

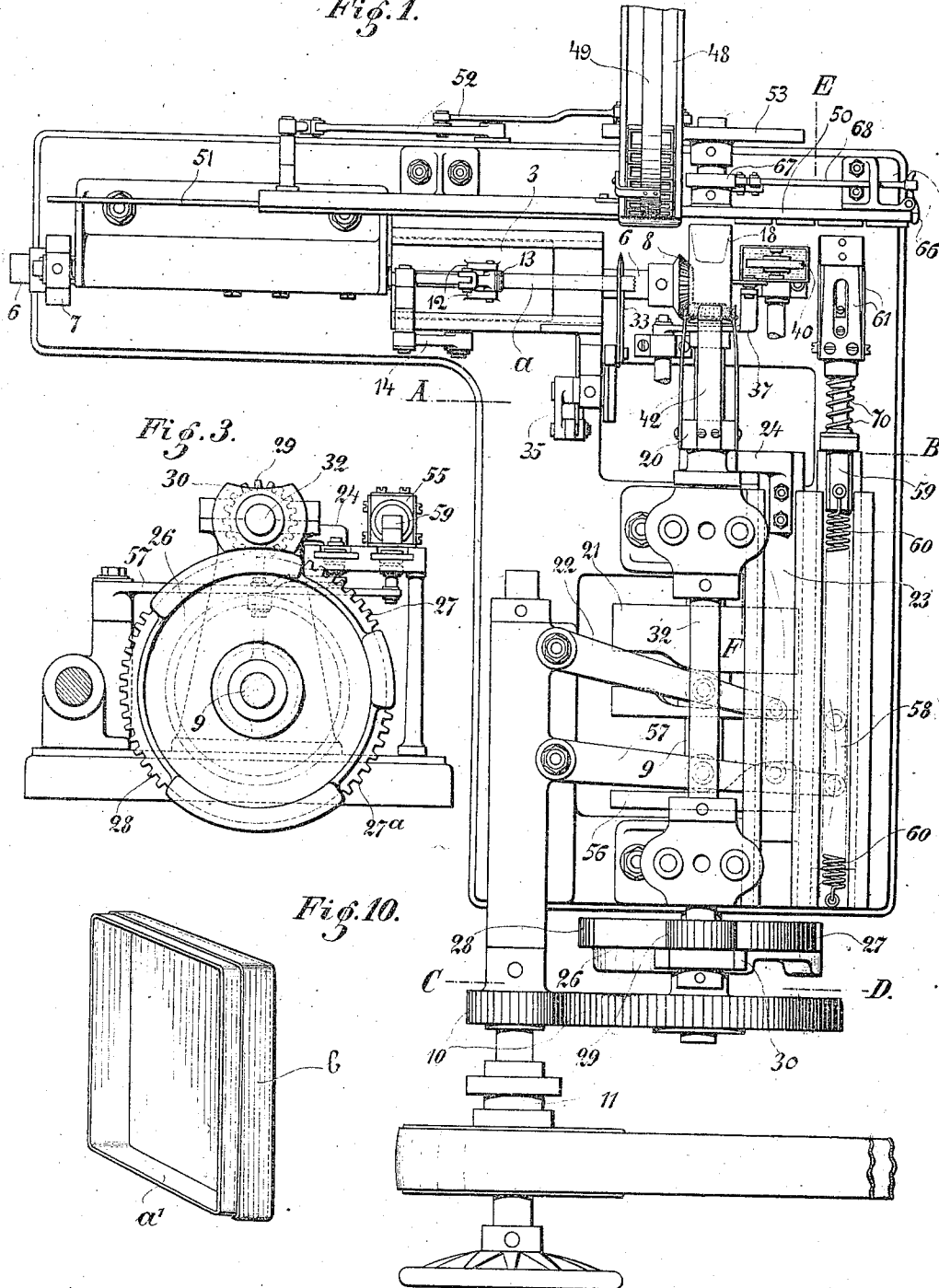
E. JAGENBERG.
MACHINE FOR SECURING NECK STRIPS TO BOXES.
APPLICATION FILED MAY 3, 1910.

996,768.

Patented July 4, 1911.

