(12) PATENT
(19) AUSTRALIAN PATENT OFFICE

(11) Application No. **AU 199873567 B2**
(10) Patent No. **749993**

(54) Title
Integrated cooking and cutting instrument for fast food doner kebab and method therefor

(51)[7] International Patent Classification(s)
A47J 037/04

(21) Application No: **199873567**

(22) Application Date: **1998.04.03**

(87) WIPO No: **WO99/51135**

(43) Publication Date : **1999.10.25**
(43) Publication Journal Date : **1999.12.23**
(44) Accepted Journal Date : **2002.07.04**

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(56) Related Art
GB 2271274
GB 2249716
GB 2218327

73567/98

PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A47J 37/04 | A1

(11) International Publication Number: **WO 99/51135**

(43) International Publication Date: 14 October 1999 (14.10.99)

(21) International Application Number: PCT/TR98/00007

(22) International Filing Date: 3 April 1998 (03.04.98)

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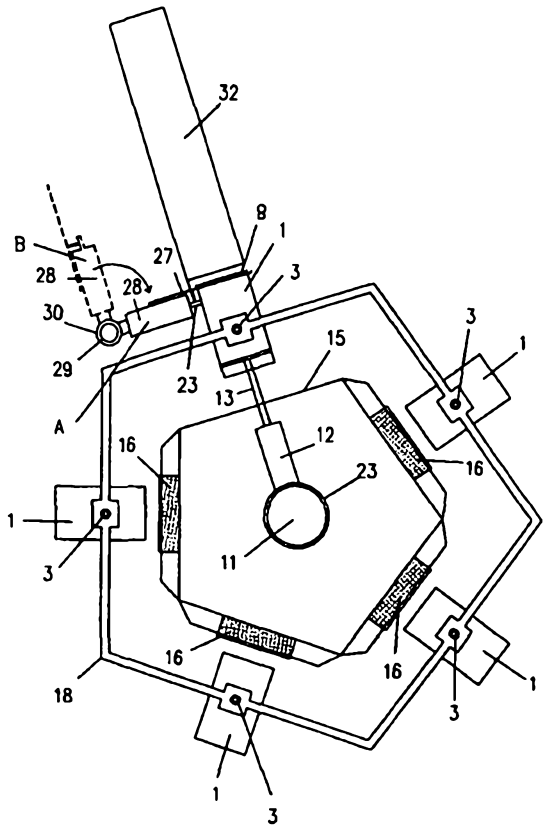
(81) Designated States: AL, AM, AT, AU, AZ, BA, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, JP, KG, KP, KR, KZ, LT, LU, LV, MD, MK, MN, MX, NO, NZ, PL, PT, RO, RU, SE, SG, SI, SK, TJ, TM, TR, UA, US, UZ, VN, YU, Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.

(54) Title: INTEGRATED COOKING AND CUTTING INSTRUMENT FOR FAST FOOD DONER KEBAB AND METHOD THEREFOR

(57) Abstract

Subject of the present invention is a method for cooking, cutting and preparing the doner meat automatically and without any human intervention in the same amount and form for service and an integrated instrument for cooking and cutting doner. This invention relates to a method for cooking the front sides of the meat boxes which are filled and frozen beforehand, by rotating said meat boxes around a centre arranged circularity or with multi–sides having 4, 5 or 7 cookers (radian or LPG), cutting the cooked meat part and sending it for cooking again by rotating around itself and carrying all of these operations at a predetermined amount and speed without human intervention controlled from a central command and tuning table and an integrated doner cooking and cutting instrument for performing said method.



INTEGRATED COOKING AND CUTTING INSTRUMENT FOR FAST FOOD DONER KEBAB AND METHOD THEREFOR

Field of the Invention

The present invention relates to a cooking apparatus and method particularly, but not exclusively, to a method for obtaining cooked doner meat and an integrated doner broiling and cutting apparatus for achieving this method.

Background of the Invention

The field of the invention and the technique for making Turkish Doner Kebab is known. In conventional methods a grill bar, usually vertical, is dressed with doner meat material and is rotated on its vertical axis in front of a cooker and the broiled parts of the meat are cut with a knife in a vertically downward fashion.

Different orientations of the grill bar have been attempted namely, arranging the bar vertically and horizontally, and different types of cookers have been tried, electrical knives were used for cutting but no alternative solution or modification could be provided for the traditional way of rotating the meat on the grill axis in front of a cooker and cutting the broiled parts by a human operated knife. The most improved variation of the traditional method comprises the preparation and freezing of the blocks of meat at a central place and transmitting the frozen meat blocks to the cooking station, and using electrical knives in cutting the broiled meat. Presently, there is no method or instrument, known or used, both for broiling and cutting the doner meat in the same amount and form, ready to serve, without human intervention.

Publications representing the State-of-the-Art are the British Patent No. 2,218,327 – MICHAEL ZANNETOS, British Patent No. 2,271,274 – MUSTAFA KAYA TÜREDİ, European Patent Application No. 85300967,8 – OZORAN LIMITED, and as it is known from all of these documents, the doner meat to be cooked is aligned in a row around a

single grill bar and a single bar of meat is rotated in front of a single cooker and the cooked meat is cut off by a man operated knife or various other cutting tools, thus made ready to serve.

The speed of obtaining cooked meat has been limited to the broiling speed of the meat in a single block, and standardisation, speed and practicality of a fast food system could not be obtained. The hygienic conditions, left only to the operator, may be far from being consistently clean.

Summary of the Invention

In accordance with the present invention, there is provided a cooking apparatus including a cooking station and a box for receipt of meat to be cooked, wherein the box includes an opening, for exposing the meat to heat from the cooking station, and the box is movable relative to the cooking station so as to position the opening at a cutting station, for cooked meat to be cut from the box, the apparatus further including a mechanism for advancing the meat through the opening for cutting, wherein the mechanism includes a pushing plate within the box, for driving the meat through the opening.

In another aspect, there is provided a box for use in the cooking apparatus, including side walls, an opening through which meat is advanced for a cooking and cutting operation and a pushing plate for driving the meat through the opening.

In yet another aspect, there is provided a method for cooking meat including providing the meat in a box with an opening, exposing the opening to a cooking station to cook the meat and moving the box relative to the cooking station so as to position the opening at a cutting station, for the cooked meat to be cut from the box, wherein the cooked meat is advanced through the opening, prior to being cut, by a pushing plate arranged within the box.

Brief Description of the Drawings

The invention will now be described with reference to the accompanying drawings in which:

FIGURE 1 - is a perspective view of a meat box from the front of the quarter.

FIGURE 2 - is a perspective view of a meat box from the rear quarter.

FIGURE 3 - is a perspective view of a meat box from the front quarter with the interior wall placed in it.

FIGURE 4 - is a perspective view of the interior wall placed inside the meat box with the meat inside it, from the front quarter.

FIGURE 5 - shows the movable pushing plate whose side surface is similar to the edge of the interior wall of figure 4 and which constitutes the rear surface of the interior wall, and the two resilient arms in which they are rearwards unopened.

FIGURE 6 - shows the two resilient arms in a rearwards open state behind the movable pushing plate of figure 4, when it is pushed forward, whose side surface is similar to the edge of the interior wall of figure 4 and which constitutes the rear surface of the interior wall.

FIGURE 7 - is another view of the interior wall where meat is placed, showing that the side edges of the interior wall could be in any other desired form.

FIGURE 8 - shows the movable pushing plate whose side surface is similar to the edge of the interior wall of figure 7 , and which constitutes the rear surface of the interior wall, together with the two resilient arms in a rearwards unopened state.

FIGURE 9 - shows the two resilient arms opened rearward behind the movable pushing plate, when it is pushed forward, whose side surface is similar to the edge of the interior wall of figure 4 and which constitutes the rear surface of the interior wall.

FIGURE 10 - shows the central fixed bar carrying the fixed cookers on it, and the 2 pushing pistons, the piston arms and the rotating arm.

FIGURE 11 - shows the central fixed bar with cookers arranged in a pentagon fashion on it and the projecting two pushing piston arms and the rotating arm.

