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(54) DEVICE AND METHOD FOR FILLING A CIGARETTE TUBE

VORRICHTUNG UND VERFAHREN ZUM FÜLLEN VOM ROHR VON EINER ZIGARETTE

DISPOSITIF ET PROCÉDÉ DE REMPLISSAGE DE TUBE D'UNE CIGARETTE

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Description

[0001] The present invention relates to a system and method for filling a cigarette tube with tobacco. In particular, the invention facilitates use of a process for filling a cigarette tube with tobacco and improvements to the quality and consistency of a cigarette or cigarettes manufactured by filling a cigarette tube with a portion of tobacco.

[0002] As an alternative to buying pre-manufactured cigarettes, it is available to a user to buy loose hand rolling tobacco and cigarette papers in order to roll his own cigarettes by hand. As an alternative, it is possible to purchase ready-made cigarette tubes, which generally include a filter at a first end and an open second end, and loose tobacco, and to fill the cigarette tubes with the tobacco. These are commonly known as make-your-own (MYO) cigarettes.

[0003] Machines for filling empty cigarette tubes with loose tobacco have been proposed in the past. Solutions have been proposed using an elongate pushing member, which is driven into the cigarette tube alongside the tobacco rod as it is inserted in to the cigarette tube. Documents DE 464347 and DE 39 14669 A1 disclose each a device for filling a pre-formed cigarette tube with a portion of smokable material according to the preamble of claim 1. Some drawbacks associated with known tobacco rod transferring devices are that friction between the paper and the tobacco can be distributed unevenly around the circumference of the tobacco rod. This can result in one side of the tobacco rod being inserted further in to the cigarette tube than the other side, since friction between the tobacco and the paper resists the advancement of the tobacco into the tube. Further, the friction forces can mean that the tobacco that is driven furthest into the cigarette tube, at a distal or filter end of the tobacco portion, is rarefied in some cases, and over-compressed in other cases, in comparison with the tobacco which travels less distance into the cigarette tube. This can result in an uneven density of tobacco in the resulting manufactured cigarette, which can detract from the user experience, since the quality of the cigarette can vary within the length of a cigarette itself, and also between sequentially manufactured cigarettes.

[0004] In addressing the drawbacks of the prior art, the present invention provides a device for filling a pre-formed cigarette tube with a portion of smokable material, comprising:

a fluid outlet for releasing a pressurised fluid;
cigarette tube receiving means for receiving the cigarette tube during the filling process;
portion receiving means, located between the cigarette tube receiving means and the fluid outlet, for receiving the portion of smokable material prior to filling of the tube;
the portion receiving means and cigarette tube receiving means being arranged such that when fluid

is released from the pressurised fluid outlet, the smokable material is moved by the released fluid from the portion receiving means into the cigarette tube.

[0005] The device of the present invention allows a user to fill a preformed cigarette tube with a portion of smokable material by use of a pressurised fluid, thus avoiding the need for any mechanical insertion means, which can otherwise create uneven distributions of tobacco in the resulting tube, as is described above. The present device is simple to manufacture, requires few moving parts and can be operated by a user without the need for any power input other than a pressurised fluid source.

[0006] The portion receiving means of the invention may comprise engagement means for engaging a portion of smokable material, or a casing of the portion. This feature can enable the machine to be used with encased portions of smokable material, which allows a user to avoid the need for handling loose tobacco. The casing can thus be attached to the machine prior to transfer of the smokable material into the tube, and the operation carried out by the user can therefore be quickly and easily carried out, with minimal risk of spillage or loss of loose tobacco.

[0007] The device of the present invention may further comprise fluid pressuring means for pressuring the fluid. By virtue of this feature, the device need not be provided with pressurised fluid sources, such as canisters or an external fluid source, rather the pressurised fluid can be pressurised by the device on demand.

[0008] The device may further comprise valve means for controlling a flow of pressurised fluid from the fluid outlet. The use of valve means allows pressurised fluid to be stored in the machine, either long term or in short term, or instantaneously, before the portion of tobacco is transferred to the preformed cigarette tube.

[0009] The device may further comprise cigarette tube retaining means arranged to retain the cigarette tube as the portion is transferred. Such tube retaining means can avoid the cigarette tube being inadvertently displaced by the pressurised fluid, which could result in an imperfectly formed finished cigarette, because movement of the cigarette tube may mean that the tobacco portion is not sufficiently transferred into the interior of the preformed cigarette tube.

