



HU000031754T2

(19) **HU**(11) Lajstromszám: **E 031 754**(13) **T2****MAGYARORSZÁG****Szellemi Tulajdon Nemzeti Hivatala**

EURÓPAI SZABADALOM SZÖVEGÉNEK FORDÍTÁSA

(21) Magyar ügyszám: **E 13 712751**(22) A bejelentés napja: **2013. 03. 25.**(51) Int. Cl.: **A47F 1/06** (2006.01)**A47F 10/06** (2006.01)**B65G 31/00** (2006.01)

(96) Az európai bejelentés bejelentési száma:

EP 20130712751

(97) Az európai bejelentés közzétételi adatai:

EP 2836098 A1 **2013. 10. 17.**

(86) A nemzetközi (PCT) bejelentési szám:

PCT/EP 13/056249

(97) Az európai szabadalom megadásának meghirdetési adatai:

EP 2836098 B1 **2016. 11. 30.**

(87) A nemzetközi közzétételi szám:

WO 13152945

(30) Elsőbbségi adatok:

102012103150**2012. 04. 12.****DE**

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Éttermi rendszer

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

RESTAURANT SYSTEMDESCRIPTIONTECHNICAL FIELD

The invention relates to a restaurant system (also: catering system) according to the preamble of claim 1.

TECHNICAL BACKGROUND

Such a restaurant system comprises at least one working area for cooking and/or preparing food and/or beverages and at least one guest area, wherein the working area and the guest area are connected via a transport system for food and/or beverages, and wherein the transport system is designed to transport food and/or beverages from the working area to the guest area. Such a restaurant system is known from EP 1 833 331 B1. In a restaurant system of such kind, it is further provided that the transport system has a first transport section with a propulsion and/or transport device, by means of which kinetic and/or potential energy is transferred to the food and/or beverages to be transported, and a second transport section subsequent to the first the first transport section, in at least portions which transport of the food and/or beverages is effected by the kinetic and/or potential energy transmitted in the first transport section.

In this context, the term restaurant system is understood to refer not only to systems for restaurants in the narrow sense, but generally to systems for all types of catering, including for example, mobile or fixed food stalls, beer gardens, fast food restaurants and drive-in restaurants as well as restaurants and pubs. A restaurant system is further understood to refer to a mobile serving trolley, which for example can be pushed from table to table in restaurants or children's hotels for example to deliver the food and/or beverages in an eye-catching way e.g., loop the loop to arrive on or at the respective table. In general, mobile serving or snack systems, e.g., systems designed as trailers or self-propelled apparatuses with corresponding attachment for example, are also understood to be restaurant systems within the meaning of the invention.

The working area is, for example, an area that comprises a kitchen and/or bar. It may be a snack stand for example, or also a simple place for preparing or cooking the food and/or beverages. The working area may also simply be the area in which food and/or beverages are placed in or on the transport system, as may be the case with the serving trolley described above, for example.

The guest area is the area where the guests of the restaurant, snack stand, beer garden and so on are accommodated. Usually, tables and chairs are provided here. However, the facility may only offer standing room for guest, or it may be a drive-in area, where guests receive food and/or beverages delivered to their cars. Or the guest area is also understood to be a simple handover area for food and/or beverages in a food stall, where guests receive their food and/or beverages.

In the restaurant system known from EP 1 833 331 B1 the food and/or beverages are transported from the working area to the guest area via the transport system by means of gravity, at least in sections.

The disadvantage of this is that in such a restaurant system the working area must be located higher than the guest area.

Documents EP 1 833 331 B1, US 3 294 343 A and US 5636 710 A are herewith cited as representing the prior art of the invention.

DISCLOSURE OF THE INVENTION

The object underlying the present invention is therefore to provide a novel restaurant system, particularly a restaurant system in which the working area and the guest area may be in any position relative to one another.

This object is solved with the features of claim 1. Advantageous refinements and developments are specified in the dependent claims.

A crucial core of the invention resides in the design of the transport system. A waiter does not bring food and beverages to the customers nor do the customers have to fetch the food and beverages themselves. Complete meal and beverage transport systems driven by electricity or any other means, for example conveyor belts, as known from some restaurants, in particular Japanese restaurants, are not provided either. Neither are self-propelled transport vehicles provided that run on a track or rails and transport food and/or beverages placed in or on them.

Particularly in one variant of the propulsion and/or transport device as a propulsion device, it may be provided that the transport of the food and/or beverages known from EP 1 833 331 B1 by means of gravity does not provide the decisive driving force for the transport provided according to the invention, even if gravity may be added at least in sections, in particular at least in subsections of the second transport section. In this case, the food and/or beverages are transported rather because the food and/or beverages are accelerated in the first transport section (supply of kinetic energy). These accelerated food and/or beverages then continue moving in the second transport section without additional driving force. They can also overcome frictional forces and/or be transported to a greater height, diminishing the kinetic energy supplied in the first transport section as the transport continues, wherein said height and the potential energy associated therewith can be used again in a subsequent transport section for example, when transport takes place by gravity again. The kinetic energy supplied in this case by the propulsion device in the first transport section thus moves the food and/or beverages for all or at least part of the second transport section, wherein a conversion into potential energy of the kinetic energy supplied that took place in a subsection may be at least partially converted back into kinetic energy by means of gravity in a subsequent subsection.

Manual activity (activity by humans) is not considered to be part of the transport system. According to one variant of the proposed restaurant system, staff in or at the working area merely place the food and beverages – in suitable receptacles as necessary – into the transport system, and in a particularly advantageous variant in special transport aids such as carriages, and the customer takes the food and beverages out of the transport system in the customer area. At most, the staff only need to make adjustments to the transport system, or a branch station as described in greater detail later may require manual activity on the part of the staff.

The advantages of the invention consist particularly in that the working area and guest area can be located in any position relative to each other without requiring a the continuous, uninterrupted presence of a transport drive, such as a conveyor belt as in a Japanese sushi restaurant. In particular, the working area does not have to be located higher than the guest area to enable transport by means of gravity. The transport of food and/or beverages is

assured by supplying the required kinetic and/or potential energy when the transport starts, so that all or at least sections of the subsequent transport path can be travelled using said supplied kinetic and/or potential energy. The kinetic and/or potential energy is diminished on the way, by carrying out frictional and/or lifting work for example, wherein at least some of the potential energy gained by the performance of lifting work may be converted back into kinetic energy by gravity and so can be used again to transport the food and/or beverages.

According to the invention, the propulsion and/or transport device is constructed and arranged such that it supplies kinetic and/or potential energy to the food and/or beverages only in the first transport section. A force originating from the propulsion and/or transport device thus only acts on the food and/or beverages to be transported in the first transport section. Thus, conveyor belts or traction systems which move the food and/or beverages beyond the first transport section and into the second transport section are not propulsion and/or transport devices in this sense. Compressed air systems in which the expanding air also exerts a force that acts on the food and/or beverages to be transported beyond the first transport section, that is to say into the second transport section as well, are also not propulsion and/or transport devices within the meaning provided above.

According to the invention, the propulsion and/or transport device is a propulsion and/or transport device which remains permanently in the first transport section and in particular is arranged in fixed manner in the first transport system. A propulsion and/or transport device in this sense is therefore not transported with the food and/or beverages to be transported. Accordingly, a self-propelled trolley, for example such a trolley equipped with an electric motor which transports food and/or beverages placed in or on it, for example, on a track or rails, is also not a propulsion and/or transport device in this sense.

The added kinetic and/or potential energy should be appropriately sized sufficiently that food and/or beverages may undergo the subsequent second transport section.

