Sept. 12, 1967 P. J. M. VAN LUXEMBORG 3,340,677

DEVICE FOR PACKAGING BOTTLES IN CASES

Filed March 24, 1965 2 Sheets-Sheet 1

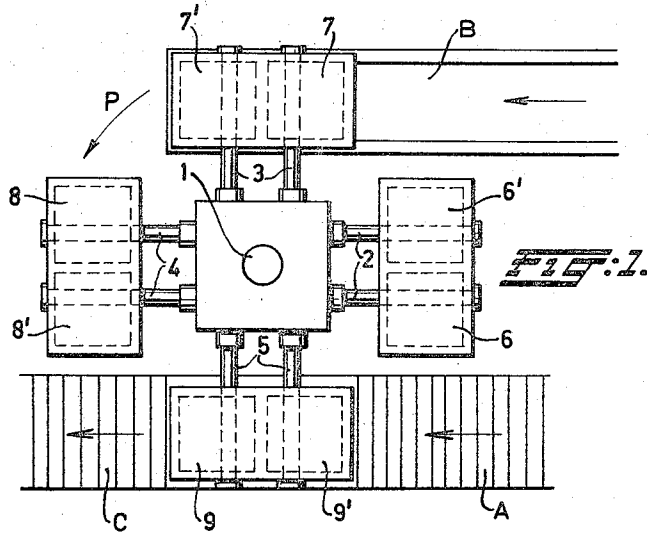


FIG. 1.

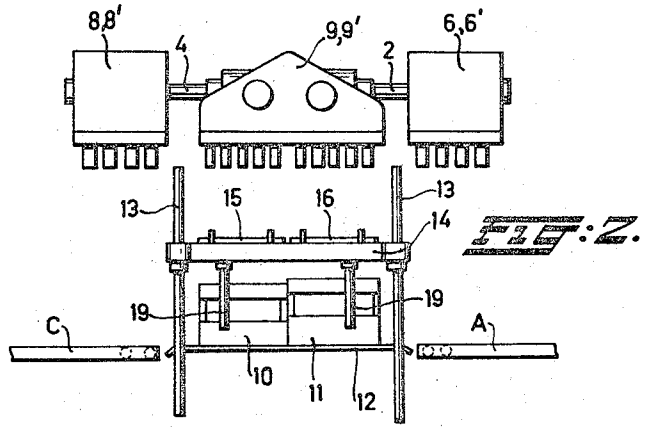


FIG. 2.

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Filed March 24, 1965 2 Sheets-Sheet 2

FIG. 3.

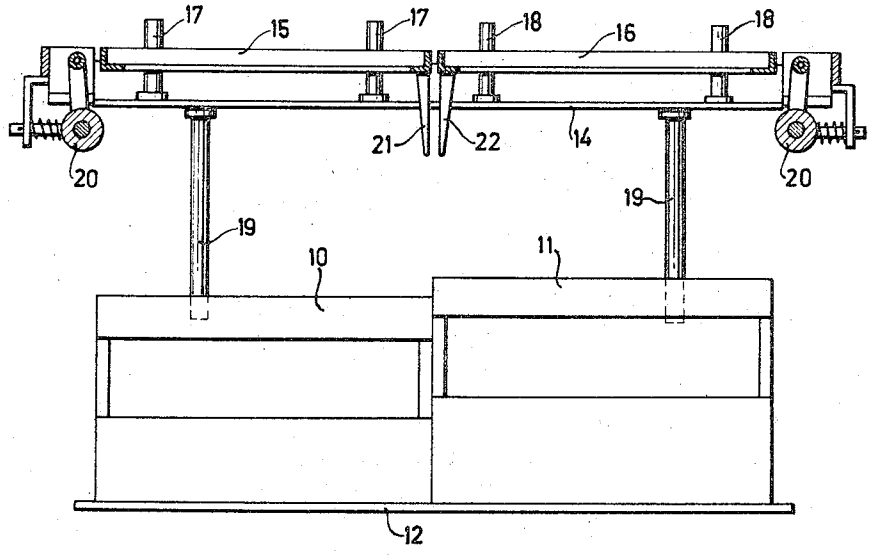
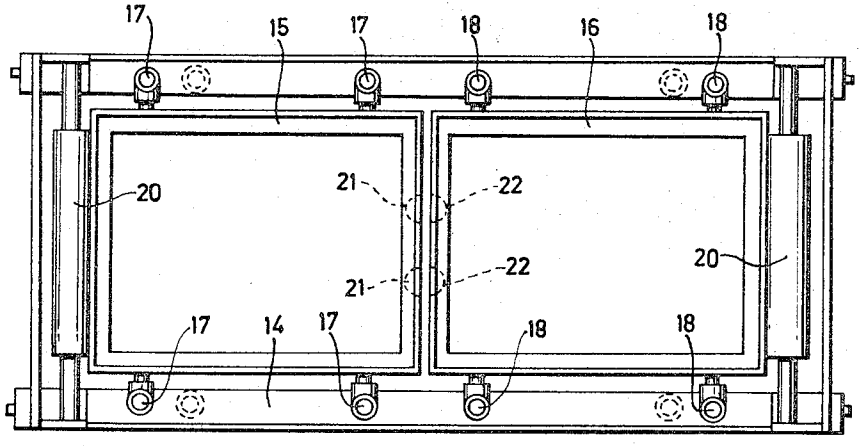


FIG. 4.



