

April 1, 1958

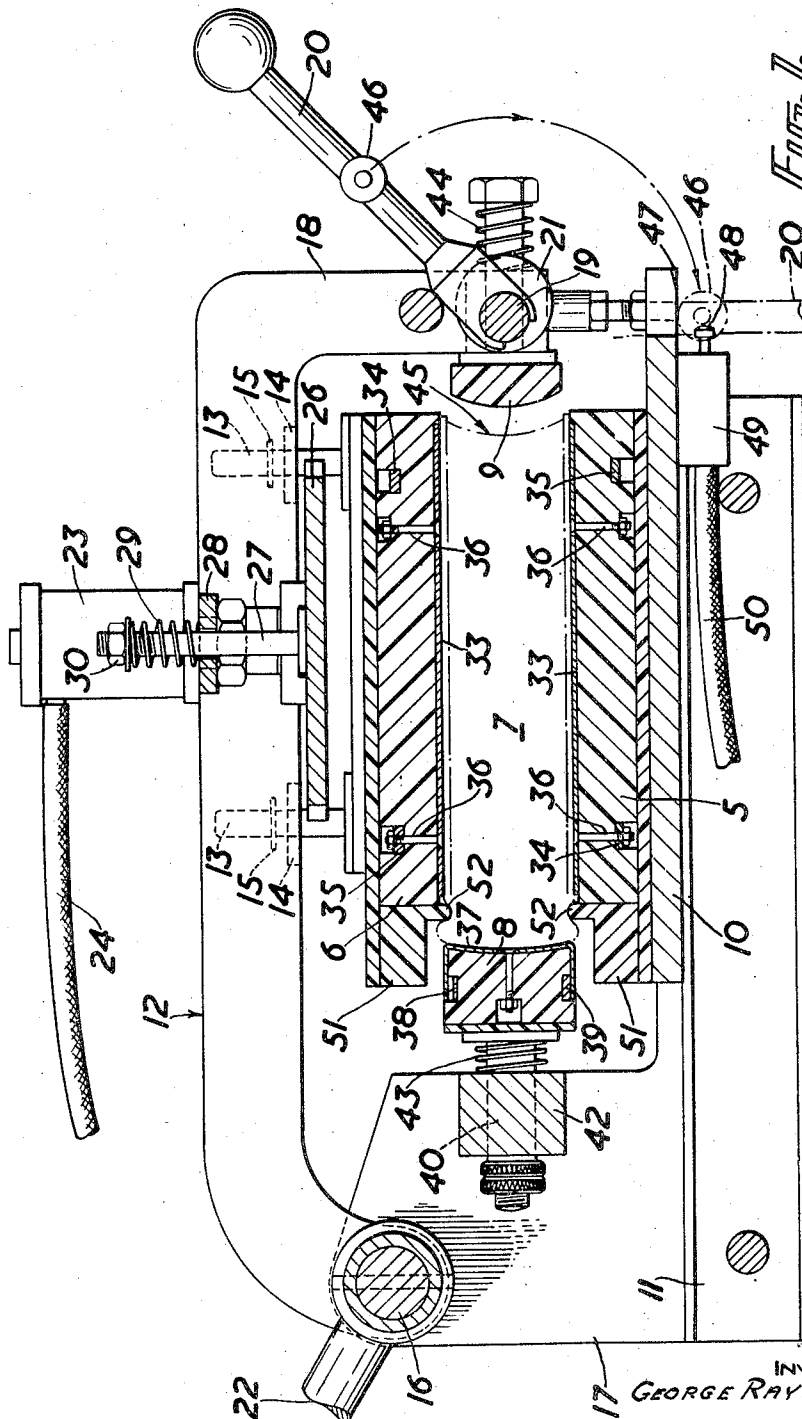
G. R. L. WEBB

2,829,228

CASING OR COVERING OF BOOKS

Filed May 10, 1955

3 Sheets-Sheet 1



