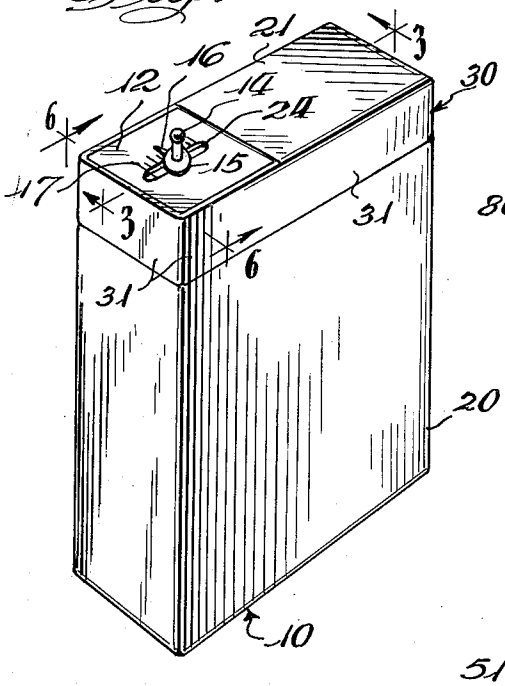
Jan. 23, 1962 M. W. WEIL 3,017,763

CLOSURE TIMING ARRANGEMENT

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Fig. 1.



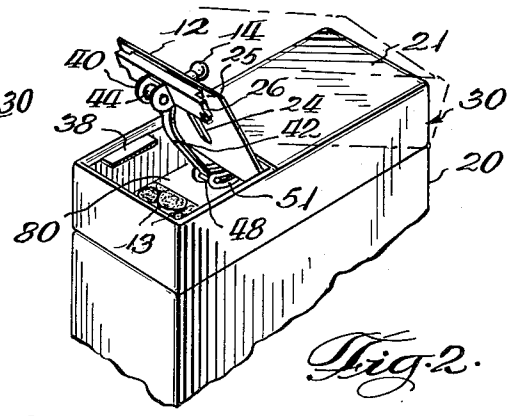


Fig. 2.

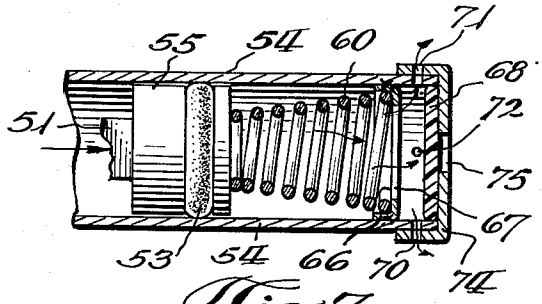


Fig. 7.

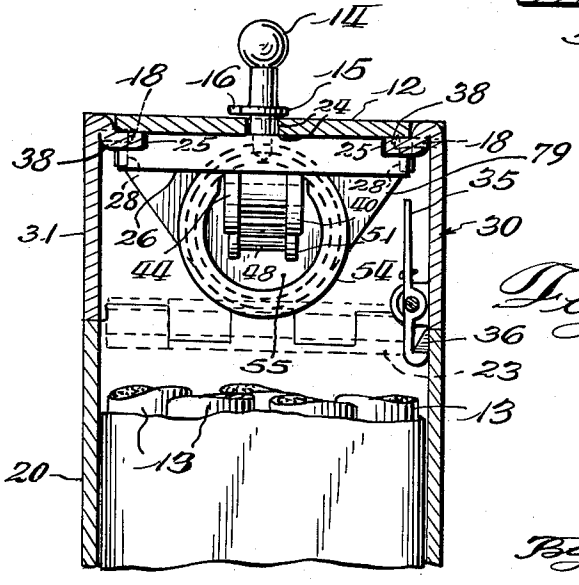


Fig. 6.

