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Bagging spade for bread slicer

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(56) Related Art
US 4216689 A
US 2332084 A
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ABSTRACT

A bagging spade 4, for a slicing machine including a planar member 9 for positioning in a product path of the slicing machine, having a flanged region 10 extending longitudinally and preferably laterally of the planar region 9, and a pivotal mounting 6 for the planar member 9 for rotating the bagging spade 4 out of the product path.

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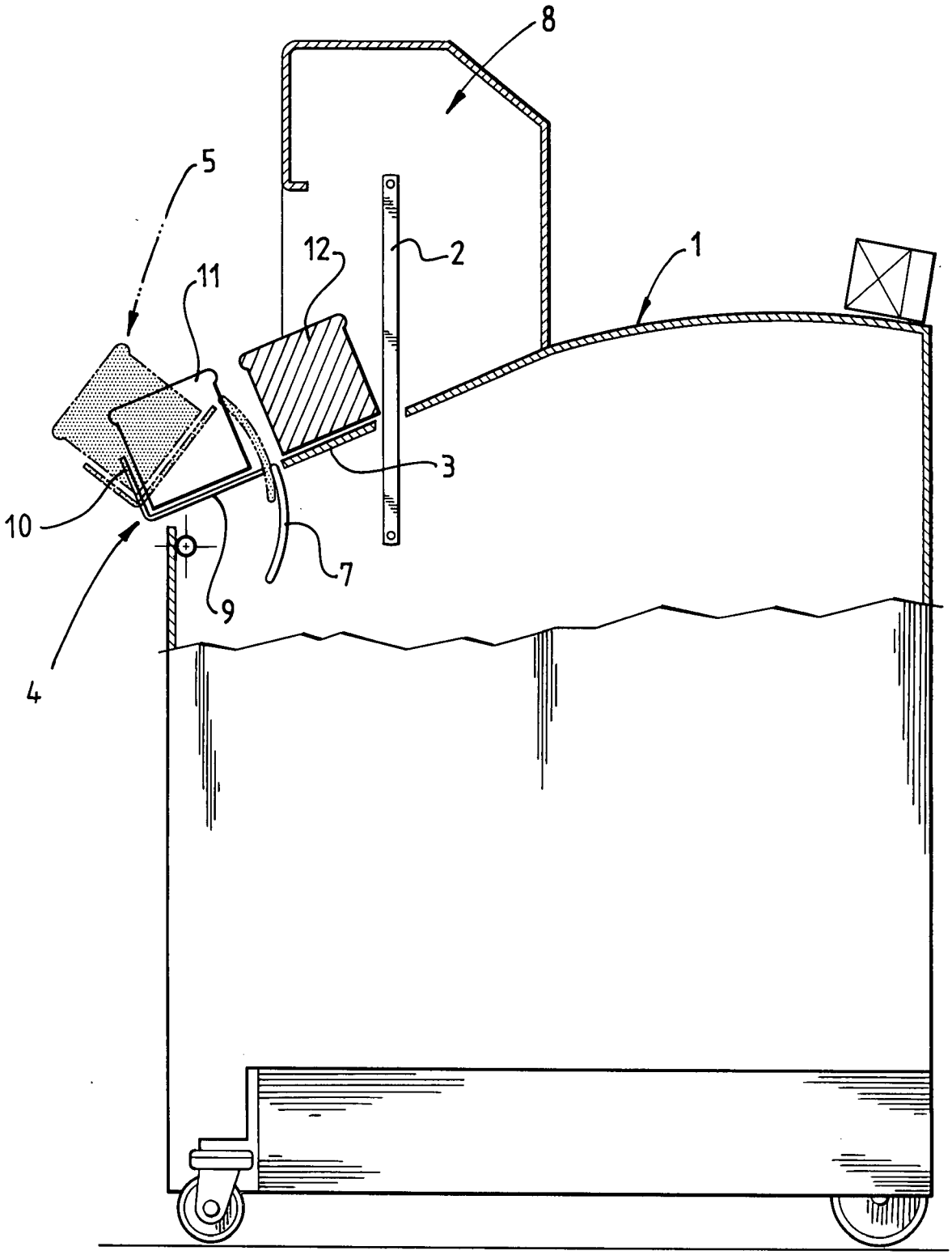

