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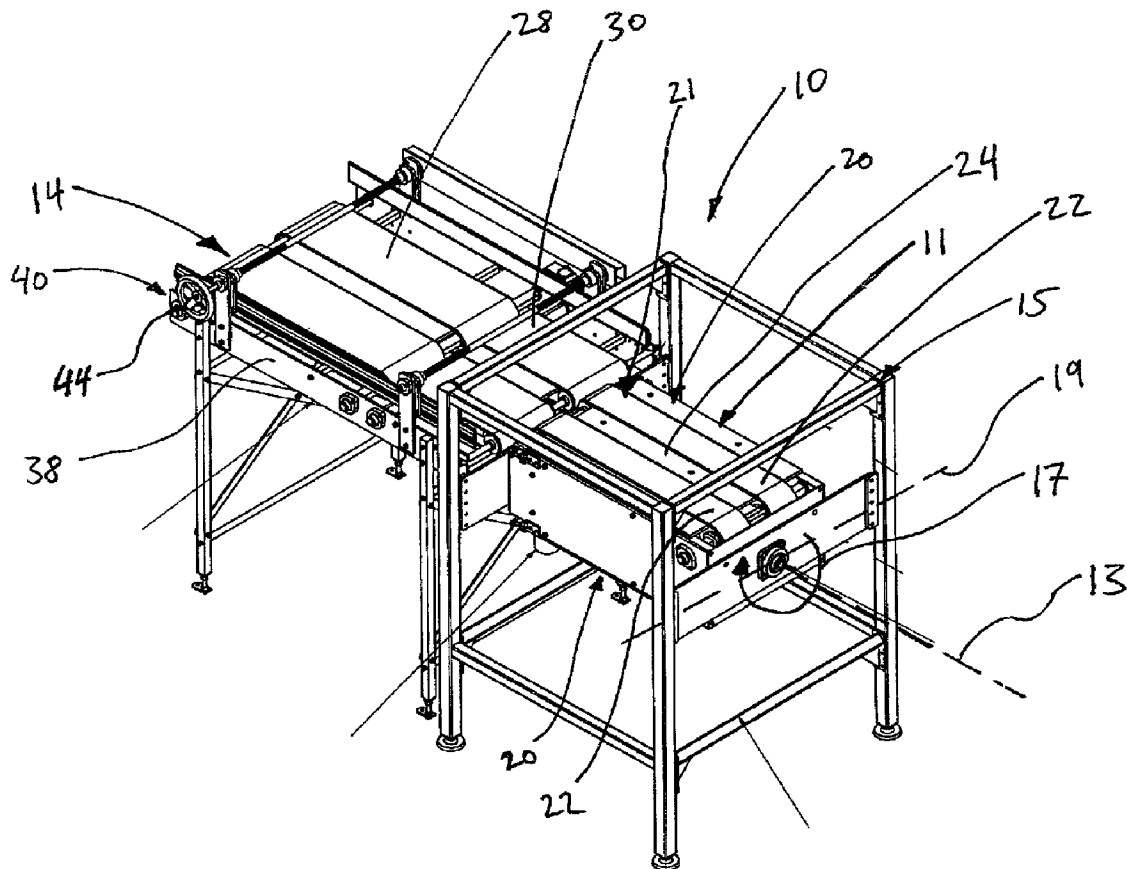
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(54) Titre : SYSTEME D'INVERSION POUR RECIPIENT A CUISSON

(54) Title: BAKING PAN INVERTING SYSTEM



(57) **Abrégé/Abstract:**

A baking pan inverting system is disclosed comprising a rotating table having a central longitudinal axis disposed at a transversal mid-point of the table, the table being rotatably mounted within a static frame for rotation about the longitudinal axis. First and

(57) **Abrégé(suite)/Abstract(continued):**

second conveyors are respectively disposed on opposed primary faces of the table. The first and second conveyors are independently operable to displace a baking pan along the primary faces of the table in a direction substantially parallel to the longitudinal axis. A magnetic engagement device is disposed adjacent both of the primary faces of the table to releasably engage the baking pan to the table when disposed on the table.

