(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 635 453 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
02.05.1997 Bulletin 1997/18

(51) Int. Cl.[6]: **B67B 5/03**

(21) Application number: **94110749.2**

(22) Date of filing: **11.07.1994**

(54) **Multipurpose supporting element for bottle capsule applicators**

Mehrzweck-Trägerelement für Flaschenkapsel-Applikator

Support multiusage pour applicateurs de capsules de surbouchage

(84) Designated Contracting States:
DE ES FR

(30) Priority: **21.07.1993 IT TO930174 U**

(43) Date of publication of application:
25.01.1995 Bulletin 1995/04

(73) Proprietor: **ROBINO & GALANDRINO S.p.A.**
I-14053 Canelli (Asti) (IT)

(72) Inventor: **Galandrino, Agostino**
I-14053 Canelli (Asti) (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati S.r.l.
Via Meravigli, 16
20123 Milano (IT)

(56) References cited:
EP-A- 0 366 956
DE-A- 2 548 976
DE-A- 2 626 459
DE-A- 3 615 532

EP 0 635 453 B1

Description

The present invention relates to a multipurpose supporting element for capsule application heads for bottles of wine, sparkling wine and beverages in general.

As is known, bottles of wine and of beverages in general are provided, after bottling, with a capsule concealing the cap and constituting a seal that guarantees the contents of the bottle.

Typically, sealing capsules are made of a shrink-wrap polymeric material or of aluminum and alloys thereof. These capsules are fitted on the neck of bottles and are then made to adhere to said neck with different methods according to their material.

In the case of polymeric capsules, the heat-shrinking property of the material is used to make the capsules adhere by heating with matching heating heads.

In the case of metal capsules, the capsules are made to adhere to the neck of the bottle by forming a series of longitudinal folds on the capsule by means of appropriate pneumatic heads and by then pressing said folds down onto the neck of the bottle, for example by means of rolling heads.

If the axial extension of the capsule is limited, said capsule can be made to adhere to the neck of the bottle by means of the rolling heads alone.

In conventional and current capsule applicators, the bottles are supported by a rotating carousel-like disk and are arranged on corresponding pans of the disk which are spaced with a constant angular pitch, and the heating, pneumatic and/or rolling capsule application heads are suspended above the bottles and supported by a supporting element that performs descending and ascending movements to lower and raise the head or heads onto and respectively from the bottles.

In said conventional capsule applicators, depending on the type of capsule being processed, the supporting element must be provided with one or more capsule application heads of different kinds, suitable for the specific process. This entails the replacement of the heads or even of the entire supporting element when the type of capsule being processed changes; this is a considerable drawback both due to the downtimes entailed by the head replacement and adaptation operations and due to the possible need to supply multiple supporting elements dedicated to the different processes, with evident economical disadvantages.

Known from EP-A-0366956 is a device provided with rollers made of a rubber-like material for advancing thin-walled capsules to the tops of beverage bottles, such as wine bottles. The rollers are brought into contact with the neck of a bottle provided with a capsule and are rotated at high speed along a spiral path and have pressure applied thereto. The rollers are elastically supported on a bush, which is moved vertically back and forth and rotated by a surrounding and coaxial actuation bush. The bush and the actuation bush are rotatively interconnected.

Known from DE-A1-3615532 is a labelling machine having rotary supports fixed on a rotating table, wherein bottles are placed on the supports with the aid of raisable and lowerable centering devices. Capsules made of heat-shrinking material are applied on the bottles by means of heating heads.

Also known from DE-A-2548976 is a machine which applies capsules on bottles by exerting pressure during operation of a labelling device for applying labels on bottles. The machine has a rotary table supporting single bottle supports, and a bottle centering head. Hydraulic fluid fed from the labelling device is used to drive a capsule crimping device in each centering head.

A principal aim of the present invention is to eliminate the above-mentioned and other drawbacks, and within the scope of this general aim the invention has the object of providing a multipurpose supporting element as defined in claim 1 suitable to selectively perform, with a simple adaptation maneuver, heat-treatment or rolling operations on capsules and perform, with a simple replacement maneuver, operations for forming and rolling folds on various types of capsules.