This transport system consists of first and second transport section. However, it is also possible that the first transport section and the subsequent second conveying section form only a part of the transport system. For example, the first transport section precede a third transport section, in which the food and/or beverages to be transported at least in sections by means of gravity. After passing through this third portion of the transport food and/or beverages are then in the first transport section accelerated by the propulsion and/or transport device and then further transported in the second transport section. In this way, for example, to overcome long transport routes. It is also possible to arrange two or several pairs each consisting of a first transport portion and a second transport section consecutively. In this case, the food, for example, first accelerated in a first transport section of this first conveyor section associated propulsion and/or transport device, then go through the belonging to this first transport section second transport section, then go to another first transport section and be there by this another first transport section associated further propulsion and/or transport device is accelerated and then go through the belonging to this other first transport section further second transport section. In this way, for example, greater heights overcome, as well as long transport routes.

According to the invention, the propulsion and/or transport device includes a catapult, which accelerates the food and/or beverages by a mechanical force, particularly a spring and/or tensioning force. The catapult may include at least one elastic element, particularly a spring and/or tensioning strap, for example a rubber strap, to accelerate the food and/or beverages. The catapult may further comprise a tensioning device for tensioning the elastic

element, and a retaining means for retaining the tension stored in the elastic element tensioned by the tensioning device, and a triggering device for releasing the tension in the elastic element.

According to one variant, it may also be provided that the propulsion and/or transport device comprises means for accelerating the food and/or drink by forces generated by electric and/or magnetic and/or electromagnetic and/or pneumatic and/or hydraulic means and/or by a chemical reaction, such as an explosion.

This device may be for example a pressure cylinder with a pressure chamber, wherein a pressure built up in the pressure chamber by the movement of a piston is released, and the food and/or beverages are accelerated by the movement of the piston.

The pressure chamber may be filled or fillable with a highly pressurised gas such as air for example (in this case, the pressure of the gas is understood to be higher than ambient pressure), wherein the food and/or beverages are accelerated by the expansion of said gas, for example by means of a retaining device which first restrains the piston and then a triggering device which releases the piston movement at the desired time, and wherein the piston moved by the gas expansion accelerates the food and/or beverages. Such a pressure cylinder with gas under high pressure, a compressed air cylinder for example, has the advantage that the propulsion force induced is adjustable and thus variable, via the pressure of the gas in the pressure chamber. The compressed air may be supplied to the air cylinder via a compressor, for example, but also via a simple air pump, such as a pump for a bicycle, ball or rubber dinghy.

However, it is also possible for the pressure chamber to be filled or fillable with an explosive gas, and for the food and/or drink to be accelerated by the explosion of explosive products that occurs after ignition of this gas and the expansion of the explosive products, which acts on and moves the piston.

A further development of the invention provides that the propulsion and/or transport device comprises one or two or more chains or belts, particularly V-belts or toothed belts, which are moved or movable substantially in the intended direction of travel of the food and/or beverages in a section of the propulsion and/or transport device, and during this movement entrain the food and/or beverages that are to be transported, in particular by the action of one or more chains or belts which directly or indirectly contact the food and/or beverages via transport aids. Entrainment elements, particularly teeth or wedges, are preferably provided on the side of the chain or belt or driving elements that directly or indirectly contacts the food and/or beverages via transport aids. Elements corresponding with these entrainment elements, in particular projections and/or depressions, such as ribs, may be provided on the transport aids. When the transport aids are driven or slid into the propulsion and/or transport device access, the entrainment elements on the chains or belts for example engage in the elements corresponding thereto and thus ensure the intended movement of the transport aids.

With this propulsion and/or transport device the food and/or beverages can be accelerated to a defined speed, which is or can be predetermined by the speed of movement of the one or more chains or belts. When passing through the propulsion and/or transport device, the food and/or beverages or the transport aids with the food and/or beverages may be guided on rails, as described in greater detail below.

Such a propulsion and/or transport device may also be used as a braking device in the restaurant system according to the invention. Incoming food and/or drinks are then decelerated by one or more chains or belts that

are moving more slowly than the incoming food and/or beverages to the speed of movement of the one or more chains or belts and their movement continues at this speed. This has the advantage that the incoming food and/or beverages are not stopped abruptly, but decelerated to a slower speed, so the food and/or beverages for example less shaken up, or not at all, or for example that beverages do not froth over when opened later. Such a braking device may be particularly useful at the end of the transport path in the guest area. Such braking devices may also be implemented following loops or sharp curves to reduce a greater speed of the food and/or drinks before each such loop or sharp curve which is attained for example by one of the aforementioned propulsion and/or transport devices and is necessary in order to successfully pass through the loop or sharp curve, to a normal speed again. In this way, for example, accidents due to food and/or beverages being ejected from the transport system may be avoided.

If it is necessary to negotiate a relatively large height in the restaurant system, for example between a lower kitchen and a higher branch station, the propulsion and/or transport device described above might be implemented in a correspondingly long version, and optionally also as a pure transport device to overcome the height, without accelerating the food and/or beverages. In this case, it may be expedient to use chains instead of belts. Then, entrainment elements, particularly pins, teeth or knobs made from plastic or metal for example, may be provided and/or fastened particularly at regular intervals along the chain, on all or at least some of the chain links, for example. These entrainment elements may for example cooperate with corresponding devices, particularly projections and/or depressions on the transport aids. When the transport aids are driven or pushed into the propulsion and/or transport device, the entrainment means engage in the elements corresponding therewith, preferably on both sides in the case of two chains, for example between ribs on the transport aids. In this way, the transport aid is raised by the propulsion and/or transport device, preferably on rails which run through the propulsion and/or transport device. There, the transport aid might then continue travelling under the force of gravity. Then, a branch station, particularly an intermediate or dispatching station may be provided after the top end of such a propulsion and/or transport device, by means of which the transport aids with the food and/or beverages may be diverted to other rails, either manually or automatically, for example by means of track switching systems, and then continue travelling to the guest area under the force of gravity.

In order to overcome a relatively great height, two or more of the previously described propulsion and/or transport device described above may be arranged in series. These may be identical propulsion and/or transport devices, but the propulsion and/or transport devices may also be different, for example a combination of one or more propulsion and/or transport devices with belts or one or more propulsion - and/or transport devices with chains.

Generally, in a further development it may be provided that the second transport section comprises two or more alternative routes for the food and/or beverages, and that a branch station is provided between the first transport section and the second transport section or as part of the second transport section following the first transport section by which or in which the food and/or beverages being transported are routed to one of the transport paths of the second transport section.

A further development of the invention provides that transport in the second transport section is assured by the kinetic and/or potential energy supplied in the first transport section, that the kinetic and/or potential energy supplied in the first transport section is used to at least partially carry out friction and/or lifting work.

According to the invention, the transport system comprises one or more rails, particularly slide rails, preferably slide rails with a sliding surface or roller rails or roller tracks for transporting of food and/or drink in the first transport section and the second transport section. The rail or rails are thus preferably formed continuously, in the region of the first transport section forming a guide for the propulsion and/or transport device, and in the second transport section forming a guide for directing the transport, which is performed without powered driving force, at least in sections, with the exception of the forces of gravity.

According to a preferred variant of the invention, the transport system comprises two at least substantially parallel rails, particularly two rails with substantially circular or oval or rectangular cross-section.

A further variant provides that the transport system comprises one or more U-shaped rails. The width of the U-shaped rail may be chosen for example such that packaged foods and/or beverages or ice cream in cones can be transported within the U-shape of the U-shaped rail without further transport aids, particularly sliding. Such a U-shaped rail might then also be used as a kind of ramp, with which small meals or drinks for example may be catapulted directly into the crowd, at concerts or carnival events for example. This would also enable the possibility at community fairs, for example, of playing catching games such as "catching the ice directly in the cone".

It has been found advantageous to provide transport aids, particularly sliding bases and/or sliding means such as carriages designed for the transport of food and/or beverages on the rails and for this purpose that such sliding means match the rails in terms of their dimensions and/or sliding properties.

It may also be provided that the transport aids comprise rollers mounted rotatably on the transport means, that the transport means move on rails by means of the rollers. The rollers can be designed to be self-braking.

