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DEVICE FOR APPLYING COVERING WAFERS, LABELS OR THE LIKE TO A CONTINUOUSLY OR INTERMITTENTLY ADVANCED WEB OF MATERIAL

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Fig.1

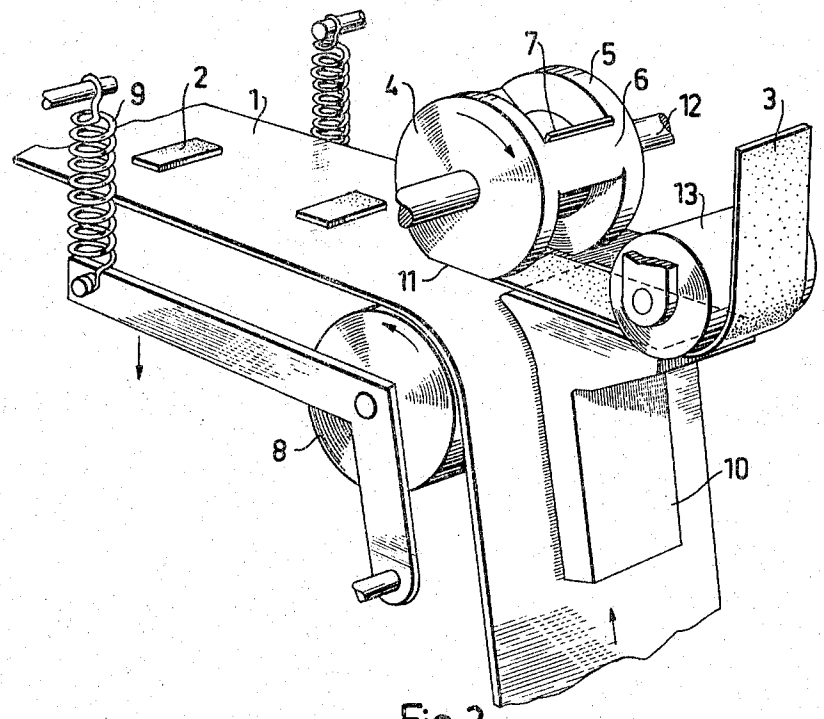
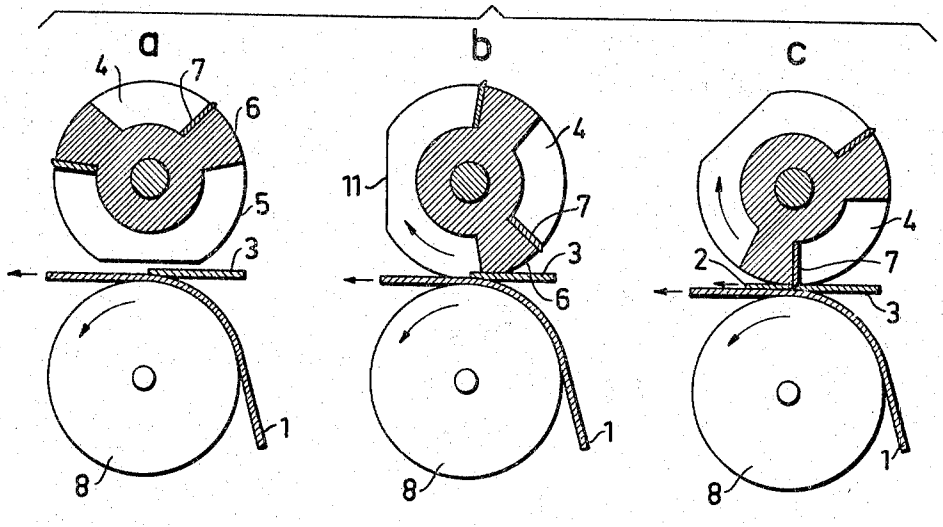


Fig.2



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DEVICE FOR APPLYING COVERING WAFERS, LABELS OR THE LIKE TO A CONTINUOUSLY OR INTERMITTENTLY ADVANCED WEB OF MATERIAL

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The present invention relates to a device for applying covering wafers, labels or the like to a continuously or intermittently advanced web of material. Within several fields of industry there is a problem in applying labels, wafers or the like to a web. These labels or wafers may for instance consist of marking slips, price tags or covering wafers, by means of which an aperture or cut in the web is covered and restored with regard to tightness or density. The latter case occurs for instance when packages are manufactured from a web of material and are provided with an opening notch consisting of a covering wafer attached to the outer side of the package and disposed over an opening or a cut in the package wall. An opening notch of this kind is preferably provided already in the web of material which is meant to be converted into packages, it being possible to apply the wafer by means of the device according to the present invention.

