Steam Pot For Restaurant's Conveyor Belt

1. Brief description of the drawing

Fig. 1 called Section shows all the parts that make up the invention, starting from the block of the standard size conveyor belt (Fig. 1 Number 9) to the water container (Fig. 1 Number 2). This view is particularly important because it allows us to recognize all the individual parts of the Steam Pot. Starting from the water container (Fig. 1 Number 2) with the heater (Fig. 1 Number 1) inside to end up with the feed bar (Fig 1. Number 7) applied to the belt (Fig. 1 Number 9).

Fig. 1.1 Open, is the same design as Fig. 1, but with the difference of representing the cover opening and exposing a plastic plate, to better understand its peculiarities.

Fig. 2, represents starting from left to right, the individual level that makes up the final part of the invention and exactly, the first image on the left, represents the perforated grid that allows the passage of heat and humidity inside the container.

Immediately to the right, we see the same grid, but with the image of the plate placed on it, to better understand its dimensions with respect to the Steam Pot, the penultimate image represents the closed container, and finally the same opened Steam Pot.

All images naturally represent the view of the various phases of the Steam Pot seen from above Fig. 3 the side view of Steam Pot, where it is clearly seen how the cover is opened in allowing air to pass through it during movement at the plastic plate (Fig 3. Number 3).

Turning clockwise, we find all the parts that make up the invention. Similar to Fig. 1, Fig 3.1 represents the Steam Pot with an opened cover.

Fig. 4, which is the front view, clearly shows what the Steam Pot looks like when it is closed and how it will appear to end-users.

2. Detailed description of the preferred embodiments

As illustrated in Fig. 1, it is precisely the most important part of the invention, where we can recognize every single part that best describes the invention – Steam Pot. The meaning of the individual numbers that make up the project will be described below.

1. Water heater
2. Water
3. Plastic plate with handle
4. Double glass for steam
5. Holes outlets for steam
6. Protection
7. Extension for electricity – Positive (“+”) - Power Bar 7
8. Conveyor belt – Negative (“–”)
9. Normal conveyor belt block
10. Base with holes
11. Electric rail
12. Coverage glass
13. Coverage open
14. Base for Steam Pot – water container

3. Novelty

The invention relates to the revolutionary idea for a hot container that can be used on a restaurant conveyor belt concept, allowing the sale of any types of cuisine in the world as well as for existing conveyor belt concept restaurants without having to replace the whole existing belt, but simply by updating it.

The aforesaid container 14 allows the dish to stay on belt minimum 45 to 60 minutes, without altering the original characteristics or taste of the dish.

The original characteristics and taste of the dish are safeguarded in the presence of well controlled system of the temperature and humidity.

Temperature factor turns out to play an important role for the choice of this solution, as not everyone knows that once food is being exposed to temperatures below 60°C, it triggers a process of bacterial formation, while exposed above the 70°C, substantially it dehydrates the dish slowly, therefore, it is necessary to maintain the temperature within the range between 60°C to 70°C.

The advantages, but not limited to, of this invention are in its simplicity and revolutionary that allows any type of cuisine in the world to be sold in the mode of a conveyor belt.

It should be noted that the conveyor belt has seen its appearance almost exclusively in only sushi restaurants and we associate this type of concept to only cold or room temperature Japanese cuisine.

Two main reasons, but not limited to, to this invention: Firstly, business costs savings in terms of manpower, logistics as well as general operations. Secondly, it is truly the first in the world to have such unique and distinctive features that allows a conveyor belt to serve hot and cold dishes concurrently and any type of cuisines, on it.

It is important to note that this invention can be used concurrently with any cold dishes desired. Meaning to say, all existing conveyor belts business owners need not spend high costs to incorporate, update or upgrade this invention to their business concept.

This simple yet sophisticated invention brings with it a few challenges, namely: temperature, humidity measure, while power supply to each individual Steam Pot is the biggest challenge of all. The use of water at high temperatures and electricity are also potential source of dangers to end-users.

There were few cases in the past whereby restaurants owners tried using gel canister or candles to put inside an exposed container with food on plates to be placed on a conveyor belt for serving hot dishes. All these were unsafe practises as it comes with an open flame, high temperature containers and exposing hot water to the diners.

There was no proper thought through when introducing hot dishes on the conveyor, usage of battery operated containers proved to be unstable too. This precisely underline, our invention in solving one of the major problems - power supply, which cascade most problems related to the safety of a heat generating conveyor belt.

