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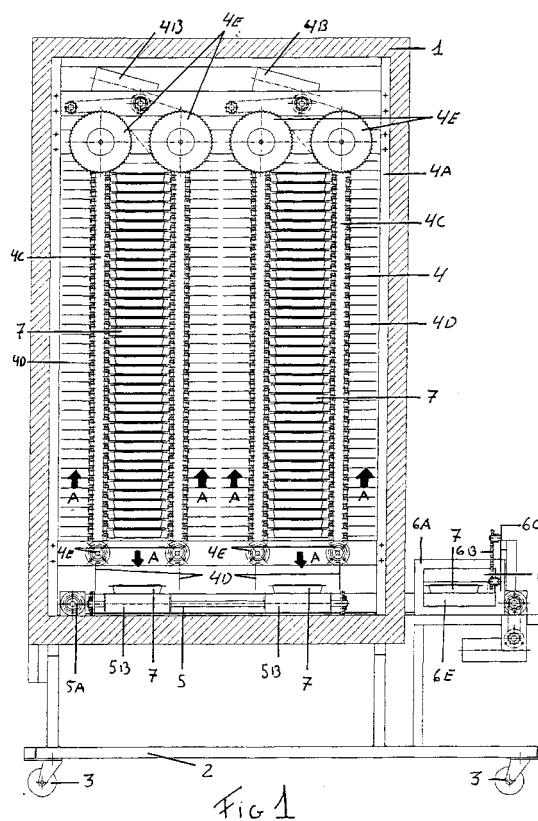
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(54) **Equipment for preservation, cooking and automatic vending of cooked and uncooked food in general**

(57) The present patent is described as being an equipment for automatic preservation, cooking and vending of cooked or uncooked food in general which, by reason of its characteristics, is provided not only with the vending function, but also those of storage, refrigeration and cooking. It has a specific design and shape, is easily accessed for better adaptation and safety, easy handling and installation features, is of accessible cost and, by reason of its characteristics and dimensions, is adaptable to any place and product. The present patent comprises the utilization of a modern and efficient equipment for fully automated food vending having the function of receiving money and storing, refrigerating, heating (if necessary) and delivering the food in a quick and hygienic manner. The patent in question comprises a single equipment divided into modules for storage and refrigeration, heating, transportation and electronic control.



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Description

[0001] The present patent relates to vending equipment in general, more specifically to an equipment for the automatic preservation, cooking and vending of cooked and uncooked food in general which, by its novel characteristics, is provided not only with the vending function, but also those of storage, refrigeration, heating and cooking. It has a specific design and shape, and easily accessible for better adaptation to and safety of the user, characteristics of easy handling and installation, of quite accessible cost, easily transportable and by reason of its characteristics and dimensions, is easily adaptable to any place and product.

[0002] It is quite versatile, due to its material and shape and basic modules, in addition to the low manufacturing cost, ease of operation and great safety for the user, thereby differing from other ordinary models known in the state of the art.

[0003] The patent in question improves and adds devices in a new concept. This concept provides a more efficient, low-cost and functional product, without prejudice to its technical qualities, thereby providing the invention with advantages and improvements, the characteristics of which differ from the other ordinary models known in the state of the art.

[0004] The present patent comprises the utilization of a modern, efficient and safe equipment for the fully automated sale of foods in general to the public and that has the function of receiving money and storing foods under refrigeration and delivering them to the user in a refrigerated, warmed or cooked condition, in a quick, hygienic, cheap and satisfactory manner.

[0005] The patent in question comprises a single equipment made of steel or the like, of equal or higher lightness and strength, generally divided into a storage and refrigeration module, a transportation module, a heating and cooking module and an electronic control module with collection of money.

[0006] There is at present a faster pace in the way of life in the large cities and people are having less time to dedicate themselves to fundamental activities of the human being, such as food and recreation. In addition to these factors, the lack of room, expensive labor and high operational costs leave a portion of the market without options for quick, low-cost and hygienic meals, the consumer being unassisted in respect of his/her food needs. This takes place particularly in constant attendance places, during the twenty-four hours of the day, where the sales volume and the operational cost for the implementation of a sales point with an employee render the commercial exploitation in these places both unfeasible and prohibitive. Accordingly, the automatic equipment for the sale of foods meets these needs, by offering a practical and hygienic consumption, in addition to an extremely profitable commercial practice, with low operational costs and immediate financial return.

[0007] The scopes, advantages and other important

features of the patent in question can be more easily understood when read jointly with the appended drawings, wherein:

[0008] Figure 1 is a front view of the equipment for the automatic preservation, cooking and vending of cooked or uncooked foods in general.

[0009] Figure 2 is a lateral view in cross-section of the equipment for the automatic preservation, cooking and vending of cooked or uncooked foods in general.

[0010] Figure 3 is an upper view in cross-section of the equipment for the automatic preservation, cooking and vending of cooked or uncooked foods in general.

[0011] Figure 4 is a front perspective view of the of the equipment for the automatic preservation, cooking and vending of cooked or uncooked foods in general.

[0012] Figure 5 is a front perspective view of the equipment for the automatic preservation, cooking and vending of cooked or uncooked foods in general.

[0013] Figure 6 is a rear perspective view of the equipment for the automatic preservation, cooking and vending of cooked or uncooked foods in general.

[0014] Figure 7 is a rear perspective view of the equipment for the automatic preservation, cooking and vending of cooked or uncooked foods in general.

