



(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification :
26.08.92 Bulletin 92/35

(51) Int. Cl.⁵ : **B65B 5/02**

(21) Application number : **89500064.4**

(22) Date of filing : **30.05.89**

(54) **A device for forming and filling tubular containers.**

(30) Priority : **03.06.88 ES 8801745**

(43) Date of publication of application :
13.12.89 Bulletin 89/50

(45) Publication of the grant of the patent :
26.08.92 Bulletin 92/35

(84) Designated Contracting States :
AT BE CH DE FR GB GR IT LI NL SE

(56) References cited :
DE-C- 675 656
GB-A- 2 074 124

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EP 0 346 260 B1

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Description

The present invention relates to a device intended to facilitate filling of tubular containers, specially when it is intended to can in the said container solid pieces such as blocks or tablets of a comparatively large size.

BACKGROUND OF THE INVENTION

It is well known the need for canning blocks or tablets of a comparatively large size as it arises, for example, when preparing blocks of washing means such as those used in the machine washing of clothes and washing up dishes in domestic use.

In all of these cases, canning of such blocks is generally performed by means of covers made of cellophane, plastics or other material of a light nature, which do not afford to the product the necessary protection against mechanical strains such as blows, pressures, friction and the like fatally damaging the said product, breaking and crumbling it such that it loses its appearance.

On the other hand, there are as well known containers made of a cardboard sheet rolled over itself, with their borders mutually overlapped and adhered with one another, the container having on its inside and close to at least one of its ends, respective heat sensitive adhering stripes to secure the lids which are to close these ends, such as described in the Spanish Utility Model N° 242 532.

The document DE-C-675 656 refers to a container filling device comprising a movable stop associated with a first opening of the container and a pusher faced to the second opening of the container and connected with driving means to push a row of product blocks put between the pusher and the container into this container and until abutting with the movable stop.

DESCRIPTION OF THE INVENTION

The subject of the invention is indeed to facilitate canning and preparing pieces of the above said features, such that they are able to reach the user public in a good condition and with its whole shape, such that its appearance is not impaired.

To this end, according to the invention, the device for forming and filling tubular containers, preferably with washing agents in the form of large blocks or tablets, comprises, besides the fact that it may comprise a conventional cutting and stamping off station, a container filling device including a movable stop associated with a first opening of the container and a pusher faced to the second opening of the container and connected with driving means to push a row of product blocks put between the pusher and the container into this container and until abutting with the

movable stop, and it is characterized in that it is made up of:

an endless conveyer guided between two direction change points thus forming at least one essentially straight working run between these points and driven stepwise in one working direction;

a plurality of pairs of nippers mounted on the conveyer at regularly spaced points of its length, each pair of nippers having two legs fast on the outer surface of the endless conveyer at longitudinally spaced points thereof, such that the said nippers assume an open, container releasing, position at the places where the conveyer performs a change of direction, and a closed, container holding position, along the working runs;

a lid fitting station including a device for inserting lids at both openings of the containers;

a container closing station including a device for securing the said lids to the borders of the said containers;

an empty container inserting station at a step position in which the nippers stay open, and

a full container removing station at another step position in which the nippers stay open, the container filling device being a station coinciding with the step position of one closed pair of nippers.

It is obvious that the nippers of the conveyer can be present in a number suitable for picking up, and subsequently releasing, one or more tubes or containers at a time. In this latter case, the filling stations will also be, as it is obvious, several in number and arranged along the conveyer length.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the above exposition, the enclosed drawings show, in a thoroughly diagrammatic form and only by way of example, with no limiting character at all, a practical embodiment of the method according to the invention and of the device facilitating the filling and closing of the containers. In the said drawings:

Figure 1 corresponds to an isometric view of a tubular body formed by rolling and overlapping the borders of a sheet;

Figure 2 shows in longitudinal section a container at the time of filling it;

Figure 3 is a view similar to Figure 2, after the terminal lids have been fitted;

Figure 4 is as well a similar view after the edges of the container openings have been flanged for closing the container;

Figure 5 shows an isometric view of a container closed and endowed with opening means by tearing, and

Figure 6 is a diagrammatic view of the container filling and closing device which is to complete, as indicated, a conventional station for cutting and

stamping off the sheets which are the basis for the method.

