

Feb. 25, 1936.

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2,032,094

COMBINED CIGARETTE LIGHTER AND CASE

Filed Aug. 25, 1934

2 Sheets-Sheet 1

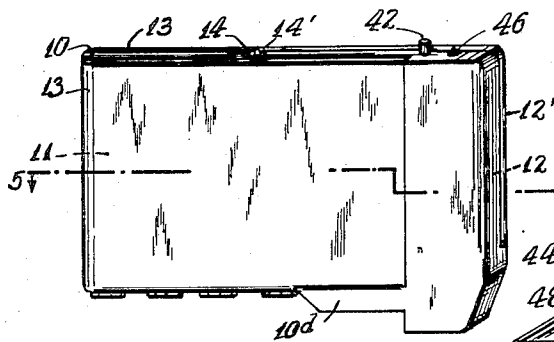


Fig. 1.

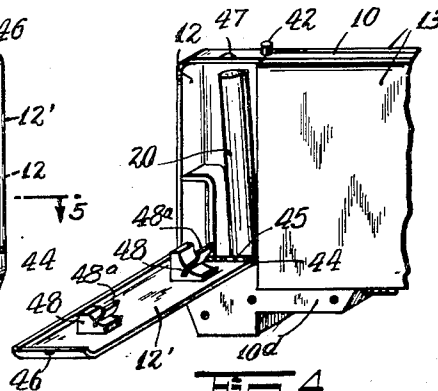


Fig. 4.

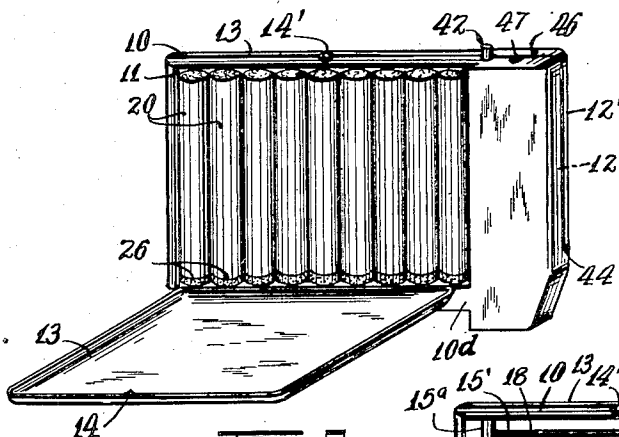


Fig. 2.

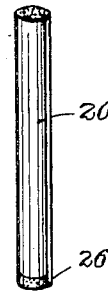


Fig. 12.

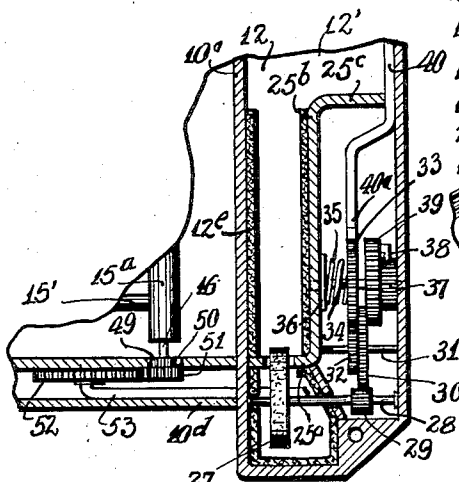


Fig. 5.

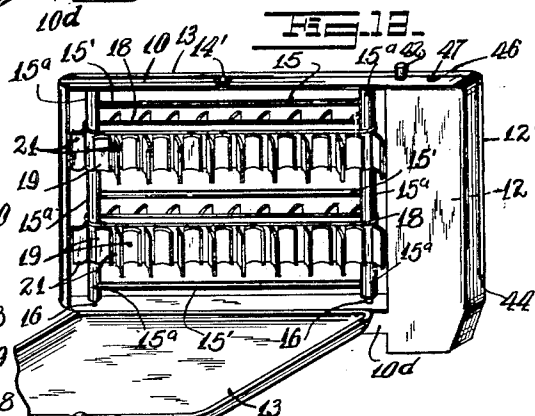


Fig. 3.