[0010] The cigarette tube retaining means may be arranged to release the cigarette tube and the smokable material is transferred to the cigarette tube. This can be beneficial in that, in a first stage, the tube is retained in place at a receiving location and resists any forces on it created by the smokable material entering the cigarette tube under the force of pressurised fluid. In a second stage, once the portion is fully transferred into the cigarette tube, the tube may be released and optionally ejected from the tube retaining means, so that in a single simple operation, the portion is transferred into the tube and the tube is removed from the tube retaining means. This

may be achieved by configuring the tube retaining means to resist a lower tube extracting force, which is present when the portion is being delivered into the tube, but to release the cigarette tube when a higher tube extracting force is applied, resulting from pressurised fluid impinging on the portion of smokable material substantially after it has been delivered to the cigarette tube.

[0011] At least one of the cigarette tube retaining means and/or the pressure source may be configured such that the cigarette tube is removed from the cigarette tube retaining means by the fluid acting on at least one of the portion and/or the cigarette tube.

[0012] The device may further comprise braking means for braking a motion imparted to the filled cigarette tube by the pressurised fluid. In this way, if the cigarette tube is displaced from or released from the tube retaining means by the pressurised fluid, the braking means can brake the motion of the filled cigarette tube such that, when stationary, the completed cigarette can be grasped by a user.

[0013] The braking means may be configured to impart an increasing braking force on the filled cigarette tube as the filled cigarette tube advances along an access of the braking means. This could be imparted by, for example, a compressible item, which imparts an elastic braking force, or alternatively a friction braking force may be applied to the cigarette tube. A increasing friction braking force may be applied by a member extending obliquely to the path of the cigarette tube, which imparts an increasing lateral force on the cigarette tube as it moves along an axis.

[0014] The cigarette tube retaining means may be displaceable in the outlet direction of the fluid outlet. This can allow the cigarette tube, once located on the tube receiving means to be advanced towards or away from the fluid outlet to configure the cigarette tube appropriately relative to the fluid outlet before transfer of the portion. Guide means may further be provided for guiding the tobacco portion into the open end of the cigarette tube. Such guide means can help to ensure that the portion does not either miss or damage the open end of the cigarette tube upon release of the pressurised fluid. Such means may include a conical member, which may be hollow, cylindrical or tubular or of any suitable converging form for guiding the portion into the tube.

[0015] The present invention further provides a method of filling a pre-formed cigarette tube with smokable material, the method comprising the steps of:

providing a fluid under pressure to an outlet of a device for filling cigarette tubes, for example a device according to the present invention;
arranging a portion of smokable material between said outlet and the pre-formed cigarette tube;
ejecting the pressurised fluid from said outlet towards the portion of smokable material, to transfer the portion into the cigarette tube.

[0016] The method of the present invention allows a portion of smokable material to be transferred to a pre-formed cigarette tube whilst avoiding the drawbacks of previously known methods which require mechanical transfer means or significant degrees of manual manipulation of the tobacco and cigarette tube. The method may further comprise the step of pressurising a fluid source to place the fluid under pressure.

[0017] The portion of smokable material may be provided in a portion casing and the portion may be transferred from the portion casing into the cigarette tube by the fluid.

[0018] The method may further comprise breaking one or more frangible closures of the consumable portion, either during application of the consumable to the device, or upon release of pressurised fluid from the pressurised fluid source.

[0019] The method may further comprise braking a motion imparted to the filled cigarette tube by the pressurised fluid.

[0020] A specific embodiment of the invention will now be described with reference to the following figures in which:

Figure 1 schematically illustrates the motion applied in the method and device of the present invention; Figure 2 illustrates a device of the present invention; Figures 3 and 4 illustrate portions of smokable material suitable for use with the present invention; Figure 5 illustrates a further example of a portion of smokable material suitable for use with the present invention.

Figure 6 illustrates further detail of a device and method for using the portion of Figure 5 with the device of the present invention.

[0021] Figure 1 shows a schematic illustration of a pre-formed cigarette tube 9 which is to be filled with a portion of smokable material 8. In the method of the present invention, a pressurised fluid impinges on the portion 8 in the direction of arrow A, thus creating a motive force in the direction of arrow A, which acts to drive the portion 8 into the interior of preformed cigarette tube 9. The motion imparted by the fluid is thus transferred without the need for mechanical contact of any driving member or device on portion 8 and no element other than portion 8 need be inserted into tube 9 to fill the tube 9.

