

(No Model.)

2 Sheets—Sheet 1.

A. L. GARVER.
BOOK BACKING MACHINE.

No. 519,997.

Patented May 15, 1894.

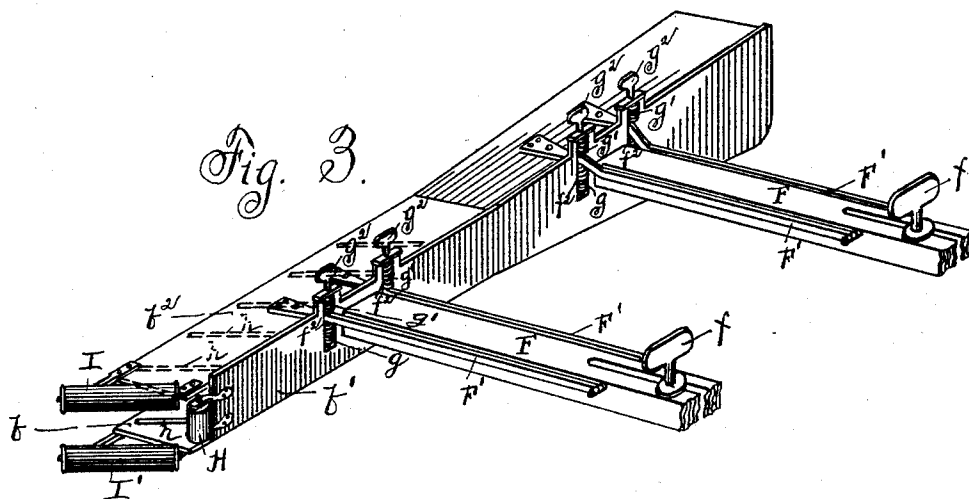


Fig. 4.

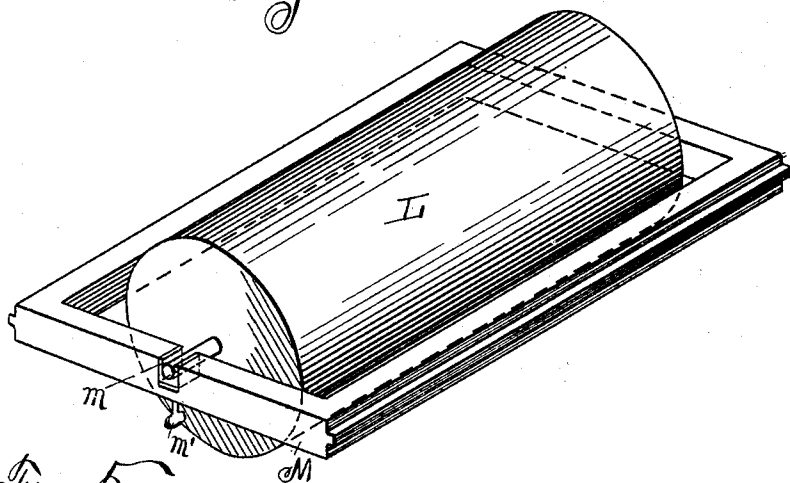
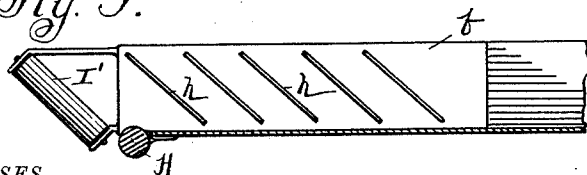


Fig. 5.



WITNESSES

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Phil. Massi.

INVENTOR

A. L. Garver.
E. W. Anderson
his Attorney

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2 Sheets—Sheet 2.

