

(No Model.)

G. B. SOELBERG.
ELASTIC INLAY FOR BACKS OF BOOKS.

No. 598,185.

Patented Feb. 1, 1898.

Fig. 1.



Fig. 2.

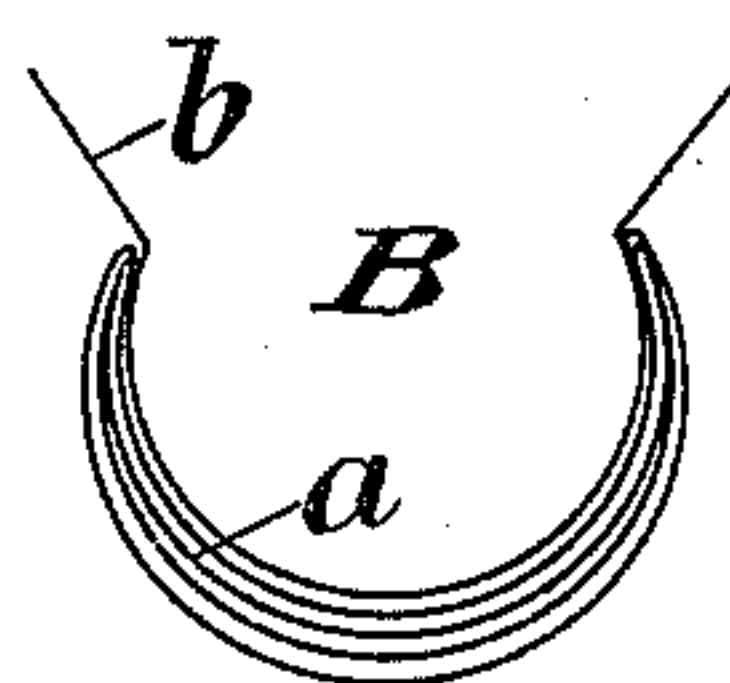


Fig. 3.

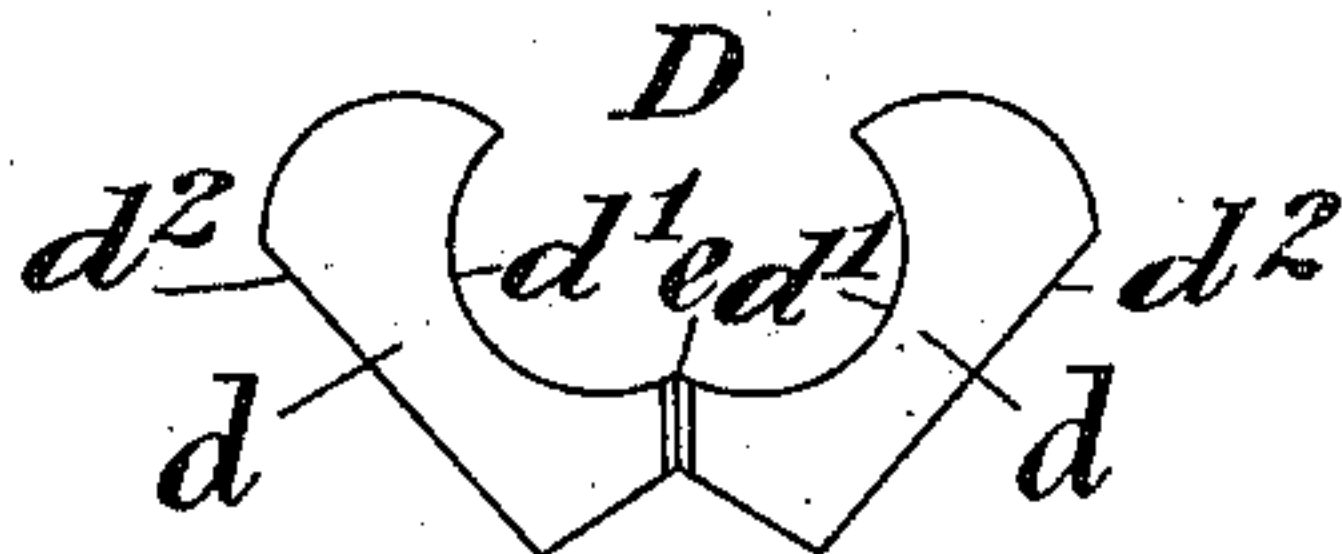


Fig. 4.