[0022] Figure 2 illustrates a device 20 according to the invention. In the illustrated embodiment, the device 20 comprises a pressurised fluid source 1 in for example a pneumatic ram, which can be actuated in a direction of arrow 11 to create a source of pressurised fluid, in this case, in the pressurised fluid zone 12. Release means for releasing or containing the pressurised fluid are provided in the form of valve means 2, which may be actuated by linear or rotational action. The actuating force on the valve may be imparted by a user or by other mechanical or electric means, such as a solenoid, electric motor,

servo or other suitable valve actuating means. A portion retaining means 3 is provided, which acts to retain at least a part of the portion of tobacco or other smokable material, prior to transfer of the portion into the preformed cigarette tube 9. In the example illustrated in Figure 2, the portion retaining means 3 connects with an end of the tobacco portion proximal to the valve means 2. However, the retaining means may be configured to support a greater amount of, or the entire tobacco portion, either along some or all of its length, prior to transfer of the portion into the tube 9.

[0023] Portion guiding means 4 may be included, for example in the form of a conical insertion nozzle, which can assist with guiding the portion 8 into the preformed cigarette tube 9, either prior to or during transfer of the whole of the portion into the tube with the pressurised fluid.

[0024] Tube retaining means 5 may be included, which may clamp the preformed tube to retain it before and during transfer of the portion 8 into the tube. The retaining means 5 may be configured to apply a retaining force sufficient to retain the tube while the portion is being transferred into the tube, but small enough to be overcome once the portion 8 is fully transferred into the preformed tube 9, such that the tube escapes the retaining force of the retaining means 5 once the fluid impinges on the portion 8 when fully inserted into the preformed tube 9.

[0025] The device may include a base plate or chassis 10, on which the mirrored parts are mounted and a second, moveable, base plate 7 may be included, which can be displaced to move any or all of the guide means 4, tube retaining means 5 and braking means 6 relative to the portion retaining means 3 and/or any of valve means 2 and pressurised fluid source 1.

[0026] The device may include a braking means 6, which is arranged to brake a motion of the filled cigarette tube 9 once the smokable material portion 8 has been transferred into the preformed tube 9. In the illustrated example, the braking means includes a member 61, which is arranged obliquely relative to an axis 62 parallel to a trajectory of motion of the filled cigarette tube when it is ejected from the retaining means 5. As such, the further the filled cigarette tube advances towards the braking means, the greater the braking force applied to the filled cigarette tube 9. The member 61 may be movable relative to the axis 62, such that it can be entirely removed from the path of the cigarette tube 9, whilst still maintaining a frictional braking force on a side of the cigarette tube 9. Such an arrangement can help to provide a gentle braking force to the cigarette tube 9 to avoid causing damage to the tube during the braking process.

[0027] Figure 3 illustrates a packaged portion of smokable material which may be used as a consumable product with the device and method of the present invention. A smokable material is intended to define the material as smokable by a user and includes tobacco products, such as roll your own tobacco and tobacco for make-

your-own (MYO) cigarettes, or other smokable products suitable for enabling a user to make cigarettes. A portion may be pre-packaged in a foil or other substantially airtight material to maintain its freshness before use. A portion may be unwrapped and delivered to the device of Figure 2 for transfer into the cigarette tube 9.

[0028] Figure 4 illustrates an alternative consumable product, comprising a portion of smokable material, which may also be used in conjunction with the device of Figure 2.

[0029] The consumable product 4 includes a casing 41, which retains the portion of smokable material in the desired form prior to use, during transit and which may be sold as a consumable for use with the device of Figure 2. The consumable product 4 includes an attachment means 42, which may be used to attach the portion, including casing 41, to portion retaining means 3 of the device of Figure 2. In this way, the portion of smokable material can be delivered to the device in a pre-formed casing. The portion of smokable material may then be transferred from the pre-formed casing 41 into the preformed cigarette tube by action of the fluid under pressure, when the fluid is released by valve means 2. The attachment means 42 may comprise a press-fit, a bayonet fitting or a threaded attachment, or any other releasable attachment means, where the reasonable attachment means is suitable for attaching the casing 41 to the portion retaining means 3 of the device 20 of Figure 2 to prevent axial movement of the casing 41 relative to the device upon release of the pressurised fluid. A distal end 43, or either or both ends, of the encased portion may be provided with releasable sealing means, which, during transit, act to preserve the freshness of the tobacco in the casing, whilst after release of the pressurised fluid when the portion is attached to the device of Figure 2, the releasable sealing means 43 opens to release the portion 8 into the preformed cigarette tube 9. Accordingly, there can be provided a portion of a smokable material for use with the device 20 of the present invention, the portion comprising a casing 41 filled with a smokable material, the casing comprising, at a first end, releasable attachment means for attaching the portion to the device 20 and, optionally at a second end, releasable sealing means for sealing the end of the portion distal from the attachment means. Releasable sealing means may further be provided at the first end of the consumable product 4. The sealing means may be partial sealing means, such as simple folding over of flexible ends of the portion, to substantially prevent free airflow into and out of the casing 41, or may alternatively comprise (or additionally) a substantially hermetic seal, which substantially prevents all airflow into and out of the sealed end of casing 41. By the use of such features, the portion indicating 41 can be kept entirely sealed and thus fresh before the seal is broken by use in the device 20 of the present invention.

