United States Patent [19]

Wertz

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[54] TIMED CIGARETTE DISPENSER

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[73] Assignee: **Charles A. Larrain**, Northbridge, Calif.

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[52] **U.S. Cl.** **221/15**

[51] **Int. Cl.** **B65b 59/00**

[58] **Field of Search** 221/15, 22, 281; 222/70; 206/41.2

[56] **References Cited**

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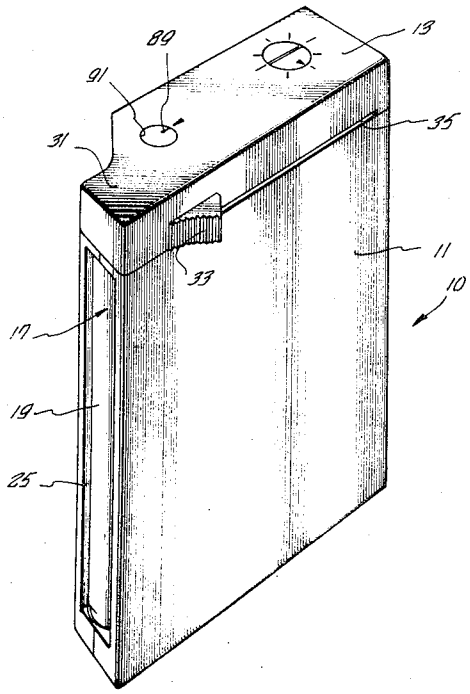
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Primary Examiner—Samuel F. Coleman
Assistant Examiner—Joseph J. Rolla
Attorney—Harold L. Jackson et al.

[57] **ABSTRACT**

A timed cigarette dispenser is disclosed which is operable to eject cigarettes one at a time at predetermined time intervals. The dispenser comprises a case having a compartment for containing a quantity of cigarettes. A tubular ejector is rotatingly mounted on the case for ejecting one cigarette from the compartment and blocking the passage of the others. The ejector is operatively connected, via a trip wire, to a slide which is transversely movable across the top of the casing. The manual movement of the slider is controlled by a timing mechanism which functions to periodically release the slider for ejection purposes. The slider is also operatively connected to a ratchet which is utilized as an automatic counter of the periodic time intervals. The rachet preferably contains twenty teeth about its periphery for providing twenty time interval counts for one revolution of the rachet. The rachet also includes a cam lever mounted thereon which is adapted to trigger a locking mechanism for opening a cover to the case. The cam lever functions to unlock the case after each revolution of the rachet, which is twenty time intervals, to enable the compartment to receive a new supply of cigarettes. The slider is also integrally connected to a gear rack which is longitudinally slidable to engage an input gear of the timing mechanism for winding purposes. A time sequence cam is mounted adjacent the gear rack to adjustably limit the travel of the gear rack, thereby limiting the amount the timing mechanism can be wound.

