A method for concurrently manufacturing two different types of smoking article using a smoking article manufacturing machine is disclosed. The machine comprises a filter rod feeder, a rod attachment unit for attaching rods of smokable material to each longitudinal end of a dual length filter rod received from the filter rod feeder, and a cutter to cut the dual length filter rod into two filter rod segments so that each segment, together with the rod of smokable material attached to each segment, forms a smoking article. The method comprises supplying the filter rod feeder with filter rods comprising filter tow. The filter rods being configured so that the two filter rod segments cut from a dual length filter rod by the cutter will each have a different characteristic. A pack of smoking article industry products, and an intermediate product made during the concurrent manufacture of two different types of smoking article, are also disclosed.
A Method for Manufacturing Different Types of Smoking Article

Technical Field
The present invention relates to a method of manufacturing different types of smoking article using a smoking article manufacturing machine. In particular, the method relates to the concurrent manufacture of two different types of smoking article. The tobacco industry products are smoking articles or more specifically, filter cigarettes, in which the filter rod of each cigarette may contain an object, such as a capsule, which has been inserted into the filter rod using a filter rod manufacturing machine, although the invention is also applicable to filter rods that do not contain an object. The invention also relates to a smoking article obtainable by the method of the invention, to an intermediate product made whilst carrying out the method and, to a pack of tobacco industry products.

Background
Filter rods for use in the manufacture of filter cigarettes are manufactured by filter rod making machinery such as the KDF-2 filter maker from Hauni Maschinenbau AG. In a filter rod making machine, cellulose acetate filter plug material, referred to as to tow, is drawn along a path from a source and subsequently compressed and paper wrapped, with 'plug wrap', in a garniture to form an elongate wrapped rod. The wrapped rod is subsequently cut to form individual rods made up of a number of filter rod segments each of which will eventually form the filter of an individual cigarette. A filter rod making machine that also combines the cellulose acetate filter plug material with a filter tube, so that both the filter plug material and the tube are paper wrapped with plug wrap to form an elongate wrapped rod of filter plug material incorporating a tube is also known. For example, the KDF-5 made by Hauni Maschinenbau AG is capable of combining filter rods and tubes. A machine, such as the KDF-5, may be configured to position the tube in any location along the length of the wrapped rod. For example, the tube may be located at the mouth end of the filter plug material adjacent to the filter plug material or, it can be sandwiched between two sections of filter plug material to form a three segment filter. The tube may remain hollow to provide a cavity between filter plug sections or, a space at the mouth end of the smoking article.

A filter cigarette can have an object within the filter, such as a breakable flavourant-containing capsule. Smoke from the cigarette may be selectively flavoured by squeezing the filter, thereby breaking the capsule and releasing the flavourant. The breakable
capsules are conventionally incorporated into smoking article filter rods by dispensing individual capsules one by one from a delivery wheel into a flow of tow as it passes through a filter rod making machine. Typical feed mechanisms for feeding objects, such as capsules, and for inserting them into filter rods are known from, for example, WO 2012/072676 Ai and WO2011/024105 Ai.

Once the capsule containing filter rods have been manufactured, they are supplied to a cigarette manufacturing machine, which also receives tobacco rods from a conventional tobacco rod maker. As described above, the cigarette manufacturing machine may be supplied with filter rods that include hollow tubes, in addition to the filter tow containing capsules. A typical cigarette manufacturing machine includes a rod attachment unit for attaching a filter rod and a tobacco rod together to form a filter cigarette. In a known filter attachment unit, a "dual length" filter rod (also called a "2-up" rod), which refers to a filter rod formed from two filter rod segments, is aligned with a tobacco rod at either end, and the three rods are wrapped with a wrapper known as "tipping paper" to join them together. The centrally positioned 2-up filter rod is then cut in half to form two filter cigarettes. The filter rods which are initially supplied to the cigarette manufacturing machine may also be a "4-up" filter rod, which refers to a filter rod that is formed from four filter rod segments. In this case, the 4-up filter rod is cut into a pair of dual length filter rods prior to attachment of a tobacco rod to both ends of each dual length filter rod. Suitable filter rod attachment units are machines such as the "Max S" unit from Hauni Maschinenbau, a "Max 90" unit, also from Hauni Maschinenbau, or a GD AF12 unit. Other suitable rod attachment units include the M5 or M8 filter tip attachment units from Hauni Maschinenbau or the GD121 filter attachment unit.

Summary
In accordance with some embodiments described herein, there is provided a method for concurrently manufacturing two different types of smoking article using a smoking article manufacturing machine that comprises a filter rod feeder, a rod attachment unit for attaching rods of smokable material to each longitudinal end of a dual length filter rod received from the filter rod feeder, and a cutter to cut the dual length filter rod into two filter rod segments so that each segment, together with the rod of smokable material attached to each segment, forms a smoking article, the method comprising supplying the filter rod feeder with filter rods that comprise filter tow and which are configured so that the two filter rod segments cut from a dual length filter rod by the
cutter will each have a different characteristic. In some embodiments, the method comprises supplying filter rods in which the tow of one filter rod segment of a dual length filter rod has a different characteristic to the tow of the other filter rod segment of the same dual length filter rod. Preferably, the method comprises supplying filter rods in which the different characteristics of the filter rod segments of a dual length filter rod are visually discernible.

Alternatively, or in addition, the method may comprise supplying filter rods in which the tow contains longitudinally spaced objects of different respective types so that when a dual length filter rod is cut by the cutter into two filter rod segments, each segment contains a different object type or different combination of object types.

The filter rod feeder can comprise an initial cutter for cutting filter rods into dual length filter rods prior to attachment of rods of smokable material to each longitudinal end of each dual length filter rod. The method may then comprise the step of supplying the filter rod feeder with filter rods each of which contain four longitudinally spaced objects of alternating type so that, when cut by the initial cutter into two dual length filter rods, each dual length filter rod contains an object of each type.