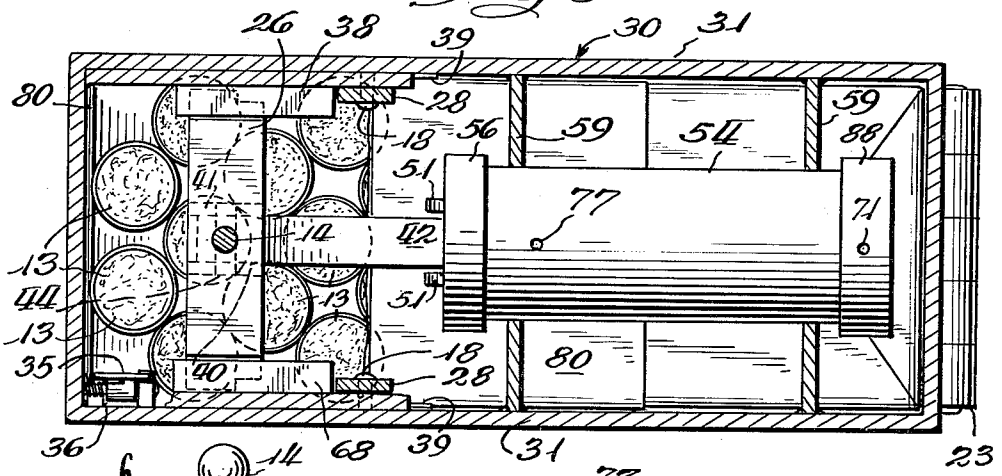
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Attorneys

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CLOSURE TIMING ARRANGEMENT

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Fig. 5.



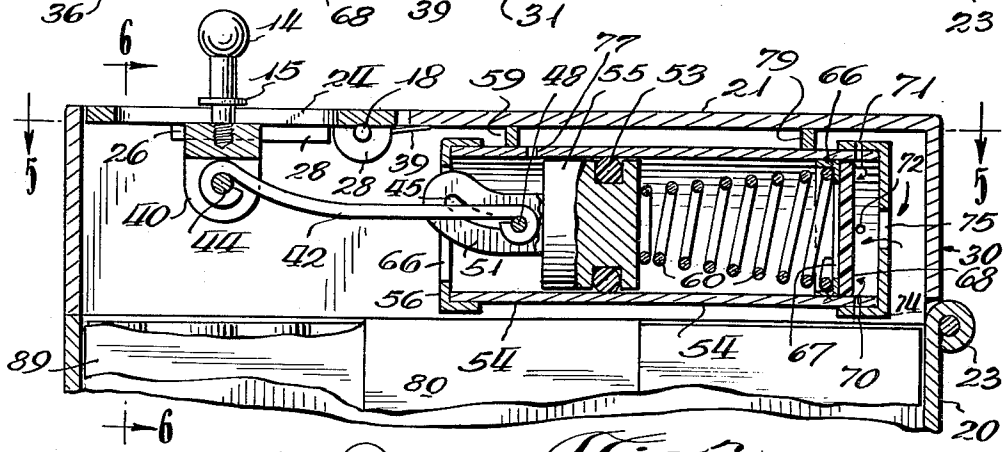


Fig. 3.

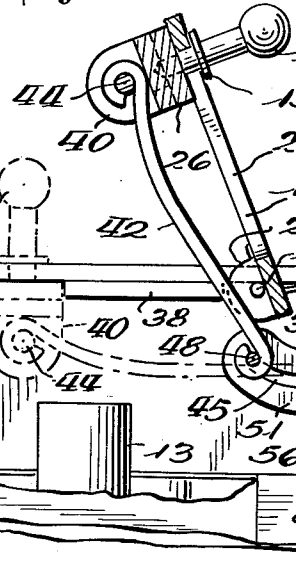


Fig. 4.

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CLOSURE TIMING ARRANGEMENT

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5 Claims. (Cl. 70—269)

This invention relates in general to a closure timing device and more specifically to an arrangement for controlling the time interval in which a case containing cigarettes, pills or the like may be opened to permit access to the contents.

In accordance with accepted understanding of the deleterious effects of nicotine on those addicted to the habit of smoking cigarettes, it is oftentimes desirous for such persons to limit the number of cigarettes they smoke. One approach to this problem for those not having sufficient self-control is to provide a closure timing arrangement for a carton or container is which the cigarettes are disposed, that prevents opening of the container except at certain time intervals. The provision of a timing arrangement in a container of this nature poses a number of problems due to both the limited space available and other considerations such as weight and the necessary economies in the construction of the container. Likewise, similar problems are present in containers for pills or the like, the contents of which must be taken at stated intervals.