FIGURE 12 - shows the carrier chassis forming the rotating group where the meat boxes are seated which that can be configured as a pentagon, hexagon, or an octagon.

FIGURE 13 - shows five meat boxes placed on top of the pentagonal lower frame of the rotating group's carrier chassis, and the meat box at the front has its open front face turned outwardly in order to slice the cooked meat, and is ready to be cut.

FIGURE 14 - shows 5 meat boxes placed on top of the pentagonal lower frame and upper frame of the rotating group's carrier chassis, and the meat box at the front has its open front face turned outwardly in order to slice the cooked meat, and is ready to be cut.

FIGURE 15 - shows as a side cross-section, two piston arms of the mobile pushing plate's two pistons, pushing the cooked meat section that is on the open side of the meat box, so that it projects 3 mm from the meat box and is made ready to be cut, and the resilient arms behind the mobile pushing plate which are pushed forward during the process and are opened rearwards and jump one tooth, entering the toothed slots at the

rear wall of the meat box, so preventing the mobile pushing plate from sliding back.

FIGURE 16 - shows a top view of a configuration layout of an instrument pentagonally configured with 4 cooker stations and a cutting station without a cooker.

FIGURE 17 - is a top view of a configuration layout of an instrument hexagonally configured with 5 cooker stations and a cutting station without a cooker.

FIGURE 18 - is a top view of a configuration layout of an instrument hectagonally configured with 7 cooker stations and a cutting station without a cooker.

FIGURE 19 - shows the cutting unit of the cutting group comprising the disc knife and the knife motor.

FIGURE 20 - shows the cutting unit of the cutting group comprising disc knife and the knife motor and the fixed horizontal plane placed in front of it, the plane connected to the fixed bar that carries them.

FIGURE 21 - shows the cutting unit of the cutting group comprising disc knife and the knife motor and the fixed horizontal plane placed in front of said unit, wherin said unit and fixed horizontal plane are connected to the fixed bar carrying them, and the cooked meat slice at the open front side of the meat box is cut and the cooked meat slice lies on the horizontal plane.

FIGURE 22 - shows an instrument of the invention as a whole, pentagonally configured comprising 4 cooker stations

and a cutting station without cooker including the cutting group of the station without cooker.

FIGURE 23 - shows the Central monitoring and Tuning Table, which facilitates the tuning of Time/Speed/Amount and the process according to desire and needs, and allows operation of the instrument with its various components as an integrated whole.

1- Meat boxes: The boxes are filled with meat in butchery, are let frozen and are sent to businesses having cooker groups inside refrigerated containers.

Meat boxes (1) are preferably 10 cm x 60 cm with 15 cm depth, made of stainless steel with an open front side (8), there are pins (2), (3) in the middle of the lower and upper walls of the meat boxes (1) in order to seat them, as shown in Figures 12, 13 and 14, on the seats (19) in the lower (17) and upper frames (18) which could be pentagonal, hexagonal or octagonal. There are two holes (5), a lower and an upper one, at the closed rear side (4) of the meat boxes (1). The meat boxes (1) also comprise in its inner part a thin interior wall (7) of stainless steel. This interior wall (7) is inserted and fixed into the meat box (1) as seen in Figure 3, so that the front side of the meat (8) is open. As seen in Figures 4 and 7, this interior wall (7) may have different edge forms so that it gives a certain form to the cooked meat besides preventing any contraction that may take place in the meat block during cooking. At the back of this interior wall (7) there is a mobile pushing plate (9) constituting the rear side of the wall and whose edges have the same form as the edge of the said interior wall. As may be seen in Figures 5, 6 and 8, 9, side edges of the mobile pushing plate (9)

forming the rear side of the interior wall (7), have to have the same form as the side edges of the interior wall (7) which can be in any desired form. Figures 4,5 and 6, and Figures 7, 8 and 9 are organised to emphasise and show this point. Said mobile pushing plate (9) can go forward and rearward at a right angle inside the interior wall (7) having the same edge form, and it is being pushed from behind each time to go forward and push the meat block (8A) inside the interior wall 3 mm forwards so that it is ready to be cut. The mobile pushing plate (9) is pushed by the piston pushing arms (13) of the two pistons (12) located at the side (15) of the instrument where there is no cooker and connected to the fixed bar (11) at the centre of the cooker group, towards the open front side (8) of the meat box (1) so that the cooked part of the meat is pushed 3 mm out from the meat box (1) for cutting. After this cooked meat of 3 mm is cut, the meat box is sent for cooking again.

There are two resilient arms (10) behind the mobile pushing plate (9) ensuring that it stays there after each time it is pushed. These resilient arms are opened one step back each time the mobile pushing plate (9) is pushed forward 3 mm, and they enter the gear openings (6) at the rear wall of the box, thus, they stand at a right angle inside the mobile pushing plate (9) behind the meat box (8A) without coming back and are ready for the next 3 mm push.

2- Cooker group: The cooker group comprises 4, 5, 7 units of (LPG or radian) cookers (16) that are pentagonally, hexagonally or octagonally arranged and vertically standing on the fixed bar (11) at the centre of the system, as seen in figures 16, 17, 18 and 22. A pentagonal instrument (Figure 16) has been arranged to have 4 cooker stations (16)

and a cutting station without cooker (15), a hexagonal instrument (Figure 17) to have 5 cooker stations (16) and a cutting station without cooker (15), and a octagonal instrument (Figure 18) to have 7 cookers (16) and a cutting station without cooker (15). In each cutting station without cooker (15), there are two holes (5A) through which piston pushing arms (13) of the pushing pistons (12) connected to the fixed main bar (11) do project. These piston pushing arms (13) also enter the holes (5) at the rear side (4) of the meat box (1). The height of the cookers (16) is the same as the meat box (1). Cooking heat provided by each cooker (16) (radian or LPG) could be tuned progressively according to the desired cooking degree or temperature.

3- Rotating group: The rotating group comprises a rotating exterior bar (22) on which lower (17) and upper (18) frames of pentagonal, hexagonal or octagonal shape is mounted with pin seats (19) on them to receive the lower (2) and upper (3) pins of the meat boxes (1). The rotating exterior bar (22) is seated on the fixed bar (11) and is rotated by a group of gears (25) (26) connected to a single motor (24). The number and speed of the rotations is adjusted from the command and tuning table (Figure 23). At the pentagonal arrangement with 4 cooker stations (16) and a cutting station without a cooker (15), the rotating angle is 72°. At five rotations a full circle of 360° is completed. At a hexagonal arrangement with 5 cooker stations (16) and a cutting station without a cooker (15), the rotating angle is 60° and 6 rotations complete a 360° circle. The frames where the meat boxes (1) are seated are the lower (17) and upper (18) frames. On the lower (17) and upper (18) frames there are seats (19) to receive the meat boxes (1), and the pins (2), (3) on the meat boxes (1) engage in these seats (19) so that the

meat box (1) is placed on the lower (17) and upper (18) frames. The lower frame (17) is connected to the rotating exterior bar (22) from its corners with linking arms (20). The upper frame (18), on the other hand, is connected to a rotating ring (23) on the fixed central bar (11) from its corners with linking arms (20). Thus, by turning the rotating exterior bar (22) around the central fixed bar (11), lower and upper frames (17) (18), and in return, the meat boxes (1) they carry, go round the cookers as can be seen in Figures 13 and 14. Depenting to the number of cookers (16) the instrument of the invention has, the rotating degree of the lower and upper frames (17), (18) is adjusted from the command and tuning table (Figure 23) via a motor (24). In this rotational movement, each cooker (16) constitutes a station and the meat box (1) is kept at each station (16) for a programmed amount of time and the cooking process is progressively completed.