16 Claims, 8 Drawing Figures



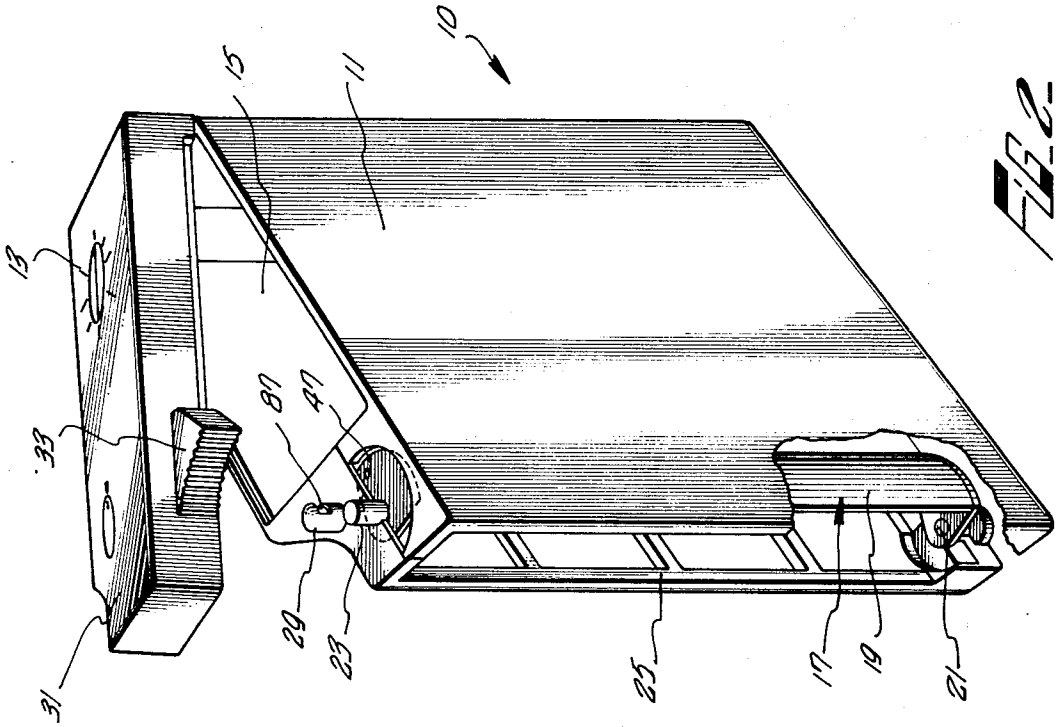


FIG. 2

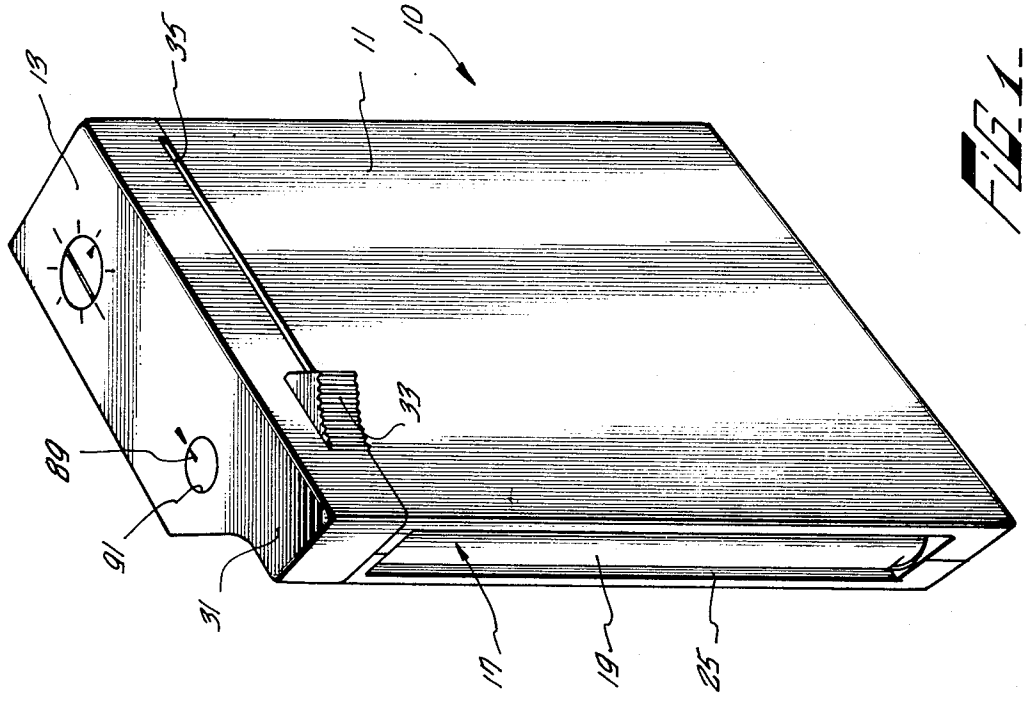


FIG. 1

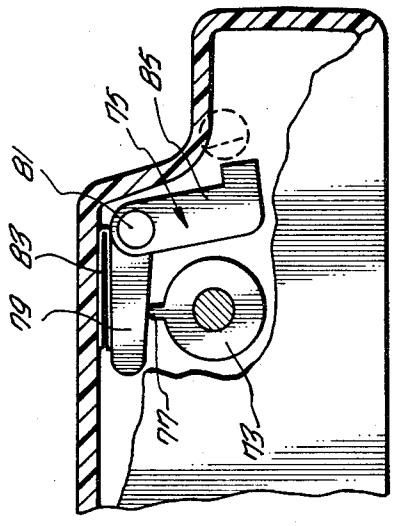


FIG 1

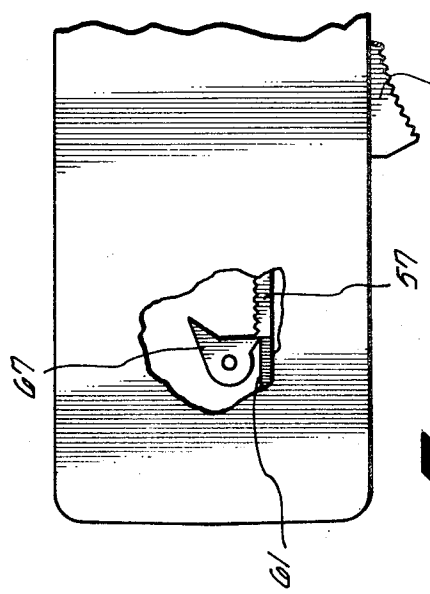


FIG 2

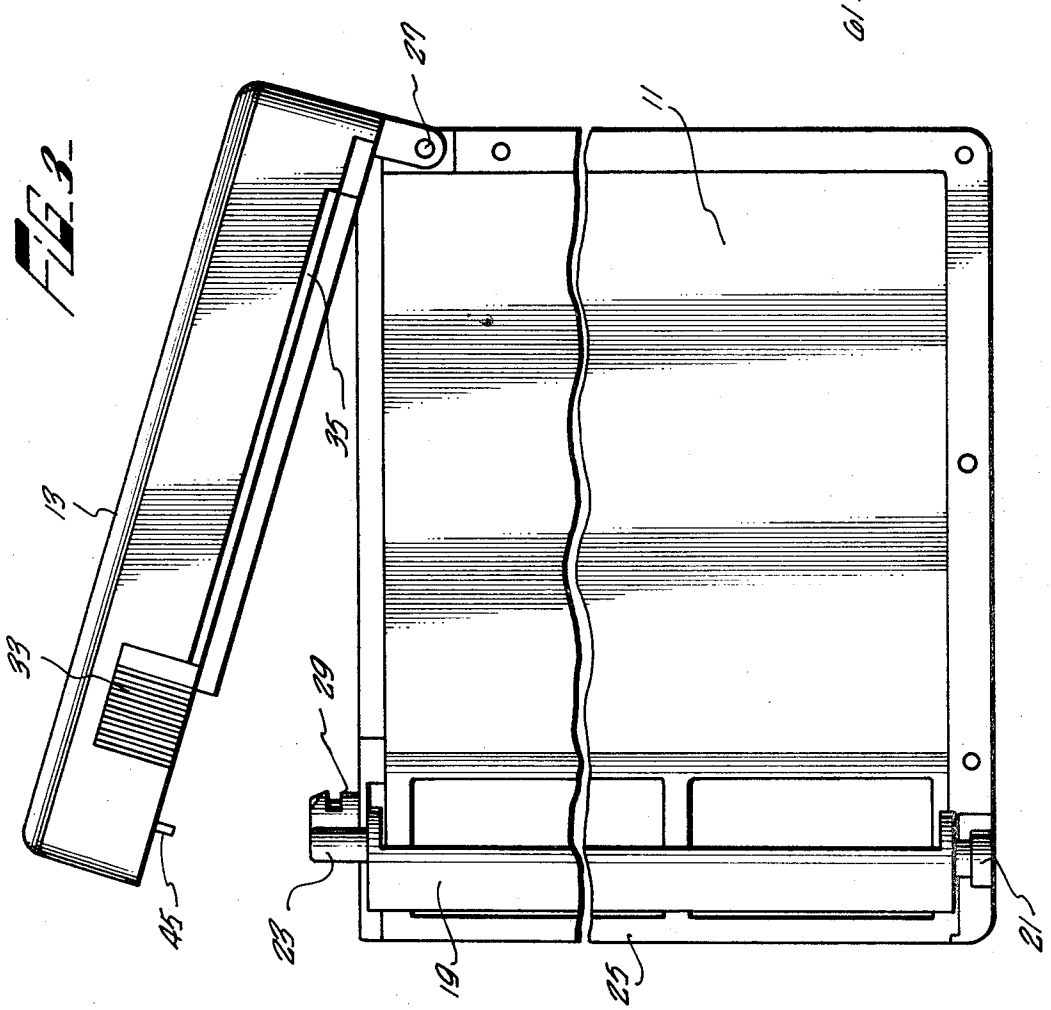


FIG 3

FIG. 4

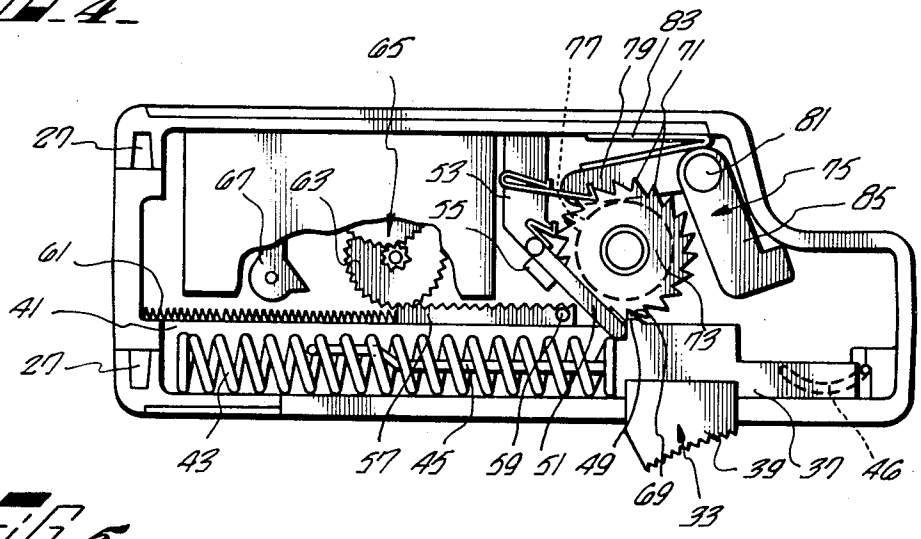


FIG. 5

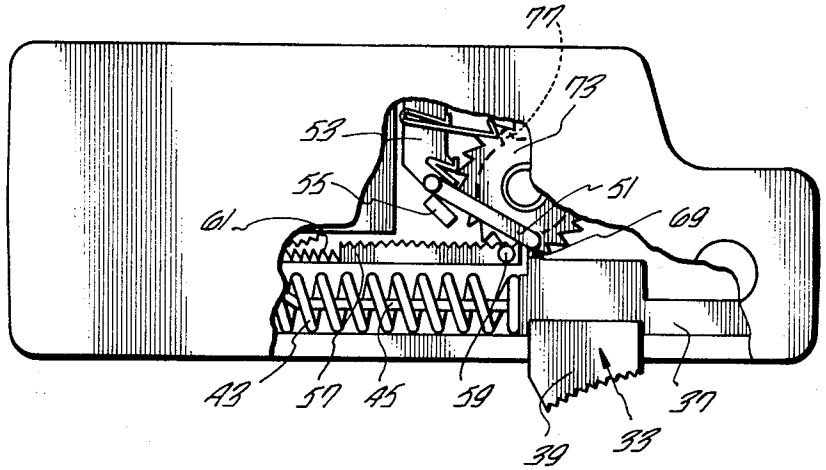
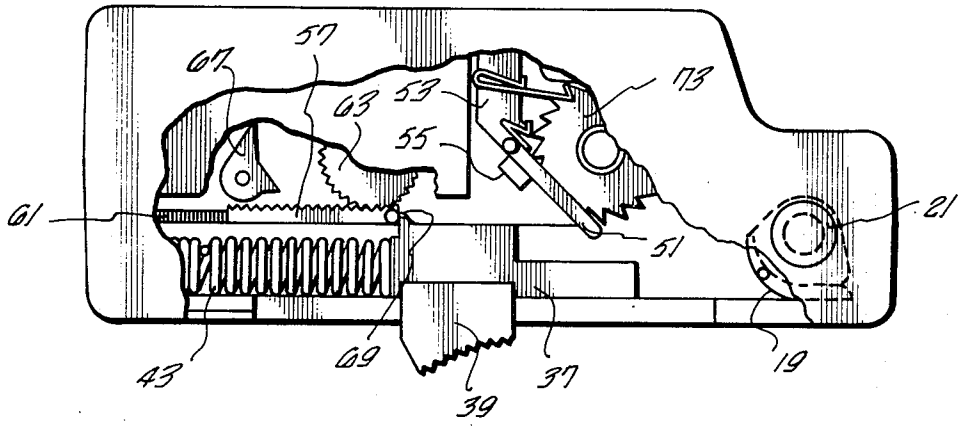


FIG. 6



TIMED CIGARETTE DISPENSER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to cigarette cases for holding a quantity of cigarettes therein and more particularly to time-controlled cigarette cases capable of dispensing cigarettes one at a time at predetermined time intervals.

2. Description of the Prior Art

Because of the many warnings by the Surgeon General and the medical profession that cigarette smoking is injurious to one's health, many people have decided to give up smoking. However, since smoking is a habit which is difficult to stop, various techniques have been developed to assist people in breaking this habit.

One particular method of breaking the smoking habit is through the use of drugs. However, such a method has not gained a wide acceptance because such drugs are depressants and can create harmful side effects for some people. This general distrust for drugs has severely restricted their commercial utilization.

Another method is to substitute other activities in place of smoking. This can be beneficial if the activities are healthful. However, quite often people turn to overeating or drinking alcohol, which is more deleterious than smoking.

It has been found that the cigarette smoking habit can best be combated by a gradual withdrawal rather than completely stopping all at once. In this manner, the craving for cigarettes can subside gradually until it is lost completely. Another benefit of such a method is that even if a person does not completely stop smoking, he can drastically cut down on the number of cigarettes smoked every day. Tests have proven that the chances of contracting lung cancer greatly increase for those who smoke one or more packs of cigarettes a day. Therefore, simply cutting down on the number of cigarettes smoked can still be very beneficial to people.

