June 4, 1929. E. F. GRAF ET AL 1,715,653

LOOSE LEAF BINDER

Filed March 15, 1926 2 Sheets-Sheet 1

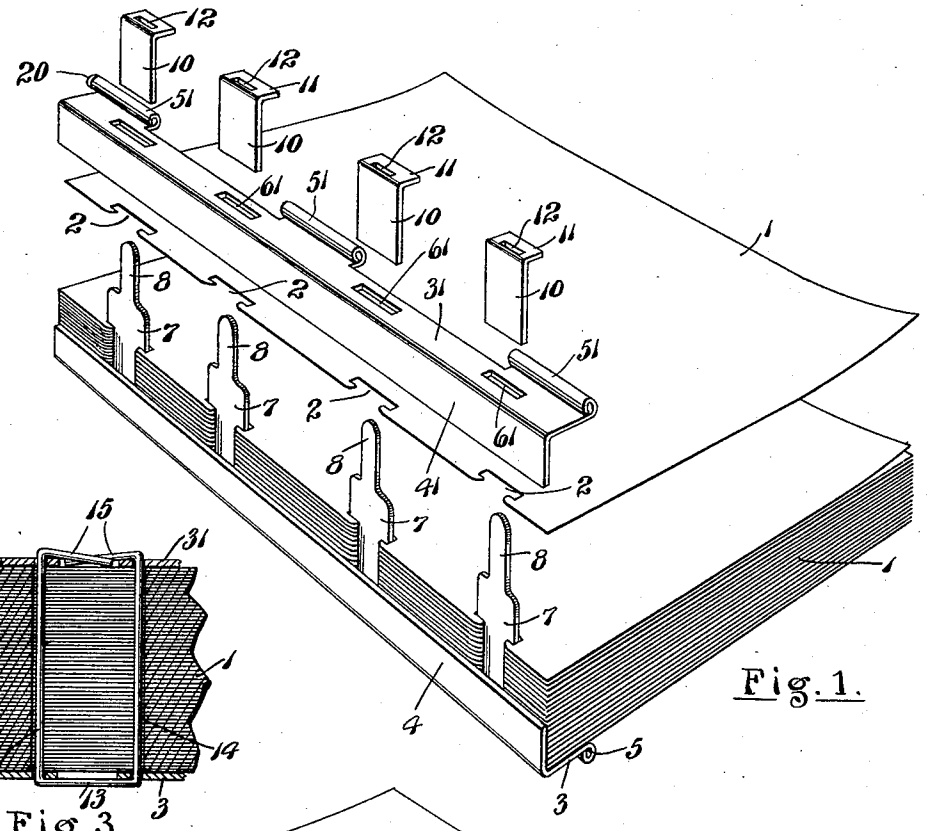


Fig. 1.

Fig. 3.

