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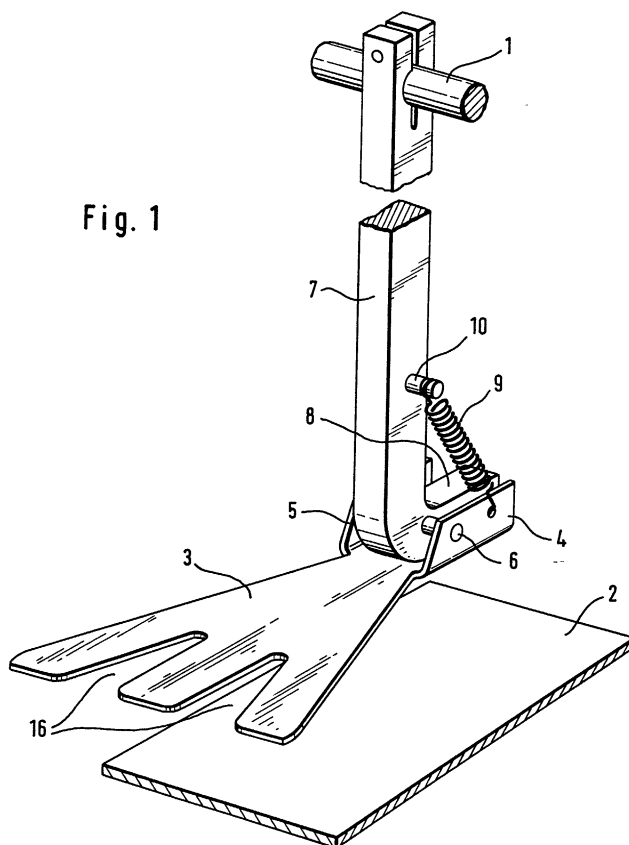
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(54) Auxiliary push-in arrangement for envelope-filling machines

(57) The invention proposes an auxiliary push-in arrangement for envelope-filling machines, in the case of which an additional auxiliary push-in finger, which is articulated on a central pivoting lever (7), at the beginning of the operating stroke, by way of its bottom end, first of

all slides over the surface of the base of the push-in arrangement and, if appropriate, over the envelope-filling table (2) and, towards the end of its operating stroke, is raised and thus raises the top wall of an envelope (14) which is held ready in an open state.

Fig. 1



EP 1 270 266 A2

Description

[0001] The invention relates to an auxiliary push-in arrangement for envelope-filling machines according to the preamble of Claim 1.

[0002] In the case of known auxiliary push-in arrangements (DE 200 20 168 U1), the auxiliary push-in fingers and the associated levers of the lever arrangement are designed such that one auxiliary push-in finger is pushed into the opening of an envelope, which is held ready in an open state, in the vicinity of one end of said opening, while a second auxiliary push-in finger is pushed into the envelope opening in the vicinity of the other end.

[0003] From time to time, such known auxiliary push-in arrangements are beset by the problem where the top envelope wall, in the central region of the envelope opening, tends to move towards the bottom envelope wall again, counter to the forces exerted, for example, by suction arrangements, with the result that, when relatively thick sets of enclosures are pushed in, the envelope-filling material may strike against the border of the open envelope wall in the opening region. It is also possible for blowing air, which is blown in through the envelope opening in order to open the envelope, to produce a suction action by means of which that region of the top envelope wall which is in the vicinity of the opening is pulled downwards in the central section of the envelope opening.

[0004] US-A-5848 518 discloses the practice, in the case of an envelope-filling machine, of opening the envelope-opening mouth by means of the comparatively wide tongue aligned approximately with the centre of said envelope-opening mouth.

[0005] The invention is intended to achieve the object of configuring an auxiliary push-in arrangement of the type defined in the introduction such that the envelope is opened wide and comparatively thick sets of enclosures can be reliably pushed in even at high operating speeds.

[0006] This object is achieved according to the invention by an auxiliary push-in arrangement having the features according to Claim 1.

[0007] Advantageous developments and configurations of such an auxiliary push-in arrangement form the subject matter of the dependent claims, Claims 2 to 5.

