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A METHOD AND A MACHINE FOR THE MANUFACTURE OF BOOKLETS.

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Description

Technical field

The present invention relates to a method and a machine for the manufacture of booklets. More specifically, the invention refers to booklets comprising a cover made up of two cover sheets, a spine therebetween, and a binding agent attached to the inside of the spine, as well as a sheaf of papers inserted between the two cover sheets, one side edge of the sheaf of papers being connected to the inside of the spine by means of the binding agent.

Background art

Booklets of the kind described above are usually manufactured in the following way.

A flat sheet of paper and/or plastic is folded such that it is divided into two cover sheets and a spine. A binding agent in the form of a bead of melt glue is attached to the inside of the spine by firstly heating and melting the glue to a semi-solid state and then cooling it, so that it will solidify and adhere to the spine. This is disclosed in US-A-4,367,061, for instance. The cover sheets are then folded along the crease lines such as to form a cover, the bead of glue being oriented between the cover sheets. When the finished covers have been packed and distributed, the user will take a cover out of the package and insert a sheaf of papers in the cover, such that one side edge of the sheaf will bear against the bead of glue. He will then insert the cover containing the sheaf of papers into a binding machine, such that the outside of the spine will get into contact with a heating plate. This is disclosed in US-A-4,009,498, for instance. After a certain amount of time, the glue will melt and the sheaf of papers will sink into it. The user will then remove the cover containing the sheaf of papers from the machine and the glue will be allowed to cool, said side edge of the sheaf of papers adhering to the spine so that a finished booklet is obtained.

US-A-3,093,396 discloses a bookbinding method and apparatus, whereby the covers with a sheaf of papers inserted between the two cover sheets of the cover and connected to the inside of the spine by means of a binding agent are moved from an activation station to a cooling station with the cover sheets parallel to the moving direction of the transport means.

US-A-3,708,813 refers to a method and apparatus for making books similar to that in US-A-3,093,396 with the exception that there is no cooling station in the last document.

Disclosure of invention

It will be understood that the above described manual binding method of US-A-4,009,498 is complicated and time-consuming, especially when a large number of booklets of the same or similar kind are to be manufactured.

It will also be understood that the methods and apparatuses of US-A-3,708,813 and 3,093,396 are complicated and require a lot of space.

It is therefore an object of the invention to improve the known methods and apparatuses and to achieve a method and a machine which reduce the amount of manual handling, which increase the manufacturing speed, which require little space, and which improve the quality of the finished booklets.

This object is achieved by the invention having been given the distinguishing features disclosed in the characterizing portions of the claims.

Description of Figures

Figure 1 is a partially cut perspective view of a cover with a sheaf of papers inserted in the cover but not yet attached to the same.
Figure 2 is a sectional view along the line II-II in Figure 1.
Figure 3 is a partially cut perspective view of a machine for binding sheaves of papers into covers of the kind shown in Figures 1 and 2 so as to form booklets.
Figure 4 is a side view of the machine according to Figure 3, seen from the right.
Figure 5 is a side view of the machine according to Figure 3, seen from the left, and
Figure 6 is a schematic perspective view of, among others, a jogging device included in the machine according to Figures 3, 4 and 5.

Preferred embodiment

In Figure 1 there is illustrated a cover 1 made from carton and/or plastic, which cover has been folded from a flat state into a shape as shown in Figure 1 to form two cover sheets 2 and 3 and a spine 4. A binding agent 5 is attached to the inside of the spine and, if required, to the sections 2, 3 of the cover sheets 2, 3 adjacent to the spine. The binding agent 5 can be of any form and composition, however, preferably consists of a strip or bead of hot melt glue with substantially rectangular cross section, i.e. a glue which at room temperature is in a solid state and when heated to a higher temperature becomes semisolid or solid.

In Figures 1 and 2 there is depicted a sheaf of papers 6 consisting of a plurality of sheets of paper, which sheaf of papers is inserted in the
cover such that one side edge of the sheets contained in the sheaf of papers is resting on the surface of the binding agent 5 farthest away from the spine 4. In this position, the cover containing the sheaf of papers is intended to be inserted and treated in the machine according to Figures 3 - 6 for connecting the sheaf of papers to the cover by means of the binding agent 5.

The cover 1, which by definition is assumed to comprise the cover sheets 2, 3, the spine 4 and the binding agent 5, is provided with automatically readable indication means 7, the function of which is to ensure that a different or faulty cover will not be treated by the machine according to Figures 3 - 6, which might then be destroyed, and/or to inform the user about the number of covers or booklets of varying spine widths being treated by the machine.

The indication means 7 can be formed and mounted in any of several possible ways, some of which will now be described. In Figures 1 and 2 there is illustrated a number of interspaced wires 7a, 7b etc. made from magnetizable or magnetic material and embedded in the binding agent 5. Number of wires, distances between them and/or wire thicknesses vary depending on the rind of cover. The indication means, which can be placed anywhere on the cover, is, however, preferably attached in the area of the spine 4 of the cover, for example, on any of the surfaces of the binding agent 5. The wires 7a, 7b etc. may be replaced by one or more strips of varying widths and/or can be located at different distances from each other to be significative of a certain kind of cover, for example a cover having a certain spine width.

