

Oct. 27, 1959

E. D. VISSING  
CIGARETTE LIGHTERS

2,909,914

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2 Sheets-Sheet 1

Fig. 1

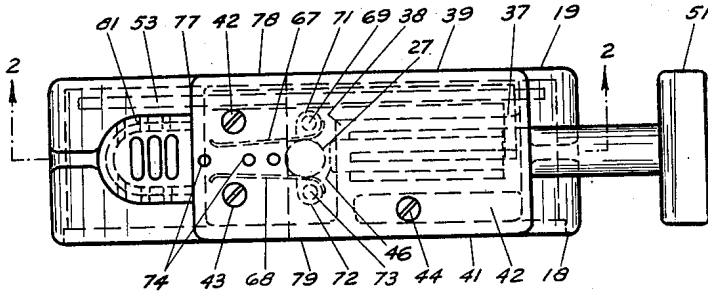
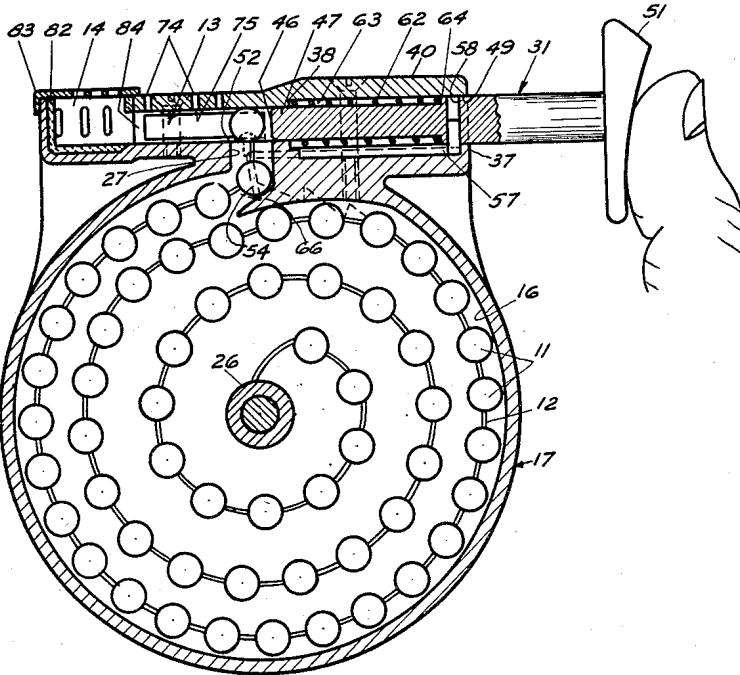