The food and/or beverages may be transported in or on the transport aids in suitable receptacles for example. The receptacles may be for example, pots, dishes, glasses, mugs, cups, bottles or fast-food packaging of any kind.

According to a further development, at least portions of the at least one rail in the first transport section may slope upwards to the second transport section. This ensures that, in the case of a catapult for example, the transport aid or the food and/or beverages are properly seated in the catapult or on components of the catapult provided therefor, a contactor for example, preferably a thrust plate, and so may be accelerated by the beginning of the release of the armed catapult to the transport aid and/or food and/or beverages. In this way, abrupt pulses of force on the food and/or beverages that may arise in a later contact between the catapult and the transport equipment, are avoided.

A particularly dramatic embodiment of the invention provides that the second transport section comprises a loop, that is to say the food and/or beverages perform a somersault during transport. To do this, it is essential that the food and/or beverages, or their transport aids are supplied with sufficient kinetic and/or potential energy in the first transport section to ensure that the food and/or beverages remain in loop at the uppermost point of the loop due to centrifugal force and do not fall due to gravity.

A further development provides that the propulsion and/or transport mean has a movable contacting device, for example a piston or rod with a thrust plate, by means of which the kinetic and/or potential energy emanating from the propulsion and/or transport device is transferred to the food and/or beverages in the first transport section, for example by ensuring that the transport aids are lying flush against the piston or thrust plate and that the transport aids may be moved by the contactor and accelerated thereby.

Alternatively or additionally, it may also be provided that the transport aids have a transport means contact device, which cooperates with the propulsion and/or transport device, with the contactor thereof for example, to accelerate the food and/or drinks in the first transport section. This may be a stop plate for example, against which an element of the propulsion and/or transport device is pressed, for example the elastic element or the previously mentioned contact device, particularly the piston or the thrust plate, and so accelerates the transport aid and therewith the food and/or beverages placed in or on it.

According to a further development, the restaurant system according to the invention may also include a braking device, by means of which the food and/or beverages are braked in the second transport section, especially at or near the end of the second transport section, in particular braked to a defined speed. This is particularly advantageous in restaurant systems with loops as described above for example, as otherwise the food and/or beverages may be travelling too fast be out of control when they reach the guest area.

As was mentioned in the introduction, the restaurant system may also be a serving trolley, on which the transport system with the first and the second transport sections is arranged. The rail in the second transport section may also be movable towards the guest area, particularly pivotable in a vertical plane, making it easier to transport the serving trolley because of the smaller when the rail is raised and so that the height of the discharge portion of the rail may be lowered to match respond to match each table in the guest area, so that the discharge portion of the rail lies on the table for example to deliver the food and/or beverages.

The above ideas concerning the service trolley may also be implemented in a restaurant system in which a rotating platform is installed on a bar or counter for example, on which are mounted the components that can also be installed on the trolley, for example the transport system with loop and propulsion and/or transport device and the aforementioned movable rail, which is particularly pivotable in a vertical plane, which may be lowered like a drawbridge for example. Since this device can be swivelled to the left and right due to the pivotable platform, this restaurant system can serve several tables. To do this, the transport system with loop and the rail, which is particularly pivotable in a vertical plane, is rotated in the direction of the table to which the delivery is to be made. Then, the movable rail is lowered so that it either delivers directly to the table, or docks with more rails optionally provided on the table, which then transport the delivered food and/or beverages further to the table. After delivery, the rail is raised, the platform rotates to the next table to which a delivery is to be made, and the movable rail is lowered again.

The restaurant system may also be a mobile snack cart, for example in the form of a trailer that can be transported on the back of a vehicle, or also in the form of a self-propelled vehicle, for example in the form of a rickshaw or motor vehicle, such as a van or truck. The transport system with its first and second transport sections is then also arranged on the food cart.

DESCRIPTION OF THE DRAWING

In the following, further features and advantages of the invention will be explained in greater detail in the with reference to the description of exemplary embodiments and to the accompanying schematic drawings.

In the drawing

- FIG. 1 shows an embodiment of a restaurant system according to the invention in a top view,
 FIG. 2 shows the restaurant system of FIG. 1 in a side view,
 FIGURES 3 to 6 show various embodiments of a propulsion and/or transport device of a restaurant system according to the invention, for example the restaurant system of FIGURES 1 and 2,
 FIG. 7 shows a further embodiment of a restaurant system according to the invention, designed as a serving trolley,
 FIG. 8 shows a further embodiment of a propulsion and/or transport device of a restaurant system according to the invention, for example the restaurant system shown in FIGURES 1 and 2, which can also be used as a braking device, and
 FIGURES 9 and 10 show two embodiments of transport aids for food and/or beverages.

Corresponding parts and components in the figures are designated with the same reference numerals.

DETAILED DESCRIPTION OF THE INVENTION

FIGURES 1 and 2 show a plan view and a side view of an inventive restaurant system 1. Restaurant system 1 comprises a working area 2 for preparing and/or cooking food and/or beverages and a guest area 3, where guests can receive the food and/or beverages they ordered. At a snack stand, this may be a standing area, in a restaurant tables and seats may be located in guest area 3.

Working area 2 and guest area 3 are connected via a transport system 4 for food and/or beverages via which the food and/or beverages are transported from working area 2 to guest area 3.

Transport system 4 comprises two substantially parallel rails 21. The food and/or beverages are transported by means of transport aids 22. For this, the food and/or beverages to be transported are placed in the transport aids 22 in suitable receptacles 26, such as pots or bottles or fast-food packaging.

The rails 21 of transport system 4 are preferably slides with a sliding surface, for example rails 21 with an at least substantially circular or oval or rectangular cross section. Accordingly, the transport aids 22 are preferably sliding bases and/or sliding devices, which designed to the transport food and/or beverages over slide rails 21, and for this purpose are constructed correspondingly to the slide rails 21 in terms of their dimensions and/or sliding properties. However, alternative configurations are also possible, for example, the use of roller tracks instead of the slide rails, in which case respective rolling devices are designed correspondingly instead of the sliding devices.

Such a transport system is known from the publication EP 833 331 B1 mentioned in the introduction and described in detail there, for more details, reference is made to that disclosure.

Transport system 4 has a first transport section 5 and a second transport section 6. In first transport section 5, a propulsion and/or transport device 7 is provided by means of which food and/or beverages to be transported are accelerated, that is to say kinetic energy is supplied to the food and/or beverages by means of the propulsion and/or transport device 7.

Second transport section 6 follows and adjoins first transport section 5. In this second transport section 6, the food and/or beverages are transported at least over portions thereof by means of the kinetic energy supplied in the first transport section 5. Second transport section 6 includes a loop 23, through which the food and/or beverages pass with transport aids 22. To achieve this, such a high speed is necessary that the transport aids 22 with the food and/or beverages would arrive in the guest area 3 too fast, and no longer under control. Therefore, a braking device 9 is provided near the end of second transport section 6, by means of which the transport aids 22 and thus the food and/or beverages are decelerated to a predetermined speed and thus reach guest area 3 under control.

Transport system 4 is thus designed such that at least some of the kinetic energy supplied in first transport section 5 is used in the second transport section 6 for lifting work to pass through loop 23, for example. Even with optimum design of rails 21 and the transport aids 22 friction occurs during transport, so that the kinetic energy supplied in first transport section 5 is at least partially used to overcome friction in second transport section 6.

The rails 21 in first transport section 5 slope upwards towards second conveyor section 6. This ensures that the transport aids 22 installed are initially pressed against the propulsion and/or transport device 7. FIGURES 1 and 2 show that the propulsion and/or transport device 7 has a thrust plate as movable contactor 24, by means of which the kinetic energy emanating from the propulsion and/or transport device 7 is transmitted to the transport aids 22 and thus to the food / or beverages in first transport section 5. The inclined rails 21 thus ensure that the transport aids 22 rest directly on contactor 24, under the force of gravity, so that the movement of the contactor 24 also causes the transport aid 22 and therewith the food and/or beverages to move and thus accelerate as soon as the propulsion and/or transport device 7 is activated. This then prevents jolts of force on the transport aid 22 and thus the food and/or beverages, which may occur if an already moving contactor 24 collides with transport aid 22.