One particular method that could offer great assistance to smokers is the method utilizing timed cigarette dispensers. These dispensers function to periodically give out only one cigarette at a time to ensure against the user getting access to another cigarette before a predetermined time interval has lapsed. Although these devices could be used to advantage, prior timed cigarette dispensers have all suffered from various shortcomings which have prevented any widespread commercial utilization.

U.S. Pat. No. 2,812,851 discloses a time-controlled cigarette case having ten individual compartments, the ends of which are uncovered one at a time by the one end of a sliding closure member. The other end of the closure member is attached to a drum which in turn is connected to a timing mechanism. The closure member is adapted to be rotated onto the drum to uncover the openings of the compartments. The timing mechanism regulates the movement of the closure member by controlling the movement of the drum. Conversely, the timing mechanism is wound by the forward movement of the closure member which closes off the compartment openings after they have been replenished with a new supply of cigarettes.

The main shortcoming with the time-controlled cigarette case, described in the above-mentioned patent, is the small supply of cigarettes that the case is capable of containing. Although the case can be made larger to have the closure member extend over more than 10 compartments, this would be highly impractical since the case size would then be larger than the size of a pack of cigarettes, the generally accepted size for such cases.

Another shortcoming with the apparatus lies in the shortness of the winding mechanism. Although the patent states that any conventional timing mechanism can be used, the mechanisms currently developed would not be able to be sufficiently wound by the short movement of the closure member. This perhaps more than anything has limited its commercial utilization.

U.S. Pat. No. 2,953,280 discloses a timed cigarette dispenser having a very complex timing and locking mechanism which is operatively connected to an ejector tube. The timing mechanism comprises a watch having conventional hands and an extra spoke of timing trip hands for contacting a trip lever. The ejector tube is regulated by the trip lever to manually eject the cigarettes one at a time. An injection tube is also provided on the casing for cigarette loading purposes.

The dispenser described in U.S. Pat. No. 2,953,280 also has a few shortcomings which limit its widespread use. A major shortcoming is that no means are provided to permit the case to be opened for reloading purposes. THe injection tube that is provided only permits one cigarette at a time to be inserted into the casing. Since the case can hold 30 cigarettes, the amount of time involved in fully reloading the case would be highly impractical and inconvenient. Another shortcoming is the complexity of the timing and locking mechanism. Besides being susceptible of malfunction, the cost of producing such an apparatus would be prohibitive. Another major inconvenience is that the timing mechanism only unlocks the dispenser for a short period of time. After that time has lapsed, the dispenser is again locked. Missing a time interval, and having to wait for the next one in order to get a cigarette, could be very disturbing to the user.

Another cigarette dispenser is disclosed in U.S. Pat. No. 2,870,937. The dispenser comprises a box casing adapted to be placed on a table, with an electric timer-motor drive mounted therein for rotating a double cranked shaft. The crank shaft is drivingly connected to two separators which function to first permit a cigarette to drop between the two separators by opening and closing the first separator. After which the second separator is opened and closed to enable the segregated cigarette to fall into a trough outside the dispenser casing. An electrical switch is connected to the trough for shutting off the motor when the trough is occupied.

Although the dispenser described above works adequately as a table model, for many reasons which are self-evident, such a device could not operate as a portable cigarette case.

SUMMARY OF THE INVENTION

The present invention obviates the above-mentioned shortcomings by providing a time-regulated cigarette case that is easy and convenient to use, economical to manufacture, and highly practical in operation. The apparatus comprises a casing having a tubular ejector formed thereon for ejecting the enclosed cigarettes one

at a time. The ejector is operatively connected, via a trip wire, to a slider mounted on one end of the casing. The manually movable slider is also operatively connected to a timing-locking mechanism which functions to unlock the slider after a predetermined time interval. The slider also functions to unlock the casing cover after a longer predetermined time interval to enable the case to be replenished with a new supply of cigarettes.

There are many advantages to the cigarette dispenser of the present invention. One advantage is that the timing mechanism is not reactuated until the slider is manually operated to eject a cigarette. This prevents the lapse of time from locking the dispenser for another cycle.

Another important advantage of the manual slider is that its movement not only causes a cigarette to be dispensed, but it also winds up the timing mechanism for another cycle.

Still another important advantage is that the timing-locking mechanism functions to open the top of the casing, preferably after every 20 time intervals to enable the casing to be easily and conveniently replenished with a new supply of cigarettes.

A further advantage of the apparatus of the present invention is that the timing cycle is adjustable by a novel mechanism which controls the movement of the slider.

