Sept. 1, 1942. H. L. LINDBLAD 2,294,505

TIME CONTROLLED CLOSURE LATCH

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Fig. 1.

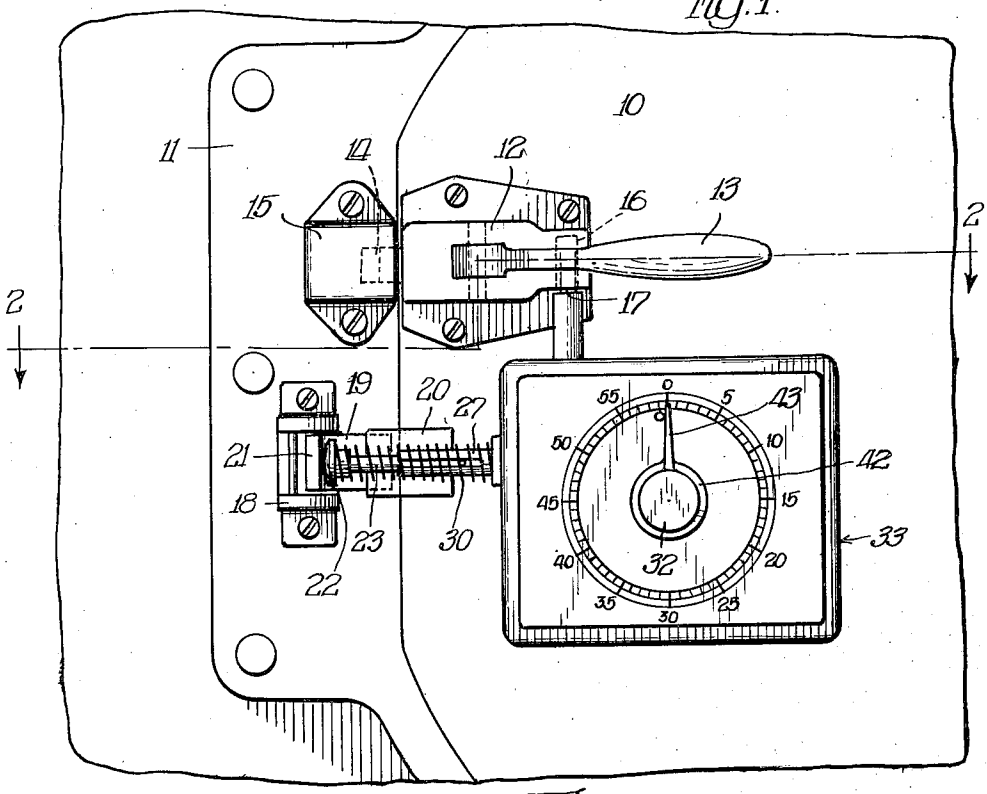
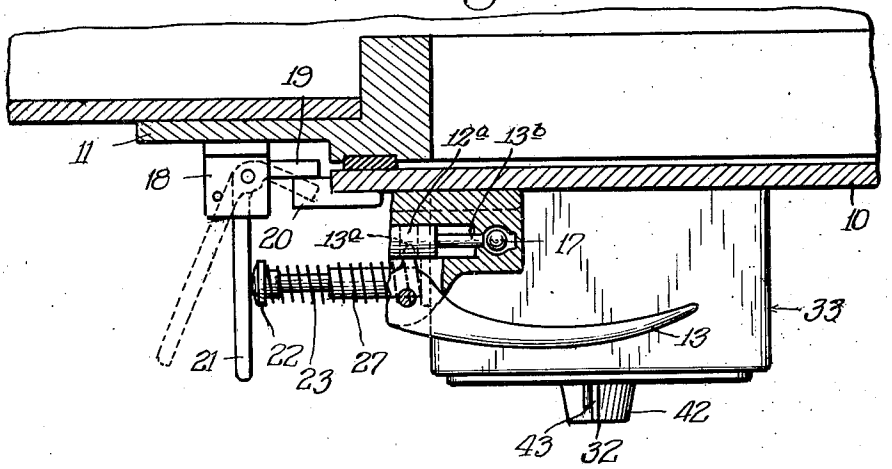


