

CARTON FOR SMOKING ARTICLES WITH EXTINGUISHING MEANS AND METHOD OF CHARGING IT**FIELD OF THE INVENTION**

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This invention relates to cartons for smoking articles and in particular but not exclusively for cigarettes.

The present invention is concerned with
10 providing a carton which allows for the extinguishing and retention of a used or part-used smoking article. For brevity the smoking article will be referred to as a cigarette hereafter and will be exemplified for cigarettes. It is concerned also with methods of
15 charging such cartons.

BACKGROUND OF THE INVENTION

There have been numerous prior proposals for cigarette cartons having additional functions and in
20 particular cartons have been proposed which incorporate ashtrays or compartments in which used cigarettes or butts can be stored. See for example US-A-4886161 and US-A-4789059. In EP-A-586233 a flexible divider is provided on one side which of which unused cigarettes
25 are held in the carton and to the other side of which used cigarettes are returned - these being cigarettes

of a special type which do not diminish in length upon smoking.

The purpose of the present invention is however primarily to provide means by which a used cigarette is
5 safely extinguished. In some embodiments it will be firmly retained in the carton while in others it may be removed by the user and discarded. Retention is preferred because of the environmental advantages of not having to dispose of discarded cigarette butts.

10 In US-A-4793478 a block is mounted inside a cigarette carton. The block has a slanted upper face and a plurality of parallel tubes formed in it which are to receive respectively a cigarette, with the end of the cigarette accessible above the sloping face. It
15 is clear that a tube which has been vacated by a cigarette could be used thereafter for extinguishing and receiving that cigarette again, though this use is not disclosed. In US-A-4207976 a cigarette butt is inserted through the base of the carton to be held in a
20 tube in a block in the carton and to push up a new cigarette in the same tube. However, the positioning in manufacturing terms of cigarettes in blocks of this type would be a matter of extreme difficulty.

In GB-A-2275258 a grid for the reception of
25 cigarettes in a carton is formed by a plurality of tubes secured together. The tubes have steps or



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shoulders in them so that accessible ends of the cigarettes are presented in a sloping array. In US-A-3960270 a grid is formed with detent means interacting with a sliding lid of a carton to allow progressive presentation of cigarettes stored in the grid.

In Japanese Patent Applications JP-A-6-46822 and 6-70740 are disclosures of cartons with two portions, one with a grid for receiving cigarettes and the other having one or more tapered extinguishing tubes into which used cigarettes are put. It is also disclosed that butts may be stored in the cells of the grid.

It is a common feature of all these proposals that there is a pre-formed grid into which cigarettes must be loaded (either before or after insertion of the grid into the carton or formation of the carton around the grid).

SUMMARY OF THE INVENTION

The present invention provides cartons which have extinguishing means and in some cases retention and storage means for used cigarettes but which at the same time allow for the extremely high manufacturing speeds which are required in economic terms for objects of this nature. Furthermore, they are for the most part adaptable either to insertion of the charge into a

preformed carton or, as is more common in this art, the formation of a carton around a preassembled charge.

In a first general embodiment of this invention a carton of cigarettes has, surrounding part of the
5 length of each cigarette, a tube which is a sufficiently close fit for the cigarette to extinguish a lighted such cigarette when placed in it, each tube being discrete and separate from each other tube. Such a charged carton is assembled first by fitting
10 individually a tube onto a cigarette so as to leave one end of the cigarette free and preferably with the other end of the cigarette flush with one end of the tube, assembling a collocation of such tubed cigarettes and inserting that collocation into an erected carton or
15 erecting a carton from a blank around that collocation so that the free ends of the cigarettes are exposed at an opening end of the carton. All of these operations can be done on standard machines, the insertion of the cigarette into the tube being done on a filter-tip
20 assembler machine; and the dimensions of the carton so obtained can be extremely similar to, if not identical to, those of a standard carton.

The tubes involved are preferably tubes of substantially rigid card assembled by spiral winding in
25 known manner and may have two or more layers. An innermost layer of the tube may be a heat dispersion or



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insulation layer such as for example a carbon-containing layer and such a layer especially if it is carbon may also have a deodorant activity.

In another general embodiment of the invention
5 a charged carton contains in one portion a standard collocation of cigarettes. By a standard collocation we mean a shaped bundle of for example 15 or 20 or 25 cigarettes assembled in standard machinery and enwrapped in a conventional foil-backed paper wrapping.
10 This part of the carton may be defined by a conventional carton inner frame.