Still another important advantage of the present invention is that the working mechanisms are small enough to be placed in the lid of the case to enable the case to be of the same size as a conventional cigarette case.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a timed cigarette dispenser of the present invention;

FIG. 2 is a fragmentary perspective view of the cigarette dispenser with the lid in an open position;

FIG. 3 is a fragmentary view of the ejector rotatively mounted on the casing;

FIG. 4 is a sectional view of the dispenser lid taken along lines 4—4 of FIG. 1 with the internal components thereof shown in elevation;

FIG. 5 is a view similar to that of FIG. 4 with the slide member locking means shown in its open position;

FIG. 6 is a view similar to that of FIG. 4 with the slide member shown in its advanced position;

FIG. 7 is a fragmentary elevational view of the rachet wheel actuating the locking pawl; and

FIG. 8 is a fragmentary view of the time sequence cam in a second position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, FIGS. 1 and 2 illustrate a timed cigarette dispenser, generally indicated by arrow 10, comprising an elongated casing 11 having a lid 13 pivotally mounted on the one end thereof. FIG. 1 shows the dispenser 10 with the lid 13 in a closed position while FIG. 2 shows the dispenser 10 with the lid 13 in an open position to provide access to an interior compartment 15 formed within the casing 11. The casing 11 is approximately the size of a package of cigarettes with the compartment 15 of a size sufficient to contain twenty cigarettes.

The casing 11 further comprises an ejector 17 pivotally mounted on one side of the casing 11. As shown in FIG. 3, the ejector 17 comprises a semi-circular tube 19 which is pivotally journaled within the bottom end of the casing 11 by a stub shaft 21 while the upper end of the tube is adapted to be pivotally supported via a stub shaft 23 within a journal bearing formed within the lid housing. The wall forming the tube 19 functions to (1) close off the interior of the casing 11 in its closed position; and (2) to segregate a cigarette from the rest of the cigarettes within the compartment in its open position. This enables the operator to withdraw the segregated cigarette from a trough 25 formed in the casing side wall while still not being able to reach for other cigarettes within the compartment. The means for pivotally driving the tube 19 will be described hereinafter.

The lid 13 comprises a housing 31 forming an enclosure for a group of components described hereinafter. A slide member 33 is movably mounted on the lid housing 31 and is adapted to slide along a transverse slot 35 formed in the lid housing 31. The lid 13 is pivotally mounted to the upper right corner of the casing 11 by pins 27. The other end of the lid 11 is adapted to extend over and receive a latch locking member 29 integrally mounted on the upper left corner of the casing 11. The lid 13 is adapted to be secured to the locking member 29 in its closed position, the operation of which will be described hereinafter.

Referring now to FIG. 4, the slide member 33 comprises a main body portion 37 and a projection 39. The main body portion 37 is adapted to slide within a groove 41 formed within the lid housing 31 with the projection 39 extending through the slot 35 to be manually moved by the user's finger or thumb. A spring 43 is mounted within the groove 41 to provide a spring biased resistance against the main body portion 37 as it moves in the forward direction.

A trip wire 45 is adapted to extend through a longitudinal groove formed in the main body portion 37 to extend into the groove 41 and be connected at the one end thereof to the spring 43. The other end of the trip wire 45 is adapted to bend downwardly to extend through an arcuate groove formed in the bottom wall of the lid housing 31. As more clearly shown in FIG. 3, this end of the trip wire 45, which extends below the surface of the lid housing 31 is adapted to extend through a groove 46 formed on the top wall of the casing 11 and into a bore 47 formed in the upper end of the ejector 17. The main body portion 37 of the slide element 33 also includes a notch 49 for receiving the cantilevered end of a lock spring 51. The other end of the lock spring 51 is pivotally mounted on a flange 53 formed within the lid housing 31. A stub 55 is also formed within the lid housing 31 to prevent the lock spring 51 from moving in the forward direction.

The lid housing 31 also includes a gear rack 57 slidably mounted within, with the forward end of the

gear rack adapted to contact the lock spring **51** to move it in a rearward direction, out of locking engagement with the notch **49** of the slide element **33**. The rearward end of the gear rack **57** also includes a projection **59** for contacting the main body portion **37** of the slide member **33**. A compression spring **61** is mounted on the forward end of the gear rack **57** to provide a resistive force against the forward movement of the gear rack **57**. The teeth of the gear rack **57** are adapted to engage an output gear **63** of a spring biased gear train **65** forming the timing mechanism.