Fig. 2



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Fig. 4

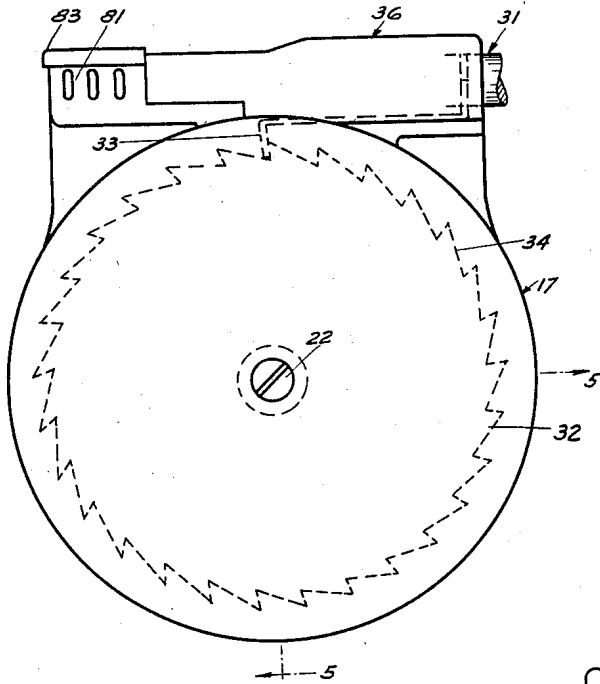


Fig. 5

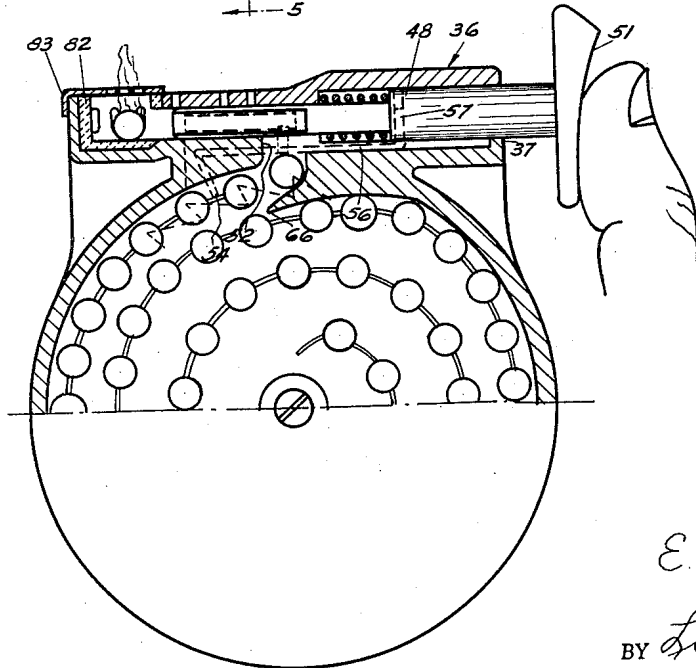
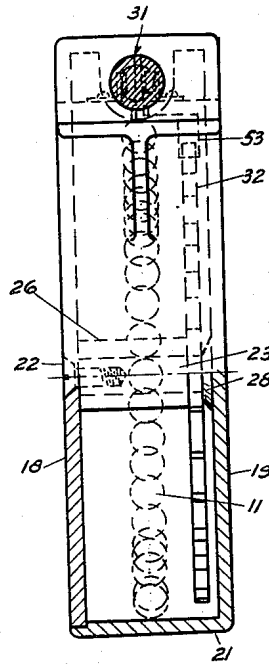


Fig. 3

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## CIGARETTE LIGHTERS

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11 Claims. (Cl. 67-7)

This invention relates to a cigarette lighter and more particularly to a type of cigarette lighter that utilizes friction-ignitable cartridges.

An object of the invention is the provision in a cigarette lighter utilizing ignitable cartridges of novel means for storing the cartridges.

Another object of the invention is the provision in a cigarette lighter utilizing ignitable cartridges of novel means for feeding the cartridges to the ignition mechanism.

Another object of the invention is the provision in a cigarette lighter of the type using ignitable cartridges of novel means for igniting the cartridges.

Another object of the invention is to construct a novel type of cigarette lighter that is positive in its action, that does not require a liquid, that is compact, that assures the user of a flame when desired, that is simple to construct, that utilizes a minimum of parts, that is inexpensive to operate, that is rugged in construction, and that is inexpensive to produce.

Other objects and advantages of the invention will become apparent upon reference to the accompanying drawings in which:

Figure 1 is a top view of a cigarette lighter embodying the present invention.

Figure 2 is a sectional view taken substantially along the line 2-2 in Figure 1.

Figure 3 is a side view similar to Figure 2 with the parts shown in a different operating position.

Figure 4 is a side view with the ratchet wheel and detent shown in dotted lines.

Figure 5 is an end view of the lighter with a cutaway sectional view taken substantially along the line 5-5 in Figure 4.

Referring now to the drawings, the invention is shown embodied in a cigarette lighter of the type using ignitable cartridges 11 mounted on carrier 12, arranged to be stored in the lighter and upon simple manipulation to be fed to an ignition mechanism 13 and thence to a firepot 14 so that the resulting flame may be used to light a cigarette, pipe or the like.

As shown, the storage chamber 16 for storing the cartridges 11 and carrier 12 is of a cylindrical shape and is formed in a casing or housing 17 defined by a generally circular front 18, a generally circular back 19 spaced from the front 18, and a bridging wall 21 interconnecting the outer peripheries of the front 18 and back 19. The wall 21 and the back 19 may be formed as an integral unit while the front 18 may be in the form of a removable plate or cover which seats against the wall 21 and which is held in assembled relation by a screw 22 threaded into a post 23 projecting outward from the central portion of the back 19.

