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METHOD OF CREASING THE JOINTS OF BOOKS

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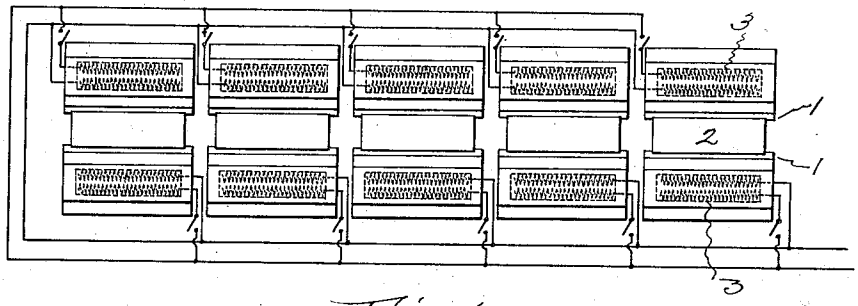


Fig. 1

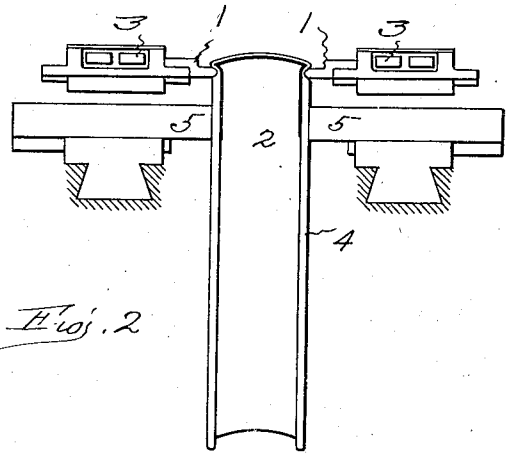


Fig. 2

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METHOD OF CREASING THE JOINTS OF BOOKS

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7 Claims. (Cl. 11—1)

This invention relates to a method of placing the joints in the covers of books with respect to the fillers, and securing the covers to the fillers adjacent the joints, after the covers have been applied. This method is particularly serviceable for practice in connection with automatic machines which are capable of casing-in many hundreds of books per hour and which are found in binderies that produce large numbers of books, although it is, of course, valuable for use in small binderies.

It is common practice to glue crash and paper to the backs of the stitched signatures for strengthening the backs and then paste the waste leaves and apply the covers. Following this beaded binding boards or ribbed plates are inserted between the books with the beads or ribs placed to form the cover joints, and the books stacked in presses and subjected to pressure for several hours until the adhesive has hardened and the cover joints are set. It has also been proposed to insert lining sheets and dry adhesive-impregnated sheets between the outer sheets of signatures and their covers, and then press the books between heated dies or plates until the adhesive softens and the covers are secured to the lining sheets.

The object of the present invention is to provide a method which obviates the necessity of the employment of press boards and also placing the books in a press, thereby saving the cost of the boards, which in large binderies amounts to many thousands of dollars, eliminating the cost of and space occupied by a press, etc., by making that space available for other purposes, dispensing with the labor of inserting the boards between the books and stacking the books in and removing them from a press, and saving the hours lost while the books are in a press. The present method may also eliminate the time, labor and expense of inserting extra sheets—lining and dry adhesive—and expensive heated dies or plates for softening the adhesive and pressing the covers to the signatures. The method not only effects economies in time, labor and apparatus but produces better, more uniform and stronger joints for the covers of the books than the old methods, without injuring or defacing the material of the covers.

The object set forth is attained by submitting the books, closely following the application of the covers, to a plurality of compressions at the joints, as by joint creasing jaws, and also to a plurality of heat applications at or adjacent the joints, each of which acts upon a book but a very short interval. The pressure of the individual compressions is not heavy enough to cut or mar the material of the covers, and the heat of the individual heat applications is not high enough to scorch or discolor the material of the covers, but the total pressure and heat radiated from the successive applications is sufficient to set the creases and the cover attaching adhesive at the joints. The heat can be applied through joint creasing jaws, and the compressions can be made by a series of joint creasing jaws, and all such sets of jaws may be caused to act on a number of books at the same time so that the pressures and heat will be applied equally and thus the joints will be uniform and the covers not liable to be pulled from the books at the joints.

The accompanying drawing illustrates the best mode of carrying out the method of my invention of which I am now aware. Fig. 1 is a diagrammatic representation of a series of electrically heated creasing jaws with a book between each set of jaws.

Fig. 2 is, on larger scale, an elevation showing a book between a set of heated creasing jaws, and a set of carrying jaws that may be employed to transfer the books from station to station, that is, from one set of creasers to the next set.

This method may be practiced by providing a plurality of pairs of creasing jaws 1 located in line with the spaces between the jaws of each pair sufficiently wide to allow the books 2 which are to be creased to be passed between the jaws from one pair to the other. The jaws are suitably mounted so that those of each pair may be moved toward and from each other, independently or in unison, either by manual means or mechanically operated means, to effect the same pressure or different pressures against the books which are passed between them.