[0015] As can be inferred from the appended drawings that illustrate and are an integral part of the present descriptive report of patent for model of utility for "Equipment for Automatic Preservation, Cooking and Vending of Cooked or Uncooked Food in General", Figure 1 shows the equipment in a general manner as having a rectangular-shaped structure (1) on a chassis (2) with four casters (3), made of steel or the like, having an equal or higher lightness and strength and comprised of a storage, dispensing and refrigeration module (4), a transportation module (5), a heating and cooking module (6) and an electronic process control module.

[0016] All food stored, that is, placed inside the equipment, is previously and individually packaged in proper packaging (7) able to withstand the refrigeration, transportation, cooking and final consumption process by the users, in a safe, hygienic and practical manner.

[0017] The storage, dispensing and refrigeration module (4) is comprised of a rectangular structure (4A) of steel or the like, of equal or higher lightness and strength, inside the structure (1) and supported on the chassis (2), an internal thermal lining in the entire structure, in order to maintain the proper internal temperature, two electric motors (4B), two double roll chain systems (4C) with lateral ribs (4D), having the function of supporting the packages (7) while it is stored and vertical transportation, a system of four upper and four lower tensioning wheels (4E), a mechanical force transmission system and a refrigeration device that maintains the food at the proper temperature for better preservation thereof, as shown on figures (1) and (2).

[0018] The storage, dispensing and refrigeration module (4) can contain one, two or more double roll chain systems (4C) with lateral ribs (4D) and, accord-

ingly, the remaining devices, depending on the needs of use of the equipment and the installation site conditions.

[0019] The function of this storage, dispensing and refrigeration module (4) is to store the food under a proper atmosphere and dispense the necessary quantity of that given food, when so requested by the electronic process control module.

[0020] The transportation module (5) attached inside the structure (1) and supported on the chassis (2) is comprised of electric motors (5A), two transversal, horizontal conveyors (5B) attached under the heating, dispensing and refrigerating module (4) and a longitudinal horizontal conveyor (5C) attached to the rear portion of the heating, dispensing and refrigerating module (4) and the heating and cooking module (6), both having the function of transporting the package (7) dispensed by the storage, dispensing and refrigerating module (4) towards the heating and cooking module (6), wherein the food will be heated, cooked and made available for final consumption at the proper temperature, as shown in detail on Figure (3).

[0021] Instead of two transversal, horizontal conveyors, the transportation module (5) may contain two horizontal transportation systems and instead of the longitudinal horizontal conveyor (5C), a horizontal transportation system, depending on the utilization needs.

[0022] The heating and cooking module (6) attached inside the structure (1) and supported on the chassis (2) laterally to the heating, dispensing and refrigerating module (4) is comprised of an oven (6A), a roll chain system (6B) having lateral arms (6C) on the inner portion of the oven (6A) for transportation of the packages (7), two resistance banks (6D) in the inner portion of the oven (6A) for heating and cooking of the food and a dispenser (6E) (tray) to make the package (7) available to the user, as shown on Figure (3). The function of this module is to heat and cook at the proper temperature and for the proper time the food to be made available to the user for consumption.

[0023] In the specific case where the foods should be served in a refrigerated condition, the package (7) passes inside the heating and cooking module (6), that is, through the oven (6A) without being heated thereby, and the latter serves only as a dispenser of the product to the user for consumption.

[0024] The electronic process control module has the purpose of accepting the request of a given food by a user or operator, controlling the preparation process and making the ready food available to the client or operator. The electronic process control module is comprised of a central programmable logic control module, an automatic coin and/or currency bill accepting and identifying system, a power source module, electric actuators and sensors.

[0025] The operating process of the equipment for automatic preservation, cooking and vending of cooked or uncooked food in general starts with the supply of the packages (7) containing the food to the refrigerated por-

tion, that is, the storage, dispensing and refrigeration module (4). Upon supplying the equipment with food, the former is ready for operation.

[0026] As long as the food contained inside the equipment is not requested by the users, the former remain in storage inside the refrigerated ambient of the storage, dispensing and refrigeration module (4) which, in this manner, preserves and provides a longer useful life to the food, as shown on Figures (1) and (2).

[0027] When the users requests food by introducing currency bills and/or coin in the appropriate place and selecting the desired food on the outer panel, the electronic process control module receives and processes this information. If the information processed by the electronic process control module is correct, this module starts to control the entire preparation process. Subsequently, the logic system actuates the electric motor (4B) corresponding to the stack of packages (7) of the selected food. The electric motor (4B) in turn actuates a double roll chain system (4C) with lateral ribs (4D), moving them in the vertical direction, towards the lower portion of the equipment, as shown by arrows (A) of Figure (1). Accordingly, when both roll chains (4C) start to revolve around their lower tensioning wheels (4E), their lateral ribs (4D) follow them, dropping one unit of package (7) on the transversal horizontal conveyor (5B) located on the lower portion of the storage, dispensing and refrigeration module (4), as shown on Figure (1), which carried the package (7) to another longitudinal horizontal conveyor (5C) arranged perpendicularly thereto, on the rear portion of the equipment, as shown by arrows (B) of Figures (2) and (3), which will take the package (7) to the inlet of oven (6A), as shown by arrow (C) of Figure (3). As soon as the package (7) containing the food is positioned in the inlet of oven (6A) at the end of the longitudinal horizontal conveyor (5C), a system perpendicular thereto, with roll chains (6B) having lateral arms (6C) is actuated so that the package (7) is dragged into the oven (6A), remaining in that position for the time required for heating or cooking of the food, as shown by arrow (D) of Figure (3). In the case of frozen food, the permanence within the oven (6A) is not necessary, and a direct transportation takes place towards the dispenser (6E) (tray) for delivery of the package (7) to be removed by the user. When the food is already heated and cooked for a predetermined time and temperature by means of the electronic process control module, the roll chain system (6B) with lateral arms (6C) guides the package (7) out of the oven (6A) ready for consumption, as shown by arrow (E) of Figure (3). Upon exiting the oven (6A), the package (7) is deposited on the dispenser (6E) (tray) for delivery of the package (7), making the food available for consumption, as shown on Figure (3).