DESCRIPTION OF PREFERRED EMBODIMENTS

A it may be seen in Figure 1 of the drawings, the method starts from a sheet of the features described in the Spanish Utility Model N° 242 532, which is rolled up over itself to define a tubular body 1 with its borders 2 overlapped and stuck by respective heat sensitive adhesion bands 3 which are disposed at the inside and adjacent the container ends. This body will, eventually, have a tearing band 4 for opening the container, and a small window 5 covered by a transparent sheet 6 to look at the inside.

The thus constituted tubular body is placed in front of a preferably movable stop 7, and the blocks or tablets 8 to be canned are inserted therein through the opposite opening, for example by means of a pusher or the like 9 which is suitably operated. Once the blocks have been inserted, it is proceeded with applying lids 10 at both ends of the container, which may be, indifferently, a shape of a flat disc or the indicated shape of a shallow pan, with its wings juxtaposed to the terminal edges of the container, after which the container will be completed and closed by a flanging 11, enclosing into it the canned product 8.

A device suitable for filling and closing the containers is represented in diagrammatic form in the Figure 6 and will complete an installation which is to comprise stations, of a conventional composition, for cutting and stamping off the sheets 1.

The said device comprises of an endless conveyer 12 formed of ring closed flexible band of any suitable conventional construction which is mounted taught between two direction changing rollers or the like 13 such that it forms two straight upper and lower runs respectively 12a, 12b, with the rollers adapted to rotate about respective central axis 13a and connected with suitable well known operating means. For example, one axis 13a can be mounted on lengthwise adjustable journals, not shown, to place the conveyer band under a suitable working tension, and the other shaft 13a, of fixed position, can be connected to a conventional speed reducing motor gear to drive the ensemble of the conveyer in the direction shown by the arrows in Figure 6.

The conveyer 12 has mounted on its outer surface (as regards the closed ring) suitable pairs of nippers 14, disposed at regularly spaced positions along the length of the conveyer band. Each said pair of nippers is formed of two legs 14a, 14b mounted at a short mutual longitudinal distance on the band, and the mutually faced sides of each leg in a pair of nippers are formed with complementary surfaces to form, together, a housing for a tubular container 1. In this example it is assumed that the legs are conformed to receive containers 1 of a cylindrical shape, but it is

obvious that the described nippers could be devised to handle containers 1 having whatever different shape in cross section. It is also possible to devise the legs 14a, 14b such that they, or at least a portion thereof could be substituted by legs, or parts of leg, defining a housing for differently shaped containers 1.

The two legs 14a, 14b of each pair of nippers 14 are mounted fast, independently of one another, on the surface of the band of the conveyer 12, such that the nippers 14c, 14d, 14e that any time are located on a straight run, for example 12a, of the conveyer 12 conform, with the complementary faces of their legs 14a, 14b, a housing with the cross section dimensions suitable to grasp in fixed relation a corresponding tubular container 1c, 1d, 1e. However, when the nippers are run by the conveyer 12 about the curved surface of the rollers 13, the legs of these latter are moved from their parallel positions on the straight runs 12a, 12b to a radial position, respect to the concerned axis 13a, as the nipper 14 at the left end of Figure 6, thus assuming a more separated or open position allowing the empty containers 1 to be inserted in the conveyer or the filled and closed containers to be removed therefrom.

As described, the conveyer 12 is driven such that it rotates in the direction indicated by the arrows in Figure 6. Preferably this drive is performed in a step-wise manner such that the several nippers remain stationary at the positions shown in the Figure 6 for a time suitable for the several operations to be carried about on the containers to take place as desired, and when these operations are finished, the ensemble of the conveyer is moved forward a length corresponding to the peripheral pitch of the pairs of nippers 14 on the conveyer band and these latter are advanced one pitch along the series of positions or stations indicated by the nippers 14, 14c, 14d and 14e. In other words, the container in the station 1 is moved to the station 1c, the one in station 1c to the station 1d, and so forth.