Fig. 1

P/00/011
Regulation 3.2

AUSTRALIA

Patents Act 1990

COMPLETE SPECIFICATION
STANDARD PATENT

Invention Title: **Bagging spade for bread slicer**

The following statement is a full description of this invention, including the best method of performing it known to us:

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Bagging spade for bread slicer

Field of the invention

This invention relates to improvements in slicing machines.

Background of the invention

Bread slicing machines are commonplace in most bakeries and retail outlets. The loaves of bread are generally sliced through either a series of figure 8 bands of blades or through reciprocating blades which allows multiple slices to be cut at once or by sickle slicing one slice at a time using a single blade. In most of the slicer designs, the operator places one or more loaves on a platform and the loaves are moved through the blades by mechanical devices or by gravity. Depending on the feed mechanism, the platform can be inclined or flat.

Once the slicing operation is complete, the sliced loaf is commonly removed by the operator from a position rearward of the cutting station containing the blades. The sliced loaves are then placed into bags.

To permit this to be done manually, the loaf is commonly lifted to a bagging spade. The shape of the spade is typically longer than the usual sliced loaf to ensure that the loaf can be totally contained on the spade and also to fit different sized loaves. The spade can be angular in shape or simply a flat surface. The spade may be angled when mounted on a machine so as to encourage the individual slices to remain arranged in a generally upright position resembling a loaf as the bag is slid over the spade and loaf. A flat vertical end on the spade retains the front slice upright with the rear slice held against the rest of the loaf by the incline angle of the spade.

In bakeries and retail outlets, there is often a shortage of available space and so the space allocated to a slicing machine and bagging spade is limited. Therefore, it is desirable for the slicing machine and bagging spade to be part of a single machine. It is also desirable for the sliced loaf to be able to progress to the bagging spade with little or no operator intervention.

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Attempts to automate the bagging process have generally been unsuccessful where a large variety of loaf types are sliced. Accordingly a manual bagging process using the spade described above is usually preferred.

It is one aspect of this invention to provide a device for presenting a sliced loaf for bagging and another aspect of the invention provides a bread slicer having a device for presenting a sliced loaf for bagging.

Summary of the invention

In one aspect, the invention provides a product slicer including a surface defining a path along which a product travels, a cutting station on the path for slicing the product, to form sliced product, and at least one bagging spade on a downstream side of the cutting station for receiving the sliced product, the bagging spade including a member defining a planar region positionable in the product path to receive the sliced product and a guide member rotatable with the planar region, the bagging spade being rotatable to move the planar region out of the product path to present the sliced product for bagging, and move the guide member to a position to prevent movement of further product onto the planar region.

In one preferred form of the invention, the bagging spade includes a planar member having a flanged region for contact with the sliced product. The flanged region preferably extends longitudinally and laterally of the planar region along an edge of the planar region. The planar region is sized to receive that portion of the sliced product which is to be bagged. As the sliced loaf moves into position on the bagging spade, one longitudinal side and one end of the sliced loaf contacts the flanged region of the bagging spade. The bagging spade is preferably pivotable about an axis at an angle to the direction of travel of the product. Preferably the axis of rotation of the bagging spade is substantially perpendicular to the direction of travel of the product.

In another aspect of the invention, there is provided a bagging spade for a slicing machine including

a member defining a planar region positionable in a product path of the slicing machine to receive sliced product and, having a flanged region extending longitudinally;

a guide member; and

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a pivotal mounting about which the member and the guide member are rotatable to move the planar region out of the product path, to present the sliced product for bagging, and the guide member to a position to prevent movement of further sliced product onto the member.

In one form of this aspect of the invention, the flanged region extends along the edge of the planar region. The pivot axis of the planar region is preferable perpendicular to the product path or direction of travel of the product.

