

[54] **PROCESS AND APPARATUS FOR
SECURING COVERING MATERIAL IN
PROPER ALIGNMENT TO A SERIES OF
CONTAINERS**

[72] Inventor: **Rolf Andra**, Schmiden, Germany
[73] Assignee: **Hofliger & Karg**, Stuttgart, Germany
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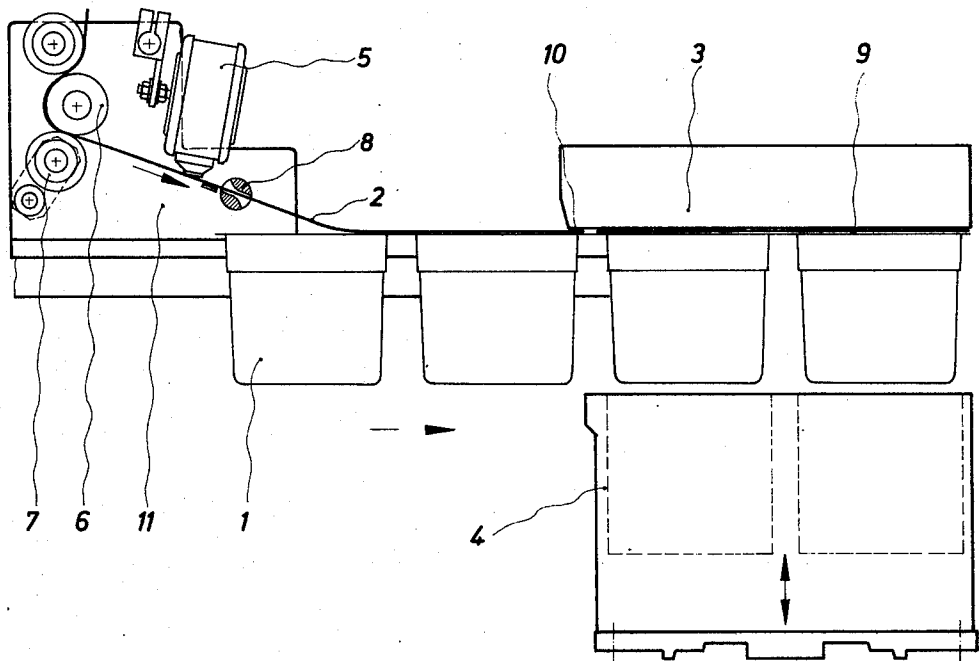
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Primary Examiner—Robert L. Spruill
Attorney—Michael S. Striker

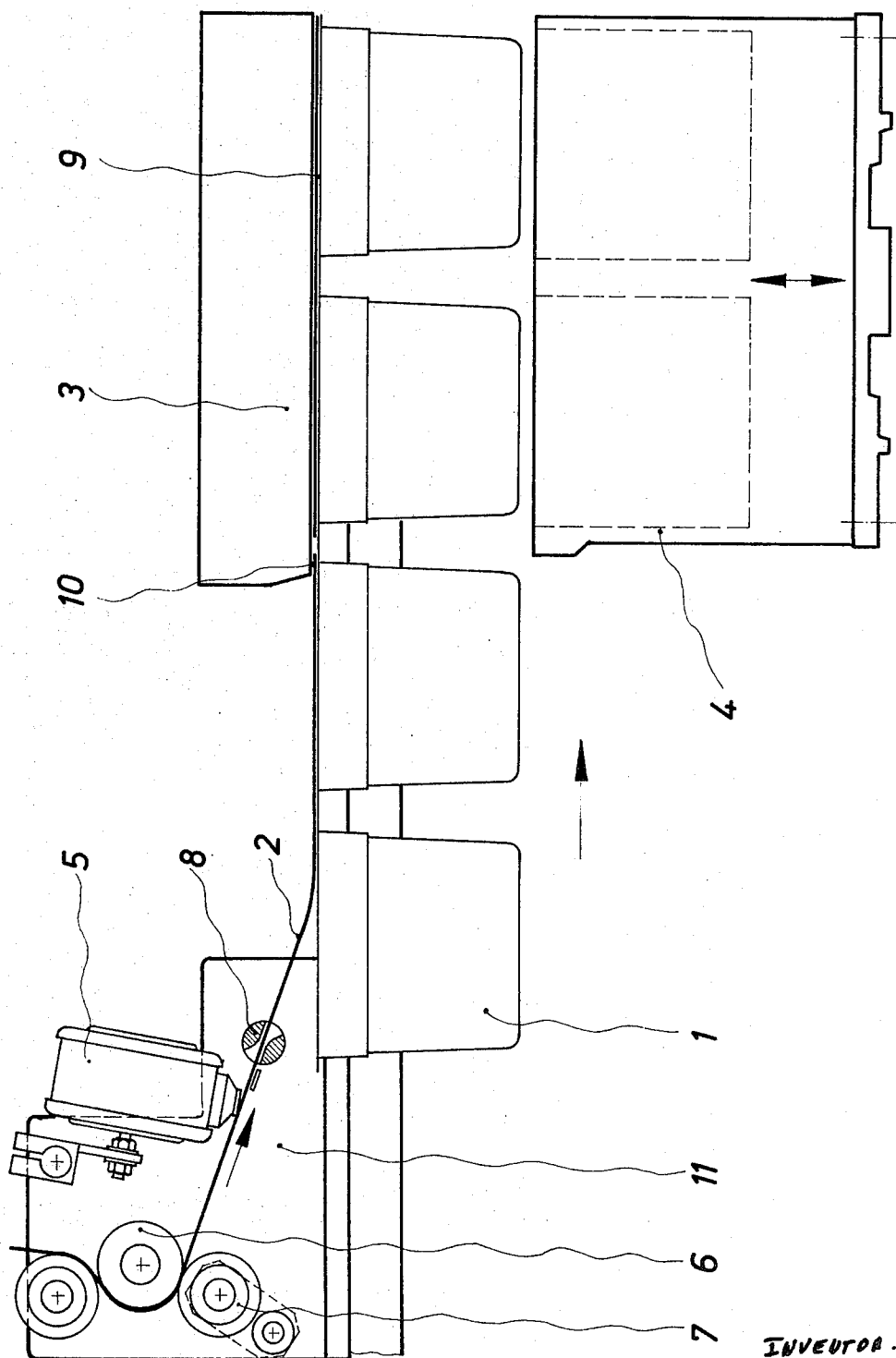
[57] **ABSTRACT**
The leading edge of a sheet of covering foil is sealed to the leading rim of a container of a row of several containers to ensure correct positioning of the foil on the containers, while the covering sheet previously sealed to the leading rim of a container is now completely sealed over the tops of its several containers.