In the example of Figure 6 an ensemble of four positions or working stations is thus defined: load and discharge station 14, filling station 14c, lid placing station 14d and lid closing station 14e.

In the load and discharge station, for example, an empty container 1 is pushed by a conventional means from the outer position shown up to between the two legs 14a, 14b of the nipper in position 14, at the same time pushing out of the conveyer a filled and closed container, not shown, which has reached this station after several step motions along the lower run 12b of the conveyer. In an alternative embodiment, a similar pusher device, not shown, can discharge a completed container at the open position which the nippers 14 assume at the opposite end of the conveyer. Otherwise, although not as much efficiently, one or both operations can be performed by hand on one or both terminal stations described.

A one step advance motion is performed and the

thus inserted tubular container 1 comes to the next station or filling station 14c comprising the movable stop 7 and pusher 9 foreseen in Figure 2, according to which the blocks 8 are inserted in the tubular bodies 1.

With a next step motion the filled tubular container 1c comes to the lid inserting station 14d, in which lids 10 are fitted in the ends of the tubular body 1d by means of opposite pushers 15.

A further step motion carries the tubular container 1d, with its lids fitted, in front of the last station 14e in which several conventional flanging mechanisms 16 act upon the edges of the tubular body, and eventually also on those of the lids 10, such that the tubular body or container 1 becomes thoroughly closed and with the product 8 housed in its inside, as previously indicated.

A further step motion would carry the thus completed container 1e to the discharge station located at the right side end of the conveyer according to the described alternative embodiment, or the said completed container will come, after a number of step advancing motions, to the load and discharge station 14 as described above.

The working mode of the described device derives itself from the above description of the method and the device and requires no further discussion.

It is obvious that the development of this device may respond to a merely mechanic, pressure fluid or the like conception, with no change at all of the essentials of the invention. On the other hand, the means used in the described stations, including the loading and discharging stations may be formed of conventional, well known in the art means which can be easily devised by the expert.

On the other side, it will be understood that the described method can be applied to whatever product, even if this latter does not assume a block or tablet shape, by arranging to this end suitable pushing or inserting means, whereas it has been preferably developed in its conception for the above solid and shaped products.

Finally, it can be said that whereas in the description and claims reference is made to a conveyer with a single nipper 14 for each working step, these nippers may be arranged over the conveyer 12 forming groups for every one of these steps, such that they act picking up and releasing, respectively at the conveyer beginning and end, a suitable number of containers at a time to be handled simultaneously one group at a time, in which case the handling stations will as well be multiple at each filling and closing station.

Claims

1. A device for forming and filling tubular containers, comprising a conventional cutting and stamping

off station, and a container filling device including a movable stop associated with a first opening of the container and a pusher faced to the second opening of the container and connected with driving means to push a row of product blocks put between the pusher and the container into this container and until abutting with the movable stop characterized in that it comprises:

and endless conveyer (12) guided between two direction change points (13) thus forming at least one essentially straight working run (12a) between these points and driven stepwise in one working direction;

a plurality of pairs of nippers (14) mounted on the conveyer (12) at regularly spaced points of its length, each pair of nippers having two legs (14a, 14b) fast on the outer surface of the endless conveyer (12) at longitudinally spaced points thereof, such that the said nippers assume an open, container releasing, position at the places (13) where the conveyer performs a change of direction, and a closed, container holding position, along the working runs;

a container lid inserting station (14d) including a device (15) for inserting lids (10) at both openings of the containers (1d);

a container closing station (14e) comprising devices (16) for securing the said lids to the borders of the said containers;

an empty container inserting station (14) at a step position in which the nippers (14) stay open, and

a full container removing station at the same or another step position (14) in which the nippers stay open,

the container filling device being a station coinciding with the step position of one closed pair of nippers (14).