2 SHEETS-SHEET 1.

Fig. 1.



Witnesses:
Katherine Hoch
Daniel Holmgren

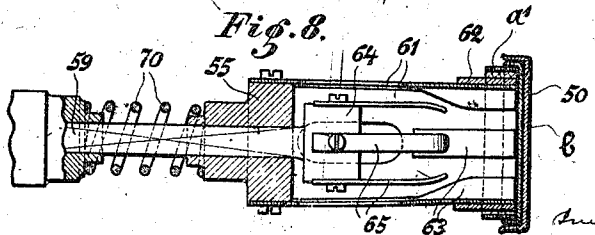
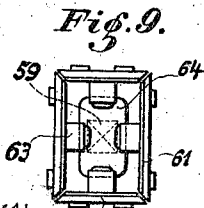
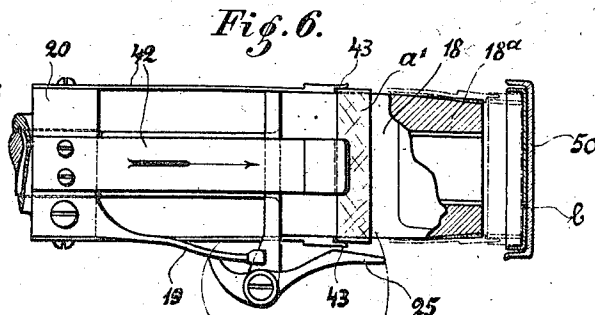
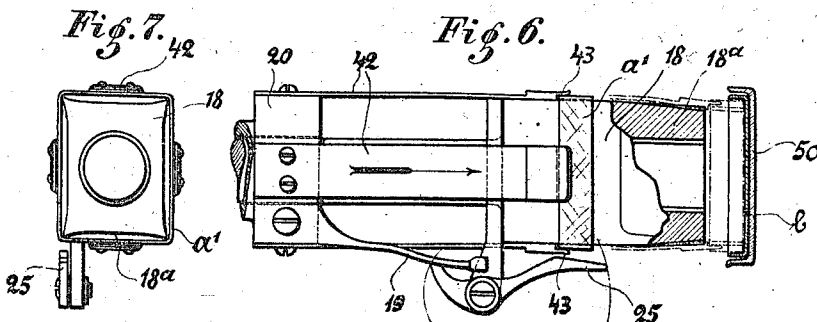
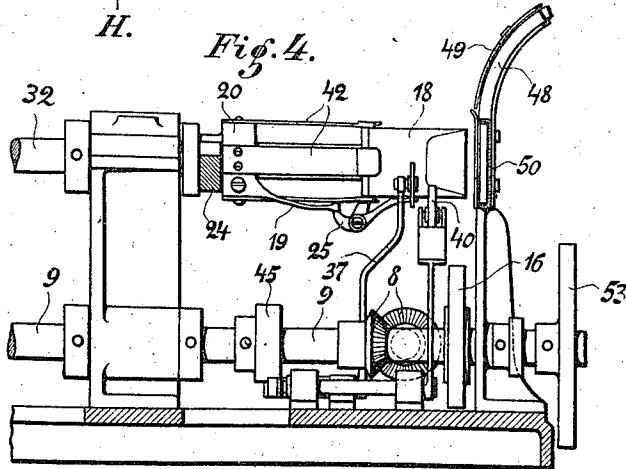
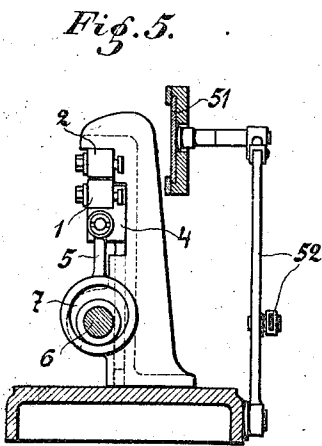
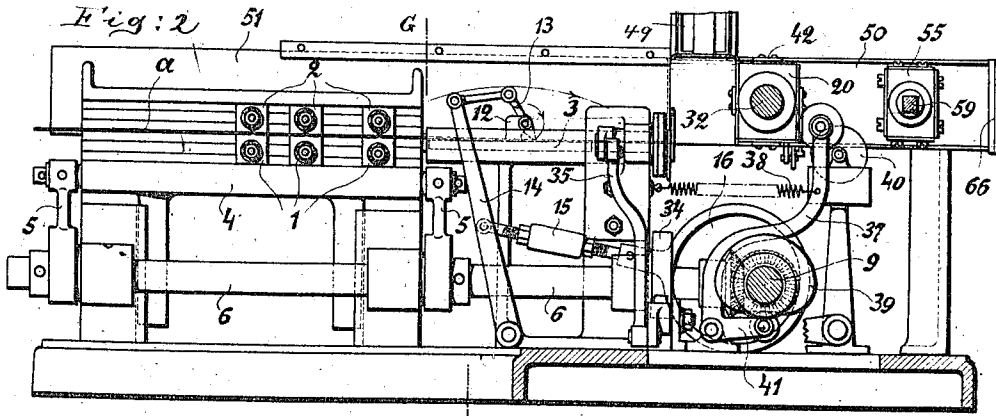
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2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