ABSTRACT

A baking pan inverting system is disclosed comprising a rotating table having a central longitudinal axis disposed at a transversal mid-point of the table, the table being rotatably mounted within a static frame for rotation about the longitudinal axis. First and second conveyors are respectively disposed on opposed primary faces of the table. The first and second conveyors are independently operable to displace a baking pan along the primary faces of the table in a direction substantially parallel to the longitudinal axis. A magnetic engagement device is disposed adjacent both of the primary faces of the table to releasably engage the baking pan to the table when disposed on the table.

BAKING PAN INVERTING SYSTEM

TECHNICAL FIELD

[0001] The present invention relates generally to commercial baking equipment and systems, and more particularly to a baking pan inverting system for use in a commercial baking process.

BACKGROUND OF THE ART

[0002] In commercial bakeries, automated systems and processes are used to produce bread products, such as breads, rolls, buns and the like, in large volumes and typically in a generally continuous manner. The pans within which such bread products are baked are usually displaced by conveyors to facilitate the movement of a large number of these baking pans, whether before, during or after the actual baking process, from one location within the establishment to another. For example, in one example of a typical commercial bread baking process is as follows: a pan is first conveyed to a make-up station in which the raw dough is loaded into the individual pans; the pan then travels to a proofing area in which the dough is allowed to rise; once the dough has risen, the pan is transported by conveyor into a oven in which the dough is baked so as to turn into bread; once the baked bread exits the oven, it is removed from the individual baking pans and allowed to cool before being packaged for shipment; and the baking pans are then returned to the first make-up station to be loaded with new dough.

[0003] Such continuous production lines thus require a large number of these baking pans to be moved around, usually via conveyors. One handling process which is desirable in the displacement of such backing pans is the ability to invert the pans, i.e. turn them either upside down or right-side up. This can be useful for a variety of reasons, including to facilitate emptying the baked breads from the pan, or to facilitate the storage and/or cleaning of the pans.

[0004] For example, it is preferable that when not in use or while they are waiting to be filled, re-used, cleaned or stored, etc., the pans be stacked one on top of the other such as to minimize the space occupied thereby. However, if the pans are stacked on top of each other in a right-side up direction (i.e. with the interior surfaces which receive the bread

dough therein facing upwards), then at least the upper most pan is exposed to the environment for a period of time, thus risking that dirt or other unwanted material falls into the recesses of the baking pan. Further, when stacked on top of each other a right-side up direction, the load of a stacked pile of pans is transmitted through the more delicate baking surfaces of the pans rather than the more robust and reinforced edge regions, which is not the case when stacked in an upside down orientation. It can also be desirable to be able to invert the pans for a number of other reasons, such as to empty out the baked contents of the pan or to permit cleaning of the interior surfaces of the pan with the aid of gravity, air jets, etc.

[0005] The cleaning process in particular is much more easily accomplished when the pans are upside down. However, to be able to do this, the pans must first be turned upside down, cleaned, and then turned back right-side up before they can be re-used in the baking process assembly line. This process of inverting the pans twice can be quite time consuming with currently employed pan inverting systems, and in a continuous and high-volume production setting, any pan inverting system employed must be able to accommodate a very high throughput which is now required in most modern commercial bakeries, such as in the order of 30-50 pans per minute.

[0006] Thus, while there have been various previous attempts to provide pan inverting systems, there are disadvantages associated with these known systems. Typically, these systems include some type of rotating drum or wheel, having a number of radially extending flaps or clamps on which pans are loaded, one pan per paddle or clamp on the rotating drum/wheel. Once one or more pans are loaded, the wheel is rotated thereby turning the pans end-over-end to turn them upside down, before being unloaded from the wheel. One disadvantage with these types of systems is that the pan loading and wheel rotation steps are discrete activities, and thus subsequent movement of the pans ceases until these steps are executed. These pan inverting systems, with their discrete movements and "flip" turning end-over-end motion of the pans, cannot be operated fast enough to invert the high volume numbers of pans required in most commercial bakeries today. Also, some of these systems subject the pans to free fall movement that is only broken by the pan striking a hard surface. This shock loading can, over time, weaken the pans and significantly reduce their useful lifetimes. This "flip" turning method of

inverting the pans end-over-end using a paddle-wheel style system also tends to generate significant noise, created by each pan being flipped over and striking the exit surface or conveyor. Such noise is undesirable in a commercial bakery operating continuously for long periods of time.

[0007] Accordingly, an improved baking pan inverting system is desired.