The bagging spade may be attachable in the product path of a slicing machine.

In both aspects of the invention, the bagging spade is preferably provided with a guide member which prevents movement of sliced product onto the bagging spade when the bagging spade is rotated out of the product path. The guard member is preferably a plate or arc-shaped member extending below the planar surface of the bagging spade such that rotation of the bagging spade raises the guide member to a position where product exiting the cutting station contacts the guide member. The guide member maintains contact with the next sliced loaf until the planar surface of the bagging spade is rotated back into position to be loaded.

Brief description of the drawings

Figure 1 is a schematic diagram of the slicing machine with bagging spade in accordance with the invention;

Figure 2 is a perspective view of another slicing machine.

Detailed description of the embodiments

In Figure 1 a slicing machine and bagging spade in accordance with the embodiment of the invention is shown. While the invention will be described with reference to bread and the slicing of bread, the invention could equally be used for slicing and bagging other elongate items or bakery products into slices or smaller pieces.

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The slicing machine includes a feed table 1 upstream of the cutting blades 2 for loading the loaves prior to slicing. The feed table may be flat or inclined as shown in Figure 1. The incline on the feed table enables gravity to feed the unsliced loaf or loaves to the cutting station 8 on the slicer. In the embodiment shown, the cutting station 8 comprises a frame and reciprocating cutting drive for supporting and actuating the reciprocating cutting blades 2. A multiple number of slicer blades 2 are used in the cutting station to cut the loaf into a number of slices. Other types of single or multiple cutting arrangements can be used in the cutting station 8 without departing from the spirit and scope of the invention.

The loaves travel on a product path from the loading section 1 through the cutting station 8 and outlet table 3. The loaves are generally aligned with their longitudinal axis perpendicular to the travel path such that the plane of each slice is perpendicular to that longitudinal axis.

The surface through the cutting station 8 to the outlet table 3 is generally inclined at an angle to the horizontal to assist the progression of the loaves. An automatic mechanical feeder at the loading section (not shown) may also be used to assist with the progression of the loaves through the cutting station. The details of an automatic mechanical feeder and a preferred bread slicer for use with the invention are described in Australian patent application no 2005203152 filed 21 July 2005 in the name of Moffat Pty Ltd, the whole contents of which are incorporated herein by reference.

Adjacent to the outlet table is a bagging spade 4 mounted for rotation out of the product path. The bagging spade 4 includes a generally planar member 9 having length and width dimensions to be in line with the surface of the slicer sized to receive a sliced loaf. The surface of the planar member 9 is normally inclined so that the sliced loaf can

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progress from the outlet table onto the planar member. The bagging spade is provided with a flange region 10 which contacts and abuts against the sliced loaf 11 once it is fully loaded onto the bagging spade 4. The flange region 10 in this embodiment extends along the longitudinal edge of the planar region 9. A further lateral flange region 14 may also be provided at one end to maintain the slices vertical and prevent the slices of the loaf separating.

The bagging spade 4 which may be mounted to the slicer or a mounting assembly 12 adjacent to the slicer is pivotable about an axis 6 parallel to the longitudinal axis of the loaf. Hence the bagging spade rotates to lift the sliced product 11 backwards and upwards out of the product path as shown by position 5. Once the loaf is loaded onto the bagging spade, the bagging spade 4 is rotated about the pivot axis 6 into a position where the bagging spade can be inserted into a bag. The bag with the sliced loaf

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retained within the bag is then removed from the bagging spade in a reverse action. Once the loaf is removed from the spade, the empty weight of the spade causes it to retract to the original position ready for the next loaf.