In essence, the present invention solves these problems by the provision of a simple lightweight air or vacuum pump, which is evacuated to a degree determined by the adjustable positioning of a latch element. The movement of the pump piston is controlled by the latch position and is returned to its unoperated position by the external air pressure in a time period controlled by the degree of evacuation to place the latch in its open position. The invention further solves these problems in an extremely efficient manner by the provision of a connection between the latch element and pump which permits the latch element to be longitudinally moved with respect to the pump and which enables the latch element to be carried by the lid into rotation therewith.

It is therefore an object of the present invention to provide a closure timing device for a cigarette or like container, which achieves the maximum economy not only in construction but also in space and weight.

It is another object of this invention to provide such a closure timing device for cigarette containers which is air controlled.

It is a feature of this invention to provide a closure timing device for a cigarette container in which the adjustment of a latch on closing of the container loads a piston controlled spring in accordance with the adjustment pre-set and in which the piston is thereafter controlled by air pressure to return the latch to an open position.

In the drawings wherein the same characters or references are employed to identify the same or equivalent parts throughout the several figures thereof:

FIG. 1 is a perspective view of one type container in which the invention is used.

FIG. 2 is a perspective view of a portion of the container shown in FIG. 1 with the lid in its open position.

FIG. 3 is a cross-sectional view of a portion of the container taken substantially along the line 3—3 in FIG. 1 and looking in the direction indicated.

FIG. 4 is a fragmentary sectional view of a portion of the cigarette container shown in FIG. 3 diagrammatically illustrating the position of the position and lid when the container is open.

FIG. 5 is a cross-sectional view of the container taken along the line 5—5 of FIG. 3 and in the indicated direction to illustrate the disposition of the various components.

FIG. 6 is a cross-sectional view of the container taken substantially along the line 6—6 of FIG. 1 and in the direction indicated; and

FIG. 7 is a fragmentary cross-sectional view of the piston and valve arrangement in its fully operated condition.

Referring now to FIG. 1 of the drawings, it will be seen that the cigarette container 10 comprises a pair of box-like formations 20 and 30 having engaging side walls to form the container. Both formations are arranged to provide a pleasing and aesthetic appearance with the upper formation 30 rotatably secured to the bottom formation 20 by means of hinge 23. Latch element 35, which is carried on the inner surface of one side wall holds formation 30 in closed relationship to the formation 20 by engaging with projection 36.

The upper formation 30 comprises an addition to its side walls 31, a top wall 21 and a rotatable lid 12. The lid 12 has a slot 24 formed therein through which extends the shank portion of an adjustment knob 14. It is also provided with bearing ears 28 at the sides of its lower surface and adjacent the top wall 21 whereby it is rotatably supported by respective pins 18 engaging the side walls 31. If desired, a flat spring such as 39 can be provided to normally bias the lid 12 to its open position when permitted to do so, as shown in FIGS. 2 and 4, but this is usually not necessary.

The shank of the adjustment knob 14 has a collar 15 formed or attached thereon in any well known manner and carries the pointer 16. The handle 14 and its associated shank and collar are moved by sliding the same to set the pointer 16 in accordance with the time period in which the lid 12 is to be rotated to its open position, after being closed as will be explained. The markings such as 17 on lid 12 are provided to indicate respective time intervals and the changes in the setting of the pointer 16 with respect thereto provides the adjustment in the time period. These marks are preferably graduated in ¼ hour periods and provide adjustment over a 2 hour period, for example. The shank portion of handle 14 is suitably threaded for attachment to a latch element or slider 26 which is carried directly beneath the lid 12. The slider 26 has suitable recesses 25 as best seen in FIG. 6 whereby it is arranged to engage the side stops or flanges 38 carried adjacent the respective inner surfaces of opposite walls 31. Flanges 38 prevent opening of lid 12 until the slider is disengaged therefrom and therefore are shorter than the length of lid 12 to provide a disengagement position at the front of lid 12. Thus when the slider 26 is positioned at the front of container 10 and forwardly of the flanges 38, the lid 12 is unlatched.

The slider 26 also carries a pair of bearing ears or depending flanges 40 having a pin 44 mounted therebetween. The pin 44 is engaged by the piston connecting arm 42, which is connected at its other end to pin 48. Pin 48 in turn is supported between the arcuate slots 45 of the flanges 51 which protrude from the piston 55.