[0028] If the heating and cooking of another food in addition to the one lying inside oven (6A) is required, the electronic process control module actuates the roll chain system (6B) with lateral arms (6C) so that the latter

moves the package (7) located inside the oven (6A), near the first resistance bank (6D) towards the position of the second resistance bank (6D) and simultaneously moves the second package (7) that was outside the oven (6A) near the latter's inlet, to the position near the first resistance bank (6D).

[0029] Since it is made of steel or the like, of equal or higher lightness and strength, the equipment does not rust, is tamper-proof, has a great durability and provides more comfort and safety to the user.

[0030] The equipment for automatic preservation, cooking and vending of cooked or uncooked food in general has practical and hygienic features for the consumption of food, associated to an extremely profitable commercial practice, with low operational costs and immediate return.

[0031] By reason of its general characteristics, the equipment for automatic preservation, cooking and vending of cooked and uncooked food in general can be manipulated in the same manner and with the same ease and safety by children, teenagers, adults, elders and physically impaired persons.

[0032] By reason of its constitution and constructive arrangement, the present equipment has the advantages of low final cost, reduced dimension, allowing the storage thereof in small spaces, the large number of advertising and/or information data it may contain, the great ease of handling, great safety, strength and durability.

[0033] By reason of its general features, the equipment for automatic preservation, cooking and vending of cooked or uncooked food in general was designed for the marketing of practically all kinds of food, without large adaptations and for an extended period.

[0034] All these features allow to classify this equipment for automatic preservation, cooking and vending of cooked or uncooked food in general as being extremely useful for the packaging, heating and vending of any kind of food and capable of being handled by any person; however, the measures and dimensions can vary depending on the utilization needs.

Claims

1. "EQUIPMENT FOR AUTOMATIC PRESERVATION, COOKING AND VENDING OF COOKED OR UNCOOKED FOOD IN GENERAL", characterized in that it comprises a rectangular shaped structure (1) on a chassis (2) with four casters (3), made of steel or the like of equal or higher lightness and strength, and comprised of a storage, dispensing and refrigeration module (4), a transportation module (5), a heating and cooking module (6) and an electronic process control module.
2. "EQUIPMENT FOR AUTOMATIC PRESERVATION, COOKING AND VENDING OF COOKED OR

UNCOOKED FOOD IN GENERAL" according to claim one and characterized in that the food placed inside the equipment is previously and individually packaged in appropriate packages (7) capable of resisting the refrigeration, transportation, cooking and final consumption process.

3. "EQUIPMENT FOR AUTOMATIC PRESERVATION, COOKING AND VENDING OF COOKED OR UNCOOKED FOOD IN GENERAL" according to claim one, characterized in that the storage, dispensing and refrigeration module (4) is comprised of a rectangular structure (4A) of steel or the like of equal or higher lightness and strength inside the structure (1) and supported on the chassis (2), an inner thermal lining inside the entire structure to maintain the temperature, two electric motors (4B), two double roll chain systems (4C) with lateral ribs (4D), a system of four upper and four lower tensioning wheels (4E), a mechanical force transmission system and a refrigeration device to maintain the temperature.
4. "EQUIPMENT FOR AUTOMATIC PRESERVATION, COOKING AND VENDING OF COOKED OR UNCOOKED FOOD IN GENERAL" according to claim one, characterized in that the storage, dispensing and refrigeration module (4) is capable of containing one or more double roll chain systems (4C) with lateral ribs (4D) and, accordingly, the remaining devices.
5. "EQUIPMENT FOR AUTOMATIC PRESERVATION, COOKING AND VENDING OF COOKED OR UNCOOKED FOOD IN GENERAL" according to claim one, characterized in that the transportation module (5) attached inside the structure (1) and supported on the chassis (2) is comprised of electric motors (5A), two transversal horizontal conveyors (5B) attached under the heating, dispensing and refrigeration module (4) and a longitudinal horizontal conveyor (5C) attached to the rear portion of the heating, dispensing and refrigeration module (4) and the heating and cooking module (6).
6. "EQUIPMENT FOR AUTOMATIC PRESERVATION, COOKING AND VENDING OF COOKED OR UNCOOKED FOOD IN GENERAL" according to claim one, characterized in that, instead of the two transversal horizontal conveyors (5B), the transportation module (5) can contain two horizontal transportation systems and a horizontal transportation system in lieu of the longitudinal horizontal conveyor (5C).
7. "EQUIPMENT FOR AUTOMATIC PRESERVATION, COOKING AND VENDING OF COOKED OR UNCOOKED FOOD IN GENERAL" according to

claim one, characterized in that the heating and cooking module (6) attached inside the structure (1) and supported on the chassis (2) laterally of the heating, dispensing and refrigeration module (4) is comprised of an oven (6A), a roll chain system (6B) having lateral arms (6C) in the inner portion of oven (6A), two resistance banks (6D) in the inner portion of the oven (6A) and a dispenser (6E) (tray).