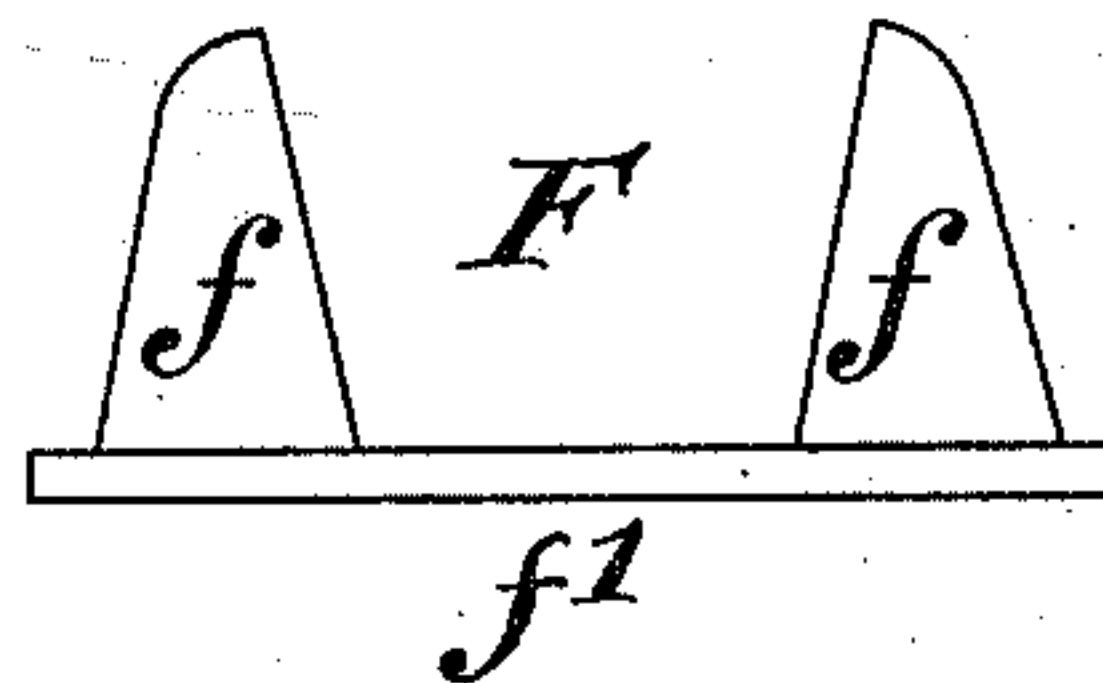


Fig. 5.