The piston 55 is arranged in a cylinder or housing 54 which is suitably supported by brackets 59. It has a front cap portion 56 with an aperture 66 therein through which the flanges 51 and the connecting arm 42 pass. Piston 55 is also provided with a suitable circumferential groove in which the O ring 53 is seated to provide an airtight seal with the interior wall of the cylinder 54.

A coiled spring 60 which is loaded by movement of the piston is located in the cylinder 54 directly behind the piston 55. It has one end seated in a suitable cup-shaped annular retaining member 66 having a central aperture 67 through which air is expelled by movement of the piston and spring. A disc 68 having a close fit with the interior wall of cylinder 54 is located behind

aperture 67 and is moved in a direction along the longitudinal axis of the cylinder responsive to air movement in the cylinder 54 caused by retraction of piston 55. The cylinder 54 is also provided with a number of vents or port holes 70, 71 and 72 extending through the cap structure 74 which seals the other end of the cylinder and these permit air passage. The cap 74 is also provided with a central aperture 75 to permit the passage of air. In addition, a port 77 is provided in the cylinder adjacent the piston 55 for a purpose to be explained.

With the lid 12 open, the latch element 35 is easily rotated to disengage element 36 to permit rotation of formation 30 about hinge 23. A package 80, for example, containing cigarettes 13 and having an opening aligned with lid 12 is placed within the portion 20. Thereafter, the formation 30 is rotated to its closed position and the latch element 35 operated to latch the formation 30 to formation 20. At this time the lid 12 is in the position shown in either FIGS. 2 or 4 with the slider 26 at the front end of the lid 12. The lid 12 may now be rotated to its closed position as slider 26 does not engage the stops 38 until it is retracted to its latching position. Handle 14 is now moved to set the pointer 16 on one of the marks 17 in accordance with the time within which it is desired to open the container, while the slider 26 is simultaneously retracted to engage the stops or flanges 38 and latch the lid closed.

The rotation of slider 26 on closing of lid 12 is translated through pin 44 and the connecting arm 42 to move the pin 48 through the arcuate slots 45 of flanges 51 until the pin 48 is brought against the end of the slots 45. At this time the lid 12 is closed. Thereafter the retraction of slider 26 by adjustment of handle 14 is translated through the flanges 51 to the piston 55 and against the spring 60 to expel air through aperture 67 and move disc 68 against the rear cylinder cap 74. This blocks port 75, as shown in FIG. 7. In the meantime, spring 60 is loaded and chamber is evacuated by piston 55. The movement of the piston also causes air to be expelled through the small ports 70, 71 and 72. The piston position and amount of air expelled are of course dictated by the position to which slider 26 is retracted on movement of handle 14, and the distance it must return governs the length of time necessary to disengage slider 26 from stops 38.

Thereafter air pressure exerted through port 75 against disc 68 immediately starts its return to block all the ports. When seated against member 66, it allows the slow passage of air into the cylinder chamber and thereby permits the spring 60 to reciprocate piston 55. This dash-pot effect may, of course, be controlled by the fit of disc 68 or in a number of well known manners. When the piston 55 starts its return, it transmits the pressure applied against it through pin 48 and arm 42 to reciprocate slider 26. Therefore, after a particular time interval determined by the position to which piston 55 was originally moved by handle 14, the slider 26 is moved to a position where it is disengaged from the stops 38. The lid 12 is now opened to permit access to the contents of container 10.

Having described an embodiment of my invention with reference to a cigarette container, but realizing that the invention is of considerably broader scope and may be used with many types containers such as those used for pills and the like, I am appending hereto a series of claims which are believed to incorporate its concepts.

What is claimed is:

1. In a container of the type having a body member and a rotatable closure member secured thereto for enclosing a number of small articles which are to be removed at different time intervals, the improvement comprising a latching means longitudinally movable with respect to said closure member for latching said closure member to said body member, timing means controlling said latching means, said timing means including a hollow member having a port at one end, a piston in said hollow member, spring means for biasing said piston, a valve in said hollow member for closing said port responsive to the pressure of air expelled from said hollow member by reciprocation of said piston toward said one end, a connection between said piston and said latching means arranged to reciprocate said piston toward said one end on the longitudinal displacement of said latching means in one direction, said valve thereafter returned under air pressure exerted through said port to control said spring means and said piston for moving said piston and latching member in the other direction for unlatching said latching means in a predetermined time period whereby said closure member is rotatable to its open position, and means controlled on return of said piston for permitting the entry of air into said hollow member between said piston and said valve.

