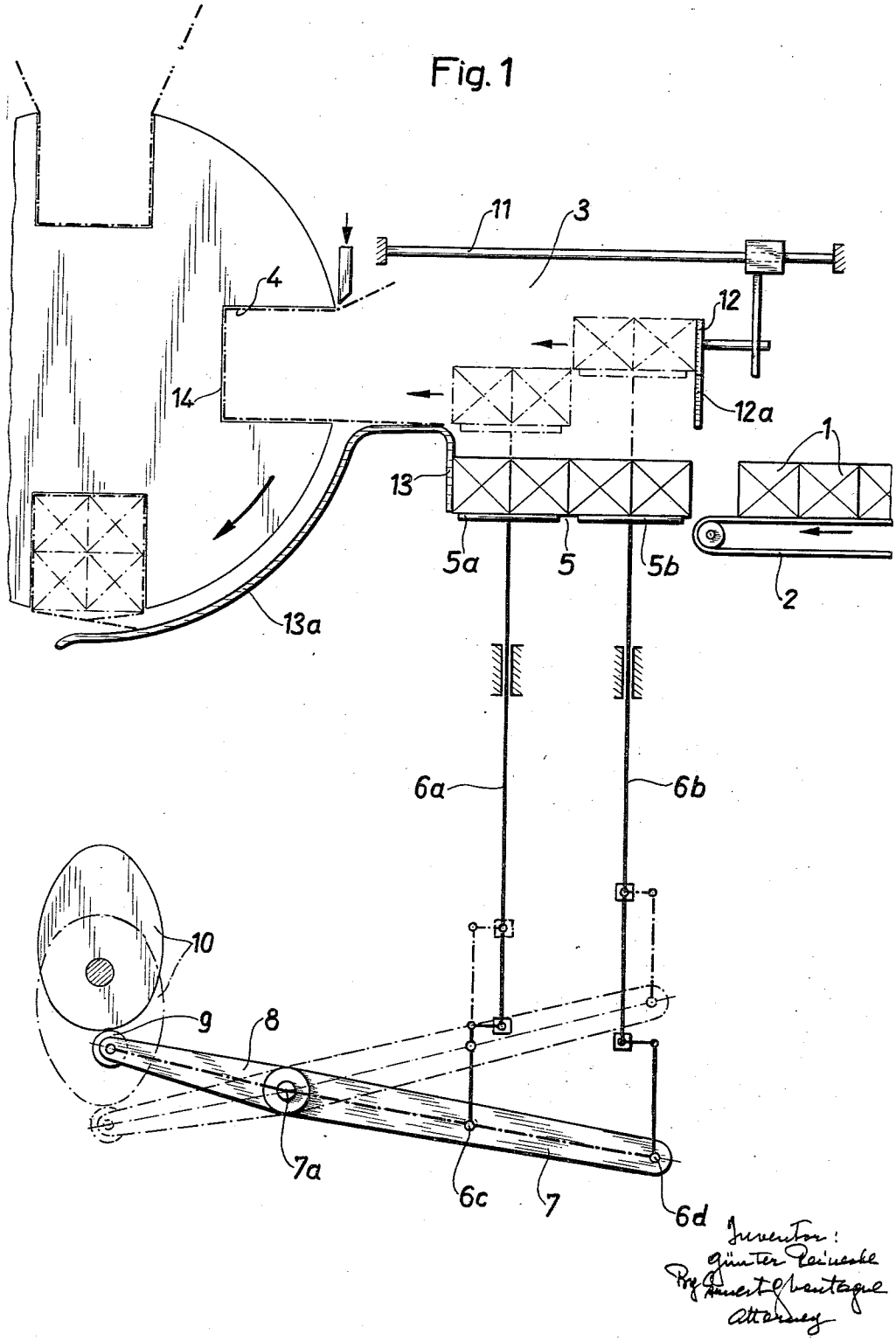
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ARTICLE STACKER