The machine shown in Figures 3 - 6 is intended for the production of booklets, each of which of the kind comprising a cover 1 and a sheaf of papers 6 inserted in the cover as shown in Figures 1 and 2. It is not necessary for the sheaf of papers 6 to have been jogged up before insertion in the machine, nor does it have to be in the desired final position in the cover. Said condition is evident from Figure 1.

The main parts of the machine are a magazine 8, in which covers 1 with inserted sheaf of papers 6 are deposited, an activation device 9 for heating and, if required, later cooling of the binding agent 5, and a reception space 10 for finished booklets. Further, the machine includes, among others, devices 11 and 12 (Figures 4 and 5) for transporting covers containing sheaves of papers from the magazine 8 to the reception space 10 and a jogging-up device 13 (Figure 6). In order to make the machine as compact as possible and to facilitate insertion of covers containing sheaves of papers as well as removal of the finished booklets from the machine, the magazine 8 and the reception space 10 have been placed side by side and immediately above the activation device 9.

The magazine 8 is defined by a parallelepipedic space containing a transport device comprising two identical, parallel conveyors 13 and 14 which define two of the side walls of said space, and a base plate 15 fixed in the frame of the machine. Each conveyor 13, 14 includes two endless flexible cogged belts 16 as well as a number of wire bows 17 extending between the cogged belts and attached to these. The belts 16 are driven by cog wheels 18, of which those furthest to the right in Figure 3 in each conveyor 13, 14 are driven by a shaft 19. The shafts 19 are continuously rotated in one direction by an electric motor 20 via interacting conical cog wheels 21a and 21b.

In each conveyor 13, 14 there are mounted two adjacent bows 17 providing support means which form a compartment and which are mounted at a mutual distance greater than the maximum occurring thickness of a cover 1 containing a sheaf of papers 6, meaning that two or more covers with inserted sheaf of papers of the minimum occurring thickness can be accommodated between the two bows. In this way, covers of different thicknesses containing sheaves of papers can be inserted in any order in the magazine 8 and yet be supported in substantially upright (vertical) positions in the magazine. Each cover 1 with sheaf of papers 6 is deposited in the magazine 8 between a pair of adjacent bows 17 in each conveyor 13, 14, with its spine 4 oriented downwardly and located in a horizontal position, and will be supported and moved by the bows, the opposing parts of the conveyor being at the same time moved to the right in Figure 3 with the spines 4 of the covers in contact with the plate 15.

Immediately to the right of the conveyors 13 and 14, there are mounted two arms 24a on a horizontal shaft 23 which is pivotal in a reciprocating movement by means to be described below with reference to Figure 6. At the open end of each arm 23 there is mounted a suction cup 24.

When a cover 1 containing a sheaf of papers 6 has been moved so far to the right in the magazine 8 that it leaves the plate 15, it will fall a short distance such as to come into contact with a plate 25 forming part of the machine frame. The spine 4 of the cover acts on a breaker 26 which will temporarily interrupt the travel of the conveyors 13, 14 and will pass an impulse to a suction pump (not shown) connected to the suction cups 24 to start working. At the same time, the pivoting shaft 23 will move the suction cups 24 towards the cover 1 which is resting on the plate 25 and will suck the cover such that it will adhere thereto. When the shaft 23 then pivots in the opposite direction, the suction cups 24 will carry the cover 1 containing a sheaf of papers 6 to the right in Figure 3, so that it
will leave the plate 25. When the cover 1 is then released by the suction cups 24, the spine 4 of the cover will get into contact with two steps 27 on a hoist made up of two arms 28 provided with pulleys 29, which are adapted to run vertically on rods 30 attached to the machine frame and extending almost along the entire height of the machine. The two arms 28 and pulleys 29 are connected to each other by means of an angled arm 31, the ends of which are attached to two flexible cogged belts 32 and 33 driven by a motor 22 via shafts driven by the motor, e.g. shafts 34a and 34b, the motor being provided with a reciprocating output shaft. The cogged belt 32 extends between cog wheels 34 and 35 and the caged belt 33 between cog wheels 36 - 39.

As soon as the cover 1 containing a sheaf of papers 6 has been transferred to the steps 27 of the hoist 28, 29, 31, where it will be retained vertically by the arms 28, the caged belts 32 and 33 will move the hoist downwardly towards the lower part of the machine. During the transfer, a sensing means 40 will sense whether the cover 1 with inserted sheaf of papers 6 can be accepted for continued processing in the machine and also senses the width of the cover spine. The sensing means 40 can be of previously known kind, comprising, for example, a magnet movably attached to one of the pulleys 29 for reciprocating travel immediately under the spine 4 in the area of the indication means 7. During its movement along the spine 4, the means 40 will sense the number of metal wires 7a, 7b etc. or other indication means and will signal to a suitable device (not shown) for adding and indicating total number of covers 1 of each spine width sensed. Further, the means 40 will signal to a magnet 41 to move a stop plate 42 attached to the lower part of the machine frame to an almost horizontal position if the cover is acceptable. Alternatively or in addition, the sensing means 40 can act on the activation device 9 such that the latter becomes idle, i.e. does not emit heat.

