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(54) **Overturning device for roller shutters**

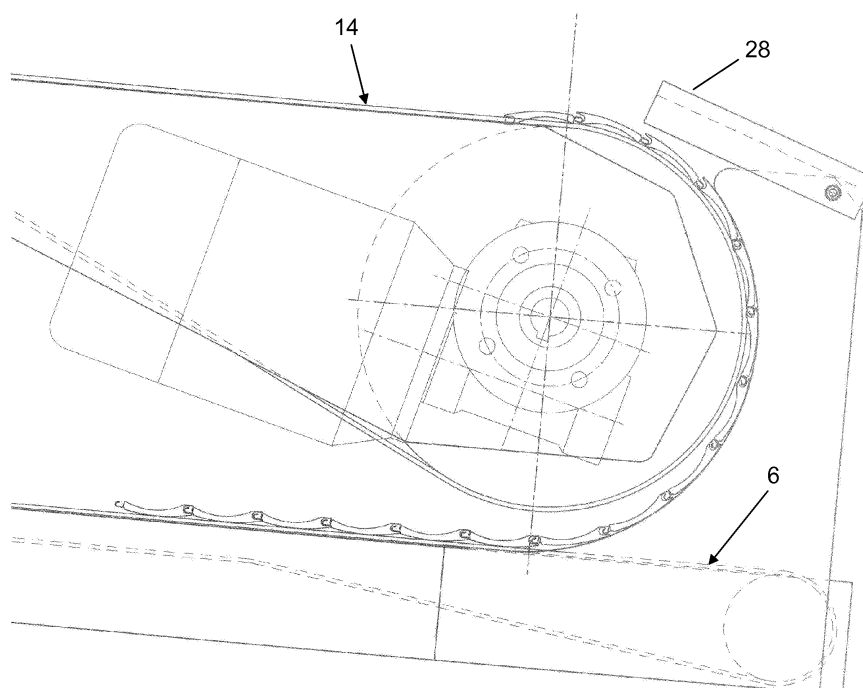
(57) An overturning device for roller shutters, characterised by comprising:

- at least one first endless conveyor (6) extending between drive rollers and deviation rollers (12),
- at least one second endless conveyor (14) situated in a position overlying said first conveyor, said second conveyor extending between drive rollers (16) and deviation rollers (20),
- a curved surface (26) positioned at the exit end of the

first (6) and second (14) endless conveyor with its cavity facing the conveyors, to convey the roller shutter (30) leaving the upper surface of the first conveyor, with its slats (32) having their cavity facing upwards, onto the upper surface of the overlying conveyor such that they are disposed with their cavity facing downwards,

- monodirectional passage means (28) for guiding the roller shutter leaving the first conveyor such that it rests on the second conveyor.

FIG. 4



Description

[0001] The present invention relates to an overturning device for roller shutters.

[0002] Systems for preparing and making-up roller shutters are known.

[0003] Said systems comprise substantially a profiling station for a sheet metal strip, a station for cutting the profile to the length required to form the slat, a station for inserting a foam into the slat and a make-up station for inserting the edge of each slat into the grooved edge of the adjacent slat.

[0004] When the roller shutter has been made up, it is transferred from a conveyor belt, along which it is disposed with the concavity of the slats facing upwards, onto an underlying conveyor belt such that the roller shutter presents its slats with their concavity facing downwards.

[0005] In this manner the slats rest on the surface at at least two points so that they can be clamped with known devices, to enable closure plugs to be applied to their ends, to prevent their mutual longitudinal sliding.

[0006] These known systems have however proved susceptible to improvement both with regard to the labouriousness of the transfer device and with regard to the overturning rate.

[0007] According to the invention this improvement is achieved by an overturning device for roller shutters as described in claim 1.