According to the present invention, with this aim, this object and others, which will become apparent from the following detailed description, in view, there is provided a multipurpose supporting element for capsule application heads, as defined in the appended claims.

Further characteristics, purposes and advantages of the present invention will become apparent from the following detailed description of a preferred embodiment thereof and with reference to the accompanying exemplifying drawings, wherein:

figure 1 is a partially sectional schematic elevation view of a capsule applicator with the multipurpose supporting element according to the invention;
figure 2 is a top plan view of figure 1;
figures 3 and 4 are partial sectional views, similar to figure 1, illustrating the different operating configurations of the supporting element.

Initially considering figures 1 and 2, the reference numeral 10 generally designates the multipurpose supporting element, which is arranged above a carousel disk 11 provided with a plurality of pans 12 which are mutually spaced with an angular pitch "p" and support a corresponding plurality of bottles B on the neck whereof there are sealing capsules C.

The element 10 comprises a main plate 13 for supporting capsule application heads, which is supported by a shaft 14 performing vertical ascending and descending operating strokes with a preset length and timing to lower said heads onto the bottles and raise them from said bottles respectively. The main plate 13 has two rolling heads 15 which are rigidly coupled thereto and are mutually spaced with an angular pitch "p" which is equal to the spacing pitch of the pans 12. The heads 15, which have a per se known structure,

have a central presser 15a and one or more peripheral rollers 15b rotated by a pulley 15c which actuates an actuation gear 15d meshing with end pinions of respective shafts 15e of the rollers. The pulleys 15c of both heads 15 are in turn simultaneously actuated, by means of a transmission belt 17, by a motor 16 which is supported by the plate 13.

A secondary plate 18 is associated with the main plate 13 and is rigidly coupled thereto by means of a vertical column 19 accommodated in a retention bush 20 of the plate 13, which is provided with an eccentric mechanism for locking and releasing the column 19 that can be actuated by means of a lever 21.

According to the invention, the supporting element 10 has two interchangeable secondary plates 18-18a; each secondary plate has a corresponding pair of heads for the selective processing of shrink-wrap capsules or of metal capsules.

The secondary plate 18 (figures 1 and 3), which is preset for processing shrink-wrap capsules, has two heating heads 22 arranged side by side and mutually spaced with an angular pitch "p" which is equal to the spacing pitch of the pans 12. The heating heads 22, which have a per se known structure, comprise an armored resistor 22a which is coiled so as to form a cylindrical spiral, is surrounded by fins 22b, and accommodates the neck of the bottle on which the shrink-wrap capsule C is fitted and a capsule presser 22c which is arranged coaxially to the resistor 22a and is subjected to a weight (not shown). By means of the column 19 and of its locking mechanism, the plate 18 and the heads 22 rigidly coupled thereto can be moved into a lowered operating position (figure 1) in order to fit them on the neck of the bottles when the plate 13 descends, or into a raised disengagement position (figure 3).

When the heating heads are in disengaged position, it is possible to use only the rolling heads 15, and the heating heads, which are not powered, are used as capsule pressers.

The secondary plate 18a (figures 1 and 4), which is preset for processing metal capsules, has two pneumatic heads 23 which are also arranged side by side and mutually spaced with an angular pitch "p" equal to the spacing pitch of the pans 12. The pneumatic heads 23, which have a per se known structure, form a series of folds on said metal capsules; said folds are then pressed by the rolling heads 15. For this purpose, the heads 23 are of the type comprising a presser 23a which is subjected to a weight 23b and a profiled elastomeric sleeve 23c which is actuated so as to adhere to the capsule by the action of a pressurized fluid.

As clearly shown in figure 4, the secondary plate 18a is in the raised position when the pneumatic heads 23 are in the operating position.