In the device according to the invention a web of material is fed between two cooperating rollers, one of which serves as an abutment roller, while the other one is a working roller provided with cutting means. The invention is characterized in that the working roller has at least two separate roller tracks comprising portions of different sizes on the periphery of the working roller, the large roller track being adapted to roll against the said web of material while the small roller track is adapted to advance a second web of material in time with the advancing of the first web of material, said second web containing the said wafer or label material, and to press the said second web of material against the said first web of material in order to fix it against the underlying first web of material, and further to separate one or more pieces of the said second web of material corresponding to the length of the smaller roller track, using the cutting means disposed on the small roller track.

Further particulars and advantages of the invention will be apparent from the accompanying drawing showing an embodiment of the invention chosen by way of example, and where:

FIG. 1 is a perspective view of the device, and

FIG. 2 shows the working operation of one working roller having two cutting means with the roller tracks pertaining thereto.

In FIG. 1 a web of paper or the like coated with a thermoplastic material is designated **1**. The web **1** is fed over an abtument roller **8**, the counter-pressing force of which is controlled by the spring **9** and the upper position of which is defined by stopping means not shown in the drawing. The working roller **4**, which is rotatable about the shaft **12**, consists of two large roller tracks **5** and two small roller tracks **6** as well as of cutting means disposed at the trailing edge of the roller tracks **6**, the edge of said cutting means projecting outside the roller track. In addition, the working roller **4** is provided with a bevel or a chamfer **11**.

The web **3** of wafer material consists of a paper web coated with a thermoplastic, which is advanced from a storage roller (not shown here) via the pulley **13** and is introduced between the two large roller tracks **5** of the working roller **4**. The device is further provided with a wedge-shaped heating device **10** which is adapted to heat

the thermoplastic surface of both the web of material **1** and the wafer material **3**. The wafers applied to the web of material are finally designated **2**.

The web of material **1** may for instance be the wall material of a package of the type where a web of material is first folded so as to form a tube having a longitudinal seam and is then filled with filling material and sealed off so as to form individual packages, by consecutive transverse seals in narrow sealing zones at right angles to the tube axis. In order to establish opening notches in the finished packages the web **1** is provided in advance with punched openings or slots which are then covered with wafers which are relatively easy to tear off, said operation being carried out by means of a device according to the invention.

The web **1** provided with opening punchings is advanced via the spring loaded abutment roller **8**, the upper position of which is defined by an adjustable stopping shoulder and the spring of which is chosen in such a way that the tension of the web **1** alone is not capable of moving the abutment roller aside.