SUMMARY OF THE INVENTION

[0008] It is an object of the present invention to provide an improved baking pan inverting system.

[0009] There is therefore provided, in accordance with one aspect of the present invention, a baking pan inverting system comprising: a rotating table having a central longitudinal axis disposed at a transversal mid-point of the table, the table being rotatably mounted within a static frame for rotation about the longitudinal axis; first and second conveyors respectively disposed on opposed primary faces of the table, the first and second conveyors being independently operable to displace a baking pan along the primary faces of the table in a direction substantially parallel to said longitudinal axis; and a magnetic engagement device disposed adjacent both of said primary faces of the table to releasably engage the baking pan to the table when disposed overtop thereof.

[0010] There is also provided, in accordance with another aspect, a method of inverting baking pans comprising: feeding a baking pan onto an upper surface of a rotating table using a first conveyor disposed on the upper surface; releasably engaging the baking pan in place on the upper surface of the rotating table using a magnetic engagement device; rotating the table 180 degrees about a longitudinal axis thereof such that the table and the baking pan fastened thereto are inverted, the longitudinal axis being centrally located in a transverse direction and extending substantially parallel to a direction of operation of the first conveyor; and activating the first conveyor to displace the inverted baking pan away from the table until the baking pan has been ejected from the table.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Further features and advantages of the present invention will become apparent from the following detailed description, taken in combination with the appended drawings, in which:

[0012] Fig. 1 is a top perspective view of a baking pan inverter in accordance with one aspect of the present invention;

[0013] Fig. 2 is a side elevation view of the baking pan inverter of Fig. 1;

[0014] Fig. 3 is a top plan view of the baking pan inverter of Fig. 1;

[0015] Fig. 4 is a perspective view of the baking pan inverter of Fig. 1, shown with an exit conveyor and baking pans engaged thereon;

[0016] Fig. 5 is a side view of the baking pan inverter as shown in Fig. 4;

[0017] Fig. 6 is an end perspective view of the baking pan inverter of Fig. 1, shown with a drive motor and sensors;

[0018] Fig. 7 is a perspective view of a baking pan inverting system in accordance with another aspect of the present invention, including two pan inverters as shown in Fig. 1 and an intermediate pan cleaning module;

[0019] Fig. 8 is a perspective view of an alternate baking pan inverting system, having one pan inverter as shown in Fig. 1 and a pan cleaning module of Fig. 7; and

[0020] Fig. 9 is a detailed view of an inverted baking pan passing through the pan cleaning module of Figs. 7 and 8.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] As noted above, it is desirable to be able to rapidly and reliably invert baking pans in a high throughput commercial baking setting for a number of reasons, including but not limited to emptying baked goods from the pan, to facilitate cleaning of the pans and to facilitate storage of the pans. It is to be noted that the term “inverted” as used herein is intended to comprise both turning pans upside down which are initially right-side up, or

vice versa. The process of inverting baking pans using the pan inverting system of the present invention is more efficient, rapid and reliable than with most prior art pan inverting devices, permitting continuous use at a high-volume throughput rate, such as of the order of 30-50 pans/minute, and more preferably of 40-50 pans/minute.

[0022] It is also of note that although the present pan inverting system is described herein with specific reference to its use for inverting baking pans, such as those used in commercial bakeries, it is to be understood that this is but one possible use of this system, which could also be used in other industrial or commercial food preparation applications. For example, the present pan inverting system could be used to invert other types of pans used to receive, support and/or otherwise contain food products of any number of types.

[0023] Referring to Figs. 1-6, the pan inverter device 10 is depicted in relative isolation, i.e. without the associated upstream and downstream conveyors which would be present when the pan inverter 10 is used in-line within an continuous production line. The pan inverter 10 operates to invert baking pans 12 (see Figs. 2-3) which are fed onto the inverter 10. This is done, as will be described in further detail below, by rotating an entire table portion 11 of the device about a longitudinal axis thereof. This therefore differs from most prior art pan inverting systems, wherein the pans are typically turned upside down by being flipped end-over-end about an axis which extends transversally relative to the direction of travel of the pans on the conveyor, whether this is done about the long or short axis of the rectangular pans. In the present pan inverter 10, however, the pans 12 are inverted by rotating them around a longitudinal axis of the pan which is substantially parallel to the direction of travel of the pans on the conveyor feeding the pan inverting device 10.

