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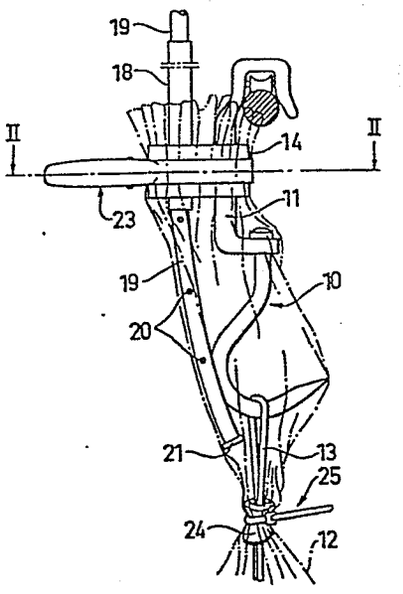
(54) Method and device for vacuum packing suspended carcase prior to cold storage.

(57) For hygienic packing and subsequent short freezing time of suspended carcases, according to the invention vacuum packing of the carcases is proposed. A bag (12) is threaded from below over the suspended carcase and over an air evacuation hose (19), which is suspended adjacent the carcase and movable in a rubber gasket (14) attached about a butcher's hook (10). The bag (12) is closed sealingly about the rubber gasket (14) by means of a spring-loaded forceps (23), so that the hose (19) is capable to evacuate substantially all air while being drawn up through the bag (12). When the lower end of the hose (19) is located a short distance beneath the rubber gasket (14), the bag (12) again is closed beneath the lower end of the hose (19), whereafter the hose (19) and rubber gasket (14) can be released from the suspended completed packing.

FIG.1



EP 0 117 247 A1

Method and device for vacuum packing suspended carcase prior to cold storage

This invention relates to a method and a device for vacuum packing a suspended carcase prior to its cold storage.

Meat is cold stored at present both in the form of cut-up goods and in the form of carcases, preferably of beef and pork, which are whole or divided, and in the latter case usually into two or four parts. The cut-up goods substantially exclusively are packed in protective film material and placed in cardboard boxes, while the carcases are cold stored unprotected, as it is the case a.o. in Sweden. This method of cold storing the carcases unprotected in cold storage rooms for frozen products is inappropriate for hygienic as well as for quality reasons. Abroad, especially in countries which are members of the EC, the carcases are protected in that the carcase subsequent to freezing is packed in a plastic bag and possibly also covered with cotton fabric, so-called stockinet. This material provides protection for the sensitive plastic bag and facilitates handling when the carcases are stacked upon each other, because the plastic material is very slippery and has low friction. It is now a hygienic requirement from the authorities in EC-countries that carcases must be packed at cold storage.

This method of packing carcases as described above and other known systems have disadvantages and can be improved in respect of both goods quality and hygienic protection.

Carcases divided into two or four parts, which is the most usual type of division, due to the configuration of the abdominal cavity have partially concave shape. When they are packed in the way described above, a cavity is formed especially beneath said part, but

also beneath other concave parts of the carcase which are covered by the packing material. The portions of this material which as described are not supported by the goods from within, are exposed to damage at the handling and can break. The film, consequently, cannot act as a protection.

The present invention has the object to provide a method and a device of the kind described above in the introductory portion, by which the disadvantages of the prior art are eliminated.

This object is achieved in that the invention has been given the characterizing features defined in the attached claims.

At the packing of carcases according to the present invention vacuum packing is applied. A substantially stronger and more expedient packing is hereby obtained, as the air is evacuated from a bag enclosing the goods, and the bag thereafter is closed so as to be completely sealed. At vacuum packing the film material encloses the entire goods and penetrates into all cavities of the carcase. This method implies that a very thin film can be used, which yields low costs. Packing prior to the freezing of the goods is to be preferred for quality reasons. Due to the fact that the film encloses tightly adjacent the meat surfaces, the freezing time is substantially the same as at the freezing of unpacked goods. This is of great importance from a quality aspect. A carcase suspended freely in enclosing material requires a much longer freezing time owing to the insulating properties of the air. This implies substantial disadvantages in respect of quality and freezing costs. The freezing and cold storage of carcases vacuum packed in gas-tight bags yield a considerable improvement of the quality of the goods compared to the method used at present with cold storage of carcases. The method, besides,