8. "EQUIPMENT FOR AUTOMATIC PRESERVATION, COOKING AND VENDING OF COOKED OR UNCOOKED FOOD IN GENERAL" according to claim one, characterized in that the electronic process control module is comprised of a central programmable logic control module, an automatic coin and/or currency bill acceptance and identification system, a power source module, electrical actuators and sensors.

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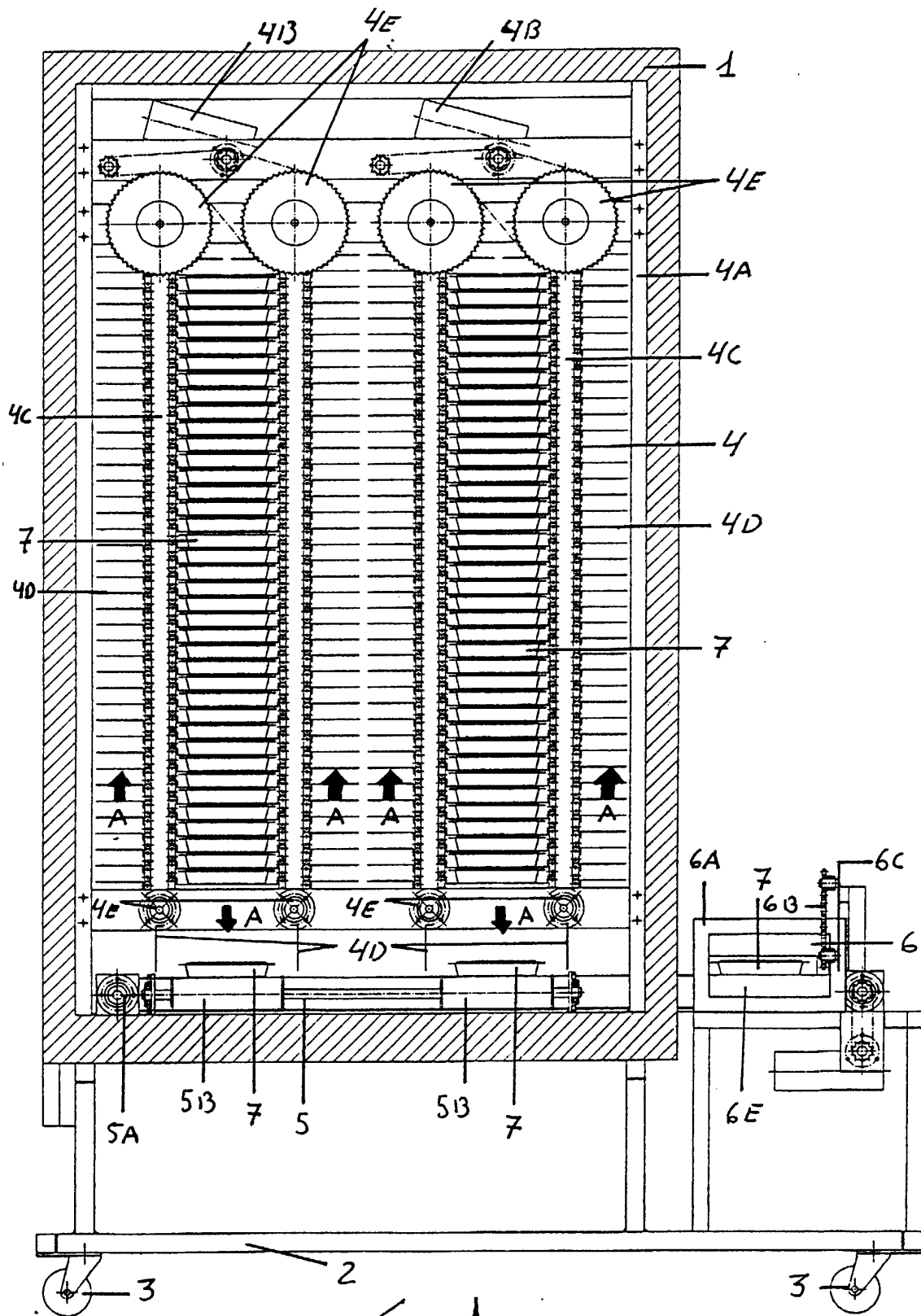