The filter rod feeder can comprise an initial cutter for cutting filter rods into dual length filter rods prior to attachment of rods of smokable material to each longitudinal end of each dual length filter rod. The method may then comprise the step of supplying the filter rod feeder with filter rods each of which contain six longitudinally spaced objects of alternating type so that, when the filter rods are cut by the initial cutter into three dual length filter rods, each dual length filter rod contains an object of each type.

The step of supplying the filter rod feeder with filter rods may comprise supplying filter rods with capsules inserted therein, wherein some of the capsules contain a flavourant of a first type and some of the capsules contain a flavourant of a second type which is different to the first type. If the filter segments also have tow with different characteristics, then the tow characteristic may be related to the flavourant contained in the capsule inserted into the tow having that characteristic.

The filter rods can comprise plug wrap having an indicator to denote a predetermined rod orientation based on object type. The method may then include placing the filter
rods in the filter rod feeder so that all the filter rods are in a predetermined orientation relative to the filter rod feeder.

The smoking article manufacturing machine may comprise a tipping unit to receive a web of tipping paper so that the smoking article manufacturing machine cuts the web into individual patches and wraps each patch about a respective dual length filter rod to attach rods of smokable material to the ends of each dual length filter rod. A first lateral portion of the tipping paper web may comprise a first longitudinal series of first indicators, and a second lateral portion of the tipping paper web may comprise a second longitudinal series of second indicators, the first and second indicators may be different to each other so that a first indicator is indicative of a first type of smoking article and a second indicator is indicative of a second type of smoking article which is different to the first type of smoking article. The method may include loading the tipping paper web onto a smoking article manufacturing machine in a predetermined orientation, and placing filter rods in the filter rod feeder in an orientation corresponding to the orientation of the supply of tipping paper, so that the machine wraps a first part of a patch of tipping paper which is formed from the first lateral portion of the tipping paper web around a first portion of the dual length filter rod in the formation of a smoking article of the first type and so that a first indicator on the first part of the patch denotes that said first portion of the dual length filter rod is part of a smoking article of the first type and, so that the machine wraps a second part of the patch which is formed from the second lateral portion of the tipping paper web around a second portion of the dual length filter rod in the formation of a smoking article of the second type and so that a second indicator on the second part of the patch denotes that said second portion of the dual length filter rod is part of a smoking article of the second type, prior to cutting the dual length filter rod and the patch into a first filter rod segment that is wrapped in said first part of the patch and which forms, together with the rod of smokable material attached thereto, a smoking article of the first type, and into a second filter rod segment that is wrapped in said second part of the patch and which forms, together with the rod of smokable material attached thereto, a smoking article of the second type.

The filter rods may include tube filters and so the method of the invention may comprise supplying the filter rod feeder with filter rods that include tube filters so that when a dual length filter rod is cut into two filter rod segments, each segment contains a tube filter portion in addition to a filter tow section, each of the filter tow sections of a dual length filter rod having a different characteristic.
According to another aspect of the invention, there is provided a pack of smoking article industry products, each smoking article industry product comprising a filter rod formed from filter tow that contains a capsule, the capsule contained in the tow of a filter rod of at least one of the smoking article industry products in the pack being of a different type to the type of capsule contained in the tow of a filter rod of at least one other smoking article industry product in the pack, wherein the tow of filter rods containing capsules of one type has a different characteristic to the tow of filter rods containing capsules of another type.

The tow of filter rods containing capsules of one type may be of a different colour to the tow of filter rods containing capsules of a different type.

Each filter rod may comprise a tube filter, and the differently coloured tow may be visible through the tube filter when the pack is opened.

According to the invention, there is also provided a smoking article obtainable by the method according to the invention.

According to another aspect of the invention, there is provided an intermediate product made during the concurrent manufacture two different types of smoking article according to the method of the invention, comprising a dual length filter rod having rods of smokable material attached to each longitudinal end prior to the dual length filter rod being cut into two filter rod segments, the dual length filter rod comprising filter tow and being configured so that when the dual length filter rod is cut to form two filter rod segments, each filter rod segment will have a different characteristic.

The tow that forms one filter rod segment of a dual length filter rod may have a different characteristic to the tow that forms the other filter rod segment of the same dual length filter rod.

The tow that forms one filter rod segment of a dual length filter rod may contain an object of a first type and the tow that forms the other filter rod segment of the same dual length filter rod may contain an object of a second type, the first and second object types being different.
In accordance with yet another embodiment of the invention, there is provided a pack of smoking article industry products, each smoking article industry product comprising a filter rod formed from filter tow, the tow of a filter rod of at least one of the smoking article industry products in the pack having a different characteristic to the tow of a filter rod of at least one other smoking article industry product in the pack.

The tow of at least one smoking article industry product may be of a different colour to the tow of a filter rod of at least one other smoking article industry product in the pack.

Some or all of the filter rods may include an object, such as a capsule, in the tow. All the filter rods having the same tow characteristic may contain the same type of capsule. The type of capsule that is contained in tow having a particular characteristic may correspond or relate to the tow having that characteristic.