When the hoist 28, 29, 31 reaches its lower end position the spine 4 of the cover 1 will come into contact with two surfaces 43 of the machine frame, which surfaces are inclined in an inward-downward direction. If the stop plate 42 has not been turned but is vertical, the cover with the sheaf of papers on continued movement of the hoist will slide on the surfaces 43, whereafter it will leave the hoist and fall into a slot between the hoist and a transport device 44 to enter, for example, into a space situated under the transport device. If, on the other hand, the stop plate 42 has been turned to an inclined, almost horizontal position in which it bridges the slot between the device 44 and the surfaces 43, the cover 1, on sliding on the surfaces 43, via the stop plate 42 will be moved to the transport device 44 where it will be gripped by conveyors 46 and 47, which are substantially identical to the conveyors 13, 14 except that the latter extend farther in the horizontal direction. The conveyors 46, 47 are mounted on shafts 60 which are step-operated and driven by a motor 61 in the opposite direction relatively to the conveyors 13, 14. The motor 61 has an eccentric disc 61a which via an arm 62 turns a latch 63 in a reciprocating movement. The latch 63 engages a ratchet 64, which in Figure 4 gives a shaft 65 attached to the ratchet a step-by-step, anti-clockwise movement. The shaft 65 drives the shafts 60 via pairs of conical cog wheels 21 and a roller 50 extending between the cog wheels.

The transport device 44 includes at least one endless flexible conveyor belt 52 of suitable heat conducting material such as Teflon (registered trade mark), the upper part of which is moving step by step to the left in Figure 3 at the same speed as the conveyors 46 and 47. The transport device 44 includes also the roller 50 and a roller 51, on which the belt 52 is mounted.

The activation device 9 is situated between the parts of the belt and projects sideways past the belt where it is attached to the machine frame. The device 9 includes also a heating plate 53 which emits a sufficient amount of heat to melt, via the belt 52, the melt glue bead 5 attached to the cover 1, so that said bead will become semisolid or almost liquid. The underside of the upper part of the belt 52 bears against, and slides on, the heating plate 53. If a different kind of binding agent, other than melt glue, is used, the activation device is adapted accordingly. In an alternative embodiment, the belt 52 may be formed as a heat source or other means for activating the binding agent.

Between the two parts of the belt 52, to the left of the heating plate 53 in Figure 3, there is mounted a cooling plate 54; the upper part of the belt bearing against and sliding on the upper surface of the heating plate. In order to increase the degree of cooling, the underside of the heating plate 54 can be provided with cooling flanges, and/or a cooling fan can be installed in the machine. Alternatively, the plate 54 can be provided with channels for cooling water.

The conveyors 46 and 47 and the belt 52 running at the same speed move the cover 1 containing the sheaf of papers 6 to the left. During this movement, the melt glue is brought into a semisolid or almost liquid state and the sheaf of papers 6 will sink into the melt glue on the spine 4. Further, during said movement, the sheets of paper contained in the sheaf are jogged up in the sheaf and relatively to the cover by the jogging-up device 13 shown in Figure 6 and to be described in more detail below. Already at this stage, it should, how-
ever, be pointed out that during jogging up, the covers and the sheaves of papers contained there-in will be pressed against the heating plate 53 to increase heat transmission from the heating plate to the spine 4 of the cover via the belt 52.

The reason why the covers 1 do not get into direct contact with the heating plate 53 whilst moving over the same is that friction between covers and plate could result in scratching or dirtying of the outside of the cover spines 4, which is a risk, especially when the covers are provided with printing ink.

When the cover 1 with the sheaf of papers 6 contained therein has passed the heating plate 53, it is moved (still by the conveyors 46, 47 and the belt 52) over the cooling plate 54, such that the melt glue, at least partially, will solidify. When the cover has passed the plate 54, the glue will have assumed a substantially solid state.

When the cover 1 containing a sheaf of papers 6, i.e. the finished booklet, has passed the transport device 44 it will fall into a chute 55 at the left-hand end of the device 44. From its position in the chute 55, the booklet is to be transported to the reception space 10, which is performed by the transport device 12 shown in Figure 5. The device 12 consists of a hoist comprising a horizontal shaft 56, which at both ends is attached to the cogg'd belt 33 as well as to an endless cogg'd belt 57 running over cog wheels 58 and 59. The cog wheels 59 is rotatably mounted in the frame of the machine whereas the cog wheel 58 is attached to a shaft 70 which is rotatably mounted in bearing brackets 71. The cog wheel 38, which is attached to the other end of the shaft 70 and driven by the cogg'd belts 33, thus drives the shaft 70 which via the belts 33 and 57 gives the shaft 56 an upward-downward movement synchronous with the movements of the conveyors 46, 47 and of the transport device 44.