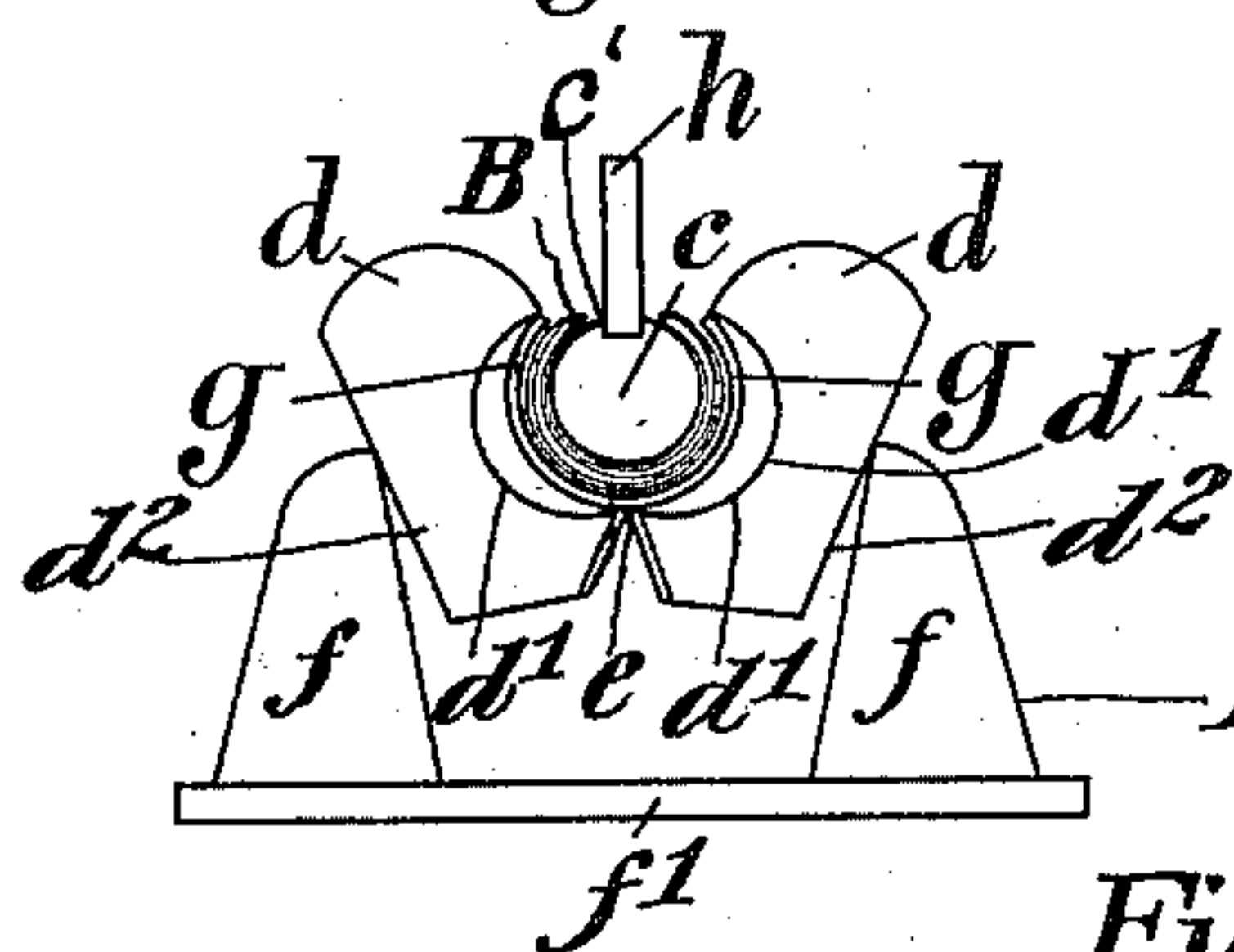


Fig. 6.

