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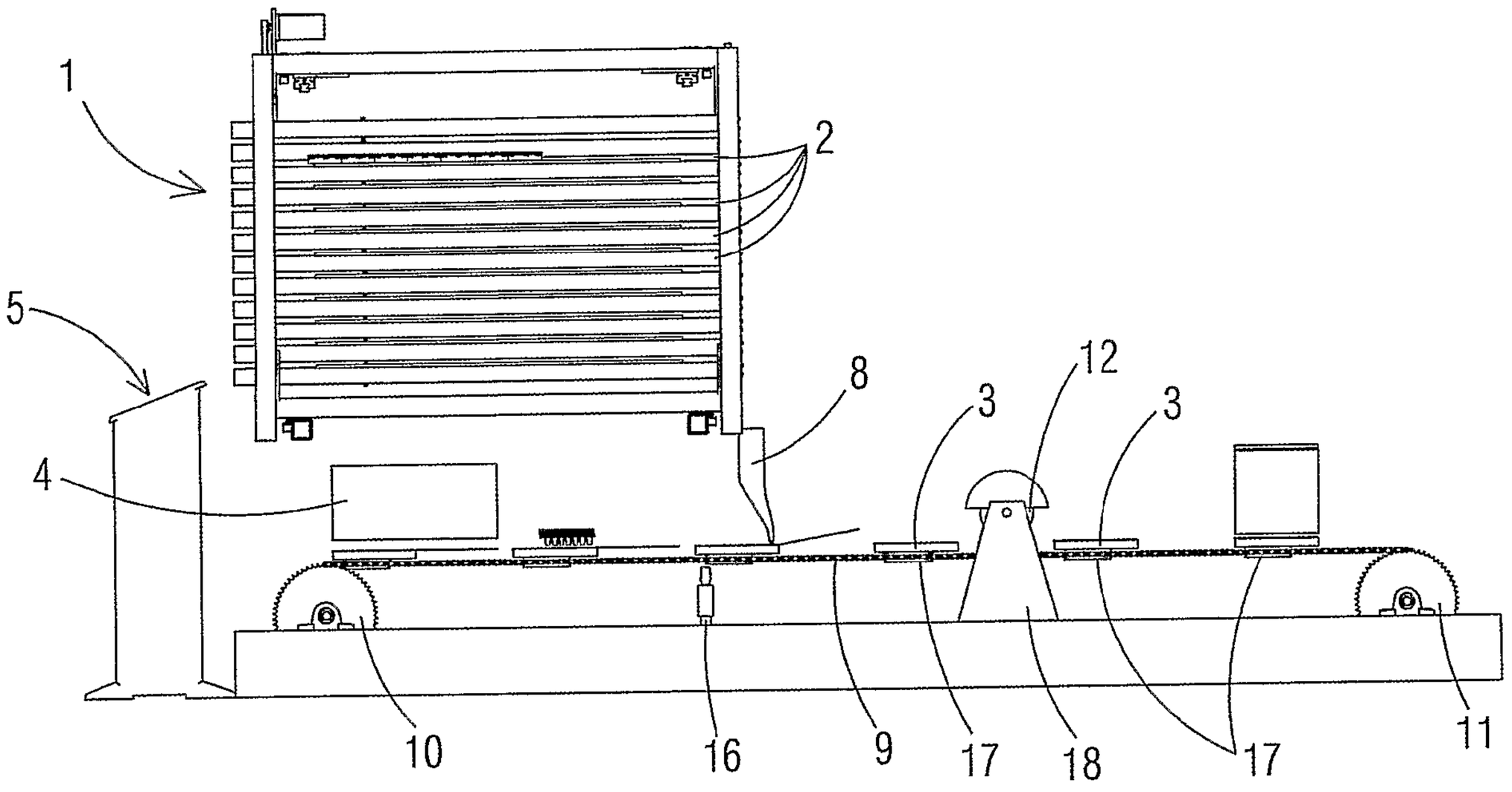
(54) **Titre : MACHINE DE DISTRIBUTON D'EMBALLAGES DU TYPE BLISTER**
(54) **Title: DISPENSER MACHINE FOR BLISTER TYPE PACKS**



(57) **Abrégé/Abstract:**
Dispenser machine for blister type packs for the supply of tablets that has a storage area (1) where a plurality of at least two different types of tablets are stored which includes at least one platform (2) onto which the tablets or previously filled blister packs are placed, which include some means for the selection of the tablets, some means for the extraction of the tablets from said at least one platform to a blister pack to be filled, a feeder (4) for blister packs (3) connected to a conveyor means for the blister bands (3), some means of sealing the blister bands (3), and some means for the control and introduction of data (5) connected to the tablet selection means in such a way that the blister band can be filled with two or more different types of tablets.

SUMMARY

Dispenser machine for blister type packs for the supply of tablets that has a storage area (1) where a plurality of at least two different types of tablets are stored which includes at least one platform (2) onto which the tablets or previously filled blister packs are placed, which include some means for the selection of the tablets, some means for the extraction of the tablets from said at least one platform to a blister pack to be filled, a feeder (4) for blister packs (3) connected to a conveyor means for the blister bands (3), some means of sealing the blister bands (3), and some means for the control and introduction of data (5) connected to the tablet selection means in such a way that the blister band can be filled with two or more different types of tablets.

Dispenser machine for blister type packs

DESCRIPTION

OBJECT OF THE INVENTION

The object of this invention is a dispenser machine for blister type packs for the supply of tablets that incorporates appreciable innovations and advantages.