[0024] Therefore, the pan inverter 10 will invert pans fed therein, causing pans which are right-side up (i.e. with their bread dough receiving recesses facing upwards) when they enter the pan inverter 10 to come out upside down, and vice versa. The pan inverter 10 also permits pans to be inverted regardless of the orientation in which they are fed into the device. For example, pans fed into the inverting device 10 in a longitudinally extending direction (i.e. the so-called "easy-way") will exit the device in this same orientation, and

similarly pans entering the device in a transversally extending direction (i.e. the so-called “hard-way”) will exit the device in this orientation.

[0025] The pan inverter 10 includes a rotating table portion 11 which is rotatably mounted within a static frame structure 15, such as to permit the entire table portion 11 to rotate, such as in direction 17 for example, about a longitudinal axis 13 thereof in 180 degree increments. Rotation in the opposite direction is of course also possible. The longitudinal axis 13 preferably extends through the center of the table, both relative to the transverse (width) and depth dimensions thereof. Thus, the table 11 is able to fully rotate about this central longitudinal axis 13. Although two successive rotations of 180 degrees in the same rotational direction (ex: both clockwise) is possible, it is more preferable for practical reasons, such as to simplify wiring, etc., that the table 11 is first rotated 180 degrees in one rotation direction (ex: clockwise), and then next rotated back in the opposite rotational direction (ex: counter clockwise). Regardless, the table 11 will always rotate about the longitudinal rotation axis 13, or rotatably reciprocate about this axis in the case when it is driven in successive and alternating opposite rotational directions, such that the table 11 remains substantially in the same position (i.e. longitudinally, laterally and in a height direction) within the frame structure 15 at all stopped positions. As the table rotates about the centrally located longitudinal axis 13, the moment forces to which the table is exposed are limited, in comparison for example with a table or pan displacing car or trolley which pivots about a side hinge thereby resulting in significant displacement of the pivoting structure. Rotation of the table 11 is generated by a suitable motor 31 (not shown for clarity in Fig. 1, but see Fig. 2), such as an electrical servo or step motor for example.

[0026] The table portion 11 of the pan inverter 10 is generally a cuboid (i.e. a rectangular box), defining defines a length relative to the longitudinal axis 13, a width relative to a transverse axis 19 that is substantially perpendicular to the longitudinal axis and in the same plane, and a height in a direction substantially perpendicular to the plane defined by the longitudinal and transverse axes. The cuboid-shaped table 11 thus includes three pairs of parallel and equally shaped faces, which include the major or primary faces 20 which accept and support the baking pans thereon. On each of these major faces 20 of the rotating table 11 is provided an independently operable conveyor 21, which may include

two conveyor belts 22. In the present embodiment, the two conveyor belts 22 are laterally spaced apart in a transverse direction such that a central, longitudinally extending gap exists therebetween. A magnetic pan-engagement mechanism 24 is provided within this central longitudinally extending gap, between the two belts 22 of the conveyor 21. The magnetic pan-engagement mechanism 24 may include permanent magnets and/or electromagnets which are sufficiently strong to attract the metal baking pans fed onto the faces 20 of the table, and retain them in place thereon before, during and after the entire table portion 11 has been rotated 180 degrees about the longitudinal axis 13, thereby inverting both the table 11 and any baking pans 12 releasably fastened thereto using the magnetic pan-engagement mechanism 24. If permanent magnets are used, the motion of the conveyor 21, when actuated, must be sufficient to dislodge the pans from their fastened positions such as to displace them along the surface 20 of the table 11. In other words, the translational force (in the longitudinal direction) which is exerted on the pans which are fixed in place by the magnets of the magnetic pan-engagement mechanism 24 must be greater than the inwardly directed (i.e. towards the center of the table 11) magnetic force exerted on the pans by the magnets to keep them in place during the inversion. Alternately, if electromagnets are used in the magnetic pan-engagement mechanism 24, these can be relatively strong, as when the pans are to be translated along the face 20 of the table 11 by the conveyor 21 (such as when being fed into or off of the table 11), the electromagnets can simply be remotely disengaged by cutting the power to them, thereby allowing the conveyor 21 to translate the pans. However, it must be understood that following the rotation of the table, the pan which is being inverted is then suspended from the now lower surface 20 of the table 11. Thus, unless support guides or the like are present to prevent the pans from falling off the table when the electromagnets are disengaged, the electromagnets cannot be fully disengaged. One possible solution to this is to have electromagnets which can produce a variable amount of magnetic force, for example being controlled by an electric rheostat, and thus the magnetic force exerted on the pans 12 by the electromagnets can be sufficiently reduced to permit the pans to be displaced by the actuated conveyor 21 but not completely eliminated such as to hold up the suspended pan long enough for it to be fed off of the inverted surface 20 of the table 11 and onto an exit conveyor downstream of the inverter device 10.