In this embodiment the carrier 12, which is of semi-flexible material such as paper, cord or the like, twisted or stiffened so that it also has some rigidity, is wound around a reel 26 rotatably mounted upon the post 23. In general the carrier 12 and ignitable cartridges 11 are

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threaded around the reel with the inner end being secured to the reel 26 and the outer end being free to pass through an opening 27 at the top of the housing 17 and in communication with the storage chamber 16. A circular spring washer 28 mounted on the post 23 is disposed between the reel 26 and the back 19 and arranged in the assembled position of the parts to apply a pressure on the reel 26 so that the reel 26 does not rotate freely and the carrier 12 and cartridges 11 are held in a desired position in the lighter.

The mechanism for feeding the cartridges 11 from the storage chamber 16 through the opening 27 in the housing to the ignition mechanism 13 includes a manually operable plunger 31 suitably mounted on top of the casing 17, a ratchet wheel 32 disposed in the storage chamber 16 and rigid with the reel 26, and a pawl 33 rigidly fixed to the plunger 31 and cooperatively arranged with the teeth 34 on the wheel 32 so that when the plunger 31 is pressed inward the pawl 33 moves relative to the teeth 34, yet when the plunger 31 returns to its normal position the pawl engages a tooth 34 on the wheel 32 and effects limited rotation of the reel 26, and in turn unthreading of the carrier 12 and feeding of a cartridge 11 through the opening 27.

The plunger 31 is suitably mounted on top of the casing 17 for movement between opposed positions. As shown the plunger 31 is supported in a cage or housing 36 defined by spaced walls 37 and 38 projecting upward from the casing 16 and interconnected with side walls 39 and 41 in the same plane as the back 19 and front 18 respectively and interconnected with the top of the bridging wall 21. A removable cover 40 seats on the walls 37, 38, 39 and 41 which terminate in a common plane. The cover 42 is held in position by screws 42, 43 and 44 extending through the cover and threaded into the casing. Removal of the cover permits access to the plunger and associated parts.

The forward end 46 of the plunger 31 projects through a snug fitting opening 47 in the wall 38 and the intermediate portion 48 of the plunger is of a larger diameter than the forward end 46 and projects through an opening 49 in the wall 37. In the normal position of the parts shown in Figure 2 the end 46 of the plunger is free of the opening 27 to permit entrance of a cartridge 11. At its extreme rear or outer end the plunger is formed with an enlargement 51 shaped so that an operator's thumb or finger may apply a pressure to the plunger. The forward end 46 of the plunger is also designed to coact with a shoulder or land 52 defining the opening 27 to form a cutter for severing a portion of the carrier 12 and a cartridge projecting through the opening, from the main portion of the carrier.

The plunger 31 is also constructed so that the forward end 46 engages the cartridge after it is severed from the carrier and forces the same through the ignition mechanism 13 to the firepot 14.

The ratchet wheel 32 is provided with a plurality of teeth 34 about its periphery shaped so that when the plunger 31 is depressed the pawl 33 slides over the teeth 34 and when the plunger is released the pawl 33 engages a tooth 34 and causes the ratchet wheel 32 to rotate sufficiently to force the carrier and one cartridge through the opening 27. As shown, the pawl 33 is a generally elongated flat member arranged in substantially parallel relation with and immediately below the plunger 31. Preferably the pawl is also at one side thereof so as to overlie the ratchet wheel 32 in the casing. One end 54 of the flat member 56 is turned down and passes through an elongated slot 53 formed on top of the housing 17 and overlying the ratchet wheel 32 so as to be able to engage the teeth 34 on the ratchet wheel 32. The opposite end 57 of the flat member is turned up and offset with respect

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to the axis of the member a sufficient amount to permit the end to be inserted in a vertically extending opening 58 in the plunger 31. Outward movement of the plunger is limited by engagement of the end 57 with the wall 37. The plunger 31 is normally biased to its outer position by a compression spring 62 disposed in a chamber 63 formed on top of the housing 17 between the plunger-support walls 37 and 38. The compression spring 62 encircles the forward end 46 of the plunger 31 and has one end abutting the wall 38 supporting the extreme inner end of the plunger 31 and its opposite end coacting with a shoulder 64 formed on the plunger. Inward movement of the plunger 31 is limited by the compression of the spring 62; that is, when adjacent coils of the compression spring 62 are in contiguous relation, the spring becomes a rigid member and the plunger 31 cannot move farther in that direction.

