



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 453 943 A2

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: **91106150.5**

(51) Int. Cl.⁵: **B65H 45/04, B65H 20/20**

(22) Date of filing: **17.04.91**

(30) Priority: **24.04.90 IT 5933890 U**

(43) Date of publication of application:
30.10.91 Bulletin 91/44

(84) Designated Contracting States:
BE CH DE ES FR GB IT LI

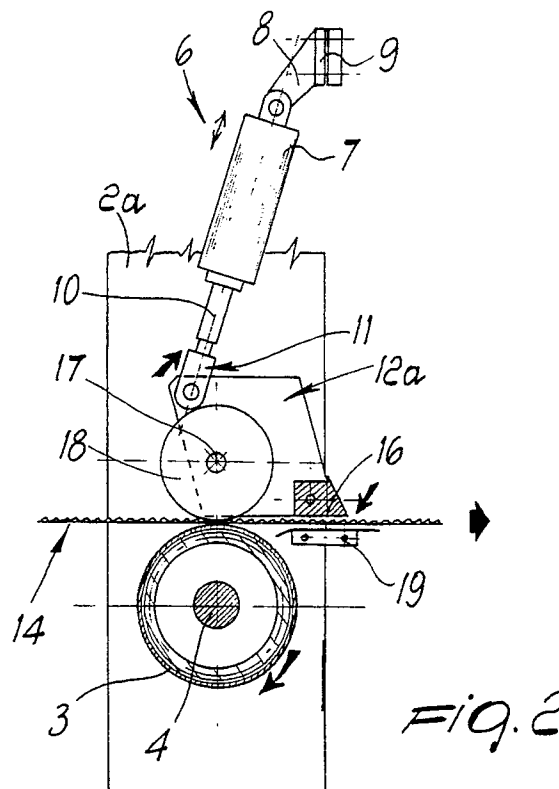
(71) Applicant: **PANOTEC S.r.l.**
Via E. Azzi, 20
I-31040 Castagnole di Paese (Prov. of
Treviso)(IT)

(72) Inventor: **Fabris, Bruno**
Via Picasso 14
I-31038 Paese (Treviso)(IT)

(74) Representative: **Modiano, Guido et al**
MODIANO, JOSIF, PISANTY & STAUB
Modiano & Associati Via Meravigli, 16
I-20123 Milano(IT)

(54) **Locking device structure particularly for traction-fed cardboard.**

(57) The locking device structure includes a polygonal plate (12a) having a counter roller (18) pivoted thereto, the counter roller being arranged above a driven roller (4). An actuation piston (6) is pivoted to an upper corner of the plate (12a), which is also provided at a lower corner with a presser plate (16). Extension of the piston (6) provides traction feeding of cardboard (14) between the rollers (4,18) whereas retraction of the piston releases the traction and further blocks the feed of cardboard (14) due to engagement of presser plate (16) on abutment surface (19).



EP 0 453 943 A2

The present invention relates to a locking device structure, particularly usable in cardboard processing machines during said cardboard traction feeding, these.

Machines suitable for performing a plurality of processes on corrugated cardboard are already currently known.

On the subject, the same Applicant filed March 9, 1987 a European patent application No. 87103312.2, publication No. 0247300, related to an automatic machine for processing corrugated paper, constituted by a first station for multiple feeding of corrugated cardboard, with the possibility of different widths, a second station for inserting the corrugated cardboard, a third station for cutting the cardboard, a fourth station for scoring the cardboard, a fifth station for dinking the cardboard and a sixth station for removing the cardboard and for the eventual gluing and folding of the flaps resulting from the manufacturing process.

Thus, this solution provides the presence of a station for the feeding of cardboard which essentially comprises a supporting frame; the shafts of three rolls, each constituted by corrugated cardboard with different width and/or length, are freely pivoted to the side members of said supporting frame.

This solution has thus allowed to solve the problem related to the selective feeding of cardboard starting from rolls according to different dimensions, such as width and length.

However, the insertion system is expensive from both a mechanical and electrical-electronic viewpoint.

The aim of the present invention is to stop the advancement of the cardboard unrolled from an inserter or reel-holder or from a fanfold pack, or from individual or pasted sheets, after the operation of cutting said cardboard.