EMIL JAGENBERG, OF DUSSELDORF, GERMANY.

MACHINE FOR SECURING NECK-STRIPS TO BOXES.

996,768.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed May 3, 1910. Serial No. 559,188.

To all whom it may concern:

Be it known that I, EMIL JAGENBERG, a citizen of Germany, and a resident of Dusseldorf, Germany, have invented a new and improved Machine for Securing Neck-Strips to Boxes, of which the following is a specification.

This invention relates to a machine of novel construction for automatically securing the neck strip to an angular or round box.

The invention comprises means for feeding a web or strip to a mandrel, and means for holding the web to the mandrel while the latter is turned, so that the web is bent to assure the desired form of the neck. The webs are then covered with an adhesive and pressed into the boxes so as to become firmly united therewith.

In the accompanying drawing: Figure 1 is a plan of the machine; Fig. 2 a section on line A-B, Fig. 1; Fig. 3 a section on line C-D, Fig. 1; Fig. 4 a section on line E-F, Fig. 1; Fig. 5 a section on line G-H, Fig. 2; Fig. 6 a detail of the means for holding the web to the mandrel; Fig. 7 an end view thereof; Fig. 8 a longitudinal section through the expansible plunger and cooperating parts; Fig. 9 an end view of Fig. 8, with the slideway and box omitted, and, Fig. 10 a perspective view of the completed box provided with the neck.

The strip or web *a* which is to form the neck is fed between lower and upper jaws 1, 2 to a table 3, the lower jaws being provided with small projections, while the upper jaws are provided with corresponding grooves. Jaws 1 are carried by a vertically movable slide 4 actuated through rods 5, and eccentrics 7 from shaft 6. This shaft is driven by wheels 8 from a shaft 9, which in turn is driven from the main driving shaft 11 by wheels 10.

When a web has been introduced between the jaws slide 4 is raised to provide the web with creases at the lines of folding, and then the slide is lowered, and the web advanced along the table. Table 3 is horizontally movable and is provided with a boss 12, to which is fulcrumed a two arm lever 13, having a tapering lower end. To lever 13 is pivoted an arm 14, fulcrumed to the machine frame and connected to a longitudinally adjustable rod 15, actuated by an eccentric 16 of shaft 9. When jaws 1 descend, arm 14 is swung to the right (Fig. 2) to