On the shaft 56, there is attached an angular holder 72 on which a roll 73 is rotatably mounted. The holder 72 is also pivotally mounted on a plate 54 which is attached to two rods 75 for vertical upward-downward movement. To the plate 74 there are attached two arms 79 supporting resilient hooks 80 oriented towards the machine. The roll 73 continuously bears against a fixed rail 76 in the machine frame. In Figure 5, a projection 77a on a handrail 77 is situated beside the upper end of the rail 76 and in line with said upper end. The handrail 77 which by means of a spring 84 is pressed outwardly from the machine is attached to two arms 78 pivotally mounted in the lower part of the machine frame.

When the booklet has fallen into the chute 55, the hoist, i.e. the device 15, is brought to its lowest position, and the hooks 80 will be turned somewhat outwardly from the machine against the action of a light spring force by being pressed outwards by the booklet. On reaching its lowest position, the hooks 80 will be moved inwards by means of the spring force such as to assume a position under the spine 4 of the booklet. On subsequent rising of the hoist, the hooks will carry the booklet upwards. When, on ascending movement of the hoist, the roll 73 leaves the rail 76, it will forcibly press the projection 77a inwards towards the machine so that the handrail 77 will be passed through a fairly large recess in a panel 81 of the machine frame, moving the booklet now situated in line with the space 10 into said space, the booklet having previously passed two strips 83 situated at a mutual distance slightly less than the height of the booklet. A counterstay 82, which is resiliently pressed towards the strips 83, ensures that the booklets will always take up the positions shown in Figure 3.

After the cover has entered the space 10, the hoist, i.e. the device 12, is brought down to collect another cover situated in the chute 55.

In Figure 6 there is illustrated the jogging-up device 13, comprising three panels 85, 86 and 87 and driving devices for same, as indicated in Figure 4, of which panels at least panel 85 is shown in Figure 3. A motor 88 which may be the same as the motor 61 is provided with an eccentric disc 88a on which an arm 89 is pivotally mounted. The arm 89 is pivotally connected to an arm 90 which is pivotally connected to pivoting pieces 91. The pivoting pieces 91 are fixedly connected to pivoting pieces 92 and shafts 93 pivotally mounted in beams 94 on the machine frame. Pivoting pieces 92', identical to the pivoting pieces 92, are pivotally connected to these by means of arms 104.

The shafts 93 are provided with cranks 96 mounted in blocks 95 attached to the panels 85 - 87. The upper part of each crank 96 is attached to a shaft 97 extending through a beam 98 which is attached to the panel 87. Above the beams 98 each shaft 97 is connected to a screw 100 engaging with a nut 99, which is attached to the upper side of the beam 98. The nut 99 is unrotatably attached to the machine frame but can be moved axially relative to the frame.

On rotation of the motor 88, the panels 85 and 86 will move towards and away from each other in the horizontal direction at a frequency determined by the speed of the motor. At the same time, the panel 87 will move towards and away from the activation device 9 because the axially immovable screws 100 on turning of the shafts 97 will be screwed into and out of the nuts 99 such that they will later be displaced axially, bringing the beams 88 and the panel 87 with them. Displacement of the panels 85 - 87 is effected immediately before and during activation of the binding agent 5 in the
covers 1 by means of the device 9 in order to jog up the sheets 6 relatively to each other and relatively to the covers as well as to press the covers containing the sheets of paper against the activation device 9 (which is done by panel 87 only) to increase heat transmission to the binding agent.

One of the shafts 97, which is elongated and is referred to as 97’, is provided with a pivoting piece 101 rotatably mounted on a rod 102 rotatably mounted on an arm 103 attached to one end of the shaft 23. On rotation of the shaft 97’ in a reciprocating movement, the shaft 23 will be pivoted alternately clockwise and anti-clockwise to move the suction cups 24 towards and away from a cover 1 resting on the plate 25.

Although only one embodiment of the present invention has been shown on the drawings and only a few embodiments have been described above, it will be understood that the invention is not restricted to these embodiments but only by the statements of the claims.

Claims

1. A method for manufacturing booklets, each comprising a cover made up of two cover sheets, a spine therebetween, and a binding agent attached to the inside of the spine, as well as a sheaf of papers inserted between the two cover sheets of the cover, one side edge of the sheaf being connected to the inside of the spine by means of the binding agent, which is activated by an activation device, such that said side edge of the sheaf of papers inserted in the cover will adhere to the binding agent, whereafter the cover is parted from the activation device, or vice versa, by a first power operated transport means so that the binding agent is brought to solidify, characterized in that the first power operated transport means (44,46,47) moves the covers (1) and the sheaves of papers (6) enclosed therein with both cover sheets (2,3) of each cover substantially perpendicular to the moving direction of the transport means.

2. A method according to claim 1, characterized in that the covers (1) with the sheaves of papers (6) enclosed therein are moved to the activation device (9) by a second power operated transport means (44,46,47,11,13,14).

3. A method according to claims 1 and 2, characterized in that the covers (1) with the sheaves of papers (6) enclosed therein are moved by means (44,46,47) forming parts of the first and second transport means (44,46,47; 44,46,47,11,13,14).