The present invention naturally covers embodiments achieving equal utility by using the same inventive concept defined by the claims that follow.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Multipurpose supporting element (10) for bottle capsule application heads, comprising a main plate (13), to which two mutually spaced rolling heads (15) are rigidly coupled, said heads being simultaneously actuated by a conventional motor (16) by means of a transmission belt (17), and a set of two interchangeable secondary plates (18-18a) respectively having two heating heads (22) and two pneumatic heads (23) respectively for processing shrink-wrap capsules and for processing metal capsules, and coupling means for detachably coupling any of the two secondary plates (18, 18a) to the main plate (13), said coupling means consisting of a vertically adjustable vertical locking and disengagement column (19) which allows to lower or raise the secondary plate (18) with respect to the main plate (13).

2. Supporting element according to claim 1, characterized in that the main plate (13) is supported by a shaft (14) above a carousel disk (11) which has pans (12) for supporting a plurality of bottles, and in that said shaft (14) performs vertical ascending and descending operating strokes.

3. Supporting element according to claim 1, characterized in that the vertical column (19) is accommodated within a retention bush (20) of the main plate (13) and in that said bush has an eccentric mechanism for locking and releasing the column (19) which can be actuated by means of a lever (21).

4. Supporting element according to claim 1, characterized in that the heating heads (22) include an armored electric resistor (22a) which is coiled so as to form a cylindrical spiral and a presser (22c) which is coaxial to the resistor.

5. Supporting element according to claim 1, characterized in that the rolling heads (15) include one or more peripheral rollers (15b) which are rotated by a pulley (15c) and by an actuation gear.

6. Supporting element according to claim 1, characterized in that the pneumatic heads (23) are of the type comprising an elastomeric sleeve (23c) subjected to the action of a pressurized fluid.

Patentansprüche

1. Mehrzweck-Trägerelement (10) für Flaschenkap-

sel-Applikatorköpfe, mit einer Hauptplatte (13), mit der zwei voneinander beabstandete Walzköpfe (15) starr verbunden sind, die von einem herkömmlichen Motor (16) über einen Transmissionsriemen (17) gleichzeitig betätigt werden, und mit einem Satz zweier gegeneinander austauschbarer Nebenplatten (18-18a) mit zwei Heizköpfen (22) bzw. zwei Druckluftköpfen (23) zum Bearbeiten von Schrumpffolienkapseln und zum Bearbeiten von Metallkapseln, und mit Kupplungsmitteln zum lösbaren Koppeln einer der beiden Nebenplatten (18, 18a) mit der Hauptplatte (13), wobei die Kupplungsmittel eine vertikal verstellbare vertikale Arretier- und Freigabesäule (19) umfassen, die ein Absenken oder Anheben der Nebenplatte (18) relativ zur Hauptplatte (13) ermöglicht.

2. Trägerelement nach Anspruch 1, dadurch **gekennzeichnet**, daß die Hauptplatte (13) an einer Welle (14) oberhalb einer Karussellscheibe (11) angeordnet ist, die Sockel (12) zum Tragen einer Vielzahl von Flaschen hat, und daß die Welle (14) vertikale Arbeitshübe nach oben und unten ausführt.

3. Tragerelement nach Anspruch 1, dadurch **gekennzeichnet**, daß die vertikale Säule (19) in einer Führungsbuchse (20) der Hauptplatte (13) aufgenommen ist, und daß die Buchse einen Exzentermechanismus zum Arretieren und Freigeben der Säule (19) hat, der mittels eines Hebels (21) betätigbar ist.

4. Trägerelement nach Anspruch 1, dadurch **gekennzeichnet**, daß die Heizköpfe (22) einen zu einer zylinderförmigen Spirale gewickelten geschützten elektrischen Widerstand (22a) sowie ein Andruckelement (22c) enthalten, das koaxial zum Widerstand ist.

5. Trägerelement nach Anspruch 1, dadurch **gekennzeichnet**, daß die Walzköpfe (15) eine oder mehrere Randwalzen (15b) haben, die mittels einer Riemenscheibe (15c) und eines Betätigungsgetriebes drehbar sind.

6. Trägerelement nach Anspruch 1, dadurch **gekennzeichnet**, daß die Druckluftköpfe (23) von dem Typ sind, der eine Elastomerhülle (23c) hat, auf die ein Druckfluid einwirkt.