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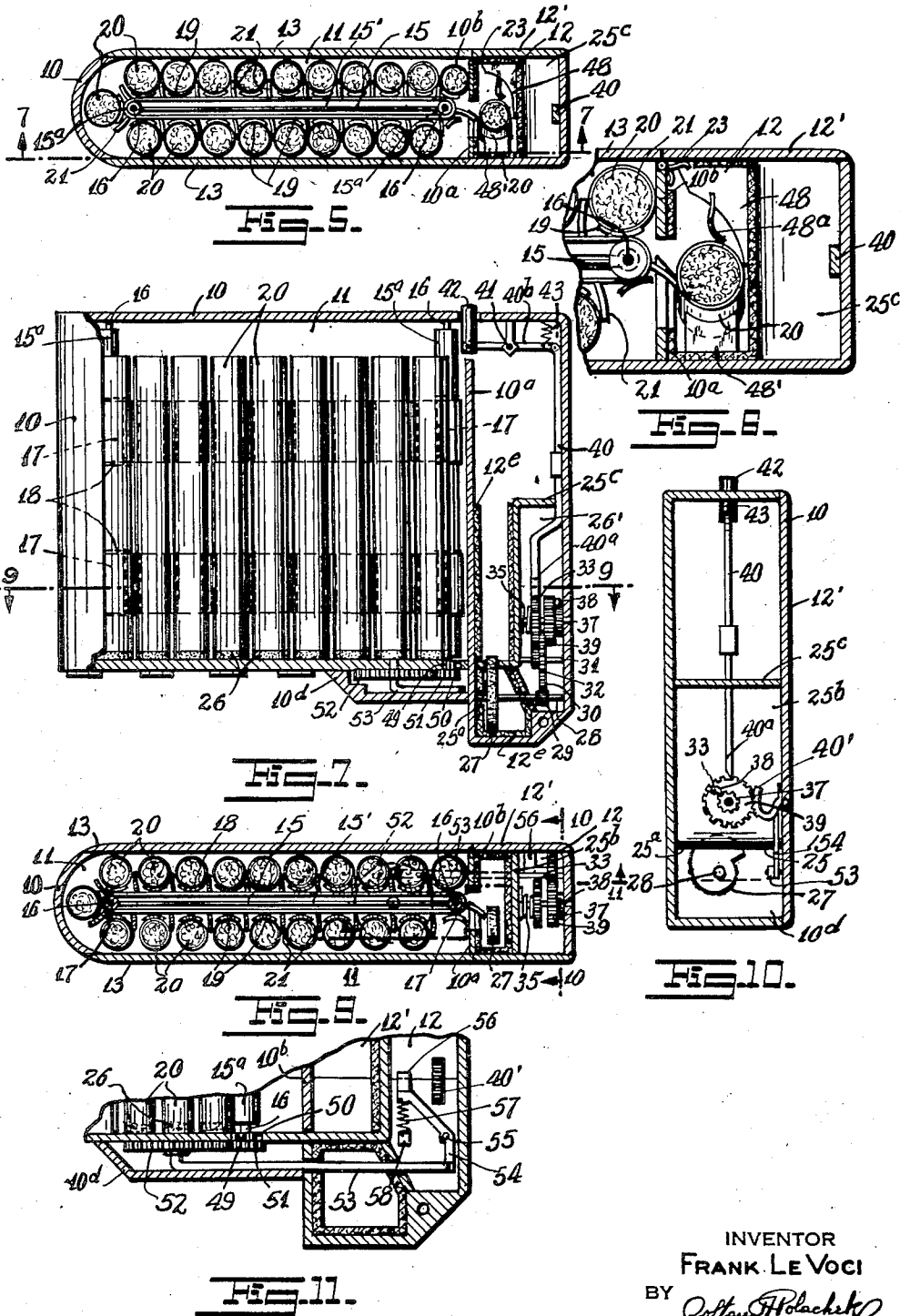
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COMBINED CIGARETTE LIGHTER AND CASE

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2 Sheets-Sheet 2



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2,032,094

COMBINED CIGARETTE LIGHTER AND CASE

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Application August 25, 1934, Serial No. 741,364

12 Claims. (Cl. 206—41.4)

This invention relates to new and useful improvements in a combined cigarette lighter and case.

The invention has for an object the construction of a device as mentioned which is characterized by a cigarette case and a lighter arranged in such a fashion that when a cover for the lighter part is opened a cigarette in lighted condition may be taken out from the device.

Still further the invention proposes to so construct the device that the cigarette case has covers which may be opened for the purpose of placing cigarettes within the case, upon a conveyor adapted to deliver the cigarettes one at a time into the lighter part.

Still further the invention also proposes an arrangement wherein the lighter cover is closed (after the lighted cigarette has been taken from the lighter compartment) automatically the conveyor previously mentioned is operated for the purpose of delivering another cigarette into the lighter compartment, and simultaneously energy storing means is operated for storing energy to be subsequently used to operate lighting mechanism when the cover of the lighter is open.