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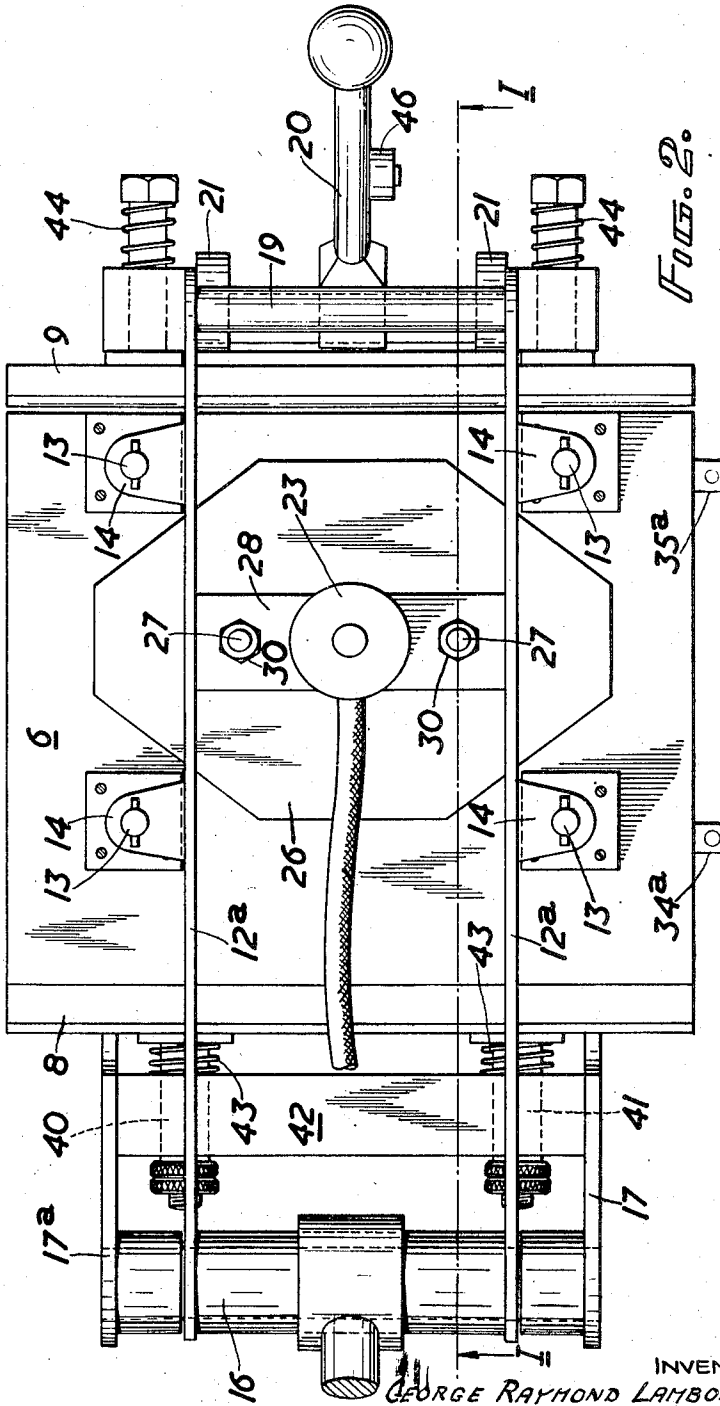


FIG. 2.

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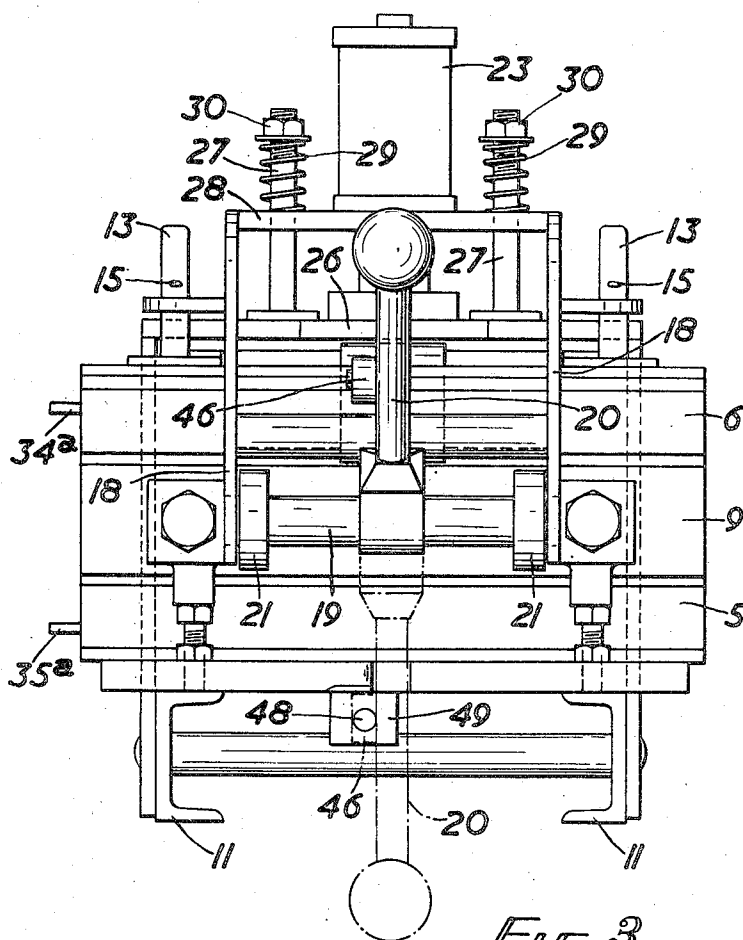