Revendications

1. Elément de support multiusage (10) pour des têtes d'application de capsule de bouteille, comportant une plaque principale (13), à laquelle sont couplées rigidement deux têtes tournantes (15) mutuellement espacées, lesdites têtes étant actionnées simultanément par un moteur conventionnel (16) au moyen d'une courroie de transmission (17), et un ensemble de deux plaques secondaires interchangeables (18-18a) possédant respectivement deux têtes de chauffage (22) et deux têtes pneumatiques (23) respectivement pour traiter des capsules enveloppantes rétractables et pour traiter des capsules métalliques, et des moyens de couplage pour coupler de façon amovible l'une quelconque des deux plaques secondaires (18, 18a) à la plaque principale (13), lesdits moyens de couplage consistant en une colonne verticale (19) de blocage et de dégagement, réglable en hauteur permettant d'abaisser ou d'élever la plaque secondaire (18) par rapport à la plaque principale (13).

2. Elément de support selon la revendication 1, caractérisé en ce que la plaque principale (13) est supportée par un arbre (14) au-dessus d'un disque carrousel (11) qui possède des cuvettes (12) pour supporter une pluralité de bouteilles, et en ce que ledit arbre (14) accomplit des courses de fonctionnement ascendantes et descendantes verticales.

3. Elément de support selon la revendication 1, caractérisé en ce que la colonne verticale (19) est reçue à l'intérieur d'un manchon de retenue (20) de la plaque principale (13) et en ce que ledit manchon possède un mécanisme excentrique pour bloquer et dégager la colonne (19) qui peut être actionné au moyen d'un levier (21).

4. Elément de support selon la revendication 1, caractérisé en ce que les têtes de chauffage (22) comprennent une résistance électrique blindée (22a) qui est bobinée de manière à former une hélice cylindrique et un presseur (22c) coaxial à la résistance.

5. Elément de support selon la revendication 1, caractérisé en ce que les têtes rotatives (15) comprennent un ou plusieurs galets périphériques (15b) qui sont entraînés en rotation par une poulie (15c) et par un pignon d'actionnement.

6. Elément de support selon la revendication 1, caractérisé en ce que les têtes pneumatiques (23) sont du type comportant un manchon (23c) en élastomère soumis à l'action d'un fluide pressurisé.