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Fig. 1



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Fig. 2

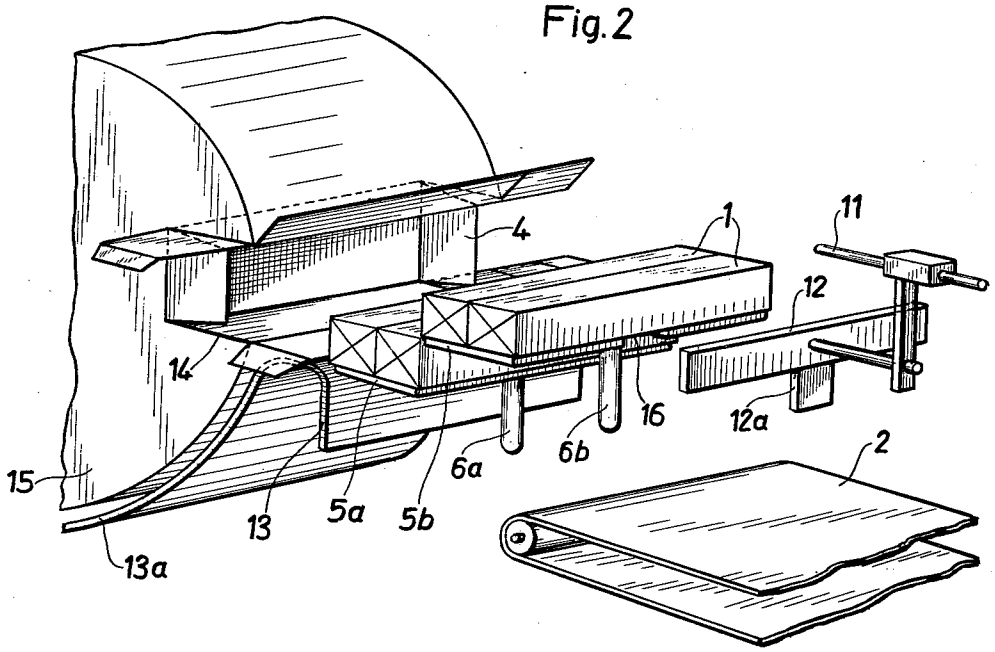
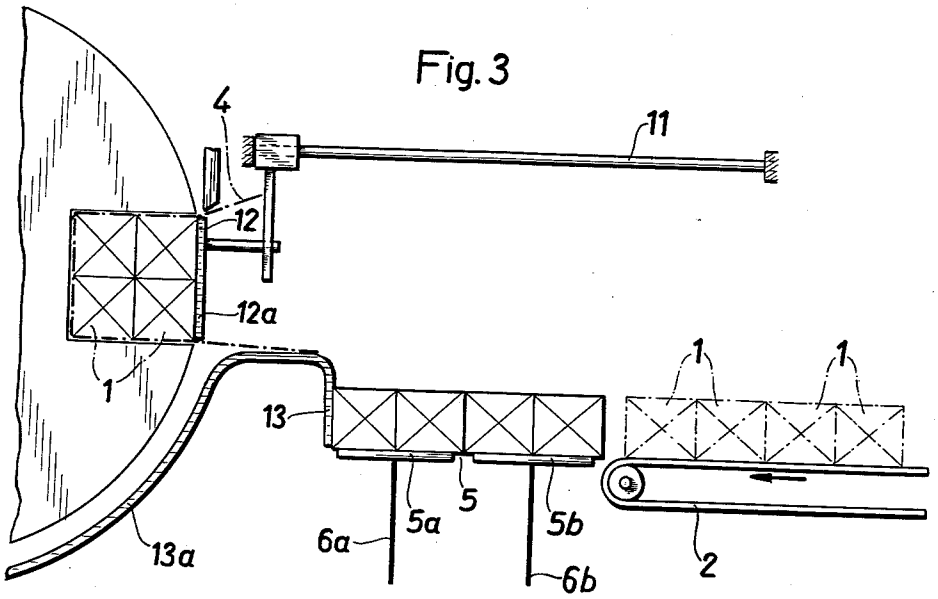


Fig. 3



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United States Patent Office 3,352,435
Patented Nov. 14, 1967

3,352,435

ARTICLE STACKER

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Filed Oct. 19, 1966, Ser. No. 587,738
Claims priority, application Germany, Oct. 26, 1965, B 84,251
3 Claims. (Cl. 214—6)