Fig 1

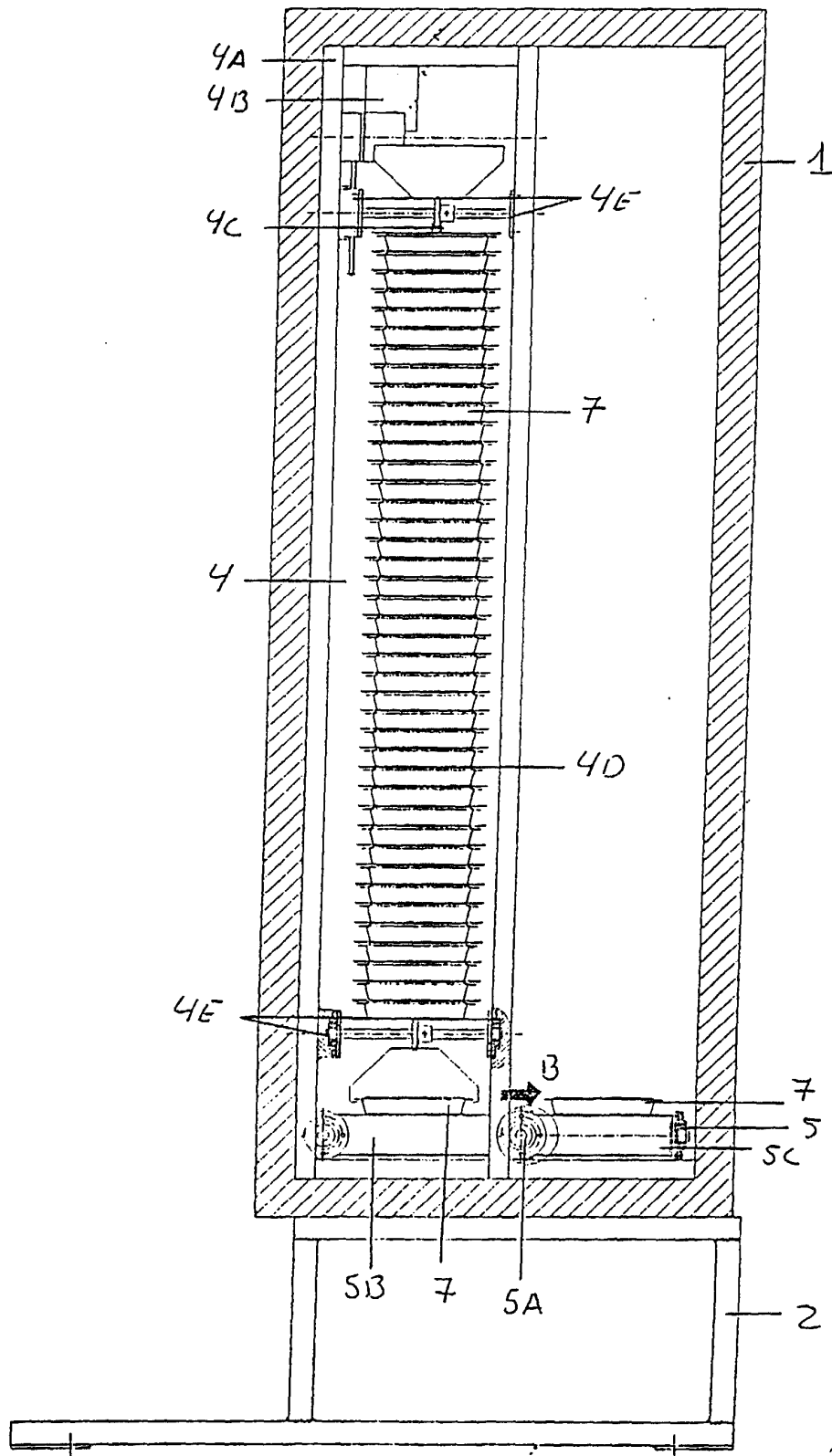


Fig. 2

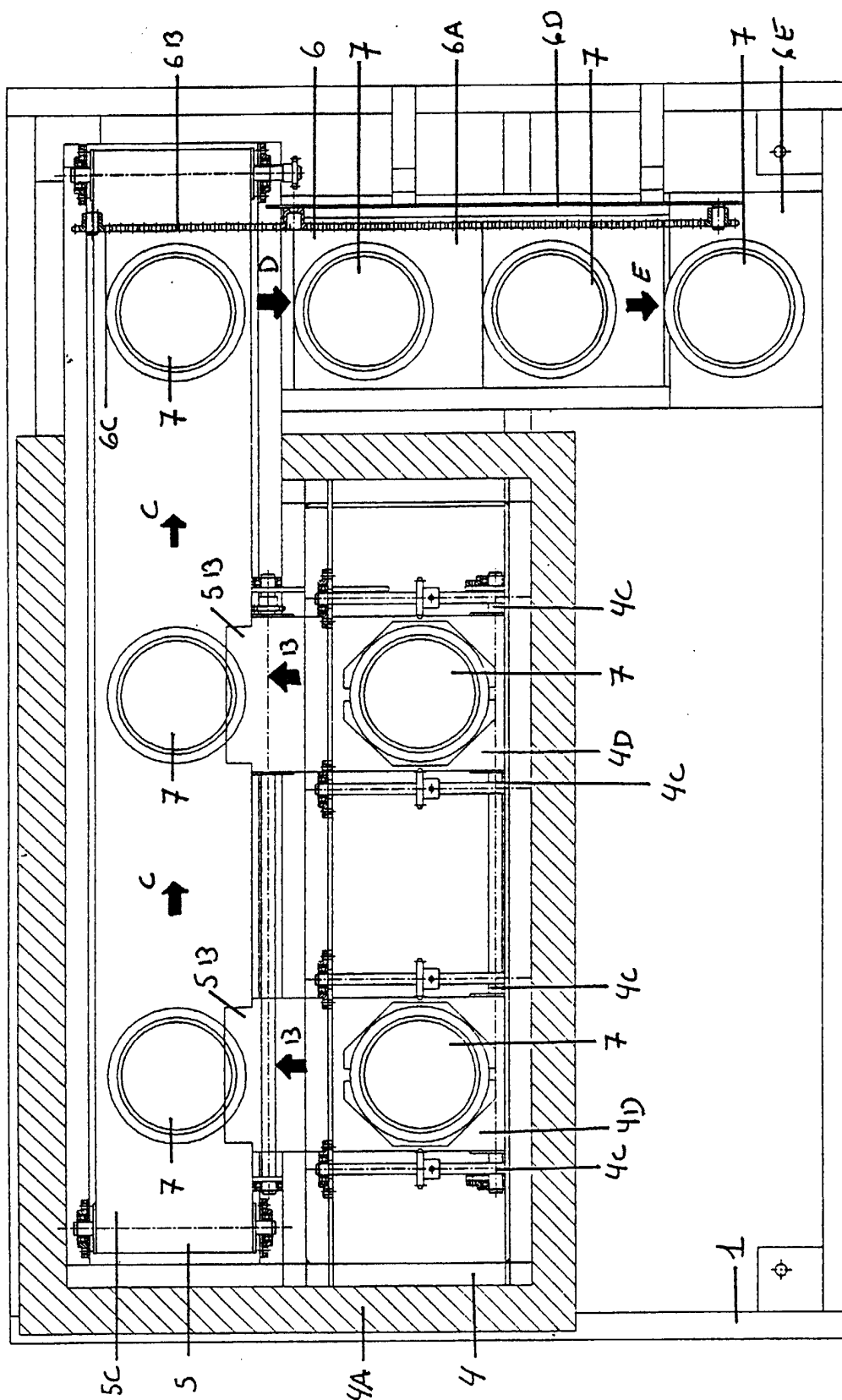