The bagging spade may be further provided with a guide member 7 adjacent the leading edge of the planar region 9 of the spade 4. The guide member 7 is intended to prevent movement of the sliced product 12 from the outlet table when the bagging spade is rotated into a position where the sliced product can be loaded into a bag. A gap exists between the guide member 7 and planar region 9 to allow a bag to pass between the guide member 7 and planar region during the bagging operation. The guide member 7 is shown as a plate or arc shaped member extending below the planar surface of the outlet table and bagging spade. Rotation of the bagging spade raises the guide member to a position where the product exiting the cutting station 8 contacts the guide member. The guide member maintains contact with the next sliced loaf until the planar surface of the bagging spade is rotated back into position for loading of the next sliced loaf.

In a second embodiment of the invention, shown in Figure 2, the loaves depart the cutting station in more than one, preferably in two rows, one next to the other such that the longitudinal axis of the loaves is perpendicular to the travel path. In this embodiment multiple bagging spades 14, 24 are provided one for each of the respective loaves and when in position to receive a loaf, are longitudinally aligned. In these circumstances, the lateral flanged region of the bagging spades may be positioned adjacent each other or they may be positioned at the same end of the respective planar regions (the latter arrangement shown in Figure 2). In order to allow access to the bagging spades when both are operating, the pivotable axis 16, 26 of the bagging spades 14, 24 may be modified to be other than perpendicular to the travel path so that there is adequate clearance between the bagging spades during the simultaneous bagging operation. The off centre rotational axis of the bagging spades 14, 24 allows each bagging spade to pivot away from the path of the respective loaves. This is particularly useful for the operation of spade 14 which has an open end adjacent to adjacent spade 24. Bagging spade 14 is able to pivot such that the open end is clear of the adjacent bagging spade 24, thereby allowing simultaneous independent bagging operation.

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It has been found that the bagging spade design in accordance with the present invention avoids the need for the operator to transfer the sliced loaf to the spade. As there is less need for the operator to handle the loaf prior to bagging, the health and hygiene characteristics of the process are improved.

Furthermore the spade may form part of the slicing machines outlet table. As bagging spades are commonly placed in positions in front of the machine which not only take up valuable space but often hinder the view of the slicing process, this valuable space is saved particularly when the bagging spade is in the retracted position and the operator's comfort and safety is improved.

It will be understood that the invention disclosed and defined in this specification extends to all alternative combinations of two or more of the individual features mentioned or evident from the text or drawings. All of these different combinations constitute various alternative aspects of the invention.

It will also be understood that the term "comprises" (or its grammatical variants) as used in this specification is equivalent to the term "includes" and should not be taken as excluding the presence of other elements or features.

CLAIMS

1. A product slicer including a surface defining a path along which a product travels, a cutting station on the path for slicing the product, to form sliced product, and at least one bagging spade on a downstream side of the cutting station for receiving the sliced product, the bagging spade including a member defining a planar region positionable in the product path to receive the sliced product and a guide member rotatable with the planar region, the bagging spade being rotatable to move the planar region out of the product path to present the sliced product for bagging, and move the guide member to a position to prevent movement of further product onto the planar region.

2. The product slicer of claim 1 wherein the bagging spade defines a planar region and a flanged region for contact with the sliced product.

3. The product slicer of claim 2 wherein the flanged region extends longitudinally and laterally of the planar region along an edge of the planar region.

4. The product slicer of claim 3 wherein the bagging spade is pivotable about an axis at an angle to the direction of travel of the product.

5. The product slicer of claim 4 wherein the axis of rotation of the bagging spade is substantially perpendicular to the direction of travel of the product.

6. The product slicer of claim 1 wherein the downstream side of the cutting station is provided more than one bagging spade.

7. The product slicer of claim 6 wherein the multiple bagging spades are positioned adjacent each other, longitudinally aligned.

8. A bagging spade for a slicing machine including:

a member defining a planar region positionable in a product path of the slicing machine to receive sliced product andhaving a flanged region extending longitudinally;

a guide member; and

a pivotal mounting about which the member and the guide member are rotatable to move the planar region out of the product path, to present the sliced product for

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bagging, and the guide member to a position to prevent movement of further sliced product onto the member.

