

EUROPEAN PATENT APPLICATION

Application number: **90102998.3**

Int. Cl.⁵: **B65B 61/26**

Date of filing: **16.02.90**

Priority: **15.03.89 ES 8900842 U**

Date of publication of application:
19.09.90 Bulletin 90/38

Designated Contracting States:
AT BE CH DE DK FR GB IT LI LU NL SE

Applicant: **REPSOL-BUTANO, S.A.**
C/. Archipreste de Hita, 10
E-28015 Madrid(ES)

Inventor: **Vela Lumbreras, Antonio**
Avenida San Luis, 93-12
E-28033 Madrid(ES)
Inventor: **Antunez Jiménez, José**
Avenida Brasilia, 21-5
E-28028 Madrid(ES)

Representative: **Grättinger, Günter**
Wittelsbacherstrasse 5 Postfach 16 49
D-8130 Starnberg(DE)

Device for printing bar codes on liquid petroleum gas containers.

A device for printing bar codes on liquid petroleum gas containers (3) comprising an arm (10) in an inverted "U" shape, which revolves alternately in both directions around the container on which it is intended to print the bar code, the printing of which is carried out by means of a printing head (11) installed in one of the arms of the aforementioned "U" shaped arm; it having been foreseen that the latter arm forms part of a general structure (1) in which an entry zone (2) is defined for the containers, with a transporter (4), in the area of which there is a brake (5) for stopping the containers, allowing the sequential passage of each of them until they reach a retractable buffer (7) which immobilizes the said container facing an overhead elevating unit (8), also positioning it with a centering unit (9); with the particular characteristic also that the revolving arm is attached to a shaft (12) which turns on ball bearings (13) and is driven by an electric motor, the said revolving arm being fitted with a rotary element (15) by means of which the arm can be turned manually in order to clean the printing head.

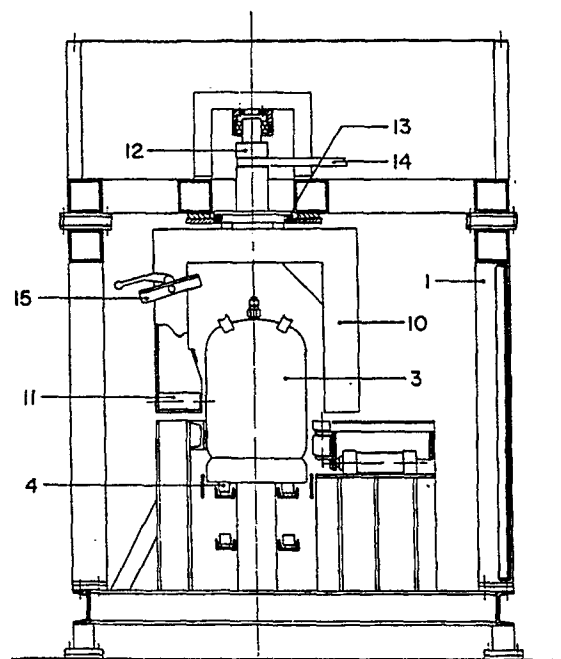


Fig. 1

DEVICE FOR PRINTING BAR CODES ON LIQUID PETROLEUM GAS CONTAINERS

The invention refers to a device for printing bar codes on liquid petroleum gas containers, a device which includes a mechanism or the means for setting up the container itself on its entry and exit, as well as an element by which the printing of the bar code is carried out precisely.

The containers of liquid petroleum gas (Butane/Propane), which henceforth will be symbolized by the letters L.P.G. are supplied with a charge of gas which is defined by its weight; or what is the same thing, the charge in the gas (L.P.G.) containers is measured in Kg.

Naturally, the filling of this charge requires the prior knowledge of the respective weight of the empty container which is given the name of "tare", with the object of subtracting this weight from the total once the container has been filled, and thus obtain the specific weight or charge of gas.

At the moment, the tare referred to is printed on the container, in arabic numerals, on the upper cap of the said container so that it can be read by the operator who will feed the data into the memory of the scales.

The said method of working means that the operator must pay complete attention, so that errors do not occur in reading, in such a way that it makes it necessary to systematically rotate the job to prevent tiredness produced by the level of attention required.