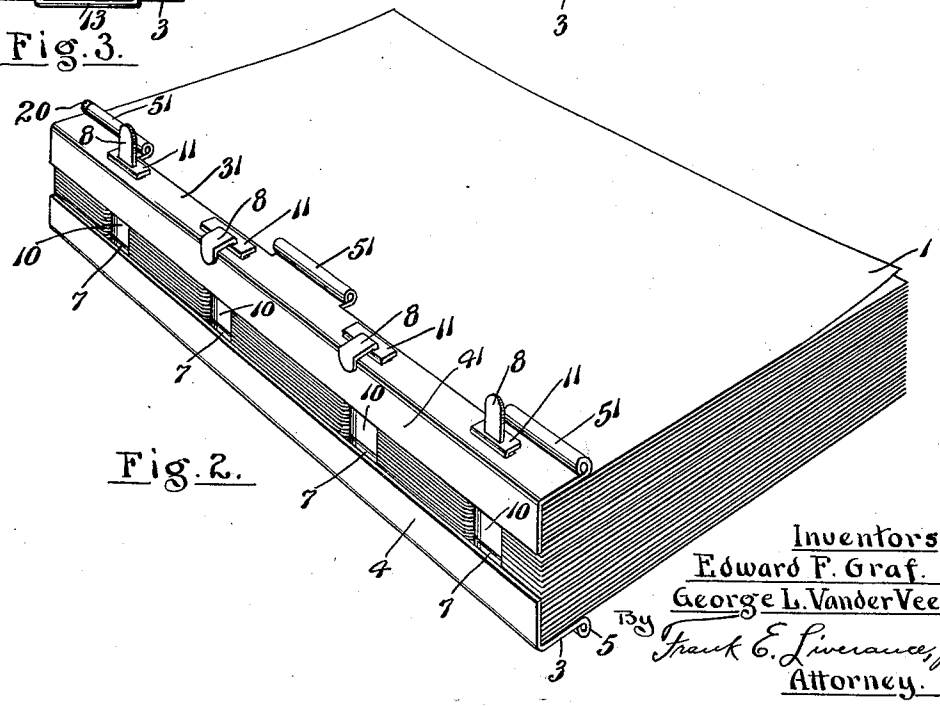


Fig. 2.

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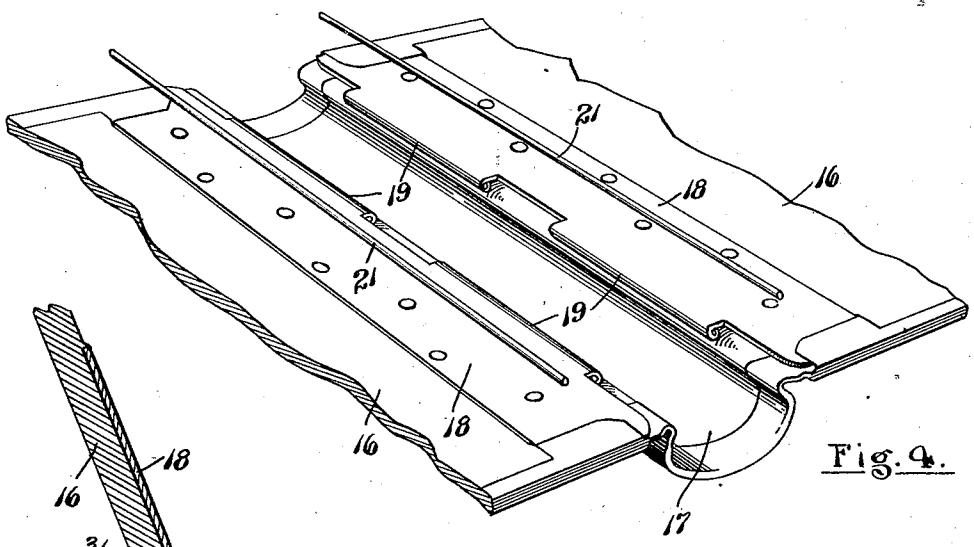


Fig. 4.

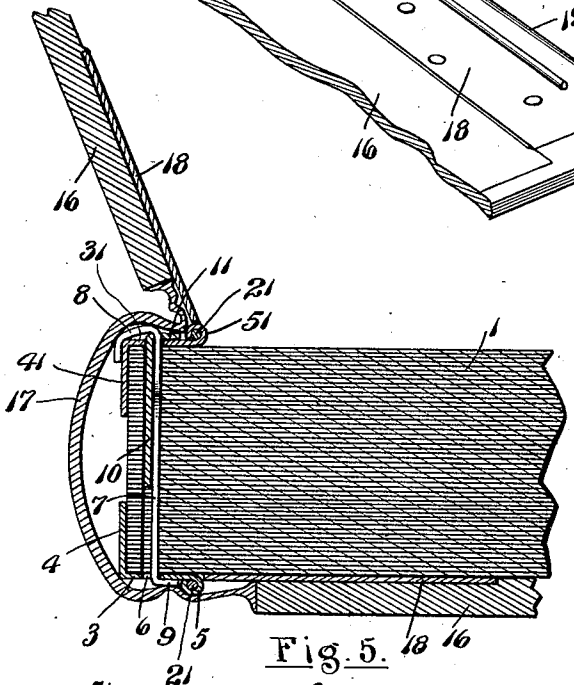


Fig. 5.

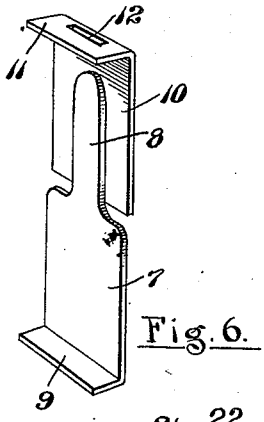


Fig. 6.