Adjacent the creasing jaws are means whereby they may be heated, electrical heaters 3 being indicated. The heaters are movable with the creasing jaws and are controllable so that all the jaws may be heated to the same temperature, or to different temperatures. Five pairs of heated jaws are illustrated but there may be more or fewer depending upon the desired conditions of heat and pressure to which the books are to be subjected to form the creases.

The books, say immediately after the covers 4 have been pasted to the waste or outside leaves, for example as by such a machine as is illustrated in U. S. Patent #1,765,349, June 17, 1930, are passed between the jaws 1 from one pair to the other, dwelling a very short interval between

each pair, during which interval of dwell the heated creasing jaws are closed so as to hot press the creases in the covers. The books may be carried from one pair of creasing jaws to the next by clamping jaws 5 mounted so that they can be closed against the covers, then moved transversely to transfer the books to the next pair of jaws and finally opened and returned to starting position. The books may be carried between the heated creasing means 1 by a continuously moving conveyor, or by hand.

Many different kinds and qualities of material are employed for covering books, some material being coarse and heavy and some thin and delicate, and the creases are of different sizes and shape. By practicing the present method the heating and pressing of the creasers can be regulated according to the material on the outside of the covers. The pressing force may be started light and increased gradually until the succession of pressures produces the desired creases without cutting, ruffing or marring the cover material. The heat applied during the short intervals of pressing by the creasers may be comparatively low at each station so as not to burn, scorch or discolor the cover material, but the accumulated amount of heat to which the creases are subjected will be sufficient to surely affect the adhesive applied to the books in the vicinity of the joints, and to set the creases so that they will retain their shape and be firmly secured to the books.

It will be understood that my invention is not limited to the details of construction and operation illustrated in the accompanying drawing and described above, except as appears hereafter in the claims.

The invention claimed is:

1. The method of finishing the binding of a book that has its cover adhered to the sides thereof which comprises exerting pressure a plurality of times to opposite sides of the cover along lines parallel to and a short distance from the edges of the backs of the cover and book and forcing the joints of the cover into the joints of the book, the pressure on the cover being relieved between each two successive compressions and the pressure of each compression being insufficient to mar the material of the cover, but the total effect of the pressures being sufficient to unite the cover joints and the book joints and establish creases in opposite sides of the cover.

2. The method of finishing the binding of a book that has its cover adhered to the sides thereof which comprises applying pressure and heat, simultaneously, a plurality of times to opposite sides of the cover along lines parallel to and a short distance from the edges of the backs of the cover and book, the pressure and heat delivered to the cover being reduced between the successive applications and the temperature of each heat application being insufficient to injure the material of the cover, but the total amount of heat conducted to the cover by the plurality of heat applications being sufficient to affect adhesive and cause the cover joints to be securely adhered to the book joints.

3. The method of finishing the binding of a book that has its cover adhered to the sides thereof which comprises exerting pressure a plurality of times and applying heat a plurality of times to opposite sides of the cover along lines parallel to and a short distance from the edges of the backs of the cover and book and forcing the joints of the cover into the joints of the book, the pressure on and the heat applied to the cover being relieved between the several compressions and heat applications, the pressure of each compression and the temperature of each heat application being insufficient to injure the material of the cover but the total effect of the compressions and heat applications being sufficient to affect the adhesive and to cause the cover joints to be securely adhered to the book joints and creases established in opposite sides of the cover.

4. The method of finishing the binding of a book that has its cover adhered to the sides thereof which comprises exerting heat and pressure a plurality of times to opposite sides of the cover along lines parallel to and a short distance from the edges of the backs of the cover and book and forcing the joints of the cover into the joints of the book, the pressure, temperature and period of each compression and the interval between the successive compressions being so correlated as not to injure the material of the cover but the total effect of the compressions, temperature, and periods of time being sufficient to secure the cover joints in the book joints and establish creases in opposite sides of the cover.

5. The method of finishing the binding of a book that has its cover adhered to the sides thereof which comprises exerting pressure and applying heat a plurality of times to opposite sides of the cover along lines parallel to and a short distance from the edges of the backs of the cover and book and forcing the joints of the cover into the joints of the book, relieving the cover from heat and pressure and transferring the book from one locality to another between each compression, the individual applications of heat and pressure being insufficient to mar the material of the cover but the aggregate of the applications of heat and pressure being sufficient to set the cover joints into the book joints and establish creases in opposite sides of the cover.

6. The method of finishing the binding of a book that has a cover with thickened sides adhered to the sides of the book which comprises exerting pressure and applying heat a plurality of times to opposite sides of the cover along lines parallel to and between the edges of the back of the book and the edges of the thickened sides of the cover and forcing the joints of the cover into the joints of the book, the individual exertions of pressure and the individual applications of heat being so applied and correlated that the material of the cover will not be disfigured or the book distorted, but the aggregate effect of the several exertions of pressure and applications of heat will cause the cover joints and book joints to be securely united and permanently established.

7. The method of finishing the binding of books which have covers adhered to their sides, which comprises passing the books successively between a series of pairs of heated jaws and subjecting opposite sides of the covers and books along lines parallel to and a short distance in from the edges of their backs sequentially to pressure by said jaws whereby the joints of the covers and books are gradually consolidated and their permanence assured by the successive pressures without distorting the book or disfiguring the cover.

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