



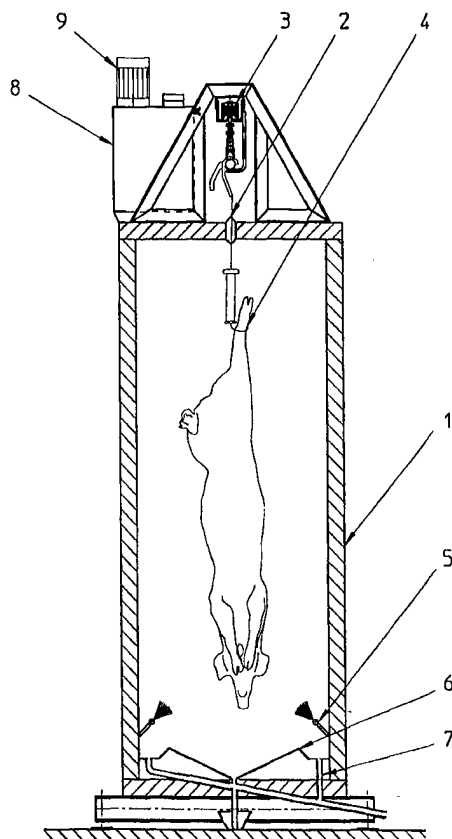
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(21) International Application Number: PCT/DK98/00036 (22) International Filing Date: 29 January 1998 (29.01.98) (30) Priority Data: 0109/97 29 January 1997 (29.01.97) DK (71) Applicant (for all designated States except US): SFK MEAT SYSTEMS A.M.B.A. [DK/DK]; Albuen 37, DK-6000 Kolding (DK). (72) Inventor; and (75) Inventor/Applicant (for US only): SMIDT, Henrik [DK/DK]; Sandnæsvej 77, DK-7100 Vejle (DK). (74) Agent: HOFMAN-BANG & BOUTARD, LEHMANN & REE A/S; Ryesgade 3, P.O. Box 367, DK-8100 Aarhus C (DK).		(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published With international search report. In English translation (filed in Danish).

(54) Title: A METHOD FOR SCALDING CARCASSES, PREFERABLY PIG CARCASSES, AND AN APPARATUS FOR CARRYING OUT THE METHOD

(57) Abstract

In a method of scalding carcasses, preferably pigs, these are scalded in that the water is atomized for condensation on the carcasses, said water having been heated in advance to the temperature necessary for the scalding. An apparatus for performing the method comprises a cabinet provided with atomizer nozzles to atomize the water directly therein.



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**A method for scalding carcasses, preferably pig carcasses,
and an apparatus for carrying out the method**

The present invention relates to a method of scalding
5 carcasses, preferably pig carcasses, with hot water and
to an apparatus comprising a cabinet for use in the per-
formance of the method.

Traditional methods of scalding carcasses use the same
10 water for scalding the carcasses, e.g. in scalding ves-
sels into which the carcasses are immersed or are recir-
culated in scalding cabinets where the carcasses are
sprayed with hot water, cf. EP 0 551 123 A1 and DE 34 05
416 A1. Both methods are undesirable seen from a veteri-
15 nary point of view, and they moreover use relatively
large amounts of water.

These drawbacks are obviated by a scalding apparatus de-
fined in DK 165 866 C, in which carcasses hanging in a
20 hind leg on a suspension conveyor are moved through a
cabinet, in which hot, moist air is circulated and sucked
off, and moisture and heat are added, and are then re-
turned to or in the cabinet. The apparatuses are rela-
tively large and complicated, as a relatively large
25 amount of circulating air is required, and this moreover
has to be distributed in the cabinet. In addition, the
apparatus is divided into an inner cabinet through which
the carcasses pass, and an outer cabinet which is ar-
ranged around the inner cabinet and serves as an air dis-
30 tribution channel, air nozzles for the distribution of
the air being provided in the walls and the bottom of the
inner cabinet. A gate having double doors is arranged in
the inlet to and the outlet from the inner cabinet. Fur-
ther, there is a section with a heat exchanger, an air
35 flow streamliner, water atomizers, a drop trap and fi-

nally a ventilator. A similar apparatus is known from DD 248 954 A1, which uses a mixture of steam, air and water.

The object of the invention is to provide a simpler and
5 more expedient manner of scalding carcasses.

It is realized by the invention that, instead, the water may be atomized directly for condensation on the carcasses, said water being heated in advance to the
10 temperature necessary for the scalding, which involves a significant improvement over the prior art, since the circulation of air and the arrangements associated with this are obviated. Atomization exclusively requires a plurality of atomizer nozzles and feeding of the water to
15 these at a suitable pressure, which may be generated with a pump. The nozzles may be arranged in an expedient pattern which ensures spreading of the mist of water around a carcass so that this is scalded in a single operation.