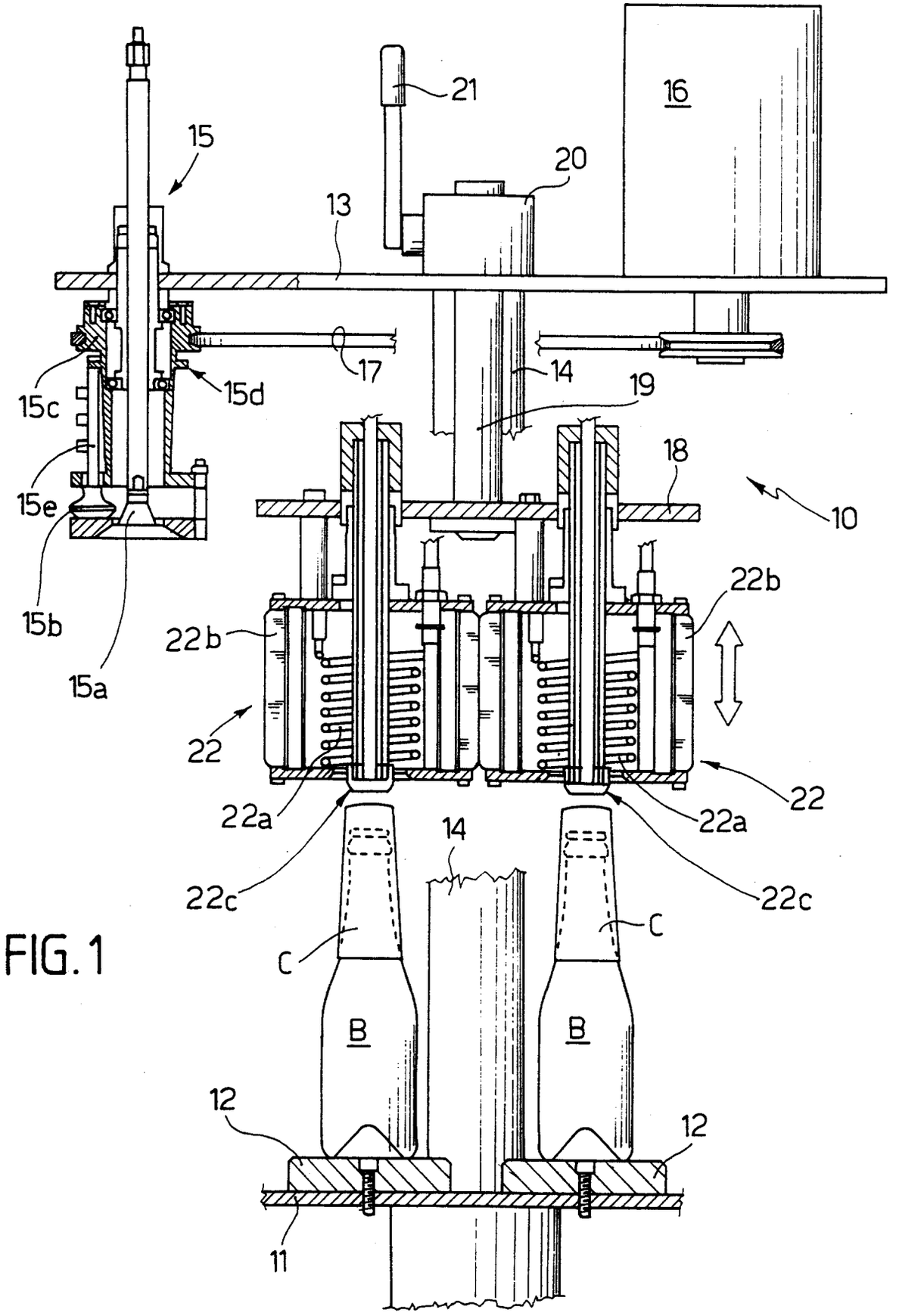
15
21
16
20
13
17
14
19
15c
15d
18
10
15e
15b
22b
22b
15a
22
22
22a
22a
14
22c
22c
C
C
B
B
12
12
11