Still further the invention proposes to so construct the device that it may be embodied as a portable article simulating a regular cigarette case and adapted to be carried in one's pocket, or it may be embodied as a stationary device which may be attached upon the wall of a car or other place as desired.

Still further the invention proposes the construction of a device as mentioned which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:—

Fig. 1 is a perspective rear view of a combined cigarette lighter and case constructed according to this invention shown in the closed position.

Fig. 2 is a perspective view of the device illustrated in Fig. 1 with one of the cigarette compartment doors open.

Fig. 3 is a perspective view similar to Fig. 2 but illustrating the device with the cigarettes removed so that the conveyor may be seen.

Fig. 4 is a fragmentary rear elevational view of Fig. 1 but illustrating the front of the device, with the cover of the lighter compartment open.

Fig. 5 is a horizontal sectional view taken on the line 5—5 of Fig. 1.

Fig. 6 is a fragmentary enlarged detailed view of the right hand portion of Fig. 5.

Fig. 7 is a longitudinal sectional view of the device as though taken on the line 7—7 of Fig. 1.

Fig. 8 is a fragmentary enlarged detailed view of a portion of Fig. 7 illustrating in particular the lower corner of the figure.

Fig. 9 is a horizontal sectional view as though taken on the line 9—9 of Fig. 7.

Fig. 10 is a transverse sectional view taken on the line 10—10 of Fig. 9.

Fig. 11 is a fragmentary sectional view taken on the line 11—11 of Fig. 9.

Fig. 12 is a perspective view of one of the cigarettes.

The combined cigarette lighter and case according to this invention comprises a flat hollow casing 10 having a large cigarette holding compartment 11 and a small lighter compartment 12 in which one cigarette is adapted to be lighted. Two large doors 13 are hingedly connected upon the case 10 and close the front and rear sides of the cigarette holding compartment 11. A small door 12' is hingedly mounted upon the case and closes the lighter compartment 12. The covers 13 and the top portion of the case are formed with coacting elements 14 and 14' adapted to hold the covers in the closed positions. The arrangement is such that portions of the case adjacent the portions 14 may be depressed or moved to release the covers as is conventional in the construction of cigarette cases. The cigarette holding compartment 11 and lighter compartment 12 are separated from each other by a stationary partition 10^a extending from the rear face of the case to substantially the center and in line with a front hinged partition 10^b hingedly mounted upon the front of the casing 10.

A conveyor is arranged within the cigarette holding compartment 11 for the purpose of holding the cigarettes and conveying the cigarettes one at a time into the lighter compartment. This conveyor comprises a support 15 fixedly mounted in the case 10 and having several horizontal arms 15' and vertical sectional end portions 15^a of the support are hollow and support spindles 16 which are rotatively engaged therethrough. The arrangement is such that there is a spindle 16 at each end of the cigarette compartment 11.

Rollers 17 are mounted upon the spindles 16 and between the sections 15^a.

Endless chains 18 are engaged over the rollers and arranged to extend across the front of the cigarette holding compartment and around across the rear. These endless chains, two in number, see particularly Fig. 3, are arranged superimposed and support small vertical arcuate shaped elements 19 which are adapted to form convenient receiving supports for the cigarettes. The conveyor belts 18 are also provided with projecting fingers 21 spaced from each other a sufficient distance so that the normal space between adjacent fingers is adapted to receive one cigarette. These projecting fingers serve to move the cigarettes along during the operation of the conveyor. The cigarettes rest upon the bottom of the case and are merely pushed along by the conveyor during the operation.

The conveyor is arranged to operate in "steps" and each advance is sufficient to cause the roller 17 at the right to rotate through 180°. The arrangement is such that the cigarette immediately behind the hinged partition 10^b will be ejected to the front into the compartment 12. The partition 10^a is formed with openings to allow for the passage of the fingers 21 but the cigarette, since it extends substantially the full height of the casing, will be restrained from passing along and in this manner the cigarette will be maintained in the lighter compartment. The hinged partition 10^b is provided with a spring 23 arranged upon the hinge thereof and having its ends engaging respectively against the inner side of the casing 10 and the partition 10^b so as to normally hold the partition 10^b at right angles to the front wall of the casing 10. Thus when a cigarette is forced into the compartment the partition 10^b will be moved open to allow such transfer and thereafter will immediately close to divide off the cigarette holding compartment from the lighter compartment and so prevent the possibility of the other cigarettes becoming ignited when the cigarette in the lighter compartment is ignited as hereinafter explained. The lighter compartment is lined with fireproof material 12^a.