Fig. 3

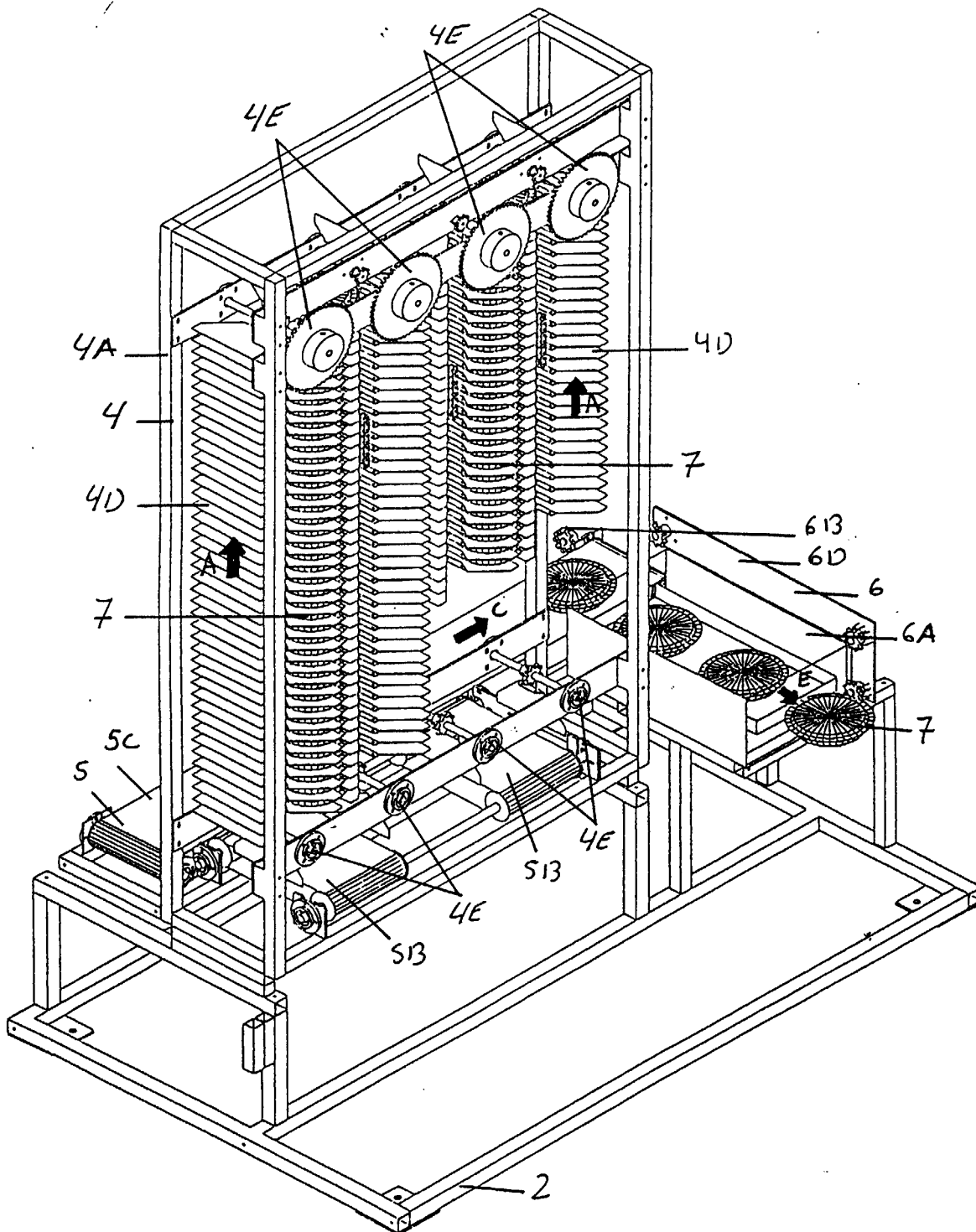


Fig 4

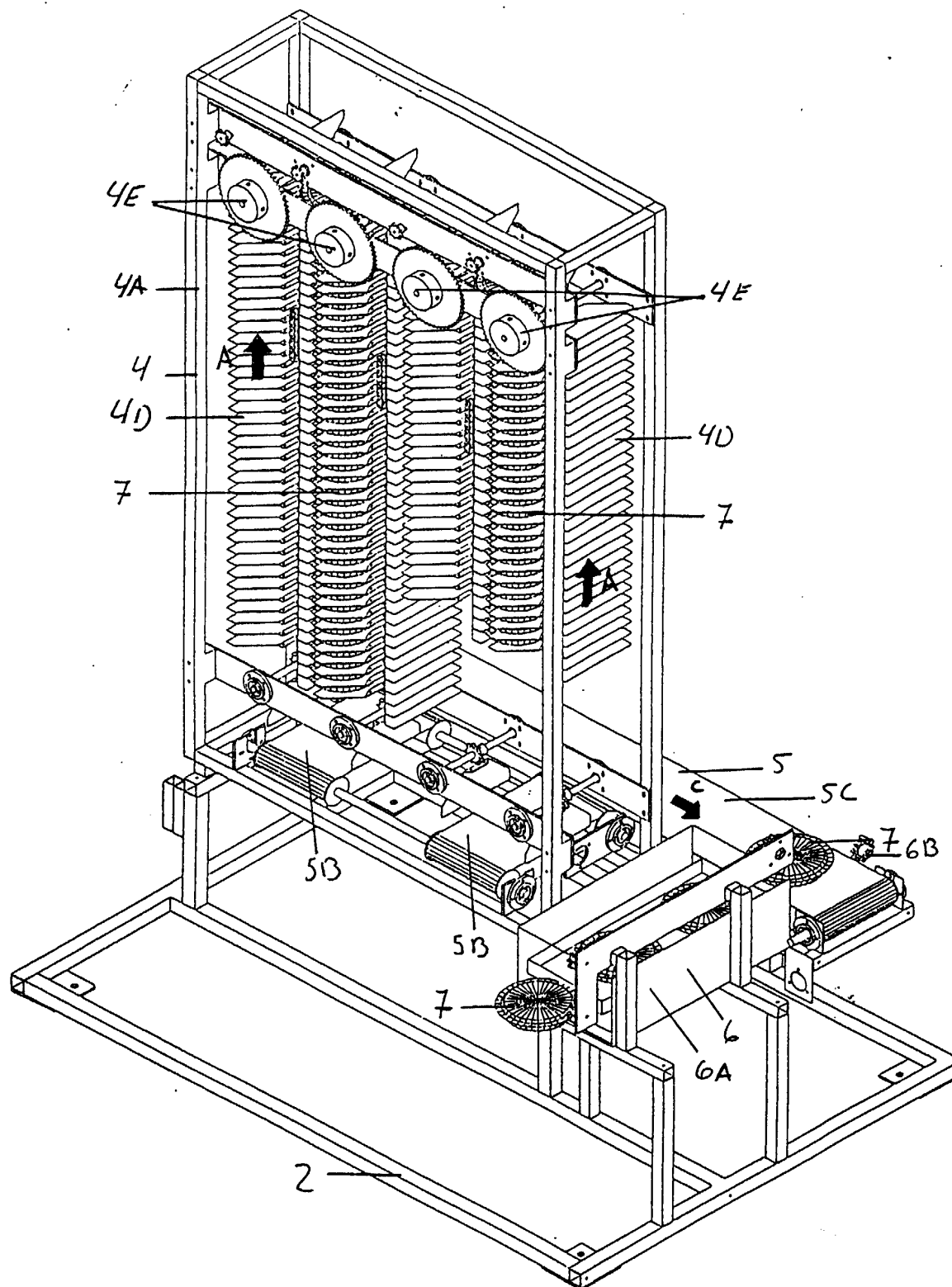