[0030] Figure 5 shows a further embodiment 51 of a consumable product for use with the device and method of the present invention. In this embodiment, the con-

sumable product 51 contains a portion of smokable material 52, such as tobacco. The portion 52 is wrapped in a casing 53, which may be manufactured from a paper, or paper-like sheet material, such as standard cigarette paper, as is used in the manufacture of cigarettes. Alternatively, the wrapper 53 may be made from aluminium foil, or any other sheet-like flexible and substantially airtight material, in order to help preserve the freshness of the portion 52 of smokable material inside. The wrapper 53 may comprise an overhang portion 54 which extends beyond the end of the portion 52 of smokable material. The end can then be sealed by merely folding over the ends or applying a seal, a closure device, or adhesive material, to the overhang portion 54. The consumable product 51 may further comprise a substantially hollow, or tubular, member 55, which is substantially hollow and has a wall which substantially corresponds to at least a part of the outer circumference of the portion 52 of smokable material. The hollow member, comprises a wall section and an interior section through which fluid under pressure may pass to eject the portion 52 from within the casing 53. Hollow member 55 may be attached to the consumable product 51, or to the sleeve 53 of the consumable product 51 by the use of a standard machine, or cigarette production unit, for making mass-produced cigarettes. In the cigarette production unit, the portion 52 of tobacco and the hollow member 55 can be combined and wrapped with a section of sheet material, such as a sheet of pliable material, any foil, or aluminium foil. The hollow member 55 may further comprise a closure member 56 for closing the hollow member and substantially sealing an end of the consumable product 51 to help preserve the freshness of the portion 52 inside the wrapper 53. The closure member may be a frangible member, or may be attached to the inner walls or to an end of the walls of the hollow member 55 with a frangible connection. In this way, when air pressure is applied to the consumable product 51 in the direction of arrow 57, the frangible closure member 56, which may be frangibly connected to the interior surface or to an end of the hollow member 55, is broken, or detached from the hollow member 55, and the pressure acting in the direction of arrow 57 from a pressurised fluid can drive the portion 52 of smokable material out from the hollow sleeve 53. During the same operation, any seal at a distal end 54 of the portion may also be broken by the pressure 57 applied at hollow member 55.

[0031] Figure 6 illustrates how consumable product 51 of Figure 5 may be used with a device 70 of the present invention, which device is essentially equivalent to, and works in a similar manner to, the device shown in Figure 2. The device therefore includes a pressurised fluid source 1, illustrated in the form of a cylinder containing a piston, and a valve 2 for selectively sealing the pressure within the cylinder or releasing the pressurised fluid from the cylinder in the direction of a nozzle 71. The nozzle 71 is arranged to enter the hollow member 55 and may be arranged such that when a distal end of hollow mem-

ber 55 engages a hollow member engagement portion 72 of the device, the closure portion 56 is either partially or wholly pierced or detached from hollow member 55, by the nozzle 71.

[0032] Portion engagement means 72 may be arranged as described with regard to Figure 2. Further, the engagement means 72 may comprise a clip or frictional engagement means, for retaining the hollow member with sufficient force to react the forces induced in the portion 51 by a pressurised fluid impinging upon the portion 52 of smokable material within wrapper 53 of consumable portion 51.

[0033] The present invention therefore provides a consumable portion for use in a tube filling device, comprising the casing filled with smokable material, the casing comprising a hollow end member, optionally comprising a frangible closure portion and an optional end closure portion, distal from the frangible closure portion, and a portion of smokable material contained within the casing. The casing may be attached to, or integrally formed with, a hollow engagement member arranged to engage a pressurised fluid delivery means of the tube filling device.

[0034] The invention also provides a method of forming a consumable portion for use in a tube filling device, comprising the steps of: providing a portion of smokable material, applying a casing to the smokable material, applying a hollow member comprising a frangible closure portion to the casing, either integrally with or by attachment to the casing, applying a closure to a distal end of the portion distal from the hollow member to substantially seal the portion of smokable material within the casing.

[0035] The method may further comprise breaking one or more frangible closures of the consumable portion, either during application of the consumable to the pressure source, or upon release of pressurised fluid from the pressurised fluid source.