**Brief Description of the Drawings**

In order that the invention may be more fully understood, embodiments thereof will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a side elevation of a 4-up capsule-containing filter rod which is supplied to the cigarette manufacturing machine, according to an embodiment of the method of the invention;

Figure 1A is a side elevation of a 4-up capsule containing filter rod which is supplied to the cigarette manufacturing machine, according to another embodiment of the invention;

Figure 2 is a side elevation of the filter rod shown in Figure 1, after it has been cut centrally to form a pair of dual length filter rods;

Figure 3 is a side elevation of each of the dual length filter rods shown in Figure 2, after a tobacco rod has been attached to the ends of each dual length filter rod using tipping paper;

Figure 4 is the same view of the dual length filter rods and tobacco rods as shown in Figure 3, but after each dual length filter rod has been centrally cut to form a pair of filter rod segments, each segment being associated with its own tobacco rod to form an individual cigarette;

Figure 5 is a cross-sectional view of a conventional filter rod making machine and capsule inserter unit;

Figures 6A shows a conventional capsule feed mechanism;
Figure 6B shows a top view of the rotary feed disk of the feed mechanism of Figure 6A; Figure 7 is a representation of a 4-up filter rod that can be produced using the feed mechanism of Figures 6A and 6B; Figure 8 shows a plug wrap with markings to indicate its orientation and which can be used in in an embodiment of the method of the invention; Figure 9 shows a tipping paper with two sets of lateral markings to indicate the type of capsule contained within the filter about which the tipping paper is wrapped, and which is used in an embodiment of the method of the invention; and Figure 10 is a schematic side elevation of a conventional filter attachment cigarette manufacturing machine.

Detailed Description

In a method of simultaneously manufacturing two different types of smoking article in a filter attachment cigarette manufacturing machine 17 (see Figure 10) according to an embodiment of the present invention, a filter rod feeder 22 of the cigarette manufacturing machine 17 is supplied with pre-oriented rod articles, namely 4-up filter rods 1 (see Figure 1), each of which contains four equally spaced capsules 2 comprising two capsules of a first type "A" and two capsules of a second type "B". The capsules 2 are inserted into the filter rods 1 by a conventional capsule inserter filter rod making machine 5 (see Figure 5) and so that they are spaced relatively far apart, i.e. so that the separation "S" between centres of adjacent capsules is approximately 27mm.

The capsules 2 are provided along the length of the filter rod 1 in an alternating manner so that capsules 2 of identical type are not adjacent to each other, i.e. they may be in the order A-B-A-B. A cutting drum 23a and knife drum 29a of the filter attachment cigarette manufacturing machine 17 cooperate with each other to initially cut the 4-up filter rod in half to form an identical pair of 2-up or dual length filter rods 1', as shown in Figure 2, prior to the attachment of a rod of smokable material, such as a tobacco rod 4 to both ends of each dual length filter rod 1', as shown in Figure 3 (only part of each of the tobacco rods 4 being shown in Figure 3) to form adjoined cigarettes, one of which is referred to as an "internal" cigarette and the other an "external" cigarette.

As the initial 4-up filter rod 1 contains capsules 2 in an alternating configuration, each dual length filter rod 1' will contain one capsule 2 of type A and one of type B in the sequence A-B as shown in Figure 2. To attach a tobacco rod 4 to the ends of each dual length filter rod 1', the dual length filter rods 1' and tobacco rods 4 are fed through a
filter attachment unit of the cigarette manufacturing machine 17 in which the tobacco rods 4 are attached to the ends of each dual length filter rod 1' using tipping paper.

Finally, as shown in Figure 4, each of the dual length filter rods 1' are cut in half to form two filter rod segments 1", each segment being attached to its associated tobacco rod 4 to form an individual cigarette. As the cigarettes formed from the same dual length filter rod 1' have a different type of capsule 2 within their respective filter rod segments 1", two different types of cigarette are produced, one with a filter containing a capsule 2 of type "A" and one with a filter containing a capsule 2 of type "B".

The four filter cigarettes produced from the original 4-up filter rod 1 will include two cigarettes of one type, as their filter segments 1" contain capsules of type A, and two cigarettes of another type, as their filter segments 1" contain capsules of type B. In the embodiment of Figure 1, all of the cigarettes will have the same type of tobacco rod 4 and the same type of filter, apart from the different type of capsule 2 contained within their filter rod segments 1". However, in another embodiment explained in more detail below with reference to Figure 1B, each cigarette may additionally comprise a different type of filter or a filter that has a characteristic which is associated with, or related to, the type of capsule contained within it.

Although the rod article supplied to the filter attachment cigarette manufacturing machine 17 is preferably a 4-up filter rod 1 as shown in Figure 1, which is initially cut to form a pair of 2-up or dual length filter rods 1' by the cutter drum 23a, the rod article supplied to the filter attachment cigarette manufacturing machine 17 may alternatively be a 2-up or dual filter rod 1', i.e. a 4-up filter rod which has already been cut into a dual filter rod 1' pair. In this instance, each dual filter rod 1' will contain one capsule 2 of each type, i.e. 'A'-'B', and the initial cutting by the cigarette manufacturing machine 17 prior to attachment of a tobacco rod 4 to the ends of each dual filter rod 1' is not necessary. The rod article supplied to the filter attachment cigarette manufacturing machine 17 may alternatively be a 6-up filter rod. In this case, the 6-up filter rod is initially cut into three 2-up dual length filter rods 1' by the cutter drum 23a, each dual length filter rod 1' containing one capsule 2 of each type 'A' and 'B', prior to attachment to the ends of each of the three dual length filter rods 1'.
The technology for manufacturing filter rods containing capsules is known in the art and reference is made to WO2012/072676 and WO2011/024105, both of which are incorporated herein by reference.