2. In a container of the type having a body member and a rotatable closure member secured thereto for enclosing a number of small articles which are to be removed at adjustable different time intervals, the improvement comprising a latching member longitudinally movable to different positions with respect to said closure member for latching said closure member to said body member in any of said positions, timing means controlling said latching member, said timing means including a hollow member having a plurality of ports at one end and one port adjacent the other end, a piston in said hollow member, spring means for biasing said piston, a valve in said hollow member for closing one port of said plurality responsive to air pressure caused by reciprocation of said piston toward said one end which air is expelled from said plurality of ports, a connection between said piston and said latching means arranged to reciprocate said piston toward said one end on the longitudinal displacement of said latching means in one direction to any one of said positions, said valve thereafter returned under air pressure exerted through said one port to control said spring means and said piston for returning said piston and latching member in the other direction for unlatching said latching member in a time period determined by the one of said positions it was moved to whereby said closure member is rotatable to its open position and the entry of air between said piston and said valve is permitted through said one port adjacent said other end.

3. In a cigarette container of the type having a deep drawn body member and closure member having an aperture, a rotatable lid for said aperture, a latch arrangement for securing said closure member to said body member and accessible for unlatching said closure member only when said lid is rotated to an open position, the improvement comprising a latching means mounted on said lid and longitudinally movable with respect thereto for engaging said closure member to seal said container, a hollow cylinder in said container and carrying a piston for reciprocation therein, said piston operably connected to said latching means whereby it is reciprocated in said cylinder to any one of a number of predetermined positions individual to respective longitudinal displacements of said latching means while expelling air from said cylinder and also connected to said latching means for permitting the rotation of said latching means with said lid, and means in said cylinder operated responsive to the reciprocation of said piston to anyone of said positions and the expelling of air from said cylinder for thereafter being disposed in a position to be operated responsive to the external air pressure for returning said piston to its latch-releasing position in a time period dependent on the position to which said latching means was moved, whereby said lid carrying said latching means is rotatable to its open position.

4. In a container having a receptacle body and a rotatable closure secured thereto for enclosing a number of small articles which are to be removed at different intervals, the herein invention comprising, a closure timing

mechanism for said container comprising, latching means slidably mounted on said closure member and movable in a plane parallel to the closure member between a latch-releasing position and any one of a plurality of latch-locking positions linearly spaced from said latch releasing position predetermined distances determining said intervals respectively, an air cylinder having a spring-biased piston reciprocable therein, said piston having one end thereof operably connected to said latching means with said piston normally biased to move in a direction to move said latching means to said latch-releasing position, valve means behind said piston for expelling air from the cylinder selectively by movement of the latching means to any of said latch-locking positions against said spring bias, and means at an end of said cylinder for bleeding external air into the cylinder to return said latch means to said latch releasing position during an interval of time dependent upon the initial latch-locking position of the latching means whereby said closure member is opened.

5. In a container having a receptacle body and a rotatable closure secured thereto for enclosing a number of small articles which are to be removed at different intervals, the herein invention comprising, a closure timing mechanism for said container comprising, latching means slidably mounted on said closure member and movable

in a plane parallel to the closure member between a latch-releasing position and any one of a plurality of latch-locking positions linearly spaced from said latch releasing position predetermined distances determining said intervals respectively, an air cylinder having a spring-biased piston reciprocable therein, said piston having one end thereof operably connected to said latching means with said piston normally biased to move in a direction to move said latching means to said latch-releasing position, valve means behind said piston for expelling air from the cylinder selectively by movement of the latching means to any of said latch-locking positions, against said spring bias, and means at an end of said cylinder for bleeding external air into the cylinder to return said latch means to said latch-releasing position during an interval of time dependent upon the latch-locking position of the latching means whereby said closure member is opened, and means controlled on return of said piston for allowing entry of air into the cylinder between said piston and valve.

References Cited in the file of this patent

UNITED STATES PATENTS

2,554,360 Davis ---------- May 22, 1951