

FOOD STEAMING APPARATUS

This invention relates to food steaming apparatus which includes a perforated food support through which steam is to pass during its passage through the food steaming apparatus.

Food steaming apparatus of the type comprising a
5 tubular body having an optionally removable,
perforated food support at a lower end region
thereof is well known. A divider having walls
adapted to be substantially vertically orientated
in use for maintaining different types of foods
10 separate from each other during the steaming
operation is also known.

Such food steaming apparatus can include a
plurality of vertically spaced perforated food
15 supports each of which may receive a divider and,
in a preferred form, the apparatus includes a lid
having one or more outlet perforations
therethrough. A number of different food steaming
apparatuses of this general nature have been
15 proposed heretofore.

Generally speaking, steam tends to rise substantially vertically but, when obstructed by the presence of food, the steam must make its way around the obstruction. In order to assist in the distribution of steam and assist in this movement around the obstructions caused by the food, it has been proposed to perforate the walls of any divider which may be employed on a food support in such apparatus. Perforating the walls of the divider has been found to assist in this regard.

It is the object of this invention to provide food steaming apparatus of the general type outlined in which the passage of steam through the body of the apparatus is rendered more effective for the purposes of cooking or heating food.

According to the present invention, there is provided food steaming apparatus comprising a tubular body, a lid with at least one outlet aperture therethrough, and a perforated food support, wherein the perforations through the food support are shaped to impart a transverse component to the direction of travel of steam rising substantially vertically prior to passage through such perforations and each of the perforations comprises an aperture and an adjacent deflector zone which extends out of the plane of the food support, and the apertures are all directed in the same direction relative to respective radial lines radiating from a central point to the apertures.

Preferably, a divider having perforated walls is included for dividing the space above the food support into compartments, the perforations of the divider are shaped to impart a transverse component to the direction of travel of rising steam and each perforation of the divider comprises an aperture and an adjacent deflector zone with the apertures of the divider all being directed in the same direction.

Preferably, each deflector zone is integral with the rest of the perforated food support or divider wall of which it forms part and has a free edge defining part of the periphery of its

associated aperture whereby that aperture is transverse to the plane of its associated food support or divider wall.

Preferably, each deflector zone is inclined to the plane of its associated food support or divider wall and decreases in cross-sectional size from its associated aperture towards the plane of its associated food support or divider wall.

Preferably, the deflector zones and apertures of the perforations of the divider are directed downwardly.

Preferably, the food support is of circular shape and said same direction relative to the radial lines from the central point is a radial direction, a circumferential direction or a direction angularly in between such directions.

Preferably, the tubular body is open ended and arranged to be supported on a perforated support member of dish-like configuration for location on the upper periphery of a conventional cooking pot. Alternatively, the tubular body has a flange or brackets for supporting it on the upper periphery of a pot.

The food support may be made of sheet metal. If so, the manufacturing method may involve forming each perforation of the food support by cutting the sheet metal and deforming the metal, in the vicinity of the cut on at least one side thereof, out of

the plane of the sheet to provide a deflector zone terminating in an aperture which is located in a plane substantially at right angles to the sheet.

The divider may be made of sheet metal. If so, the manufacturing method may involve forming each perforation of the divider by cutting the sheet metal and deforming the metal, in the vicinity of the cut on at least one side thereof, out of the plane of the sheet to provide a deflector zone terminating in an aperture which is located in a plane substantially at right angles to the sheet.

The provision of a lid having outlet aperture(s) at the upper end of the food steaming apparatus ensures that a continuous flow of steam passes through the apparatus in a swirling action promoted by the specially directed perforations through the food support and optional divider. The food steaming apparatus may comprise a single food support or, alternatively, a plurality of food supports supported in a single tubular body or each in its

own tubular body which is releasably supportable on a subjacent tubular body so that a plurality of vertically spaced food supports are provided in the composite apparatus.

5 In order that the invention may be more fully understood two embodiments thereof will now be described with reference to the accompanying drawings.

10 In the drawings :-

FIG. 1 is an exploded, partly sectioned, isometric view of food steaming apparatus according to the invention in association with a conventional cooking pot;

15 FIG. 2 is a detailed sectional elevation through one perforation of a wall of a divider;

FIG. 3 is a similar view through one perforation of a food support of the food steaming apparatus;

5 FIG.'s 4a, 4b and 4c are each a plan view of a food support (and in the case of Fig. 4a a divider in association therewith) indicating the general circumferential, radial, or intermediate direction in which the flow of steam is promoted;

10 FIG. 5 Illustrates alternative perforations; and,

FIG. 6 is a schematic sectional elevation of a second embodiment of the invention.

15 In the embodiment of the invention illustrated in Figs. 1 to 4a, food steaming apparatus comprises an operatively lowermost, smoothly dished, support member 1, perforated to allow steam to pass upwardly therethrough, and adapted to be supported

on the upper edge 2 of a substantially conventional cooking pot 3.

5 The support member 1 is adapted to support the lower edge 4 of a tubular body 5 of the food steaming apparatus and the tubular body 5 is adapted to support releasably, at its upper end 6, a second tubular body 7. Such second tubular body 7 may be used if required, or the lowermost body 5 may be used on its own depending upon requirements.

10 A lid 8 is provided for use on the top of the second tubular body 7, where it is used or, alternatively, on the top 6 of the first tubular body 5 where only that one is used. The lid 8 has outlet perforations 9 therethrough to provide for
15 the escape of steam from the apparatus and, preferably, a central handle 10 is provided and a surrounding shield 11 for preventing steam emitting from the holes 9 from contacting a persons hand when the handle is employed for lifting the lid.
20 Alternatively, a radially extending handle 12 could be used.