[0008] The present invention is further clarified hereinafter with reference to the accompanying drawings, in which:

Figure 1 is a schematic side view of an overturning device of the invention,

Figure 2 is a plan view thereof,

Figures 3, 4, 5 and 6 show the steps of transferring the roller shutter from one row to the other row of conveyors.

[0009] As can be seen from the figures, the roller shutter overturning device of the invention comprises a framework 2 supported by uprights 4, which support a first row of endless conveyors 6, extending between rollers 8 driven by an electric motor 10, and deviation rollers 12, and a second row of endless conveyors 14 each of which is overlaid by a conveyor 6 of the first row.

[0010] The second conveyors 14 extend between rollers 16 driven by a single electric motor 18, and deviation rollers 20.

[0011] Said rollers 16 have a diameter greater than the rollers 20, their outer surface forming with the upper surface of the lower conveyor 6 a passage gap 22.

[0012] Facing said rollers 16, there is provided at one end of the framework an L-shaped body 24, that surface 26 of which facing the rollers 16 being substantially curved to form with said rollers a channel the width of which decreases towards the upper surface of the conveyor 14.

[0013] Bars 28 are pivoted to said shaped body 24 such that their free end, when in the non-stressed condition, lies substantially below the plane of the upper surface of the conveyor 14.

[0014] The device of the invention operates in the following manner.

[0015] The roller shutter 30 with its slats 32 having their concavity facing upwards is made to advance along the upper surface of the lower conveyor 6 towards the shaped body.

[0016] As the roller shutter advances, its front end becomes inserted into the gap 22 formed by the roller 16, which rotates anticlockwise (with reference to the drawings), and the curved surface 26 (see Figure 3).

[0017] On continuing its advancement, the free end of the roller shutter interferes with the bar 28 to cause this to rotate by an amount such as to enable it not only to pass but also to rest on the upper portion of the upper conveyor 14 so that it advances in the opposite direction to the preceding (see Figure 4).

[0018] When the entire roller shutter 30 is positioned on the upper portion of the upper conveyor 14, the bar 28 falls by gravity to return to its original position (see Figure 5).

[0019] The rotation of the upper conveyor 14 is then reversed such that the roller shutter uses the bar 28 as a ramp, to be directed to the next make-up station (see Figure 6).

[0020] From the foregoing it is apparent that the overturning device for roller shutters enables them to be easily and comfortably overturned by an apparatus of simple construction.

Claims

1. An overturning device for roller shutters, **characterised by** comprising:

- at least one first endless conveyor (6) extending between drive rollers and deviation rollers (12),
- at least one second endless conveyor (14) situated in a position overlying said first conveyor, said second conveyor extending between drive rollers (16) and deviation rollers (20),
- a curved surface (26) positioned at the exit end of the first (6) and second (14) endless conveyor with its cavity facing the conveyors, to convey the roller shutter (30) leaving the upper surface of the first conveyor, with its slats (32) having their cavity facing upwards, onto the upper surface of the overlying conveyor such that they are disposed with their cavity facing downwards,
- monodirectional passage means (28) for guiding the roller shutter leaving the first conveyor such that it rests on the second conveyor.

2. A device as claimed in claim 1, **characterised in that** each conveyor consists of a plurality of side-by-side belt conveyors.
3. A device as claimed in claim 1, **characterised in that that** roller of the second conveyor facing the curved surface has a greater diameter than the other rollers. 5
4. A device as claimed in claim 1, **characterised in that** the passage means consist of a bar secured to the curved surface and presenting, when in its rest position, its bearing surface substantially below the plane of the upper surface of the second conveyor. 10