More specifically, the invention refers to a dispensing machine for blister type tablet packs, in which the said blister includes a plurality of housings or cells to receive the corresponding tablets, so that it allows the personalising of the contents of the inside of a blister in an efficient and effective manner.

BACKGROUND TO THE INVENTION

The supply of medicines in tablets by means of packaging commonly known as blister packs coming directly from the manufacturer has been known for many years. In this case said blister in the form of a band is made with a plurality of tablets each one being housed individually.

Another possibility of blister supply consists on a non-industrial level, this being, those being made in pharmacies, in which case it is the pharmacist who fills a blister to order in a manual manner with differing types of tablets, a practice that is normally carried out for elderly people who have to take a considerable number of tablets on a daily basis.

In the first case, that is, on an industrial scale, differing machines are well known by skilled persons in the art for the

manufacture and supply of blisters. However, the current machines do not allow a mixture of different tablets to be carried out in a predetermined manner on the same blister.

On the other hand, in regard to the manual preparation of blisters by people in hospital establishments or centres, such manual preparation requires a considerable amount of time for one or more people who are exclusively involved in the arrangement and preparation of the tablets along the various blister bands, a fact that increases the possibilities of mistakes in the arranging of the tablets in their corresponding placement on the blister, especially in the making of blisters with a considerable number of individual housings where two or more different types of tablets must be included.

European patent N° EP 1 627 813 describes a device for the placement of at least two different products on a blister pack. This device has hoppers in which the different types of tablets are received in bulk. In spite of this, this device does not allow for the placement of two different products into the same cell nor does it allow them to be changed by means of additional programmes. In addition, the installation of this device is not viable, for example, in pharmaceutical establishments as it would require as many hoppers as there are different products, in such a way that its possibilities for use are limited to an industrial scale on requiring a considerable sized working space.

In addition, none of the devices known by the applicant, is there the existence of an invention considered that provides the characteristics that are described in this description.

DESCRIPTION OF THE INVENTION

This invention has been developed for the purpose of providing a dispensing machine aimed at solving the previously stated disadvantages, in addition giving other advantages that will be evident from the description that is attached below.

Therefore, it is an object of the invention to provide a blister type dispensing machine for the supply of tablets, in which said blister includes a plurality of individual housings to receive tablets, said tablets coming from one or several blister type packs that have been previously packed or in bulk, characterised in that it includes:

A storage area where a plurality of at least two different types of tablets are stored that includes at least one platform on which previously filled blister packs are deposited that includes some means for the selection of the tablets; some means for the extraction of the tablets from said minimum of one platform to a blister type pack to be filled; a feeder for unsealed and empty blister bands that is connected to said conveyor means for the blister bands from the feeder to a collection point; some means for the sealing of the blister bands; some means for the control and introduction of the data that is connected to the tablet selection means in such a way that each one of the cells of the pack or blister type band can be filled with two or more different

types of tablets. Obviously, the platform could have any suitable arrangement, such as horizontal or vertical in line with the design of the internal components of the machine.

Thanks to these characteristics, a novel machine is obtained that allows for the simplification and in particular, automates a blister type filling process in a simple and very practical way that has been unknown until this time. Said machine allows blister type packs to be filled in a personalised manner, this being, filling a blister band with two or more different types of tablets in one or in several different cells of a blister type pack, unlike the machines known in the current state of the art technique which do not allow said packs to be supplied to order. Another advantage is that said dispensing machine can be installed in pharmaceutical establishments in which the space available is limited as it does not require a considerable space for its installation and operation.

In a preferred manner, the storage area includes a plurality of horizontal platforms arranged separately on differing levels, so that each platform includes some means for the extraction in an individualised manner.

In one embodiment of the invention, each platform includes a template made from a body that is appreciably laminar fitted with a plurality of housings into which the tablets to be supplied are placed in an individual manner.

According to another aspect of the invention, said extraction means consist of a pusher mechanism that is axially movable along two axes, X and Y in a sequential manner, supported by a gateway structure arranged over it on at least one platform.

In an advantageous manner, there are guide mechanisms fitted for the tablets from at least one platform to the blister pack to be filled.

By preference, the guide means of the dispenser machine comprises a dispenser hopper that collects the tablets coming from at least one platform, movable on one axis of coordinates located on the lower part of at least one platform and above the conveyor means of the blister type packs or blister bands.

According to another characteristic of the invention, each platform has a transport element on the lower part, such as a ramp that is slightly inclined compared to the horizontal plane or in an alternative embodiment from a conveyor belt connected to an evacuation channel, the end of evacuation channel is connected to the dispenser hopper.

In one preferred embodiment of the machine of the invention, the conveyor means consists of a conveyor belt provided with at least two pulleys located at the ends arranged horizontally from the feeder to the collection point, the movement distance of said conveyor belt being coordinated by the pusher mechanism.

Additionally, some printing means are included so as to print the blister pack, such as a laser type of printer, an inkjet

printer or any other known type that may be suitable for such purpose.

In regard to the movable pusher mechanism it is made with a support element that is movable axially along an upward/downward direction that holds a punch aimed towards the tablet.

In addition, the conveyor belt can include a plurality of support elements for the individual support of a blister pack.

Other characteristics and advantages of the dispenser machine object of this present invention will become clear from a description of a preferred, but not exclusive, embodiment as illustrated in the drawings that are attached, without these being in any way limiting.

A BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1. - A perspective diagrammatic view of the external appearance of the dispenser machine for tablet blister packs according to the invention;

Figure 2. - A plan view of the dispenser machine in which some parts have been omitted for reasons of clarity;

Figure 3. - A diagrammatic elevation view of the dispenser machine shown in the previous figure;

Figure 4. - A diagrammatic view of an embodiment of the pusher means;

Figure 5. - A diagrammatic elevation view of the inside of the storage area of the dispenser machine; and

Figure 6. - A lateral and plan elevation view of an embodiment of the template received on the inside of the storage area.