The device which is preconized has been conceived to solve that problem in a completely satisfactory way, a device by means of which the tare is marked on the container, using a bar code which is going to be read by an automatic instrument thus avoiding the human element.

Structurally and fundamentally, the device consists of an arm in an inverted "U" shape and revolving around the side surface of the container, an arm which is equipped with a printing head by means of a jet of ink, which will print several times and all around the perimeter of the container, the bar code corresponding to the tare weight.

The device also includes the means for moving that arm, and also the means to move the container into and out of the zone in which the printing really takes place, a means made up of a transporter, a retractable buffer, as well as an elevator and a centering device for the container itself, to position it in the correct zone or spot.

To aid the better understanding of the characteristics of the invention, a detailed description is going to be made, based on a set of drawings which are attached to this descriptive memorandum, forming an integral part of it, and in which in a purely orientative and non-limiting way the follow-

ing has been described:

In the 1st. diagram a frontal elevation schematic description of the whole of the printing device is shown.

In the 2nd. diagram an overhead view schematic description of the same device is shown.

In the 3rd. diagram, a side elevation view of the part corresponding to the gate which closes in that side, and in which is seen in profile the control panel or console, is shown.

In the said diagrams, the numbered references correspond to:

- 1.- General structure.
- 2.- Container entry zone.
- 3.- Containers.
- 4.- Transporter.
- 5.- Brake.
- 6.- Control console.
- 7.- Retractable buffer.
- 8.- Elevating mechanism.
- 9.- Centering unit.
- 10.- Revolving arm of the printing unit.
- 11.- Printing head.
- 12.- Shaft on which the arm (10) is mounted.
- 13.- Ball race of the shaft (12).
- 14.- Belt for turning the shaft (12).
- 15.- Rotating element fixed to the arm (10).

As can be seen in the diagrams, the complete device is composed of a general structure (1) in which an entry zone (2) for the containers (3) is defined to which they gain access on a transporter (4). In the entry zone (2) there is a brake (5) which holds the containers (3) whilst the operator feeds in the tare weight of the corresponding container on the control console (6). At that moment, the brake (5) frees the first container (3), closing again immediately after to hold the next one.

For its part, the transporter (4), makes the said container move forward as far as a retractable buffer (7) which stops it facing the printing unit, which further on will be described in full detail. Simultaneously with the arrival of the container (3), an elevating mechanism (8) lifts it off the transporter (4), so that it is not affected by the vibrations of the belt. Likewise, the buffer (7) withdraws and a centering unit (9) operates on the container (3) holding the latter stationary in a vertical position.

Then the printing unit or mechanism in the true sense of the word operates, this being comprised of an arm (10) in the shape of an inverted "U", which incorporates the printing head (11) to print the bar code, a defined number of times all the way around the perimeter of the container (3), some centimetres below its equator.

The said arm (10) can revolve around the con-

tainer (3) and it is held in place by the central part of its intermediate and upper arm by means of a shaft (12) which, resting in a ball race (13), can revolve freely. A belt (14) driven by a reduction motor allows the arm (10) to revolve alternately in clockwise and anti-clockwise directions, printing in this way once to the right and another time to the left.

Once the printing is completed, the centering unit (9) and the elevator (8) are withdrawn, freeing the container (3) which will be removed by the transporter (4), in such a way that the retractable buffer (7) will again be positioned awaiting the next container.

The revolving arm (10) incorporates a rotary element (15) by means of which it is possible to turn the arm (10) for cleaning of printing head (11) from outside.

Finally, it should be mentioned that the whole unit will be complemented by the addition of the reduction motor mentioned already, which will controlled by a frequency converter which allows progressive accelerations and decelerations, it being a set of inductive sensors which define the start of the deceleration slope and the activation of the brake when the entry position is reached. An incremental codifier will define the distance between the vertical bars of the codes, independently of the speed of turning, which allows a uniform print to be made during acceleration, deceleration and travel at a rapid and steady speed.