Safety, being one of the most important considerations to the end-users spurs inspirations to the design choices of the invention. The risk of contact burns or electric shock has been completely eliminated using this invention.

Efforts on maintenance and implementation such as problems relating to a possible short circuit to section of the Steam Pot or the conveyor belt, which may cause a hike in maintenance costs have all been addressed promptly.

4. Industrial applicability.

The project has high applicability in any Food & Beverages sector, but it could also be used in other sectors or industry where the needs can be equivalent, such as transporting something in temperature on a belt, the versatility of this invention has huge potentials.

In addition, this is a fast moving food consumption as well as safety towards end-users with any possible dangers or problems that have been widely and previously described. Another important solution is the marketing of the product, as the features are user friendly as well as versatile, to end-user as well as business owners, the sale of this invention will not pose a problem at all.

The solution found allows any business owners or entrepreneurs to do an updating for their existing conveyor belt, around the world, or wanting to start a business on this. It has the abilities to change the core business by not only selling cold but both hot and cold dishes at the same time. The best part of this change is the business owners need not to invest any huge amount of budgets in replacing existing conveyor belts.

This element of industrialization is very important because with this invention if any business owner who wishes to incorporate his existing business to this, he/she need to buy only the Steam Pot – refer to point 14 and power line – refer to point 7 to have an efficient, effective and economic system that will allow you to sell any type of desired cuisine, in the world, on the same conveyor belt. Imagine both hot and cold simultaneously on one conveyor belt, one next to the other, without altering the setting of the dining room.

We understand the enormous potentials of this invention! From now on, one will be able to enjoy all types of cuisine from all over the world, on a conveyor belt! This Food & Beverages revolution will yet another time create all new form of needs and wants in the food sector. It will also help on the saving of manpower and only marginal cost for the existing business owners who already have a restaurant with conveyor belt concept for incorporating Steam Pot into their existing conveyor belt.

Due to the invention coupled with advanced technology, the low engineering cost, simplicity of assembly and functionalities (not limiting to all these advantages) of the device all these make Steam Pot - the perfect invention of this era for the food sector. This product will change what we associate mentally today to the conveyor belt. Today, conveyor belt equates to only serving sushi. Tomorrow, it shall be any type of cuisine!

Companies with existing conveyor belt concept will find it easy to incorporate Steam Pot into the current concept with a negligible cost as compared to a manufacture a complete new conveyor belt. Summary of Steam Pot:

• Maintenance of operating temperatures;
• Maintenance of operating humidity;
• Does not allow liquid to be drained onto the belt;
• Elimination of condensation humidity from the cover;
• Does not allow belt to stop during to a short circuit;
• A system to control amount of liquid inside Steam Pot;
• A technical solution that allows you to feed multiple devices on the belt;
• Practical, reusable and attractive design;
• Affordable system with easy options for upgrading to newer version, in future;
• The possibility to have an update of the existing conveyor belt at a low cost;
• Reduce problems relating to system maintenance;
• Simplicity of construction with existing technologies without resorting to artificial and imaginative solutions;
• Simplicity of maintenance during ordinary day-to-day business operations.

All these problems have been thoroughly thought through, trial and error tested and solved. All these are to the credits to the inventor's idea of having Steam Pot on a conveyor belt.

The description of the individual part that make up the Steam Pot, to better understand how from an industrial point of view related to the production of the Steam Pot itself.

This is simple enough to achieve with low cost manufacturing and maintenance costs due to the correct methods of applying the right technology and elements, which are already available on the market.

Description of the elements that make up the invention

Extension for electricity – Positive (“+”) - Power Bar

The power bar is nothing more than an electric line that carries the positive ("+") inside (Fig 1. Number 7), appropriately protected by any possible accidental contact and it is being positioned in some parts of the conveyor belt (Fig 1. Number 9), where it is to provide high safety level. It will be better explained in following.

The positioning of the feed bar will depend on the intrinsic characteristics of the layout of the restaurant layout, positioning of the kitchen, length of the line and the interval between two feed bars.

The power bar can also be equipped with both the positive ("+") and negative ("-") current, but will always carry only the positive current on new system, for the Steam Pot, that have the basis of the steel belt (Fig 1. Number 8). The power bar can also be double in particular cases, in which it can carry positive ("+") and negative ("-"), which in this situation the negative will be positioned above the positive, when introducing Steam Pot onto an existing conveyor belt.