A time sequence cam **67** is also mounted within the lid housing **31** to govern the extent of the forward motion of the gear rack **57**. The main body portion **37** of the slide member **33** also includes a projection **69** which is adapted to engage a plurality of inclined teeth **71** formed on the periphery of a rachet wheel **73**. A pawl **75** is also mounted on the flange **53** to engage the teeth **71** for preventing it from rotating in the counterclockwise direction as shown in FIG. **4**.

In the preferred embodiment of the present invention there are twenty teeth **71** on the periphery of the rachet wheel **73** to correspond to the selected number of time intervals required to eject all of the cigarettes enclosed within the compartment **15**. The rachet wheel **73** also includes a cam **77** formed thereon for contacting a spring biased leg **79** which is pivotally mounted on a pin **81** formed in the lid housing **31**. A spring **83** is mounted on the back side of the leg **79** to provide a biasing force in the counterclockwise direction.

The leg **79** is integrally connected to a locking arm **85** which is pivotally mounted on the pin **81**. The cantilevered end of the locking arm **85** is adapted to engage a groove **87** formed in the latch locking member. The rachet wheel **73** also includes a pointer **89** which is adapted to be displayed through a window **91** formed in the tubular surface of the lid housing **31**.

OPERATION

The beginning of the operation will be described with the lid in its open position as shown in FIG. **2**. In this position, the compartment **15** is to be completely filled with 20 cigarettes. After which the lid is pivoted downwardly in the closed position shown in FIG. **1**. The lid **13** is secured in this position by the engagement of the locking arm **85** with the groove **87** of the latch **29**.

With the lid **13** in the closed position, the components within the lid housing **31** are as shown in FIG. **5**. This position is the unwound open position in which the slide member **33** is free to slide forward in the groove **41**. This freedom of movement occurs because the gear rack **57** is engaging the lock spring **51** to keep it out of engagement with the notch on the slide member **49**.

From the open position, the slide member **33** is moved manually in the forward direction against the compression of the spring **43**. This compression of the spring **43** causes the trip wire **45** to also move in the forward direction to pivot about the arc formed in the lower surface of the lid housing **31**. This arcuate movement of the trip wire which extends below the lid housing **31** to engage the ejector **17** causes the ejector tube **19** to pivot 180° to segregate the cigarette contained within the tube from the rest of the cigarettes stored in the compartment **15**. The user is now free to remove the segregated cigarette from the trough **25** with the ejector tube **19** preventing him from reaching the rest of the cigarettes within the compartment **15**. After the cigarette is removed, the slide member is manually moved rearwardly to the position shown in FIG. **4**. During this movement, the trip wire also is moved in a rearward direction by the expansion of the spring **43** to pivot the ejector tube **19** to return it to its original position covering the trough **25**.

To explain the movement of the other components during the movement described immediately above, let us return to the above original position in which the components are as shown in FIG. **5**. In this position, the forward movement of the slide member **33** also contacts the gear rack **57** to move it forwardly. This forward movement of the gear rack **57** against the compression of the spring **61** causes the output gear **63** to rotate in a clockwise direction to wind the timing mechanism comprised of the gear train **65**. As in all conventional timing mechanisms, the input gear includes a clutch (not shown) for permitting it to wind in the clockwise direction.

Upon the return of the slide member **33**, the gear rack **57** is still held in the forward position by the output gear **63** because of the clutch locking the gear **63** in that direction. In this position, the slide member **33** is again locked in the position shown in FIG. **4** by the lock spring **51** engaging the slide element notch **49**.

While the slide member **33** is in this locked position the timed movement of the gear train **65** rotates the output gear **63** in the counterclockwise direction to move the gear rack **57** forward until it again contacts the lock spring **51** to disengage it from the slide member **33**. The length of time that the gear rack **57** takes to move rearwardly to disengage the lock spring **51** is the predetermined time interval that the user has set for obtaining a cigarette from within the casing.

As can be seen, the gear rack **57** cooperates with the slide member **33** to: (1) function as a timing mechanism for unlocking the slide member **33** for movement, and (2) to wind the timing mechanism when moved in the opposite direction.

The length of the predetermined time intervals is governed by the amount that the gear train **65** is wound. This is dependent upon the amount of travel that the gear rack **57** makes. The time sequence cam **67** functions to govern the movement of the gear rack **57**. In the position shown in FIG. **6**, the gear rack **57** is moved to its foremost position. This is because the cam **67** is positioned such that the gear rack **57** bypasses the cam **67**.

FIG. **8** shows the time sequence cam **67** in a second position in which the cam **67** is rotated 90° to enable a stop **93** to be positioned across the path of the gear rack **57**. In this position, when the gear rack **57** is moved forwardly, it engages the stop **93** and does not travel any further. This abbreviated movement of the gear rack **57** causes the gear train **65** to be wound less than were the gear rack **57** permitted to travel its full distance. As a result, the timing mechanism is wound sufficiently to move the gear rack **57** forwardly but since the gear rack does not have to travel as far to contact the lock spring **51**, the predetermined time interval is shortened.