Claims

1st.- Device for printing bar codes on liquid petroleum gas containers, essentially characterized because it consists of an arm in an inverted "U" shape, which revolves alternately in both directions around the container on which it is intended to print the bar code, the printing of which is carried out by means of a printing head installed in one of the arms of the aforementioned "U" shaped arm; it having been foreseen that the latter arm forms part of a general structure in which an entry zone is defined for the containers, with a transporter, in the area of which there is a brake for stopping the containers, allowing the sequential passage of each of them until they reach a retractable buffer which immobilizes the said container facing an overhead elevating unit, also positioning it with a centering unit; with the particular characteristic also that the revolving arm is attached to a shaft which turns on ball bearings and is driven by an electric motor, the said revolving arm being fitted with a rotary element by means of which the arm can be turned manually in order to clean the printing head.

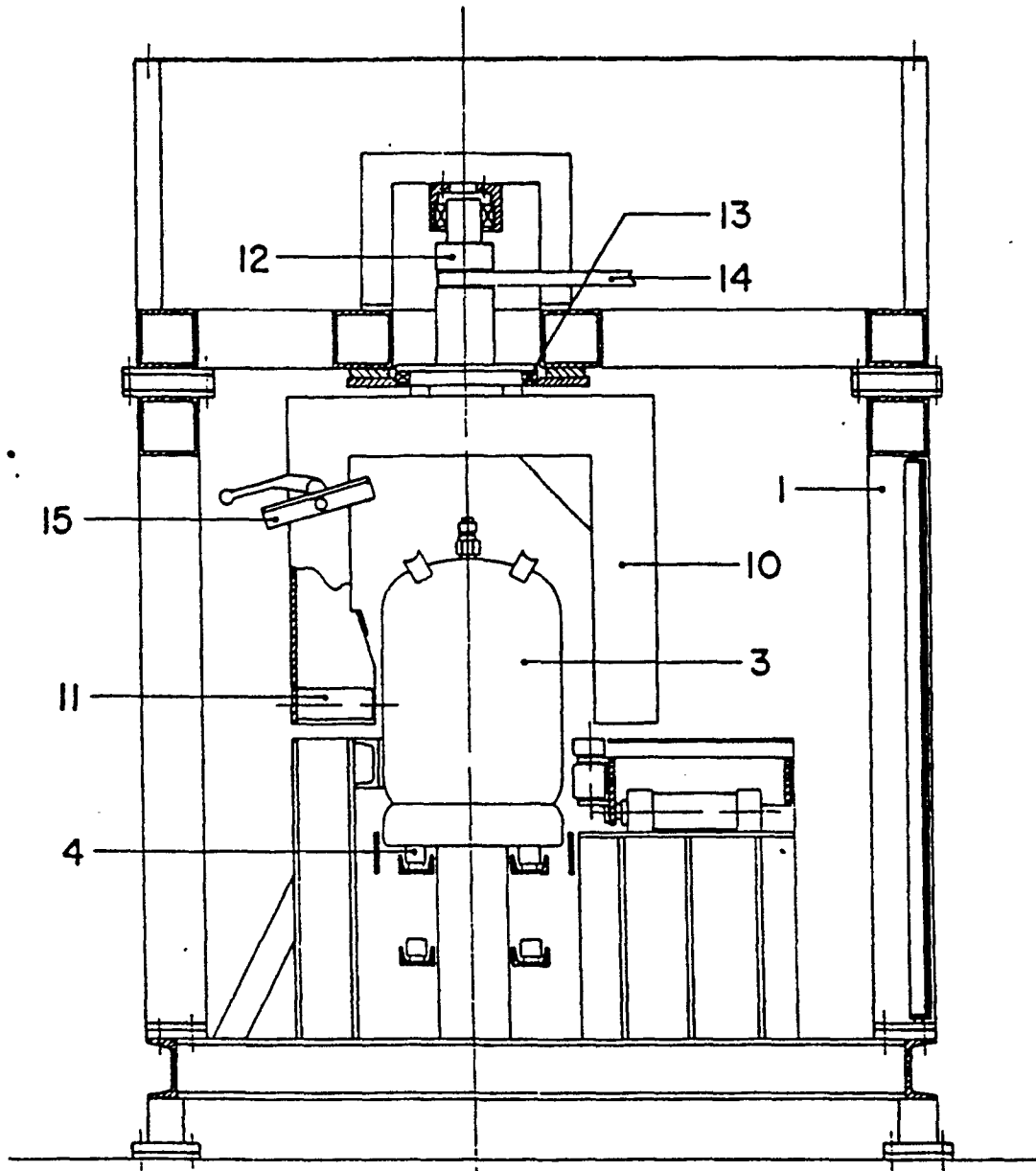


Fig. 1