[0027] As noted above, each of these major faces 20 of the rotating table 11 are provided with an independently operable conveyor 21, and with a magnetic pan-engagement mechanism 24. Thus, both faces 20 of the rotating table 11 are substantially identical. Thus, when the table 11 is rotated 180 degrees about its longitudinal axis 13, the other of the two major faces 20 is then upwardly facing and ready to accept another pan which is fed thereon for inversion.

[0028] In operation, referring to Figs. 2-3, a baking pan 12 is fed in a forward direction 26 in the conveying system of the production facility onto an upstream or entry conveyor assembly 14 of the present system. The entry conveyor 14 continues to move the pan 12 forward using conveyors, which in at least one embodiment include two separate but aligned conveyors 28 and 30, each driven by a separate motor 27 and 29 respectively. These conveyors 28,30 acts as a metering conveyors, which feed the pans into the inverter 10 at a suitable speed and frequency. Although the second conveyor 30 is not absolutely necessary, if used it can be independently controlled such as to ensure an entry speed onto the table 11 which is fine tuned to a desired level. Also, as will be described, for the transition of the pans from the conveying system of the facility onto the rotating table 11 to be a smooth and continuous process, the conveyor 21 of the table portion 11 must be driven at the same speed as the metering conveyors 28,30. The entry conveyor assembly 14 includes the metering conveyors 28,30 mounted to a static frame structure 38 which is preferably substantially horizontal and aligned with the table 11 of the downstream inverter 10. The frame structure 38 of the entry conveyor assembly 14 includes, in at least one embodiment, a guide mechanism 40 which is fixed thereto and used to align and position, for example centrally on the metering conveyors 28,30, the pans 12 as they are received into the present system. The guide mechanism 40 includes adjustable guide rails 42 (see Figs. 4-6) which are either manually actuated using the hand-wheels 44 as shown or alternately automatically using automatic actuators, in order to restrict the width of the "channel" within which the pans in order to help ensure the pans 12 are fed onto the rotating table 11 of the inverter 10 in an aligned position.

[0029] The entire process of inverting pans 12 using the present pan inverting system is preferably fully automated. Thus, using a control system operated for example via a control panel 32 (see Fig. 3), pans 12 are fed onto the upper surface 20 of the table 11 by

operating the conveyor 21 of the table 11 at the same speed as the metering conveyors 28,30. Once the pan 12 is fully located on the table 11 (for example at the mid-point thereof), as detected by suitable sensors of the control system, the control system acts to immediately stop motion of the conveyor 21 of the upper surface 20 of the table 11 in order to stop the translating movement of the pan 12. The magnetic pan-engagement mechanism 24 is then used to releasably fasten the pan to the upper surface 20 of the table 11, whether by actuation controlled by the control system in the case of an electromagnetic system or simply by proximity or contact with the metallic pan in the case of a permanent magnetic system. The entire table 11 is then rotated by 180 degrees about the longitudinal axis 13 by the indexing motor 31, such that the entire table 11, and therefore the baking pan 12 still fastened to the now upside down major face thereof, has been inverted. The pan 12 is then inverted, and suspended upside down to the now underside of the table, as shown in Fig. 2. The conveyor 21 beneath the inverted pan is then actuated by the control system, in order to drive the belts 22 thereof which thus displace the inverted pan away from table 11 in an exit direction 34 (see Fig. 2), such as to eject the inverted baking pan, suspended upside down on the underneath of the table, onto an outlet conveyor 50 which displaces the inverted pans off to a location of the facility as required.