Figure 5 is a cross-sectional view of a filter rod making machine and capsule inserter unit 5, known from WO2011/024105. In operation, filter plug material (not shown) in the form of cellulose acetate filter tow is drawn from a source, stretched in a set of stretching rollers (not shown) and compressed through a stuffer jet 6 and drawn through the tongue 7 of garniture 8. As shown, the capsule inserter unit 5 has a rotatable capsule inserter wheel 9 arranged to insert capsules 2 from circumferential recesses 9a directly into the tongue 7 so that the capsules 2 come into contact with filter tow passing therethrough. As described in WO2011/024105, the capsule inserter unit 5 can be adjusted to control the distance between the centres of adjacent capsules 2. The tow is wrapped in plug wrap 10 (see Figure 7) in the garniture 8 to form an elongate rod which is subsequently cut to a desired length (such as the length of the filter rod 1, equivalent to four filter rod segments 1", as shown in Figure 1), for placement of the manufactured filter rods 1 into the filter rod feeder 22 of the filter attachment cigarette manufacturing machine 17.

WO2011/024105 does not describe an arrangement in which different types of capsules 2 are inserted into the same elongate filter rod 1. Whilst it is possible to place capsules 2 of different types together in the capsule hopper 11 of the apparatus known from WO2011/024105, this would result in capsules 2 being delivered into the tow in an entirely random sequence.

Figures 6A and 6B shows a capsule feed mechanism 12 from WO2012/072676. The feed mechanism 12 has a rotatable disk assembly 13 for feeding capsules 2 into pockets 9a of a rotatable capsule inserter wheel 9, similar to the rotatable capsule inserter wheel 9 referred to above in relation to WO2011/024105. The disk assembly 13 has two sets of channels 13a, 13b (see Figure 6B) for guiding capsules 2 respectively received in first and second capsule inputs 14a, 14b. The channels 13a, 13b are alternately positioned around the disk assembly 13. Consequently, capsules 2 from the first and second inputs 14a, 14b are alternately delivered into the pockets 9a of the rotatable capsule inserter wheel 9 via respective channel sets 13a, 13b, and so are inserted alternately into the tow. By placing capsules 2 of one type 'A' in the first input 14a and capsules 2 of a second type 'B' in the second input 14b, pairs of capsules 2, in which the individual
capsules 2 of each pair are of a different type Ά'-'Β', can be inserted into the tow. By altering the angular separation between channels 13a, 13b and by spacing the pockets 9a in the rotatable capsule inserter wheel 9 in a corresponding manner, capsules 2 may be inserted from the rotatable capsule delivery wheel 9 into the tow with varying intervals between successive insertions, so that any desired longitudinal arrangement of capsules 2 can be obtained in the eventual filter rods 1.

In the device known from WO2012/072676, an embodiment is described in which the eventual filter rod 15 contains four capsules 16 of one type (type Ά') and four capsules 16 of another type (type 'Β'), arranged in the sequence 'Α'-'Β'-'Β'-'Α'-'Α'-'Β'-'Β'-'Α' along the length of the filter rod 15. The eight capsules 16 may be arranged in four pairs, the separation between capsules 16 in neighbouring pairs being greater than the separation between neighbouring capsules 16 in a pair as, for example, shown in the exemplary filter rod 15 of Figure 7. The separation between neighbouring capsules 16 in each pair is 11mm. In cigarette manufacture, the filter rod 15 is initially cut into dual length filter rods 1'A' along line 'Β'-'Β', and a tobacco rod 4 is attached to the ends of each dual filter rod before the dual filter rods 1'A' are cut, along lines 'C'-'C' into filter rod segments 1" each of which is associated with its own tobacco rod 4 to form a cigarette. Each filter rod segment 1" contains two capsules 16, each of which is of a different type. It will be appreciated that the cigarettes manufactured in this way are all identical, i.e. each filter rod segment 1" has a capsule of type 'Α' closest to the mouth end of the cigarette and a capsule of type 'Β' furthest from the mouth end. It will be appreciated that the disk assembly 13 of Figures 6A and 6B can be used to insert individually spaced capsules 2, rather than pairs of capsules 2, into the tow.

Whilst WO2011/024105 and WO2012/072676 both disclose technology for inserting objects into filter rods, and WO2012/072676 further discloses embodiments in which a sequence of two different types Ά and 'Β' of capsules 16 can be inserted into the same filter rod 15, it will be appreciated that the filter rods 1 produced by this machine 5 are cut by a filter attachment cigarette manufacturing machine 17 to form identical filter rod segments 1" each containing the same capsule 2 or same pair of capsules 16. If the capsules 16 are in pairs, the sequence of capsule types Ά and 'Β' within each pair is also the same. Therefore, all the cigarettes manufactured using the filter rod segments 1" are identical.
Instead of supplying the rotatable disk assembly of WO2012/072676 with different capsule types to deliver capsules of alternating type to the same tow, each filter containing a different type of capsule can be manufactured separately, i.e. on a different capsule inserter filter rod making machine, so that each machine only needs to insert one type of capsule into the tow. Individual filter rod segments from different machines are subsequently positioned end-to-end and wrapped in plug wrap in a filter rod combiner to form 2-up, 4-up or 6-up filter rods which can then be fed into the filter rod feeder of the filter attachment smoking article manufacturing machine.

It will be appreciated that if each filter rod segment is manufactured on a different capsule inserter filter rod manufacturing machine, different tows can be supplied to each capsule inserter filter rod making machine. For example, the tow may have characteristics that complement the type of capsule that is being inserted into it. Those characteristics may be visually discernable or different types of tow may have different tactile properties. In particular, the tow supplied to each capsule inserter filter rod manufacturing machine may be of different colours. The colour of the tow supplied to each capsule inserter filter rod manufacturing machine may be one that a consumer would associate with the particular type of capsule that is being inserted by that machine. Although the tow is wrapped in plug wrap, and subsequently tipping paper, the mouth end of the tow will remain visible and so the different tow characteristics can be identified by a consumer. This can act as a visual indicator as to the type of capsule contained by that filter instead of, or in addition to, any markings or indicia on the tipping paper.

