

Dec. 23, 1969

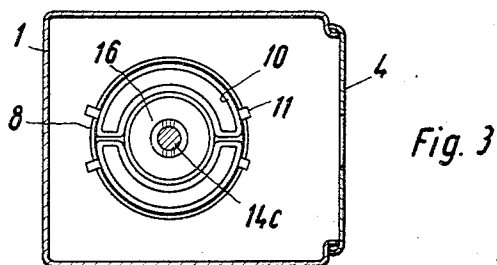
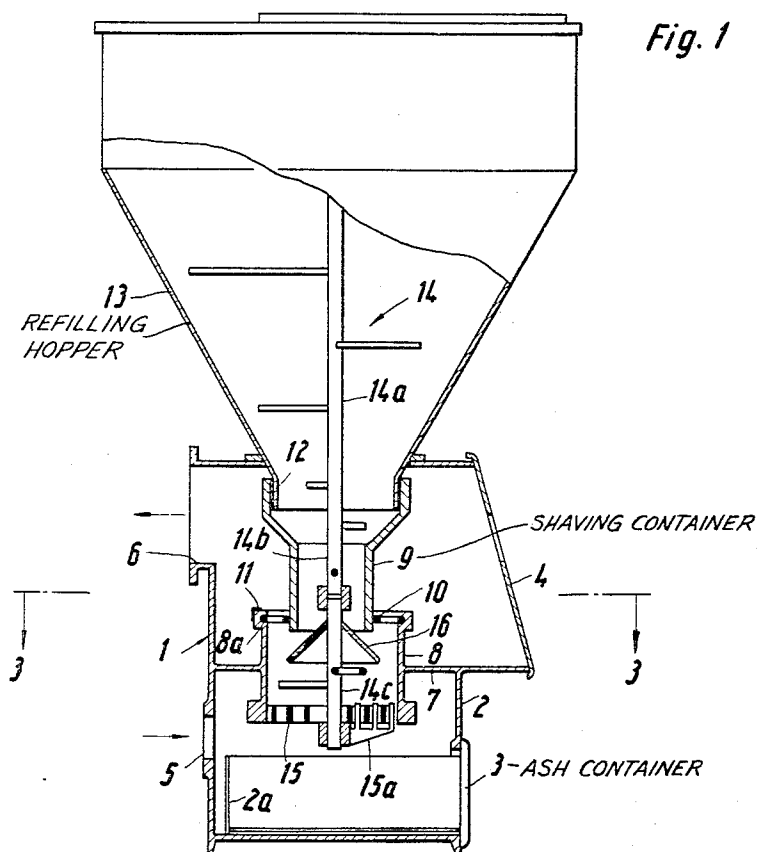
E. E. PAKULA

3,485,769

SMOKING DEVICE

Filed Sept. 14, 1967

2 Sheets-Sheet 1



Inventor:

ERWIN E. PAKULA

By *Starnes, Davis, Miller & Hester*
ATTORNEYS

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E. E. PAKULA

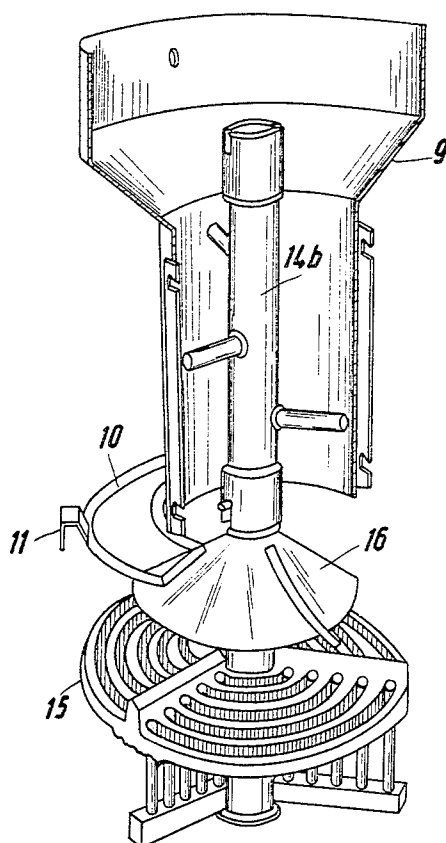
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Fig. 2