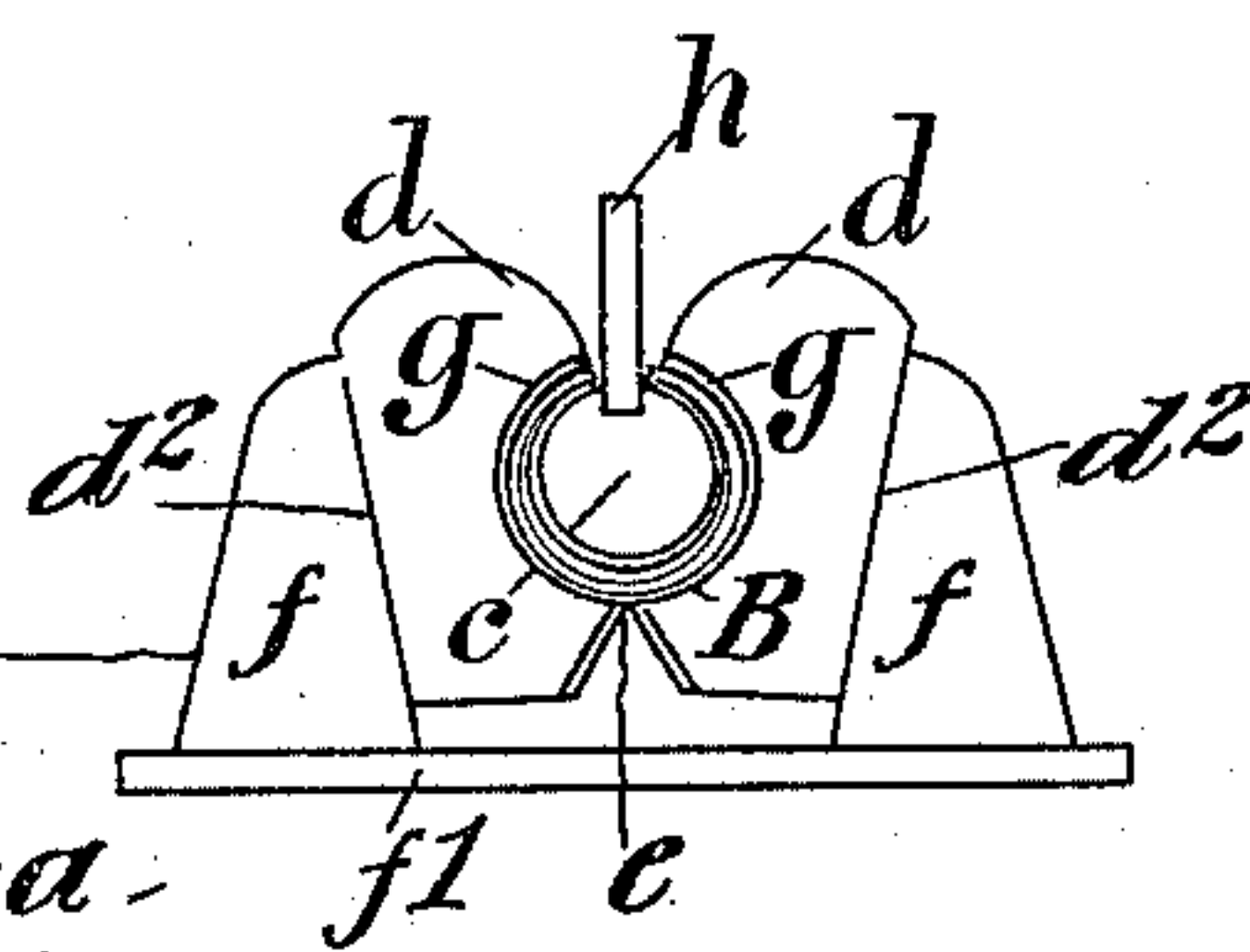
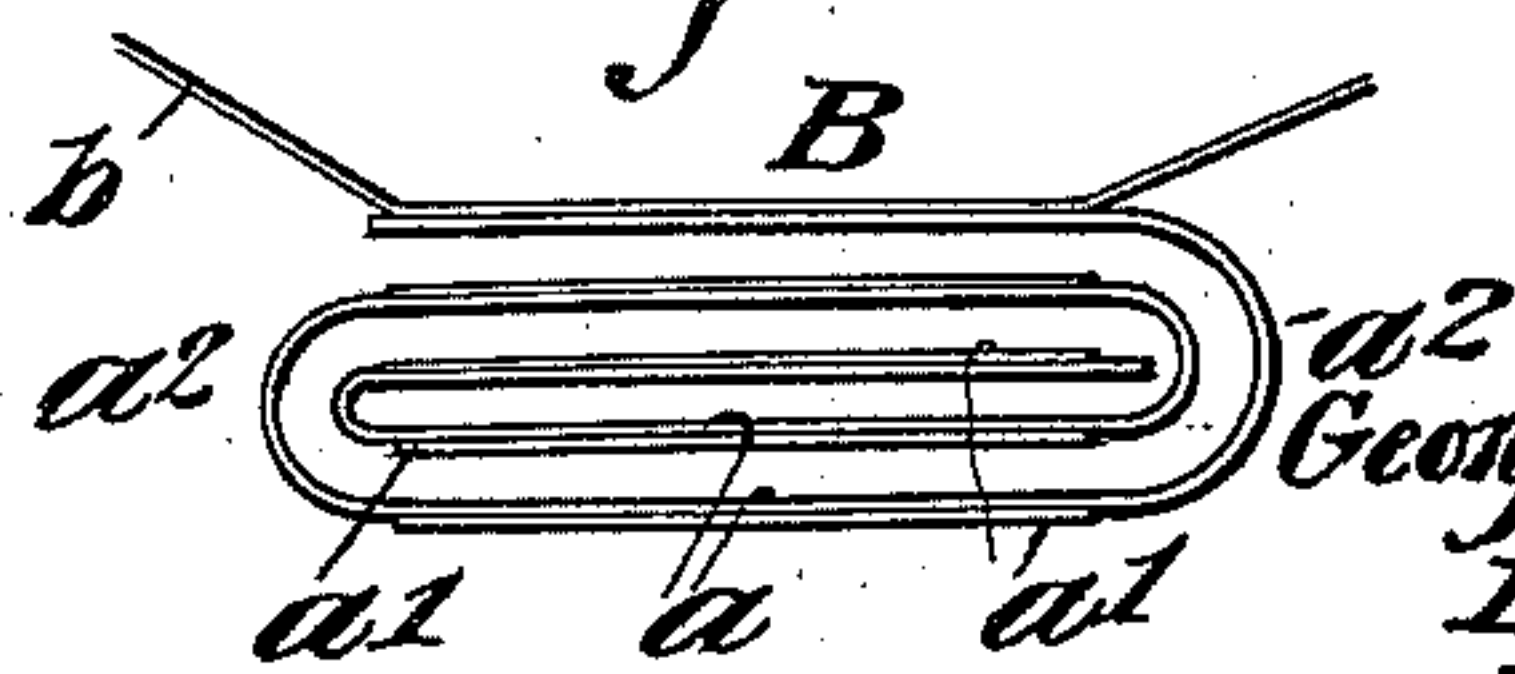