Fig. 2



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Fig. 3

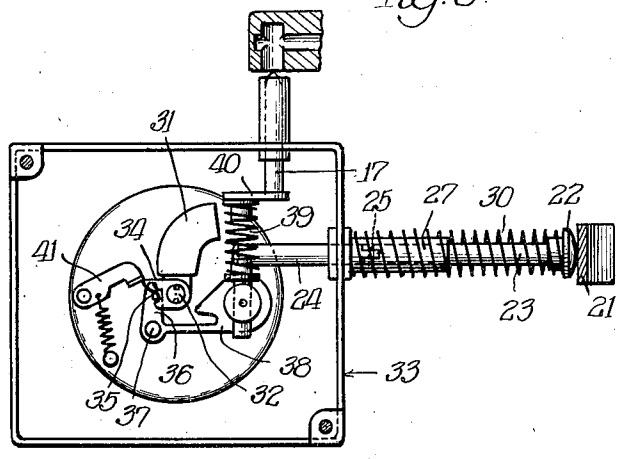


Fig. 4

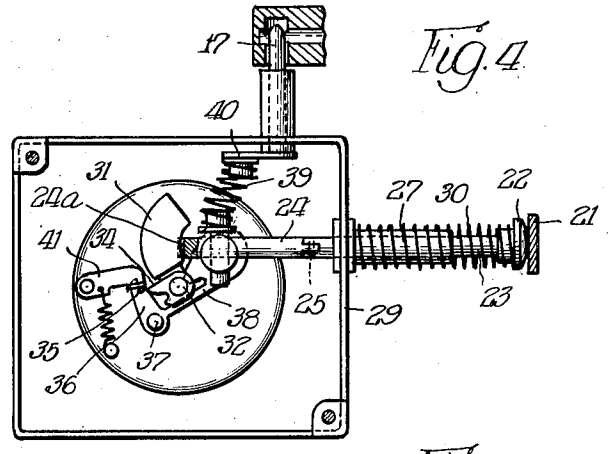
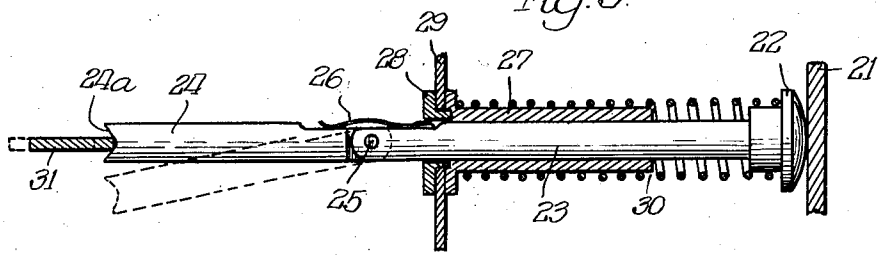


Fig. 5



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UNITED STATES PATENT OFFICE

2,294,505

TIME CONTROLLED CLOSURE LATCH

Harald L. Lindblad, Chicago, Ill., assignor to Mercury Cleaning Systems Incorporated, Chicago, Ill., a corporation of Illinois

Application July 23, 1941, Serial No. 403,712

9 Claims. (Cl. 70—268)

My invention relates to time locking means and particularly to a time lock applied to the door of a dry cleaning washer.

It is required by city ordinances and the rules of underwriters' organizations that the doors of dry cleaning washers shall be provided with some timing means that will insure against the opening of the door until after the expiration of a certain predetermined period. Time locks of various kinds have been suggested, but many thereof fail to take into consideration the fallibilty of the operator.

In the device of my invention I provide for locking means that operate automatically upon the closing of a door to securely lock the door and, in order to avoid oversight in failing to set the time lock, the mechanism is such that the door cannot be open thereafter unless the time lock is set for at least a predetermined minimum period. Thus if the operator overlooks the setting of the clock, it will be impossible to open the door at any time thereafter until the clock is set. This is accomplished by the use of simple mechanism which will be more fully described hereafter.

The invention will be more readily understood by reference to the accompanying drawings; in which,

Fig. 1 is a partial side elevation of a washer door to which my improved mechanism has been applied;

Fig. 2 is a fragmentary sectional view on the irregular section line 2—2 of Fig. 1;

Fig. 3 is a view from the rear of the timing mechanism with the parts in idle or unset condition;

Fig. 4 is a similar view showing the parts immediately as the door is closed; and,

Fig. 5 is an enlarged fragmentary detail showing the construction of the plunger which is operated by the door.