Inventor:

ERWIN E. PAKULA

By *Stevens, Davis, Miller & Hester*
ATTORNEYS

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SMOKING DEVICE

Erwin E. Pakula, Halstenbek, Holstein, Germany, assignor to Mittelhauser & Walter

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7 Claims

ABSTRACT OF THE DISCLOSURE

A device for producing smoke by low temperature combustion of shavings comprising a vertical shaving container, a refilling hopper disposed above the shaving container, an ash container disposed therebelow, a deflector element disposed at the bottom end of the shaving container to prevent the smoke produced from passing through the shaving container.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to a device for producing smoke by the low temperature combustion of shavings, having a vertical container to receive a volume of shavings, a hopper disposed above the container for refilling the container with shavings, and an ash container disposed therebelow. Devices of this type are used particularly for producing smoke for the smoking of foodstuffs.

Description of the prior art

In one known device of the above described type ignition gas is supplied to the bottom end of the vertical container, so that the shavings at the bottom of the latter are slowly burned. The low temperature combustion gas or the smoke passes through the shavings contained in the container and then out of the container through side apertures, from which it is passed to the smoking device.

It has surprisingly been found that the quality of the smoke, which governs the quality of the smoked foodstuffs, can be considerably improved if the low temperature combustion gas or smoke is not passed through the shavings contained in the container but is passed directly from the low temperature combustion point to the smoking device.

SUMMARY

According to the present invention a device is provided for producing smoke by low temperature combustion of shavings comprising a vertical shaving container, a refilling hopper disposed above the shaving container, an ash container disposed therebelow, a deflector element disposed at the bottom end of the shaving container to prevent the smoke produced from passing through the shaving container.

In a preferred embodiment of the invention the deflector element is in the form of a hollow cone with its apex upwardly directed and its walls disposed at a short distance from the bottom open end of the container to form an outlet slot to enable the shavings to pass out of the bottom end of the container, while the bottom edge of the cone is disposed a distance above a shaving grate.

By this construction the shavings pass continuously downwards through the slot formed between the bottom end of the container and the conical deflector member, to the point at which the ignition gas is supplied and the low temperature combustion is effected. The low temperature combustion gases or the smoke are prevented by the deflector element in the form of a hollow cone

from entering the shaving container, so that they pass directly from the low temperature combustion point into a suitable pipe in which they are conveyed to the smoking device.

The deflector element may be fastened on a stirring shaft extending through the refilling hopper and the shaving container. A construction of this type is advantageous because no additional means, apart from the stirring shaft which is in any case provided, are necessary for the provision of the deflector element.

Preferably a grate comb running in the grate is fastened on the bottom end of the stirring shaft.

In another preferred embodiment the stirring shaft is sub-divided into a plurality of parts, namely into a part extending through the refilling hopper, a part extending substantially through the container, and a part carrying the grate comb. These parts may preferably be connected together in such a manner that they can easily be detached. A tenon and slot arrangement is preferred.

For the purpose of easy insertion and replacement for the purpose of maintenance, cleaning, and replacement of parts, or the like, it is advantageous for the shaving container to be formed of bowls which are connected together so as to be easily detachable and which are in addition similarly connected to the refilling hopper. The connection between the refilling hopper and the container bowls may advantageously be formed by outwardly extending projections formed on a bottom cylindrical flange on the refilling hopper and by corresponding recesses formed in the container bowls.

Readily detachable fastening of the bottom end of the container may preferably be effected by means of radial spacers, the inner surface of which has a shape corresponding to the peripheral shape of the shaving container, while its outer surface is secured by means of clips on the top end of a stationary hollow part, which is open at both ends and the diameter of which is greater than the diameter of the shaving container, said part forming a lateral boundary for the shavings passing out of the container and for the low temperature combustion point.

The smoke produced at the low temperature combustion point is diverted directly from the device for further use without previously flowing through the shavings contained in the shaving container.