Claims

1. A device (20) for filling a pre-formed cigarette tube (9) with a portion of smokable material (8), comprising:

a fluid outlet (2) for releasing a pressurised fluid; cigarette tube receiving means for receiving the cigarette tube during the filling process; portion receiving means, located between the cigarette tube receiving means and the fluid outlet, for receiving the portion of smokable material prior to filling of the tube; the device being **characterised by** the portion receiving means and cigarette tube receiving means being arranged such that when fluid is released from the pressurised fluid outlet, the smokable material is moved by the released fluid from the portion receiving means into the cigarette tube.

2. A device (20) according to claim 1, the portion receiving means comprising engagement means for engaging with a casing (41) of a portion of smokable material (8). 5
3. A device (20) according to claim 1 or claim 2, further comprising fluid pressurising means for pressurising the fluid and preferably further comprising valve means for controlling a flow of pressurised fluid from the fluid outlet. 10
4. A device (20) according to any of the preceding claims, further comprising cigarette tube retaining means (5) arranged to retain the cigarette tube (9) as the portion is transferred. 15
5. A device (20) according to any of the preceding claims, wherein the cigarette tube retaining means (5) is arranged to release the cigarette tube (9) when the smokable material (8) is transferred to the cigarette tube. 20
6. A device (20) according to any of the preceding claims, further comprising braking means (6) for braking a motion imparted to the filled cigarette tube (9) by the pressurised fluid. 25
7. A device (20) according to any of the preceding claims, further comprising guide means (4) for guiding the tobacco portion into the open end of the cigarette tube (9). 30
8. A method of filling a pre-formed cigarette tube (9) with smokable material (8), the method comprising the steps of: 35
 - providing a fluid under pressure to an outlet of a device (20) for filling cigarette tubes;
 - arranging a portion of smokable material between said outlet and the pre-formed cigarette tube;
 - ejecting the pressurised fluid from said outlet towards the portion of smokable material to transfer it into the cigarette tube. 40
9. A method according to claim 8, further comprising the step of pressurising a fluid source to place the fluid under pressure. 45
10. A method according to claim 8 or claim 9, wherein the portion of smokable material (8) is provided in a portion casing (41) and the portion is transferred from the portion casing into the cigarette tube (9) by the fluid. 50
11. A method according to claim 10, further comprising breaking one or more frangible closures of the casing (41), either during application of the consumable to 55

the device (20), or upon release of pressurised fluid from the pressurised fluid source.

12. A method according to any of claims 9 to 11, further comprising braking a motion imparted to the filled cigarette tube (9) by the pressurised fluid.

Patentansprüche

1. Eine Vorrichtung (20) zum Befüllen eines vorgeformten Zigarettenrohrs (9) mit einer Portion einer rauchbaren Substanz (8), umfassend:
 - einen Flüssigkeitsauslass (2) zur Freisetzung einer druckbeaufschlagten Flüssigkeit;
 - ein Zigarettenrohr-Aufnahmemittel zur Aufnahme des Zigarettenrohrs während des Füllvorgangs;
 - ein Portionsaufnahmemittel, das zwischen dem Zigarettenrohr-Aufnahmemittel und dem Flüssigkeitsauslass angeordnet ist, zur Aufnahme der Portion der rauchbaren Substanz vor dem Befüllen des Rohrs; wobei die Vorrichtung **dadurch gekennzeichnet ist, dass** das Portionsaufnahmemittel und das Zigarettenrohr-Aufnahmemittel so angeordnet sind, dass wenn die Flüssigkeit aus dem Auslass für die druckbeaufschlagte Flüssigkeit freigesetzt wird, die rauchbare Substanz durch die freigesetzte Flüssigkeit aus dem Portionsaufnahmemittel in das Zigarettenrohr bewegt wird.
2. Eine Vorrichtung (20) nach Anspruch 1, wobei das Portionsaufnahmemittel ein Kopplungsmittel zum Koppeln mit einer Ummantelung (41) einer Portion der rauchbaren Substanz (8) umfasst.
3. Eine Vorrichtung (20) nach Anspruch 1 oder Anspruch 2, ferner umfassend ein Flüssigkeits-Druckbeaufschlagungsmittel zur Druckbeaufschlagung der Flüssigkeit und vorzugsweise ferner umfassend ein Ventilmittel zur Steuerung eines Flusses der druckbeaufschlagten Flüssigkeit aus dem Flüssigkeitsauslass.
4. Eine Vorrichtung (20) nach einem der vorangehenden Ansprüche, ferner umfassend ein Zigarettenrohr-Rückhaltemittel (5), das so ausgelegt ist, dass es das Zigarettenrohr (9) zurückhält, während die Portion übertragen wird.
5. Eine Vorrichtung (20) nach einem der vorangehenden Ansprüche, wobei das Zigarettenrohr-Rückhaltemittel (5) so ausgelegt ist, dass es das Zigarettenrohr (9) freisetzt, wenn die rauchbare Substanz (8) in das Zigarettenrohr übertragen wird.