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FIG. 1

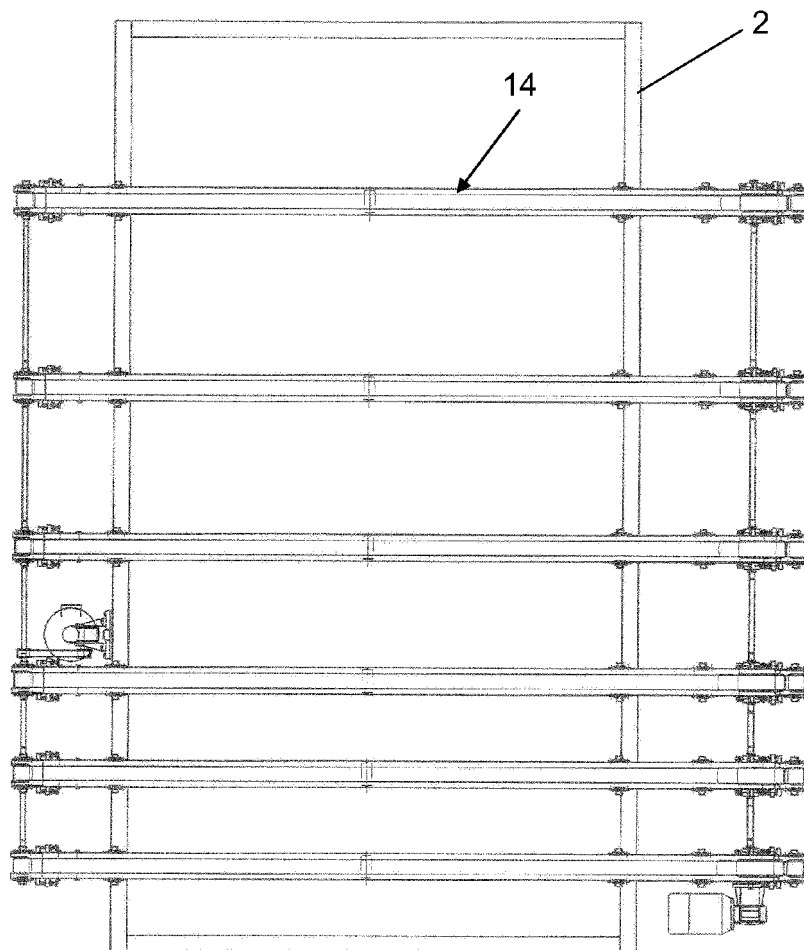
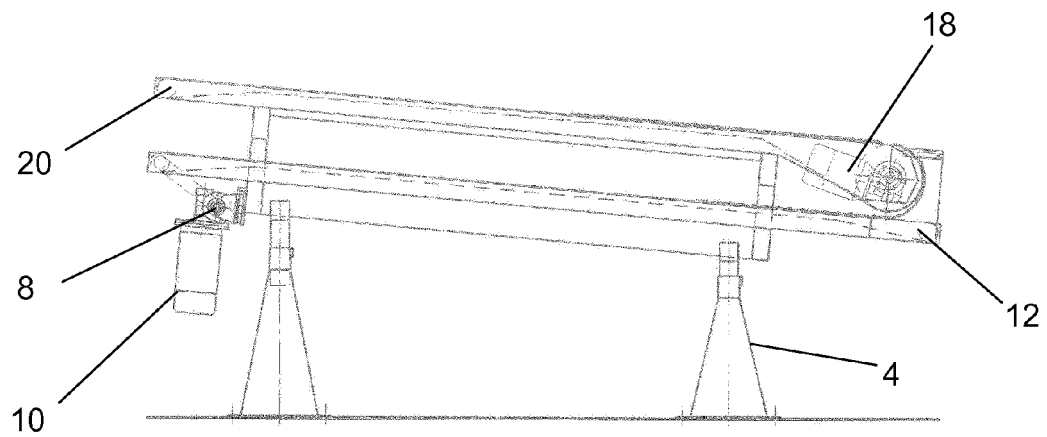