ABSTRACT OF THE DISCLOSURE

An apparatus for boxing-in into a folding carton of a plurality of prismatic packages disposed side by side and on top of each other, which comprises a conveyor belt and a collecting table which includes a plurality of table portions and is disposed at one end and in the plane of the conveyor belt. The table portions are adapted to receive packages to be boxed in into a folding carton. Linkage means are arranged for each of the table portions which lift the latter to different levels. The lifting means comprises a control lever operatively connected with each of the linkage means and through the latter with the table portions. The linkage means comprise vertical rods, the lower end of which is connected with the control lever by pivots. The latter are spaced apart such that one of the table portions disposed adjacent the folding carton which receives packages is lifted to the level of the lower edge of the folding carton and the other of the table portions is liftable further for the height of one of the packages.

The present invention relates to an apparatus for boxing-in into a folding carton of a plurality of prismatic packages disposed side by side or on top of each other.

Different devices of this type are known, in which the individual packages are fed in series from a packaging machine to a collecting plate, which collecting plate can be lowered in turn about the height of one package. By this arrangement, it is possible to set on top of the lowermost packages a second group of packages and upon further lowering a third group of packages etc. The insertion of this stack of packages into a collecting package can be performed by turning thereover a folding carton, which is closed upon turning over or the packages are inserted by means of a slide, package for package or stack by stack, into the open folding carton.

The known devices have the drawback that the conveyor belt, the collecting plate and the lower edge of the open collecting carton must be disposed in one plane. By this arrangement, the slide for the stack of packages is forced to grip laterally and from above, respectively, behind the stack, in order to insert it into the folding carton. This requires not only an additional and complicated control member for the slide, but also an additional space for the same. It is to be added, that the arrangement of packages one at a time on the collecting plate influences the output of the collecting packaging disadvantageously, if each package layer consists only of a few packages. In addition, not only must the collecting plate be lowered, but also the mechanism for the slide must be put into operation.

It is one object of the present invention to provide an apparatus for boxing-in into a folding carton a plurality of prismatic packages disposed side by side or on top of each other, wherein a collecting table at the end of a conveyor path is disposed in the plane of the latter and comprises a plurality of part plates, which are connected over a linkage with a control lever common for all part plates. The linkage is connected thereby with a

control lever, such that in case of a lever movement, the part plate disposed adjacent the open folding carton is lifted up to the height of the lower edge of the folding carton and the other part plate is liftable for the height of a package.

The particular advantages of the present invention reside in the fact that the lower edge of the folding carton is disposed in a different plane than that of the conveyor belt and the collecting table, so that thereby not only a better separation of the packages between the folding carton and the collecting table is brought about, but also the slide suffices without additional movement for rendering the same operative or inoperative and can be set in a space-saving manner without interference of the fed packages. Furthermore, in the divided arrangement of the collecting table, a further advantage is present, as thereby the possibility exists to lift the individual parts of the collecting table by means of a single movement stepped up such, that the packages disposed thereabove are brought again into the folding carton by means of a single sliding movement next to each other or superposed to each other. This arrangement permits an extremely high output during the collecting packaging.

With these and other objects in view which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIGURE 1 is a schematic elevation of an apparatus disclosing a conveyor belt, a filled collecting table with slide still in starting position and a cell carrying the opened folding carton;

FIG. 2 is a perspective view of the elements disclosed in FIG. 1 with a collecting table lifted in several layers; and

FIG. 3 is a schematic elevation of the packages moved by means of a slide into the opened folding carton.

Referring now to the drawings, the individual packages **1** are fed by means of a conveyor belt **2** to a collecting station **3**. Four packages **1** should be boxed always in a folding carton **4**, whereby two packages are disposed adjacent each other and two on top of each other. It is suitable, to collect at first the four packages, after being released from the packaging machine, and to feed the same in closed position to the conveyor belt **2**. The particular advantage resides in the fact, that the conveyor pause between two packaging units is used for the purpose to perform at the collecting station **3** the boxing-in of the unit into the opened folding carton **4**.