FIG. 3.

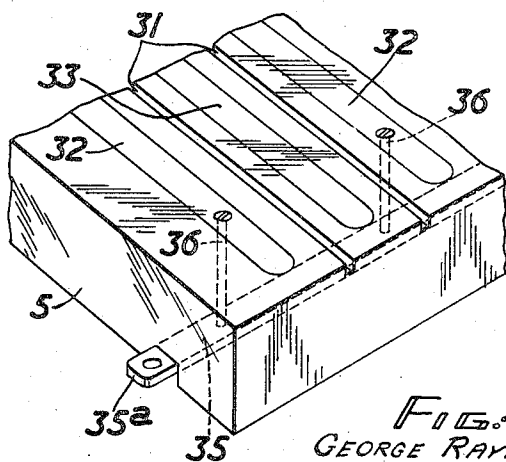


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1

2,829,228

CASING OR COVERING OF BOOKS

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3 Claims. (Cl. 219—10.53)

This invention relates to the casing or covering of books.

In the casing or covering of books, i. e., the application of a cover to the bound book—usually referred to in the trade as its "casing"—the procedure is first to apply a glue, paste or other adhesive to the ends of the sheets at one end or side of the bound book and then apply the casing or cover causing it to adhere firmly to the pasted ends of the sheets.

This latter step is usually accomplished by placing the cased or covered book in a press and letting it remain there until the adhesive is thoroughly dry, so that any warping or distortion is prevented. This is an inconvenient process in that it is slow and involves the use of a number of presses which are costly and take up considerable floor space. For this reason machinery has already been proposed by means of which the drying process is expedited by the application of direct heat to the cover of the book. Such known machines, however, involve complications, and although satisfactory in practice, so far as their functioning is concerned, they are expensive in capital outlay and thus only suitable for large scale production.

There are, however, large numbers of book binding establishments of small and medium capacity, and the object of the present invention is to provide a method and apparatus which in ultimate function compares favourably with the known methods and machinery but will be far less costly to operate and install.

The method according to the present invention consists in applying an adhesive to the appropriate areas of a bound book or to a cover to be secured to the bound book placing the cover on the bound book after the adhesive has been applied, placing the bound book with the cover applied thereto in a press to press the cover against the book at the areas to which adhesive has been applied and finally passing a high frequency electric current into, through or around said bound book and cover to expedite the drying of the adhesive without the application of direct heat.

The apparatus for carrying out the invention consists broadly of a press comprising pressure members made of insulating material and adapted to apply pressure to the bound book, said pressure members being provided with a plurality of spaced electrodes adapted to be connected with a source of electric current and to cause a high frequency electric current to pass into, around or through the bound book and cover.

In order that the invention may be more clearly understood one particular embodiment thereof will now be described, by way of example, with reference to the accompanying drawings wherein:

Figure 1 is a vertical section through the apparatus according to the invention on the line I—I of Figure 2,

Figure 2 is a plan view thereof,

Figure 3 is a front elevation of the apparatus and,

Figure 4 is a fragmentary view on an enlarged scale of one of the pressure members of the apparatus.