In the drawings I have shown a washer door 10 and a portion of the door frame 11 which carries co-operating parts for the lock and latch. Mounted on the door is a latch housing 12 and an operating arm 13. The latch 14 engages with a keeper 15 on the frame. Within the housing I provide a vertical opening 16 adapted to receive the time controlled locking bolt 17. A projection 13a on the handle engages a sliding plunger 12a in the housing in such manner that the end 13b of the plunger is projected transversely of the opening 16 when the handle is in open position. When the bolt 17 is in locking position, the handle 13 is held against opening movement because the plunger end 13b cannot enter the vertical opening 16.

Fixed to the door frame by means of a bracket 18 is a bell crank, one arm 19 of which lies in the path of movement of a striker 20 fixed to the edge of the door, the other arm 21 of the bell crank being positioned to engage with the head 22 of a plunger. This plunger is composed of two parts 23—24 jointed at 25, and a leaf spring 26, secured to the outer end 23 of the plunger, tends to swing the jointed inner end 24 into the dotted line position shown in Fig. 5.

The plunger operates in a tubular guideway 27 joined by means of a nut 28 to the wall 29 of the timing clock, a spring 30 tending to maintain the plunger in its retracted position. In Fig. 3 the bolt is shown in its retracted position, while in Figs. 1, 2, 4 and 5 it is shown in its advanced position. It will be seen that when in the retracted position of Fig. 3, the joint 25 in the plunger is within the tubular guideway and thus the two parts of the plunger are held in parallel relation.

The outer end of the jointed portion 24 of the plunger has a notch 24a which engages with an arm 31 fixed to the time shaft 32 of the timing mechanism or clock, indicated generally by the numeral 33. Also attached to the shaft 32 is a cam piece 34, the cam on the end of which engages a pin 35 carried by an arm 36, of a bell crank which is pivoted at 37. The other arm 38 of the bell crank carries on a suitable centering projection a coil spring 39, the upper end of which engages over a similar centering projection on an arm 40. The spring serves as the actuating means for moving the locking bolt 17. A spring such as described is essential, since at the initial movement of the described parts, the latch handle 13 will not have moved to locked position, and thus the bolt cannot be seated until the door is completely closed. When, however, it is closed and the latch handle 13 has returned to its closed position, the bolt will spring into the opening 16.

As the arm 31 is rotated to the left as viewed in Fig. 3, the pin 35 is carried to the left until it underlies and is caught by the pawl or dog 41 which holds the bell crank, spring and locking bolt in locked position. Regardless of further movement of the arm 31 and time shaft 32, the parts will remain in this position until the time shaft has returned by reason of the operation of the clock mechanism to a point at which the cam arm 34 engages with the pawl 41 to lift it and permit the spring 39 to withdraw the bolt 17 and

the return of the parts to the position shown in Fig. 3.

As the door is closed the parts are, as before stated, moved to the position of Figs. 4 and 5 in which position the jointed end 24 of the plunger is interlocked with the arm 31, the engagement taking place before the joint emerges from the tube 27. Thereafter the jointed arm cannot swing into the dotted line position of Fig. 5 because of the interlocking engagement and the clock mechanism cannot return the time shaft and arm 31 to their initial positions. They will thus remain in locked position indefinitely unless and until the time shaft 32 is further rotated by means of the knob 42 and pointer 43 on the face of the time lock as shown in Fig. 1. The movement of the pointer to the extent of even one or two minutes will be sufficient to move the arm 31 out of interlocking engagement and to permit the jointed end of the plunger to swing into the dotted line of Fig. 5, whereupon the clock mechanism will function, and upon the elapse of the set time the locking bolt will be retracted. Thus it is impossible for an operator to overlook the setting of the time clock and then to open the door without the lapse of the required period of time. Usually the clock will be set for a desired period of ten or more minutes, but as stated it must first be set to enable the door to be opened at any time thereafter.

When the jointed end has swung out of the plane of rotation of the arm 31, there will be no interference with the rotation of that part. Then when the door is opened and the plunger is retracted the jointed end of the plunger is pulled into the tube 27 and thus brought into line in position for the next engagement with the arm 31.