It is also envisaged that a tube filter may be located in the filter rods by the capsule inserter filter rod making machine within the plug wrap. Each tube filter may be dual length and positioned between filter rod segments by the filter rod combiner so that when the 2-up, 4-up or 6-up filter rods are cut to form individual filter rod segments, they each have a tow section and a tube filter section, with the tube filter section at the mouth end of each filter rod segment. Figure 1A shows an alternate side elevation of a 4-up capsule-containing filter rod to Figure 1, which is supplied to the cigarette manufacturing machine according to an embodiment of the method of the invention. As shown in Figure 1A, the 4-up filter rod comprises first and second pairs of filter rod portions 30a, 30b. The filter rod portions 30a, 30b in each pair are separated by a tube filter 31. In addition to containing a different type of capsule 2a, 2b, the filter rods 30a, 30b in each pair are formed from
tow having different characteristics, represented by the different hatched lines on each filter rod. The steps carried out in the manufacture of a smoking article are shown only in conjunction with the embodiment of Figure 1. However, it will be appreciated that the 4-up filter rod shown in Figure 1A can be supplied to the filter rod feeder in the same way that the 4-up filter rod of Figure 1 is supplied to the filter rod feeder. In the filter attachment cigarette manufacturing machine the plug wrap, which holds the filter rods together in the embodiment of Figure 1A, is first cut along line B-B to form a pair of 2-up filter rods. A tobacco rod is then attached to the ends of each pair of 2-up filter rods. Each 2-up filter rod is then cut along line C-C, i.e. through the double-length tube filter, to form individual smoking articles having a filter rod formed from tow having a particular characteristic and containing a capsule and having a tube filter at the mouth end of the smoking article.

Whilst a tube filter may be combined with filter rods having different tow characteristics, so that the tow is visible through the tube filter at the mouth end of a smoking article, a tube filter can also be used with conventional tow.

Although reference is made to an embodiment in which the two filter rod segments of a dual length filter rod have different objects in them or have different tow characteristics in addition to different objects, it should also be noted that, in another embodiment, there are no objects and the filter rod segments differ only in their tow characteristics.

As previously described, an embodiment of the invention comprises a method of simultaneously producing two different types of cigarettes in a cigarette manufacturing machine 17. This is achieved by supplying the machine 17 with filter rods 1 containing capsules 2 of different types in which the capsules 2 are longitudinally separated from each other by a distance 'S' (see Figure 1), such that when the filter rod 1 is initially cut into a dual length filter rod 1', that dual length filter rod 1' will contain one capsule 2 of each type, i.e. one capsule 2 of type A' and one capsule 2 of type B' and, when the dual length filter rod 1' is cut to form two filter rod segments 1", each segment 1" will contain one of those capsules 2. As each segment 1" is associated with a tobacco rod 4 and the segment 1" and tobacco rod 4 together form a cigarette, it will be appreciated that each dual filter rod 1' forms two different types of cigarette, i.e. cigarettes in which the filter rod segment 1" of each cigarette contains a capsule 2 of a different type.
The plug wrap 18 which is wrapped around each filter rod 1 by the filter rod making machine 5 may be provided with markings or other visual or tactile indicia 19 to provide an indication as to the orientation of the filter rods 1, i.e. at which end of the filter rod 1 has a capsule 2 of type 'A', as opposed to a type 'B' capsule 2, situated at the other end of the filter rod 1. A visual representation of how a section of plug wrap 18 may look is shown in Figure 8. In this embodiment, chevrons 19 are printed onto the plug wrap 18, all of which are in the same orientation to denote a particular end of the filter rod 1 about which it is wrapped by the filter rod making machine 5. For example, the chevrons 19 may act as arrow heads to indicate the end of the filter rod 1 that has a capsule 2 of type 'A' inserted into it. It will be appreciated any type of marking or indica 19 may be applied to the plug wrap 18 and that it may be visual or tactile in nature, so that it signifies one end of the plug wrap relative to the other end. However, as previously indicated, if the tow containing a capsule has a particular characteristic or colour to represent that type of capsule, then markings or indicia on the tipping paper are unnecessary.

An operator loads a bobbin, on which a supply of plug wrap 18 is wound, onto the filter rod making machine 5, in such a way that the markings 19 on it correctly denote, when cut into filter rods 1, which end of the filter rod 1 is which, i.e. which end of the filter rod 1 has a capsule 2 of type 'A' in it as opposed to a capsule of type 'B'. This indication will then ensure that the operator manually places the filter rods 1 in the filter rod feeder 22 of the cigarette manufacturing machine 17 in the correct orientation in a subsequent manufacturing step.

By placing the filter rods 1 in the filter rod feeder 22 of a cigarette manufacturing machine 17 in the correct orientation as a result of knowing which end of the filter rod 1 contains a capsule of type 'A', and which end contains a capsule 2 of type 'B', and by providing tipping paper with indicators to denote to consumers the type of capsule 2 contained within a particular filter, it is possible to ensure that the end of a dual length filter rod 1 containing a capsule 2 of type 'A' is wrapped with that part of the tipping paper which carries an indicator corresponding to capsule type 'A' and, that the other end of the dual length filter rod 1 containing a capsule 2 of type 'B' is wrapped with the remaining part of the tipping paper which carries an indicator corresponding to capsule type 'B'. A respective capsule type-denoting indicator on the tipping paper will then be in register or correspond with the type of capsule 2 contained within that part of the dual length filter rod 1 about which it is wrapped, so a consumer will be able to
correctly identify a cigarette as being of a particular type, i.e. whether it is a smoking article having a filter containing a capsule of type 'A' or type 'B'.

As described in more detail below, the indicator on the tipping paper may be a mark, printed indicia or any other visual type of indicator. It will also be appreciated that the marking could be non-visual, for example, they could be tactile in nature.