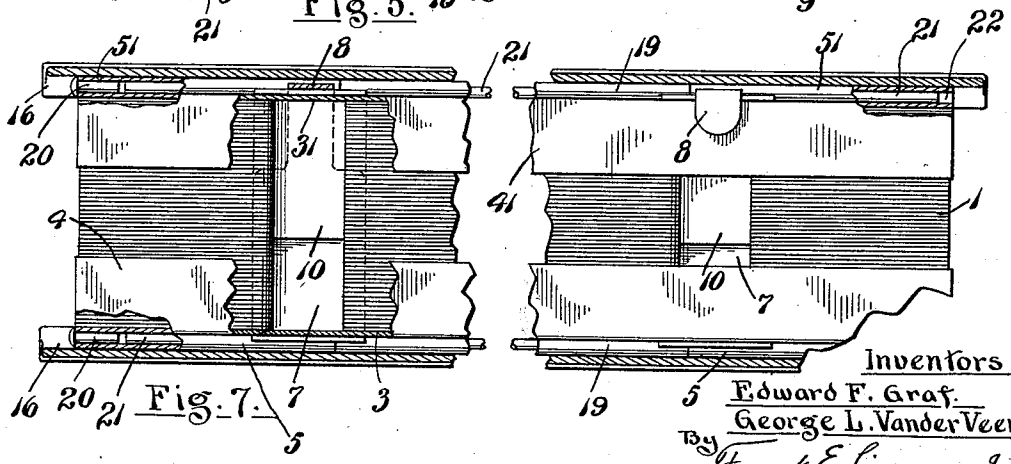


Fig. 7.

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UNITED STATES PATENT OFFICE.

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LOOSE-LEAF BINDER.

Application filed March 15, 1926. Serial No. 94,717.

This invention relates to improvements in binders used for binding sheets together. In many cases, particularly in connection with municipal, county and other government public record work it is desirable that record sheets be permanently bound to prevent changing or other tampering therewith and, at the same time when a series of such sheets are being collected, that they may be temporarily bound until the assembly for a volume is completed. It is a primary object and purpose of the present invention to provide a binder for record sheets and the like which may be used to bind the same temporarily in order that other sheets may be added until the desired number for a volume is attained, whereupon covers may be added to the temporary binder and sealed in place in such a manner that the covers cannot be removed nor the parts of the temporary binder reached, so that by the addition of such covers and their permanent connection a permanent binding of the sheets in a volume is secured.

A further object of the invention is to provide a binder of the class described which is very simple in construction, economical to manufacture and durable and efficient in its operation. The means whereby these ends are attained as well as many others not at this time specifically stated, is fully disclosed in the following description taken in connection with the accompanying drawings, in which

Fig. 1 is a perspective view illustrating a number of sheets, the method used for temporarily binding the same and the parts which go to make up said binder, the same being shown in separated condition.

Fig. 2 is a similar view showing the parts together and in position to effect a temporary binding of the sheets.

Fig. 3 is a fragmentary section illustrating a slightly different form of binding means.

Fig. 4 is a fragmentary perspective view showing the cover used and applied to the temporary binder to make the same permanent.

Fig. 5 is a fragmentary enlarged transverse section through the back portion of a volume permanently bound together, the covers being attached.

Fig. 6 is a perspective view of one of the leaf holding members used, and

Fig. 7 is a rear elevation of a volume permanently bound, the connecting back between the two covers being shown in section so as to disclose the rear end of the volume which is ordinarily covered by said back.

Like reference characters refer to like parts in the different figures in the drawings.

The sheets which are to be bound together are indicated at 1 and at their back edges are provided with a plurality of apertures or notches 2 of the form shown, the same being adapted to have the leaf holding members pass therethrough. The leaves may be placed, one over the other, the bottom leaf, at its back edge, lying against the lower binding bar which is of angle form having a bottom flange 3 and a back vertical flange 4. The bottom flange 3 at its forward edge is formed with a plurality of spaced apart rolls 5, the same as are used in hinges. Said bottom flange 3 also, at spaced apart points in its length, has slots 6 cut therethrough for the passage of lower leaf holding members 7 upwardly through said openings. The members 7 are of flat stock narrowed at their upper portions to make the tongues 8 and at their lower ends being turned at right angles making the flanges 9 which bear against the lower sides of the lower flange 3 of the bottom binding bar. The leaves, when passed over the leaf holding member 7 are held by said members as they pass through the notches or apertures 2, as is obvious.