The lighter compartment 12 is provided with a stationary partition consisting of a horizontal portion 25^a comprising the floor of the lighter compartment, and a vertical portion 25^b terminating in a top horizontal portion 25^c, which divides off an area 26' in which mechanism hereinafter described is located. The cigarettes 20 are of special construction, merely in the fact that one of the ends of each is provided with self igniting substances 26 adapted to be ignited when rubbed with an abrasive or some type of wheel. The substance 26 may be any ignitable substance combined with a proper oxidizing agent, such as browned manganese peroxide (MnO₂). In other respects the cigarette 20 is substantially identical to the types presently known and consisting of a paper or other type of covering material holding tobacco.

The lighter device includes an abrasive wheel 27 of circular shape with an offset side, which is fixed upon a spindle 28 rotatively mounted in the area 26 below the floor 25^a. The floor 25^a is formed with an opening through which the top of the abrasive wheel 27 extends. The arrangement is such that the upper portion of the abrasive wheel 27 will be in intimate contact with the substance 26 of a cigarette 20 ejected into the lighter compartment.

A spring motor means is provided for operating the abrasive wheel 27. This means comprises a gear train associated with a spring. More particularly there is a small pinion 29 fixed upon the spindle 28, said pinion meshing with a gear 30 on a spindle 31 and associated with a pinion 32 meshing with a gear 33 free upon a spindle 34, see Fig. 8. It should be noticed that only the gear 33 is free upon the spindle 34, and the other gears (29, 30 and 32) just mentioned are fixed upon their spindles. A spring 35 is arranged coaxially upon the spindle 34 and has one of its ends connected with the side of the gear 33. The other end of the spring 35 is fixed upon a disc 36 fixed upon the spindle 34. The spindle 34 is rotative within the compartment 26' and is provided near one end with a ratchet wheel 37 fixed thereon. This ratchet wheel 37 is cooperatively associated with a pawl 38 mounted upon the side of a gear 39 which is also loose upon the spindle 34.

The gear 39 is in mesh with an arcuate arm 40' projecting from the lower hinged end of the lighter compartment door 12'. The arrangement is such that when the door 12' opens the gear 39 will merely idle, (turn freely), upon the spindle 34, but when the door 12' is closed the pawl 38 will transmit rotations to the gear 37 which in turn will turn the spindle 34 and wind the spring 35, by turning disc 36. The gear 33 is held stationary, which is necessary for the winding of the spring 35. The means for holding the gear 33 stationary comprises a lever 40 having one end 40^a engaging through the top of the partition 25^c and engaging against the teeth of the gear 33.

The lever 40 extends upwards and is connected with lever 40^b at right angles thereto and pivotally mounted intermediately at the point 41 upon the top of the casing. A button 42 extends from the casing and is connected with the one end of the lever 40^b. The arrangement is such that the button 42 may be depressed for the purpose of moving the lever 40 and causing the portion 40^a to move slightly upwards a sufficient distance to release the gear 33. An expansion spring 43 is interposed between the lever 40^b and the casing and serves to normally urge the lever into a position in which the end 40^a engages against the gear 33. When the button 42 is completely pressed in the finger presses the material of the casing to release the door 12' as hereinafter explained.

It should be noticed that when the spring 35 is in a wound condition and the button 42 is depressed, the lever 40^a will disconnect with the gear 33 and the gear 33 will then be free to rotate upon the spindle 34. The result will be that the gear 33 will transmit rotations thru the gears 32, 30 and 29 to the spindle 28 and so the abrasive wheel 27 will rotate and cause the igniting of the cigarette.

The lighter door 12' is hingedly mounted by a hinge 44 upon a portion of the casing, coating snap parts on the door 12' and the casing holds the door in closed position. A spring 45 is arranged upon the hinged point of the door 12' and has its ends acting respectively between the casing and the door 12' so as normally to urge the door into an open position. The door 12' is provided with a latching depression 46 adapted to engage a complementary element 47 upon the casing so that the door will be held in the closed position when manually moved so. The arrangement is also such that, when the button 42 is depressed for the purpose of moving the lever 40, the material of the casing will be depressed to

disengage the coacting elements 47 and 46 so that the door 12 is released and the spring 45 is free to open the door to the position as illustrated in Fig. 4.