FIG. 2

FIG. 3

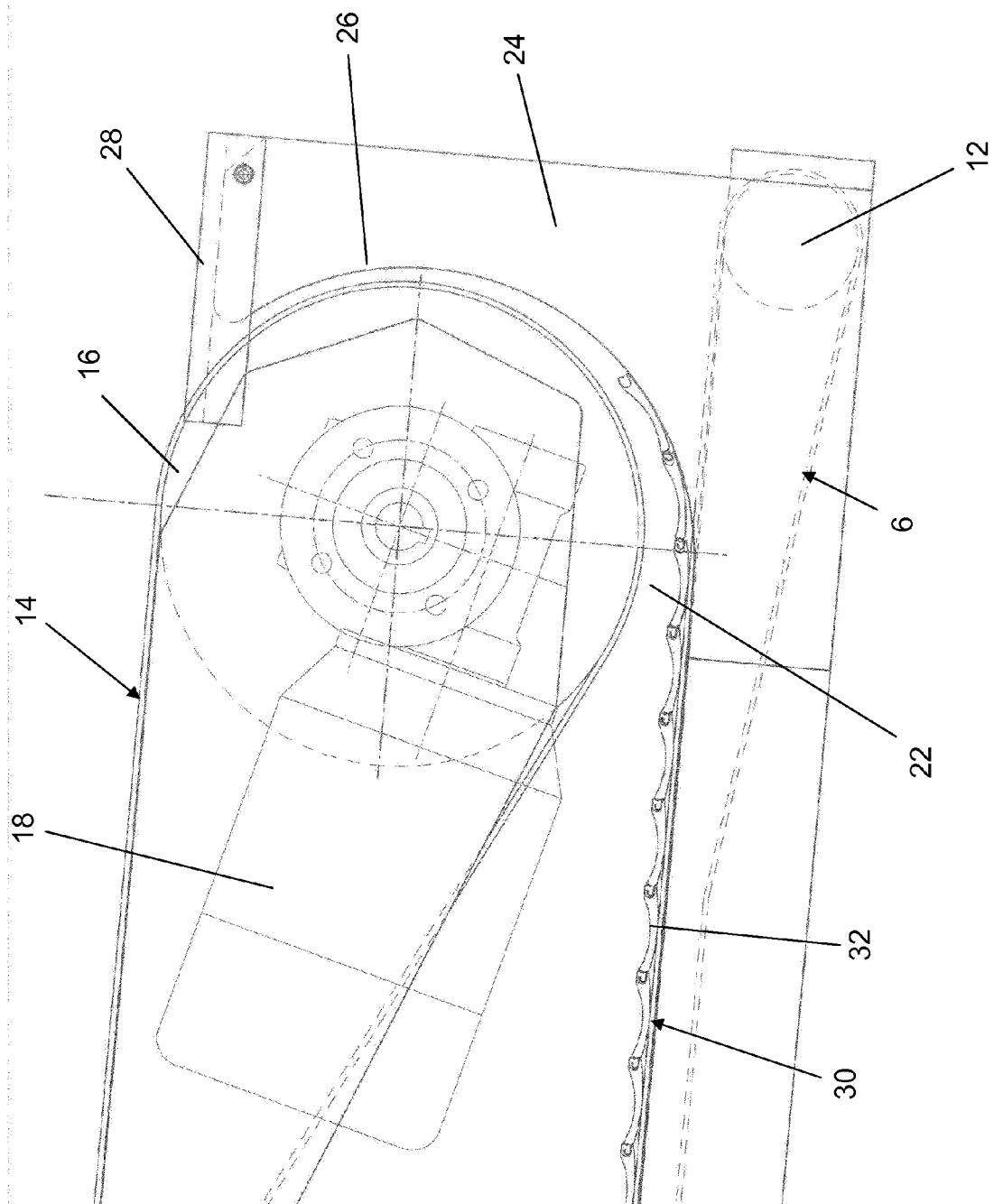