results in substantial economic advantages, because it prevents completely weight loss of the goods during freezing and cold storage. It is known by experience that the weight loss of the goods is at least 1 per cent of the goods weight. Packing with sealing film prevents the meat surfaces from drying-out, which is initiated especially at the freezing of unpacked goods. The freezing process takes place normally during a period of 48 hours in a temperature of -40°C and with high air rate.

The primary reason of packing carcases at cold storage is to protect the goods against getting soiled. The packing, therefore, should be carried out as soon as possible after the goods are received in the cold--store and before they are further handled and transported. This is possible when the method described is applied.

Vacuum packing delays substantially fat from becoming rancid, because the oxygen of the air is evacuated from the packing. Cold storage of fatty products, for example pork, therefore, can cover a longer period when the goods are vacuum packed. The improvements from a quality aspect are equal to those described in SE-C-196843 relating to "Method of preventing fatty fish species and shellfish from becoming rancid and drying-out".

The advantages of vacuum packing are well-known at the packing of provisions, but heretofore no practical system has been available for applying it to large carcases with partial weights of up to 100 kg. The present invention can be applied in combination with conventional methods of handling, freezing and cold storage of carcases and renders it possible that vacuum packeting can be carried out on parts, which are freely suspended on hooks running on a transport track or in a loop attached in the meat and fastened

on the hook. This method involves little handling and is suitable from a labour safety aspect, because lifting operations are avoided.
The invention is described in greater detail in the following, with reference to the accompanying drawing, in which Fig. 1 is a lateral view of a device for packing suspended carcases, and Fig. 2 is a view along the line II-II in Fig. 1 partially by way of section and on an enlarged scale.

The carcases (not shown) arrive at the cold-store suspended on rolling or sliding hooks 10 attached on transport tracks of a vehicle. Immediately after the transfer to transport tracks of the cold store, the carcases shall be packed in order to limit spoiling of the carcase surfaces. The packing is carried out with a bag 12 of a material, which is extremely impervious to gases, of a suitable thickbess and sufficient strength, for example HD or LD polyethylene. The bag is threaded from below on the carcase freely suspended from the hook 10. As an alternative, the carcase can be connected at a loop 13, for example of plastic string, which is attached on the hook 10. The film material is manually folded together about the carrying upper vertical hook portion 11, which in advance has been provided with a detachable rubber gasket 14.
The rubber gasket 14, seen in cross-section according to Fig. 2, comprises a rectangular recess 15 with a constricted opening slit 16 for receiving the upper hook portion 11, and a circular recess 17 for receiving permanently a tubular sleeve 18, which in its turn receives movably an air hose 19. Prior to the packing, the air hose 19 is suspended freely along the carcase within the bag 12 (not shown). About the folded film material at the upper hook portion 11, sealing against the rubber gasket is effected by a spring-loaded forceps 23, which entirely encloses film and rubber

gasket. At the demand of better sealing, a thick porous tape 22 (Fig. 2) can be applied about the outer surface of the rubber gasket 14 abutting the film material. The hose 19 movable in the sleeve 18 is connected to a vacuum pump (not shown) of a capacity suitable for the purpose, and the free portion of the hose 19 opens into the lower portion of the bag 12.