FIG. 5

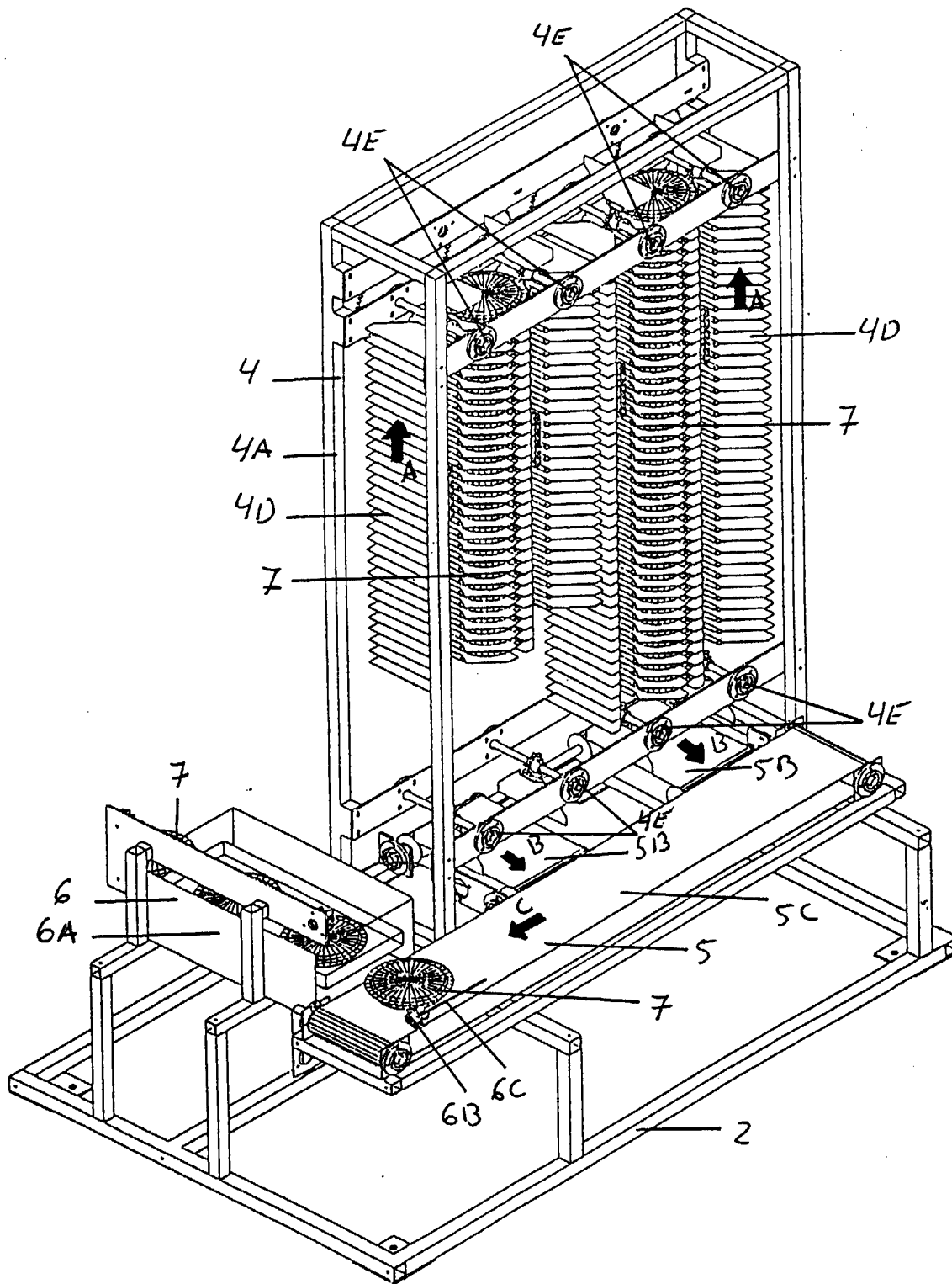


Fig. 6