4. A method according to any of the preceding claims, characterized in that the covers (1) with the sheaves of papers (6) enclosed therein are moved with the covers situated at a distance from each other.

5. A method according to any of the preceding claims, characterized in that the cover (1) is moved continuously or step by step past the activation device (9).

6. A method according to any of the preceding claims, characterized in that the movement of the cover (1) relative to the activation device (9) takes place without the outside of the spine (4) sliding on the activation device.

7. A method according to claim 6, characterized in that the cover (1) is moved past the activation device (9) at a distance therefrom which is bridged by at least one conveyor belt (52) attached between the fixedly mounted activation device and the cover, the outside of the cover spine (4) bearing against the conveyor belt.

8. A method according to any of the preceding claims, characterized in that the sheaf of papers (6) is jogged up in and relative to the cover (1) before the binding agent (5), on activation, has been brought to solidify.

9. A method according to any of the preceding claims, characterized in that the sheaf of papers (6) is jogged up in and relative to the cover during movement to the activation device (9) and/or during the initial stage of activation.

10. A method according to any of the preceding claims, characterized in that the sheaf of papers (6) is jogged up in and relative to the cover (1) while the cover and the sheaf of papers are simultaneously pressed against the activation device (9).

11. A method according to any of the preceding claims, characterized in that the activation consists of heating of the binding agent (5) formed as a bead of melt glue.

12. A machine for manufacturing booklets, each booklet comprising a cover made up of two cover sheets, a spine therebetween and a binding agent attached to the inside of the spine, as well as a sheaf of papers inserted between the two cover sheets of the cover and one side edge of which is connected to the
inside of the spine by means of the binding agent, the machine comprising an activation device for activating the binding agent, such that said side edge of the sheaf of papers inserted in the cover will adhere to the binding agent, and a first power operated transport means for moving the covers from the activation device to a cooling space or cooling means in the machine where the binding agent will solidify and the sheaves of papers inserted in the covers will be connected to the spines of the covers, characterized in that the first power operated transport means (44,46,47) includes two opposed conveyors (46,47) which support and convey the covers (1) with the sheaves of papers (6) enclosed therein and which are arranged at a distance from each other seen in a direction perpendicular to the conveying direction.

13. A machine according to claim 12, characterized by means (44,46,47,52) for moving the covers (1) relative to the activation device (9) with the outside of the spine (4) not sliding on the activation device.

14. A machine according to claim 13, characterized by movable conveying means (52), the outside of the spines (4) of the covers (1) bearing against one side of said conveying means.

15. A machine according to claim 14, characterized in that the conveying means (52) is provided with a second side which bears against and slides on the fixedly mounted activation device (9).

16. A machine according to claim 14 or 15, characterized in that the conveying means consists of at least one thin belt (52) made from a heat conducting or heat permeable material.

17. A machine according to claim 14 or 15, characterized in that the conveying means (52) is the activation device (9) which is formed as at least one heated, movable belt.

18. A machine according to any of claims 12-17, characterized in that the activation device is a heating device (9) for heating the binding agent (5) formed as a bead of melt glue.

19. A machine according to any of claims 12-18, characterized by a jogging-up device (13) for jogging up the sheaf of papers (6) in and relative to the cover (1) before the binding agent (5) has solidified.

20. A machine according to claim 16, characterized in that the jogging-up device (13) comprises means (87) for pressing the cover (1) and/or the sheaf of papers (6) against the activation device (9).

21. A machine according to any of claims 12-20, characterized in that the conveyors (46,47) are driven at the same speed and/or are arranged at a constant distance from each other.

22. A machine according to any of claims 12-21, characterized in that each conveyor (46,47) includes a number of bows (17), two adjacent bows on each conveyor being arranged at a distance from each other somewhat greater than the maximum thickness of a cover (1).

23. A machine according to any of claims 12-22, characterized by a second power-operated transport means (44,46,47,11,13,14) for moving the covers (1) with sheaves of papers (6) therein towards and over the activation device (9), said second transport means including parts common with parts included in the first transport means (44,46,47).

Patentansprüche

1. Verfahren zur Herstellung von Broschüren, von denen jede einen von zwei Deckblättern gebildeten Einband, einen dazwischen liegenden Rücken mit einem auf dessen Innenseite aufgebrachten Bindemittel sowie ein zwischen die beiden Deckblätter des Einbandes eingesetztes Papierbündel umfaßt, wo eine Seitenkante des Papierbündels mit der Innenseite des Rückens durch das Bindemittel verbunden ist, das durch eine Aktiviervorrichtung aktiviert wird, so daß die Seitenkante des in den Einband eingesetzten Papierbündels am Bindemittel haftet, worauf der Einband durch eine erste angetriebene Transportvorrichtung von der Aktiviervorrichtung entfernt wird oder vice versa, so daß das Bindemittel zum Erhärten gebracht wird, dadurch gekennzeichnet, daß die erste angetriebene Transportvorrichtung (44, 46, 47) die Einbände (1) und die darin umschlossenen Papierbündel (6) mit beiden Deckblättern (2,3) eines jeden Einbandes im wesentlichen rechtwinkelig zur Bewegungsrichtung der Transportvorrichtung bewegt.