A DESCRIPTION OF A PREFERRED EMBODIMENT

As shown in the attached figures, an embodiment of the machine of the invention comprises a storage area which is referenced in a general manner with (1) and is intended to store a plurality of tablets. Such tablets come from either previously manufactured blister packs or are in bulk and for at least two types differing tablets, said storage area (1) has a carcass on the outside and on the inside of which there is a plurality of either horizontal or equally appreciably horizontal platforms (2) located at differing heights.

In this description, the terms 'blister band' and 'blister pack' can be considered as synonymous which refer to the same concept under the reference (3).

In addition, the dispenser machine is fitted with some means for the extraction of the tablets from said platforms (2) to a blister band to be filled, a feeder (4) of unsealed and empty blister pack bands that are connected to some blister band conveyor means from the feeder to a collection point and means for sealing blister band (3). Such sealing means is made up from a roller (12) that has been heated to a predetermined temperature and held in place by means of a support (18) fitted at a point along the blister band conveyor means.

In the attached figures the feeder has been represented in a diagrammatic way as a feeder (4) of a known type can be used that has a housing so as to stack a set of packs and some mechanical means so as to deposit said band from the feeder to the conveyor means.

The dispenser machine also includes some control and data introduction (5) means that consist of a computer with its screen, keyboard and data base where the working orders are stored. These control means (5) are connected to the tablet selection means in such a way that the blister band (3) can be filled with two or more different types of tablets.

Referring to the extraction means, these consist of a pusher mechanism (6) that is axially movable on two axes X and Y in a sequential manner, supported by a gateway structure (7) fitted over each platform (2). In the figures shown only one pusher mechanism for one platform has been shown, although it must be stated that each platform (2) has its corresponding tablet pusher mechanism.

Tablet guide mechanisms are fitted from at least one platform to the blister pack (3) to be filled, the guide means comprising a metering hopper (8) that collects the tablets coming from each platform (2) that is movable on an axis of coordinates located on the lower part of the platform (2) and over the blister band conveyor means.

Each platform (2) has on its lower part a conveyor belt (not shown) linked to an evacuation channel (not shown) that is located

on one of the sides of the storage area (1), where the end of the evacuation channel is connected to the stated metering hopper (8). This evacuation channel consists of a pipe (19) fitted vertically in such a way that the tablets coming from the conveyor belt (20) fall by gravity into said metering hopper (8) in the direction shown by the arrows, as can be seen in figure 5.

As can be seen in figures 2 and 3, the conveyor means for the blister packs consist of a conveyor belt (9) fitted with two cogged pulleys (10, 11) located at the ends, that are arranged horizontally from the feeder (4) to the collection point, the movement distance of said conveyor belt (9) being coordinated with the pusher mechanism. Additionally, the conveyor belt (9) includes a plurality of support elements (17) fixed to the conveyor belt (9) for the purpose of supporting a blister pack (3) individually.

So that the user knows when to take each tablet or knows the type of tablet deposited in each blister cell, the dispenser machine includes a printing means, such as a laser type printer (16), located along the conveyor belt (9) and especially on the lower part of the conveyor belt (9) which allows the blister pack (3) to be printed on one of its sides.

One embodiment of the movable pusher mechanism (6) is shown in figure 4 where it can be seen as consisting of a movable support element (13) that is axially placed in its upward/downward direction which has a punch (14) fixed to its lower end that will push the tablet (15).

In figure 6 a template is shown, marked with the number (21) and which is formed by an appreciably laminar body with a rectangular shape with an upper hinged lid (22) provided with a plurality of housings (23) in which the tablets to be supplied are placed in an individual manner, said plurality of housings (23) being distributed by die stamping in rows and columns. In this template in particular, the tablets can stay in a blister pack without the need to remove them as the positioning of the housings (21) coincides with the positioning of the individual cells of the standard types of blister packs that are in the market. Such a template (21) can be held by means of lateral guides that keep the template (21) in a horizontal position and can be removed with relative ease for a refilling operation once they have been used up.

The dispenser machine described above works as follows:

After the introduction of the data into the control means by means of a computer (5), the pusher element of the corresponding platform moves until it comes to the position where it finds the tablet to be placed in the blister pack, in such a way that next it presses from above in a downward direction until the tablet (15) is released from the blister so that it falls onto the conveyor belt and goes to the metering hopper (8). This action is repeated as many times as the number of tablets that must be dispensed onto a single blister, the displacement of the conveyor belt being synchronised with the extraction means. Once the blister is full it goes along the conveyor belt where the next

stage for the printing of the name of the medicines or the periods of consumption is carried out.

In this way, the dispenser machine allows a predetermined number of different tablets to be placed on a blister pack, either on the blister in general or in each one of the cells of the blister itself in an automated way and with great reliability without any margin or error by the operators.

The details, shapes, sizes and other accessorial elements, likewise the materials used in the manufacture of the dispenser machine of the invention can be appropriately substituted by others that are technically equivalent and do not stray away from the essentiality of the invention or the scope defined by the claims that are included below.