[0030] As note above, the conveyors 21 on each of the opposed faces 20 of the rotating table 11 are independently operated and controlled. For example, each may be driven by separate motors 46 (see Figs. 4-6), such that they are easily independently operated. Accordingly, once the table 11 has been rotated 180 degrees to invert a first pan, the conveyor 21 which is now upwardly facing is able to immediately accept another pan thereon. As such, once the table has been turned, the conveyor 21 which now upwardly facing is turned on, running at a speed substantially the same as that of the inlet metering conveyors 28,30, such as to accept the next pan 12 being fed along the conveying system. As the first, now inverted pan is being ejected from the inverter 10 by the upside down conveyor of the table, the table is able to simultaneously accept the next pan onto the free, upwardly facing surface 20 of the table using the other of the two conveyors 21 on the table. This is possible as the two conveyors 21 on the opposed faces 20 of the table 11 are independently operated and controlled, and thus can be run at different speeds. Thus,

the inverter 10 operates much more efficiently and rapid than most prior art systems, permitting a large number of pans to be inverted in a continuous manner. Tests have shown that the inverter 10 is able to accommodate pan throughputs of at least 40 pans/minute, and this is an relatively small space envelope in comparison with much larger and more complex, and therefore more expensive, systems of the prior art.

[0031] As shown in Fig. 2, a debris collector 36 may be provided directly beneath the rotating table 11 of the inverter 10, for catching and collecting any debris, such as crumbs, etc., which may fall out of the baking pans 12 when the are inverted by the table 11.

[0032] As best seen in Fig. 6, the inverter 10 may include a number of sensors, detectors, and the like which are used to control the system using the interconnected control system. For example, one or more position sensors 48 are preferably provided on the fixed frame 15 of the inverter 10, such as to be able to detect the presence and position on the table 11 of a baking pan 12. Thus, such sensors are used to determine when to turn on and off the conveyors 21 on either of the opposed faces 20 of the rotating table 11. It is to be understood that various other sensors may be included as part of the control system, such as to permit the full automation of the inverter 10 operating in a manner as described above. Those skilled in the art will appreciate the number and types of sensors and other control electronics which may be required in order to permit the full automation of the present system.

[0033] Referring now to Figs. 7-9, the present pan inverting system may include the inverter device 10 as described above in conjunction with a number of associated modules or assemblies which are used therewith. For example, the complete pan inverting and cleaning system 100 depicted in Figs. 7 and 8 includes a pan inverting device 10 as described herein, disposed immediately upstream from a cleaning module 102 which is used to clean the internal surfaces of the pans 12 once they are inverted by the inverting device 10. The cleaning module 102 thus preferably includes at least one cleaning device, including for example a rotating roller brush 104 and an air injector or blower 105 which are fixedly mounted to the frame 106 of the cleaning module 102 in a position immediately below the inverted pans as they exit from the upside down conveyor

21 of the rotating table 11. Thus, a downwardly facing conveyor 108 (best seen in Fig. 9) is provided in the cleaning module assembly 102 in alignment with that of the table 11 of the inverter device 10, being both in transverse alignment therewith and at an exact same height. Thus, the conveyor 108 also provides a pan-engaging magnetic mechanism 124, as per that described above in the table 11, which permits the pans 12 to be held inverted (i.e. suspended upside down) as they are fed by the conveyor 108 through the cleaning devices (namely the rotating brush 104 and the air injector 105) of the cleaning module 102. Although these may be disposed in any order, in the depicted embodiment the inverted pans 12 are first fed through the rotating brush 104, such that the bristles thereof are permitted to clean out the internal surfaces cavities within the pan, following which the pan is fed overtop of the air injector 105 which directs a jet of air upwardly into these internal cavities of the pan. Such cleaning processes are much more easily achieved with the pans so-inverted, than if they were cleaned right side up, for example. This is due in part to the additional help of gravity, which causes any debris or left over food product to easily fall out of the pan, whether by itself or with the aid of the rotating brush 104 and air injector 105. Accordingly, once the table 11 of the inverter 10 has rotated and the pan thereon is inverted, by actuating the conveyors 21 on the table 11 the inverted pan is forced off the table on onto the next conveyor 108 of the cleaning module 102, still in its inverted position suspended from the conveyor 108 by the pan-engaging magnetic mechanism 124. The pan is then fed by the conveyor 108 through the rotating roller brush 104 and over top of the air injecting blower 105, thereby cleaning out the inverted food-receiving recesses in the pan 12.