6. Eine Vorrichtung (20) nach einem der vorangehenden Ansprüche, ferner umfassend ein Bremsmittel (6) zum Bremsen einer Bewegung, in die das gefüllte Zigarettenrohr (9) durch die druckbeaufschlagte Flüssigkeit versetzt wird. 5
7. Eine Vorrichtung (20) nach einem der vorangehenden Ansprüche, ferner umfassend ein Lenkungsmit-
tel (4) zum Lenken der Tabakportion in das offene
Ende des Zigarettenrohrs (9). 10
8. Ein Verfahren zum Befüllen eines vorgeformten Zi-
garettenrohrs (9) mit einer rauchbaren Substanz (8),
wobei das Verfahren die folgenden Schritte umfasst: 15
- Bereitstellung einer druckbeaufschlagte Flüs-
sigkeit an einem Auslass einer Vorrichtung (20)
zum Befüllen von Zigarettenrohren;
Anordnung einer Portion einer rauchbaren Sub-
stanz zwischen dem Auslass und dem vorge-
formten Zigarettenrohr; 20
- Ausstoßen der druckbeaufschlagten Flüssigkeit
aus dem Auslass in Richtung auf die Portion der
rauchbaren Substanz, um diese in das Zigaret-
tenrohr zu übertragen. 25
9. Ein Verfahren nach Anspruch 8, ferner umfassend
den Schritt zur Druckbeaufschlagung einer Flüssig-
keitsquelle, um die Flüssigkeit unter Druck zu set-
zen. 30
10. Ein Verfahren nach Anspruch 8 oder Anspruch 9,
wobei die Portion der rauchbaren Substanz (8) in
einer Portionsummantelung (41) enthalten ist und
die Portion durch die Flüssigkeit von der Portionsum-
mantelung in das Zigarettenrohr (9) übertragen wird. 35
11. Ein Verfahren nach Anspruch 10, ferner umfassend
das Aufbrechen eines oder mehrerer zerbrechlicher
Verschlüsse der Ummantelung (41), entweder durch
Einwirkung des Verbrauchsmaterials der Vorrich-
tung (20), oder nach Freisetzung der druckbeauf-
schlagten Flüssigkeit aus der druckbeaufschlagten
Flüssigkeitsquelle. 40
12. Ein Verfahren nach einem der Ansprüche 9 bis 11,
ferner umfassend die Abbremsung einer Bewegung,
in die das befüllte Zigarettenrohr (9) durch die druck-
beaufschlagte Flüssigkeit versetzt wird. 45

Revendications

1. Dispositif (20) de remplissage d'un tube de cigarette
(9) préformé au moyen de matière fumable (8), com-
portant: 55
- une sortie de fluide (2) servant à dégager un

fluide pressurisé;
un moyen de réception du tube de cigarette ser-
vant à recevoir le tube de cigarette pendant le
remplissage;
le moyen de réception, situé entre et le moyen
de réception du tube de cigarette et la sortie de
fluide, et servant à recevoir la partie de matière
fumable avant le remplissage du tube; le dispo-
sitif étant **caractérisé en ce que**
le moyen de réception et le moyen de réception
du tube de cigarette sont disposés de manière
à ce que, lorsque le fluide se dégage de la sortie
de fluide pressurisé, la matière fumable est dé-
placée par le fluide dégagé à partir du moyen
de réception et dans le tube de cigarette.

2. Dispositif (20) selon la revendication 1, la partie ré-
ception comportant un moyen de mise en prise ser-
vant à la mise en prise avec l'enveloppe (41) d'une
partie de la matière fumable (8).
3. Dispositif (20) selon la revendication 1 ou la reven-
dication 2, comportant par ailleurs un moyen de pres-
suriser le fluide et, de préférence, de comporter par
ailleurs une soupape servant à contrôler le débit de
fluide pressurisé qui vient de la sortie de fluide.
4. Dispositif (20) selon l'une quelconque des revendi-
cations précédentes, comportant par ailleurs un
moyen de retenue (5) du tube de cigarette disposé
de manière à retenir le tube de cigarette (9) lors du
transfert de la partie de matière fumable.
5. Dispositif (20) selon l'une quelconque des revendi-
cations précédentes, **caractérisé en ce que** le
moyen de retenue (5) du tube de cigarette est dis-
posé de manière à libérer le tube de cigarette (9)
lorsque la matière fumable (8) est transférée au tube
de cigarette.
6. Dispositif (20) selon l'une quelconque des revendi-
cations précédentes, comportant par ailleurs un
moyen de freinage (6) servant à freiner le mouve-
ment communiqué au tube de cigarette (9) rempli
par le fluide pressurisé.
7. Dispositif (20) selon l'une quelconque des revendi-
cations précédentes, comportant par ailleurs un
moyen de guidage (4) servant à guider la partie tabac
dans l'extrémité ouverte du tube de cigarette (9).
8. Procédé de remplissage d'un tube de cigarette pré-
formé (9) au moyen de matière fumable (8), le pro-
cédé consistant:

à envoyer un fluide sous pression à la sortie d'un
dispositif (20) de remplissage des tubes de ci-
garette;

à disposer une partie du matériau fumable entre cette sortie et le tube de cigarette préformé;
à éjecter le fluide pressurisé de cette sortie vers la partie du matériau fumable en vue de le transférer dans le tube de cigarette.

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9. Procédé selon la revendication 8, comportant par ailleurs l'étape qui consiste à pressuriser une source de fluide pour mettre le fluide sous pression.

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10. Procédé selon la revendication 8 ou selon la revendication 9, **caractérisé en ce que** la partie de matière fumable (8) est prévue dans l'enveloppe (41) d'une partie, et **en ce que** la partie est transférée de l'enveloppe de la partie au tube de cigarette (9) par le fluide.

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11. Procédé selon la revendication 10, comportant par ailleurs la rupture d'une ou de plusieurs fermetures frangibles de l'enveloppe (41) soit pendant l'application du produit consommable au dispositif (20) soit lors du dégagement du fluide pressurisé à partir de la source de fluide pressurisé.

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12. Procédé selon l'une quelconque des revendications 9 à 11, comportant par ailleurs le freinage d'un mouvement communiqué au tube de cigarettes rempli (9) par le fluide pressurisé.

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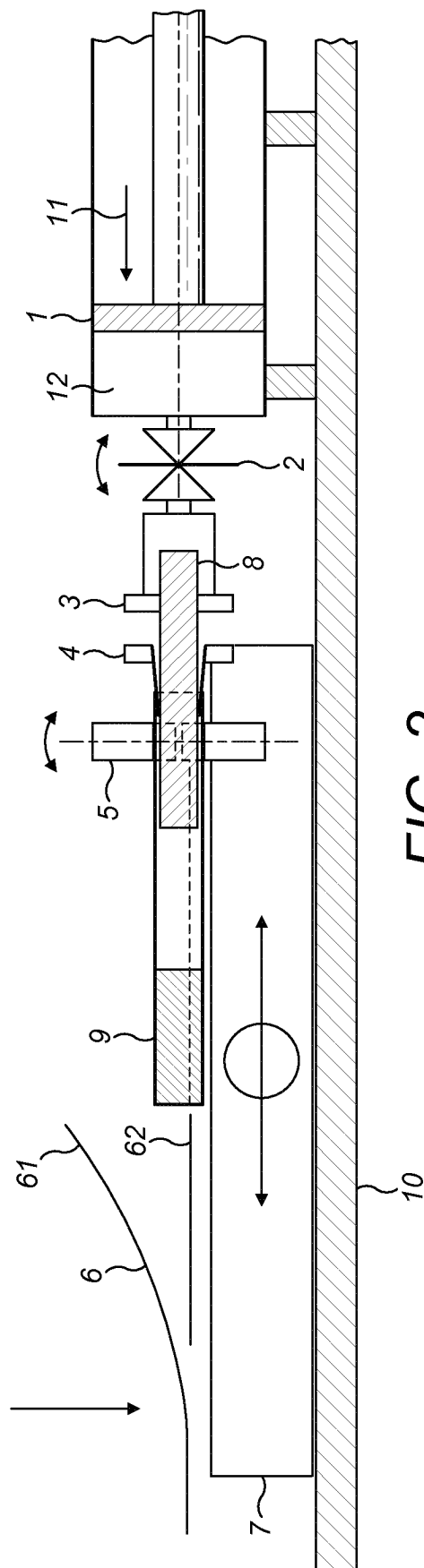
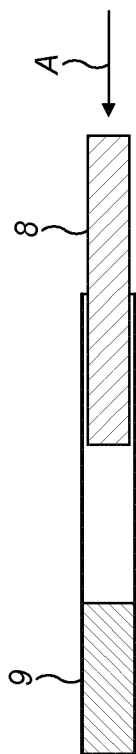
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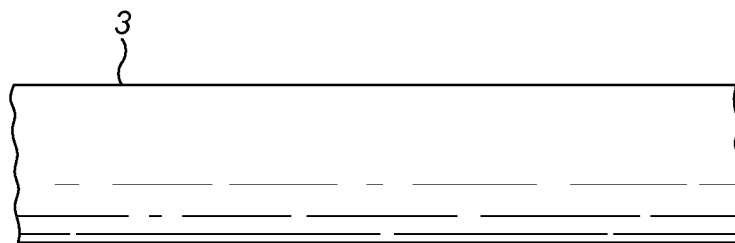


