July 15, 1930. J. C. NELSON ET AL 1,770,596

LID LOCK FOR CENTRIFUGAL CLOTHES DRIERS

Filed Dec. 10, 1926

Fig. 1.

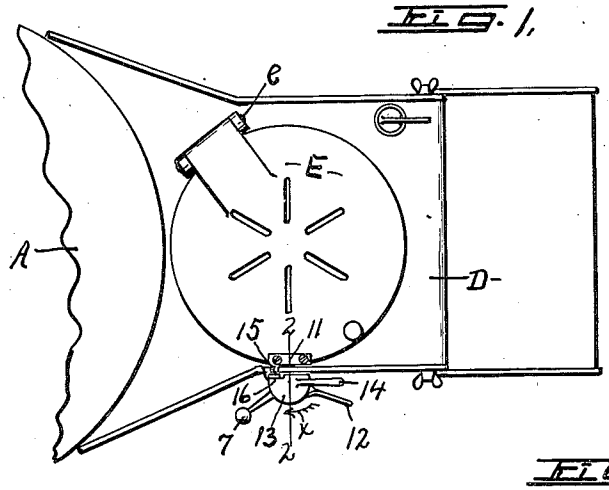


Fig. 2.

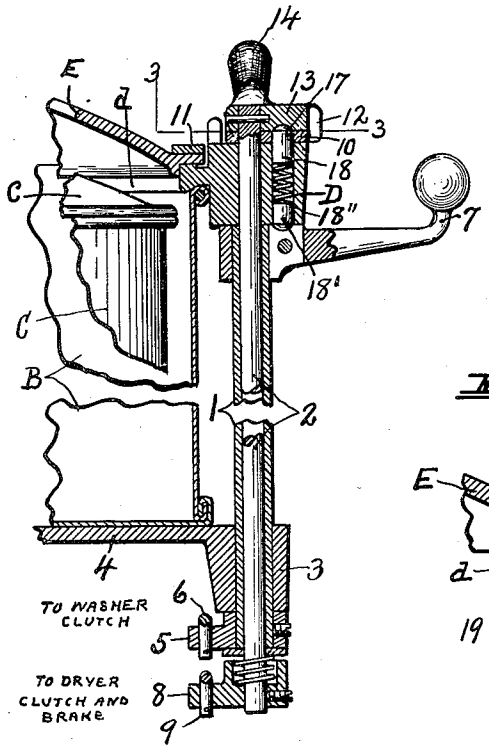


Fig. 3.

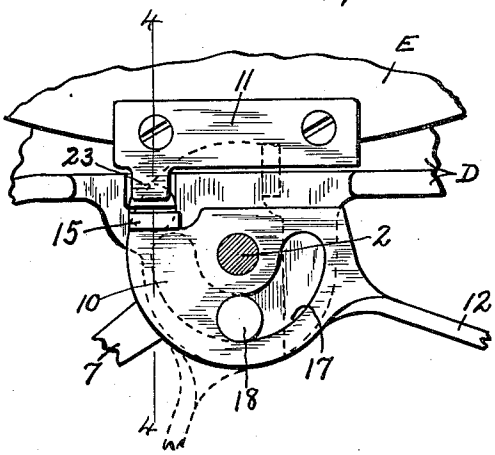
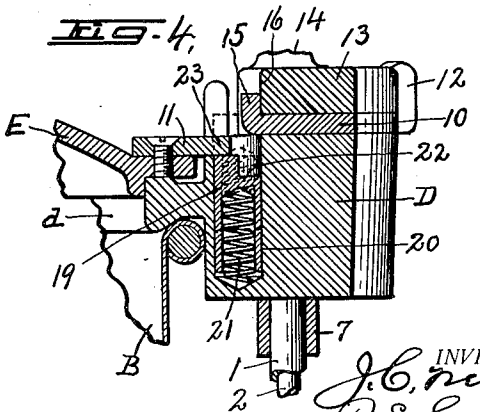


Fig. 4.