A lip 66 formed on the interior of the casing directly below and spaced from the opening 27 defines a guide for feeding the outer layer of cartridges on the carrier 12 into the opening 27. The lip 66 also defines a support for holding the next cartridge that is to be utilized in a position immediately below the opening 27.

The ignition mechanism 13 in this instance comprises a pair of elongated flat springs 67 and 68 mounted on top of the housing 17 and disposed between the opening 27 and the firepot 14. The ignition mechanism is encased in a chamber 75 defined by wall 38, a wall 77 spaced from the wall 38, and side walls 78 and 79, in this instance forward extensions of walls 39 and 41 respectively. The forward end or extension of cover 42 forms a cover for the top of this chamber. As shown, the spring 67 is a generally elongated flat spring held in vertical relation and mounted in a cantilever manner as by a bracket 69 within the chamber 76. Screw 71 extending through the bracket and threaded into the casing 17 secures the spring in position. In a similar fashion the spring 68 is provided with a bracket 72 through which a screw 73 extends to support the spring 68 in position in a manner similar to that described for securing the spring 67 in position. As best seen in Figure 1, one end of each spring 67 and 68 overlies the hole 27 adjacent the end 46 of the plunger 31 and these ends are spread apart so that a cartridge 11 may be received between the springs. At the opposite ends the springs 67 and 68 converge so that the distance between them is less than the diameter of one of the cartridges 11. Preferably the surfaces of the springs facing each other are roughened or provided with abrasive material so that the cartridge 11 when forced between the springs 67 and 68 is ignited. Apertures 74 in the cover 42 of the ignition chamber 75 form an outlet for gases caused upon ignition of the cartridge 11. It will also be observed in Figure 5 that the forward end 46 of the plunger is provided with grooves on opposite sides shaped to receive the spring members 67 and 68.

The firepot 14 is mounted on top of the casing 17 and is formed by a circular wall 81 projecting upward from the casing 17 adjacent the ignition mechanism 13 and the wall 77. An opening 84 formed in the wall 77 provides communication between the firepot 14 and the ignition chamber 75 for the passage of a cartridge 11. Preferably the firepot 14 is lined with insulation material 82 to prevent transfer of heat from the firepot 14 to other parts of the lighter. A removable screen cap 83 on the firepot 14 may also be utilized to prevent sparks or the like from escaping from the firepot 14.

The operation of the lighter is apparent from the foregoing but may be summarized as follows: The plate 18 may be removed so as to provide access to the storage chamber for inserting a reel of ignitable cartridges. The free end of the carrier is threaded through the opening 27 and a cartridge 11 rests on the lip 66 beneath the opening 27. The reel 26 is then mounted on the post

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19 and the cover 18 replaced and the screw 22 threaded into position to secure the cover in place. When the cover is in position the spring washer 28 is compressed so that a pressure exists between the reel and the housing. This pressure should be sufficient so that the reel is held in position yet is permitted to rotate upon actuation of the plunger. In Figure 1 the parts of the lighter are shown in their normal position and the plunger 31 is in its outer position.

When it is desired to use the cigarette lighter, the operator manually presses the plunger 31. This causes the end 46 of the plunger 31 to engage the cartridge 12 and force the latter between the spaced springs 67 and 68. Concurrently the plunger 31 coacts with the shoulder 64 to sever a portion of the carrier 12 and a cartridge 11 from the carrier 12. The friction between the cartridge 11 and the springs 67 and 68 causes the cartridge 11 to ignite and upon additional movement the burning cartridge 11 is expelled into the firepot 14. Inward movement of the plunger 31 is limited by the compression spring 62. As soon as the cartridge 11 is ignited and forced into the firepot 14 the user may light a cigarette. When the plunger 31 is released the end 54 of the pawl 33 is moved relative to the teeth 34 on the wheel 32. Upon release of pressure on the plunger 31 the coil spring 62 reacts between the wall 38 and the shoulder 64 on the plunger 31 to cause the plunger 31 to return to the position shown in Figure 2. Upon the return of the parts to the position shown in Figure 2 the end 34 of the pawl 33 engages a tooth 34 on the ratchet wheel 32 and effects rotation of the reel 26 in a clockwise direction a sufficient distance to cause the cartridge 11 resting on the lip 66 to be forced through the opening 27 and into the chamber 75 between the spring members 67 and 68 and the end 46 of the plunger 31 and the cigarette lighter is then ready to be used again as desired.