Other means may be devised for accomplishing the desired result and I do not wish to be limited except as indicated in the appended claims.

I claim:

1. In time locking means, the combination of a door having a manually movable latch, a bolt for holding the latch in locked position, timing means including a timing shaft, a plunger positioned to rotate said time shaft and operated by the closing of the door, means operated by the rotation of said time shaft for advancing said bolt to locking position, interlocking means between said plunger and said time shaft for holding said time shaft against return movement, and means for disengaging said interlock upon further manual movement of the time shaft to a time setting greater than is effected by the movement of the plunger.

2. In time locking means, the combination of a door having a manually movable latch, a bolt for holding the latch in locked position, timing means including a timing shaft, a plunger positioned to rotate said time shaft and operated by the closing of the door, means operated by the rotation of said time shaft for resiliently advancing said bolt to locking position, interlocking means between said plunger and said time shaft for holding said time shaft against return movement, and means for disengaging said interlock upon further manual movement of the time shaft to a time setting greater than is effected by the movement of the punger.

3. In time controlled locking means, the combination with a door having a latch, of a bolt for holding the latch in locked position, timing means including a shaft having an arm thereon, a plunger operated by the closing of the door, said plunger being adapted to interlock with said arm and to rotate said arm and shaft, means operated by the movement of said arm for advancing said bolt to locking position, and means applied to said plunger for disengaging the interlock with the arm following further manual rotation of the time shaft whereby the engaging end of said plunger is permitted to shift out of the path of rotative movement of said arm.

4. In time controlling locking means, the combination with a door having a latch, of a bolt for holding the latch in locked position, a time controlled shaft having an arm, a jointed plunger operated by the closing of the door and adapted to be projected into interlocking engagement with said arm and to rotate said arm and shaft to a predetermined limited extent and to remain in interlocked position subject to a further operation, means operated by the rotation of said arm for resiliently advancing said bolt to locking position, and means acting on the jointed end of said plunger for moving said jointed end out of the plane of rotation of said arm when said arm has been further advanced by a manual time-setting operation.

5. In time controlling locking means, the combination with a door having a latch, of a bolt for holding the latch in locked position, a time controlled shaft having an arm, a jointed plunger operated by the closing of the door, means tending to move the jointed end of said plunger out of line with the shank thereof, guides for the plunger for maintaining the two parts of the plunger in alignment when the plunger is in retracted position, said guide being so positioned that said joined end may swing out of line only when the plunger is in advanced position, said plunger acting to engage and interlock with said arm as it is advanced by the closing of the door, whereby said shaft and arm are rotated by the closing of the door and said shaft and arm are held against return movement by the interlocking engagement with the jointed end of the plunger, means operated by the rotation of said shaft and arm for advancing said bolt to locking position, said interlocking engagement between the plunger and arm being released and said jointed end being permitted to swing out of the plane of rotation of the arm when said time shaft has been further rotated by a time-setting manual movement.

6. In a time controlled lock structure, in combination, a shiftable member, latch means for latching said shiftable member in predetermined position, locking means for locking the latch means in latching position, control means automatically operable by the shifting of the shiftable member into said predetermined position for moving the locking means into locking position, manually settable time control mechanism, and means operated by the setting of the time control mechanism to a predetermined time set position for disabling said control means.

7. In a time controlled lock structure, in combination, a closure member, latch means for latching said closure member in closed position, locking means for locking the latch means in latching position, control means automatically operable by the closing of the closure member for moving the locking means into locking position, manually settable time control mechanism, and means operated by the setting of the time control mechanism to a predetermined time set position for disabling said control means.

8. In a time controlled lock structure, in combination, a closure member, latch means for latching said closure member in closed position, locking means for locking the latch means in latching position, a first control means automatically operable by the closing of the closure member for moving the locking means into locking position, manually settable time control mechanism, a second control means for said locking means, means operated by the setting of the time control mechanism to a predetermined time set position for disabling the first control means and for simultaneously causing the second control means to maintain the locking means in locking position, and means operated by the time control mechanism after a predetermined time operation thereof for releasing said second control means.

9. A time controlled lock structure as defined in claim 8, wherein said manually settable time control mechanism may be set to a plurality of different time set positions.

HARALD L. LINDBLAD.