[0008] Expedient embodiments of the auxiliary push-in arrangement specified here are explained in more detail hereinbelow with reference to the drawing, in which:

Fig. 1 illustrates a perspective view of part of an auxiliary push-in arrangement, the illustration showing just the bottom part of the central pivoting lever and the additional auxiliary push-in finger articulated thereon;

Fig. 2 illustrates a schematic side view, partly in section, of an auxiliary push-in arrangement ac-

cording to Figure 1 for the purpose of explaining the functioning; and

Fig. 3 illustrates a side view of the central part of an auxiliary push-in arrangement of the type specified here, a push-in arrangement being illustrated in part.

[0009] The auxiliary push-in arrangement of the type specified here, in a manner similar to conventional auxiliary push-in arrangements, is arranged upstream of the push-in arrangement of an envelope-filling machine, as seen in the push-in direction, and contains a pivoting shaft 1 which is made to rotate in an oscillating manner by means of a suitable drive and on which there are fastened, in the vicinity of the right-hand side and in the vicinity of the left-hand side, pivoting levers (not illustrated in Figure 1), at the bottom ends of which there are articulated auxiliary push-in fingers, which are prestressed by spring means in the direction of the envelope-filling table 2, which is shown schematically in Figure 1.

[0010] Located between said lateral pivoting levers and associated auxiliary push-in fingers, approximately in the region of the centre of the push-in station, corresponding to the centre of the opening of an envelope 14 provided, is an additional auxiliary push-in finger 3, which is formed approximately in the manner of a duck's foot and from a comparatively thin metal sheet and has vertically upwardly bent bearing side pieces 4 and 5 in the rear region.

[0011] The additional auxiliary push-in finger 3 is articulated at the bottom end of a pivoting lever 7, which is assigned to the auxiliary push-in finger 3, such that it can be pivoted via a pin 6 inserted through bores of the bearing side pieces 4 and 5, the top end of said pivoting lever being fastened on the pivoting shaft 1 such that the pivoting lever 7 moves in an operating stroke and a return stroke in synchronism with the lateral pivoting levers adjacent to it.

[0012] The bottom end of the pivoting lever 7 is bent rearwards approximately at right angles such that the bent section 8 interacts with the base of the additional auxiliary push-in finger 3, said base connecting the bearing side pieces 4 and 5, as a stop which limits the downward movement of the front end of the additional auxiliary push-in finger 3 in the direction of the surface of the envelope-filling table 2. An upward movement of the front end of the additional auxiliary push-in finger 3 takes place counter to the prestressing force of a helical spring 9, which is tensioned between a bore of the bearing side piece 4 of the additional auxiliary push-in finger 3 and a spring-bearing pin 10 of the pivoting lever 7.

[0013] If, during the return stroke of the auxiliary push-in arrangement, the pivoting lever 7 which has the additional auxiliary push-in finger 3 articulated at its bottom end is pivoting rearwards on the pivoting shaft 1 to such an extent that the front end of the auxiliary push-in finger

3 rests on a base plate 11 of the push-in arrangement, said base plate being illustrated schematically in Figure 2, then this takes place with the auxiliary push-in finger 3 being pivoted in the clockwise direction, in relation to the position shown in Figure 2, the base which connects the bearing side pieces 4 and 5 being raised off, counter to the prestressing force exerted by the helical spring 9, from the underside of the rearwardly bent section 8 of the pivoting lever 7, as is indicated at S in Figure 2.

[0014] Before push-in fingers 12 of the push-in station, sliding over the surface of the base plate 11, push a set of enclosures 13 into the opening of an envelope 14 provided on the envelope-filling table 2, the pivoting lever 7, in an operating stroke coordinated with the operating cycle of the push-in fingers 12, is pivoted to the left, in relation to the position of Figure 2, out of the position indicated by chain-dotted lines, the bottom end of the additional auxiliary push-in finger 3 sliding along the surface of the base plate 11 and, if appropriate, additionally sliding along the surface of the bottom wall of the envelope 14 provided until, finally, the play between the base wall of the auxiliary push-in finger 3, said base wall connecting the bearing side pieces 4 and 5, and the bottom surface of the rearwardly bent section 8 of the pivoting lever 7 has been used up and the rear, bottom end of the section 8 then presses against the base between the bearing side pieces 5 and 6. This results in the front end of the additional auxiliary push-in finger 3 then being raised and finally, as is illustrated by solid lines in Figure 2, additionally raising the top wall of the envelope 14 which is held ready in an open state.