I claim:

1. In a cigarette lighter of the type for use with friction-ignitable cartridges formed on a carrier, the combination of a housing having an opening for the passage of said carrier and cartridges in unison, means for cutting the carrier to separate a cartridge and a portion of the carrier from said carrier, a firepot for receiving said cartridges and portions of said carrier mounted on said housing, spaced elongated leafspring members between said opening and said firepot, means for mounting said spring members to have them spaced apart a greater distance adjacent the opening in said housing and generally converging at a position adjacent said firepot, plunger means mounted on said housing having an end adjacent said opening and movable between opposed positions between said spring members, said plunger in one position having its end free of said opening to allow passage of a cartridge on said carrier therethrough and in the other position being adjacent said firepot, and means for moving said plunger from said one position to said other position to move a cartridge and associated portions of said carrier to said firepot after it passes through said opening.

2. In a cigarette lighter of the type for use with friction-ignitable cartridges mounted at spaced positions on a cord-like carrier, the combination of a housing having an opening for the passage of said carrier and cartridges, a firepot for receiving said cartridges, means for feeding at least one cartridge through said opening, means for cutting the carrier to separate a cartridge from the carrier and move it to said firepot, and means between said firepot and said opening for igniting said cartridge as it moves to said firepot.

3. In a cigarette lighter of the type for use with friction-ignitable cartridges on a carrier, the combination of a housing having an opening for the passage of said carrier and cartridges, a firepot for receiving said cartridges, plunger means adjacent said opening and movable between opposed positions, said plunger in one position

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being free of said opening to effect passage of a cartridge on said carrier therethrough and in the other position being adjacent said firepot, means normally biasing said plunger to said one position, means responsive to manual manipulation for moving said plunger from said one position to said other position to move a cartridge after it it passes through said opening to said firepot, means between said firepot and said opening for igniting said cartridge as it moves from said opening to said firepot, means responsive to movement of said plunger for feeding said carrier and a cartridge through said opening, and means co-acting with said plunger upon movement of the latter from said one position to said other position to shear the carrier to separate one cartridge from said carrier.

4. In a cigarette lighter of the type for use with friction-ignitable cartridges on a carrier, the combination of a housing having an opening for the passage of said carrier and cartridges, a firepot for receiving said cartridges, plunger means adjacent said opening and movable between opposed positions, said plunger in one position being free of said opening to effect passage of a cartridge on said carrier therethrough and in the other position being adjacent said firepot, means for moving said plunger from said one position to said other position to move a cartridge after it passes through said opening to said firepot, means between said firepot and said opening for igniting said cartridge as it moves from said opening to said firepot, means responsive to movement of said plunger for feeding said carrier and a cartridge through said opening, and means for cutting said carrier to free a cartridge after said cartridge clears said opening.

5. In a cigarette lighter the combination of a housing having an opening, a firepot mounted on said housing adjacent said opening, a reel mounted in said housing, an ignitable-cartridge carrier mounted on said reel, said carrier being a continuous carrier, ignitable cartridges integral with and mounted on said carrier at spaced intervals, means for feeding said carrier and cartridges through said opening in said housing, means for separating a portion of said carrier and a cartridge from said continuous carrier after passing through said opening and means for effecting passage of said one cartridge and a portion of said carrier from said opening to said firepot and for igniting said cartridge as it moves from said opening to said firepot.

6. In a cigarette lighter the combination of a housing having a chamber and an opening on top of the housing in communication with said chamber, a firepot mounted on said housing adjacent said opening, a reel rotatably mounted in said chamber, an ignitable-cartridge carrier mounted on said reel, ignitable cartridges integrally mounted on said carrier at spaced intervals, means for feeding said carrier and cartridges through said opening in said housing, said means providing a support for a portion of the carrier and the cartridge in said chamber adjacent said opening, means for cutting one cartridge from said carrier after said cartridge moves through said opening and means for effecting passage of said one cartridge after it passes through said opening to said firepot and for igniting said cartridge as it moves to said firepot.