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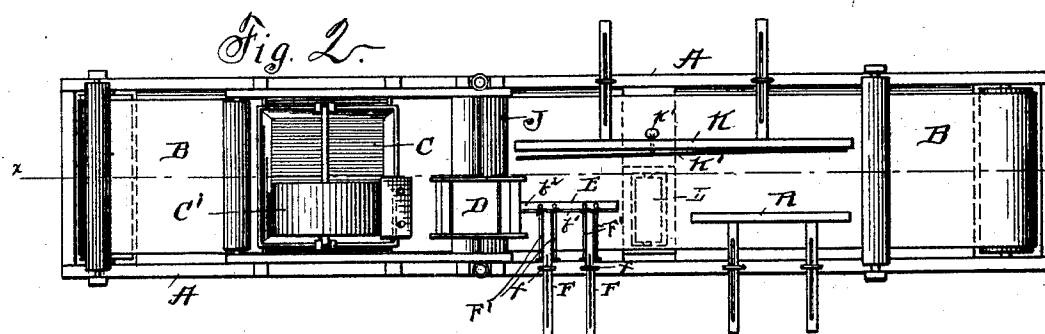
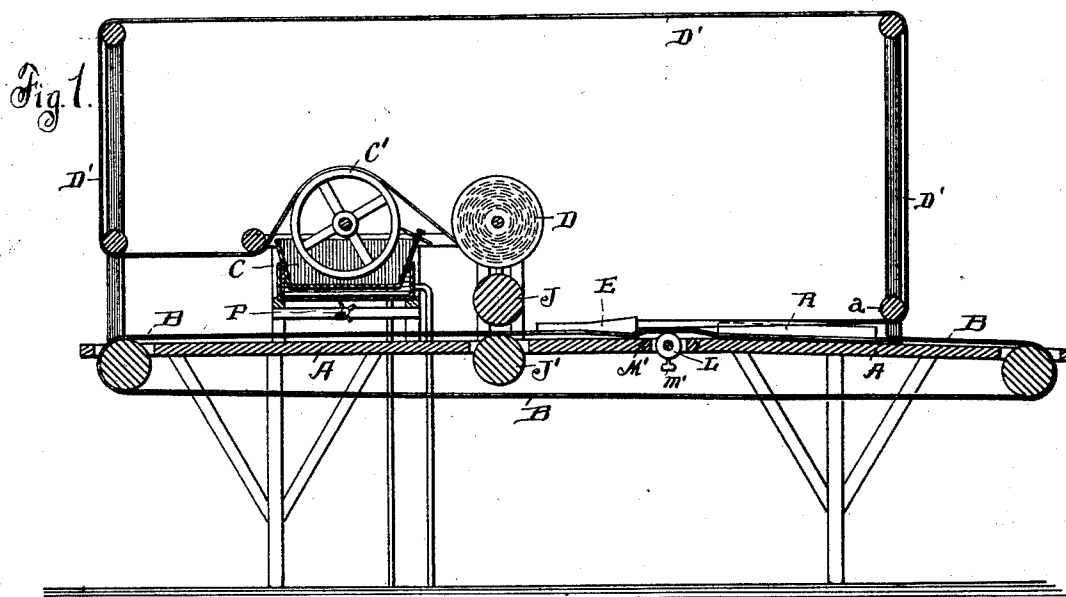
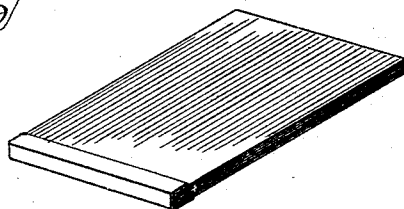


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE

ABRAHAM L. GARVER, OF ROARING SPRING, PENNSYLVANIA.

BOOK-BACKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 519,997, dated May 15, 1894.

Application filed December 6, 1893. Serial No. 492,928. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM L. GARVER, a citizen of the United States; and a resident of Roaring Spring, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Backing-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a longitudinal section of the machine embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a perspective view of the tape former removed. Fig. 4 is a perspective view of elevating roll. Fig. 5 is a sectional view of tape former and Fig. 6 is a perspective view illustrating work performed by the invention.

This invention has relation to certain new and useful improvements in machines for applying backing or binding strips to books, tablets, pads, and similar articles, and it consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

The object of the invention is to provide a machine which will rapidly and satisfactorily apply to books, tablets, pads, &c., the strip of tape, or other fabric commonly used to reinforce the backs, or connect the covers, of such articles.

Referring to the accompanying drawings illustrating the invention, the letter A designates a suitable frame and table, upon which the operative parts of the machine are supported.