A cigarette manufacturing machine 17, as shown in general in Figure 10, comprises a tipping unit (not shown) that cuts a continuous web of tipping paper into individual tipping paper patches for wrapping about the dual length filter rods 1' and tobacco rods 4 to attach them together prior to cutting of dual length filter rods 1' into filter rod segments 1'' and individual cigarettes. A length of tipping paper 20 is shown in Figure 9 and is divided into four tipping paper sections 20a, 20b, 20c, 20d, in which each section is suitable for wrapping around a dual length filter rod 1' when cut by a tipping unit into individual patches along lines Y-Y.

The tipping paper 20 comprises a first series of longitudinally extending markings 26 on a first lateral portion 25a, and a second series of longitudinally extending markings 27 on a second lateral portion 25b. The markings 26, 27 are longitudinally spaced so that one marking appears on each section 20a, 20b, 20c, 20d. First and second markings 26, 27 correspond to or denote first and second capsule types A and B, respectively, of the capsules 2 received in the filter rod segments 1''. The first and second lateral portions 25a, 25b are divided by an imaginary centre line X-X extending the length of the tipping paper 20.

In accordance with an embodiment of the invention, the method comprises placing filter rods 1 in the filter rod feeder 22 in an orientation that corresponds to an orientation of the tipping paper supply so that the first lateral portion 25a of the tipping paper, which carries a marking 26 corresponding to capsule type 'A', will be wrapped around a portion of the dual length filter rod 1' containing a capsule 2 of the first type 'A' and, the second lateral portion 25b, which carries a marking 27 corresponding to capsule type 'B', will become wrapped around a portion of the filter rod 1' containing a capsule 2 of the second type B, when the dual length filter rods 1' and tobacco rods 4 are attached to each other. The markings on the tipping paper will be recognisable to a consumer as representing a particular capsule type 'A' or 'B' and any combination of, for example, colours, words, symbols, ridges, indents or embossing may be used for this
purpose. For ease of illustration and description only, the markings in Figure 9 are represented by 'X' and 'O', where marking 'X' would be one kind of marking known to a consumer as representing a capsule 2 of type 'A' and marking 'O' would be a marking of a different appearance, kind or style and which is known to a consumer as representing a capsule 2 of type 'B'. The first lateral portion 25a is wrapped around the part of the dual length filter rod 1' containing a capsule of type 'A', and the second lateral portion 25b is wrapped around the part of the dual length filter rod 1' containing a capsule of type 'B', so that a consumer can identify the type of capsule 2 contained in a filter rod segment 1' from the marking 26, 27 on the tipping paper 20 wrapped around it.

The width of the tipping paper 20 is greater than the length of each dual length filter rod 1' so that an edge region of each lateral portion of the tipping paper 20 extends beyond corresponding ends of the dual length filter rod 1' and over a part of the tobacco rod 4 in order to attach the tobacco rod 4 to the dual length filter rod 1'. A dotted line Z-Z represents the extent of the tipping paper 20 that extends over the dual length filter rod 1' so that the part beyond each dotted line Z-Z is an edge region extending over a corresponding tobacco rod 4.

As the filter attachment cigarette manufacturing machine 17 which is supplied with elongate filter rods 1 is of a known type to those skilled in the art, it will not be described herein in detail. However, it will be appreciated that a filter attachment cigarette manufacturing machine 17 receives the filter rods 1 from the filter rod feeder 22, in which they have been placed by an automated pneumatic transport from the filter rod production department, and also receives tobacco rods 4 from a tobacco rod maker (not shown), and conveys them through a filter attachment unit by a plurality of cylindrical drums 27. Rod articles are passed from drum to drum as they are conveyed through the unit. The drums have a plurality of grooves for holding rod articles during transport, the grooves being spaced around the curved periphery of a drum, with each groove extending in the direction of the drum axis.

Certain drums are configured so that particular operations are carried out as the rod articles are conveyed by the drums 27. For example known filter attachment machines include a swash plate drum for longitudinally compressing two tobacco rods and a 2-up filter rod before tipping paper is applied, and a rolling drum which co-operates with a roll hand to wrap a tipping paper segment around the three rods. Other known drums include cutting drums, such as cutting drum 23a and knife drum 29a, to cut rod
articles, separating drums for separating rod articles, inspection drums to inspect for
the presence of filters or to carry out a leakage test, laser drums to burn small perforations in filter rods, and turning drums to change the orientation of cigarettes. Other known drums include transfer drums (also referred to as "intermediate drums"), takeover drums and feed drums. As mentioned above, a known filter attachment unit also includes a tipping unit for supplying tipping paper and a glue unit for applying glue to the tipping paper.

Suitable filter rod feeders 22 for feeding filter rods 1 into the cigarette manufacturing machine 17 are "Max S", "Max 90" or GD121 machines. As shown in Figure 10, the filter rod feeder 22 receives 4-up filter rods 1 and feeds them onto the drums 27. The filter rod feeder 22 includes a cutting drum 23a that cooperates with a knife drum 29a to cut each 4-up filter rod 1 placed in the filter rod feeder 22 by an operator into two 2-up rods prior to each 2-up rod being fed onto the feed drums 27.