The lugs 48 project from the inner side of the door 12' and are formed with curved fronts equipped with holding springs 48^a adapted to engage against the side of the cigarette in the lighter compartment for the purpose of holding the cigarette so that the cigarette is held firmly in position against the abrasive wheel 27.

A means is provided for operating the conveyor upon closing the lighter door 12'. This means comprises a small gear 49 fixed upon one of the shafts 16, namely that shaft which is adjacent the lighter compartment, and this gear 49 is engaged by a ratchet 50 carried upon the side of a gear 51 rotative on the spindle 16. This gear 51 meshes with a large gear 52 which is rotative upon the bottom of the casing. An arm 53 is connected near the periphery of the gear 52 and extends through a portion 10^d at the bottom of the casing, to the chamber 26'. The inner end of the arm 53 is connected with one end of a bell crank 54 which is pivotally mounted at 55 upon the side of the casing. The other end of the bell crank 54 is arranged immediately below a lug 56 projecting from the door 12'.

A spring 57 acts between a stationary lug 58 upon the casing and the free end of the bell crank 54 so as to normally urge it upwards. The parts are so proportioned that when the door 12' is closed, the free end of the bell crank 54 is depressed against the action of the spring 57 after the door is nearly closed, for example after it has but a quarter of an inch more to travel to assume the closed position. Depressing the free end of the bell crank 54 causes the gear 52 to be turned which transmits rotation to the gear 51 and causes the spindle 16 to turn through 180° to move the conveyor. When the door 12 is open the lug 56 moves free from the bell crank 54 so that the spring 57 moves the bell crank into its original position, which turns the gear 52 back to its original position, but the pawl 50 then idles over the gear 49 so that the conveyor will not move. It will be readily understood that the conveyor will move in steps only forward in a correct amount to deliver one cigarette at a time into the ignition compartment. It is pointed out that because the door is substantially closed before the lug 56 engages the bell crank 54 that there is very small possibility of throwing the conveyor out of time in its delivery of one cigarette at a time to the ignition chamber. If it is accidentally thrown out of time it may easily be corrected by proper manipulation of the door 12'.

The operation of the device is as follows: The doors 13 may be opened whenever desired to replenish the supply of cigarettes upon the conveyor. Cigarettes should be placed with the igniting substance 26 at the bottom. When it is desired to smoke a cigarette it is merely necessary that the button 42 be depressed and upon slight depression to cause lifting of the bar 40 to free the gear 33 so that the abrasive 27 operates and upon full depression to cause the means which holds the door 12' closed (parts 46 and 47) to release each other so that the spring opens the door for allowing removal of the lighted cigarette.

The release of the gear 33 causes the spring 35 to discharge its stored energy to rotate the abrasive wheel 27 to cause igniting of the cigarette. In Fig. 4 the cigarette is shown in the

igniter compartment and may be lifted out and it will be found that it is lighted. The door 12' may be manually closed and when closed will deliver "winding" to the spring 35. The reason for this is that the rack 40' acts against the gear 39 and causes turning of the spindle 34 carrying the disc 36 connected with the spring 35. It will be realized that when the button 42 is released the lever 40 will act under the action of the spring 43 to hold the gear 33 against rotation. For this reason the spring 35 is now wound by the turning of the spindle 34.

The closing of the door 12' will also cause the lug 56 to move the bell crank 54 and advance the conveyor. This will result in one of the cigarettes from the holding compartment being moved past the hinged partition 10^b into the lighter compartment. The partition 10^b will automatically assume the closed position when the cigarette passes. The device is now in its original condition.

While I have shown and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:—

1. A combined cigarette lighter and case, comprising a flat hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment for engaging against the cigarette therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon closing of said small door, and means for winding said spring means operable upon closing said small door.

2. A combined cigarette lighter and case, comprising a hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment for engaging against the cigarette therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon closing of said small door, and means for winding said spring means operable upon closing said small door, a large door being associated with said casing for closing said cigarette holding compartment.

3. A combined cigarette lighter and case, comprising a flat hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small

door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment for engaging against the cigarette therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon closing of said small door, means for winding said spring means operable upon closing and small door, and resilient means for urging said small door for the lighter chamber into an open position.

4. A combined cigarette lighter and case, comprising a flat hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment, for engaging against the cigarette therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon closing of said small door, and means for winding said spring means operable upon closing said small door, said conveyor comprising a support mounted upon said casing and rotatively supporting a pair of parallel spindles located at the ends of the casing, and an endless chain equipped for receiving the cigarettes mounted upon rollers upon said spindles.