B designates an endless belt or apron arranged to revolve longitudinally around said table. C designates a glue or paste pot or tank supported over said table. C' is a glue wheel turning in said pot or tank, and D is a tape carrying reel or spool. The tape D' from this reel or spool passes over the wheel C' from which it receives on its under surface a proper coating of adhesive material. From this wheel the tape passes over a series of carrying pulleys and forward to the front of the glue or paste pot, being guided by a pulley or roll *a* into a

folder or tape former E. Owing to the length of tape which is kept unwound at all times, by reason of the several carrying devices over which it is caused to pass, the glue or adhesive material has time to sufficiently set before the tape passes into the folder and is applied to the books. The said folding or tape-forming device comprises an elongated passage, -shape in cross-section and formed by a bottom piece *b*, a vertical back piece *b'*, and a movable top piece *b''*. This top-piece is designed to be capable of a vertical movement toward and away from the bottom piece to adapt it to different thicknesses of books, pads, or tablets, and to different widths of tape, and is also designed to have a yielding support. While I do not wish to limit myself to any particular means for effecting these results, as various ways may be devised, I have shown means which may be employed, and which will now be described. The tape former or folder is adjustably supported upon the table by means of slotted arms F, F, engaged by set-screws *f*, *f*, thus allowing the device to be adjusted properly to the tape as it comes from the carrying devices. Secured to the top piece *b''*, are arms F' which are also hinged or pivoted to the side faces of the arms F, and which are arranged to have vertical play in slots *f''* formed in the vertical portion *b'*. Seated in said slots are springs *g* upon which said arms rest. Springs *g'* are also placed upon said arms, adjusting screws or devices *g''* being provided to act on said springs, and thereby depress or elevate the said top portion to the desired adjustment, said top portion working inside the vertical portion *b'*. The top and bottom portions are inclined upwardly at one end, and the vertical portion *b'* is made to gradually widen toward the receiving end of the device, so as to enable it to better receive the unformed tape, and gradually to form it to the desired -shape. The center of the guide roll or pulley *a* is in substantially the same horizontal plane as the center line of the formed tape. The upper face of the bottom portion *b*, and the lower face of the upper portion *b''* are usually formed at the discharge end portion with oblique corrugations or ribs *h* the purpose of which is to act on the tape with a tendency to work or draw it toward the book, or other article, as

will hereinafter more fully appear. Toward the discharge end of the tape former is journaled a vertical roll H for the purpose of guiding and setting the tape firmly and smoothly to the back of the article. At the discharge end portion of the former are two horizontal rolls I, I' one above and one below, these rolls being journaled obliquely, so that they not only press and set the tape firmly at the top and bottom but they also have a tendency to draw it closely against the back of the book, or other article. I may however omit the rolls H, and I, I'. Just back of the tape former are two transverse rolls J, J' between which passes the upper portion of the endless belt or carrier, and between which pass the books or other articles as they come from the former. These rolls not only again set the tape, but they create a tension on the tape to constantly draw it through the former.

K is a guide for the books or other articles, being parallel with the tape former, and capable of adjustment toward and away from the latter to adapt the machine to articles of different lengths or widths.

K' is a spring or spring device on the bearing side of the guide, and acting to press the books into the open side of the tape former and into the tape. k' is a set-screw for adjusting said spring.

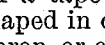
L is a short roll placed transversely underneath the endless apron or carrier just forward of the point where the articles to be backed pass into the tape former and working in a cut-away portion of the table. The purpose of this roll is to elevate the apron to the proper degree to raise the book in proper position to enter the tape former in a true manner. Suitable means are provided to permit this roll to be adjusted vertically, and also in an endwise direction to bring it into proper relation to the book. This may be accomplished in any suitable manner. In the drawings I have shown the roll as journaled in bearing m vertically slidable in a frame M, and adjusted by screws m'. The frame M is arranged to slide endwise in guides M'. Other mechanical devices may, however, be employed for the purpose of adjusting this roll. Underneath the glue pot or tank I usually place a fan P which causes a circulation of the heated air, around the pot or tank, and thus greatly facilitates the drying and setting of the glue on the articles as they are delivered.