The objects which are inserted into the filter rods 1 by the filter rod manufacturing machine 3 are preferably capsules 2. Each capsule 2 is preferably spherical, formed from gelatin and has an interior volume filled with flavourant. As used herein, the term "flavourant" refers to materials which, where local regulations permit, may be used to create a desired taste or aroma in a product for adult consumers. They may include extracts (e.g., licorice, hydrangea, Japanese white bark magnolia leaf, chamomile, fenugreek, clove, menthol, Japanese mint, aniseed, cinnamon, herb, wintergreen, cherry, berry, peach, apple, Drambuie, bourbon, scotch, whiskey, spearmint, peppermint, lavender, cardamom, celery, cascarilla, nutmeg, sandalwood, bergamot, geranium, honey essence, rose oil, vanilla, lemon oil, orange oil, cassia, caraway, cognac, jasmine, ylang-ylang, sage, fennel, piment, ginger, anise, coriander, coffee, or a mint oil from any species of the genus Mentha), flavour enhancers, bitterness receptor site blockers, sensorial receptor site activators or stimulators, sugars and/or sugar substitutes (e.g., sucralose, acesulfame potassium, aspartame, saccharine, cyclamates, lactose, sucrose, glucose, fructose, sorbitol, or mannitol), and other additives such as charcoal, chlorophyll, minerals, botanicals, or breath freshening agents. They may be imitation, synthetic or natural ingredients or blends thereof. They may be in any suitable form, for example, oil, liquid, or powder. Capsule types 'A' and 'B' are differentiated from each other by their content. In particular, capsule type 'A' will contain one of the flavourants listed above, whereas capsule type 'B' will contain a different one of the flavourants listed above.
The capsules may have a diameter of 3.5mm. It will be appreciated that other objects suitable for insertion into filter rods 1 could alternatively or additionally be fed by the capsule insertion filter rod manufacturing machine 5, such as pellets or pieces of charcoal. In particular, one of the capsule types 'A' or 'B' could be replaced by a pellet or piece of charcoal, so that one of the filter rod segments 1' formed from a dual length filter rod 1 contains a capsule 2 and the other contains a pellet or piece of charcoal.

Although reference is made to one of the segments cut from a dual length filter rod as containing a capsule of type 'A' and the other segment containing a capsule of type 'B', it will be appreciated that there may be more than one capsule or object in one segment or in each of the segments, each capsule or object in one segment can be of the same or of a different type. It is the fact that the segments formed from the same dual length filter rod are different to each other, in terms of the object type or quantity of objects received within each them, which is of importance.

The various embodiments described herein are presented only to assist in understanding and teaching the claimed features. These embodiments are provided as a representative sample of embodiments only, and are not exhaustive and/or exclusive. It is to be understood that advantages, embodiments, examples, functions, features, structures, and/or other aspects described herein are not to be considered limitations on the scope of the invention as defined by the claims or limitations on equivalents to the claims, and that other embodiments may be utilised and modifications may be made without departing from the scope of the claimed invention. Various embodiments of the invention may suitably comprise, consist of, or consist essentially of, appropriate combinations of the disclosed elements, components, features, parts, steps, means, etc, other than those specifically described herein. In addition, this disclosure may include other inventions not presently claimed, but which may be claimed in future.
Claims

1. A method for concurrently manufacturing two different types of smoking article using a smoking article manufacturing machine that comprises a filter rod feeder, a rod attachment unit for attaching rods of smokable material to each longitudinal end of a dual length filter rod received from the filter rod feeder, and a cutter to cut the dual length filter rod into two filter rod segments so that each segment, together with the rod of smokable material attached to each segment, forms a smoking article, the method comprising supplying the filter rod feeder with filter rods that comprise filter tow and which are configured so that the two filter rod segments cut from a dual length filter rod by the cutter will each have a different characteristic.

2. A method according to claim 1, comprising supplying filter rods in which the tow of one filter rod segment of a dual length filter rod has a different characteristic to the tow of the other filter rod segment of the same dual length filter rod.

3. A method according to claim 2, comprising supplying filter rods in which the different characteristics of the filter rod segments of a dual length filter rod are visually discernible.

4. A method according to any preceding claim, comprising supplying filter rods in which the tow contains longitudinally spaced objects of different respective types so that when a dual length filter rod is cut by the cutter into two filter rod segments, each segment contains a different object type or different combination of object types.

5. A method according to claim 4, wherein the filter rod feeder comprises an initial cutter for cutting filter rods into dual length filter rods prior to attachment of rods of smokable material to each longitudinal end of each dual length filter rod, the method comprising the step of supplying the filter rod feeder with filter rods each of which contain four longitudinally spaced objects of alternating type so that, when the rod articles cut by the initial cutter into two dual length filter rods, each dual length filter rod contains an object of each type.

6. A method according to claim 4, wherein the filter rod feeder comprises an initial cutter for cutting filter rods into dual length filter rods prior to attachment of rods of smokable material to each longitudinal end of each dual length filter rod, the method
comprising the step of supplying the filter rod feeder with filter rods each of which contain six longitudinally spaced objects of alternating type so that, when the filter rods are cut by the initial cutter into three dual length filter rods, each dual length filter rod contains an object of each type.

7. A method according to any preceding claim, wherein the step of supplying the filter rod feeder with filter rods comprises supplying filter rods with capsules inserted therein, wherein some of the capsules contain a flavourant of a first type and some of the capsules contain a flavourant of a second type which is different to the first type.

8. A method according to claim 7, when dependent on claim 2 or 3, wherein the tow characteristic is related to the flavourant contained in the capsule inserted into the tow having that characteristic.

9. A method according to any preceding claim, wherein the filter rods comprise a plug wrap having an indicator to denote a predetermined rod orientation based on object type, the method including placing the filter rods in the filter rod feeder so that all the filter rods are in a predetermined orientation relative to the filter rod feeder.