About the carcase portion called knuckle, into which the hook is stuck, a tape of porous material (not shown) of about 4 cm width and 1 cm thickness can be applied before the bag is threaded over the carcase. The tape is required for the final sealing closure. Alternatively, the tape 24 is applied about the string 13 between carcase and hook as shown in Fig. 1. All of the air can now be evacuated from the bag 12 through the hose 19, in that the hose is drawn in the direction out of the bag 12. In order to facilitate the evacuation, the hose is provided with a plurality of apertures 20, which are sealed by the tubular sleeve 18 as the hose is being drawn out of the bag. The hose end is provided with a stop member 21 which engages with the hose sleeve when the hose is completely drawn out. The sleeve 18 can be provided with a check valve in the portion located outside the bag (not shown). When all air has been evacuated from the bag 12, the bag is closed. This is carried out by means of a self-locking draw-band 25 or corresponding closure member, for example a metal clip, in that the packing film is pressed against the porous sealing, which had been applied about the knuckle of the carcase or about the string 13. Irregularities in the form of folds in the bag material are levelled by the pressure against the porous support, so that reliable sealing is obtained.

After completed sealing the air evacuation is closed and excess film on the packing is cut off. The carcase is now ready for freezing.

The sealing primarily is to be made available during the freezing process, with the sealing capacity required at minimum for satisfactorily maintaining vacuum during the time of the freezing process.
When the carcases are stored suspended in the cold store, no further step is required. When, however, the carcases are stored in lying state, it is necessary to provide the carcases with a suitable anti-skid protection in the form of stockinet or the like.

Claims

1. A method of vacuum packing a suspended carcase prior to cold storage, c h a r a c t e r i z e d i n that a bag (12) of a tight material is threaded from below over the suspended carcase and over an air evacuation hose (19) suspending adjacent the carcase, that the opening of the bag (12) is closed about the hose (19) and about a suspension member (10) for the carcase above the upper end thereof, that the hose (19) actively is coupled to a vacuum pump, that the hose (19) during the avacuation of air is drawn up through the bag (12) such a distance that its free lower end is located between the closure and the upper end of the carcase, and that the bag (12) again is closed sealingly slightly beneath the lower end of the hose (19), so that the hose and said firstmentioned closure can be released from the suspended packing thus obtained.

2. A device for carrying out the method according to claim 1, c h a r a c t e r i z e d i n that it comprises a sealing member (14) attached about a suspension member (10), for example a butcher's hook, for the carcase, an air evacuation hose (19) movable in the longitudinal direction in the sealing member (14) and intended to be coupled with a vacuum pump, a detachable clamping member (23) for sealingly clamping a bag casing (12) about the sealing member (14), and a closure member (25) for permanently sealingly clamping the bag casing (12) about an upper portion of the carcase or about a suspension member (13) for the carcase connected to the suspension member (10).

3. A device as defined in claim 2, c h a r a c t - - r i z e d i n that the sealing member (14) has the form of a cylinder with a first axial passage (15) for detachably receiving a neck portion (11) of

the suspension member (10) via a constricted slit (16) open to the outside of the sealing member, and with a second axial passage (17) for receiving the air evacuation hose (19).

4. A device as defined in claim 3, c h a r a c t e r i z e d i n that the wall of the air evacuation hose (19) is perforated with apertures (20) in the hose portion to be enclosed in the bag (12), and in the second axial passage (17) of the sealing member (14) a sliding sleeve (18) for the air evacuation hose (19) is received, which sliding sleeve (18) has such a length, that the apertures (20) are sealed by the sliding sleeve when the hose (19) is being drawn out of the bag (12).