In the other portion of the carton there is provided one or more extinguishing tubes. In one embodiment a plurality of tubes is tight packed into
15 that portion of the carton, preferably having shaped upper ends so as to guide a downwardly directed burning end of a cigarette into a central one of the tubes. In another embodiment the second portion of the carton is occupied by a closed container into which the one or
20 more extinguishing tubes debouches. The length of the extinguishing tube should be sufficient to ensure extinction of a cigarette placed in it but may be short enough that there is room below it within the container for a cigarette end which is pushed through the tube to
25 be able to get clear of the tube. In these embodiments the tubes may be of card or like material as mentioned



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above or may be moulded or extruded plastics material tubes, and the container may be of plastics material.

The invention also provides for assuring oxygen exhaustion within an extinguishing tube while

5 permitting the ready withdrawal of an unused cigarette from a tube. Ready withdrawal implies a clearance between the inner wall of the tube and the cigarette and that clearance obviously offers a path for oxygen from the ambient air. To help assure extinction, the

10 invention proposes that the diametrical dimension of a portion of the cigarette should be an interference fit with a tube which receives that cigarette; however, in the condition in which the unused cigarette is presented in a carton the interference fit portion of

15 the cigarette is free of the tube. As soon as an appreciable length of the cigarette has been burnt off however, insertion of the cigarette into the tube will bring the interference fit portion of the cigarette into engagement with the tube thereby sealing the tube.

20 The interference fit portion may be assured for example by a thick overwrap on a filter or by a specifically-provided seal ring projection either on a filter assembly or near the mouth end of an unfiltered cigarette.

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DESCRIPTION OF THE DRAWINGS

Embodiments of the invention will now be described with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view of a first
5 carton charged with cigarettes;

Figure 2 is a partial section on the line II-II;

Figure 3 is a perspective view of a second carton embodying the invention;

10 Figure 4 is a section on the line IV-IV;

Figure 5 is a top view of the second embodiment;

Figure 6 is a perspective view of the third embodiment;

15 Figure 7 is a section on the line VII-VII of Figure 6 and Figure 8 is shown in modification; and

Figure 9 is an enlarged view of a cigarette having an interference fit portion.

20 DESCRIPTION OF PARTICULAR EMBODIMENTS

In Figure 1 there is shown what is in principle a standard "flip-top" carton with a body 1 to which is hinged a lid 2 openable to expose the mouthpiece or filter ends 3 of a charge of (usually twenty)
25 cigarettes 4, and retained in its closed position against accidental opening by inner frame 7.

For a substantial portion, e.g. about two-thirds of its length, each cigarette is surrounded by a tube 5. The tube 5 may be (as described below) a hollow spiral wound tube of two or more layers of card or may be a plastics material extrudate, for example.

The fit between the cigarette and the tube should be just enough to resist accidental displacement of one in relation to the other and to allow handling of the two together.

Each cigarette 4 with its respective tube 5 is preassembled together on a filter tip assembler such as a Hauni MAX 5 or MAX 80 machine and the assembly thus made is treated as if it were a cigarette, being passed to a packing and assembling machine which in the conventional way prepares a charge of cigarettes, e.g. twenty in number, in the desired dimensions. This assembled charge is then either inserted into a preassembled carton 1 or as is more usual has a carton 1 assembled around it, both of these being operations which are *per se* standard. The charge may have a wrapping around such as the conventional aluminium foil/paper wrap.

The smoker having opened the carton can select any of the ends 3 presented to him, smoke that cigarette and then reinsert its remains into the tube 5 thereby extinguishing the butt end and at the same time

storing it in the carton and avoiding distasteful
littering of the environment.

If as will be described the cigarette has an
interference fit portion then the tube will engage the
5 used cigarette more firmly than it engaged the unused
one.

Figures 3, 4 and 5 show a second embodiment
where in a carton 1' with a lid 2 a conventional charge
6 of cigarettes is held, preferably with the provision
10 of the conventional inner frame 7.

The charge 6 may be wrapped in for example
conventional foil-backed paper.

In a second inner frame 7' in the carton 1'
there are tight packed a plurality, here nine, of tubes
15 9 analogous to tubes 5 of the first embodiment.

Upper ends 10 of the tubes are preferably
shaped so as to define a concavity which will tend to
guide a smoker inserting a part-used cigarette to the
central one of the tubes 9. Reception of the cigarette
20 in any of these tubes will result in its extinction
especially if there is the interference fit feature
which will be described in more detail below. The
upper ends 10 may be covered by a hinged cover flap 8
of the second inner frame 7'.

25 This embodiment can be assembled on standard
machinery treating the charge 6 on the one hand and the

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bundle of tubes 9 on the other as sub-assemblies to be held together while being inserted into a pre-erected carton or while having a carton erected around them. The tubes 9 may be adhered together to assist in this handling stage.