FIGURES 3 to 6 show various embodiments of a propulsion and/or transport device 7 in a restaurant system according to the invention, for example, the restaurant system 1 shown in FIGURES 1 and 2.

FIGURES 3 and 4 show two variants in which the propulsion and/or transport device 7 comprises a catapult 8, that is a device in which the food and/or drinks are catapulted by a mechanical force, in FIG. 3 by spring force generated by a spring 27 and in FIG. 4 by a tensioning force generated by a tension strap 28. Thus, elastic elements such as spring 27 and strap 28 are provided for the propulsion of food and/or beverages.

FIG. 3 is a schematic representation of tensioning device 10, a tie rod 30 driven by a motor 29, by means of which the spring 27 is compressed and armed. A schematically illustrated retaining device 11 holds the spring 27 in its armed position until a trigger device 12, also represented schematically, releases the tensioned spring

27. Spring 27 is then released, and moves a contactor 24, a thrust plate, which is attached in fixed manner to spring 27. This in turn accelerates the food and/or beverages, for example, as described with reference to FIGURES 1 and 2. The tensioning device 10 may also be actuated mechanically, with a crank for example, instead of the motor 29. It is also possible to devise games for tensioning the tensioning device. For example, tensioning may be carried out by "ringing the bell with a hammer", and ordered food and/or beverages are only delivered for the person who strike hard enough.

FIG. 4 shows that tension strap 28 is attached at or near the two ends of a crossbar 31. A tensioning device 10 is provided in the middle of tensioning strap 28 to tension it, represented by a drawbar 32. However, it may also be just the strap 28 itself, which is stretched by hand without further assistance. For this, a reinforcement or gripping device may be provided on tensioning strap 28, for example. It is also possible for the tension strap to be tensioned using a transport aid 22. A simple solution provides that tension strap 28 and therewith the transport aid 22 is simply released for transport, so that the strap 28 is under no tension and can still accelerate the food and/or beverages. But it is also possible to provide a retaining device 11 and a triggering device 12 to keep the tension strap 28 in the tensioned state and remove the tension at a desired time to accelerate the food and/or beverages.

Retaining device 11 and triggering device 12 are represented symbolically by dashed lines in FIG. 4 to show that they are optional devices. The propulsion and/or transport device 7 with a tension strap 28 may also be constructed differently from the example of FIG. 4, for example, a significantly shorter crossbar 31 may also be provided, or the fastening device for tensioning strap 28 may have a different shape, for example a V-shape or a Y-shape. In general, the principle of embodiments inspired by a basic crossbow design as well as to the basic principle of a embodiments inspired by a centrifuge are conceivable. Unlike the example of FIG. 4, strap 28 may also start directly on transport aid 22 or directly on the food and/or beverages to be accelerated or the receptacles 26 therefor, and thus act directly on them, without the interposition of contactor 24 shown in FIG. 4, which can be omitted here.

FIGURES 5 and 6 show two variants in which the propulsion and/or transport device 7 comprises a pressure cylinder 13 with a pressure chamber 14 and a piston 15. A pressure built up in pressure chamber 14 is reduced by the movement of piston 15. The free end of piston 15 is equipped with a contactor 24 such as a thrust plate, via which the movement is transmitted to the food and/or drink, accelerating them, in the manner described with reference to FIGURES 1 and 2.

In the variant shown in FIG. 5, pressure chamber 14 is filled with stationary air under high pressure. In this case, high pressure is understood to mean pressure higher than ambient pressure. When the piston is released, the air expands in the pressure chamber, moving the piston and thus accelerating the food and/or beverages. The compressed air is generated by a compressor 18, which is connected to a connector 16 on the pressure cylinder via a pressure line 17 so that the compressed air can be fed into pressure chamber 14 when the piston 15 is stationary. Alternatively, in simple embodiments compressed air can be fed into pressure chamber 14 of the pressure cylinder 13 by means of an air pump, such as a bicycle, ball or dinghy pump, via connector 16. This has the advantage that no power supply connections must be provided, for a compressor for example.

In the variant shown in FIG. 6, the pressure chamber 14 is filled with an explosive gas. To speed up the food and/or beverages, the gas is ignited, the explosion occurring and the accompanying expansion of the explosion products move the piston 15, thereby accelerating the food and/or beverages. Thus in this case, the food and/or beverages are accelerated by forces generated in a chemical reaction. In FIG. 6, a gas reservoir 20 is shown symbolically, in which the explosive gas passes into a connector 16 of pressure cylinder 13 and enters pressure chamber 14 via gas line 19.

FIG. 7 shows another embodiment of an inventive restaurant system 1, as a serving trolley. This also shows a transport system 4 connecting working area 2, in which the prepared foods are placed in the transport system 4, with guest area 3, where guests receive the food and/or beverages they ordered. The transport system again comprises slide rails 21 similar to the rails described in reference to FIGURES 1 and 2, on which the food and/or beverages are transported in suitable receptacles 26 by means of transport aids 22, although roller conveyors might alternatively be provided instead of slide rails 21. Again a first transport section 5 with a propulsion and/or transport device 7 and a second transport section 6 with a loop 23 and braking device 9 are shown. For more detailed explanations of the foregoing, the reader is referred to FIGURES 1 and 2. The transport system 3 is mounted on a serving trolley with a frame 34 which is equipped with wheels 33 and is thus movable, a compressor which may be required for the propulsion and/or transport device 7, and a gas reservoir may be placed on this frame 34, and connected to the propulsion and/or transport device 7 via suitable lines (not shown).

As a special device which does not necessarily have to be provided, a rail section 35 that is pivotable in a vertical plane is provided at the end of the second transport section 6. This rail section 35 can be raised and lowered again like a drawbridge using a traction device 36, such as a cable routed over rollers. In a raised position, shown in dashed lines in FIG. 7, the serving trolley, may be moved more easily for example. It may be lowered to place the end of the second transport section 6 on a table 37 in the guest area 3, so the food and/or beverages arrive directly on table 37. The pivotable rail section 25 can be also used to move the transport aids 22 and/or receptacles 26, which are transported onto the table 37 after the pivotable rail section 25 is lowered, back toward the serving trolley back by raising the pivotable rail section 25, optionally to drop them directly into a collection container provided for this purpose.

Another optional embodiment is to provide a trailer coupling 38, which is indicated with dashed lines in FIG. 7. In this way, restaurant system 1 can be moved as a mobile food stall by means of a vehicle. Also, a mobile embodiment without external vehicle is possible, for example, the restaurant system be designed as a rickshaw food carts. The restaurant system, in particular the food cart, can be equipped with all the equipment necessary for preparing food and/or beverages or keeping them warm or cold.

FIG. 8 shows another embodiment of a propulsion and/or transport device 7 of a restaurant system according to the invention, for example the restaurant system 1 shown in FIGURES 1 and 2, which can also be used as a braking device of a restaurant system 1 according to the invention. Resiliently mounted rollers 25 are shown on both sides of the propulsion and/or transport device 7, over which a belt 9 runs on both sides and moves at a certain speed in the direction of movement of the transport aids 22. Each of the two belts 9 is stretched over a drive roller 40 and a guide roller 41 and is rubbed by the drive roller 40 driven for example by a motor. The belts

9 engage in the transport aids 22 on the left and right to accelerate or move them when the propulsion and/or transport device 7 is functioning as propulsion and/or transport device, or slow them when the propulsion and/or conveying means 7 is functioning as a braking device, in each case at a predetermined speed, namely the moving speed of belt 9. When this speed is reached, the transport aids 22 are moved by the belts at this speed until the end of the propulsion and/or transport device 7. A transport aid 22 is shown in FIG. 8 but corresponding rails on which this transport aid is transported 22 through the propulsion and/or transport device 7 are hidden for the sake of clarity. Such a propulsion and/or transport device 7 may be provided in the first transport section which is then followed by the second conveyor section. It is also possible to arrange multiple propulsion and/or transport devices 7 and thus also multiple such first conveyor sections in succession, wherein a second transport section without propulsion and/or transport device can be provided between two first transport sections in each case. In this way, even larger transport distances and/or higher altitudes can be overcome. Optionally, the propulsion and/or transport device 7 can be also be used merely as a transport means without propulsion of the food and/or beverages.