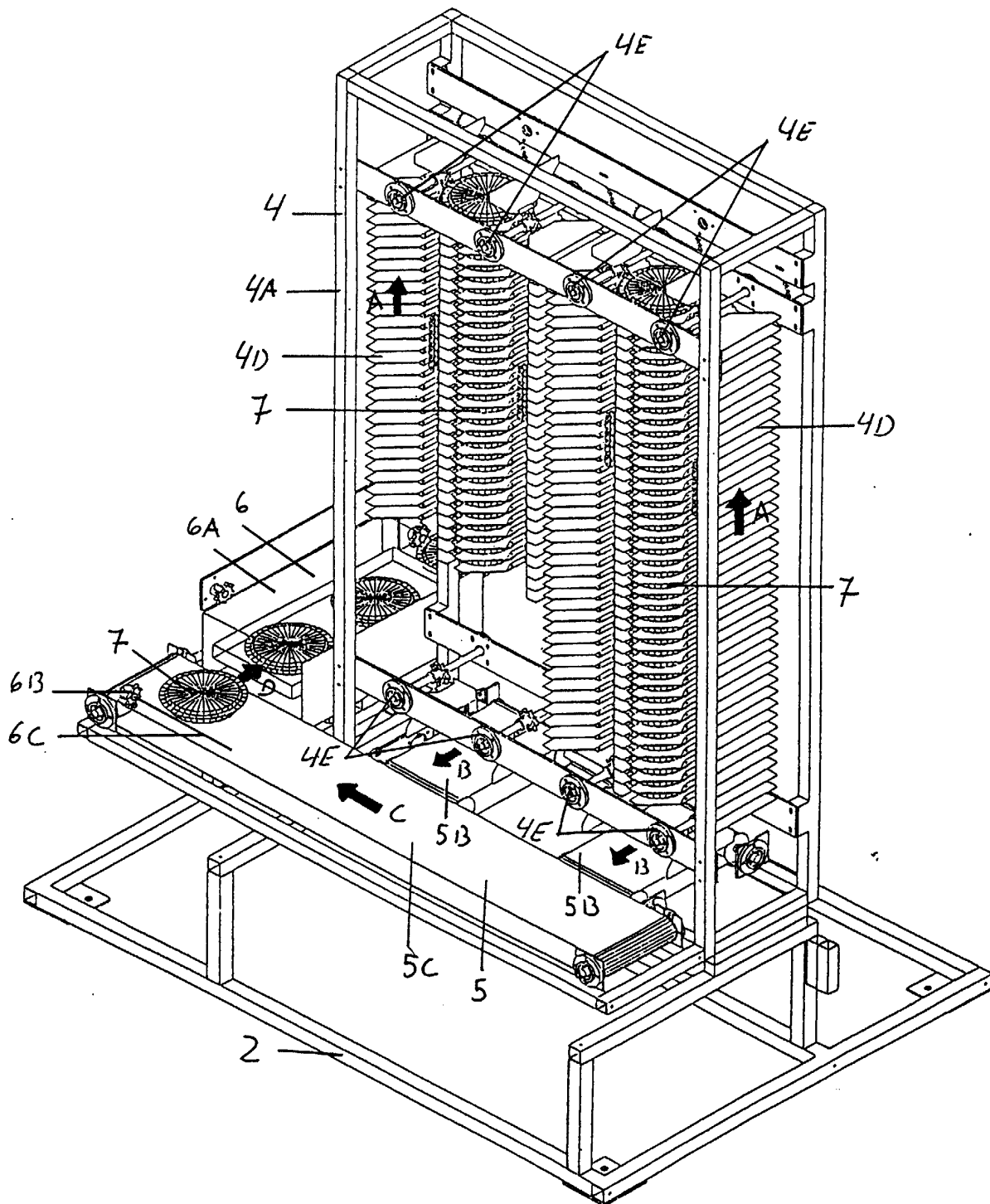


Fig. 7



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