20 As the amount of water which condenses and drips off the carcasses is very small, it can be discharged, which only involves a very modest consumption of water in relation to the known methods. The atomized water which has not been in contact with the carcasses, is expediently re-
25 cycled and re-used, which contributes to keeping the water consumption and the associated costs at a low level. The hot return water and the overall small water requirement results in a low consumption of energy. An evident veterinary advantage is achieved in that the carcasses
30 are not scalded in the same water.

In an apparatus for use in the performance of the method, the cabinet, which is optionally composed of sections, is provided with atomizer nozzles by means of which the hot
35 water is atomized for condensation on the carcasses. The

dimensions of the cabinet may be made relatively modest, as no air distribution arrangement is needed.

5 The reduced dimensions make it easier to fit in the apparatus structurally. In particular, it is readily possible, also where the floor-to-ceiling height is low, to construct the apparatus such that the cabinet may be placed below the suspension conveyor, the ceiling of the cabinet being formed with a longitudinal slot for the
10 hooks which hang down from the suspension conveyor and from which the pigs are suspended. As a result, the suspension conveyor does not have to pass directly through the aggressive environment which prevails in the cabinet, and wear on the suspension conveyor is accordingly reduced
15 significantly.

When the apparatus is formed with at least one gutter in the bottom of the cabinet, the water condensing and dripping off the carcasses may be collected and discharged in
20 a simple manner. Arranging gutters along the side walls of the cabinet also provides an easy way of collecting the water which hits the inner side of the cabinet and thus has not been in contact with the carcasses. Thus, separation of the water is obtained, so that the part
25 which has been in contact with the carcass may be discharged, while the other water may be returned.

The invention will be described more fully below with reference to the accompanying drawing, in which:

30

fig. 1 shows a schematic cross-section through an apparatus according to the invention for use in the scalding of pig carcasses.

35 The apparatus shown in fig. 1 of the drawing comprises a heat insulated cabinet 1 having a longitudinal slot 2 in

the ceiling. The apparatus is arranged directly below a suspension conveyor 3 by means of which the pigs are advanced hanging with one leg in a hook 4, it being possible for the hooks to slide into the slot 2 in the ceiling of the cabinet. The cabinet accommodates an arrangement of high pressure water mist nozzles 5 which are directed toward the carcasses, and which produce a mist of water that fills the cabinet. The carcasses are heated in that the mist of water condenses on these. To keep the mist of water inside the cabinet, it is provided with an inlet and an outlet gate for the carcasses. The bottom of the cabinet is formed with a gutter 6 communicating with a sewer for the water which condenses and drips off the carcasses. The water which hits the inner side of the cabinet and which has thus not been in contact with the carcasses, is collected in gutters 7 at the side wall and is re-used.

The apparatus is associated with a heat exchanger 8 which heats the water to a temperature so that it hits the carcasses with a temperature of about 62 degrees centigrade, just as there is a pump 9 belonging to the apparatus for the supply of the water at the necessary pressure to the nozzles. A water hydraulic pump is preferably used.

With the compact structure permitted by the invention it is easier to fit the apparatus into existing buildings, and this is additionally facilitated by the fact that the cabinet is not tied to a rectangular ground plan. For example, the cabinet may be given a U-shape or be constructed with an almost square ground plan in which the suspension conveyor has a winding course.

Patent Claims:

1. A method of scalding carcasses, preferably in a cabinet with hot water which has been heated in advance to the temperature necessary for the scalding, characterized in that the water is atomized for condensing on the carcasses.
2. A method according to claim 1, characterized in that the atomized water which condenses and drips off the carcass is discharged.
3. A method according to claim 1 or 2, characterized in that the atomized water which has not been in contact with the carcasses is recycled and re-used.
4. An apparatus for use in the performance of the method according to claim 1 and comprising a cabinet, which may optionally be composed of cabinet sections in which the carcasses are scalded, characterized in that the cabinet is provided with atomizer nozzles (5) to atomize the hot water directly therein.
5. An apparatus according to claim 4, characterized in that the bottom of the cabinet is formed with at least one gutter (6) for the water which condenses and drips off the carcasses.
6. An apparatus according to claim 4 or 5, characterized in that gutters (7) are formed along the side walls of the cabinet for the water which hits the inner side of the cabinet and has thus not been in contact with the carcasses.

7. An apparatus according to claim 2, wherein the carcasses are moved through the cabinet hanging in hooks from a suspension conveyor, characterized in that the cabinet is arranged below the suspension conveyor, and that the ceiling of the cabinet is formed with a slot through which the hooks hang down in the cabinet.