2

Referring now to these drawings the apparatus comprises generally a pneumatically operated press having two horizontally disposed pressure members 5 and 6 between which a bound book 7 is adapted to be pressed under pneumatic pressure, whereby the sides of the cover are pressed firmly against the bound book, a pressure member 8 adapted to press resiliently against the back of the bound book under spring pressure, whereby the back of the cover is pressed firmly against the back of the book, and a pressure member 9 adapted to be pressed mechanically against the front of the book to press the book against the pressure member 8. The lower pressure member 5 is in the form of a block rigidly mounted on a plate 10 which is in turn rigidly mounted on a supporting base or frame formed from I-section irons 11. The upper pressure member 6 is of the same construction and dimensions as the member 5 but is displaceable relative to the pressure member 5. The member 6 is suspended from a frame structure 12 by means of four guide posts 13 which pass through perforated lugs or eyelets 14 welded or otherwise secured to members of the frame structure 12. The posts 13 are vertically slidable in said apertured lugs or eyelets 14 and are retained therein by pins 15 which pass through holes in said posts. The external diameter of the posts 13 is substantially smaller than the diameter of the apertures in the lugs or eyelets 14 whereby the pressure member is not only vertically displaceable but is permitted a limited amount of angular movement relative to its own plane, that is, is able to tilt slightly out of its own plane in all directions. By this means it is ensured that the pressure member 6 will impart an even equally distributed pressure over the whole upper surface of the bound book. The frame structure 12 from which the pressure member is suspended comprises two arms 12a which are each connected at one end to a pivot 16 mounted between two supports 17, 17a rigidly mounted on the base or frame 11. The arms 12 are each provided at the opposite end with a leg 18 and between the two legs 18 is a shaft 19 rotatably mounted in suitable bearings in said legs 18 and to which is keyed a hand operated lever 20 and a pair of cams 21, the construction and purpose of which is hereinafter more fully described. By virtue of the frame structure 12 being pivoted at 16 said structure, with the pressure member 6, can be swung out of its operative position (Figure 1) to enable a bound book 7 to be placed on the pressure member 5. On the pivot 16 is rigidly secured an arm 22 carrying at its outer end a counterweight for facilitating the swinging of the frame structure 12 and the pressure member 6 into and out of operative position. Also mounted on the frame structure 12 is a

the pressure plate 26 will impart an even equally distributed pressure on the pressure member 6.

Each of the pressure members 5 and 6 is formed from a block of insulating material and is provided in its operative face with a plurality of spaced parallel grooves 31 and between these grooves electrodes 32, 33 are embedded in the material of the block with their upper faces exposed and flush with the upper operative surface of the block. In grooves or channels in the opposite or inoperative face of the block forming the pressure member are a pair of conductor bars 34, 35 which are connected with the electrodes 33 and 32 respectively by means of conductor pins 36. The conductor bars 34 and 35 are provided at one end with terminals 34a and 35a respectively for connecting them to a suitable source of electric current. As will be understood from the drawing the conductor bar 34 is connected with one series of electrodes 33 and the other conductor bar 35 is connected with the other alternating series of electrodes 32.

The pressure member 8, which is adapted to press against the back of the bound book, as will be clear from Figure 1, is provided with an inwardly curved or concave operative surface to ensure that pressure is distributed evenly over the outwardly curved or convex back of the book and this operative surface of the pressure member 8 is provided with a series of spaced electrodes 37 in a similar manner to the pressure members 5 and 6, except that in the case of the pressure member 8 the electrodes 37 pass round the upper and lower edges of said member and are connected directly with contact bars 38 and 39, the contact bar 38 being connected with one series of electrodes and the contact bar 39 being connected with another alternating series of electrodes, both contact bars being connected with a source of electric current. The pressure member 8 as will be seen from Figures 1 and 2 is mounted on a pair of guide rods 40, 41 which pass through a cross member 42 fixed between the two supports 17, 17a and a compression spring 43 is arranged on said guide rods 40, 41 between the pressure member 8 and the cross-member 42 whereby the said pressure member 8 is urged towards the back of the book being pressed.