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UNITED STATES PATENT OFFICE

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LID LOCK FOR CENTRIFUGAL CLOTHES DRIERS

Application December 10, 1926. Serial No. 153,854.

This invention relates to a mechanical clothes washer and centrifugal drier of the class set forth in our pending application Serial No. 28,564, filed May 7, 1925, except that it refers more particularly to the means for locking and releasing the lid overlying the clothes container in and from its closed position, in combination with the means for controlling the operation of the washing mechanism.

In this particular type of machine the container in which the clothes to be dried are placed is rotated at sufficient speed to expeditiously expel the water and moisture therefrom by centrifugal force and in order to exclude external objects from contact with the rotating container and also to prevent the operator and others from placing their hands or other members upon said rotating container a suitable lid or super-imposed cover is movably mounted upon a suitable supporting frame so as to extend entirely across the opening through which the clothes are inserted and removed to and from the container, said cover being movable to and from a position across said opening.

The operation of the container is controlled by a clutch and brake mechanism through the medium of a hand-operated controlling member placed in convenient position for operation so that when thrown to one position the clutch will be engaged for rotating the container and when thrown to another position will be released and the brake applied to stop further rotation of the container, and the main object of the present invention is to provide means actuated by the controlling member when moved to its clutch-engaging position for locking the lid in its closed position and for leaving the locking means in its locking position when the controlling member is moved to its clutch-releasing and brake-applying position so that the lid cannot be opened until the locking means is restored by hand to its lid-releasing position.

Another object is to prevent the actuation of the controlling members and locking means until the lid has been closed.

Other objects and uses relating to specific parts of the device will be brought out in the following description.

In the drawings:—

Figure 1 is a top plan of a centrifugal drier and adjacent portion of a washing machine.

Figure 2 is an enlarged vertical sectional view taken on line 2—2, Figure 1.

Figure 3 is a horizontal sectional view taken in the plane of line 3—3, Figure 2.

Figure 4 is an enlarged vertical sectional view taken in the plane of line 4—4, Figure 3.

In order that the invention may be clearly understood we have shown a portion of a washing machine —A— and a centrifugal drying apparatus similar to that set forth in our pending application previously referred to in that it comprises an upright shell or casing —B— in which is placed a rotary container —C— having a top or cover —*c*— revoluble therewith.

A frame or shelf —D— is mounted upon the upper open end of the outer casing —B— and is provided with an opening —*d*— adapted to be closed by a lid —E— which is movable to and from a position across the opening —*d*— and also to and from a position across the top —*c*— of the container —C—.

The lid —E— is preferably hinged at —*e*— to the frame or shelf —D— to swing vertically to and from a position across the opening —*d*—.

The cover —*c*— for the upper end of the container —C— is rotatably mounted upon the lid —E— on a supporting stud (not shown) depending from lid E and is movable therewith into and out of engagement with the upper end of the container as the lid —E— is moved about its pivot.

The means for operating and controlling the rotation of the container —C— is quite similar to that set forth in our pending application referred to and involves the use of an upright tubular shaft —1— and inner upright shaft —2— extending through and beyond the opposite ends of the tubular shaft —1— as shown in Figure 2.

The tubular shaft —1— is journaled in a bearing —3— in the lower deck —4— of the main supporting frame upon which the outer

casing —B— is mounted and is provided at its lower end with a crank arm —5— adapted to be connected by a link —6— to a suitable clutch-shifting mechanism for controlling the operation of the washing mechanism as shown in our pending application above referred to, and not necessary to herein illustrate or describe.

The upper end of the tubular shaft —1— is provided with a handle —7— by which it may be moved angularly to different positions for engaging and releasing the controlling clutch for the washing mechanism.

The shaft —2— is journaled within the tubular shaft —1— and the upper frame —D— and is provided at its lower end with a crank arm —8— adapted to be connected by a link —9— to a combined clutch shifting and brake-operating mechanism for controlling the operation of the rotary container of the centrifugal drier as shown in our pending application previously referred to.