4- Cutting Group: After going around the stations step by step, the meat at the open front side of the block of meat (8A) inside the meat box (1) is cooked and ready to be cut when it comes to the cutting station without a cooker (15), and here, the slot of the rotating arm (14) connected to the main fixed bar (11) at this station (15), engages the rectangular end of the upper pin (3) of the meat box (1) and the box is rotated around its axis 180° as seen in Figures 13, 14 and 22, and the front side (8) containing the cooked meat is ready for cutting. After the 180° rotation is completed, pistons (12) connected to the fixed arm (11) are moved and the piston pushing arm (13) goes through the holes (5) behind the meat box (1) until the ends of the piston pushing arms (13) touch the mobile pushing plate (9) and stops the moment it touches there. After a short stopping period, the realigned piston

pushing arm (13) moves forward again for just 3 mm, pushes the mobile pushing plate (9) only 3 mm forward/outwards before stopping and then returns. As a result of this process, the mobile pushing plate (9) at the back of the meat block (8A) inside the interior wall (7) which is located inside the meat box (1) is pushed forward 3 mm, the meat block (8A) is also pushed forward 3 mm and the cooked meat block at the open front side (8) of the meat box (1) is projected 3 mm and is ready to be cut. As seen in Figure 15, the resilient arms (10) behind the mobile pushing plate (9) which is pushed forward 3 mm, are opened rearwards, and jump one tooth to enter the gear slots (6), thus, prevent the mobile pushing plate (9) from slipping back.

When the cooked meat is pushed 3 mm outside the box, the cutting process starts. As may be seen in Figures 19, 20 and 21, the automatic knife (27) of the cutting group is connected to a fixed bar (29) from behind with a ring (30). The automatic knife (27) moves on this bar (29) up and down and in a circular motion around the axis of the bar, again controlled by the central command and tuning table. In front of the cutting knife (27), and at the front part of the arm (33) connected to the ring (30), there is a horizontal plane (32) where the cut cooked meat slice (31) will lie. In cutting position (A) (Figure 22), the disc knife (27) of the cutting group starts to rotate, then the knife motor (28) starts to descend in the edge seats together with the ring (30) which connects it to the fixed bar (29). The cut slice of cooked meat (31) lies on the fixed horizontal plane (32) connected to the arm (33) in front of the cutting knife (27). When the knife motor (28) reaches its lowest point the cutting process is complete and the cooked slice of meat (31) is taken away from the horizontal plane (32). When

the cutting process is finished in cutting position (A) (Figure 22), the cutting knife (27) moves up to its first position and stops, then turns 90° to its standstill (B) position (Figure 22). At this stage where the cutting process is completed, the rotating arm (14) connected to the central fixed bar (11) moves and turns the empty meat box (1) whose cooked meat is taken away, 180° and brings it to cooking position in front of the next cooker (16) and is released from the upper pin (3) of the meat box (1). As seen in Figures 13, 14 and 22, when the rotating group is turned one step, the empty meat box (1) comes to the next cooker (16) station in the turning direction while the following meat box arrives at the cutting station without a cooker (15). The above process is repeated.

When the last slice is cooked, the empty box will arrive at the first station after the cutting station in the turning direction. At this stage, the empty meat box (1) will be taken away and a new full meat box (1) from the frigorific box is placed instead.

5-Central Command and (Time/Speed/Amount/Process) Tuning Table:

It is preferred that the units of the integrated instrument of the invention operate together automatically. However, these are arranged in a way that would facilitate a manual tuning from the Central Command and tuning table according to the need or desire. Although all processes are integrated with each other, each of the rotating process, rotation of the meat box (1) around itself for the cutting process, the cutting process itself and the movements of the knife (27), rotating the meat box (1) again for cooking, adjusting the cooking temperature of each of the cookers (16) separately, is automatically controlled as for operation and time. Thus, it is possible to adjust time

and speed for cooking, and as a result the amount. These process stages are directed by the Central Command and Tuning Table (Figure 23).

a) Only the rotating group is operated (Figure 23). As seen in Figure 22, an instrument of pentagonal arrangement having 4 cookers (16) and a cutting station without a cooker, is controlled from the central command and tuning table (Figure 23); each time the button is pressed, the gear group (25) (26) rotating the rotating group makes a "turn". This is a 72° rotation. A rotation of 5 slices makes a full circle. The temperature of the cookers during these rotations is controlled by the cooker tuning (Figure 23) at the command table. If desired, the boxes may be rotated without any cutting, any cooking or cooking at a desired rate, at the desired intervals and for the desired periods.

b) The meat box (1) is kept at the cutting station, without rotating for cutting, for a desired period of time.

c) Although it is rotated for cutting, the meat box (1) is rotated back without cutting, then turned to other stations.

d) All of these operations are carried out from the command and tuning panel, according to needs.

The reference to any prior art in this specification is not, and should not be taken as, an acknowledgment or any form of suggestion that that prior art forms part of the common general knowledge in Australia.

List of References:

1 : meat box

2 : lower pin

3 : upper pin

4 : back side of the meat box

5 : hole at the back side of the meat box

5A: hole at the station without cooker

6 : gear slots

7 : interior wall

8 : open front side of the meat box and of the meat inside it

8A: meat block inside the interior wall

9 : mobile pushing plate

10 : resilient arms

11 : central fixed bar

12 : piston

13 : piston pushing arms

14 : rotating arms

15 : station without cooker

16 : cooker

17 : lower frame

18 : upper frame

19 : seat

20 : linking arms

21 : thin bar

22 : rotating exterior bar

23 : rotating ring

24 : motor

25 : gear group

26 : gear group

27 : disc knife

28 : motor of knife

29 : fixed bar

30 : ring

31 : cooked meat slice

32 : fixed horizontal plane

33 : arm

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Cooking apparatus including a cooking station and a box for receipt of meat to be cooked, wherein the box includes an opening, for exposing the meat to heat from the cooking station, and the box is movable relative to the cooking station so as to position the opening at a cutting station, for cooked meat to be cut from the box, the apparatus further including a mechanism for advancing the meat through the opening for cutting, wherein the mechanism includes a pushing plate within the box, for driving the meat through the opening.

2. Cooking apparatus as claimed in claim 1, wherein the pushing plate includes resilient arms for ratchet type engagement with a wall of the box, so as to inhibit reverse movement of the plate.

3. Cooking apparatus as claimed in claim 1, further including a plurality of cooking stations and a plurality of meat boxes rotatable about the cooking stations.

4. Cooking apparatus as claimed in claim 3, wherein the cooking stations are centrally arranged, to face outwardly, and the boxes are carried by a frame, rotatable about the cooking stations.

5. Cooking apparatus as claimed in claim 4 wherein the boxes are further rotatably mounted to the frame to allow each of the boxes to be rotated from facing inwardly, to facing outwardly, at the cutting station.

6. Cooking apparatus as claimed in claim 5, further including a push rod, arranged to pass through a side of the box opposite the opening, when the box is arranged with the opening facing the cutting station, so as to drive the meat through the opening for cutting.

7. A box for use in the cooking apparatus of any one of the preceding claims, including side walls, an opening through which meat is advanced for a cooking and cutting operation and a pushing plate for driving the meat through the opening.

8. A box as claimed in claim 7, wherein the pushing plate is provided with resilient arms for ratchet-type engagement with a wall of the box to inhibit reverse movement of the plate.

9. A box as claimed in claim 7, wherein the side walls are contoured and the pushing plate has a complimentary contour.

10. A box as claimed in claim 7, wherein a side of the box opposite the opening includes a hole to allow a push rod to pass therethrough, for driving engagement with the pushing plate.

11. A method for cooking meat including providing the meat in a box with an opening, exposing the opening to a cooking station to cook the meat and moving the box relative to the cooking station so as to position the opening at a cutting station, for the cooked meat to be cut from the box, wherein the cooked meat is advanced through the opening, prior to being cut, by a pushing plate arranged within the box.

12. A method as claimed in claim 11, wherein the pushing plate is driven by a push rod which engages the plate through a side of the box opposite the opening.

13. A method as claimed in claim 11, wherein a plurality of boxes are carried by a frame so as to be arranged about a central plurality of cooking stations and the method includes rotating the frame with the opening of each box facing inwardly as the boxes pass by each of the cooking stations for a cooking operation.

14. A method as claimed in claim 13, wherein each of the boxes are rotatably mounted to the frame and the method includes rotating each box so that the opening faces outwardly at the cutting station, for a cutting operation.

15. A method as claimed in claim 14, wherein rotation of the frame, the cooking operation and the cutting operation are automated.