7. In a cigarette lighter the combination of a housing having a chamber and an opening in communication with said chamber, a removable cover on said housing enclosing said chamber, a firepot mounted on said housing adjacent said opening, a rotatably mounted reel in said chamber, an ignitable-cartridge cord-like carrier mounted on said reel, ignitable cartridges fixedly mounted on said carrier at spaced intervals, means for feeding said carrier and cartridges through said opening in said housing, and means for effecting passage of one of said cartridges after it passes through said opening to said firepot and for igniting said cartridge as it moves to said firepot.

8. In a cigarette lighter the combination of a housing

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having an opening, a firepot mounted on said housing adjacent said opening, a reel mounted in said housing, a ratchet wheel having teeth on its periphery rigidly fixed to said reel, an ignitable-cartridge carrier adapted to be wound upon said reel, ignitable cartridges mounted on said carrier at spaced intervals, a pawl engageable with the teeth on the said ratchet wheel, and means movable in one direction for effecting passage of one of said cartridges from said opening to said firepot and for igniting said cartridge as it moves from said opening to said firepot, and movable in the opposite direction to move said pawl to engage a tooth on said wheel to effect limited rotation of said reel to move a portion of said carrier and a cartridge through said opening.

9. In a cigarette lighter of the type for use with friction-ignitable cartridges on a carrier, the combination of a housing having a chamber and an opening in communication with said chamber for the passage of said carrier and cartridges, a reel in said chamber for receiving said carrier and cartridges, a ratchet wheel rigidly affixed to said reel, a pawl engageable with the teeth on said ratchet wheel, a firepot for receiving said cartridges, plunger means adjacent said opening and movable between opposed positions, said plunger in one position being free of said opening to effect passage of a cartridge on said carrier therethrough and in the other position being adjacent said firepot, means for moving said plunger from said one position to said other position to move a cartridge after it passes through said opening to said firepot, means between said firepot and said opening for igniting said cartridge as it moves from said opening to said firepot, means connecting said pawl to said plunger whereby movement of said plunger in one direction causes said pawl to engage a tooth on said wheel to rotate said reel to feed said carrier and a cartridge through said opening, and means for cutting said carrier to free a cartridge after said cartridge clears said opening.

10. In a cigarette lighter the combination of a housing having an opening, a firepot mounted on said housing adjacent said opening, a reel mounted in said housing, a ratchet wheel having teeth on its periphery rigidly fixed to said reel, a removable cord-like carrier mounted on said reel, ignitable cartridges mounted on said carrier at spaced intervals, and means for severing said carrier to separate a cartridge from the carrier and for effecting passage of one of said cartridges from said opening to said firepot and for igniting said cartridge as it moves from said opening to said firepot, said means including a movable pawl engageable with the teeth on the said ratchet wheel to effect rotation of said reel and the feeding of said carrier and a cartridge through said opening in said housing.

11. In a cigarette lighter of the type for use with friction-ignitable cartridges on a carrier, the combination of a housing having a chamber for the reception of a carrier and cartridges and having an opening in communication with said chamber for the passage of said carrier and cartridges, a cord-like carrier having cartridges affixed thereto at spaced intervals in said chamber, a firepot for receiving said cartridges mounted on top of said housing, spaced elongated leaf-spring members on top of said housing between said firepot and said opening, said members being spaced apart a distance to allow passage of a cartridge while yet maintaining frictional engagement with the cartridge, plunger means mounted on top of said housing adjacent said opening and movable between opposed positions between said spring members, said plunger in one position being free of said opening to allow passage of a cartridge on said carrier therethrough and in the other position being adjacent said firepot, means for moving said plunger from said one position to said other position to move a cartridge to said firepot after it passes through said opening, means for severing said carrier to separate one cartridge and a portion of the

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carrier from the carrier, and means for moving said severed portion of the carrier and said cartridge through said opening in response to movement of said plunger.

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