The device is very simple and constructed in such a manner that for the purpose of easy access and for the purpose of cleaning, replacement, or the like the individual parts are arranged in the device by connections which can be quickly made and detached. By the fixed hollow part an enclosed space is produced in a very simple manner for the shavings passing out of the container and for the point at which the low temperature combustion takes place.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be more fully understood an embodiment in accordance therewith will now be described by way of example with reference to the accompanying drawings, in which:

FIG. 1 is a vertical cross section of a smoke producing device;

FIG. 2 is a partial perspective view of parts of the device in FIG. 1; and

FIG. 3 is a cross section of the line 3—3 in FIG. 1 looking in the direction of the arrows.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings these show a device for producing smoke which comprises a casing 1, the bottom part of which is constructed as an ash container 2 in which

an ash box 2a is disposed and which can be closed by a door 3. The upper portion of the casing is provided with a door 4, which is of such a size that convenient access is provided to the components situated in the interior of the casing 1.

In its bottom portion the casing 1 is provided with an inlet aperture 5 for ignition gas or the like and in its top portion with an outlet aperture 6 for the smoke or low temperature combustion gas produced. The two parts of the casing are separated from one another by a horizontal partition 7, at the centre of which a hollow part 8 open at both ends is disposed. At the top end of the hollow part 8 the bottom end of a shaving container 9 is supported. As can be seen in FIG. 3, arcuate spacers 10 are used as supports, their inner surface corresponding to the peripheral shape of the shaving container 9 while their outer surface corresponds to the shape of the hollow part 8, the spacers 10 being held by clips 11 to the top edge of the hollow part and in addition resting on a shoulder 8a formed on the top end of the hollow part 8. In this manner, reliable but rapidly and conveniently detachable fastening is provided for the bottom end of the shaving container 9.

If desired, the shaving container may be made of one piece, but, particularly in order to facilitate assembly and dismantling, it is preferable for the shaving container 9 to be formed of at least two bowls, one of which is shown in FIG. 2. The two bowls are provided with suitable connection means matching one another, so that they can be rapidly and conveniently assembled and dismantled. According to FIG. 2, these connecting means on one bowl are provided with slots in which corresponding projections formed on the other bowl can be brought into engagement.

At its top end the shaving container 9 is fastened on a bottom cylindrical flange 12 on the refilling hopper 13, also by a connection which can be rapidly and conveniently made and detached. As can be seen from FIG. 2, at its top end, which is to be connected to the refilling hopper 13, the shaving container 9 has openings in its peripheral wall, which can be brought into engagement with corresponding projections (not shown) on the outer wall of the flange 12 of the refilling hopper 13. The projections may have a groove the width of which corresponds approximately to the wall thickness of the container bowls, so that the latter can be practically suspended on the projections.

The device for producing smoke also has a stirring shaft 14, which extends through the refilling hopper 13 and shaving container 9 to the ash container 2. As shown, the stirring shaft 14 is composed of three parts, namely a part 14a extending through the refilling hopper 13, a part 14b extending substantially through the shaving container 19, and a part 14c extending into the ash container 2. As can be seen from FIG. 2, the three parts 14a, 14b, 14c can be coupled together by a connection which can be easily and conveniently made and detached. In one end of a shaft part are radially projecting tenons which can come into engagement with corresponding slots formed on the end of a neighbouring shaft part. It can be seen that in this manner the parts of the stirring shaft can be separated from one another and joined together by a simple vertical movement.

All the parts 14a, 14b, 14c of the stirring shaft 14 are provided with laterally projecting arms, which on the rotation of the shaft 14, which is driven in a suitable manner (not shown), keep the shavings continuously in movement, so that good downward sliding is ensured. The lowermost part 14c of the stirring shaft 14 is connected to a grate comb 15a, so that the latter is likewise rotated on the rotation of the shaft 14. The grate comb 15a runs in a grate 15 which is disposed at the bottom end of the hollow part 8, in which accordingly the low temperature combustion point and a lateral boundary for the shavings passing out of the shaving container 9 are formed.