Fig. 1a.



Witnesses:
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UNITED STATES PATENT OFFICE

GEORG BERNADOTTE SOELBERG, OF COPENHAGEN, DENMARK.

ELASTIC INLAY FOR BACKS OF BOOKS.

SPECIFICATION forming part of Letters Patent No. 598,185, dated February 1, 1898.

Application filed May 20, 1896. Serial No. 592,332. (No specimens.) Patented in Norway March 30, 1896, No. 5,064; in Germany April 18, 1896, No. 90,429; in France April 24, 1896, No. 255,841; in Sweden April 25, 1896, No. 7,919; in England April 25, 1896, No. 8,792, and in Denmark February 25, 1897, No. 980.

To all whom it may concern:

Be it known that I, GEORG BERNADOTTE SOELBERG, bookbinder, residing at Copenhagen, Denmark, have invented certain new and
5 useful Improvements in Elastic Inlays for Backs of Books, (for which I have obtained patents in Norway, No. 5,064, dated March 30, 1896; in Sweden, No. 7,919, dated April 25, 1896; in Germany, No. 90,429, dated April
10 18, 1896; in Great Britain, No. 8,792, dated April 25, 1896; in France, No. 255,841, dated April 24, 1896, and application in Denmark filed March 24, 1896, patented February 25, 1897, No. 980;) and I do hereby declare the
15 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 let-
20 ters of reference marked thereon, which form a part of this specification.

My invention has relation to the art of book-binding, and more particularly to the back-
ing of books.

25 As is well known, in order that a book may be opened flat, or substantially so, it is essential that the back should possess the required flexibility or elasticity and that the joint between the covers and said back should be
30 very flexible and yet possess the required stability or durability, so as not to break.

It has before my invention been the practice to construct the backs for books of a plurality of layers or strips of a suitable flexible
35 material, as cardboard, stout paper, and the like glued together, or of a plurality of such layers of material of successively-decreasing width glued along their edges only. In both constructions the layers of material, when
40 glued together as described, were molded into the proper shape by pressure around a hollow heated mandrel. In the mode of constructing the backs of books first referred to the gluing
45 together of the several layers of material destroys in a great measure the flexibility and elasticity of the structure, so that the back of a book is liable to break after a very short time. On the other hand, when the back of
50 a book is constructed as last described and glued along the edges only the superposed

layers of material of gradually-reduced width are liable to part from one another, while the construction is a very laborious and costly one. My invention is designed to overcome these difficulties; and it has for its object cer-
55 tain improvements whereby the strength of the backs for books is materially increased, the cost of manufacture or construction reduced, and whereby a very elastic back and a flexible hinge-joint between such back and
60 the cover is obtained, as will now be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a cross-sectional view of the back of a book before it is pressed or molded into
65 shape. Fig. 1^a is a schematic end view illustrating another mode of constructing the back. Fig. 2 is a cross-sectional view of the finished back. Figs. 3 and 4 show by end
70 views the complementary parts of a die by means of which the backs for books are shaped or molded, and Figs. 5 and 6 are like views illustrating the operation of shaping or mold-
ing.