5. A combined cigarette lighter and case, comprising a flat hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment for engaging against the cigarette therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon closing of said small door, and means for winding said spring means operable upon closing said small door, said spring means for operating the abrasive wheel comprising a gear train connected with the abrasive wheel and terminating in a gear engaged with a lever for holding the gear in a fixed position, and a wound spring connected with said latter mentioned gear.

6. A combined cigarette lighter and case, comprising a flat hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment for engaging against the cigarette

therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon closing of said small door, and means for winding said spring means operable upon closing said small door, said spring means for operating the abrasive wheel comprising a gear train connected with the abrasive wheel and terminating in a gear engaged with a lever for holding the gear in a fixed position, and a wound spring connected with said latter mentioned gear, said means for releasably holding the door closed comprising coacting elements upon the door and casing adapted to engage each other and disengage upon pressure on the end of the casing.

7. A combined cigarette lighter and case, comprising a flat hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment for engaging against the cigarette therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon closing of said small door, and means for winding said spring means operable upon closing said small door, said spring means for operating the abrasive wheel comprising a gear train connected with the abrasive wheel and terminating in a gear engaged with a lever for holding the gear in a fixed position, and a wound spring connected with said latter mentioned gear, said means for releasably holding the door closed comprising coacting elements upon the door and casing adapted to engage each other and disengage upon pressure on the end of the casing, said depressible button being arranged adjacent a depressible portion of said casing to cause the releasing of the small door, and being connected with a bell crank having a portion engaging said gear for holding the spring mechanism from unwinding.

8. A combined cigarette lighter and case, comprising a flat hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment for engaging against the cigarette therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon closing of said small door, and means for winding said spring means operable upon closing said small door, comprising an element upon said door engageable against a bell crank when the door is substantially in the closed position, an arm connected with said bell crank

and connected with a gear meshing with a pinion connected with a spindle for driving said conveyor with a pawl and ratchet arrangement associated with the parts to transmit rotations in one direction only.

9. A combined cigarette lighter and case, comprising a flat hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment for engaging against the cigarette therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon closing of said small door, and means for winding said spring means operable upon closing said small door, comprising an arcuate member connected with said small door and meshing with a gear free upon a spindle, a pawl mounted upon said gear and engaging a small gear fixed upon said spindle, a disc fixed upon said spindle, another gear free upon said spindle, and a spring connected between said disc and said free gear.

10. A combined cigarette lighter and case, comprising a flat hollow casing having a large cigarette holding compartment, a small lighter compartment for one cigarette to be lighted, a small door for closing said lighter compartment, a conveyor in said cigarette holding compartment for holding cigarettes and conveying one cigarette at a time into said lighter compartment, an abrasive wheel extending into the lighter compartment for engaging against the cigarette therein to cause lighting of this cigarette, spring means for operating said abrasive wheel, means for releasably holding said small door closed, means for releasing said small door, a depressible button for setting said spring means into operation, means for operating said conveyor operable upon

closing of said small door, and means for winding said spring means operable upon closing said small door, comprising an arcuate member connected with said small door and meshing with a gear free upon a spindle, a pawl mounted upon said gear and engaging a small gear fixed upon said spindle, a disc fixed upon said spindle, another gear free upon said spindle, and a spring connected between said disc and said free gear, said free gear being held by a lever associated with said depressible button.

11. A combined cigarette lighter and case, comprising a casing having a cigarette holding compartment and a compartment for one cigarette adapted to be lighted within said latter compartment, a door closing the said lighter compartment, a conveyor in said cigarette holding compartment for holding and conveying the cigarettes one at a time to the lighter compartment, lighter mechanism for lighting the one cigarette within the lighter compartment, means for operating said lighter mechanism and operative with a spring, means for releasing said lighter door and for setting said spring into operation, means for operating said conveyor operable upon closing of the lighter door, and means for winding said spring operable upon closing of the lighter door.

12. A combined cigarette lighter and case, comprising a casing having a cigarette holding compartment with a compartment for one cigarette adapted to be lighted within said latter compartment, a door closing the said lighter compartment, a conveyor in said cigarette holding compartment for holding and conveying the cigarettes one at a time to the lighter compartment, lighter mechanism for lighting the one cigarette within the lighter compartment, means for operating said lighter mechanism and operative with a spring, means for releasing said lighter door and for setting said spring into operation, means for operating said conveyor operable upon closing of the lighter door, and means for winding said spring operable upon closing of the lighter door, said lighter door being pivotally connected with the casing.

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