[0015] The set of enclosures 13 is then pushed beneath the additional auxiliary push-in finger 3, and also beneath the laterally adjacent auxiliary push-in finger 3, into the envelope 14.

[0016] The task of keeping the envelope 14 open is assisted in that blowing air is blown into the envelope opening, for example, via channels 15 routed in, or in the vicinity of, the base plate 11. In order to prevent the openings of the blowing-air channels 15 from being deflected by the additional auxiliary push-in finger 3, or for example the air pressure produced by the blowing air on the underside of the additional auxiliary push-in finger 3 from raising the auxiliary push-in finger 3 prematurely, cutouts or through-passages are provided in the front region of the auxiliary push-in finger 3, these being indicated at 16 in Figure 1.

[0017] In Figure 3, part of the push-in arrangement is shown by chain-dotted lines at 17. A push-in-finger carrier 19 is articulated on a link arrangement, of which only one link 18 is depicted in Figure 3, such that, when the links of the link arrangement are pivoted, the front end of the push-in-finger carrier 19 can be moved back and forth approximately horizontally over the surface 20 of the base plate 11 of the push-in station. The push-in fingers 21 are articulated at the front end of the push-in-finger carrier 19 and, by spring means which are not shown in Figure 3, have their free, bottom ends pre-

stressed in the direction of the surface of the base plate 11.

[0018] In the case of the embodiment shown in Figure 3, the pivoting lever 7 has a bent-out portion 22 which is oriented in the push-in direction, is open in the rearward direction, counter to the push-in direction, and makes it possible, when the operating stroke of the pivoting lever 7 and of the additional auxiliary push-in finger 3 ends, for the front end of the push-in-finger carrier 19 of the push-in arrangement 17 and thus the push-in fingers 21 to be able to end their operating stroke without the front end of the push-in-finger carrier 19 colliding with the pivoting lever 7. The act of arranging in the central region of the push-in station the pivoting lever 7 which bears the additional auxiliary push-in finger 3 thus does not necessitate any changes in design to the push-in arrangement, in particular any possibly undesirable increase in length of the push-in fingers 21.

Claims

1. Auxiliary push-in arrangement for envelope-filling machines, having a lever arrangement which can be pivoted in accordance with the operating cycle of the push-in station and has pivoting levers (7), at the ends of which in each case one auxiliary push-in finger (3) is mounted, by way of its bearing end, in a pivotable manner, limited by a stop (8), and with spring loading, which auxiliary push-in finger, in the operating stroke, can be moved forwards approximately in the plane of the envelope-filling table (2) and can be pushed into the opening of envelopes (14) provided, and beneath which enclosures or sets or enclosures (13) are then pushed in, over the surface of the envelope-filling table, by means of push-in fingers (12; 21) of the push-in station, **characterized in that** an additional auxiliary push-in finger (3) is arranged approximately in the region of the centre of the push-in station, corresponding to the centre of the envelope opening, and is articulated on the associated pivoting lever (7) such that its free end, over the course of the operating stroke, is first of all kept in abutment, under spring prestressing (9), against the surface of a base plate (11) of the push-in station and against the surface of the envelope-filling table, and its bearing end, even before the operating stroke has ended, runs up against a stop (8) on the associated pivoting lever (7) such that the free end of said auxiliary push-in finger (3), over the rest of the operating stroke, is raised off from the surface of the envelope-filling table and raises the top wall of the envelope (14) provided.
2. Arrangement according to Claim 1, **characterized in that** the pivoting lever (7) assigned to the additional auxiliary push-in finger (3) has an end (8) an-

gled counter to the direction of the operating stroke, bearings for the additional auxiliary push-in finger (3) being arranged in the bent region, and the angled end (8) forming a stop for an extension of the additional auxiliary push-in finger (3) which extends rearwards from the point of articulation, counter to the push-in direction. 5