Patentansprüche

1. Vorrichtung zum Formen und Füllen von rohrförmigen Behältern, bestehend aus einer herkömmlichen Schneide- und Ausstanzstation, und einer Behälterfüllstation mit einem beweglichen Anschlag, der mit einer ersten Öffnung des Behälters verbunden ist, und einem der zweiten Öffnung des Behälters gegenüberliegenden Schieber, der mit Antriebsmitteln verbunden ist, um eine zwischen den Schieber und den Behälter gebrachte Reihe von Produktblöcken in diesen Behälter bis zum Anstoßen an dem beweglichen Anschlag zu schieben, gekennzeichnet durch: ein zwischen zwei Richtungswechsellpunkten (13) geführtes endloses Förderband (12), das wenigstens einen im wesentlichen geraden Arbeitsweg (12a) zwischen diesen Punkten bildet

und schrittweise in einer Arbeitsrichtung angetrieben ist;
 eine Vielzahl von Zangenpaaren (14), die auf dem Förderband an regelmäßig beabstandeten Punkten seiner Länge befestigt sind, wobei jedes Zangenpaar aus zwei Schenkeln (14a, 14b) besteht, die auf der äußeren Oberfläche des endlosen Förderbandes an längsbeabstandeten Punkten befestigt sind, so daß die Zangen eine offene, behälterabgebende Position an den Stellen (13), an denen das Förderband einen Richtungswechsel vornimmt, und eine geschlossene behälterhaltende Position entlang des Arbeitsweges annehmen;
 eine Behälterdeckeleinfügestation (14d), die eine Vorrichtung (15) zum Einsetzen von Deckeln (10) an beiden Öffnungen der Behälter (1d) aufweist;
 eine Behälterverschließstation (14e), die Vorrichtungen (16) zum Befestigen der Deckel an den Kanten der Behälter aufweist;
 eine Leerbehälter-Einfügestation (14) an einer Schrittposition, bei welcher die Zangen offen stehen und
 eine Vollbehälter-Entfernungsstation an gleicher oder anderer Schrittposition (14), bei welcher die Zangen offen stehen, die Behälterfüllvorrichtung als Station, die mit der Schrittposition eines geschlossenen Zangenpaares (14) übereinstimmt.

transporteur effectue un changement de direction, et une position fermée de retenue de récipient le long des brins de travail,

un poste (14d) d'introduction de couvercle du récipient, comprenant un appareil (15) destiné à introduire des couvercles (10) aux deux ouvertures des récipients (1d),

un poste (14e) de fermeture de récipient comprenant des dispositifs (16) de fixation des couvercles aux bords des récipients,

un poste (14) d'introduction de récipient vide à un emplacement auquel les pinces (14) sont ouvertes, et

un poste d'extraction de récipient plein, à la même position (14) ou à une autre position à laquelle les pinces restent ouvertes,

le dispositif de remplissage de récipient étant un poste qui coïncide avec la position d'une paire de pinces fermées (14).

Revendications

- Appareil de mise en forme et de remplissage de récipients tubulaires, comprenant un poste classique de découpe et de mise en forme, et un dispositif de remplissage de récipient comprenant un organe mobile d'arrêt associé à une première ouverture du récipient et un poussoir tourné vers la seconde ouverture du récipient et relié à un dispositif d'entraînement pour repousser une ligne de blocs de produit placés entre le poussoir et le récipient vers l'intérieur du récipient et jusqu'à ce qu'ils soient en butée contre l'organe mobile d'arrêt, caractérisé en ce qu'il comprend :
 un transporteur sans fin (12) guidé entre deux emplacements (13) de changement de position, formant ainsi au moins un brin sensiblement rectiligne de travail (12a) entre ces emplacements et entraînés pas à pas dans un sens de travail,
 plusieurs paires de pinces (14) montées sur le transporteur (12) à des emplacements régulièrement espacés sur sa longueur, chaque paire de pinces ayant deux branches (14a, 14b) fixées à la surface externe du transporteur sans fin (12) en des emplacements espacés longitudinalement sur le transporteur, si bien que les pinces prennent une position ouverte de libération de récipient aux emplacements (13) auxquels le