[0034] In the embodiment shown in Fig. 8, once the pans have been fed through the cleaning devices 104, 105 of the cleaning module 102, they are ejected onto an exit conveyor 50, still in their inverted position. The inverted pans can then be sent off to a stacking machine for storage, for example. In such a configuration, a second inverter 10 may be located downstream in the production line from the stacking machine, such that once the pans are required again, they can be re-inverted by the second inverter 10 before being directed to the start of the production line for re-filling with dough.

[0035] Alternately, the cleaning module 102 and the inverter 10 can be integrated together, such that the cleaning devices 104, 105 are disposed beneath the table 11 of the

inverter 10 itself. In this embodiment (not shown), the table 11 would receive right side up baking pans thereon before inverting such as to invert the pans which are then suspended upside down beneath the table. The inverted pans can then be cleaning using the cleaning devices 104, 105 located beneath the table 11. Rather than then being fed off of the table in an inverted position as described in the embodiments above, the table 11 can then simply be returned to its starting position by rotating through another 180 degrees, such that the cleaned pan is once again right side up on the now upwardly facing surface of the table. The conveyor of the table 11 is then actuated to displace the right side up pan off the table and out of the combined inverting/cleaning system.

[0036] In the alternate embodiment shown in Fig. 7, however, a second pan inverter 10 is disposed inline, downstream from the cleaning module 102. This configuration could be used, for example, if the system is to be used in a cleaning only mode, whereby the pans are first inverted, then fed through the cleaning module 102 in order to clean out the pans, and then subsequently inverted again so that they are turned back right side up, before being ejected back into the production line, for example. In this configuration, the cleaning module 102 also comprises by bypass conveyor 112 which is disposed in line with, and at the same height as, the upper surface of the two tables 11 of the of each inverter 10 disposed on either side thereof. The bypass conveyor 112 is able to be driven at the same speed as they adjacent conveyors 21 of the tables, such as to form a substantially continuous upper conveyor level along which pans can be displaced. Thus, the entire system depicted in Fig. 7 can be put inline within a continuous production line, and used only when necessary to clean the pans. When the pans are not to be cleaned, the upper conveyors 21, 112 and 21 operate to send the pans thereacross, passing through the system and onto the exit conveyors of the production line. Once the pans are desired to be cleaned, the system is made operative such that the tables 11 of the inverters 10 rotate once a pan is disposed thereon, thereby inverting the pans, cleaning them, and then re-inverting pans back right side up before being sent back onwards in the production line. This enables a very efficient and rapid cleaning process.

[0037] Although the inverter 10 is described above primarily with respect the application wherein the pans are received into the inverter in a right side up orientation, and are thus then turned upside down by the rotating table 11 of the inverter 10, it is to be understood

that the present invention is equally applicable to an application wherein the pans are upside down initially (i.e. they are received into the inverter 10 upside down), and are thus turned right side up by the inverter 10.

[0038] The embodiments of the invention described above are intended to be exemplary. Those skilled in the art will therefore appreciate that the forgoing description is illustrative only, and that various alternatives and modifications can be devised without departing from the spirit of the present invention. For example, although the term pan or baking pan is used herein to refer to the object which is being inverted by the present system, it is to be understood that other types of cooking or food processing equipment can similarly be inverted by the present device, including trays, racks, and the like. Accordingly, the present is intended to embrace all such alternatives, modifications and variances which fall within the scope of the appended claims.

CLAIMS:

1. A baking pan inverting system comprising:
 - a rotating table having a central longitudinal axis disposed at a transversal mid-point of the table, the table being rotatably mounted within a static frame for rotation about the longitudinal axis;
 - first and second conveyors respectively disposed on opposed primary faces of the table, the first and second conveyors being independently operable to displace a baking pan along the primary faces of the table in a direction substantially parallel to said longitudinal axis; and
 - a magnetic engagement device disposed adjacent both of said primary faces of the table to releasably engage the baking pan to the table when disposed overtop thereof.