Each of the tubular bodies of the food steaming apparatus has releasably supported in the lower region thereof a food support member 13 made of sheet metal and pressed to provide a multitude of radially extending short cuts 14 with the metal 15 on one side of the cut and over a substantially triangular area, being deformed out of the plane of the support 13 to provide an upwardly inclined deflector zone 16 extending from the under-surface 17 of the food support 13 to an aperture 18 encircled by the cut edges. The aperture 18 is, accordingly, directed substantially at right angles to the plane of the support 13.

It will be understood that steam rising vertically and passing through an aperture 18 as described will have a lateral component of movement imparted thereto as indicated by the arrow 19 in Fig. 3.

In respect of the food support illustrated in Fig. 4a all the apertures are directed in the same circumferential direction so that steam passing through the perforated food support will have a spiralling or swirling action imparted thereto.

In respect of the food supports illustrated in Fig.'s 4b and 4c they are directed radially and in a direction in between radial and circumferential, respectively.

5 It is to be mentioned that an added advantage of the arrangement described above is that the outwardly deformed areas of metal 15 are elevated relative to the plane of the food support and, accordingly, food (indicated by numeral 20) cannot
10 obscure the aperture 18 to the perforation in any way. This is an advantage over the prior art wherein some apertures on which food has rested are totally blinded to the passage of steam.

The removable divider 21 is provided for
15 association with each of the food supports 13 as and when required and the walls of each divider are provided with perforations therethrough formed in exactly the same way as described with reference to Fig. 3 but with the apertures thereto directed
20 downwardly, as indicated most clearly by numeral 22 in Fig. 2. Once again the deflector zones are all formed to impart a transverse component to the

direction of flow of rising steam and, in this case, the divider having three walls, the apertures in each wall are arranged to impart such transverse component in the same circumferential direction.

5 Thus, as indicated in Fig. 4a, with the divider and food support in position, a circumferential swirling action will be imparted to steam rising through the steaming apparatus both by virtue of the arrangement of apertures in the food support as
10 well as those in the walls of the divider, when same is in use.

One alternative embodiment of the invention employs the same food supports and dividers but does away with the perforated support member. As shown in
15 Fig. 6, this is achieved by providing an inwardly directed flange 23 on the body towards its lower end. Such flange can then support the body on the upper edge of a pot 24 and can simultaneously support the food support 25 in the body.
20 Alternative to the flange, brackets could be used.

Also, the shape of the perforations may be varied widely and may even assume the form of a slot 26 as shown in Fig. 5. In this case the deflector zones 27 extend along the length of slot. These
5 deflector zones may thus form a configuration similar to the blades of a turbine.

It will be understood that numerous variations may be made to the above described embodiments of the invention without departing from the scope thereof.



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CLAIMS

1. Food steaming apparatus comprising a tubular body, a lid with at least one outlet aperture therethrough, and a perforated food support, wherein the perforations through the food support are shaped to impart a transverse component to the direction of travel of steam rising substantially vertically prior to passage through such perforations and each of the perforations comprises an aperture and an adjacent deflector zone which extends out of the plane of the food support, and the apertures are all directed in the same direction relative to respective radial lines radiating from a central point to the apertures.

2. Food steaming apparatus as claimed in claim 1, in which a divider having perforated walls is included for dividing the space above the food support into compartments, the perforations of the divider are shaped to impart a transverse component to the direction of travel of rising steam and each perforation of the divider comprises an aperture and an adjacent deflector zone with the apertures of the divider all being directed in the same direction.

3. Food steaming apparatus as claimed in claim 2, in which each deflector zone is integral with the rest of the perforated food support or divider wall of which it forms part and has a free edge defining part of the periphery of its associated aperture whereby that aperture is transverse to the plane of its associated food support or divider wall.

4. Food steaming apparatus as claimed in claim 2 or 3, in which each deflector zone is inclined to the plane of its associated food support or divider wall and decreases in



cross-sectional size from its associated aperture towards the plane of its associated food support or divider wall.

5. Food steaming apparatus as claimed in any one of claims 2 to 4, in which the deflector zones and apertures of the perforations of the divider are directed downwardly.

6. Food steaming apparatus as claimed in any one of claims 1 to 5, in which the food support is of circular shape and said same direction relative to the radial lines from the central point is a radial direction, a circumferential direction or a direction angularly in between such directions.

7. Food steaming apparatus as claimed in any one of the preceding claims, in which the tubular body is open ended and arranged to be supported on a perforated support member of dish-like configuration for location on the upper periphery of a conventional cooking pot.

8. Food steaming apparatus as claimed in any one of claims 1 to 6, in which the tubular body has a flange or brackets for supporting it on the upper periphery of a pot.

9. A method of manufacturing the food steaming apparatus as claimed in any one of claims 1 to 8, wherein the food support is made of sheet metal and the method involves forming each perforation of the food support by cutting the sheet metal and deforming the metal, in the vicinity of the cut on at least one side thereof, out of the plane of the sheet to provide a deflector zone terminating in an aperture which is located in a plane substantially at right angles to the sheet.



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10. A method of manufacturing the food steaming apparatus as claimed in any one of claims 2 to 5, wherein the divider is made of sheet metal and the method involves forming each perforation of the divider by cutting the sheet metal and deforming the metal, in the vicinity of the cut on at least one side thereof, out of the plane of the sheet to provide a deflector zone terminating in an aperture which is located in a plane substantially at right angles to the sheet.

11. Food steaming apparatus substantially as herein described and exemplified with reference to Fig. 1, Fig. 2, Fig. 3, any one of Figs. 4a to 4c, Fig. 5 or any combination thereof, or with reference to Fig. 6 of the accompanying drawings.