FIG. 1

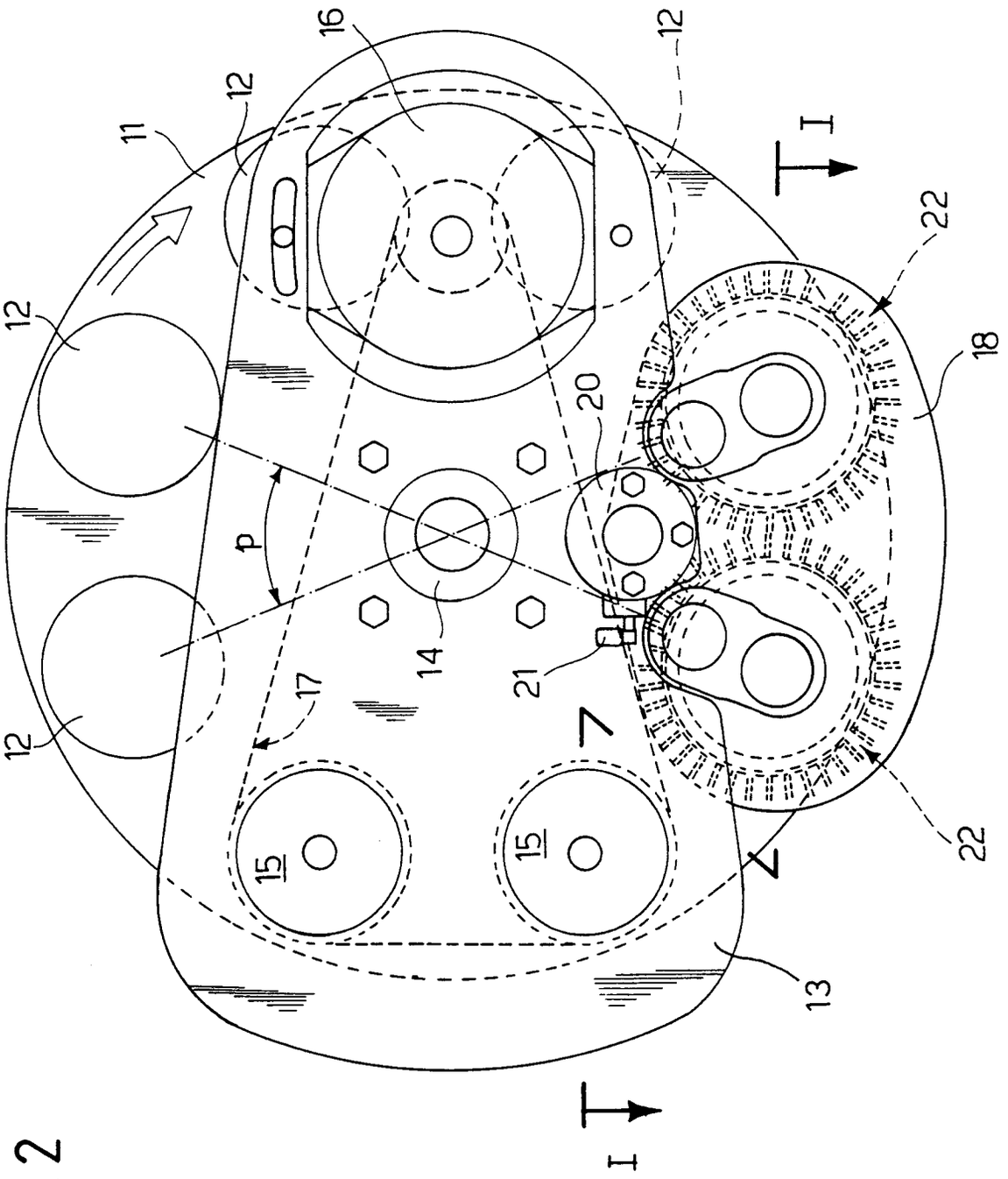

FIG. 2

FIG. 3

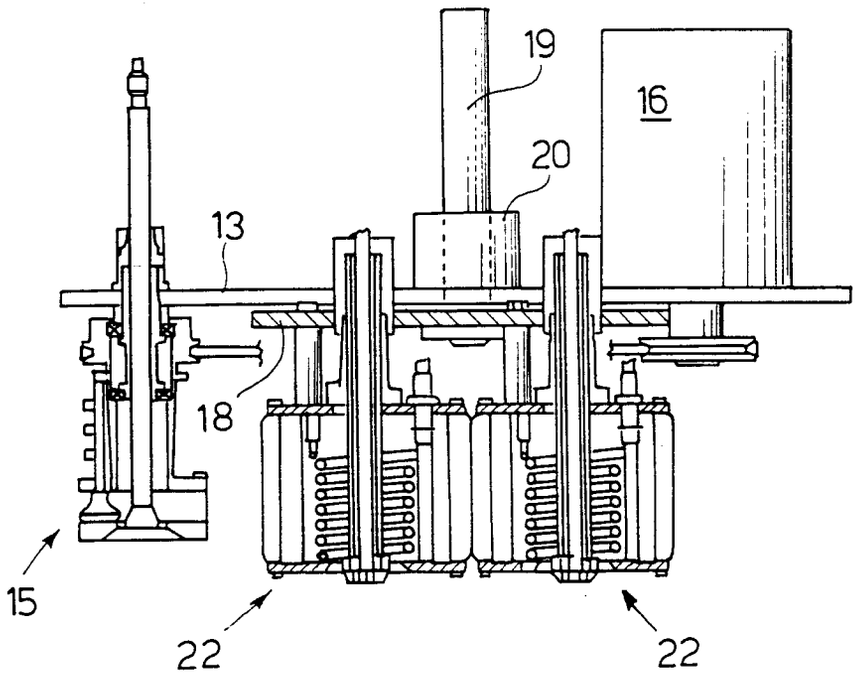

FIG. 4