In carrying out my invention the back is
75 formed of a single sheet of more or less springy material *a*—as stout paper, thin cardboard, or the like—folded upon itself a number of times sufficient to form the desired number
80 of superposed layers of the required width, as shown in Fig. 1, the superposed layers being glued together along their edges only, and to the inner or top layer is glued a strip *b* of
85 a suitable textile material, as more clearly shown in Fig. 3^a, so that the edges thereof will project from the opposite sides of such
90 top layer for connection with the covers for the book, as shown in Figs. 1 and 2 and more clearly in Fig. 1^a, the whole being then pressed flat. The flat-pressed back B, Fig. 1, thus
95 formed is molded to the proper shape in the following manner through the medium of suitable instrumentalities, to wit:

The flat-pressed back B is bent around a
suitable mandrel or male die *c*, provided with
95 a longitudinal groove *c'*, in such manner that the glued edges of the back will lie on opposite sides of said groove. The back B, with
its mandrel or male die *c*, is then placed with
100 the groove *c'* uppermost into a female die D,

composed of two complementary parts d d , preferably hinged together at e in any suitable manner, as by means of a strip of flexible material, said complementary parts having outer downwardly-converging faces d^2 and inner concave faces d' , corresponding to the shape to be given to the back. The female die is now placed, as shown in Fig. 5, into a press-frame F , composed of a bed-plate f' and two side pieces or cheeks f , whose inner faces correspond in inclination to the inclination of the outer faces of the female die D , a presser-bar h being placed in the groove c' of the die or mandrel c , to which bar pressure is applied by any suitable well-known means, whereby the die D is forced into the frame F to close its complementary parts d d around the back and the die c , whereby said back is pressed to the desired shape, as shown in Fig. 6. In practice I prefer to interpose between the back B and the die D a lining g of cardboard or the like, and a greater or less number of lining-sheets g may be employed to fill out the die D if the back B is of less diameter than the space formed by the concave inner faces d' of said die when closed or approximately closed together or when the back B is to have a more or less flattened shape, mandrels or dies c of different diameters being used.

In the operation of bending the flat-pressed back around the mandrel or die c the several superposed layers a of material will be displaced relatively to each other along the non-adherent portions, as shown in Fig. 2, and owing to the construction of the die D the greatest pressure will be along the glued edges of the back. It will readily be seen that by the means described the shaping of the back is effected in a very rapid and simple manner.

After the operation of shaping, the finished back is allowed to dry at a normal or moderate temperature.

A book-back B constructed as described is extremely elastic, as is apparent from the position assumed by the superposed layers a of material, Fig. 2, relatively to each other when the book is opened, the successive concentric segments being of gradually-reduced diameter in an inward direction. Inasmuch as the several layers a are formed of a continuous sheet of material, very strong hinge edges are formed that are much more durable than those of any book-back known to me, while a perfectly flexible hinge-joint is obtained. This is due to the more or less springy nature of the individual layers, each of which is capable of yielding under the pressure when the back is spread on opening the book and of returning to its normal position when relieved of such pressure on again closing such book.

If the material used for the back B is very strong, hence not readily bent, the sheet before folding and gluing may be more or less moistened.

In order to give to the back B a permanent set, the sheet of material before being folded upon itself and glued along its edges may be slightly moistened, and when folded and glued as described it is pressed flat between hot plates and then shaped while still hot, as set forth. The moistening of the sheet of material may, however, be dispensed with and the same results obtained, and at the same time the care necessary to the application of the glue along the edges only avoided by spreading the glue over the whole of one face of the sheet of material used and inserting strips of paper between each two folds to prevent such folds from becoming glued together, as shown in Fig. 1^a, wherein a indicates the sheet of material folded upon itself and a' the strips of paper applied, said strips being of course narrower than the width of the folded layers, so that the edges a^2 will be glued together when the folded sheet is compressed. This has the further advantage in that a back so constructed is of greater strength and elasticity, while the glue supplies the necessary moisture to give to the back its permanent set after shaping and drying, the overlapping strip of textile or other like material b being glued to the inner or upper fold.

It will of course be understood that Fig. 1^a is a mere schematic view illustrative of the mode of construction last described.

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

1. In a process for forming backs for books, forming the same of a single sheet of more or less springy or elastic material, as cardboard or the like, by folding such strip into superposed layers, uniting said layers along their meeting edges only by means of an adhesive substance, compressing the so-united layers in presence of heat before the adhesive has become dry, and then shaping the same to the required form, substantially as set forth.

2. A back for books composed of a single sheet of a more or less springy or elastic material, as cardboard or the like, folded into superposed layers united along their meeting edges only, for the purpose set forth.

3. A back for books composed of a single sheet of more or less springy or elastic material as cardboard or the like folded in superposed layers, permanently united along their meeting edges only, and a sheet or strip of flexible material of greater width than said superposed layers connected to the inner layer of such, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

GEORG BERNADOTTE SOELBERG.

Witnesses:

CHERLOY FISCHER,
A. HERMANSEN.