These shafts —1— and —2— are co-axial and parallel with the axis of the container —C— and outer casing —B— and are located just outside of the casing in more or less opposed relation to the pivotal connection —*e*— between the lid —E— and frame —D— so as to bring the upper end of the inner shaft —2— in proximity to the periphery of the lid —E— and thus permit the convenient locking and releasing of the lid in and from its closed position by the angular movement of the inner shaft —2— in a manner presently described.

For this latter purpose a locking disk —10— is journaled for angular movement upon the upper end of the inner shaft —2— to rest upon the upper face of the adjacent portion of the frame —D— so that when adjusted rotarily to one position a portion thereof will overlie or ride against the upper face of a keeper plate —11— on the adjacent marginal edge of the lid —E— for locking said lid in its closed position and when reversed or adjusted to another position it will be withdrawn from interlocking engagement with the keeper —11— to release the lid.

The locking disk —10— is provided with a radially projecting handle —12— whereby it may be shifted by hand in reverse directions to its lid-locking and lid-releasing positions independently of the shafts —1— and —2—.

The inner shaft —2— which is used to control the clutch and brake mechanisms for the container —C— extends through and some distance above the locking disk —10— and is provided with a separate operating disk —13— keyed or otherwise secured thereto to rotate therewith in close proximity to the upper face of the locking disk —10— as shown in Figures 2 and 4, said disk —13— being provided with a handle —14— by which it, together with the shaft —2—, may be adjusted angularly for operating the clutch and brake-operating mechanisms for the container —C—.

The locking disk —10— and clutch and brake-controlling disk —13— are provided with cooperative means whereby when the locking disk —10— is in its normal lid-releasing position as shown in Figure 3, and the clutch and brake-controlling disk —13— is in its clutch-releasing and brake-applying position, the angular adjustment of the disk —13— to its clutch-engaging and brake-releasing position will automatically effect a corresponding angular adjustment of the locking disk —10— into locking engagement with the keeper —11— (providing the lid —E— is closed for holding) said lid in its closed position during the rotation of the container —C— caused by the engagement of its controlling clutch.

For this purpose the disk —10— is provided with an upstanding lug or shoulder —15— normally projecting into the path of movement of a portion —16— of the upper disk —13— some distance to one side of the axis of the shaft —2— so that when the disk —13— is adjusted angularly from its clutch-releasing and brake-applying position to its clutch-engaging and brake-releasing position, the portion —16— of the disk —13— will engage the lug —15— and effect a corresponding angular adjustment of the disk —10— until a portion thereof is super-posed upon or engaged with the upper surface of the keeper —11—.

The disk —10— is provided at one side of the shaft —2— with a concentric slot —17— adapted to receive a stop pin —18— on the stationary frame member —D—, Figures 2 and 3, said slot being of just sufficient circumferential length to permit the angular adjustment of the disk —10— from its normal lid-releasing position to its lid-locking position and vice-versa at which time the ends of the slots will engage opposite faces of the stop pin —18—.

This angular movement of the disk —10— is just sufficient to permit the corresponding angular adjustment of the clutch and brake-controlling disk —13— from its brake-applying and clutch-releasing positions to its brake-releasing and clutch-applying position and thereby to limit the angular movements of the disk —13— in reverse directions.

For example, assuming that the disks —10— and —13— are in their normal positions as shown in the drawings to release the lid —E— and simultaneously to release the clutch and apply the brake to stop the rotation of the container —C— and that the lid is in its closed position, then, if it is desired to start the rotation of the container, the disk —13— will first be adjusted angularly in the

direction indicated by arrow —*x*—, Figure 1, by means of its handle —14— thereby effecting a corresponding angular adjustment of the disk —10— in the same direction by reason of the engagement of the shoulder —16— of the disk —13— with the lug —15— of the disk —10— thereby disengaging the brake mechanism and engaging the clutch-mechanism for rotating the container —C— and at the same time moving the disk —10— into locking engagement with the keeper —11— as shown by dotted lines in Figure 3, these angular movements of both disks being limited by the stop pin —18— engaging the right hand end of the slot —17—.