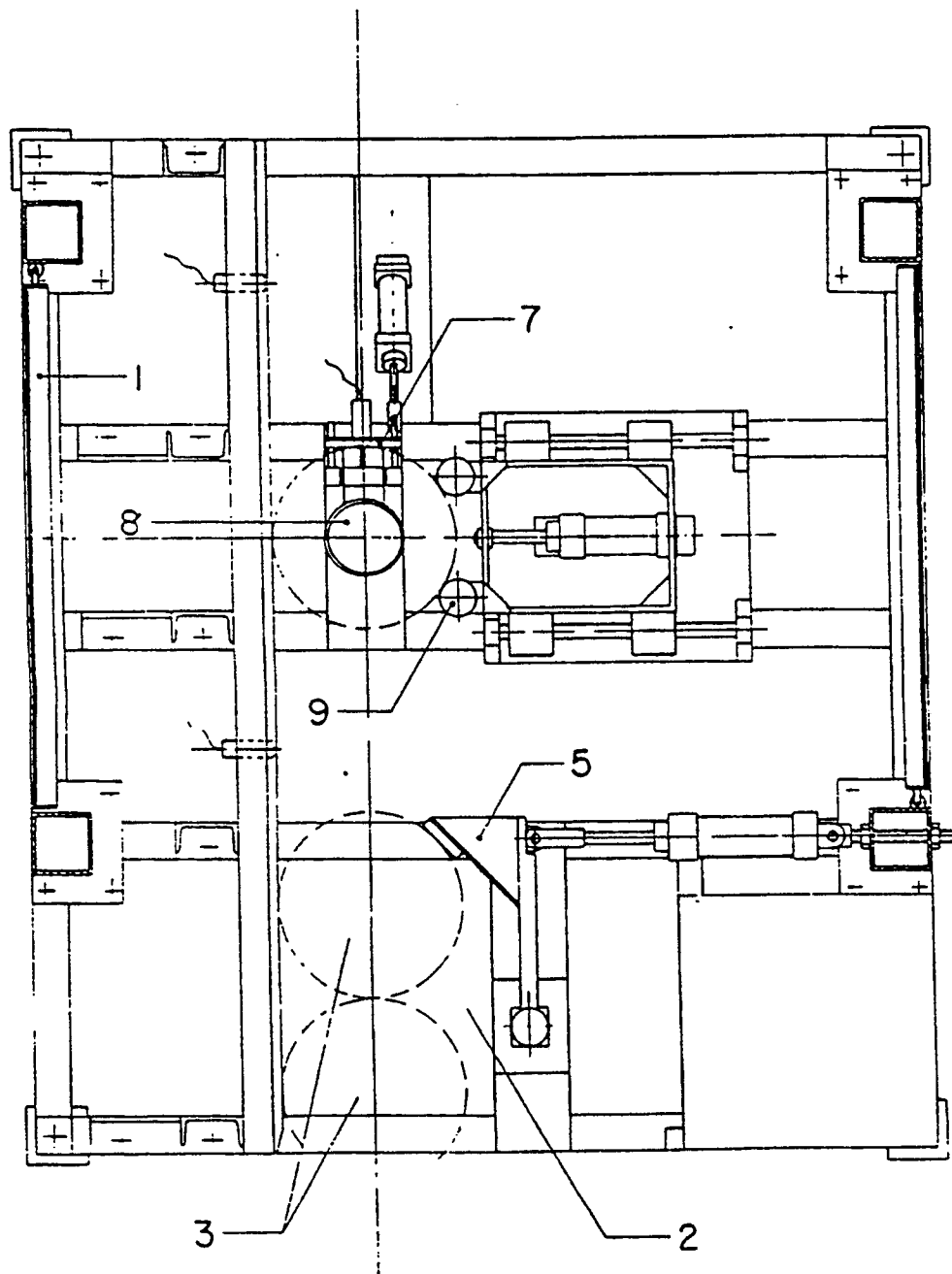


Fig. 2

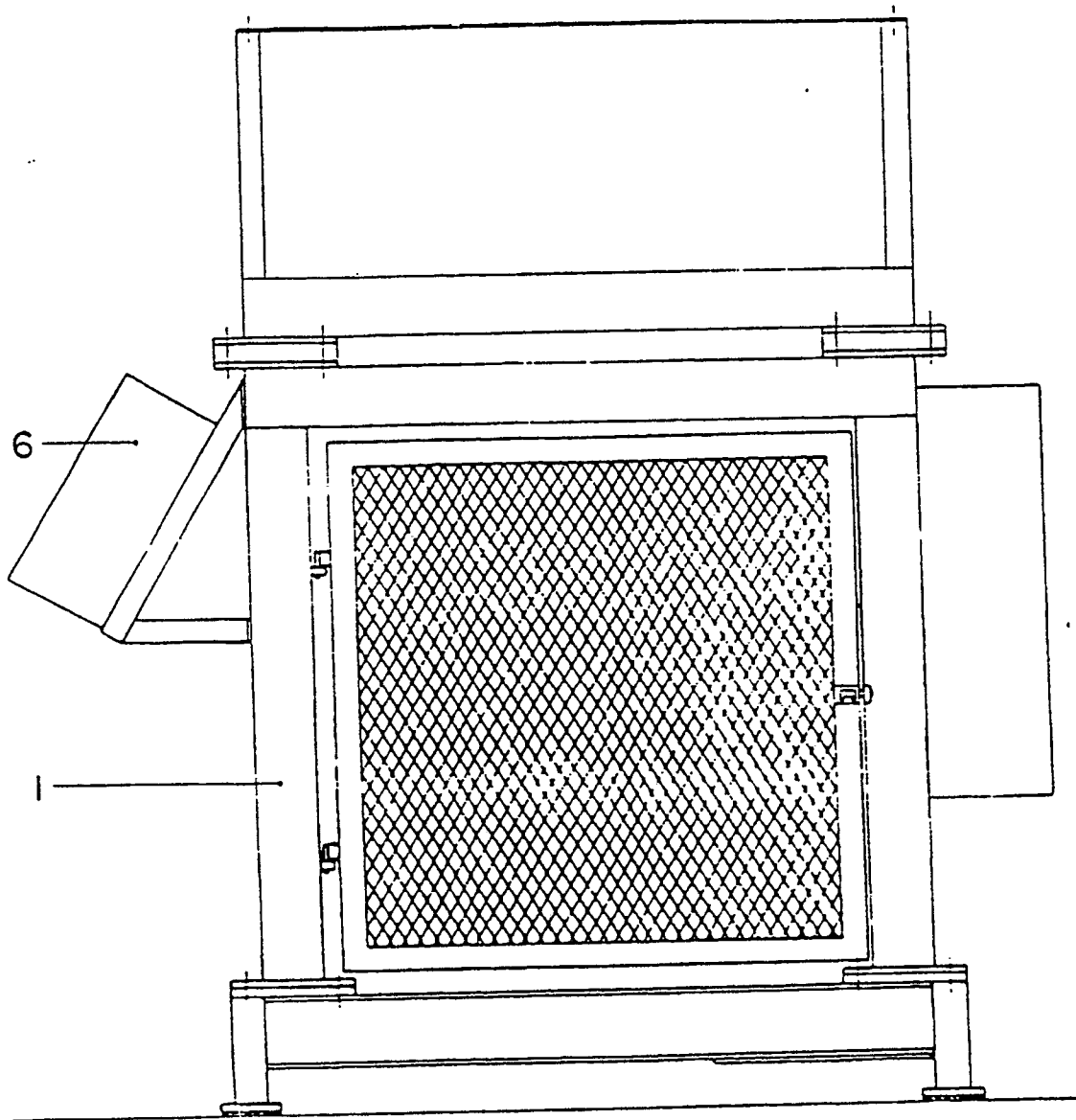


Fig. 3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 10 2998

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	DE-U-8 811 987 (SEITZ) * Complete document *	1	B 65 B 61/26
A	US-A-4 450 756 (STEENRISTE) * Claim 1; figures 3-5 *	1	
A	FR-A-2 448 201 (MARNIER-LAPOSTOLLE)		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 65 B B 41 F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 01-06-1990	Examiner NGO SI XUYEN G.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	