In a third embodiment seen in Figures 6 and 7, a carton 1' with lid 2 again has two portions, one of which is occupied by a conventional wrapped charge 6 of cigarettes.

In the other portion 11 of the carton 1' there is an extinguishing tube 12 which debouches into a closed container 13. The length of the tube 12 should be such as to assure as far as possible extinction of the coal of a cigarette placed in it but nevertheless its lower end should be sufficiently clear of the floor of the container 13 that a cigarette end pushed through it will be able to get clear axially of the tube so as not to impede a next cigarette. As in the previous embodiment the charge 6 and the container 13 are treated as sub-assemblies for purposes of charging a pre-erected carton or erecting the carton around them.

Figure 8 shows how a container 13' may be the full height of the carton, with tube 12' being inset into a depending tube or funnel 14 in the top wall of the container.

Figure 9 shows in more detail a preferred form

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of cigarette and tube combination. A tube here given the reference 15 but which may be a tube 5, 9, 12 or 12' of the embodiments described, has on its inner face a layer 16 of heat-insulant or heat-conductor which in particular may be a layer of carbon-loaded paper. There is a slight clearance 17, somewhat exaggerated in Figure 9, between the tobacco rod 18 of the cigarette 4 and the layer 16. In practice this clearance should be so slight that there is not quite free movement of the cigarette in relation to the tube.

The mouth end 3 of the cigarette is however either wholly or partially of a diameter which is a tight interference fit with the layer 16. The difference between diameters of the mouth end and tobacco rod has also been exaggerated in Figure 9.

This interference fit may for example be achieved by the use of an overwrap material 19 to unite a filter assembly to the tobacco rod or by the specific provision of a projecting ring 20 by wrapping a strip around the cigarette, either in addition to or alternatively to an overwrap 19, the ridge 20 then providing the tight interference fit with the inside of the tube.

The position of the portion of the cigarette which forms the tight interference fit should be such that when the cigarette is unused and is being

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presented as is seen in Figure 9 the interference fit portion is clear of the free end 21 of the tube but that once there has been appreciable use of the cigarette so that its length diminishes placing the
5 cigarette back into the tube will cause the interference fit portion to engage with that tube thereby giving better assurance of oxygen exhaustion and of retention of the used cigarette in the tube. Such an expedient can clearly, and advantageously, be
10 used in conjunction with any of the embodiments of carton which have been described.



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CLAIMS:

1. A carton (1,1') for containing a preassembled charge (6) of smoking articles (4) and means
5 (5,9,13,13') for holding used ones of that charge.
2. A carton according to claim 1, the holder being or including a tube (5,9,12,12'), each smoking article having portions (18,19) of two diameters, the article
10 in its unused state being engageable in the carton only by means of one of the portions (18) having a lesser diameter with a tube (5,9,12,12') of said holding means (5,9,13,13') but in a used state being more tightly engageable therewith by means of the other of the portions (19).
- 15 3. A carton according to claim 2 wherein the holding means are separate said tubes (5) fitted to individual smoking articles (4).
4. A carton according to claim 2 wherein the holding means is an assembly of said tubes (10)
20 separated in the carton (1') from the charge (6).
5. A carton according to claim 2 wherein the holding means is a container (13,13') separated in the carton (1') from the charge (6) and having at least one said tube (12,12') for introduction of the used article
25 into the container.
6. A carton according to any one of claims 2 to 5

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wherein the tube or tubes include a heat-conductive or heat-dispersive inner portion (16).

7. A method of packing smoking articles (4) in a carton (1,1') together with means (5,9,13,13') for
5 holding used such articles, which includes

i) assembling a charge (6) of at least the smoking articles

and ii) erecting the carton around that charge as well as the holding means.

10 8. A method of packing smoking articles (4) in a carton (1,1') together with means (5,9,13,13') for holding used such articles, which includes

i) assembling a charge (6) of at least the smoking articles

15 and ii) inserting the assembled charge together with the holding means into a pre-erected said carton.

9. A method according to claim 7 or claim 8 which includes the preliminary step of assembling each smoking article (4) with an individual tubular holding
20 means (5) and then performing step (i) on the assembled articles (4) and means (5).

10. A method according to claim 7 or claim 8 wherein the charge (6) of smoking articles is side by side with holding means (9,13,13') in the carton.

25 11. A method according to any one of claims 7 to 10 wherein the smoking articles (4) have portions (18,19)

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of two diameters, the article in its unused state being
engageable in the carton only by means of one of the
portions (18) having a lesser diameter with a tube
(5,9,12,12') of said holding means (5,9,13,13') but in
5 a used state being more tightly engageable therewith by
means of the other of the portions (19).

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