FIG. 4

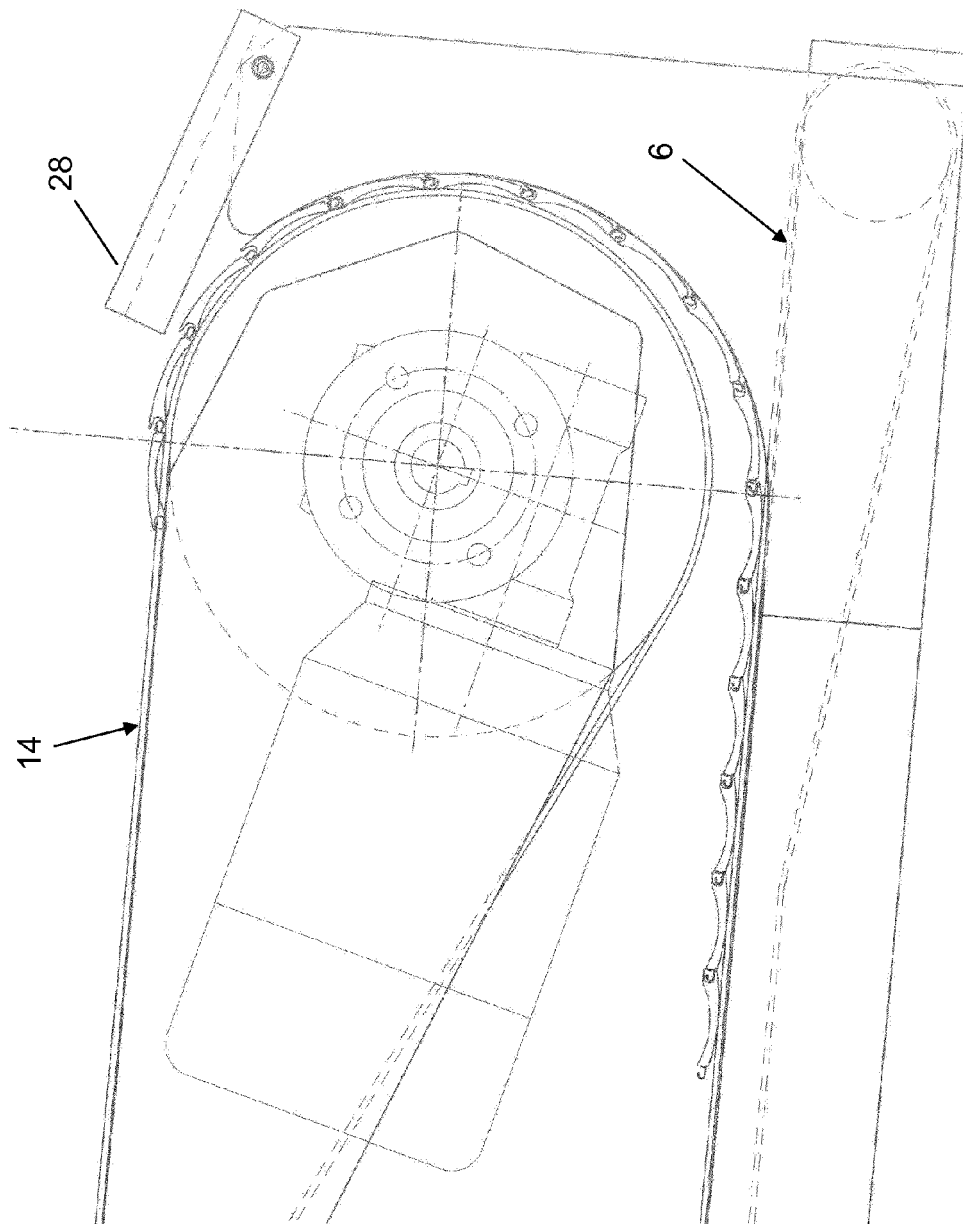