16. Cooking apparatus, substantially as hereinbefore described with reference to the drawings.

17. A box, substantially as hereinbefore described with reference to the drawings.

18. A method for cooking meat, substantially as hereinbefore described with reference to the drawings.

DATED this 16th day of May, 2002

AYHAN BABACAN

By DAVIES COLLISON CAVE
Patent Attorneys for the applicant

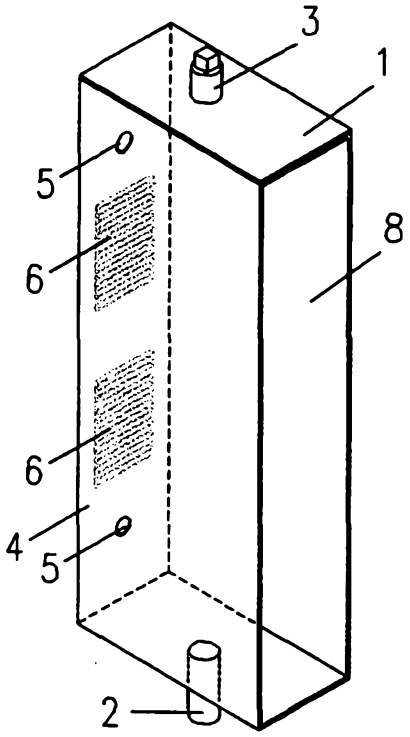


FIGURE-1

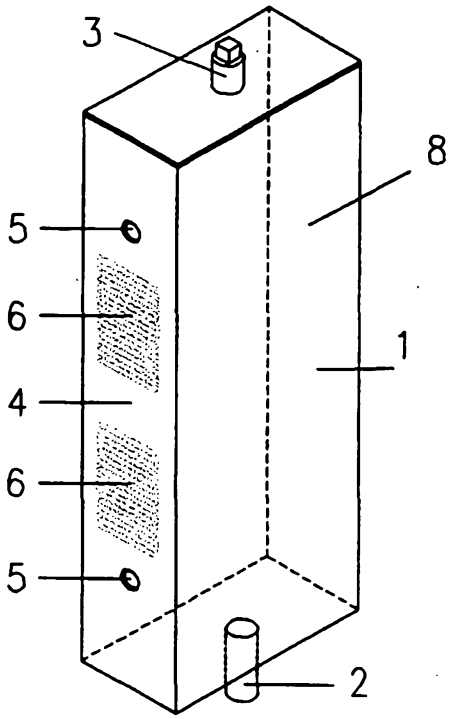


FIGURE-2

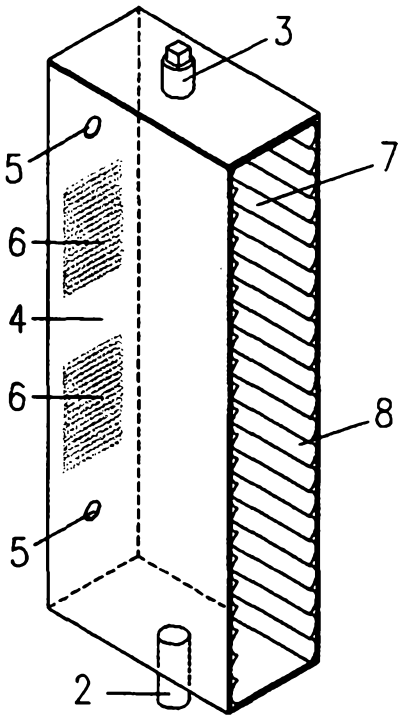


FIGURE-3

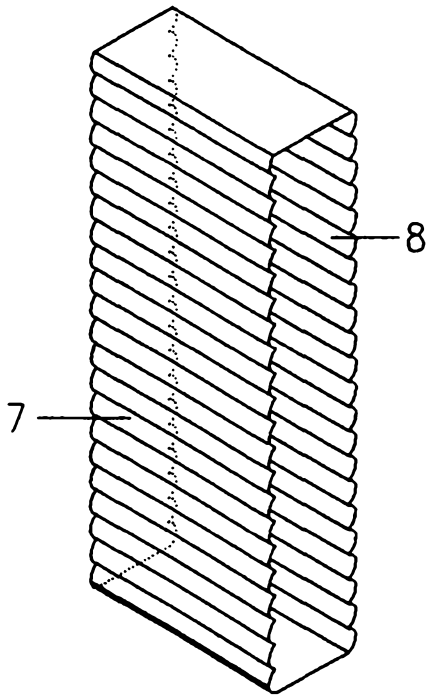


FIGURE-4

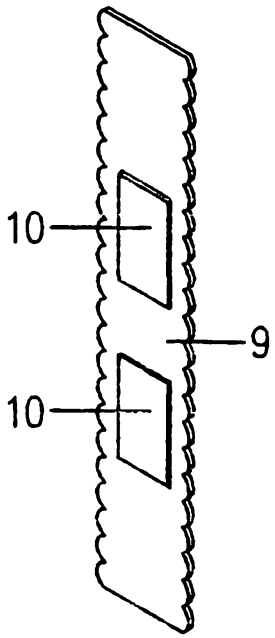


FIGURE-5

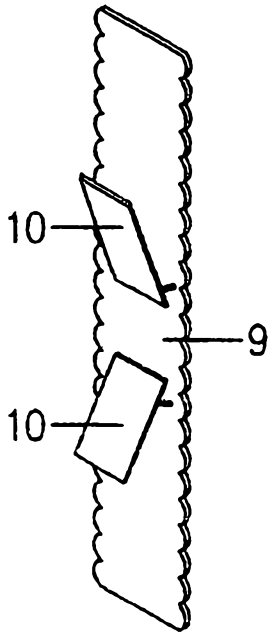


FIGURE-6

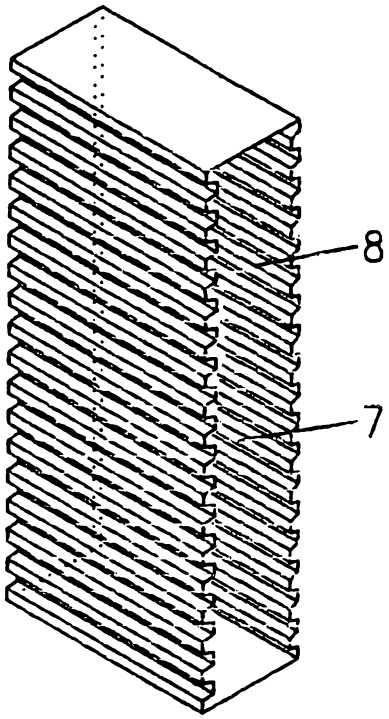


FIGURE-7

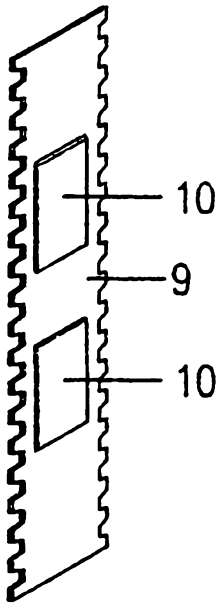


FIGURE-8

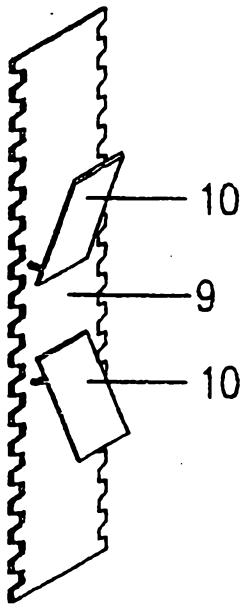
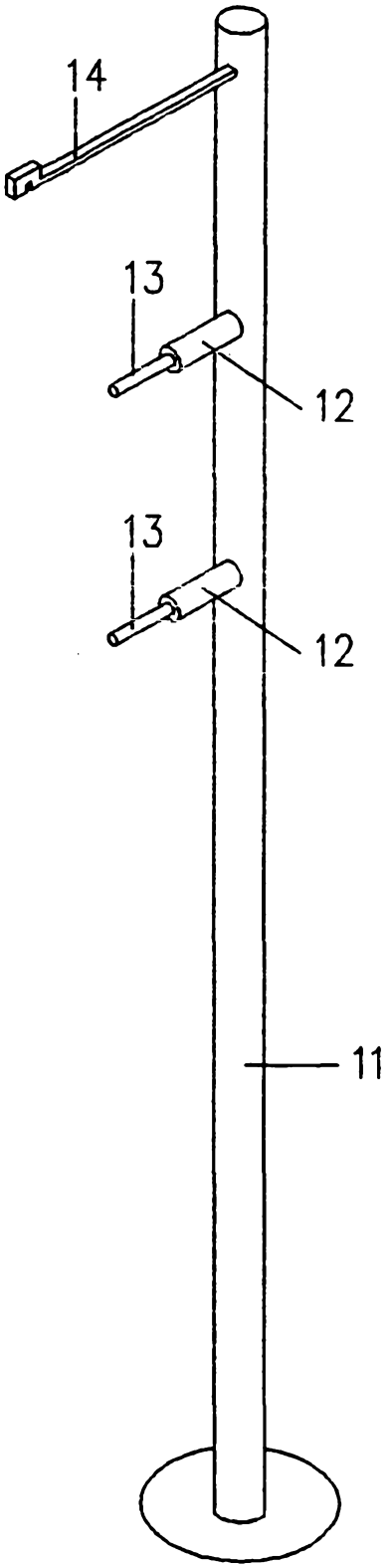
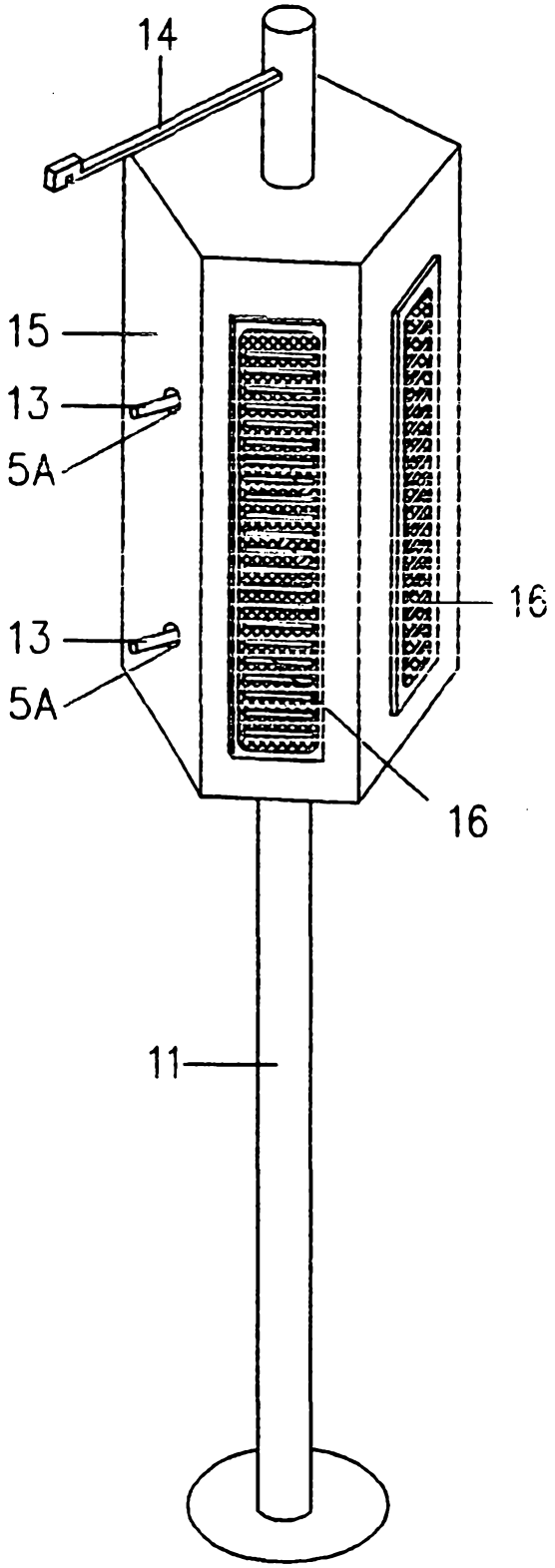