4 Claims, 1 Drawing Figure



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INVENTOR:
ROLF ANDRA
BY: Michael S. Stiller
Attorney

PROCESS AND APPARATUS FOR SECURING COVERING MATERIAL IN PROPER ALIGNMENT TO A SERIES OF CONTAINERS

BACKGROUND OF THE INVENTION

The invention relates to a process and apparatus for securing a sheet of covering material in alignment to one or more containers.

It often occurs when securing covering material, such as foil, to a row of containers to cover them that it is difficult to get the covering material into proper alignment with the containers. The containers can, for example, be deep drawn spaced portions of an elongated form foil.

Although the invention is not limited to the use of metal foil, such as aluminum foil, it is particularly advantageous when used with foil, because it ensures proper alignment of the covering foil without the danger of tearing it.

SUMMARY OF THE INVENTION

The invention overcomes the disadvantages just outlined.

More specifically, the invention provides a process and apparatus for ensuring proper registration between the sheet of covering material, such as foil, and the row of containers.

In accordance with the invention, the sheet of cover material is secured to the tops of the one or more containers covered by the sheet at the same time that another sheet of covering material is attached at its leading portion to the next container to be covered.

A process of this kind has the advantage that every kind of foil can be used, since the entire length of cover foil is not fixed to the lower sheet of foil that incorporates the containers; instead, individual lengths of cover foil are correctly positioned and fixed to cover the containers. The process of the invention has the further advantage that no additional device for advancing the attached sheet of covering material is necessary, because it is attached to the container or group of containers that are to be covered and moves therewith.

Where, as is usually the case, the individual lengths of covering material are not pre-cut, but instead the material is drawn from a supply roll, the required length of covering material is cut from the roll either during or immediately after the material has been attached to the container, thereby avoiding all possibility that the covering material can shift from its desired position while being cut from the supply roll.

The apparatus for carrying out the process of the invention comprises broadly a closing station, at which the containers are closed, and a preceding attaching station, at which the covering material is attached to the container at the same time that the closing station is securing the attached covering material to one or more containers to close the latter.

More narrowly, the apparatus of the invention can further include cutting means, for cutting the covering material to length, positioned along the container path at a distance upstream of the attaching station in dependence on the required length of the covering material.

The position of the cutting means can be made adjustable so as to enable covering material of different lengths to be cut.