3. Arrangement according to either of Claims 1 and 2, **characterized in that** the additional auxiliary push-in finger (3) is designed in the manner of a duck's foot in plan view. 10
4. Arrangement according to one of Claims 1 to 3, **characterized in that** the additional auxiliary push-in finger (3) has through-passages or cutouts (16) for the through-passage of blowing air. 15
5. Arrangement according to one of Claims 1 to 4, **characterized in that** the pivoting lever (7) assigned to the additional auxiliary push-in finger (3) has a bent-out portion (22) which is oriented in the direction of the operating stroke, is open in the rearward direction, counter to the direction of the operating stroke, and into which the front parts of the push-in arrangement pass as the operating stroke thereof ends. 20 25

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Fig. 1

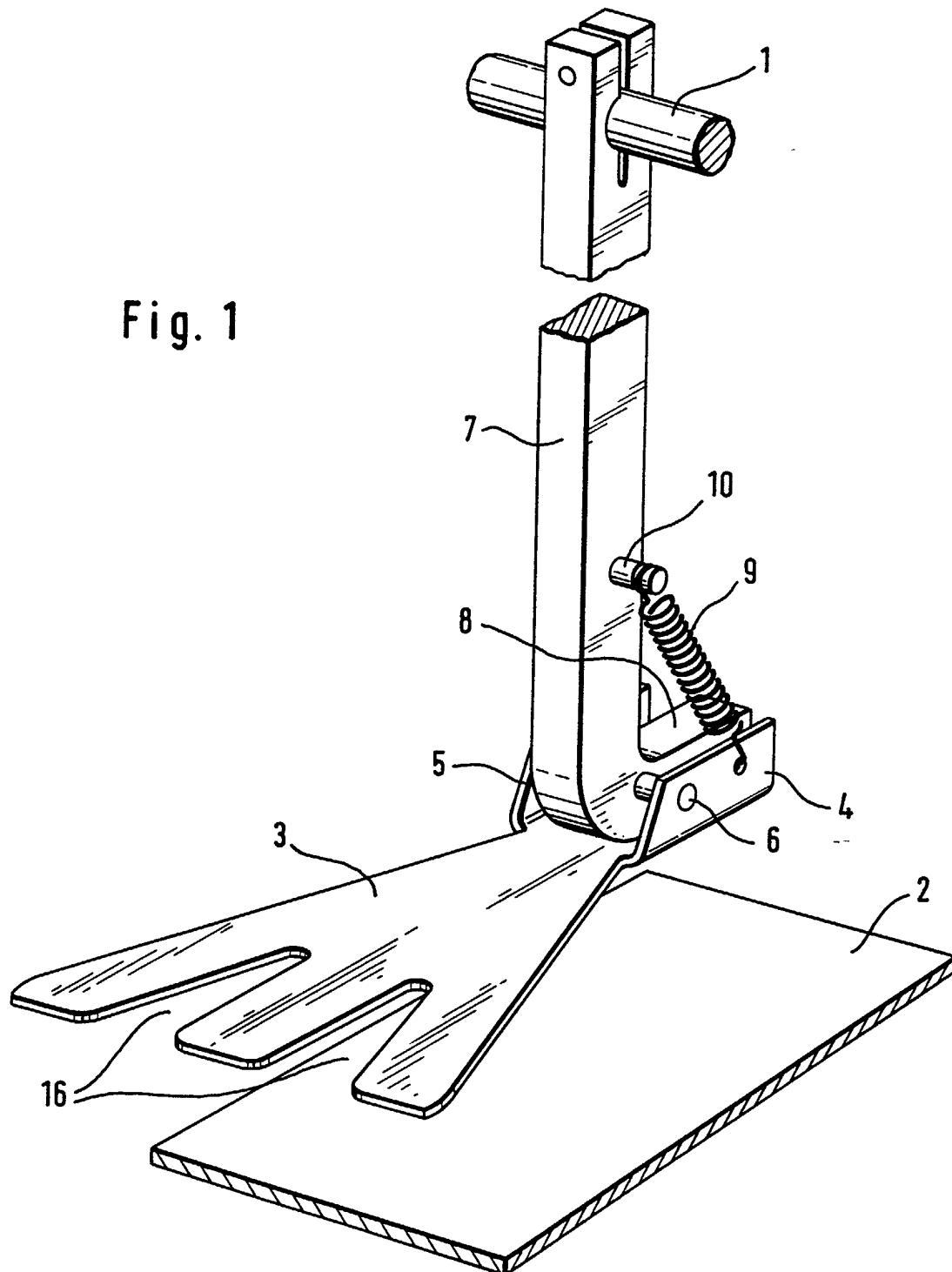


Fig. 2

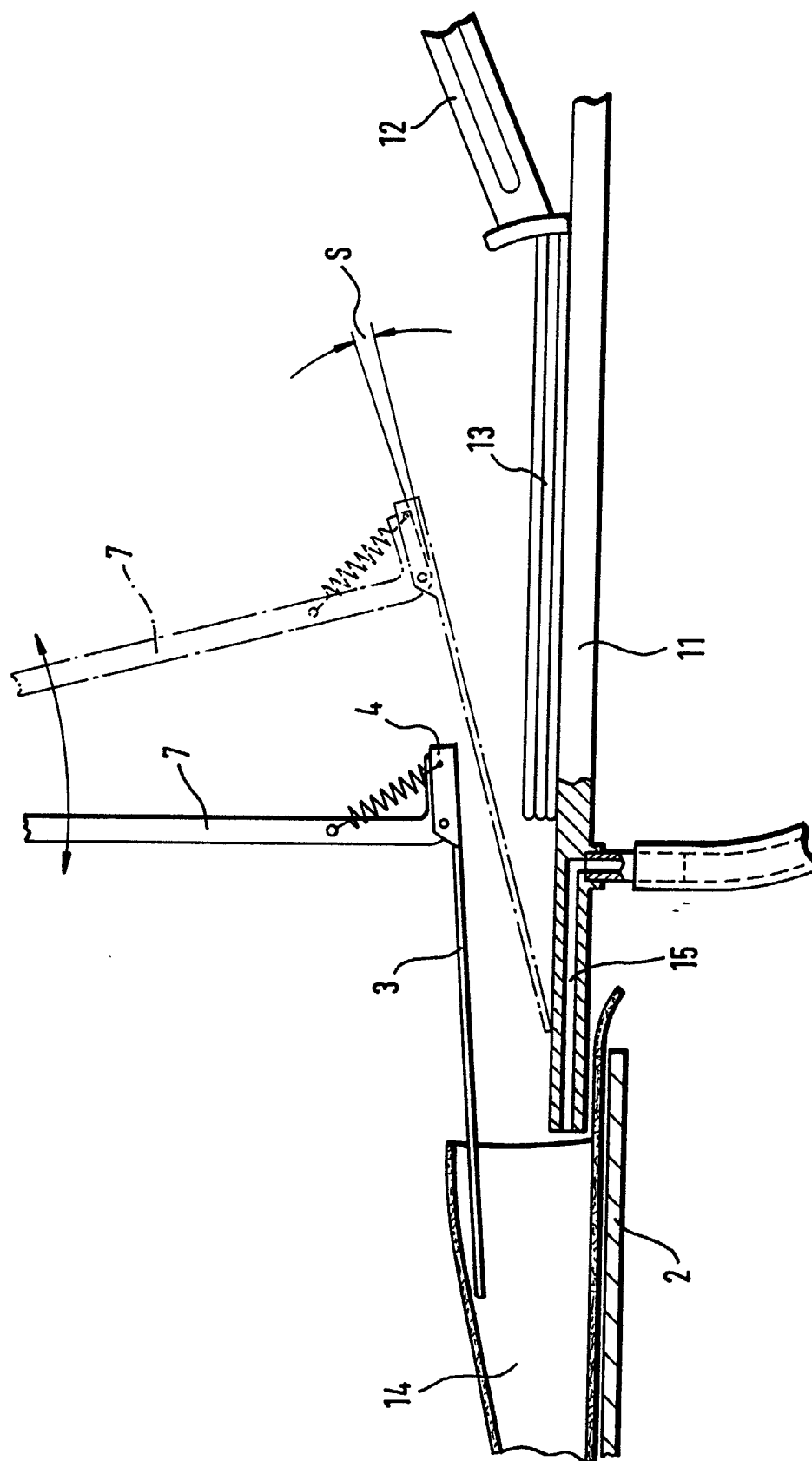


Fig. 3