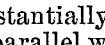
The operation is as follows: The books, pads, tablets, or other articles to be backed, or the blanks from which such articles are subsequently to be cut to the proper size, are placed on the endless belt or apron B, and are carried along into the tape former, being elevated by the roll L and guided by the guide K, the edge to be backed being embraced by the formed tape. The spring K' presses the article against the tape, and the tape is drawn against the article by the corrugations h, and also by the rolls H, and I, I', (when the latter

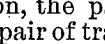
are employed). The already glued and formed tape is thus caused to adhere smoothly and firmly to the back and to top and bottom of the article adjacent to the back. After leaving the forming device, the bound articles are carried by the endless belt or apron between the rolls J, J', which are set in such position that the center line between the two is in substantially the same horizontal plane as the roll or pulley a, and the center line of the tape former. After being delivered from these rolls, the tape is cut either by hand, or by means of a suitable mechanical device. As the books, &c., pass under the glue pot, the hot air therefrom dries and sets the glue. In order to permit the books, &c., to be fed underneath the pulley or roll a, the receiving end portion of the apron is depressed, as shown. It will be seen that the books, &c., in passing through the tape former, aid in the forming of the tape.

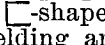
R is a short strip which is arranged to depress the apron or carrier out of contact with the tape, in front of the tape former.

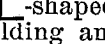
Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for the purpose herein described, the combination with an endless apron or carrier, and devices for carrying the tape or backing strip and for applying adhesive material thereto, of a tape forming device substantially -shaped in cross section, and adjacent to said apron or carrier, and a guide for directing and forcing the edge of the article to be backed into said tape forming device and into the tape shaped thereby, substantially as specified.

2. In a machine for the purpose described, the combination with an endless apron or carrier, and devices for carrying and guiding the tape or backing strip, and for applying adhesive material thereto, of an elongated tape forming device of substantially -shape in cross section, a guide parallel with said tape forming device, and a spring device carried by said guide, substantially as specified.

3. In a machine for the purpose described, the combination of the endless carrier, the tape guiding roll or pulley over the receiving end of said carrier, the tape former having a -shape in cross-section, the parallel guide, its spring device, and a pair of transverse rolls between which the said carrier passes, said rolls being situated just beyond the discharge end of said tape former, substantially as specified.

4. In a machine for the purpose described, a tape forming device -shape in cross-section, and having a yielding and adjustable top portion, substantially as specified.

5. In a machine for the purpose described, a tape forming device, -shaped in cross-section, and having a yielding and adjustable top portion, and oblique corrugations on the opposite faces of the top and bottom portions thereof, substantially as specified.

6. In a machine for the purpose specified, a tape forming device, comprising an elongated -shape in cross-section, a yielding and adjustable top portion for said passage, a vertical roller journaled in said passage near its discharge end, and horizontal rollers adjacent to said vertical roller, one above, and one below, substantially as specified.

7. In a machine for the purpose specified, a tape forming device, comprising an elongated passage -shaped in cross-section, and larger at one end portion than at the other, a yielding and adjustable top portion for said passage, oblique corrugations or ribs on the bottom and top portions of said passage, a vertical roller journaled therein near its discharge end, and oblique horizontal rollers adjacent to said vertical roller, one at the top and one at the bottom.

8. In a machine for the purpose described, the combination of the endless carrier, the tape roll *a*, the tape former -shape in cross-section, the elevating roll *L*, forward of said tape former, the guide *K*, parallel with the former, and the rolls *J*, *J'* back of said tape former, substantially as specified.

9. In a machine for the purpose described, the combination of the frame or table, a series of tape-carrying rolls supported over said table, an endless apron or carrier, working around said table, a tape forming device into which the tape passes from its carrying rolls, an elevating roll underneath the apron forward of said tape forming device, the rolls *J*, *J'* back of said device, and a glue pot supported over the delivery part of the said carrier, whereby its heat is utilized to dry the work, substantially as specified.

10. A machine for applying backing strips to tablets &c., comprising a frame or table, an endless apron or carrier, a tape former -shaped in cross-section and into which the tape is guided from its carrying and gluing devices, the elevating roll *L*, the guide *K*, and spring *K'*, and the rolls *J*, *J'*, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

A. L. GARVER.

Witnesses:

PHILIP C. MASI,
GEORGE H. PARMELEE.