Base for Steam Pot – water container

The water container basically composed of some main elements:

- The base of the Steam Pot (Fig 1. Number 14);
- Water tank (Fig 1. Number 2);
- Heating element (Fig. 1. Number 1);
- Exchange grid between the wet base and plate (Fig 1. Number 10);
- Support for the positioning of the single plate (Fig 1. Number 10);
- Cover Steam Pot (Fig. 1. Number 4);
- Supply bar (Fig. 1. Number 7);
- Separating the base to the conveyor belt, to prevent accidental electric shock to end-user (Fig 1. Number 9);

Steam Pot Operation

The power supply of each Steam Pot will be ensured by the feed bar (Fig 1. Number 7) applied to the edge of the belt, where the electrical contact and current will be transmitted from the supply bar to the water container.

Each Steam Pot consists of two contact points of the two electric poles to close the electric circuit. In the case of newly constructed conveyor belt or existing conveyor belts, the positive pole will be guaranteed by a side strip as shown in Fig 1 Number 7, while the negative pole will be directly taken from the base of each Steam Pot (Fig. 1 Number 8), previously negatively charged with the belt.

The power bar will be positioned at regular intervals and will guarantee the supply of current necessary to operate and supply the number of calculated Steam Pot.

Length of the conveyor belt and numbers of Steam Pots to be used will be calculated according to the type and layout of the restaurant.

It is useful to highlight, as not all the containers present on the conveyor belt will be fixed at the same time for few reasons:

• Reduce contact risk;

• Reduce the quantity of amperes necessary for the feeding of all the Steam Pot, especially during low operating hours;

• Need not to continuously increase temperature of Steam Pot;

• Cost savings on using a Steam Pot to control the single instantaneous operating temperature;

• To fully and efficiently maintain presence of operating temperatures

• Temperature loss of the Steam Pot desired, as it benefits the safety of the end-users without compromising the quality of the food, its operation or the invention.

• Time needed to heat one degree the water is lower when less Steam Pot is being used during low operating hours and this allows business owners to stay in the desired range for longer duration, without increasing costs and risks.

• Cost savings on energy and start-up time, precisely because of the solutions described as the water is already filled at operating temperature, it will not be necessary to bring it to temperature during operation hours.

Water Container Operation

The system, inside is equipped with a suitably sized liquid heater (Fig 1. Number 1), whereby heating water inside the tank by contact. This will ensure that it brings the temperature inside the tank to the design interval between the desired temperature 60°C to 70°C.

Steam will pass through the separation grid (Fig 2. Number 10) between the lower and upper level, will allow the food temperature to be kept within the desired approved range.

The water inside the tank cannot be removed or poured by any individual, as it is locked inside the conveyor belt (Fig 1. Number 9) and mechanically safeguarded by two side edges (in many cases already existing) and can only be removed by trained personnel.

Therefore, to further assure the safety of this invention, diners can only remove the plastic plate (Fig 1. Number 3) on the Steam Pot with nothing else.

Thanks to the operating temperatures and small technical precautions on the type of plate chosen to be used, the plate will be using plastic material that will not cause burns to those who comes in contact with it directly. This can also be equipped with an appropriate handle (Fig. 1 Number 3).

Take note, even though when a dish is being placed on the Steam Pot, from the kitchen it will be less hot than the actual food ready to be served. However, with the effects of heating inside the Steam Pot, it exercises the heating of the dish much faster as each Steam Pot comes in a singular dome.

Furthermore, the food will be able to maintain the temperature due to the controlled system of the water tank.

This is to assure and reassure the temperature of the plate will never be a problem because even after a long period of time the temperature of the food will be not compromised too much while the material used for the handle in Fig. 3 Number 3 will never pose any scalding dangers to the diners.

In the Steam Pot, you will see the dc. The function of it is to reduce the ampere load on the power supply to eliminate any unstable power supply to the Steam Pot.

The blocking of the heated Steam Pot to the conveyor belt is particularly important. As it was designed in such a way that it successfully eliminates the flow of water condensation onto the conveyor belt, it also at the same time eliminates the problem of short-circuit. However, the main elimination is the possibility of scalding an end-user.

A factor that needs to be fine tuned is relating to the condensation of the container. With the elimination of the condensation to fogging up the Steam Pot, it will give a clear view of the dish inside the Steam Pot.