FIGURE-9



FIGURE–10



FIGURE–11

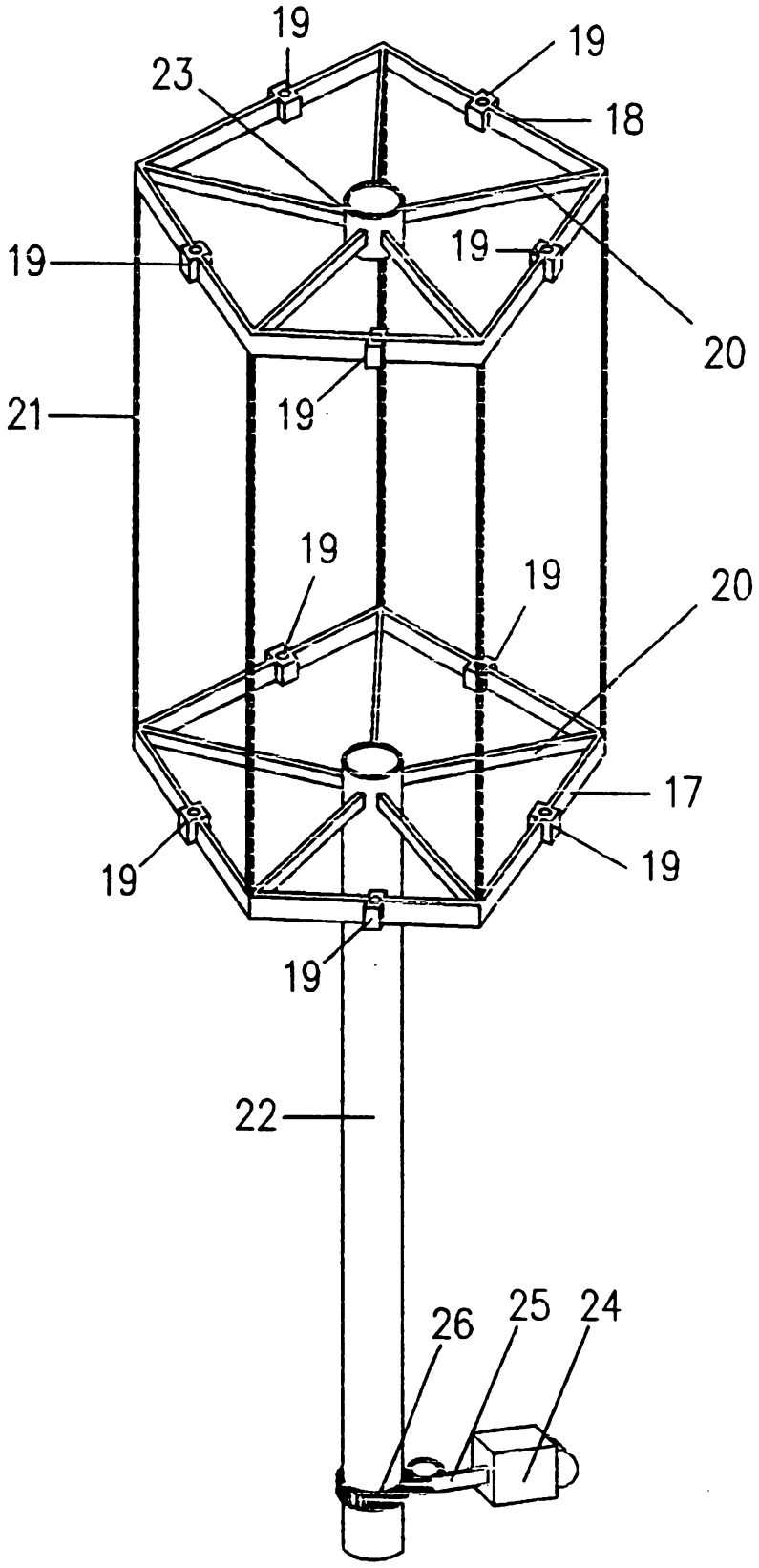
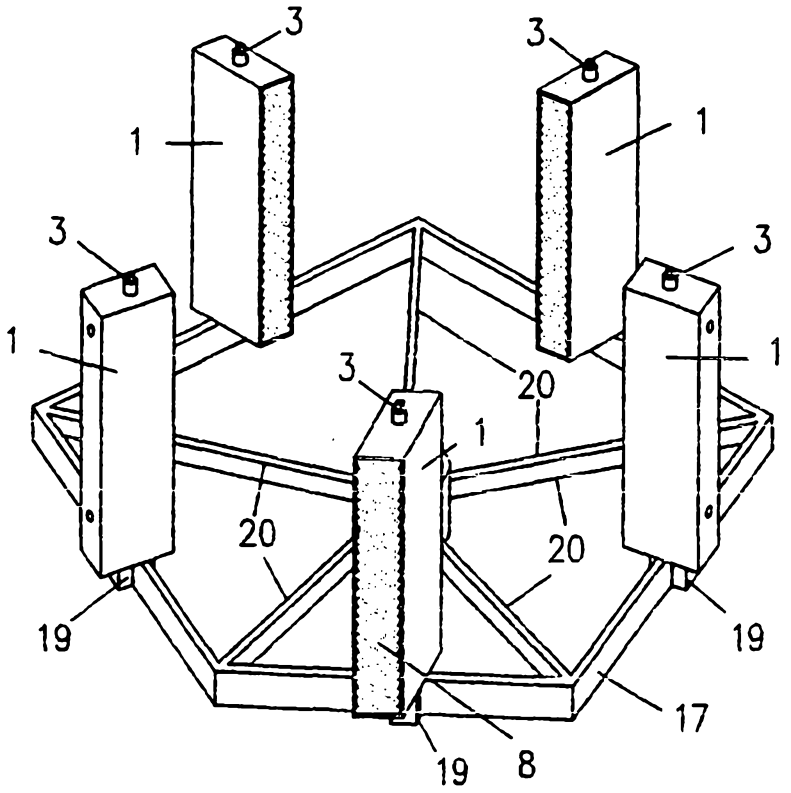
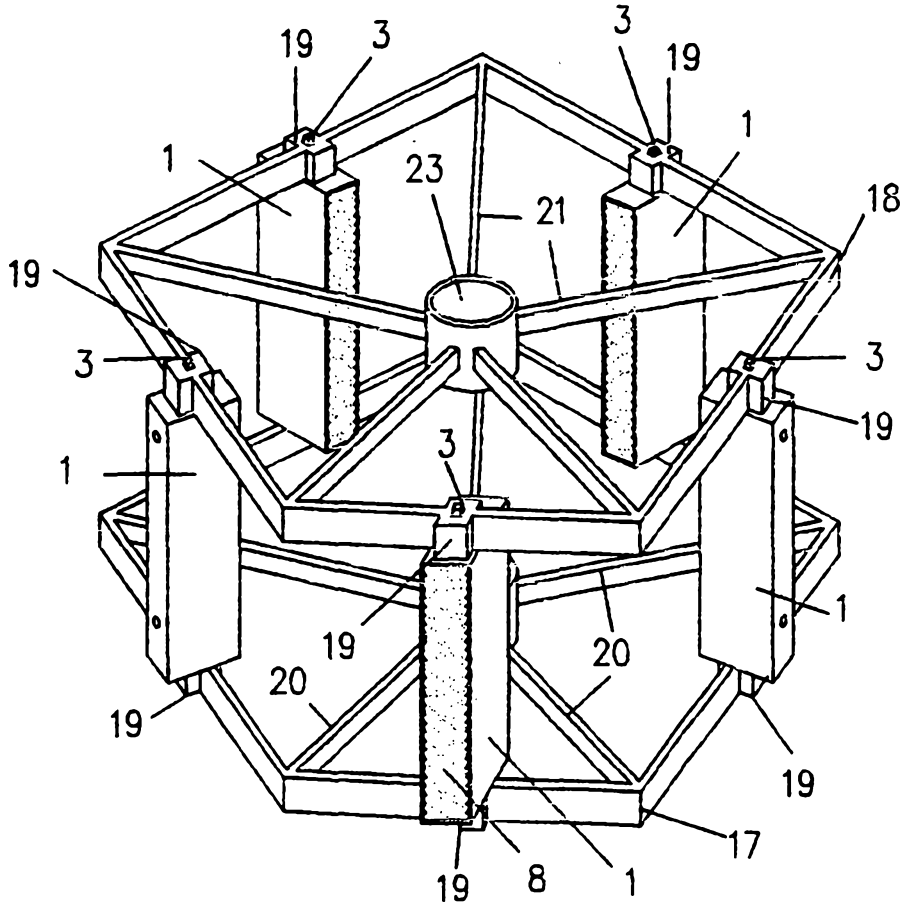