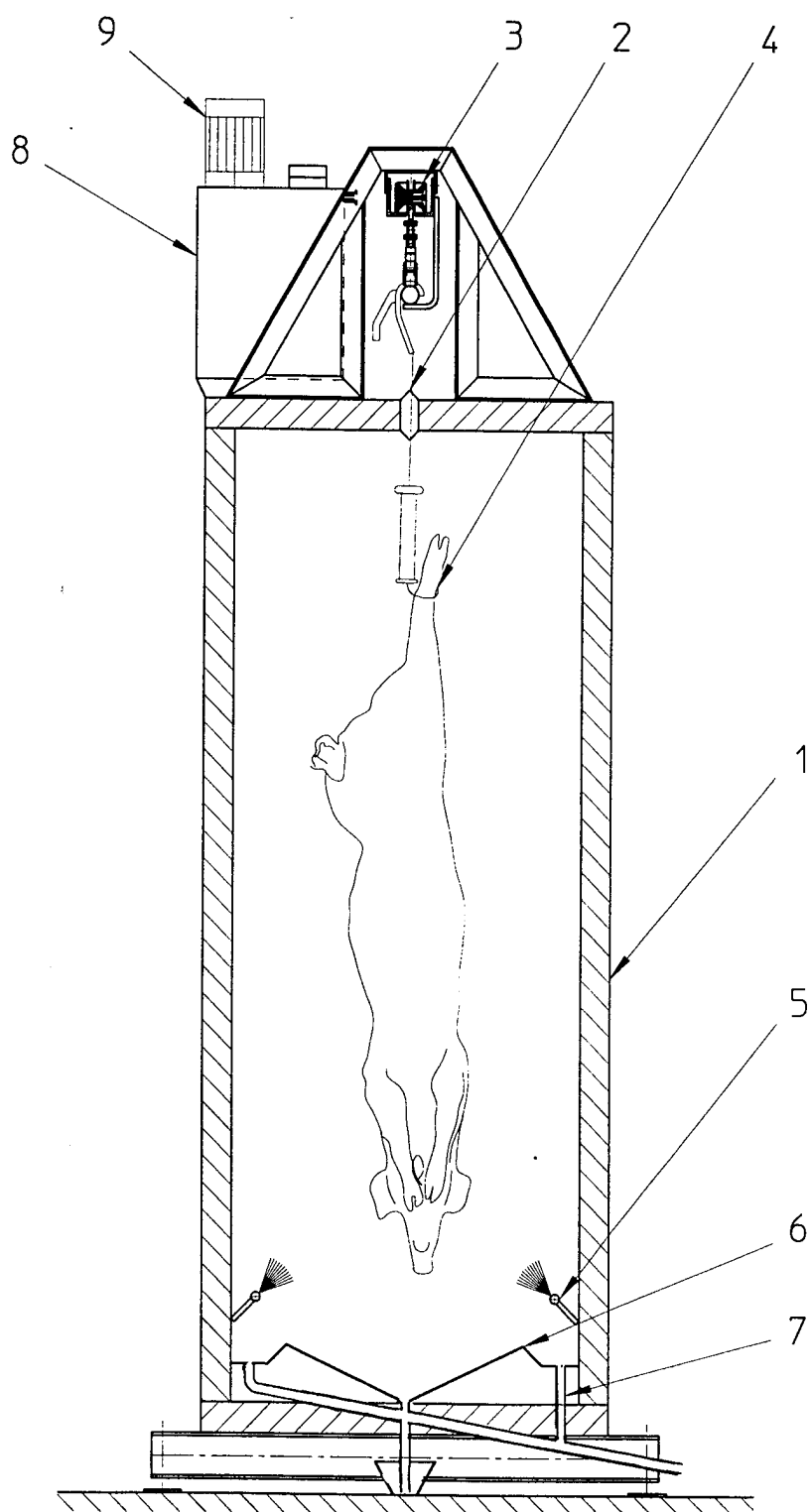


FIG. 1

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 98/00036

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A22B 5/08

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)

IPC6: A22B

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

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DK 165866 B (SLAGTERIERNES FORSKNING SINSTITUT), 1 February 1993 (01.02.93), page 8 --	1-5
X	Derwent's abstract, No 92-339135/41, week 9241, ABSTRACT OF SU, 1692483 (BELO MEAT DAIRY IND CONS TECHN INST), 18 April 1989 (18.04.89) --	1
X	US 1146589 A (G.C. MORRISON), 13 July 1915 (13.07.15), page 1, line 17 - line 27 --	1,2,4
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2783496 A (B.L. THOMAS), 5 March 1957 (05.03.57), column 4, line 40 - line 43 --	1
X	US 3631563 A (BRYAN T. SNOWDEN), 1 April 1972 (01.04.72), column 10, line 50 - line 69 --	1
X	US 3657768 A (SNOWDEN), 25 April 1972 (25.04.72), column 5, line 64 - line 75 -- -----	1,2,7

INTERNATIONAL SEARCH REPORT

Information on patent family members

02/04/98

International application No.

PCT/DK 98/00036

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US	1146589	A	13/07/15	NONE	
US	1848596	A	08/03/32	NONE	
US	2783496	A	05/03/57	NONE	
US	3631563	A	01/04/72	CA 945317 A DE 2007181 A FR 2052448 A GB 1303878 A GB 1303879 A US 3748691 A	16/04/74 23/12/70 09/04/71 24/01/73 24/01/73 31/07/73
US	3657768	A	25/04/72	NONE	