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DEVICE FOR PACKAGING BOTTLES IN CASES

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My invention relates to a device for packaging bottles in transport cases or crates, the device being provided with operating heads equipped with bottle gripping elements, the said heads being arranged around a central column and mounted on pairs of protruding brackets for stepwise rotation about a central vertical axis, the said device comprising further a member for lifting one or more cases, which are positioned under the bottles hanging in the gripping elements, and a guiding frame, which is movable in a vertical direction, the said frame being horizontally disposed between the cases on the lifting member and an operating head with bottles hanging thereon, said frame comprising means for centering the cases under the said operating head and means for guiding the bottles when same are lowered into the cases.

In such a device it is known that for the purpose of enhancing its capacity two or more operating heads with bottle gripping elements are provided on each pair of protruding brackets, so that two or more cases can be simultaneously loaded with bottles. In the event two heads with gripping elements are mounted on each pair of brackets, the heads may be tangentially juxtaposed or radially positioned behind one the other. When e.g. four heads are provided on each pair of brackets the arrangement is such that two pairs of tangentially juxtaposed heads are radially positioned one behind the other.

In the event two or more cases are simultaneously loaded, which cases, as has been found in practice, may have rather considerable differences in height, difficulties are experienced in that the guiding frame, which on lifting the cases is taken along by the upper edge thereof, moves into a skew position owing to the differences in level of these upper edges. However, the function of the frame is to guide the bottles, to which during the stepwise rotation is imparted a slightly swinging motion, in such a way that they do not catch on the upper edge of the walls of the cases. The skew position of the guiding frame results in a loss of its above mentioned function.

It is an object of my invention to solve this problem and to provide a device in which the guiding frame, irrespective of the mutual differences in height of the cases, on moving in a vertical direction remains always in a correct horizontal position, so that the bottles on loading same in the cases can be exactly guided.

It is a further object of my invention to provide a guiding frame subdivided in a number of auxiliary frames, which are guided in a vertical direction in such a way that they are movable independently of one another, the number of said auxiliary frames corresponding with the number of cases which simultaneously should be loaded with bottles.

Other objects, advantages, and meritorious features will more fully appear from the following specification, appended claims and accompanying drawings, wherein:

FIG. 1 is a plan view of a packaging machine embodying the invention;

FIG. 2 is a front view of the machine according to FIG. 1;

FIG. 3 shows to an enlarged scale a longitudinal section of the guiding frame structure embodying the invention;

FIG. 4 shows to an enlarged scale a plan view of the frame structure according to FIG. 3.

As shown in the drawing the packaging machine comprises a vertical, central, column **1**, around which pairs of protruding brackets **2**, **3**, **4**, **5** rotate stepwise through 90° (see arrow P in FIG. 1). The brackets may for instance be tubular and mounted upon these brackets are operating heads **6**, **6'**, **7**, **7'**, **8**, **8'**, **9**, **9'** equipped with bottle gripping elements. The operating heads according to the described embodiment are twins, so that every time two cases **10**, **11** are simultaneously loaded, the said cases being moved forward via a conveyor track A. The cases loaded with bottles are discharged by way of a conveyor track C. The bottles are feeded along the marshalling table B.

At the location of the conveyor tracks A and C where the bottles are loaded into the cases is a lifting member **12** which is only represented in outline in the drawing. This member is synchronized with the other movements of the machine. Only when an operating head, e.g. **9**, **9'** with gripping elements has picked up bottles from the conveyor track B, and has been moved into its correct position over the cases **10**, **11** the lifting member **12** together with the cases **10**, **11** placed thereon moves upwardly through a definite distance. Simultaneously the operating head together with the bottles moves downwardly through a definite distance in order to load the bottles into the cases.

According to a known construction of a packaging machine, between the lifting member **12** and the heads **9** with the gripping elements a vertically movable guiding frame **14** is accommodated, guided along vertical columns **13**.