When it is desired to stop the rotation of the container —C— the disk —13— and its shaft —2— may be restored to their starting positions by hand independently of the disk —10— which may remain in its lid-locking position thereby releasing the clutch and applying the brake to stop the further rotation of the container.

When the rotation of the container has ceased the disk —10— may be restored by hand to its normal lid-releasing position as shown in Figure 3 or, if desired, both disks may be simultaneously returned to their normal positions by simply returning the disk —10— by means of its handle —12— under which conditions the lug —15— which is then in engagement with the shoulder —16— will automatically engage said shoulder and thereby return the disk —13— to its starting position.

Suitable means is provided for preventing the operation of the disks —13— and —10— and shaft —2— from their normal positions when the lid —E— is opened and for this purpose is provided a yielding detent —19— consisting, in this instance, of a plunger movable vertically in a socket —20— in the frame —D— in proximity to the inner face of the lug —15— when the disk —10— is in its normal lid-releasing position so that when the lid —E— is opened the upper end of the detent —19— will be forced into engagement with the inner face of the lug —15— by means of a coiled spring —21—, Figure 4, said detent being provided with a shoulder —22— adapted to engage the underside of the adjacent portion of the disk —10— to limit its upward movement.

It is now evident that when the detent —19— is in its holding position in engagement with the inner face of the lug —15— or adjacent portion of the disk —10— it will serve to hold said disk —10— against angular movement to its lid-locking position while the shoulder —15— on the disk —10— will serve to hold the disk —13— against angular movement to its clutch-engaging position.

The lid —E— or rather its keeper plate —11— is provided with a pressure plate —23— which, when the lid is closed, engages the upper end of the detent —19— and by its own weight depresses said plunger against the action of its operating spring —21— below the plane of movement of the disk —10— to permit the angular adjustment of the disk —10— from its lid-releasing to its lid-locking position and also permitting a corresponding angular adjustment of the disk —13— to its clutch-engaging and brake-releasing position for causing the rotation of the container —C—.

This safety device is highly important in machines of this character in that it reduces to a minimum the liability of accidents and injury to the machine arising from contact of external objects with the rotating container for the reason that it prevents opening of the lid while the machine is in operation and also prevents operation of the machine when the lid is opened, but it is evident that various changes may be made in the detail construction of the various parts of the device without departing from the spirit of this invention.

The stop pin —18— together with an additional stop pin —18′— are vertically movable in an opening in the frame —D— and are spring-pressed in opposite directions by an interposed spring —18″— for frictionally engaging the underside of the member —13— and the upper face of the controlling member —7— to frictionally hold those parts in their adjusted positions or rather to prevent accidental displacement thereof from their adjusted positions.

The lower face of the member —13— and upper face of the member —7— may be provided with notches or pockets for receiving the adjacent ends of the pins —18— and —18′— when the latter are adjusted to different positions and thereby to assist in holding those parts against accidental movement.

What we claim is:—

1. In a centrifugal clothes drier, a rotary clothes container, a frame surrounding the upper end of the container, a lid hinged to the frame to swing vertically to and from a position across the top of the container, a controlling member movable about a vertical axis from a neutral position to another position to cause the rotation of the container, and a detent normally holding the controlling member against said movement when the lid is opened, said detent being tripped from its holding position by the closing of the lid.

2. In a centrifugal clothes drier, a rotary clothes container, a lid movable to and from a position across the top of the container, a controlling member movable from a neutral position to another position to cause the operation of the container, a lid-locking member actuated by the controlling member for locking the lid in its closed position, said controlling member being returnable to its neutral

position independently of the locking member.

3. In a centrifugal clothes drier, a rotary clothes container, a lid movable to and from a position across the top of the container, a controlling member movable from a neutral position to another position to cause the rotation of the container, a detent movable into the path of said member when the lid is opened to hold said member against said movement, means actuated by the lid when closed for displacing the detent from its holding position, and spring means for actuating the detent to its holding position.