An object of the present invention is to provide a device which allows both to achieve optimum feeding of cardboard and to feed said cardboard at one or more successive stations in the optimum position, although the cardboard is subjected to various and distinct processing steps.

Within the scope of the above described aim and objects, another important object is to provide a device which prevents the extraction or escape of the cardboard from the traction rollers of the inserter while said cardboard is subjected to one or more successive processing operations.

Another important object is to provide a device which allows to contain manufacturing costs especially as regards the use of motorization systems.

Still another important object is to provide a device which associates with the preceding characteristics that of being reliable and safe in use.

Not least object is to provide a device which is

structurally simple, is easy to apply even to known machines, and at the same time has modest manufacturing costs.

This aim, these objects and others which will become apparent hereinafter are achieved by a locking device structure for locking particularly during cardboard traction, which comprises a fixed support for a first motorized roller, characterized in that it is constituted by at least one actuator which is interposed between said fixed support and at least one plate which is pivoted eccentrically to said fixed support, a second counter-roller being pivoted to said plate and being adjacent to said first roller, said actuator alternatively actuating the interaction of said second counter-roller and of said plate with said cardboard respectively for the traction and locking thereof.

Further characteristics and advantages of the invention will become apparent from the detailed description of a particular embodiment, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a front elevation view of the locking device structure according to the invention;

figure 2 is a side elevation view thereof.

With reference to the above figures, the locking device structure, generally indicated by the reference numeral 1, comprises a fixed support, such as a pair of shoulders 2a and 2b, between which a first roller 3 is freely pivoted; said first roller is motorized by a single source, such as an adapted motor, not illustrated, which is suitable for providing motion to said first roller 3, a gearwheel 5 being keyed at its first shaft 4.

The structure is furthermore constituted by at least one actuator, constituted by a piston 6, the body 7 whereof is pivoted, at one end, at an arm 8 which protrudes from a base support 9 which can be rigidly associated at the shoulder 2a.

The piston 6 furthermore has a stem 10, the end portion 11 whereof is U-shaped; one of two polygonal plates 12a and 12b is freely pivoted, proximate to an edge, between the wings of said end portion.

Said plates, which are respectively adjacent to the shoulders 2a and 2b, have a lower perimetric edge 13a and 13b which is arranged proximate to the plane of arrangement of the underlying cardboard sheet 14, which in turn rests at the surface of the underlying first roller 3.

Said plates 12a and 12b, which preferably have a rhomboidal plan configuration, are in turn pivoted, by means of a pair of first pivots 15a and 15b, respectively to said shoulders 2a and 2b proximate to the corner which is opposite to the pivoting corner of said end portion 11 of the stem 10.

Both of said plates 12a and 12b have, at the corner for pivoting to said first pivots 15a and 15b,

an end on which a plate or presser 16 is fixed transversely to the plates 12a and 12b; said presser has a lanceolate configuration and is directed opposite to the direction of removal of the cardboard sheet 14.

Structurally, the axis of the first shaft 4 of the first roller 3 is interposed between the axes for the pivoting of the end portion 11 and of the stem 10 to the plates 12a and 12b and the axis of the first pivots 15a and 15b; a second shaft 17 of a second counter-roller 18 is pivoted to said plates 12a and 12b at said first roller 3.

At least one abutment surface 19 for said cardboard sheet is provided below the plane of arrangement of the cardboard sheet 14 at the presser or plate 16 which connects the plates 12a and 12b.

The use of the structure is in fact as follows: since the first roller 3 always rotates, traction of the cardboard sheet 14 can be allowed only if the piston 7 is actuated, pushing the stem 10 toward said cardboard so as to cause the surface of the second counter-roller 18 to interact with said cardboard sheet 14 which, by resting at the first roller 3, is pushed thereby for processing in subsequent stations.

In this condition, illustrated in figure 2, the presser or plate 16 connected to the plates 12a and 12b is arranged approximately parallel to the plane of arrangement of the cardboard sheet 14 and said plates do not interact with said sheet.