A photocell means can be arranged in front of the cutting means to control the stepwise movement of the covering material in dependence on marks provided on the cover foil.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

The single FIGURE of the drawing is a side view schematically showing the apparatus of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the FIG. of the drawing, containers 1, which have been deep drawn from a roll of sheet or foil, are closed by a sheet of cover foil 2 that is sealed to the containers by sealing tools 3 and 4. The open tops of the containers are located in a predetermined plane. Both the containers 1 and the cover sheet 2, which may be aluminum foil, are advanced stepwise. A photocell unit 5 is provided to ensure that the sheet 2 is correctly aligned when it is placed over, and then sealed to, the containers. When the photocell unit detects one or more markings provided on the sheet 2, the feed arrangement, comprising the two rollers 6 and 7, is stopped by an electric control, not shown. A cutter 8 for cutting the cover sheet 2 into the required lengths 9 is positioned downstream of the photocell unit.

The arrangement of the invention operates in the following manner. While cover sheet length 9 is being sealed to one or more containers 1, the leading portion, or edge, 10 of the uncut cover sheet 2 is sealed to the leading rim of the container adjacent to the rearmost container of the container group just sealed. Either during or immediately after the sealing step, the cutter 8 severs the cover sheet 2. Because the leading portion 10 is now secured to a container, the length 9 of cover foil moves with the series of containers as it advances, as a consequence of which no special device is needed to move the length 9. At the same time, the feed rollers 6 and 7 are turned on, advancing the cover sheet 2 for the following containers 1 until the photocell unit 5 detects the next mark. This manner of operation ensures that the printing on the cover sheet 2 is perfectly aligned with respect to the container opening when the sheet is secured to the container. A further advantage is that the cover cannot shift while the cover sheet 2 is being cut, because the length 9 is held fast at 10 to a container.

In order to permit adjustment of the length of the cover sheet that is cut off, the photocell unit 5, the feed rollers 6 and 7, and the cutter 8 are mounted on a common carrier 11, which can be moved along the container path and positioned closer to, or farther from, the sealing unit 3 and 4. In the embodiment shown, the sealing unit incorporates two stations: one, an attaching station at which the leading portion 10 of the uncut cover roll is fixed to the leading edge of a container; and, two, a closing station at which the cut length of cover roll is secured to the containers.

Although the invention has been described in connection with a continuous sheet of covering foil drawn from a supply roll and cut to length, those skilled in the art will know that the invention is also applicable where the covering foil is supplied pre-cut to length, and/or where covering material broadly, not necessarily foil, is used and fixed to the containers at the attaching and closing stations in any suitable manner. The covering material can be fixed at the attaching station to the leading rim of the container, as described in the preferred embodiment of the invention, or it can be fixed to any other suitable part of the container.

The word "container" as used in the specification and claims is intended to cover one container or more than one container covered by a single length of covering material.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in a process and apparatus for securing covering material in proper alignment to a series of containers, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications

without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims:

1. A process of applying sheets to open tops of containers comprising the steps of advancing along a predetermined path a series of containers having open tops, said predetermined path including an attaching station and a following closing station; placing on the open top of one container at said attaching station a portion of an elongated sheet of covering material; attaching a leading portion of said sheet to said one container at said attaching station; moving said one container with the leading portion of the sheet attached thereto to said closing station and simultaneously moving another container to said attaching station so that said sheet attached to said one container is pulled in the direction of movement of said one container and covers the open top of said other container; securing at said closing station the sheet portion overlying the open top of said one container while simultaneously attaching the sheet to a leading portion of said other container at said attaching station; stepwise repeating the simultaneous securing at said closing station and attaching at said attaching station during movement of said containers past said station; cutting off simultaneously with or immediately after each attaching step at a point upstream of the attached leading portion of the sheet, a sufficient length of the sheet to cover an intended number of containers, whereby displacement of the sheet rela-

tive to said containers during the cutting operation is avoided; and engaging the uncut sheet only upstream of said cutting point for feeding the sheet over the open top of a further container at said attaching station.

2. The process as defined in claim 1, further including the step of advancing the sheet of covering material stepwise in dependence on aligning marks provided on the sheet.

3. Apparatus for closing containers comprising means for transporting containers having open tops along a predetermined path past an attaching station and a following closing station; means for feeding an elongated sheet over the open tops of said containers; photocell means for detecting marks provided on the sheet to control said feeding means for advancing said sheet stepwise; means for simultaneously attaching a portion of the sheet to the leading portion of the container at the attaching station and for securing at said closing station a sheet portion overlying a container at said closing station to said container; cutting means positioned along said container path upstream of said attaching station and downstream of said feeding means for cutting said sheet simultaneously with or immediately after attachment of the sheet downstream of said cutting means to the container at said attaching station; and a common carrier means for mounting said cutting means and said photocell means and movable along said container path to vary the distance between said attaching station and said carrier.

4. The apparatus as defined in claim 3, including means mounted on said carrier for feeding the uncut cover sheet along said container path to said attaching station.

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