A collecting table **5** is disposed at the end of the conveyor belt **2**, which collecting table **5** is divided crosswise to the direction of conveyance. The collecting table **5** thus comprises a table portion **5***a* and a table portion **5***b*. The table portion **5***a* is limited by an abutment plate **13** which terminates at the level of the lower edge of the open folding carton **4** into a curved guide sheet **13***a*. The two table portions **5***a* and **5***b* are equipped on their underside with a linkage **6***a* and **6***b*, which, in turn, are pivoted to a control lever **7**. The control lever **7**, which is swingably mounted about the pivot **7***a*, is designed as a double lever, the shorter arm **8** of which carries at its end a follower roller **9**, which engages a cam **10**. The two linkages **6***a* and **6***b* are connected by means of the pivot points **6***c* and **6***d* with the control lever **7** at such a distance relative to each other, which corresponds to the distance between the pivot point **7***a* and the pivot point **6***c*. By this arrangement, a lifting of the pivot point **6***c* for a length takes place during the swinging of the control lever **7**, which corresponds exactly to half of the length with which the pivot point **6***d* is lifted. The table portions **5***a* and **5***b* are thereby lifted for the same different lengths, whereby the table portion **5***a* remains

at the level of the lower edge of the open folding carton 4, while the table portion 5*b* is lifted additionally for the height of a package. In this position, indicated in FIG. 1 in point-dotted lines and in FIG. 2 in actual position, a double slide 12 and 12*a* suspended from a horizontal guide rail 11 pushes during its movement at first with its wide slide portion 12, the upper package row and moves the latter onto the lower package row until both rows are disposed on top of each other. In this position, the slide portion 12*a*, which has not been used yet, stands in abutment with the lower row, so that now the block consisting of four packages is moved over the guide sheet 13*a* into the open folding carton 4.

As already stated, the lower slide portion 12*a* performs at first an idle movement. In view of the table plate 5, which is within the path of the slide 12 and 12*a*, this movement is only possible such that the table portion 5*b* has a longitudinal slot 16 disposed in the direction of conveyance, whereby both parts of the table portion 5*b* are maintained by the fork-shaped upper end of the linkage 6*b*. The width of the longitudinal slot 16 corresponds to the width of the slide portion 12*a*, while the upper slide 12 corresponds to the width of the package 1.

The folding carton 4 sits in a cell 14 of a folding wheel 15 having a plurality of cells 14, which folding wheel 15 receives during its intermittent movement the blanks of the carton, which are then filled and closed and expelled. While such folding wheel 15 is suitable for the reception of the packages prepared with high speed, it is possible to substitute therefor a swingable folding cell, which receives during an oscillating movement the empty blanks and releases the same again after filling and closing. The packaging output is below the output which is possible with a folding wheel coordinated to the collecting device.

While I have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

I claim:

1. An apparatus for boxing-in into a folding carton of a plurality of prismatic packages disposed side by side and on top of each other, comprising

a conveyor belt,

a collecting table including a plurality of table portions and disposed at one end and in the plane of said conveyor belt, said table portions being adapted to receive packages to be boxed in into a folding carton,

linkage means for each of said table portions, means for lifting said table portions to different levels,

said lifting means comprising a common control lever operatively connected with each of said linkage means and through the latter with said table portions,

said linkage means comprising vertical rods, the lower end of which is connected with said control lever by pivots,

said pivots on said control lever being spaced apart such that one of said table portions disposed adjacent said folding carton receiving packages being lifted to the level of the lower edge of said folding carton, and

the other of said table portions being liftable further for the height of one of said packages.

2. The apparatus, as set forth in claim 1 wherein

said other of said table portions has a longitudinal slot extending in the direction of conveyance to form two parts thereof, and

the upper end of said rod supporting said other of said table portions is of fork shape.

3. The apparatus, as set forth in claim 2, which includes a slide having an upper portion and a lower portion and being adapted to move said packages disposed on different levels on said table portions simultaneously into said folding carton by a single movement of said slide, and

said lower portion of said slide moving the lower packages is of a width substantially equal with the width of said longitudinal slot.

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