When the cardboard is to be processed in the subsequent stations, the piston 6 is actuated, preferably before the step of cutting said cardboard, so as to retract the stem 10, thus disengaging the second counter-roller 18 from the cardboard sheet 14 and simultaneously causing the presser 16 to interact with said cardboard sheet, which is pressed at the underlying abutment surface 19.

In this manner, the traction of the cardboard sheet is stopped on one hand and said sheet is locked on the other, preventing its escape or extraction.

It has thus been observed that the invention has achieved the intended aim and objects, a structure having been provided which allows to obtain the optimum traction of a cardboard sheet, thus achieving optimum feeding at modest manufacturing costs, allowing at the same time to lock the traction of the sheet, preventing the extraction thereof, if it is necessary to process said cardboard in adjacent stations of a more complicated machine which also provides, for example, the cutting of the cardboard in one of its operating steps.

It is thus possible to simultaneously stop the traction of the cardboard sheet and lock it if it is to be processed in subsequent stations, the presence of the presser 16 preventing any extraction of said

cardboard.

The invention is furthermore structurally very simple, as well as easy and rapid to install even in known machines, and at the same time has very modest manufacturing costs which allow to considerably contain the machine manufacturing costs.

The number of pistons, dimensions of the plates and configurations of the wings and of other components, as well as the materials used for manufacture, may naturally be the most pertinent according to the specific requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Locking device structure, particularly for traction-fed cardboard, comprising support means (2a,2b) for a first motorized roller (3), characterized in that it comprises at least one actuator (6) which is interposed between said support means (2) and at least one plate (12a,12b) which is pivoted eccentrically to said support means (2a,2b), a second counter-roller (18) being pivoted to said plate (12a,12b) and being adjacent to said first roller (3), said actuator alternatively actuating the interaction of said second counter-roller (18) and of said plate (12) with said cardboard (14) respectively for the traction and locking thereof.
2. Structure according to claim 1, characterized in that said support means comprise a pair of shoulders (2a,2b), between which said first roller (3) is freely pivoted, said roller (3) being motorized by a single source, such as an adapted motor suitable for providing motion to said first roller (3) by means of a gearwheel (5) keyed to a first pivoting shaft (4) for said first roller (3).
3. Structure according to claims 1 and 2, characterized in that it comprises at least one actuator which is constituted by a piston (6) the body (7) whereof is, at one end, pivoted at an arm (8) which protrudes from a support base (9) which can be rigidly associated at one of said shoulders (2a,2b).
4. Structure according to claims 1 and 3, characterized in that said piston (6) has a stem (10) the end portion (11) whereof is U-shaped, at

least one of two polygonal plates (12) being freely pivoted proximate to an edge between the wings of said end portion (11).

5. Structure according to claims 1 and 4, characterized in that said plates (12a,12b), which are adjacent to said shoulders (2a,2b), have a lower perimetric edge (13a,13b) arranged proximate to the plane of arrangement of said underlying cardboard sheet (14), which in turn rests at the surface of the underlying first roller (3).

5
10

6. Structure according to claims 1 and 5, characterized in that said plates (12a,12b), which preferably have a rhomboidal plan configuration, are in turn pivoted respectively to said shoulders (2a,2b) by means of a pair of first pivots (15a,15b) proximate to the corner opposite to the pivoting corner of said end portion (11) of said stem (10).

15
20

7. Structure according to claims 1 and 6, characterized in that an end is present between each of said plates (12a,12b) at the corner for pivoting to said first pivots, a plate or presser (16) with a lanceolate configuration being arranged transversely to said end and being directed opposite to the direction of removal of said cardboard sheet (14).

25
30

8. Structure according to claims 1 and 7, characterized in that the axis of said first shaft (4) of said first roller (3) is interposed between the pivoting axes of said end portion (11) of said stem (10) and of said plate (12a,12b) and of said first pivots (15a,15b), a second shaft (17) of a second counter-roller (18) being pivoted to said plates (12a,12b) at said first roller (3)

35
40

9. Structure according to claims 1 and 8, characterized in that at least one abutment surface (19) for said wings which protrude from said plates (12a,12b) is provided at said wings below the plane of arrangement of said cardboard sheet (14).

45

50

55