FIG. 3

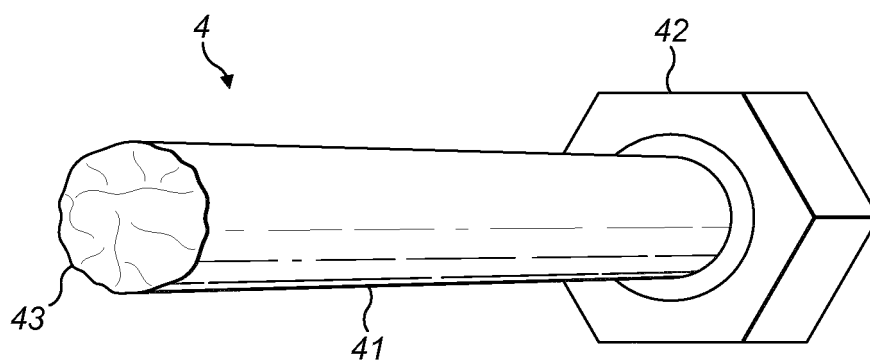
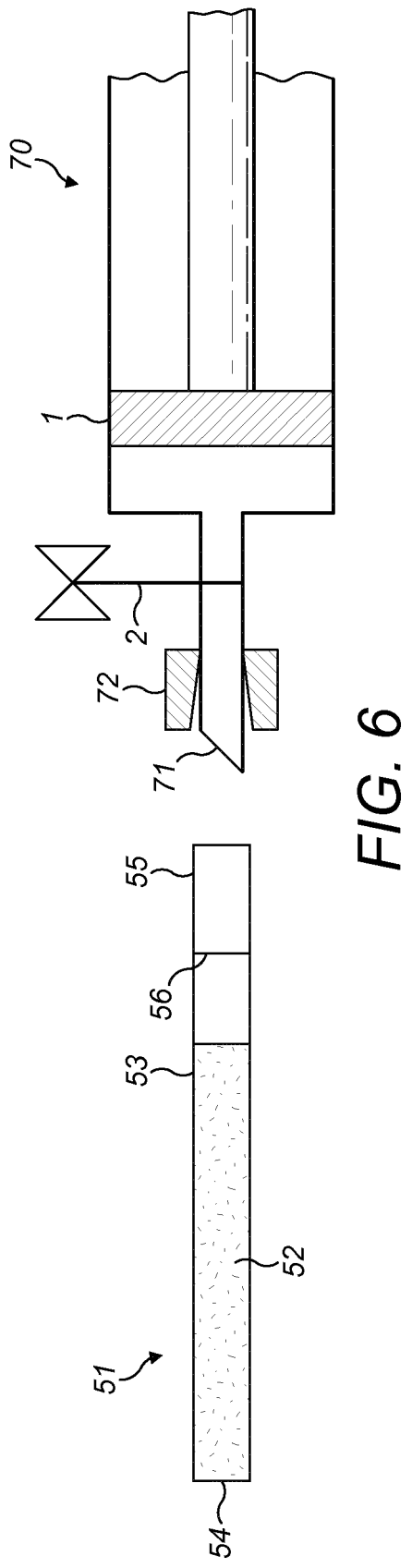
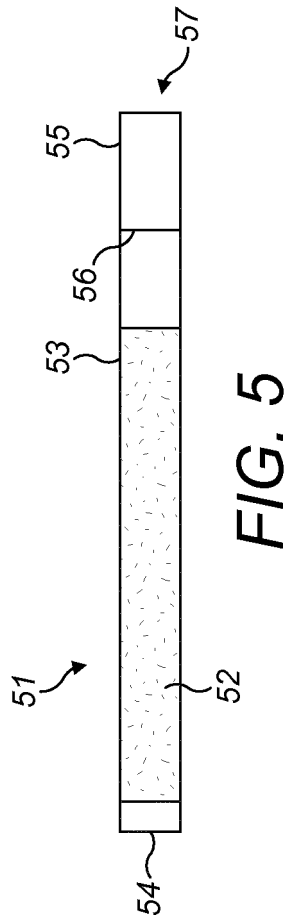


FIG. 4



REFERENCES CITED IN THE DESCRIPTION

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