FIG. 5

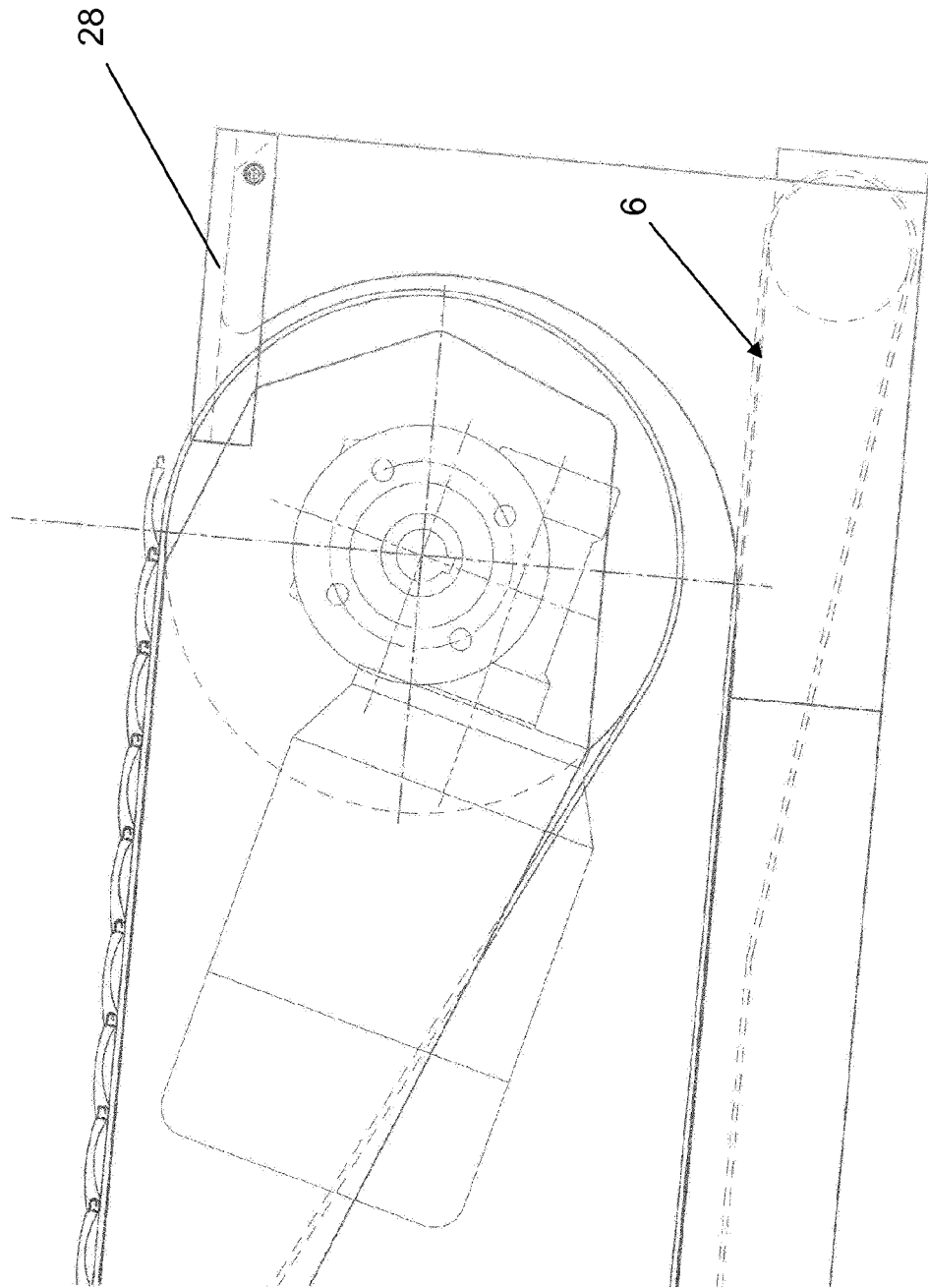


FIG. 6