This is guaranteed and thanks to the natural process of movement of the conveyor belt, holes are drilled on the cover (Fig 1. Number 4), which allows internal ventilation for keeping the Steam Pot as clear as possible from fogging due to condensation.

5. Inventive step

The invention was born simply from the need to find a solution for the sale of hot food on a conveyor belt, which has to be safe and yet not expensive to business owners or haphazard like all the previous solutions on the market.

The logic on the realization of the Steam Pot is already appropriately known by the culture on food preservation, in fact Steam Pot works like any display of hot food, only that this has been miniaturized for every single dish.

This invention is made possible, thanks to the idea of the simultaneous use of the power bar (Fig 1. Number 7), which made it possible to secure the power supply.

Subsequently, all the technical aspects were studied and applied to make Steam Pot efficient and effective, the combination of all these elements made possible the birth of this invention!

The power bar itself has separated the two polarities making sure the transport of electricity on the whole.

The power bar system takes its logic from the system normally used in electrically powered subways and precisely from the use of the third track, which in this case will provide power to the Steam Pot.

In railway technologies, the power bar, which takes the name of third track, in any case there is also a further "fourth track" for the purpose of protection of emergencies caused by the failure of the third track.

In our Steam Pot's invention, the fourth track will transport the negative pole (Fig 1. Number 8) as a backup support if the third track is not functioning properly.

It is considered useful to highlight this unique point as this element is particularly important because separating the positive (Fig 1. Number 7) from the negative (Fig 1. Number 8) with a difference in height, allows you to have liquids on the conveyor belt that will not caused short circuit. Also, if one accidentally comes in contact with the negative pole, this will never cause the electric shock too. The power bar, which carries the positive pole 7, is appropriately protected in order to avoid any contact dangers. All these safety precautions have been made possible when designing the Steam Pot.

The range of operating temperatures is quite a wide range of about 10°C, which is surprising an advantage that allows us to use the power bar to provide that heat input, not for the entire length of the conveyor belt.

• Each individual Steam Pot travels on the belt for a calculated time that allows the food to lose just over 1°C

• The power bar will provide a calculated temperature of about 10°C at calculated intervals, with a negative balance between the one lost and the one delivered, so that the internal temperature changes from the maximum designed to the minimum over two hours. This is because the negative balance will be equal to 10°c degrees only at the end of the two hours and precisely when the Steam Pot needs to be topped up with water or replaced.

• It was chosen to keep the dish between 45 to 60 minutes on the belt because this is normally the maximum time a dish stays on it in sushi restaurants before being replaced.

The market

All the technology applied and materials used are effectively cost effective as every parts of the Steam Pot are easily available on the market, therefore, making it easy to materialise and unify.

Steam Pot has been designed as an element that does not require extraordinary maintenance (breakage of components or their failure), because in case of such, the piece will be completely replaced with a new one, as it will be more cost effective.

This type of solution eliminates the problems related to the equipment maintenance or sale of small spare parts by the supplier. Replacing a complete new set will be the best choice.

For day-to-day operations or maintenance, Steam Pot needs to be refilled with water and daily cleaning. The technological aspects will hardly be addressed unless needed to upgrade to a newer version, therefore, makes it easier for any business owners to incorporate their existing conveyor belt with Steam Pot.

The technologies used are substantially equal to that of a commonly used low-cost iron than using special industrial equipment, for its manufacturing. The invention manages to maintain a low and affordable manufacturing cost of the Steam Pot.

With low manufacturing cost, high versatility and widely acceptance throughout the world, the potentials of Steam Pot will be immensely great.

Its reference market will be for new concept restaurants to use Steam Pot and offer more cuisines on a conveyor belt serving hot and cold dishes. This move will open up and create more and more needs and wants in the Food & Beverages sector. The potentials of Asia's markets where conveyor belts are widely used and accepted in a lot of restaurants will be endless.

However, not limiting to only Asia's markets, in countries whereby anyone who has a sushi restaurant or wishes to start one, will only need a small amount of investment to completely change their business concept by selling hot and cold dishes on a conveyor belt. This invention gives many the possibility and hope to use a conveyor belt on any cuisine they like to offer in their restaurant, in their home ground!

It will forever change the way we see a conveyor belt in a restaurant. From tomorrow, this will not be just a normal Japanese sushi restaurant but any restaurant with any cuisine having conveyor belts. It will provide solutions for many business owners' woes of business overheads cost, day-to-day operations, labor crunches as well as equipment maintenance costs.