2. Verfahren nach Patentanspruch 1, dadurch gekennzeichnet, daß die Einbände (1) mit den darin umschlossenen Papierbündeln (6) durch eine zweite angetriebene Transportvorrichtung (44, 46, 47, 11, 13, 14) zur Aktiviervorrichtung
3. Verfahren nach Patentanspruch 1 oder 2, dadurch gekennzeichnet, daß die Einbände (1) mit den darin umschlossenen Papierbündeln (6) durch Organe (44, 46, 47) bewegt werden, welche Teile der ersten und der zweiten Transportvorrichtung (44, 46, 47; 44, 46, 47, 11, 13, 14) bilden.

4. Verfahren nach einem der vorhergehenden Patentansprüche, dadurch gekennzeichnet, daß die Einbände (1) mit den darin umschlossenen Papierbündeln (6) mit im Abstand voneinander befindlichen Einbändern bewegt werden.

5. Verfahren nach einem der vorhergehenden Patentansprüche, dadurch gekennzeichnet, daß der Einband (1) kontinuierlich oder schrittweise bei der Aktiviervorrichtung (9) vorbeibewegt wird.

6. Verfahren nach einem der vorhergehenden Patentansprüche, dadurch gekennzeichnet, daß die Bewegung des Einbandes (1) relativ zur Aktiviervorrichtung (9) ohne Gleiten der Außenseite des Rückens (4) auf der Aktiviervorrichtung stattfindet.

7. Verfahren nach Patentanspruch 6, dadurch gekennzeichnet, daß der Einband (1) an der Aktiviervorrichtung (9) im Abstand von dieser vorbeibewegt wird, welche durch wenigstens ein Transportband (52) überbrückt ist, das zwischen der fix angedeuteten Aktiviervorrichtung und dem Einband angebracht ist, wobei die Außenseite des Einbandrückens (4) auf dem Transportband anliegt.

8. Verfahren nach einem der vorhergehenden Patentansprüche, dadurch gekennzeichnet, daß das Papierbündel (6) im und relativ zum Einband (1) zusammengerüttelt wird, bevor das Bindemittel (5) bei Aktivierung, zum Erhärten gebracht worden ist.

9. Verfahren nach einem der vorhergehenden Patentansprüche, dadurch gekennzeichnet, daß das Papierbündel (6) im und relativ zum Einband während der Bewegung zur Aktiviervorrichtung (9) und/oder während der Anfangsphase der Aktivierung zusammengerüttelt wird.

10. Verfahren nach einem der vorhergehenden Patentansprüche, dadurch gekennzeichnet, daß das Papierbündel (6) im und relativ zum Einband (1) zusammengerüttelt wird, während der Einband und das Papierbündel gleichzeitig ge-


12. Maschine zur Herstellung von Broschüren, von denen jede einen von zwei Deckblättern gebildeten Einband, einen dazwischen liegenden Rücken mit einem auf dessen Innenseite aufgebrachten Bindemittel sowie ein zwischen die beiden Deckblätter des Einbandes eingesetztes Papierbündel umfaßt, wobei eine Seitenkante des Papierbündels durch das Bindemittel mit der Innenseite des Rückens verbunden ist, welche Maschine eine Aktiviervorrichtung zur Aktivierung des Bindemittels für die Haftung der Seitenkante des in den Einband eingesetzten Papierbündels am Bindemittel, sowie eine erste angetriebene Transportvorrichtung zur Bewegung der Einbände von der Aktiviervorrichtung zu einem Kühlauf- oder Kühltürgorgan in der Maschine umfaßt, wo das Bindemittel erhaßt und die in die Einbände eingesetzten Papierbündel mit den Rücken der Einbände verbunden werden, dadurch gekennzeichnet, daß die erste angetriebene Transportvorrichtung (44, 46, 47) zwei gegenüberliegende Transporteure (46, 47) umfaßt, welche die Einbände (1) mit den darin umschlossenen Papierbündeln (6) tragen sowie transportieren und welche voneinander im Abstand angeordnet sind, gesehen in einer Richtung rechtwinkelig zur Transportrichtung.

13. Maschine nach Patentanspruch 12, gekennzeichnet durch Organe (44, 46, 47, 52) zur Bewegung der Einbände (1) relativ zur Aktiviervorrichtung (9), wobei die Außenseite des Rückens (4) nicht auf der Aktiviervorrichtung gleitet.

14. Maschine nach Patentanspruch 12, gekennzeichnet durch bewegbare Transportorgane (52), auf dessen einer Seite die Außenseite der Rücken (4) der Einbände (1) aufliegt.

15. Maschine nach Patentanspruch 14, dadurch gekennzeichnet, daß das Transportorgan (52) eine zweite Seite aufweist, die auf der fix angeordneten Aktiviervorrichtung (9) aufliegt und auf dieser gleitet.