In operation the upper or movable pressure member 6 is swung out of the operative position shown in Figure 1 by swinging the frame structure 12 upwards about its pivot 16 with the hand lever 20 remaining in its inoperative position shown in the drawings. A bound book which is to have its cover applied is coated with adhesive at the areas where the cover is intended to adhere, usually to the back of the book and to the outer surface of the inner cover leaf, and the cover is then placed in position on the bound book. The book with the cover in position is then placed on the lower fixed pressure member 5 as shown at 7 in Figure 1 with the back of the book in contact with the resilient pressure member 8. The frame structure 12 with the upper pressure member 6 is then swung into the operative position shown in Figure 1. When in this position the hand lever 20 is moved in the direction of the arrow from its inoperative position shown in full lines into its operative position partly shown in chain dotted lines. The downward movement of the lever 20 first causes the cams 21 to rotate and engage the rear side of the pressure member 9 and force it forward against the action of springs 44 into contact with the front edges of the leaves of the book at 45 thus pressing the book firmly against the opposing pressure member 8 against the action of the spring 43. During the continued downward movement of the lever 20 a roller 46, mounted on the lever, engages under an abutment 47 and thus pulls the frame structure 12 and the upper pressure member 6 downwards thus causing the pressure member 6 to be pressed downwardly onto the upper side of the book 7. The book 7 is thus subjected to a degree of mechanical pressure between the pressure members 5 and 6. After passing the abutment

47 the roller 46 on the lever 20 engages a plunger 48 of a pneumatic valve 49 which is connected with the source of compressed air or other gas through a flexible hose 50. Operation of the valve 49 in this manner results in compressed air or other gas being fed to the cylinder 23 whereby the piston therein operates to press the pressure plate 26 downwards against the action of the spring 29 whereby pneumatic pressure is applied to the pressure member 6 and the bound book 7 is subjected to maximum compression. Simultaneously with or just after the operation of the valve 49 the lever 20 operates an electric switch which connects the conductor bars 34, 35, 38 and 39 to a source of electric supply. Thus, current is caused to flow through the electrodes 32, 33 and 37, via transformers or other known means, whereby a field of high frequency current is established. This field of high frequency current is caused to pass into the bound book and thus set up local heat and expedite the drying out of the adhesive previously applied between the bound book 7 and its cover.

The method and apparatus according to the invention has the special advantage that adhesives with a fairly high moisture content can be used, for the current which passes into, around or through the book is more easily conducted in the presence of moisture, and this ensures that the electric current accomplishes the drying out process in a short space of time. The electric switch and its connections are not shown in the drawings but may be arranged in any convenient manner known to those skilled in the art.

The pressure member 9 is mounted, as will be seen from Figures 1 and 2, in a similar manner to the pressure member 8 and is provided with an outwardly curved or convex operative face to coincide with the inwardly curved or concave surface of the front 45 of the bound book. Each pressure member 5 and 6 is provided at the end adjacent the back of the book with a member 51 having a longitudinal rib 52 adapted to press the cover of the book inwards at the position where the side cover portions join the part of the cover which covers the back of the book.

The length of time the bound book remains in the press will of course depend upon the size of the book, the type of adhesive used and so on. When the operation above described is completed the lever 20 is moved back to its inoperative position, thereby breaking the electric and pneumatic circuits and the frame structure 12 swung back to open the press to permit the book 7 to be removed, another book to be placed in position and the operation repeated.

The method and apparatus according to the invention can be used on all grades of material commonly used in the binding of books, but provision must be made in the shaping of the electrodes to provide blanked out portions of the field of current to prevent metal of foils used in gold lettering, for example, to prevent direct conduction of the current, which might set up localised heating and thereby mar or injure the outside of the book cover.

5

ber, said pneumatic pressure means including a pressure cylinder connected with a source of pressure fluid supported upon said frame member and a plunger mounted within said cylinder connected to said upper plate for selectively effecting movement of said upper plate relative to said lower plate to compress a book and casing therebetween, a first series of spaced electrodes and a second series of spaced electrodes mounted in alternate sequence upon the facing surfaces of said spaced pressure plates, and high frequency alternating current supply means connected to said electrodes for supplying a high frequency current thereto.

2. Apparatus for applying a casing to a bound book as set forth in claim 1, further comprising guide posts depending from said frame member, said upper plate member being slideably and tiltably supported upon said guide posts for movement in response to actuation of said pneumatic pressure means for uniformly distributing pressure therefrom to the book and casing.

3. Apparatus for applying a casing to a bound book comprising, in combination, press means comprising spaced flat plates for clamping the sides of a casing to the sides of a bound book, means for selectively moving said flat plates substantially perpendicularly relative to each

6

other, a pressure member for pressing the back of the casing against the bound book, a positioning member for urging the leaves of the book against the back of the casing, electrodes carried by said flat plates and said pressure member, switch means for connecting said electrodes to a source of high frequency alternating current, and operating means for sequentially moving said positioning member toward said pressure member and said movement of said plates toward each other.

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