2. A method of inverting baking pans comprising:
 - feeding a baking pan onto an upper surface of a rotating table using a first conveyor disposed on the upper surface;
 - releasably engaging the baking pan in place on the upper surface of the rotating table using a magnetic engagement device;
 - rotating the table 180 degrees about a longitudinal axis thereof such that the table and the baking pan fastened thereto are inverted, the longitudinal axis being centrally located in a transverse direction and extending substantially parallel to a direction of operation of the first conveyor; and
 - activating the first conveyor to displace the inverted baking pan away from the table until the baking pan has been ejected from the table.

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Figures: 14, 15, 16, 17, 18 & 19.

Pages: _____

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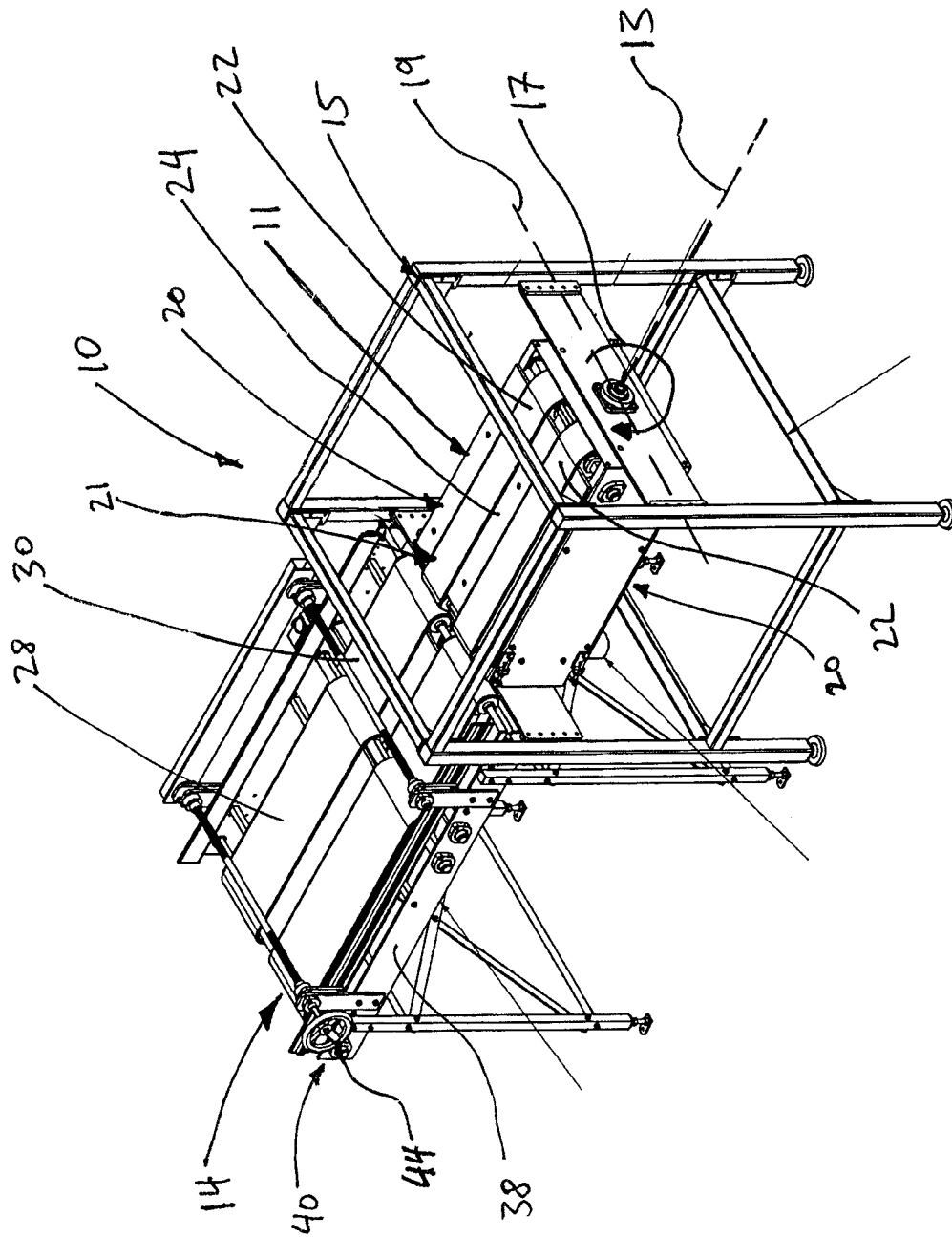


Fig. 1