FIGURE-12



FIGURE–13



FIGURE–14

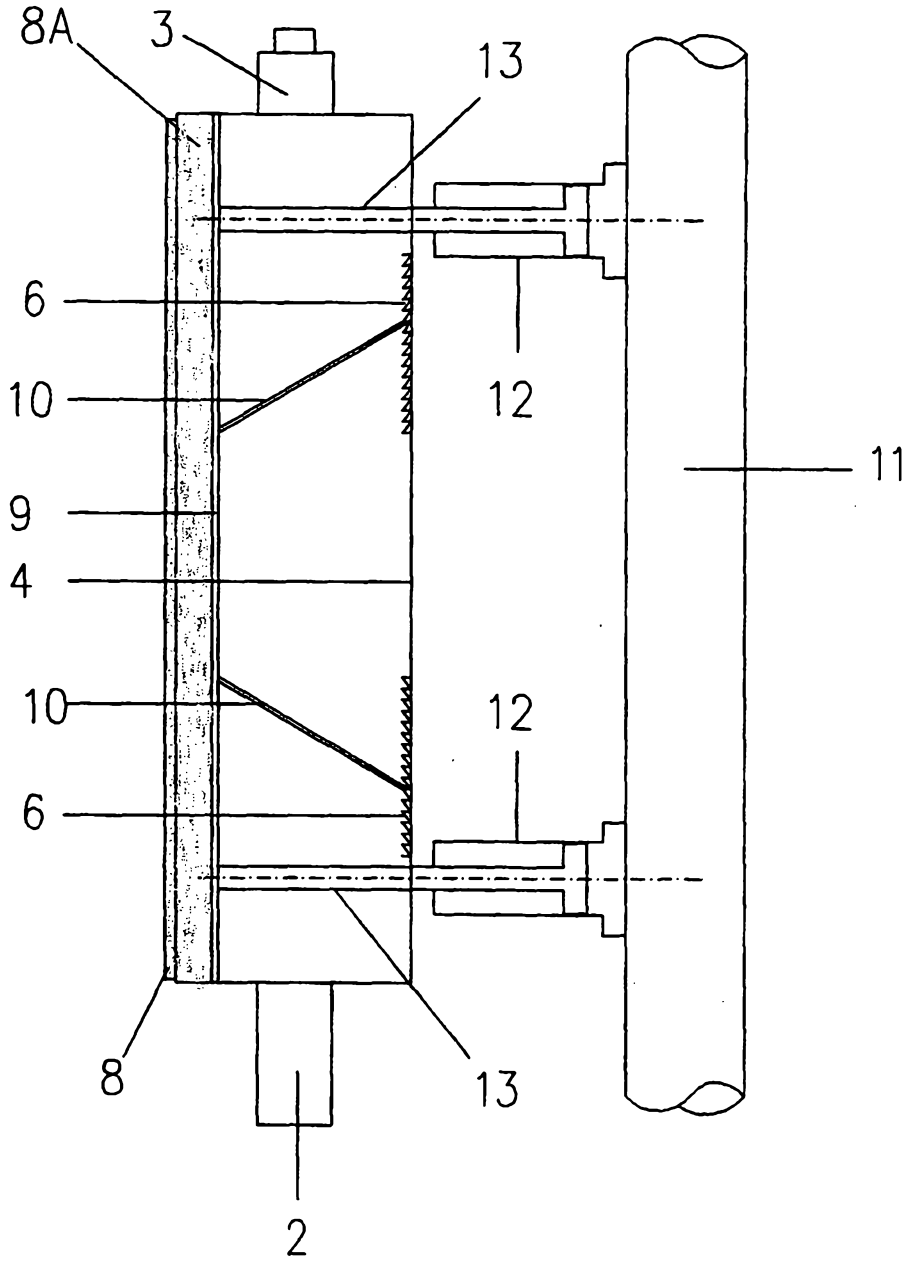
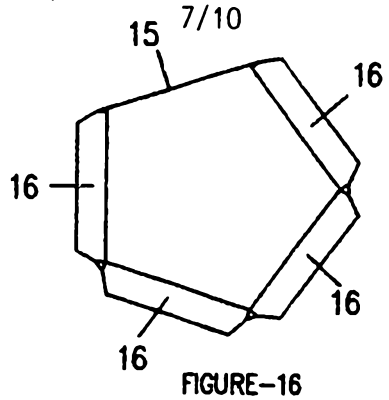
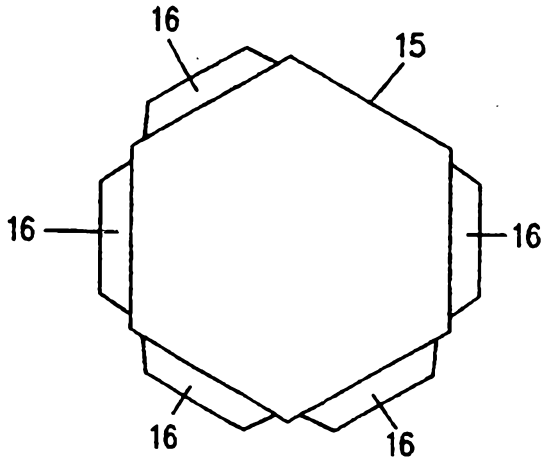