When a number of the leaves have been put together to form the leaf body an upper binder bar is applied to the leaves. This bar is similar to the lower binding bar, having an upper flange 31, a back vertical downwardly extending flange 41, while the flange 31 at its forward edge is similarly formed with a plurality of spaced apart hinge rolls 51. Also the upper flange 31 has a number of spaced apart slots 61 cut therethrough, one for each of the leaf members, tongues 8 extending upwardly through said slots 61. Companion leaf members 10 of flat form are inserted downwardly through the slots 61, each of said members 10 at its upper end being formed with a

flange 11 having a slot 12 therein through which the tongue 8 of the lower associated leaf member 7 may pass. As thus applied to the leaf body the tongues 8 may be bent backwardly, as shown in Fig. 2, to effect the securing of the leaves or sheets together, it being evident that whenever desired the tongues may be bent back to vertical position so that the upper clamping bar may be removed for the addition of other sheets or leaves.

In Fig. 3 a modified form of structure for effecting the temporarily binding of sheets or leaves is shown, the leaf members 7 and 10 being supplanted by a U-shaped wire having a bottom portion 13 and vertical spaced apart legs 14 which may pass through suitable openings in the flanges 3 and 31 of the lower and upper binding bars. The projecting upper ends of the legs 14 are bent inwardly toward each other, as indicated at 15, and into slots cut into flange 31 of the upper binding bar. In all cases, irrespective of how the actual leaf engaging members are made, the horizontal flanges 3 and 31 of the two binding bars are provided at their forward edges, in front of where the leaf holding members pass through said flanges, with the hinge rolls 5 and 51, the purpose of which will later appear.

It is evident from the foregoing that a temporary binding is made which may be used in the same manner as binders of this character are used to either add to or take away from the body of sheets or leaves which are to be bound until a volume has been prepared. It is then designed that a cover shall be applied to the volume of leaves or sheets thus bound in such a manner that they are permanently bound and no further addition to or removal from the volume can take place.

The cover consists of two leaves 16 connected at their rear edges by the usual back 17. To each of the covers 16 on their inner sides and near their back portions hinge plates 18 are permanently secured by rivets or otherwise, the same, at their rear edges being formed with spaced apart hinge rolls 19 which are so located with reference to each other that the hinge rolls 5 and 51 on the flanges 3 and 31 of the binding bars may be received in the spaces between said hinge rolls 19 and hinge rods, shown at 21, pass through the alined openings made by the rolls 5 and 19 and 51 and 19. One of the parts 5 and 51 at one end of the binding bars, is equipped with a short headed pin 20 which is driven into the end of the rolls 5 and 51 so as to be permanently secured. In fact, to make the connection permanent and one which cannot be disturbed it is our practice to solder such headed pins 20 in place. These pins 20 are best shown in Fig. 7. The hinge rods 21 which are passed through the rolls 5 and 19 and 51 and 19 are driven therein, the rods being of such length that when fully driven in the ends of the rods are disposed within and located a short distance from the outer ends of the outermost rolls 5 and 51 leaving a space shown at 22 in Fig. 7. This makes the rods 21 inaccessible so that the same cannot be removed and, in practice, we flatten, upset or enlarge the ends of the rods 21 thereby making them fit tightly into the rolls so that when driven fully into place the same are very securely held by friction at the enlarged end against any possibility of longitudinal movement.

It will be noted that by reason of the position of the hinges the upper rearwardly bent ends of the tongues 8 are inaccessible so that the temporary binder which is made before the covers are applied, becomes a permanent binder with the application of the covers in the manner outlined. The only way that the upper ends of the tongues 8 or, if the modification shown in Fig. 3 is used, the upper ends 15 of the legs 14, can be raised, is by destruction of the back 17 which, of course, involves destruction of the binding of the book. The construction shown and described is especially adapted for handling public records required in permanent bindings which cannot be bound loosely, subject as they might be to removal under such circumstances. At the same time the actual binder which is used in the finished book serves, without change, the purpose of a temporary binder during the time that the volume is being made up.