On the middle portion 14b of the stirring shaft 14 a deflector member 16 is fastened. As shown, the deflector member 16 has the form of a hollow cone the tip of which is directed upwards and lies approximately at the bottom end of the container. The bottom edge or bottom end of the deflector member 16 lies at such a distance above the grate 15 that a low temperature combustion space of adequate height is formed. The diameter at the bottom end of the deflector member is advantageously greater than the diameter of the shaving container 9.

The shaving container 9 and the stationary hollow part 8 both have a cylindrical shape for a circular cross-section. It can however be seen that the parts may equally well have any polygonal, for example square cross-section, in which case the deflector member 16 would likewise have a corresponding polygonal cross-section.

Instead of the rotating stirring shaft 14 it is moreover possible to provide a stirring shaft reciprocating in the vertical direction, in which case it would serve as a shaking shaft. Through the shaking movements of the shaft the deflector element would likewise be shaken, so that the flow of shavings to the low temperature combustion point would be ensured.

The peripheral surface of the deflector member 16 forms with the bottom end of the shaving container 9 an annular gap through which the shavings can fall downwards, so that they pass to the low temperature combustion point on the grate 15. When ignition gas is fed through the opening 5 in the casing 1, the shavings situated on the grate 15 are slowly burned and the resulting low temperature combustion gas or smoke rises, the special construction of the deflector element 16 ensuring that the smoke will not enter the shaving container 9 but will pass through the spacers 10 supporting the bottom end of the shaving container 9 and out of the opening 6, as indicated by the arrows.

The quality of the smoke produced in this manner is surprisingly far better than the quality of the smoke which has previously passed through the shavings contained in the shaving container and out of lateral apertures in them. In addition, the problems which arise from the formation of tar in the low temperature combustion of shavings are considerably reduced, while in particular cleaning is considerably facilitated by the special construction and arrangement of the individual components.

I claim:

1. A device for producing smoke by low temperature combustion of shavings comprising an upright container for receiving a volume of shavings and having an open top and bottom outlet, a refilling hopper disposed above the shaving container and discharging into its open top and an ash container disposed therebelow said shaving container, a grate disposed between the two containers for supporting shavings during combustion thereof, a stirring shaft extending vertically through the refilling hopper and the shaving container, a conical baffle element secured to said shaft with its apex upwardly directed and its walls disposed a short distance from the wall of the tubular shaving container, the conical element being disposed below the tubular shaving container and above the grate for the shavings and having a base diameter greater than the diameter of the outlet of the shaving container, a housing surrounding the shaving container and conical element, with an opening therein to discharge smoke.

2. A device according to claim 1, in which the shaving container is formed of bowls detachably connected together and in which the uppermost bowl is connected by its top end to the refilling hopper, the connection between the refilling hopper and the container bowl being made by projections on the refilling hopper and by recesses in the upper most container bowl.

3. A device according to claim 1, in which a grate comb running in the grate is mounted on the stirring shaft below said grate and conical element (16).

4. A device according to claim 3, in which the stirring

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shaft is provided with lateral stirring projections and consists of a plurality of parts detachably assembled including a shaft portion extending through the refilling hopper, a shaft portion extending through the shaving container and a shaft portion carrying the grate comb.

5. A device according to claim 4, in which the parts of the stirring shaft are detachably connected together by means of tenon and slot connections.

6. A device according to claim 1, in which the shaving container is detachably fastened at its bottom and on the upper part of a fixed imperforate cylinder by radial spacers which are arcuate in shape, the inner surface of each of said spacers having a shape corresponding to the peripheral shape of the shaving container and the outer surface having a shape corresponding to the shape of the cylinder, said spacers being adapted to be fixed at their outer surfaces by clips to the top end of the cylinder.

7. A device according to claim 6, in which said fixed cylinder is open at both ends and forms a lateral boundary for shavings passing out of the container and for a low

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temperature combustion zone contained therein, the grate being disposed at the bottom end of said cylinder.

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NORMAN YUDKOFF, Primary Examiner

J. SOFER, Assistant Examiner

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