The belts 9 are realised for example as toothed belts or V-belts, which contact and entrain transport aids 22 via entrainment means arranged on the side thereof facing the transport aids 22 particularly teeth or wedges. For this purpose, these entrainment means engage in corresponding devices, particularly projections and/or recesses on the transport aids.

Alternatively to belt 9, chains might also be used, which might then be driven for example by a gear and sprocket as drive roller 40. Guide roller 41 might be designed as a gear and sprocket, the chain would then be tensioned by the drive roller 40 in the form of a gear or pinion and the guide roller 41 in the form of a gear or pinion. The rollers 25 that are shown might then also tighten the chain, and these may also be gears and sprockets, for example. However, these rollers 25 are not absolutely essential. On the path followed by the chain in the propulsion and/or transport device 7, the chains might also run in plastic guides, plastic rails for example, from which entrainment element provided on or as part of the chains jut out laterally to contact and entrain the transport aids.

FIGURES 9 and 10 show two embodiments of transport aids 22 for food and/or beverages, in which such elements corresponding with the entrainment means are provided. Corresponding elements designed as projections 39 are shown. A pot with food would be placed or suspended inside the transport aid 22 represented in FIG. 9, a drink, for example, preferably in a bottle, would be placed in the upwardly open carrier cylinder of the transport aid 22 shown in FIG. 10. FIGURES 9 and 10 each show the upper parts of the transport aids 22, which serve to accommodate the food and/or beverages. Not shown are the respectively associated lower parts of the conveying aids 22, via which the transport aids 22 are moved on the transport system. These may be skids for example. FIG. 8 schematically shows such a complete transport aid 22 comprising upper and lower parts.

As explained earlier, the propulsion and/or transport device 7 shown in FIG. 8 may be used as a braking device. As an alternative to this braking device, speed reducers such as springs may be installed on the track as braking devices, by which the food and/or beverages or transport aids and/or receptacles are decelerated. For example, a number of such obstacles such as springs might be installed one behind the other on the rails and thus

slow down the food and/or beverages or transport aids and/or receptacles in stages due to their braking resistance.

In general - regardless of the embodiments shown above -- it should be noted that the rails of the transport system do not need to be arranged in a vertical plane, for example, curves can also be used, for example, to make the best possible use of restricted space on a serving or snack wagon.

COMMERCIAL USE OF THE INVENTION

The restaurant system according to the invention can be used in a wide range of catering applications. Besides being used in restaurants and pubs, it can also be used on mobile or stationary food stalls, in beer gardens, in fast-food restaurants and drive-in restaurants. The restaurant system according to the invention can also be used as a wheeled serving trolley, which can be pushed from table to table in restaurants or children's hotels for example, to deliver the food and/or beverages in dramatic fashion, for example by looping the loop on or at each table. The restaurant system according to the invention may also serve as a mobile serving or snack system, for example, designed as a trailer or self-propelled mobile device system with corresponding superstructure.

REFERENCE LIST

- 1 Restaurant system
- 2 Working area
- 3 Guest area
- 4 Transport System
- 5 First transport section
- 6 Second transport section
- 7 Propulsion and/or transport device
- 8 Catapult
- 9 Belt
- 10 Tensioning device
- 11 Retaining device
- 12 Triggering device
- 13 Pressure cylinder
- 14 Pressure chamber
- 15 Piston
- 16 Connection
- 17 Pressure line
- 18 Compressor
- 19 Gas line
- 20 Gas reservoir
- 21 Rails, slide rails
- 22 Transport aid
- 23 Loop
- 24 Contact device, thrust plate

25	Rollers
26	Receptacle
27	Spring
28	Tension strap
29	Motor
30	Tie rod
31	Crossbar
32	Drawbar
33	Wheel
34	Frame
35	Rail section
36	Pulling device
37	Table
38	Trailer coupling
39	Projection
40	Drive roller
41	Guide roller

Éttermi rendszer

Szabadalmi igénypontok

1. Éttermi rendszer (1), amely magában foglal legalább egy munkaterületet (2) a főzésre és/vagy az ételek és/vagy italok előkészítésére, és legalább egy vendégterületet (3), ahol a munkaterület (2) és a vendégterület (3) egy az ételek és/vagy italok számára kialakított szállítórendszeren (4) keresztül van összekötve, és ahol a szállítórendszer (4) arra van kialakítva, hogy ételeket és/vagy italokat továbbítson a munkaterületről (2) a vendégterülethez (3), ahol a szállítórendszer (4) egy első szállítószakasszal (5) rendelkezik, amely egy gyorsítószerkezettel (7) van ellátva, amelynek segítségével a továbbítandó ételekhez és/vagy italokhoz mozgási és/vagy helyzeti energiát vezetünk be, emellett a szállítórendszernek (4) van továbbá egy az első szállítószakaszhoz (5) csatlakozó második szállítószakasza (6), amelyben az ételek és/vagy italok továbbítása legalább szakaszonként az első szállítószakaszba (5) bevezetett mozgási és/vagy helyzeti energia segítségével történik és a felgyorsított ételek és/vagy italok azután a második szállítószakaszban járulékos hajtás nélkül is tovább mozognak, és ahol a szállítórendszer (4) egy vagy több sint (21), főként csúszósint, előnyösen csúszófelülettel ellátott csúszósint, vagy görgős síneket vagy görgőpályákat tartalmaz az ételeknek és/vagy az italoknak az első szállítószakaszban (5) és/vagy a második szállítószakaszban (6) való továbbítására, *azzal jellemezve*, hogy a gyorsítószerkezet (7) egy katapultot tartalmaz, amely az ételeket és/vagy italokat mechanikai erővel, főként rugó- és/vagy feszítőerővel felgyorsítja, ahol maga a gyorsítószerkezet (7) tartósan az első szállítószakaszban marad és főként helyhez kötötten van az első szállítószakaszban elrendezve.

2. Az 1. igénypont szerinti étteremi rendszer, *azzal jellemezve*, hogy a katapult (8) legalább egy rugalmas elemet (27, 28), főként egy rugót (27) és/vagy egy feszítőszalagot (28) tartalmaz az ételek és/vagy italok felgyorsításához.



3. A 2. igénypont szerinti étteremi rendszer, *azzal jellemezve*, hogy a katapult (8) egy feszítőszerkezettel (10) rendelkezik a rugalmas elem (27, 28) megfeszítéséhez és egy tartószerkezettel (11) a feszítőszerkezet (10) által megfeszített rugalmas elem (27, 28) feszítettségének megtartásához, valamint egy kioldó szerkezettel (12) a rugalmas elem (27, 28) feszítettségének kioldásához.

4. Az előző igénypontok bármelyike szerinti étteremi rendszer, *azzal jellemezve*, hogy a gyorsító- és/vagy szállítószerkezet (7) egy olyan egységet tartalmaz, amely az ételeket és/vagy italokat villamos és/vagy mágneses és/vagy elektromágneses és/vagy pneumatikus és/vagy hidraulikus és/vagy egy kémiai reakcióból kiinduló erőkkel gyorsítja fel.

5. A 4. igénypont szerinti étteremi rendszer, *azzal jellemezve*, hogy az említett egység nyomótérrel (14) rendelkező nyomóhengert (13) tartalmaz, ahol egy a nyomótérben (14) felépített nyomás egy dugattyú (15) mozgásán keresztül épül le, és ahol az ételek és/vagy italok a dugattyúmozgás révén vannak felgyorsítva.