CLAIMS

1. Dispenser machine for blister type pack for a supply of tablets, in which each blister includes a plurality of individual housings so as to receive the tablets, said tablets coming from previously manufactured blister packs, comprising:

a storage area (1) where a plurality of tablets of at least two different types are stored, said storage area (1) including a plurality of horizontal platforms (2) onto which the tablets or previously filled blister packs are placed that includes means for the selection of the tablets, being arranged said platforms (2) in a separate manner to each other at differing heights;

means for the extraction of the tablets from said plurality of platforms to a blister strip to be filled; a feeder (4) for the blister bands (3) which are not sealed and are empty and connected to blister band (3) conveyor means from the feeder (4) to a collection point;

means for sealing the blister bands (3), characterized in that:

each platform (2) includes at least one template (21) formed by a substantially laminar body provided with a plurality of housings (23) into which pre-assembled blister strips are deposited in a matrix-like manner, so that the positioning of the housings (23) coincides with the positioning of the individual cells of blister pack, and individual extraction means and guide means for conveying tablets from each platform (2) to a metering hopper (8) that collects the tablets coming from each platform (2);

having control and data introduction means (5) connected to the tablet selection means in such a way each of the cells of the blister band can be filled with a predetermined number of two or more different types of tablets depending on the working

instructions that are pre-established in the control and data introduction means (5).

2. Dispenser machine according to claim 1, characterized in that the extraction means consist of a pusher mechanism (6) that is axially movable along two axes, X and Y in a sequential manner, supported by a gateway (7) structure arranged over it on at least one platform (2).

3. Dispenser machine according to claim 1, characterized in that the guide means include the metering hopper (8) that collects the tablets coming from the minimum of one platform, that can move on an axis of coordinates located on the lower part of the minimum of one platform, and above the conveyor means of the blister bands (3).

4. Dispenser machine according to claims 1 and 3, characterized in that under each platform there is a ramp that is slightly inclined in respect of the horizontal plane attached to an evacuation channel, the end of the evacuation channel being linked to the metering hopper (8).

5. Dispenser machine according to claims 1 and 3, characterized in that under each platform (2) there is a conveyor belt associated to an evacuation channel (19), the end of the evacuation channel (19) being linked to the metering hopper (8).

6. Dispenser machine according to any one of claims 1-5, characterized in that the conveyor means consist of a conveyor belt (9) fitted with at least two pulleys (10, 11) located at the ends arranged horizontally from the feeder (4) to the collection point, the movement distance of said conveyor belt (9) being coordinated by the pusher mechanism.

7. Dispenser machine according to claim 1, characterized in that it comprises means of printing so as to print on the blister pack (3).

8. Dispenser machine according to claim 2, characterized in that the movable pusher mechanism (6) consists of a support element (13) that is axially movable in its upward/downward direction that holds a punch (14) aimed towards the tablet (15).

9. Dispenser machine according to claim 1, characterized in that the sealing means consist of a roller (12) that has been heated to a predetermined temperature and is arranged along and above the conveyor belt (9).

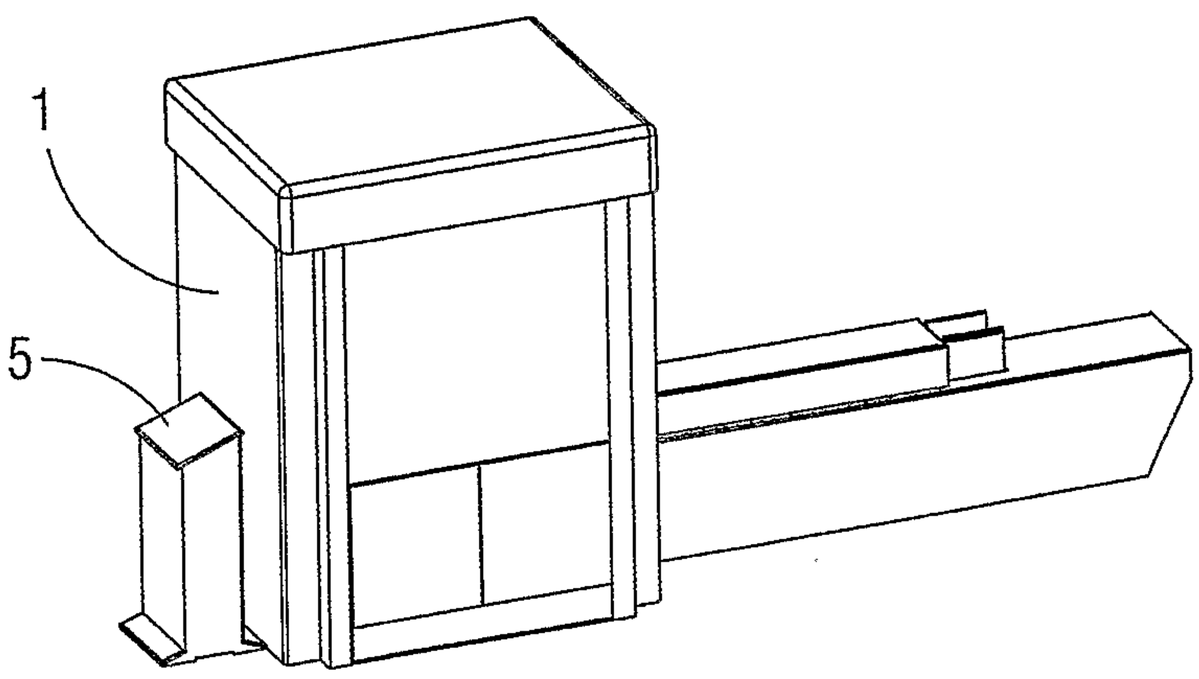
10. Dispenser machine according to claim 6, characterized in that the conveyor belt (9) includes a plurality of support elements (17) so as to individually support a blister pack.