9. The bagging spade of claim 8 wherein the flanged region also extends laterally of the planar region.

10. The bagging spade of claim 8 or 9 wherein the flanged region extends along the edge of the planar region.

11. The bagging spade of claim 8 wherein the pivot axis of the planar region is perpendicular to the product path or direction of travel of the product.

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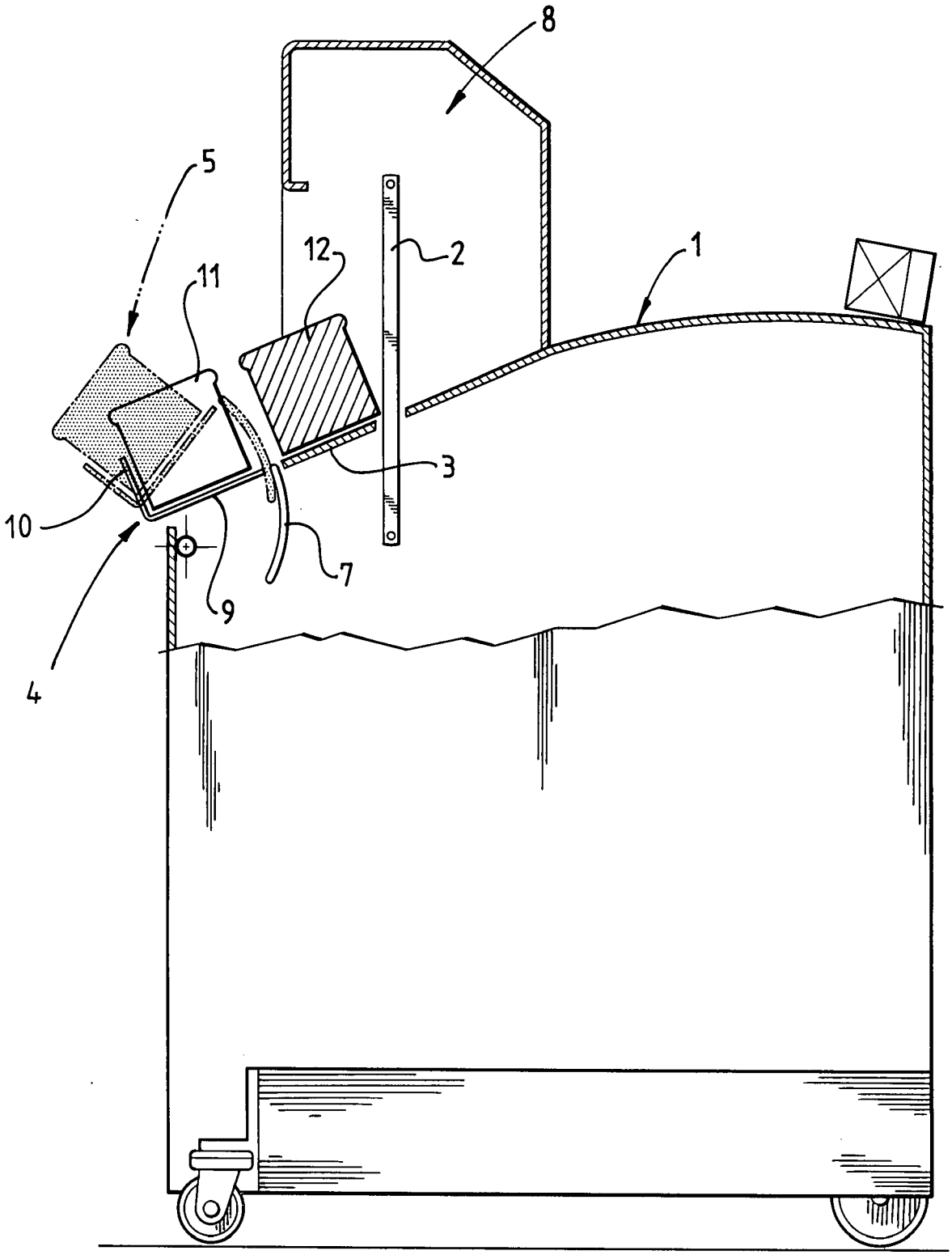