6. Az 5. igénypont szerinti étteremi rendszer, *azzal jellemezve*, hogy a nyomótér (14) egy nagy nyomás alatt álló gázzal, főként levegővel van feltöltve vagy tölthető fel, és hogy az ételek és/vagy italok ezen gáz tágulása révén vannak felgyorsítva és/vagy

a nyomótér (14) egy robbanékony gázzal van feltöltve vagy tölthető fel, és az ételek és/vagy italok ezen gáz begyűjtése után fellépő robbanás és a robbanási termékek eközben bekövetkező tágulása révén vannak felgyorsítva.

7. Az előző igénypontok bármelyike szerinti étteremi rendszer, *azzal jellemezve*, hogy a gyorsító- és/vagy szállítószerkezet (7) egy vagy két vagy több láncot vagy szíjat (9), főként ékszíjat vagy fogasszíjat tartalmaz, amelyek a gyorsító- és/vagy szállítószerkezetben (7) lényegében az ételek és/vagy italok előirányzott továbbítási irányában vannak mozgatva vagy mozgathatók, és ennél a mozgásnál magukkal viszik a továbbítandó ételeket és/vagy italokat.

8. Az előző igénypontok bármelyike szerinti étteremi rendszer, *azzal jellemezve*, hogy a második szállítószakasz két vagy több alternatív szállítási utat tartalmaz az ételek és/vagy italok számára, és hogy az első szállítószakasz (5) és a második szállítószakasz (6) között, vagy a második szállítószakasz (6) részeként az első szállítószakaszhoz (5) csatlakozva egy elágaztató állomás van elrendezve, amelynek révén vagy amelyben a továbbítandó ételek és/vagy italok a második szállítószakasz (6) szállítási útjainak egyikéhez van odavezetve.

9. Az előző igénypontok bármelyike szerinti étteremi rendszer, *azzal jellemezve*, hogy a továbbítás a második szállítószakaszban (6) az első szállítószakaszban (5) bevezetett mozgási és/vagy helyzeti energia révén azáltal történik, hogy az első szállítószakaszban (5) bevezetett mozgási és/vagy helyzeti energia legalább részben súrlódási és/vagy emelési munka elvégzésére van fordítva.

10. Az 1. igénypont szerinti étteremi rendszer, *azzal jellemezve*, hogy a szállítórendszer (4) két, legalább lényegében párhuzamosan futó sint (21), főként két, a keresztmetszetét tekintve legalább lényegében kör alakú vagy ovális vagy négyszögletes sint (21) és/vagy több U alakú sint tartalmaz.

11. A 10. igénypont szerinti étteremi rendszer, *azzal jellemezve*, hogy szállítási segédeszközök (22), főként csúsztató alátétek és/vagy csúsztató szerkezetek vannak elrendezve, amelyek az ételek és/vagy italok síneken

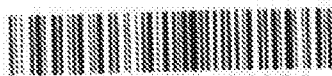
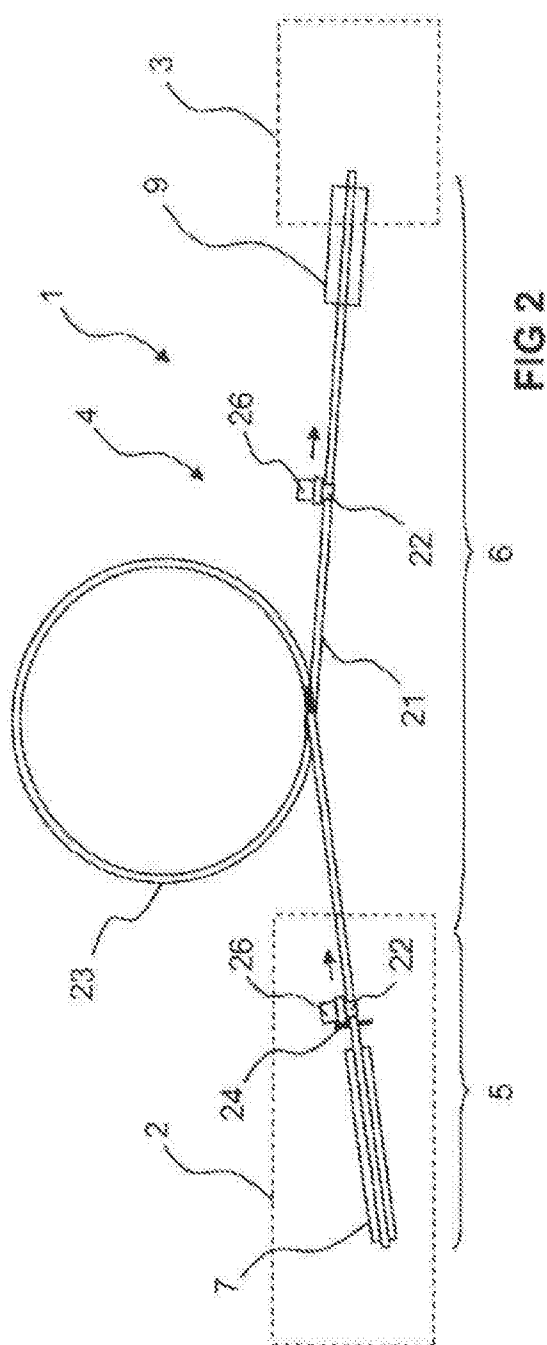
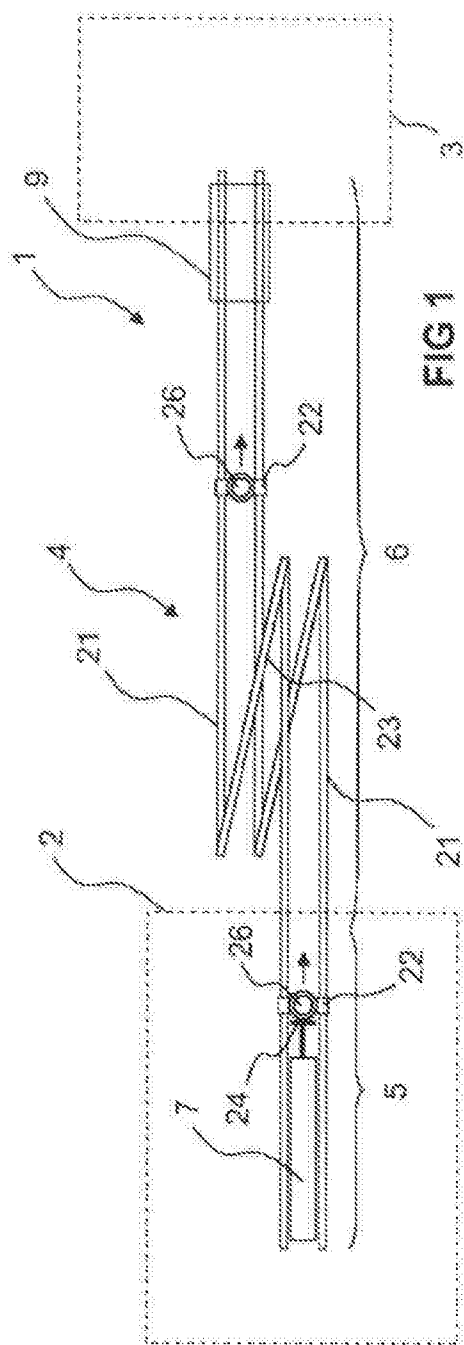
való továbbításához vannak kialakítva és ehhez a méreteik és/vagy a csúszási tulajdonságaik tekintetében összhangban vannak a sínekkel (21).

12. Az előző igénypontok bármelyike szerinti étteremi rendszer, *azzal jellemezve*, hogy a legalább egy sín (21) az első szállítószakaszban (5) a második szállítószakasz (6) felé legalább szakaszonként egy felfelé irányuló meredekséggel rendelkezik.