The forward movement of the gear rack **57** can be further shortened by the time sequence cam **67** another quarter turn to enable a second cam stop **95** to be placed in the path of the gear. This further shortens the travel of the gear rack **57** to make the predetermined time interval shorter.

The forward movement of the slide member **33** also functions to rotate the rachet wheel **73** in a clockwise direction. The rachet wheel **73** functions as a counter to record the number of ejection cycles made by the slide member **33**.

As shown in FIG. **6**, the advancement of the slide member **33** causes the rachet wheel **73** to advance one tooth. As the slide member **33** returns to its original position, the projection **69** functions to slide over the inclined teeth **71** of the rachet wheel **73** so as not to return the rachet wheel back from its advanced position. The rachet wheel **73** is further held against this reverse rotation by the pawl **75** mounted on the flange **53**.

As the rachet wheel **73** is rotated, the pointer **89** indicates on a scale shown through the window **91** the number of ejection cycles that have occurred since the casing has been last filled with the 20 cigarettes.

The cam **77**, mounted on the rachet wheel **73**, is positioned initially to be just over the position where it engages the leg **79**. As a result, the rachet wheel **73** must make a complete revolution (20 time cycles) before it commences to contact the leg **79**. This contact occurs during the last ejection cycle to enable the lid to be opened to replenish the supply of cigarettes within the casing **11**. This traveling movement is shown in FIG. **7** in which the cam **77** causes the leg **79** and the locking arm **85** to rotate in the clockwise direction to withdraw the locking arm **85** from the groove **87** of the latch **29**. The casing is then free to be opened and replenished.

The entire cycle as described above is now ready to be repeated.

As can be seen, the slide member **33** functions to not only operate the ejector **17** to wind up the timing mechanism **65**, but to rotate the rachet wheel **73** to periodically unlock the lid **13**.

It should be noted that various modifications can be made to the apparatus while still remaining within the purview of the following claims.

What is claimed is:

1. A timed cigarette dispenser comprising:

a casing having an elongated compartment for containing a plurality of cigarettes, said casing further having latched door means for providing access to said compartment;

means mounted on said casing for ejecting one cigarette at a time from said compartment;

means for actuating said ejecting means at predetermined time intervals; and

means responsive to said actuating means for periodically unlatching said door means.

2. The invention of claim **1** wherein said dispenser further comprises means for locking and unlocking said actuating means at predetermined time intervals.

3. The invention of claim **2** further comprising timing means operatively connected to said locking means for actuating said locking means.

4. The invention of claim **1** wherein said unlatching means comprises:

a ratchet wheel operatively connected to said actuating means and responsive thereto for rotary movement;

latching means for securing said door in a closed position; and

means on said ratchet wheel for triggering said locking means to release said door, thereby enabling it to become opened.

5. The invention of claim **4** wherein said ratchet wheel comprises a plurality of teeth formed about the periphery thereof, said actuating means having a pawl for engaging an individual wheel tooth upon each actuating cycle.

6. The invention of claim **5** wherein said triggering means comprises a cam mounted on said ratchet wheel, said cam adapted to engage and actuate said locking means for each revolution of said ratchet wheel.

7. The invention of claim **5** wherein the number of teeth corresponds to the number of time intervals desired.

8. The invention of claim **1** wherein said ejecting means comprises an ejector tube pivotally mounted on said casing, said tube adapted to segregate and envelop a cigarette from the supply within said compartment.

9. The invention of claim **8** wherein said ejector tube is operatively connected at one end to said actuating means and responsive thereto for pivotal movement.

10. The invention of claim **2** wherein said actuating means comprises a slide element movably mounted on said casing.

11. The invention of claim **10** wherein said means for locking said slide element comprises a locking pawl for engaging and securing said slide element against movement.

12. The invention of claim **11** further comprising timing means operatively connected to said locking pawl for actuating said locking pawl.

13. The invention of claim **12** wherein said timing means comprises a slidable gear rack movable in one direction to engage said locking pawl, said gear rack further adapted to be engaged to the output gear of a spring loaded gear train.

14. The invention of claim **13** wherein said slide element is movable adjacent said gear rack to drive said gear rack in an opposite direction to wind up the output gear and the gear train.

15. The invention of claim **14** further comprising means for limiting the travel of said gear rack in the opposite direction to limit the amount of winding of the gear train.

16. The invention of claim **2** wherein said door comprises a lid extending across an open end of the casing, said lid having a compartment for containing said actuating means and said locking means.

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