11. Dispenser machine according to claim 1, characterized in that the extraction means consist of a vacuum mechanism.

12. Dispenser machine according to claim 1, characterized in that the platform (2) includes at least one template (21) formed by a generally laminar body fitted with a plurality of housings (23) into which the tablets (15) to be supplied are placed in an individual manner.

13. Dispenser machine according to claim 12, characterized in that the plurality of housings (23) are distributed in a die stamped manner in rows and columns.

FIG.1



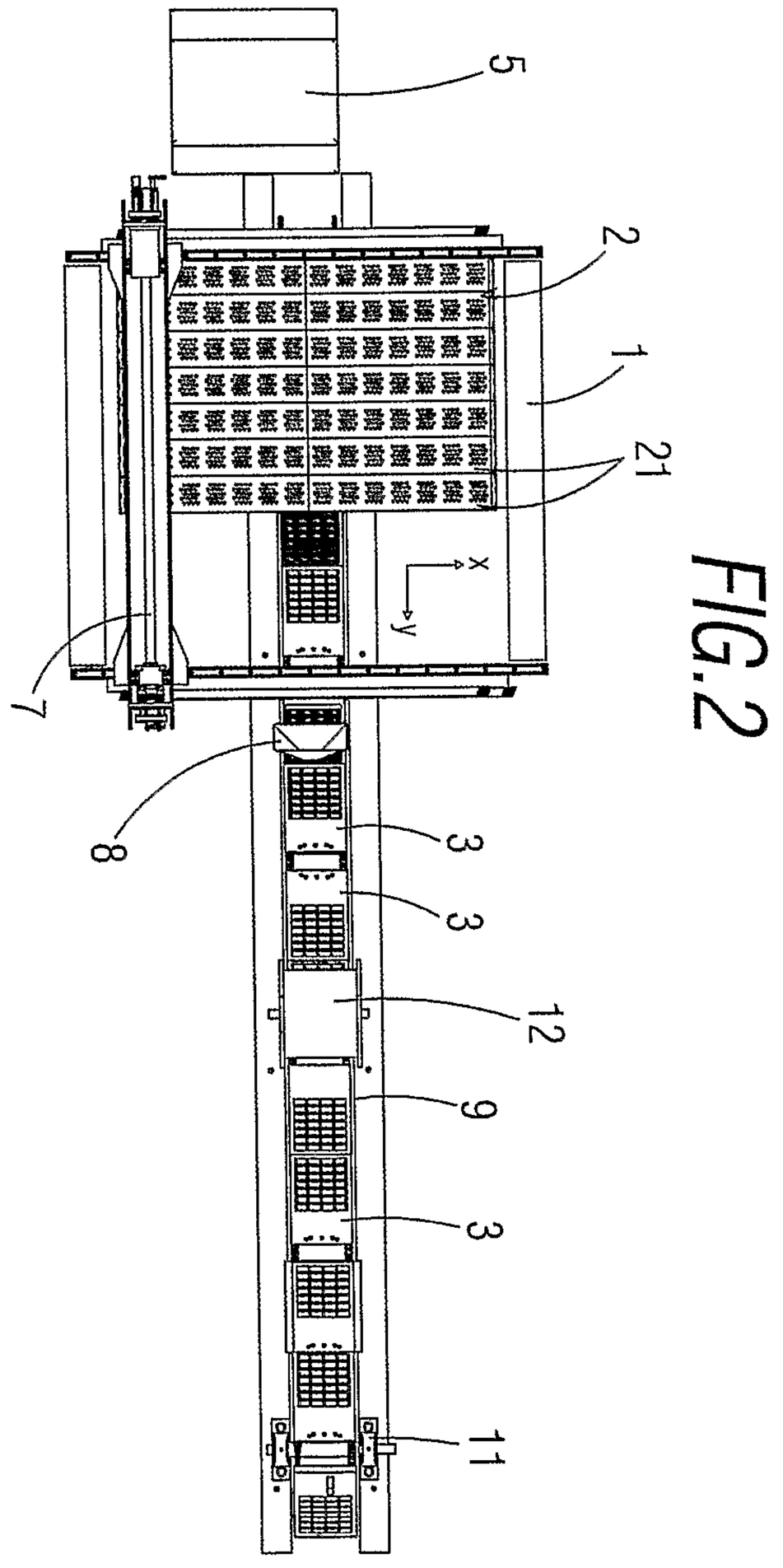


FIG.2

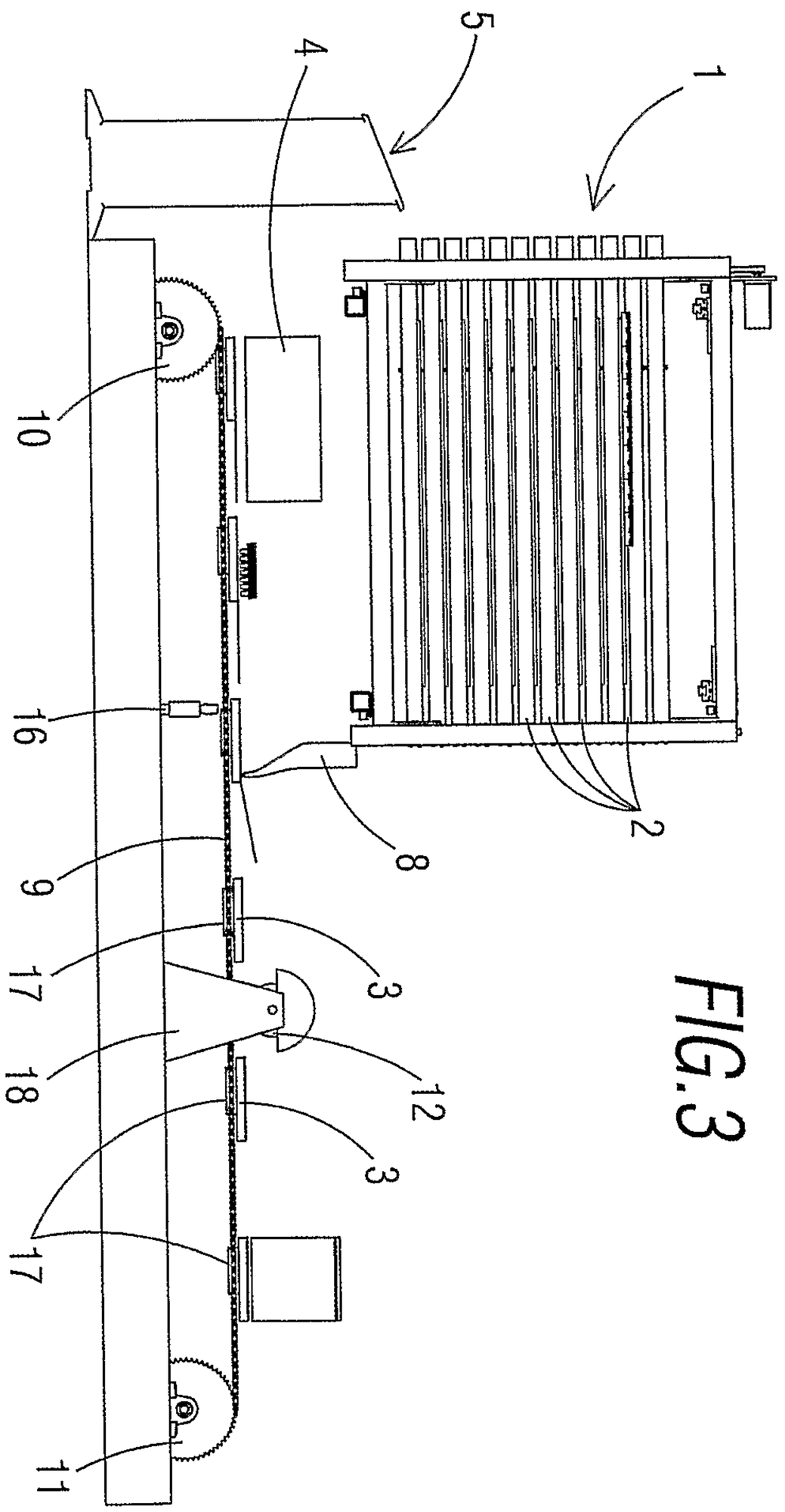


FIG.3

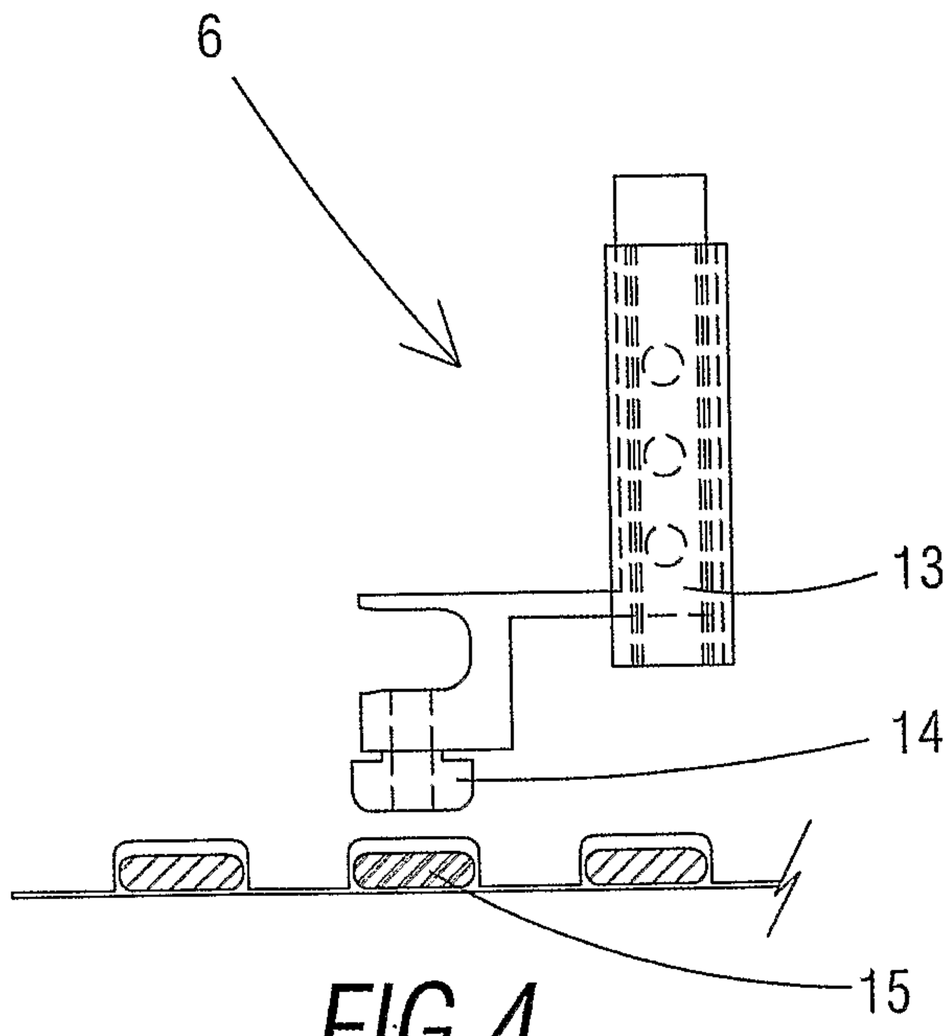
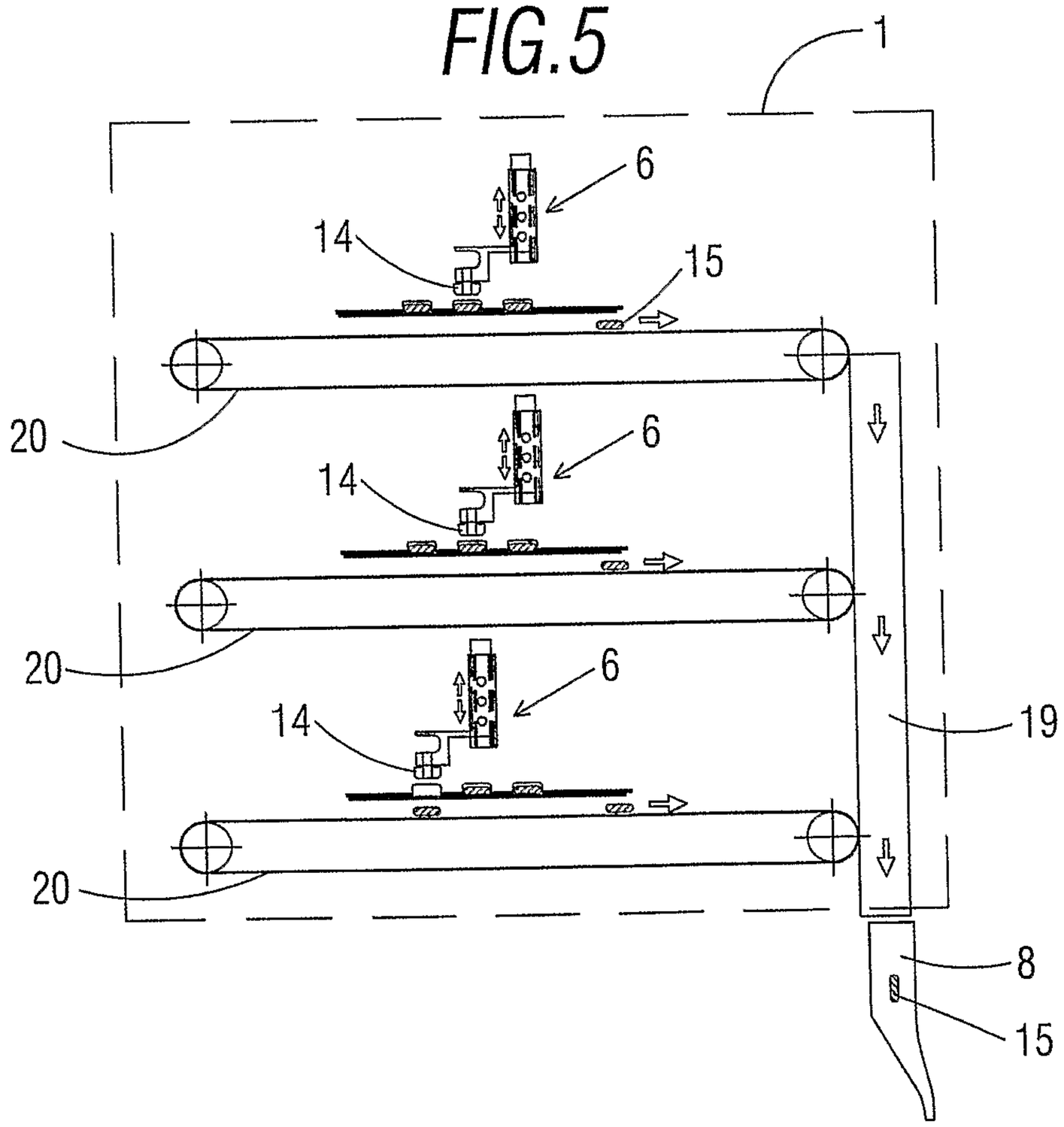