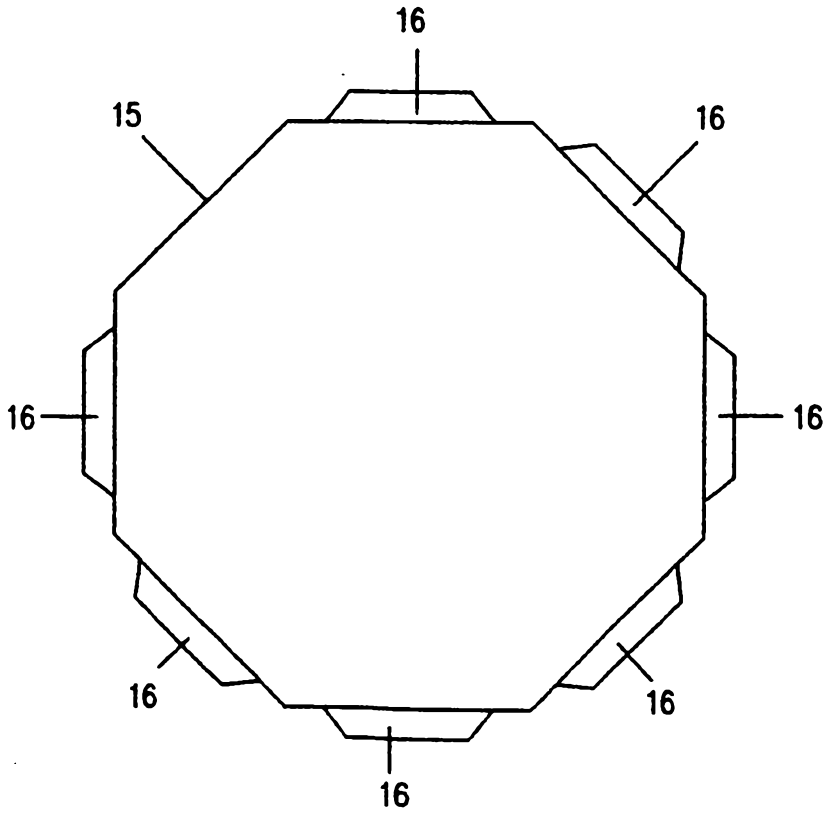
FIGURE-15



FIGURE–16



FIGURE–17



FIGURE–18

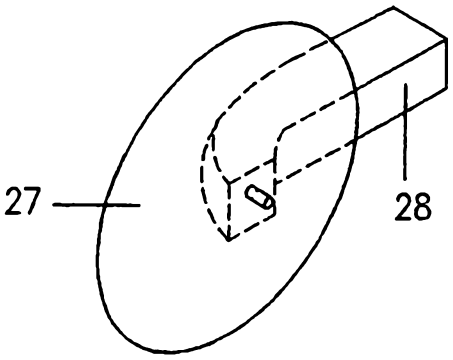


FIGURE-19

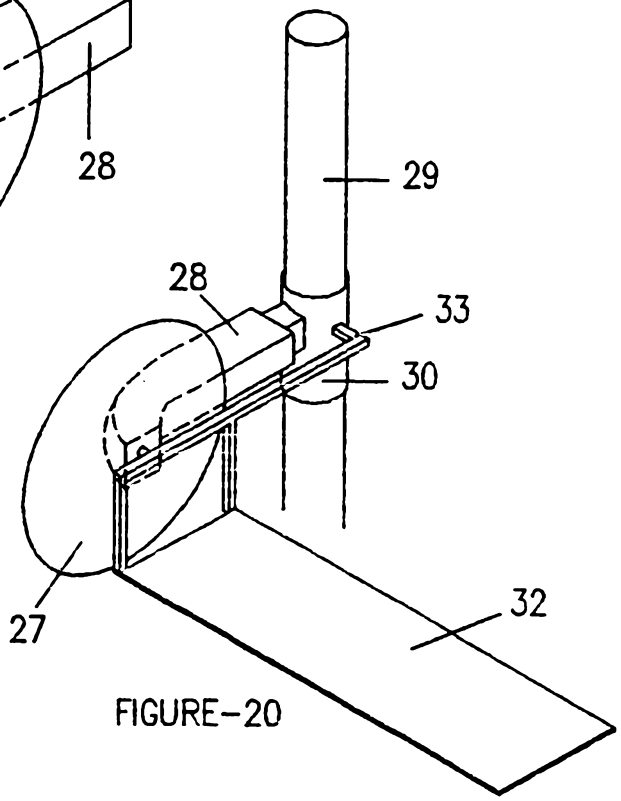