10. A method according to any preceding claim, wherein the smoking article manufacturing machine comprises a tipping unit to receive a web of tipping paper so that the smoking article manufacturing machine cuts the web into individual patches and wraps each patch about a respective dual length filter rod to attach rods of smokable material to the ends of each dual length filter rod, wherein a first lateral portion of the tipping paper web comprises a first longitudinal series of first indicators, and a second lateral portion of the tipping paper web comprises a second longitudinal series of second indicators, the first and second indicators being different to each other so that a first indicator is indicative of a first type of smoking article and a second indicator is indicative of a second type of smoking article which is different to the first type of smoking article, wherein the method includes loading the tipping paper web onto a smoking article manufacturing machine in a predetermined orientation, and placing filter rods in the filter rod feeder in an orientation corresponding to the orientation of the supply of tipping paper, so that the machine wraps a first part of a patch of tipping paper which is formed from the first lateral portion of the tipping paper web around a first portion of the dual length filter rod in the formation of a smoking article of the first type and so that a first indicator on the first part of the patch
denotes that said first portion of the dual length filter rod is part of a smoking article of
the first type and, so that the machine wraps a second part of the patch which is formed
from the second lateral portion of the tipping paper web around a second portion of the
dual length filter rod in the formation of a smoking article of the second type and so
that a second indicator on the second part of the patch denotes that said second portion of
the dual length filter rod is part of a smoking article of the second type, prior to
cutting the dual length filter rod and the patch into a first filter rod segment that is
wrapped in said first part of the patch and which forms, together with the rod of
smokable material attached thereto, a smoking article of the first type, and into a
second filter rod segment that is wrapped in said second part of the patch and which
forms, together with the rod of smokable material attached thereto, a smoking article of
the second type.

11. A method according to any preceding claim, comprising supplying the filter rod
feeder with filter rods that include tube filters so that when a dual length filter rod is cut
into two filter rod segments, each segment contains a tube filter portion in addition to a
filter tow section, each of the filter tow sections of a dual length filter rod having a
different characteristic.

12. A pack of smoking article industry products, each smoking article industry
product comprising a filter rod formed from filter tow that contains a capsule, the
capsule contained in the tow of a filter rod of at least one of the smoking article industry
products in the pack being of a different type to the type of capsule contained in the tow
of a filter rod of at least one other smoking article industry product in the pack, wherein
the tow of filter rods containing capsules of one type has a different characteristic to the
tow of filter rods containing capsules of another type.

13. A pack according to claim 12, wherein the tow of filter rods containing capsules
of one type is of a different colour to the tow of filter rods containing capsules of a
different type.

14. A pack according to claim 13, wherein each filter rod comprises a tube filter, the
differently coloured tow being visible through the tube filter when the pack is opened.

15. A smoking article obtainable by the method according to any of claims 1 to 11.
16. An intermediate product made during the concurrent manufacture two different types of smoking article according to the method of any of claims 1 to 11, comprising a dual length filter rod having rods of smokable material attached to each longitudinal end prior to the dual length filter rod being cut into two filter rod segments, the dual length filter rod comprising filter tow and being configured so that when the dual length filter rod is cut to form two filter rod segments, each filter rod segment has a different characteristic.

17. An intermediate product according to claim 16, wherein the tow that forms one filter rod segment of a dual length filter rod has a different characteristic to the tow that forms the other filter rod segment of the same dual length filter rod.

18. An intermediate product according to claim 16 or 17, wherein the tow that forms one filter rod segment of a dual length filter rod contains an object of a first type and the tow that forms the other filter rod segment of the same dual length filter rod contains an object of a second type, the first and second object types being different.
INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2015/052825

A. CLASSIFICATION OF SUBJECT MATTER

INV. A24C5/47 A24C5/00 B65D85/10 B65B19/04
ADD. A24D3/Q2 A24D1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A24C A24D B65B B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Relevant to claim No.</th>
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<td>US 4 957 122 A (MALDINA PAOLO [IT] ET AL)</td>
<td>1-11, 16-18</td>
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<td>18 September 1990 (1990-09-18) page 5, line 52 - page 6, line 10</td>
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<td>5 April 2012 (2012-04-05) paragraph [0061] ; figure 9</td>
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* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"F" document member of the same patent family

Date of the actual completion of the international search
10 June 2016

Date of mailing of the international search report
16/08/2016

Name and mailing address of the ISA/Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel.: (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Koob, Michael

See patent family annex.

Further documents are listed in the continuation of Box C.
INTERNATIONAL SEARCH REPORT

Box No. II  Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ❑ Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. ☑ Claims Nos.: 15 because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

   see FURTHER INFORMATION sheet PCT/ISA/21Q

3. ❑ Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III  Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

   see additional sheet

1. ❑ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☑ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of additional fees.

3. ☑ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☑ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

   1-11, 15-18

Remark on Protest

The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

No protest accompanied the payment of additional search fees.
Continuation of Box 11.2

Claims Nos.: 15

Claim 15 relates to a smoking article obtained by the method of claims 1-11. However, once the double cigarettes are cut, it is not able to distinguish them from smoking articles produced on two different machines. Therefore the subject-matter of claim 15 is unclear to an extent that a meaningful search is not possible.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examination Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11, 15-18

A method for concurrently manufacturing two different types of smoking article using a smoking article manufacturing machine that comprises a filter rod feeder, a rod attachment unit for attaching rods of smokable material to each longitudinal end of a dual length filter rod received from the filter rod feeder, and a cutter to cut the dual length filter rod into two filter rod segments so that each segment, together with the rod of smokable material attached to each segment, forms a smoking article, the method comprising supplying the filter rod feeder with filter rods that comprise filter tow and which are configured so that the two filter rod segments cut from a dual length filter rod by the cutter will each have a different characteristic, as well as a corresponding smoking article and intermediate product.

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2. claims: 12-14

A pack of smoking article industry products, each smoking article industry product comprising a filter rod formed from filter tow that contains a capsule, the capsule contained in the tow of a filter rod of at least one of the smoking article industry products in the pack being of a different type to the type of capsule contained in the tow of a filter rod of at least one other smoking article industry product in the pack, wherein the tow of filter rods containing capsules of one type has a different characteristic to the tow of filter rods containing capsules of another type.

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