From a separate storage roller the web **3** of wafer material is advanced over a pulley **13** and is introduced between the two large roller tracks **5** of the working roller **4**. The heating device **10** continuously heats the thermoplastic surface layers in both the web **1** and the web **3**. The normal position of the working roller **4** is shown in FIG. 2*a*, i.e. the bevelled or chamfered portion **11** of the working roller **4** faces the web **1**, which is allowed to pass unobstructedly between the working roller **4** and the abutment roller **8**. When one of the previously mentioned punchings in the web **1** occupies a certain position in relation to the working roller, the latter is caused to turn in such a way that its large roller tracks **5** will engage with the web of material **1**, the working roller **4** rolling against the web **1** during a simultaneous rotational movement. When the working roller during its movement has come into the position shown in FIG. 2*b*, one of the small roller tracks **6** located between the outer large roller tracks **5** will come into contact with the web **3** of wafer material, which is then advanced synchronously with the web **1**, while being simultaneously pressed against the said web. As the application of the wafer material implies that the web of material advanced between the roller **4** and the roller **8** will obtain an increased thickness, the leading edge of the roller track **6** will come into contact with the wafer web **3** before the leading edge of the roller track **6** has reached the minimum nip of the two rollers **4** and **8**, and consequently there is no risk that the roller track **6** will not engage with the wafer web **3**. On account of this increased thickness beneath the roller track **6**, the abutment roller **8** will make a resilient movement downwards, and consequently the outer roller tracks **5** of the working roller **4** will lose contact with the web **1**. As a consequence, the whole pressure applied by the roller **4** against the web will be applied by the roller track **6**, which will press the wafer web **3** with considerable force against the web **1**. As the thermoplastic surface layer in both the wafer web **3** and the web **1** are heated by the device **10**, the plastic layer in the wafer web **3** will fuse with the thermoplastic layer of the web **1**, whereby a tight seal is obtained. When the working roller has reached the position shown in FIG. 2*c*, the cutting means provided at the trailing edge of the roller track **6** will penetrate into the web **3** of wafer material and will separate the wafer **2** sealed at the web **1** from the web **3**. As the roller track **6** is no longer in contact with the wafer web **3**, the advancing movement of the latter ceases. In addition, the roller **8** resumes its upper position, and the roller tracks **5** will once more engage with the web **1**. The working roller **4** rotates, simultaneously rolling against the web **1**, until the subsequent roller track **6** ad-

vances, seals and cuts off a wafer. When the working roller has completed a turn, it resumes the position shown in FIG. 2*a*, which permits the web **1** to pass unobstructedly between the rollers **4** and **8**. As mentioned before, the engagement of the working roller **4** with the web **1** has to be adjusted in such a way that the wafers will be applied over the openings punched previously. As the wafers **2** must be quite easy to remove from the opening area in the finished package, the thermoplastic material must be chosen in such a way that a suitable sealing strength is obtained. Of course, it is also possible to use self-adhering wafers of labels instead of heat-sealing thermoplastic surfaces of material, or to apply a glue to the wafer web **3** before the said web is pressed against the web of material **1**.

The device shown in the embodiment has a working roller **4** with two small roller tracks **6** and cutting means **7**. During each turn, the working roller **4** consequently applies two wafers **2** spaced a determined distance from each other. It is, of course, possible to select a number of wafer applications during each turn of the working roller **4** which is arbitarary within certain practical limits, by providing the roller **4** with a corresponding number of roller tracks **6** and cutting means **7**. Furthermore, the working roller **4** does not necessarily have to be provided with a bevel or chamfer **11**, the working cycle of the roller **4** being repeated without interruption. However, the disengagement of the working roller **4** from the web **1** is of great advantage in the cases where the applied wafers have to be fitted over openings in the web **1** which have been provided in advance. That portion of the cutting tool **7** which projects outside the roller track **6** should be adjusted in such a way that the cutting tool **7** will penetrate through the wafer web **3** when the roller track **6** rolls against the wafer web **3** and will separate a wafer **2** but will not damage the web of material **1**.

The embodiment of the invention shown and described here has proved especially suitable for applying covering wafers, but of course the device may be modified in several ways within the scope of the invention. Thus, the working roller **4** may be disposed in such a way that the said roller instead of the abutment against roller **8** will make a resilient movement downwards when the wafer material is introduced between the rollers **4** and **8**, increasing the total material thickness between them.

I claim:

1. A device for applying wafers, labels and the like to a web comprising an abutment roller, a cooperating working roller having a first continuous surface adjacent to one end thereof, a part cylindrical surface extending axially from said first continuous surface and a cutting edge protruding from the trailing edge of said part cylindrical surface, means for rotating said working roller, means for feeding a web between said rollers in contact with said abutment roller and means for feeding a second web between said rollers in contact with said working roller.

2. A device as claimed in claim **1** in which said first continuous surface is partly cylindrical and partly flat.

3. A device as defined in claim **1** in which said abutment roller is resiliently mounted.

4. A device as defined in claim **1** comprising means for heating said webs before they enter the nip between said rollers.

5. A device as defined in claim **1** in which said working roller has a continuous surface at each end with said part cylindrical surface between said continuous surfaces.

No references cited.

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