Fig. 1

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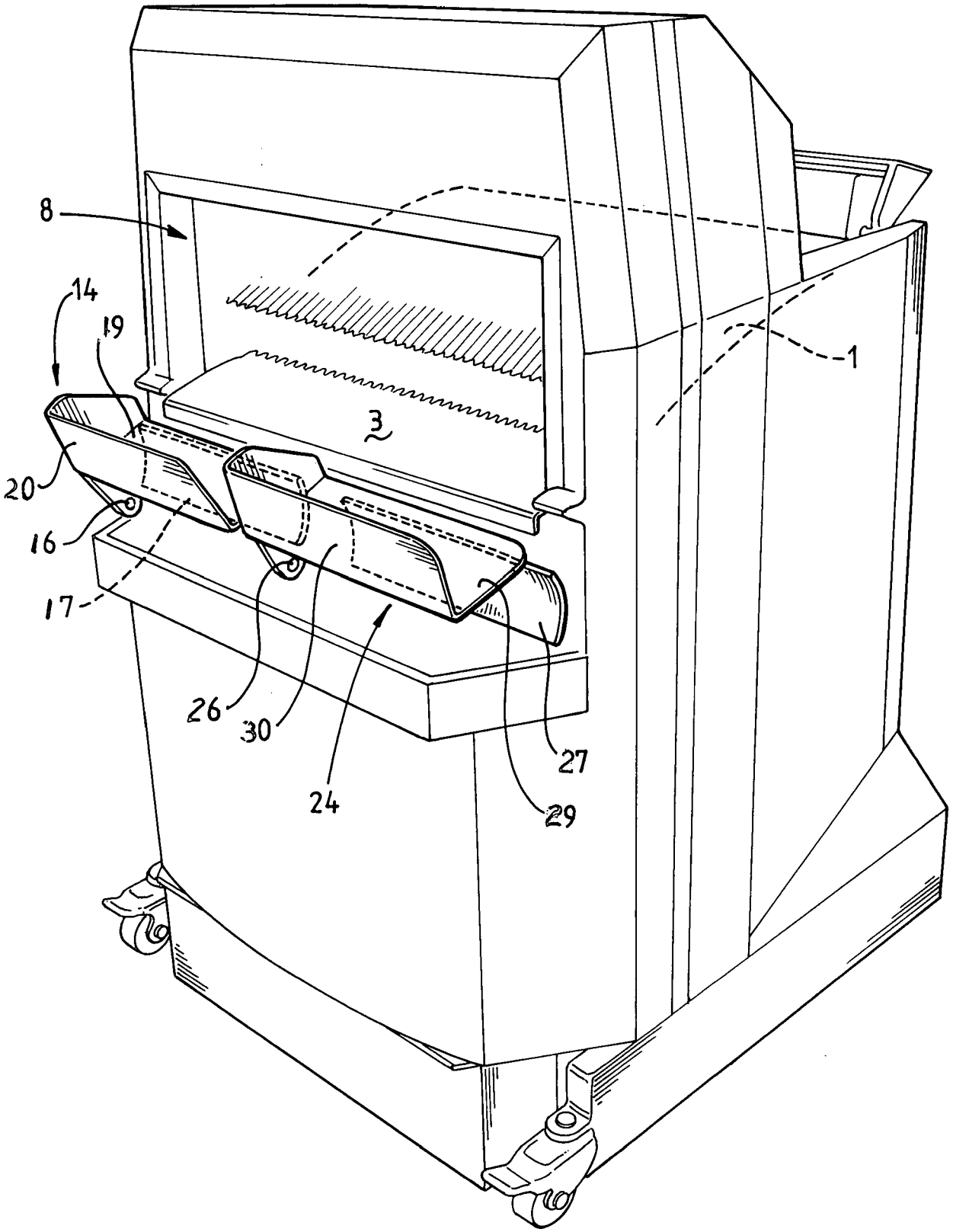

Fig. 2