16. Maschine nach Patentanspruch 14 oder 15, dadurch gekennzeichnet, daß das Transportorgan aus wenigstens einem dünnen Transport-
band (52) aus wärmelieitendem oder wärme-
durchlässigem Material besteht.

17. Maschine nach Patentanspruch 14 oder 15, 5
dadurch gekennzeichnet, daß das Transportorg-
gan (52) die Aktiviervorrichtung (9) ist, welche
als wenigstens ein beheiztes, bewegbares
Band ausgebildet ist.

18. Maschine nach einem der Patentansprüche 12 10
bis 17, dadurch gekennzeichnet, daß die Akti-
viervorrichtung eine Heizvorrichtung (9) zum
Aufheizen des als Reihe von Perlen aus
Schmelzkleber gebildeten Bindemittels (5) ist.

19. Maschine nach einem der Patentansprüche 12 15
bis 18, gekennzeichnet durch eine Rüttelvor-
richtung (13) zum Zusammenfüllen des Pa-
pierbündels (6) im und relativ zum Einband (1)
bevor das Bindemittel (5) erhärtet ist.

20. Maschine nach Patentanspruch 16, dadurch 20
gekennzeichnet, daß die Aktiviervorrichtung (13)
Organe (87) zum Anpressen des Einbandes (1)
und/oder des Papierbündels (6) gegen die Ak-
tiviervorrichtung (9) aufweist.

21. Maschine nach einem der Patentansprüche 12
bis 20, dadurch gekennzeichnet, daß die
Transporteure (46, 47) mit gleicher Geschwin-
digkeit angetrieben und/oder in konstantem
Abstand voneinander angeordnet sind.

22. Maschine nach einem der Patentansprüche 12 25
bis 21, dadurch gekennzeichnet, daß jeder
Transporteur (46, 47) eine Anzahl von Bögen
(17) umfaßt, wobei zwei benachbarte Bögen in
deinem Transporteur in einem Abstand vonei-
ander angeordnet sind, der etwas größer ist als
die maximale Dicke eines Einbandes (1).

23. Maschine nach einem der Patentansprüche 12 30
bis 22, gekennzeichnet durch eine zweite an-
getriebene Transportvorrichtung (44, 46, 47, 11, 13, 14)
zur Bewegung der Einbände (1) mit
darin befindlichen Papierbündeln (6) zur und
über die Aktiviervorrichtung (9), wobei die
zweite Transportvorrichtung Teile umfaßt, die
mit Teilen der ersten Transportvorrichtung (44,
46, 47) gemeinsam sind.

Revendications

1. Procédé de fabrication de livrets, comprenant
chacun une couverture constituée de deux
plats, un dos situé entre eux, et un agent
adhésif disposé à l’intérieur du dos, ainsi
qu’une laisse de papiers insérée entre les
deux plats de la couverture, un bord latéral de
la laisse étant lié à l’intérieur du dos au moyen
de l’agent adhésif, qui est activé par un dispo-
sitif d’activation, de telle sorte que le bord
latéral de la laisse de papiers inséré dans la
couverture adhère à l’agent adhésif, à la suite
de quoi la couverture est éloignée du dispositif
d’activation, ou vice versa, par un premier
moyen de transport actionné par moteur, de
telle sorte que l’agent adhésif soit amené à se
solidifier, caractérisé en ce que le premier
moyen de transport actionné par moteur (44,
46, 47) déplace les couvertures (1) et les lias-
ses de papier (6) qui y sont logées, les deux
plats (2, 3) de chaque couverture étant sensi-
blement perpendiculaires à la direction de dé-
placement des moyens de transport.

2. Procédé selon la revendication 1, caractérisé
en ce que les couvertures (1) contenant les
liasses de papier (6) sont déplacées vers le
dispositif d’activation (9) par un deuxième
moyen de transport (44, 46, 47, 11, 13, 14).

3. Procédé selon les revendications 1 et 2, carac-
térisé en ce que les couvertures (1) contenant
les liasses de papier (6) sont déplacées par
des moyens (44, 46, 47) faisant partie des
premier et deuxième moyens de transport (44,
46, 47 ; 44, 46, 47, 11, 13, 14).

4. Procédé selon l’une quelconque des revendi-
cations précédentes, caractérisé en ce que les
couvertures (1) contenant les liasses de papier
(6) sont déplacées avec les couvertures écar-
tées les unes des autres.

5. Procédé selon l’une quelconque des revendi-
cations précédentes, caractérisé en ce que la
couverture (1) est déplacée en continu ou pas
t à pas le long du dispositif d’activation (9).

6. Procédé selon l’une quelconque des revendi-
cations précédentes, caractérisé en ce que le
déplacement de la couverture (1) par rapport
au dispositif d’activation (9) s’effectue sans
que l’extérieur du dos (4) glisse sur le disposi-
tif d’activation.

