 members being turnable in opposite directions and connected to said obstructor and under the frictional influence of the rotatable member while the latter is rotating causing the member to turn in one direction 35 to effect the movement of the obstructor and to maintain the obstructor in the obstructing position, means which operates after the rotatable member ceases to rotate to cause the return movement of the turnable member to effect the movement of the obstructor 40 to the non-obstructing position, and means limiting the turning movement of the turnable member in both directions.

7. In a laundry machine having an outer 45 cylinder having a hingedly connected door, an arm carried by said door, an obstructor mounted for movement to obstructing and non-obstructing positions with respect to said arm, a shaft, a pulley rotatable on said 50 shaft, a member slidable and turnable on said shaft adapted to coact with a portion of said pulley, a connection between said member and said obstructor, means maintaining

said member in coacting relationship with said portion of said pulley, the turnable 55 member being turned in one direction in response to the rotation of said pulley to effect the movement of the obstructor to an obstructing position, and means which operates 60 after the pulley ceases to rotate to cause the return movement of the turnable member to effect the movement of the obstructor to non-obstructing position.

8. In a laundry machine having an outer cylinder having a hingedly connected door, 65 an arm carried by said door, an obstructor mounted for movement to obstructing and non-obstructing positions with respect to said arm, a shaft, a pulley rotatable on said shaft, a member slidable and turnable on 70 said shaft adapted to coact with a portion of said pulley, a connection between said member and said obstructor, yieldable means maintaining said member in coacting relationship with said portion of said pulley, the 75 turnable member being turned in one direction in response to the rotation of said pulley to effect the movement of the obstructor to an obstructing position, and means which operates after the pulley ceases to rotate to 80 cause the return movement of the turnable member to effect the movement of the obstructor to non-obstructing position.

9. In a laundry machine having an outer cylinder having a hingedly connected door, 85 an arm carried by said door, an obstructor mounted for movement to obstructing and non-obstructing positions with respect to said arm, a shaft, a pulley rotatable on said shaft, a member slidable and turnable on 90 said shaft adapted to coact with a portion of said pulley, a connection between said member and said obstructor, means maintaining said member in coacting relationship with said portion of said pulley, the turnable 95 member being turned in one direction in response to the rotation of said pulley to effect the movement of the obstructor to an obstructing position, means which operates 100 after the pulley ceases to rotate to cause the return movement of the turnable member to effect the movement of the obstructor to non-obstruction position, and means limiting the turning movement of said member.

JOHN HENRY SIEMANN.