FIGURE-20

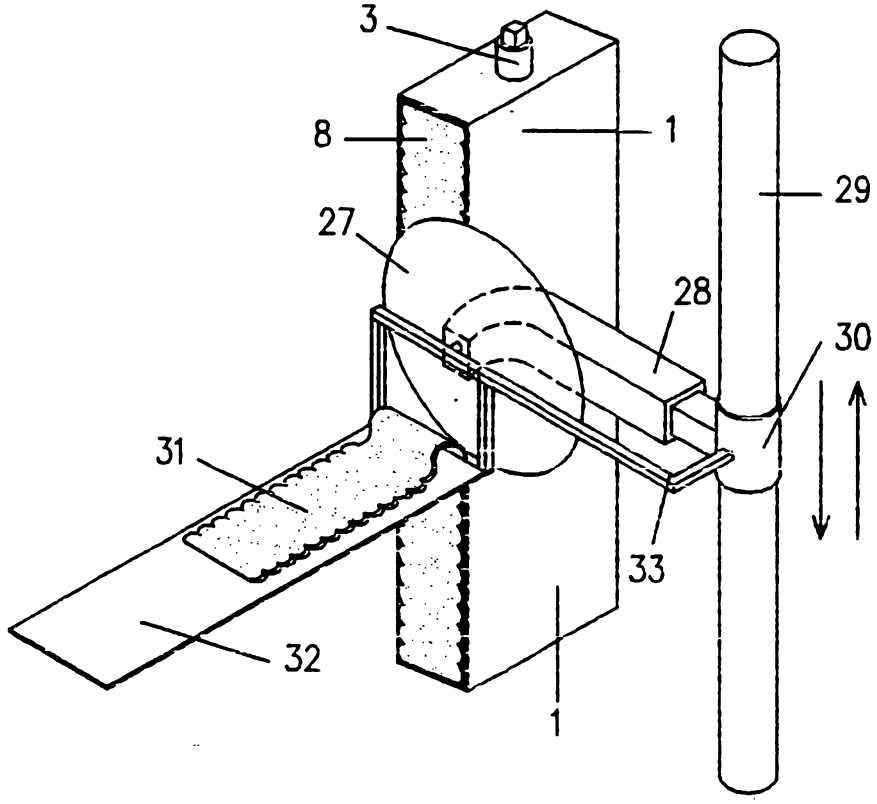
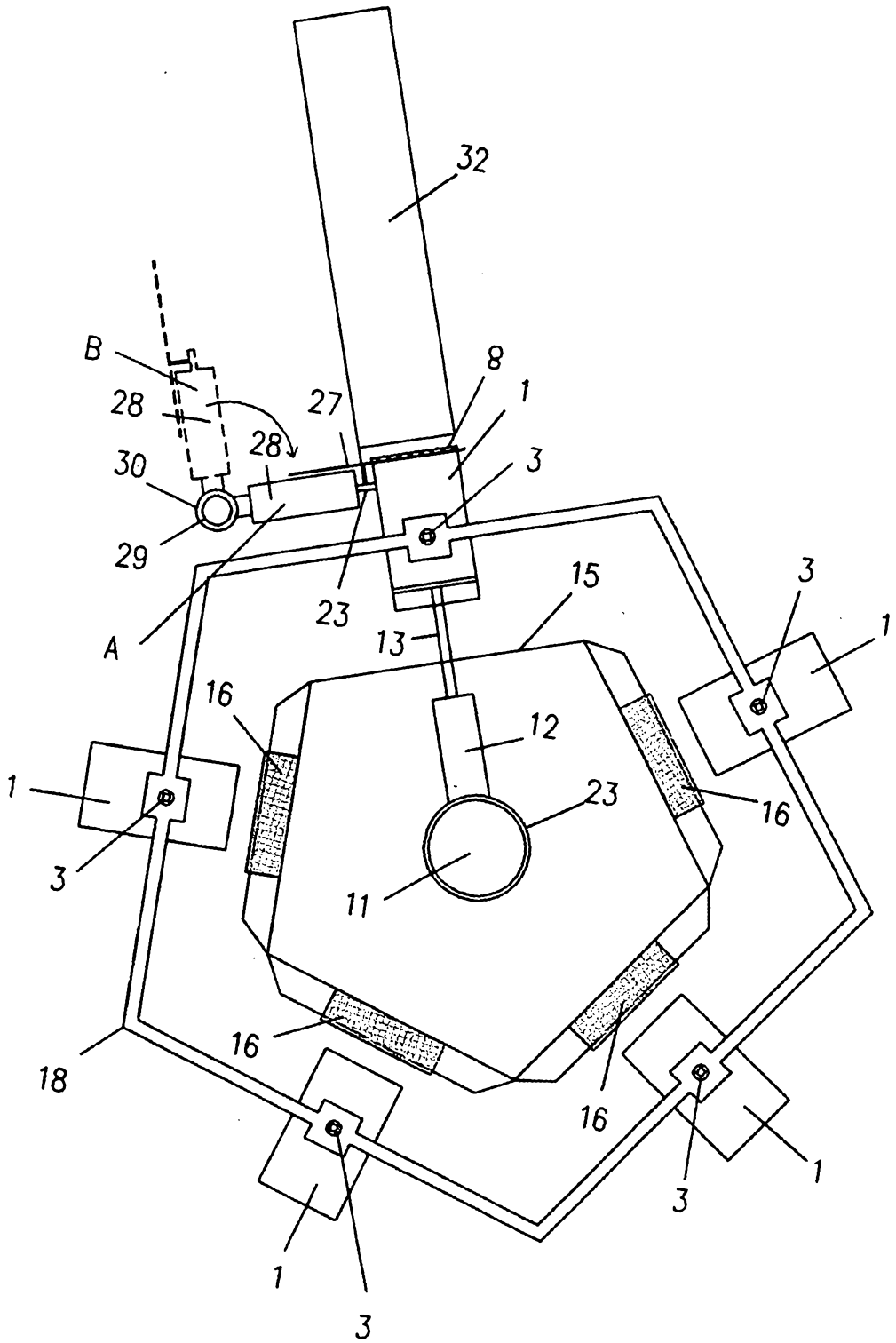
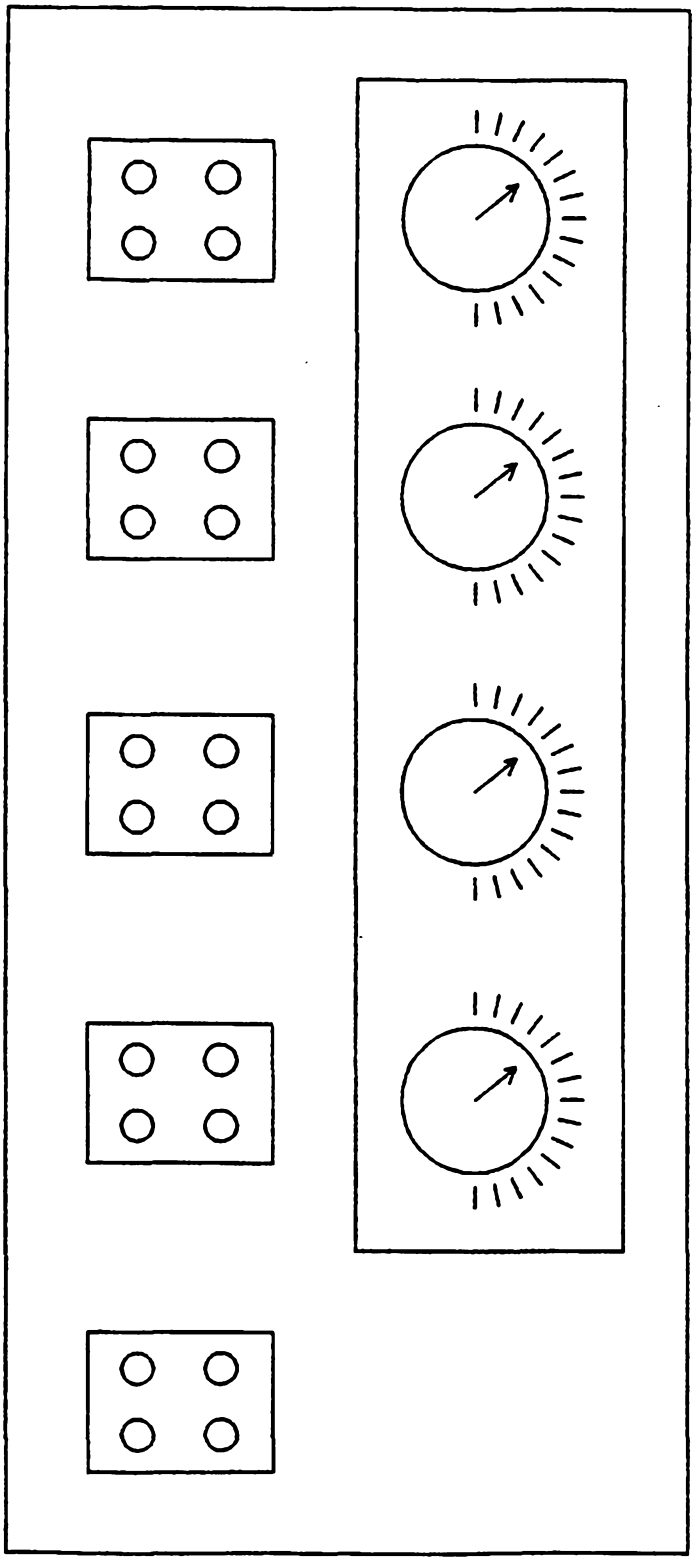


FIGURE-21



FIGURE–22



FIGURE–23