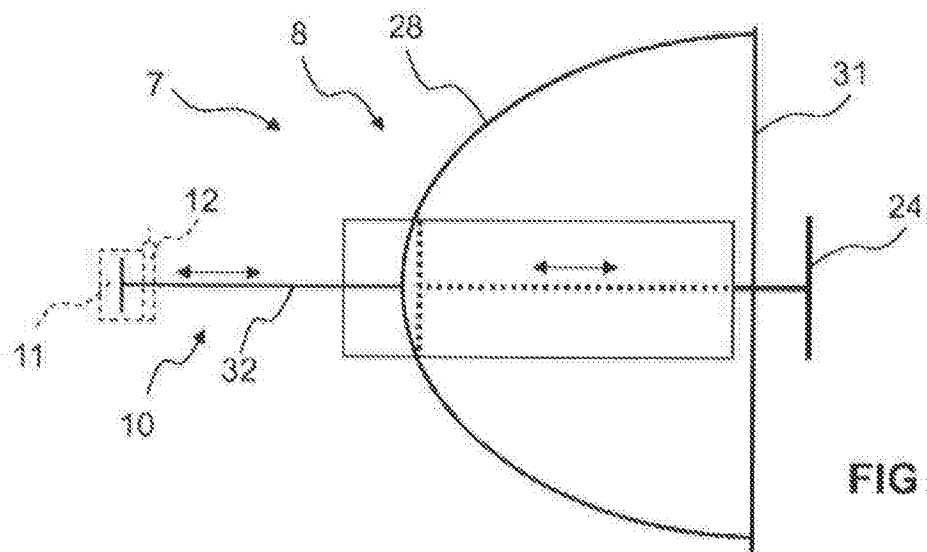
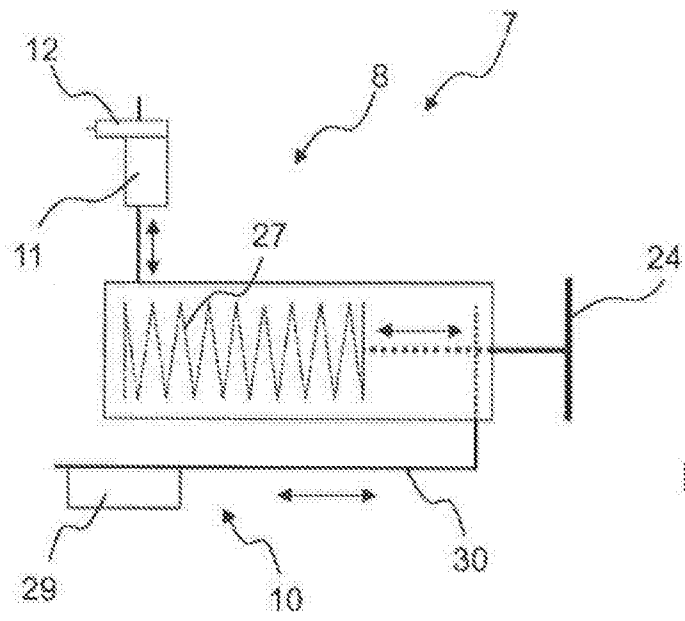
13. Az előző igénypontok bármelyike szerinti étteremi rendszer, *azzal jellemezve*, hogy a második szállítószakasz (6) egy hurkot (23) tartalmaz.

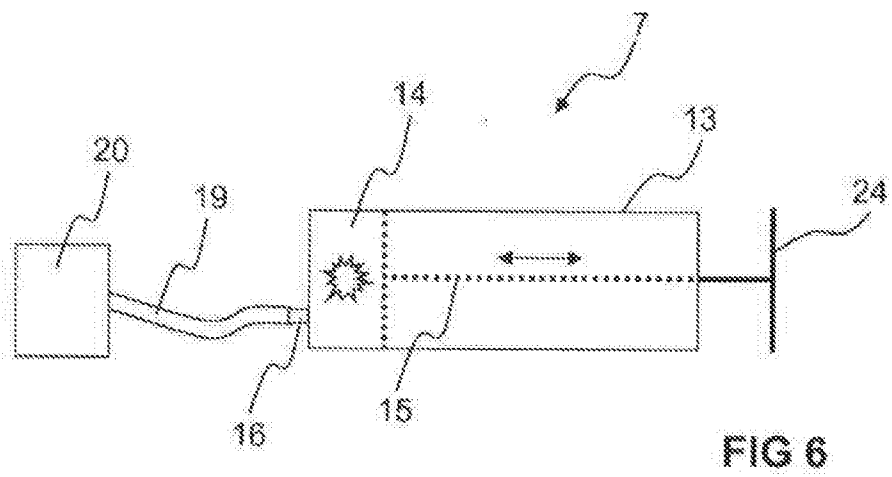
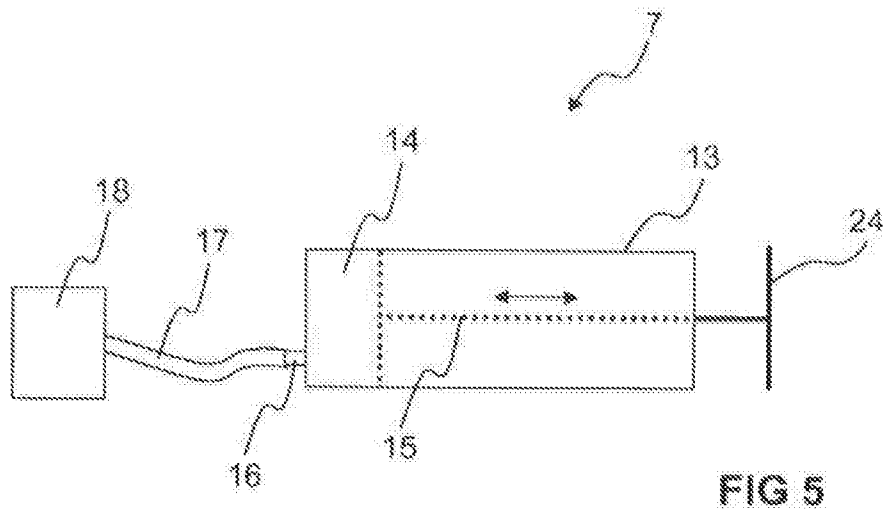
14. Az előző igénypontok bármelyike szerinti étteremi rendszer, *azzal jellemezve*, hogy a gyorsító- és/vagy szállítószervezet (7) egy mozgatható érintkező szerkezetet (24) tartalmaz, amelynek segítségével a gyorsító- és/vagy szállítószervezetből (7) kiinduló mozgási és/vagy helyzeti energia az első szállítószakaszban (5) az ételekre és/vagy italokra átadásra kerül.