turn lever 13 in the direction of the arrow and press the same against the web. In this way the web is clamped to the table, so that by the continued movement of arm 14, the web is together with the table moved toward the right. During this movement the web is carried under a mandrel 18 (which conforms in shape to that of the box, and is shown to be of square form) in such a manner that its rear edge coincides with the rear lower edge of the mandrel. Arm 14 now recedes and web *a* is clamped to mandrel 18 by means of a two arm lever 25 fulcrumed to the latter. One arm of lever 25 lies in the path of a stop 19 carried by a slide 20, which receives motion from shaft 9, by cam 21 and cam lever 22. This lever is connected to a rod 23, a lateral arm 24 of which engages a groove of slide 20. During its retracted position, the stop 19 of slide 20, is located above one of the arms of lever 25, and presses the other arm of the latter upward against the web and mandrel 18, so that the web is taken along by the rotating mandrel and is wound around the same. The mandrel is rotated by shaft 9, which carries a disk 26, having three toothed segments 27, 27^a and 28, of which segments 27, 27^a are of equal size, and half as long as segment 28. During the rotation of shaft 9, the segments are brought successively into engagement with a pinion 29, mounted on shaft 32 of mandrel 18, which is thus intermittently rotated. When the segments are out of engagement with pinion 29, the latter is arrested by means of a disk 30 having concaved sides that are engaged by the convex periphery of disk 26. As segment 27 intergears with pinion 29, mandrel 18 is turned 180°, so that web *a* is bent twice at right angles, and is laid around three sides of the latter.

To slide 20, are secured spring arms 42 that project with their ends over mandrel 18, so that the slide which is rotatably mounted on shaft 32, will with its stop 19 participate in the rotation of the mandrel. While disk 26 turns with one of its convex sides within the concavity of disk 30, web *a* is severed by knives 33. These knives are operated by an eccentric 34 of shaft 6, which by rods 35 is adapted to open and close the knives. After the web has been cut, segment 27^a comes into engagement with pinion 29, so that mandrel 18 is again turned 180°, and the web is completely wound around the same. In order to

cause the web to be wound tightly and smoothly upon the mandrel, an arm 37 is provided which carries a roller, that is pressed against the web by a spring 38. An eccentric 39 by arm 41 fulcrumed upon axis of arm 37 causes arm 37 to recede with its roller from the mandrel, and then the web wound upon the latter is displaced along the same and carried within reach of a gumming roller 40. This movement is accomplished by slide 20, through spring arms 42, which are at their ends provided with incisions or projections 43. These arms are moved by disk 21 and during said movement engage the work piece with said incisions or projections. Normally the gumming roller 40 is retracted somewhat from mandrel 18 by means of an eccentric 45, but as soon as the work piece is brought into alinement with the roller, the latter is pressed by an eccentric against the mandrel and work piece. At this moment segment 28 comes into engagement with pinion 29, and turns the mandrel 360°, so that the web is gummed along its entire length at a portion of its width. After the recession of the gumming roller, slide 20 is by its eccentric further advanced to push the work piece into the box *b*.

The feeding of the boxes is effected by a V-shaped slideway which terminates at its bottom on a level with mandrel 18 and slide 20, 42. The boxes descend along this slide, and are so positioned that when arriving at the bottom, they face the slideway with their open side. To prevent the boxes from tilting in slideway 48, the latter is provided with guide rails 49. With the bottom of slideway 48, a second horizontal slideway 50 is arranged at right angles to slide 48. Along slideway 50 moves a slide 51 actuated from eccentric 53 of shaft 9 by levers 52. Slide 51 moves the bottom box from slideway 48 into slideway 50, and opposite slide 20, 42, the latter during its forward movement thus pushing the work piece *a'* into the box during which operation slideway 50 constitutes an abutment for the box. To permit a ready withdrawal of the work piece from mandrel 18, the latter has a front tapering end 18^a, which is concaved on all of its four sides. Arms 42 are spring-pressed toward each other, and thus press the strip when passing tapering end 18^a into the concavities thereof, so that the strip is shortened on all four sides and may be readily slipped into the box. After the sides have however again straightened out, the strip will be fitted snugly into the box. Slide 20, 42, will now recede, and in the meanwhile retracted slide 51 will push a new box into slideway 50. This second box will displace the first box toward the right, so as to carry it toward a slide 55. This slide operates parallel to slide 20, and is driven by eccentric 56 of shaft 9 and arm

57, link 58 and rod 59. Between rod and slide 55 is arranged a spring 70, so that the slide will yield and move forward.