FIG.1

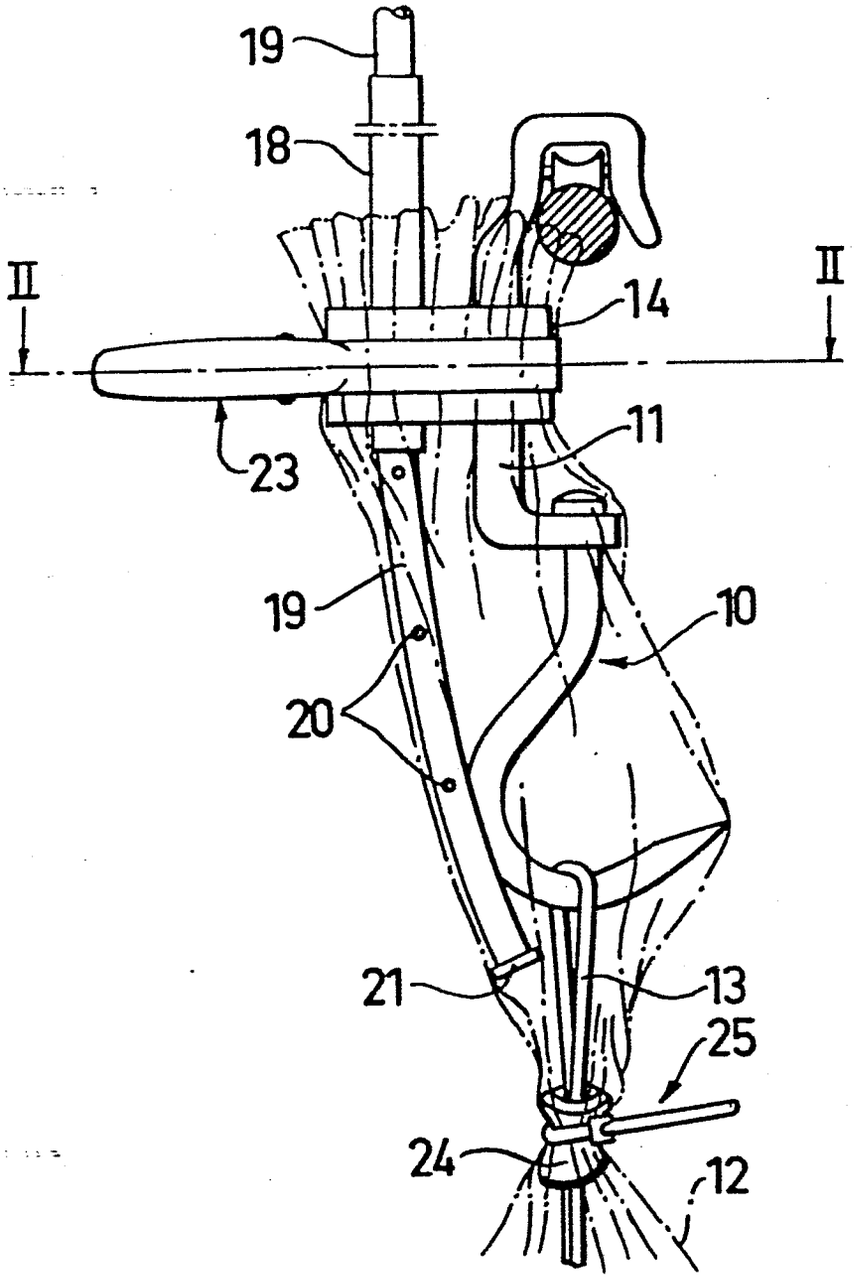
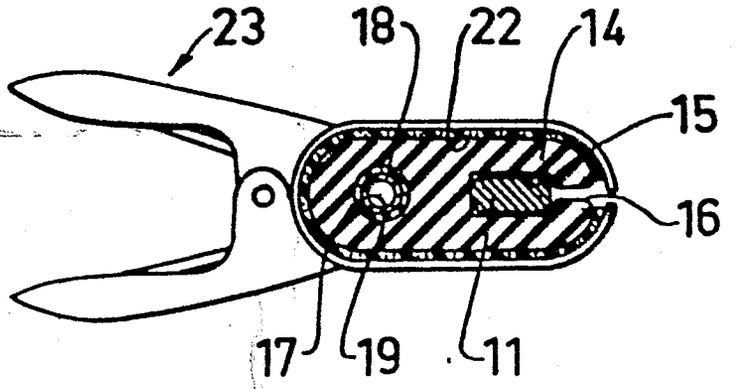


FIG.2



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EUROPEAN SEARCH REPORT

0117247
Application number

EP 84 85 0056

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
A	US-A-3 983 258 (WEAVER) * Column 2, lines 11-16; figure 1 * ---	1	B 65 B 31/06
A	US-A-3 511 020 (KRAFT) * Whole document * -----	4	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

B 65 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	14-05-1984	CLAEYS H.C.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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