FIG.4

FIG.5



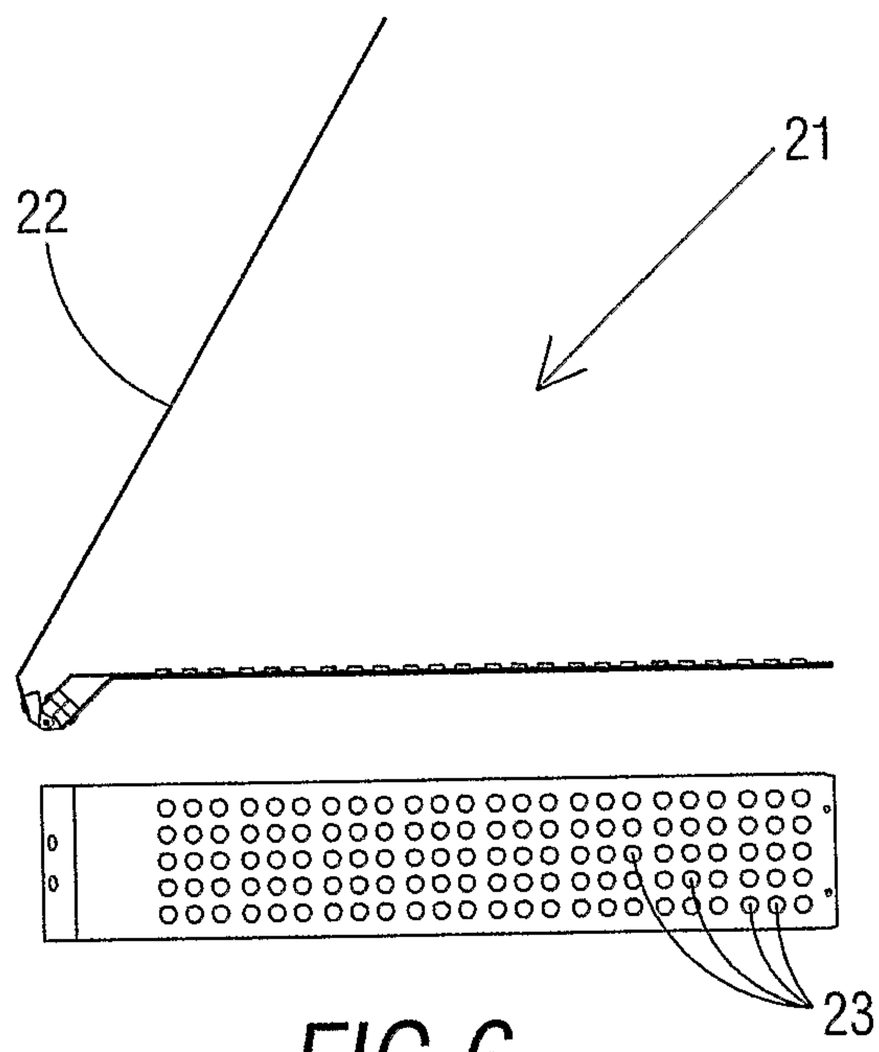
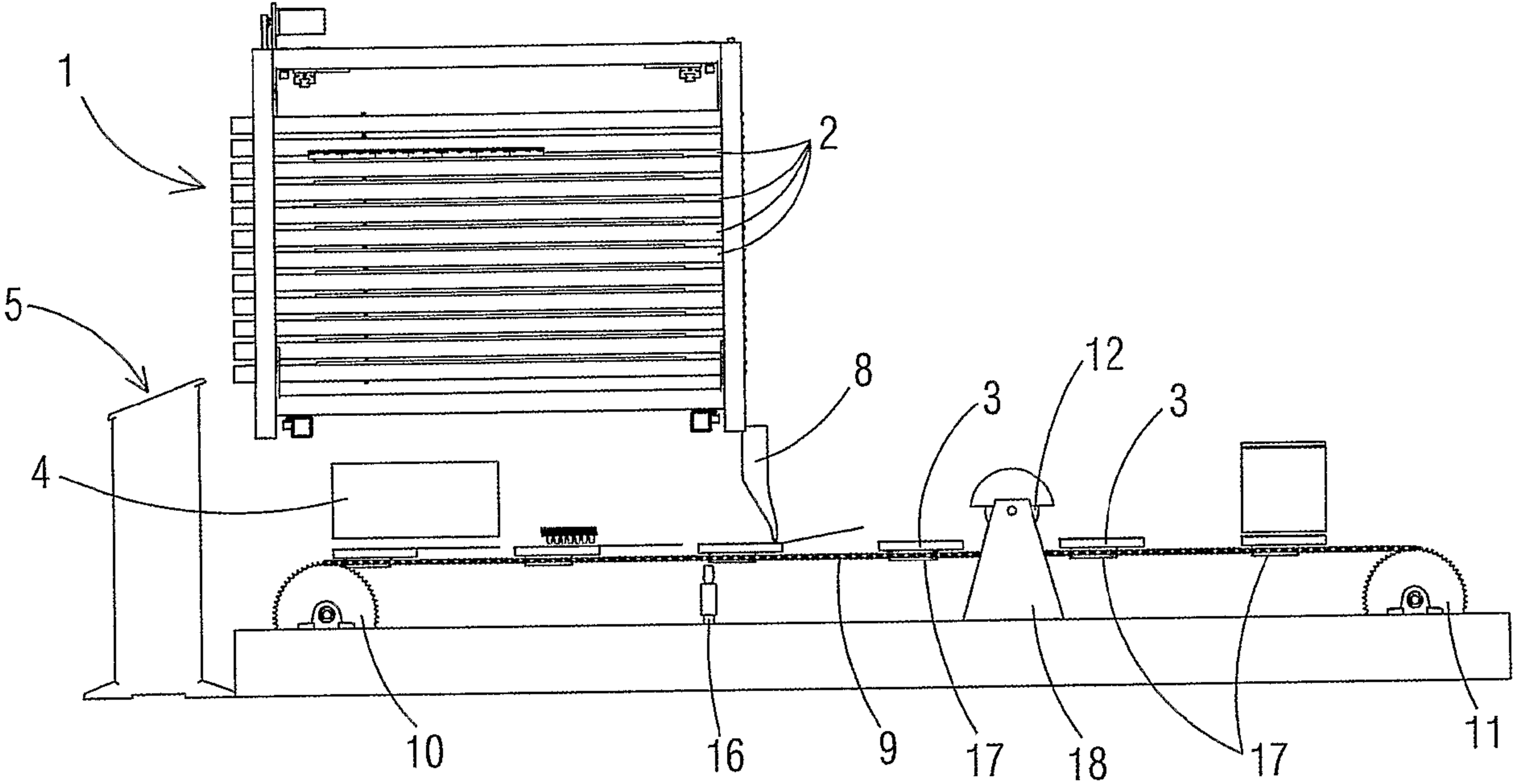


FIG.6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