The slide is provided at its front with four resilient arms 61, the ends of which carry outer jaws 62 corresponding substantially to the width of the box and inner beveled rails or abutments 63, the arms 61 forming an expansible plunger. To the front end of rod 59 is secured a block 64, having four tongues 65. During the advance movement of rod 59, through disk 56 slide 55 and block 64 are simultaneously advanced, until the former with its jaws 62, strikes the bottom of the box moving along slideway 50, opposite to the slide. Block 64 will now alone continue the movement which is permitted by spring 70 and thus impinges with tongues 65, against the inclined faces of rails 63. Spring arms 61 are thus spread to engage web *a'* and press the same against the sides of the box. The latter is held against displacement at its top and bottom by the guide-rails of slideway 50, and at its sides by the flanking boxes, as well as by the slide 51, and by an additional lever 66, secured to the other end of the slideway. This lever is at the proper moment swung sidewise with one of its arms by cam 67 and lever 68, so as to lie against the rearmost box on slideway 50. After the strip has been pasted on, slide 55 and block 64 with its tongues, are by spring 60, withdrawn from the box and lever 66 is swung outward, while a new box is by lever 51 pushed into the slideway. The box at the end of the slideway thus drops out of the same. Beneath the slideway, an additional slideway or conveyor may be provided, upon which the box is dropped, and which transports the same to the place desired.

In lieu of introducing the web in the form of a band, it may be divided into lengths and conveyed to the machine in a creased condition.

I claim:

1. In a machine of the character described, a mandrel, means for folding a web around said mandrel, means for applying glue to the folded web, means for stripping the folded and glued web off the mandrel and inserting it into a box, means for partly contracting the web during said insertion, and means for subsequently expanding the web into contact with the box-walls.
2. In a machine of the character described, a mandrel having a body-section of uniform width and a tapering concaved end-section, means for folding a web around said body-section, and a slide carried by the mandrel and having spring-arms that are adapted to transfer the folded web from the body-section to the end-section of the mandrel and to force said web into the concavities of said end-section.

3. In a machine of the character described, a mandrel having a body-section of uniform width and a tapering concaved end-section, means for folding a web around said body-section, means for applying glue to the folded web, and a slide carried by the mandrel and having arms that are adapted to transfer the folded and glued web from the body-section to the end-section of the mandrel, to force said web into the concavities of said end-section and to subsequently insert the web into a box.

4. In a machine of the character described, a mandrel having a body-section of uniform width and a tapering concaved end-section, means for folding a web around said body-section, means for applying glue to the folded web, a slide carried by the mandrel and having arms that are adapted to transfer the folded and glued web from the body-section to the end-section of the mandrel to force said web into the concavities of said end-section and to subsequently insert the web into a box, and an expansible plunger adapted to expand the web into contact with the box-walls.

5. In a machine of the character described, a mandrel having a body-section of uniform width and a tapering concaved end-section, means for folding a web around said body-section, means for applying glue to the folded web, a slide carried by the mandrel and having arms that are adapted to transfer the folded and glued web from the body-section to the end-section of the mandrel to force said web into the concavities of said end-section and to subsequently insert the web into a box, an expansible plunger adapted to expand the web into contact with the box-walls, and means for feeding the boxes.

6. In a machine of the character described, a slideway adapted to receive a series of boxes, means for inserting a folded web into

each box, an expansible plunger adapted to expand the web into contact with the box-wall and a stop-lever at the end of the slideway to retain the boxes during the operation of the expansible plunger.

7. In a machine of the character described, a slideway, means for feeding a series of boxes along the same, means located opposite said slideway for inserting a folded web into each box, an expansible plunger also located opposite the slideway for subsequently expanding the web into contact with the box-walls which slideway constitutes an abutment for the boxes during said inserting and expanding operations.

8. In a machine of the character described, means for inserting a folded web into a box, means for feeding the box from the web inserting means into axial alinement with web expanding means, said expanding means comprising a reciprocative rod, a spring-influenced slide movable thereon, yielding arms adapted to be projected into the box and to engage the box bottom upon an advance of the rod, and means on the rod for spreading the arms upon a continued advance of said rod.

9. In a machine of the character described, means for inserting a folded web into a box, means for feeding the box from the web inserting means into axial alinement with web expanding means, said expanding means comprising a reciprocative rod, a spring-influenced slide movable thereon, yielding arms adapted to be projected into the box, beveled abutments on said arms, and tongues fastened to the rod and adapted to engage said abutments.

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Witnesses:

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