7. Procédé selon la revendication 6, caractérisé
en ce que la couverture (1) est déplacée le
long du dispositif d’activation (9) à une distan-
ce de celui-ci qui est comblée par au moins
une bande transporteuse (52) fixée entre le
dispositif d’activation monté fixement et la
couverture, l’extérieur du dos (4) de la couverture
reposant contre la bande transporteuse.
8. Procédé selon l'une quelconque des revendications précédentes, caractérisé en ce que la liasse de papier (6) est égalisée dans et par rapport à la couverture (1) avant que l'agent adhésif (5), après activation, ait été amené à se solidifier.

9. Procédé selon l'une quelconque des revendications précédentes, caractérisé en ce que la liasse de papier (6) est égalisée dans et par rapport à la couverture lors du déplacement vers le dispositif d'activation (9) et/ou au cours de l'étape initiale d'activation.

10. Procédé selon l'une quelconque des revendications précédentes, caractérisé en ce que la liasse de papier (6) est égalisée dans et par rapport à la couverture (1) au moment où la couverture et la liasse de papier sont simultanément appuyées contre le dispositif d'activation (9).

11. Procédé selon l'une quelconque des revendications précédentes, caractérisé en ce que l'activation réside dans le fait de chauffer l'agent adhésif (5) se présentant sous la forme d'une goutte de colle à fusion.

12. Machine servant à fabriquer des livrets, chaque livret comprenant une couverture constituée de deux plats, un dos situé entre eux, et un agent adhésif placé à l'intérieur du dos, ainsi qu'une liasse de papiers insérée entre les deux plats de la couverture, dont un bord latéral est lié à l'intérieur du dos au moyen de l'agent adhésif, la machine comprenant un dispositif d'activation destiné à activer l'agent adhésif, de telle sorte que le bord latéral de la liasse de papiers insérée dans la couverture adhère à l'agent adhésif, et un premier moyen de transport actionné par moteur destiné à déplacer les couvertures du dispositif d'activation vers un espace de refroidissement ou vers des moyens de refroidissement prévus dans la machine, où l'agent adhésif se solidifiera et les liasses de papier insérées dans les couvertures seront liées aux dos des couvertures, caractérisée en ce que le premier moyen de transport actionné par moteur (44, 46, 47) comprend deux convoyeurs (46, 47) opposés qui supportent et transportent les couvertures (1) contenant les liasses de papier (6) et qui sont disposés à distance l'un de l'autre, vus dans une direction perpendiculaire à la direction de transport.

13. Machine selon la revendication 12, caractérisée par des moyens (44, 46, 47, 52) destinés à déplacer les couvertures (1) par rapport au dispositif d'activation (9), l'extérieur du dos (4) ne coulissant pas sur le dispositif d'activation.

14. Machine selon la revendication 13, caractérisée par des moyens de transport mobiles (52), l'extérieur des dos (4) des couvertures (1) reposant contre une face des moyens de transport.

15. Machine selon la revendication 14, caractérisée en ce que les moyens de transport (52) sont pourvus d'une deuxième face qui repose contre et coulisse sur le dispositif d'activation (9) monté fixement.

16. Machine selon la revendication 14 ou 15, caractérisée en ce que les moyens de transport comprennent au moins une bande (52) finement constituée dans un matériau thermoconducteur ou perméable à la chaleur.

17. Machine selon la revendication 14 ou 15, caractérisée en ce que les moyens de transport (52) sont constitués par le dispositif d'activation (9) qui se présente sous la forme d'au moins une bande mobile chaussée.

18. Machine selon l'une quelconque des revendications 12 à 17, caractérisée en ce que le dispositif d'activation est un dispositif chauffant (9) destiné à chauffer l'agent adhésif (5) se présentant sous la forme d'une goutte de colle à fusion.

19. Machine selon l'une quelconque des revendications 12 à 18, caractérisée par un dispositif d'égalisation (13) destiné à égaliser les liasses de papier (6) dans et par rapport à la couverture (1) avant que l'agent adhésif (5) ne se soit solidifié.

20. Machine selon la revendication 16, caractérisée en ce que le dispositif d'égalisation (13) comprend des moyens (87) destinés à appuyer la couverture (1) et/ou la liasse de papier (6) contre le dispositif d'activation (9).

21. Machine selon l'une quelconque des revendications 12 à 20, caractérisée en ce que les convoyeurs (46, 47) sont entraînés à la même vitesse et/ou disposés à distance constante l'un de l'autre.

22. Machine selon l'une quelconque des revendications 12 à 21, caractérisée en ce que chaque convoyeur (46, 47) comprend un certain nombre de pièces courbes (17), deux pièces
courbes adjacentes sur chaque convoyeur étant écartées selon une distance qui est légèrement supérieure à l'épaisseur maximum d'une couverture (1).

23. Machine selon l'une quelconque des revendications 12-22, caractérisée par un deuxième moyen de transport actionné par moteur (44, 46, 47, 11, 13, 14) destiné à déplacer les couvertures (1) contenant les liasses de papier (6) en direction et sur le dispositif d'activation (9), ce deuxième moyen de transport comprenant des parties qui sont communes avec des parties comprises dans le premier moyen de transport (44, 46, 47).