4. In a centrifugal clothes drier, a rotary clothes container, a lid movable to and from a position across the top of the container, a controlling member movable from a neutral position to another position to cause the operation of the container, and a lid-locking member actuated by the controlling member to lock the lid in its closed position, said locking member being movable to its lid-locking position independently of the controlling member.

5. In a centrifugal clothes drier, a rotary clothes container, a lid movable to and from a position across the top of the container, a controlling member movable from a neutral position to another position to cause the operation of the container, a lid-locking member actuated by the controlling member to lock the lid in its closed position, and means on the lid-locking member when returned to its lid-releasing position for returning the controlling member to its neutral position.

6. In a centrifugal clothes drier, a rotary clothes container, a lid movable to and from a position across the top of the container, a controlling member movable from a neutral position to another position to cause the operation of the container, a lid-locking member actuated by the controlling member to lock the lid in its closed position, and means for limiting the movement of the lid-locking member to its lid-locking position and to its lid-releasing position.

7. In a centrifugal clothes drier, a rotary clothes container, a lid movable to and from a position across the top of the container, a controlling member movable from a neutral position to another position to cause the operation of the container, such controlling member being returnable to its neutral position independently of the lid-locking member, a lid-locking member actuated by the controlling member to lock the lid in its closed position, said locking member being movable to its lid-locking position independently of the controlling member and being provided with means when returned to its lid-releasing position for returning the controlling member to its neutral position, and means limiting the movement of the lid-locking member to its lid-locking position and to its lid-releasing position.

8. An extractor comprising a vat, a cover hinged to the vat and adapted to close the upper end of the vat, a rotary container within the vat, means controlling the application of power to the container including a rocking member, a pivotally supported member movable over the cover to lock the cover, and means in connection with said rocking member for moving the pivotally supported member over the cover to lock the cover when said rocking member is brought to a position to cause the application of power to the container.

9. An extractor comprising a vat, a cover hinged to the vat and adapted to close the upper end of the vat, a rotary container within the vat, means controlling the application of power to the container including a rocking member, a pivotally supported member movable over the cover to lock the cover, and means in connection with said rocking member for moving the pivotally supported member over the cover to lock the cover when said rocking member is brought to a position to cause the application of power to the container, said rocking member being movable to its original position independently of the locking member.

10. An extractor comprising a vat, a cover hinged to the vat and adapted to close the upper end of the vat, a rotary container within the vat, means controlling the application of power to the container including a rocking member, a pivotally supported member movable over the cover to lock the cover, and means in connection with said rocking member for moving the pivotally supported member over the cover to lock the cover when said rocking member is brought to a position to cause the application of power to the container, said rocking member being movable to its original position independently of the locking member, and a handle for shifting the locking member to the inoperative position when the rocking member has been returned to its original position.

11. An extractor comprising a vat, a cover hinged to the vat and adapted to close the upper end of the vat, a rotary container within the vat, means controlling the application of power to the container including a rocking member, a pivotally supported member movable over the cover to lock the cover, and means in connection with said rocking member for moving the pivotally supported member over the cover to lock the cover when said rocking member is brought to a position to cause the application of power to the container, said rocking member being movable to its original position independently of the locking member, and means preventing rocking movement of said rock-

ing member when the cover is in the open position.

12. An extractor comprising a vat, a cover hinged to the vat and adapted to close the upper end of the vat, a rotary container within the vat, means controlling the application of power to the container including a rocking member, a pivotally supported member movable over the cover to lock the cover, and means in connection with said rocking member for moving the pivotally supported member over the cover to lock the cover when said rocking member is brought to a position to cause the application of power to the container, said rocking member being movable to its original position independently of the locking member, and means preventing rocking movement of said rocking member when the cover is in the open position.

In witness whereof we have hereunto set our hands this 1st day of December, 1926.

JABEZ C. NELSON.
PETER E. GELDHOF.