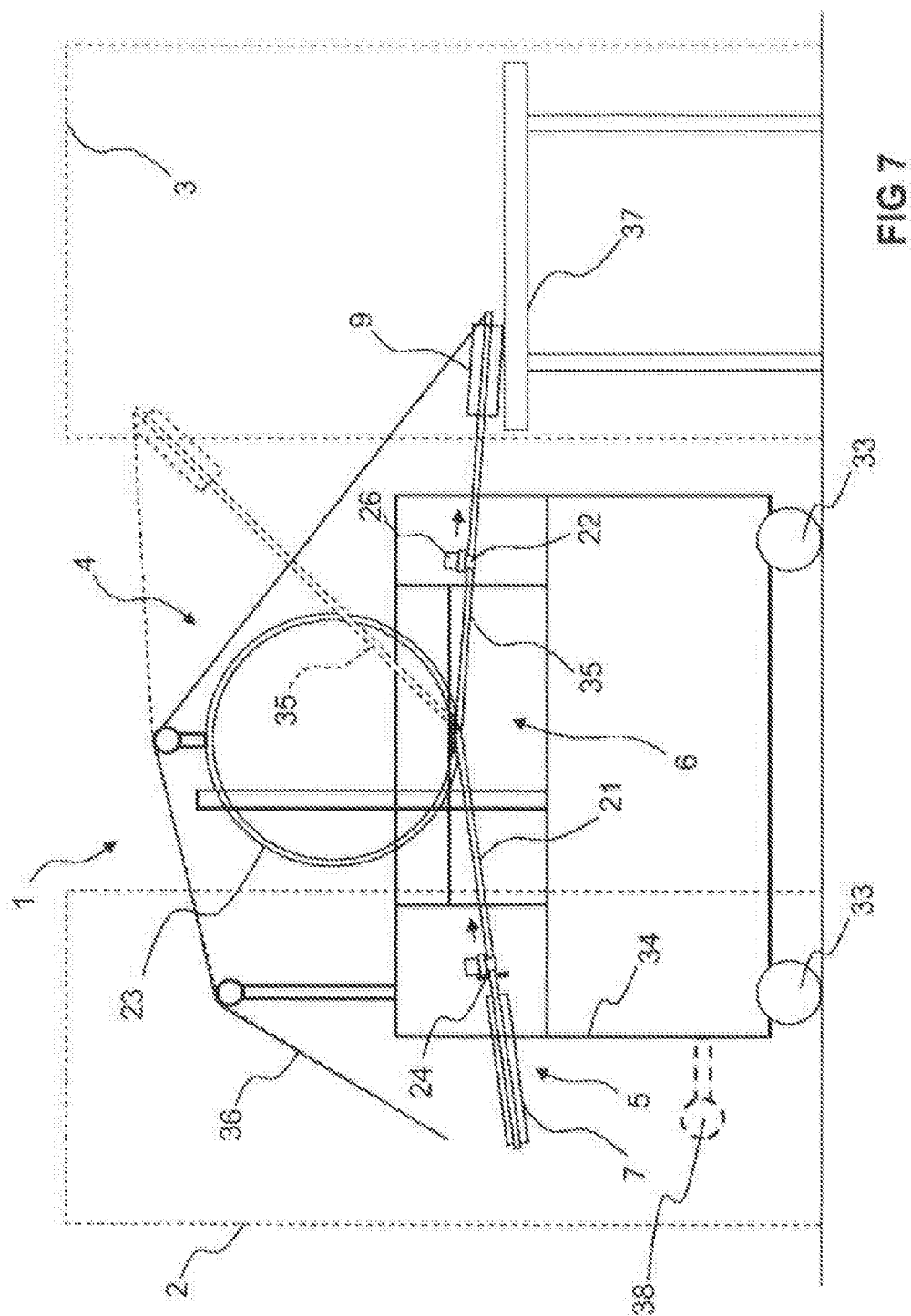
15. Az előző igénypontok bármelyike szerinti étteremi rendszer, *azzal jellemezve*, hogy egy fékezőszerkezet (9) van előirányozva, amelynek révén az ételek és/vagy italok a második szállítószakaszban (6), főként a második szállítószakasz (6) végén vagy annak közelében lefékezésre kerülnek.



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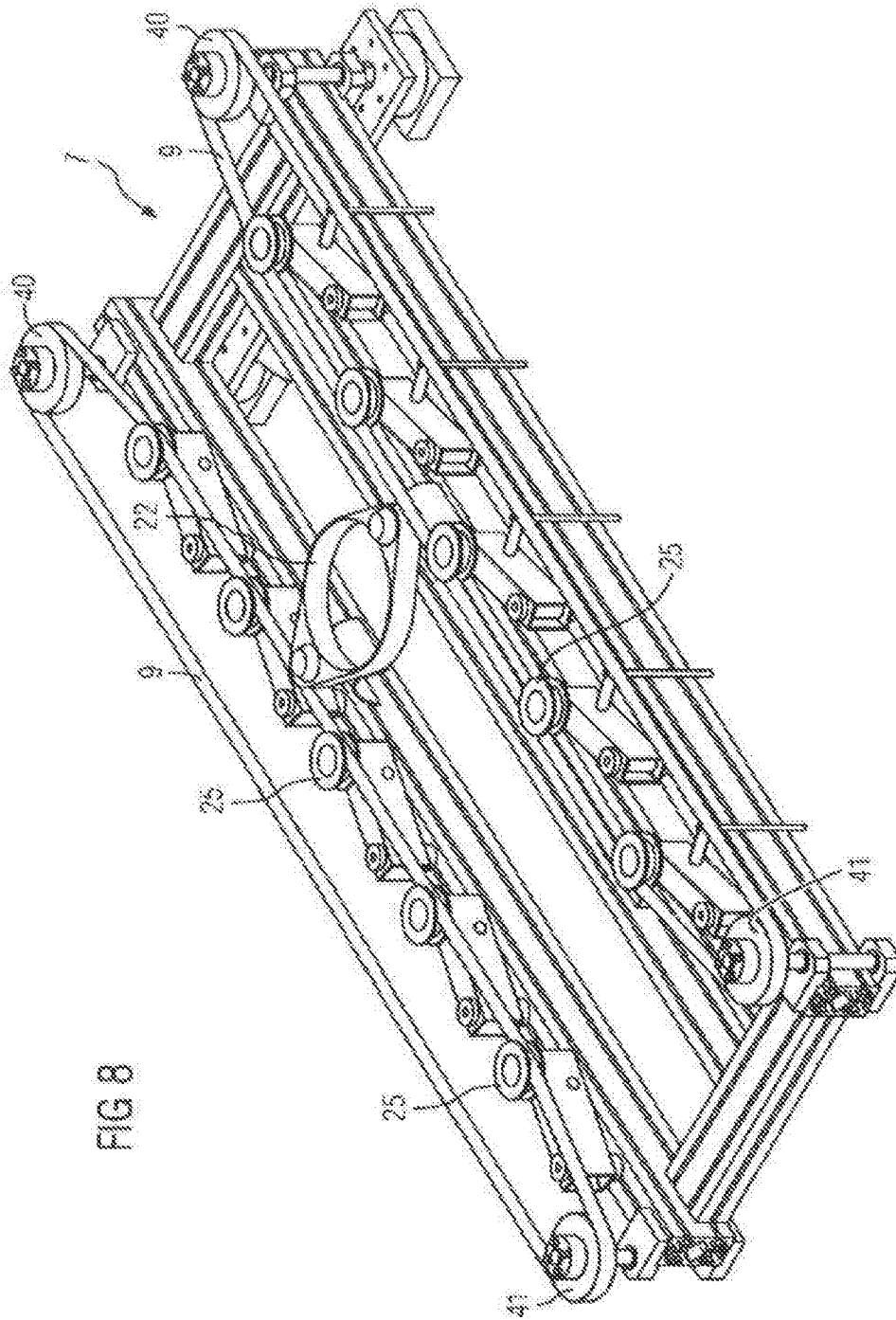


FIG 9

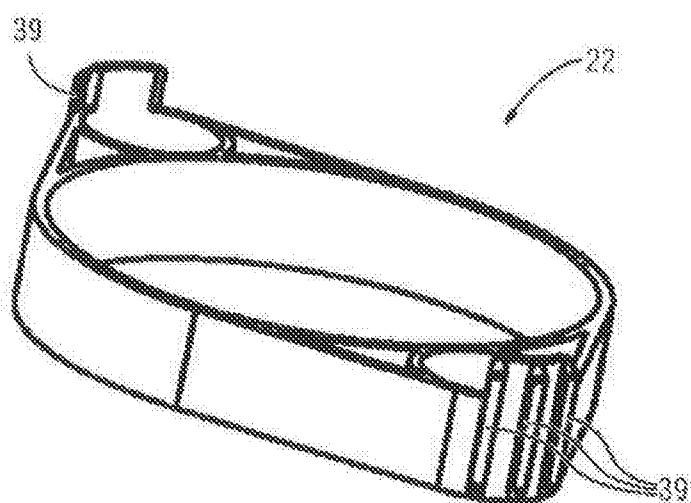


FIG 10