Up till now in the prior art structures, said frame is taken along by the upper edge of the cases during the upward movement thereof. This guiding frame is on the one hand provided with means for centring the cases under the gripping elements, which hold the bottles. On the other hand said frame comprises means for guiding the bottles in the cases in such manner that the bottles, which are slightly swinging owing to the cyclic rotary movement of the operating heads, are prevented from catching on the upper edge of the walls of the cases when they are loaded therein. The guiding and centring action of such a frame can be lost when simultaneously packaging more than one case, and said cases have a substantial difference in height in respect of one another. In that case the guiding frame, the position of which is controlled by the upper edge of the cases, will assume a skew position.

In order to remedy this drawback, the frame **14** is embodied as a principal frame, supporting auxiliary frames **15**, **16** located within said principal frame **14**, as appears in particular from the FIGURES 3 and 4. The number of auxiliary frames corresponds with the number of cases to be loaded at a time. In the described embodiment this number is consequently two. The said auxiliary frames **15**, **16** are connected with the principal frame **14**, in such a way that in an upward direction they are movable independently of one the other. Pins **17**, **18** whether hollow or not are secured e.g. by welding to the upper side of the principal frame **14**, in order to guide both auxiliary frames **15**, **16** on their vertical movement. Provided on the lower side of the principal frame **14** are vertical abutment pins **19**. The length of the abutment pins **19** is such that the lowermost case **10** in its intermediate raised position just engages, but does not lift the corresponding frame **15**. This intermediate raised position is reached, when the pins **19** contact the platform **12**. When the lifting member **12** moves upwardly from its lowered position, the highermost case **11** will lift the corresponding auxiliary frame **16** through a distance which is equal to the difference in height of the cases **10**, **11**. The lowermost case **10** consequently just abuts the corresponding

frame **15**, and the platform **12** has reached its intermediate raised position.

When now the abutment pins **19** contact the lifting member **12** the assembly of principal- and auxiliary frames is further raised in vertical direction and the lowermost case **10** keeps in touch with the auxiliary frame **15**. The relative vertical displacement between the auxiliary frames **15**, **16** does therefore not exceed the difference in height of the cases **10** and **11**.

Represented in the FIGURES 3 and 4 are means for centring the cases in the correct position under the gripping elements with the bottles. The said means are constituted by rollers **20**, which are resiliently secured to the principal frame **14**, and by downwardly protruding centring pins **21**, **22**, which are mounted on the inner lower edge of the auxiliary frames **15**, **16**.

What I claim is:

1. A device for packaging bottles in cases, the device being provided with operating heads equipped with bottle gripping elements, the said heads being arranged around a central column and mounted on pairs of protruding brackets for stepwise rotation about a vertical axis, the said device comprising further a member for lifting one or more cases, which are positioned under the bottles hanging in the gripping elements, and a guiding frame, which is movable in a vertical direction, the said frame being horizontally disposed between the cases on the lifting member and an operating head with bottles hanging thereon, said frame comprising means for centring the cases under the said operating head and means for guiding the bottles when same are lowered into the cases, the guiding frame being subdivided into a number of auxiliary frames, which are guided in vertical direction in such a way that they are movable independently of one another, the number of the said auxiliary frames corresponding with the number of cases which simultaneously should be loaded with bottles.

2. A device according to claim **1**, characterized in that the auxiliary frames are accommodated in a common principal frame, to which are secured vertical guide pins,

which protrude through corresponding lugs, provided on the outer circumference of the auxiliary frames, the latter being guided along the said pins when moved in a vertical direction.

3. A device for packaging bottles in cases, the device being provided with operating heads equipped with bottle gripping elements, the said heads being arranged around a central column and mounted on a protruding bracket for stepwise rotation about a vertical axis, the said device further comprising a member for lifting one or more cases positioned under the bottles hanging in the gripping elements, and a principal frame guided for movement in vertical direction along stationary vertical columns, the said frame being horizontally disposed between the cases on the lifting member and an operating head with bottles hanging thereon, said frame comprising means for centring the cases under said operating head and means for guiding the bottles when same are lowered into the cases, the guiding frame consisting of a principal frame and a number of auxiliary frames guided in vertical direction and movable independently of one another, the number of said auxiliary frames corresponding with the number of cases which simultaneously are being loaded with bottles, said principal frame on its lower side being provided with vertically downwardly extending abutment pins, the length of which being determined in such a way that, after the cases have been lifted over a certain distance, whereby at least one of the cases has lifted the corresponding auxiliary frame, the lifting member engages said abutment pins and thereupon moves the cases, the principal frame and the auxiliary frames together as an assembly in an upward direction.

4. A device according to claim **3**, characterized in that the distance between the end of the abutment pins and the lifting member is substantially equal to the distance between the upper edge of the lowermost case and the lower edge of the corresponding auxiliary frame.

No references cited.

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