The construction outlined has been found very practical and efficient. Many variations in minor detail of construction may be resorted to without departing from the invention which is defined in the appended claims and we consider ourselves entitled to all forms of structure which come within the scope of said claims.

We claim:

1. In a binder for a plurality of sheets, binding bars located at one edge of the sheets, means for detachably connecting said bars to the sheets, said means being accessible at the outer side of one of said bars so that the same may be readily released, and covers adapted to be connected by a back permanently hinged to said binding bars, the hinge connection of the covers to the bars being forward of the points of accessibility of said connecting means whereby when said covers and back are permanently secured to the bars, said connecting means is inaccessible.

2. In a binder for a plurality of sheets, two binding bars located at one edge of said sheets, one below the lowermost sheet and one above the uppermost sheet, means dis-

posed between the bars with which said sheets are engaged and extending upwardly through said upper bar to releasably secure said bars to the sheets, said means being bent over after passing through the upper bar and being readily bent back so as to release the bars from the sheets, covers permanently hinged to said bars at their forward edges and a back connecting the rear edges of the covers extending over the upper ends of said connecting means and adapted to render the same inaccessible.

3. In a binder for a plurality of sheets, binding bars, each having a horizontal flat portion, said flat portion of the lower binding bar lying at one edge and under said sheets and said portion of the upper binding bar lying adjacent the same edge and over said sheets, means extending upwardly through said flat portion of the lower binding bar, through said sheets and through the horizontal flat portion of the upper binding bar, said means being adapted to be bent over to secure the binding bars and sheets together, covers one at the upper and one at the lower side of said sheets, hinge plates attached to said covers and hingedly connected to the forward edges of said horizontal flat portions of the binding bars, and a back connecting the edges of the covers whereby said connecting means between the binding bars may be rendered inaccessible.

4. In a binder for a plurality of sheets, binding bars located in the upper and lower sides and adjacent one edge of said sheets, releasable means for connecting said bars and sheets together, and covers connected by a back permanently hinged to the binding bars, said back connecting the covers adapted to render said releasable means inaccessible for operation.

5. In a binder for a plurality of sheets, binding bars, each comprising a vertical and a horizontal flange, said horizontal flanges being located one at the under side and at one edge of said sheets and the other at the same edge and upper side of said sheets, said flanges lying against the upper and lower sides of the uppermost and lowermost sheets and being formed with spaced apart hinge rolls at their inner edges, leaf holding members passing upwardly through the lower bar, said leaves and the upper bar, the upper ends of said leaf engaging members being adapted to be bent so as to secure the binding bars and leaves together, upper and lower covers, a back connecting the edges of said covers, hinge plates secured one to the inner side of each cover near the points of connection thereof to said back, each of said hinge plates being formed with spaced apart hinge rolls at its rear edge to pass between the similar hinge rolls on said binding bars, and hinge rods passing through the alined hinge rolls of the binding bars and plates on said covers combined with means whereby said rods may be insured against removal.

6. In a binder for a plurality of sheets making a sheet body, binding bars located one at the lower side and one at the upper side of said sheets and adjacent one edge thereof, each of said binder bars having a flat horizontal portion lying against the upper and lower sheets and formed at their inner edges with spaced apart hinge rolls, leaf holding means passing through the lower binding bar, said sheets and upper binding bar for releasably securing the binding bars and sheets together, covers, plates secured thereto provided with hinge rolls spaced apart and adapted to pass between the hinge rolls on said binding bars, a back connecting said covers, hinge rods passing through the alined hinge rolls on said binding bars and plates, said rods being of less length than the width of said covers, whereby the ends of the rods are located a short distance from the ends of the outermost hinge rolls and a plug secured in the outer end of one of the outermost hinge rolls at each side of the sheet body, substantially as described.

7. In a binder for a plurality of sheets making a sheet body, binding bars releasably connected to said sheet body at one edge thereof, covers adapted to be permanently hinged to the inner edges of said binding bars, and a back connecting the covers and covering the means which releasably connects the binding bars and sheets.

8. In a binder for a plurality of sheets, binding bars, means for detachably connecting the binding bars and sheets, and covers adapted to be permanently hinged to said binding bars in a position to cover and render inaccessible said means for connecting the bars and sheets.

In testimony whereof we affix our signatures.

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