No. 879,573. PATENTED FEB. 18, 1908.

M. C. NEUNER.

BOOKBINDING.

APPLICATION FILED NOV. 11, 1907.

Fig. 1.

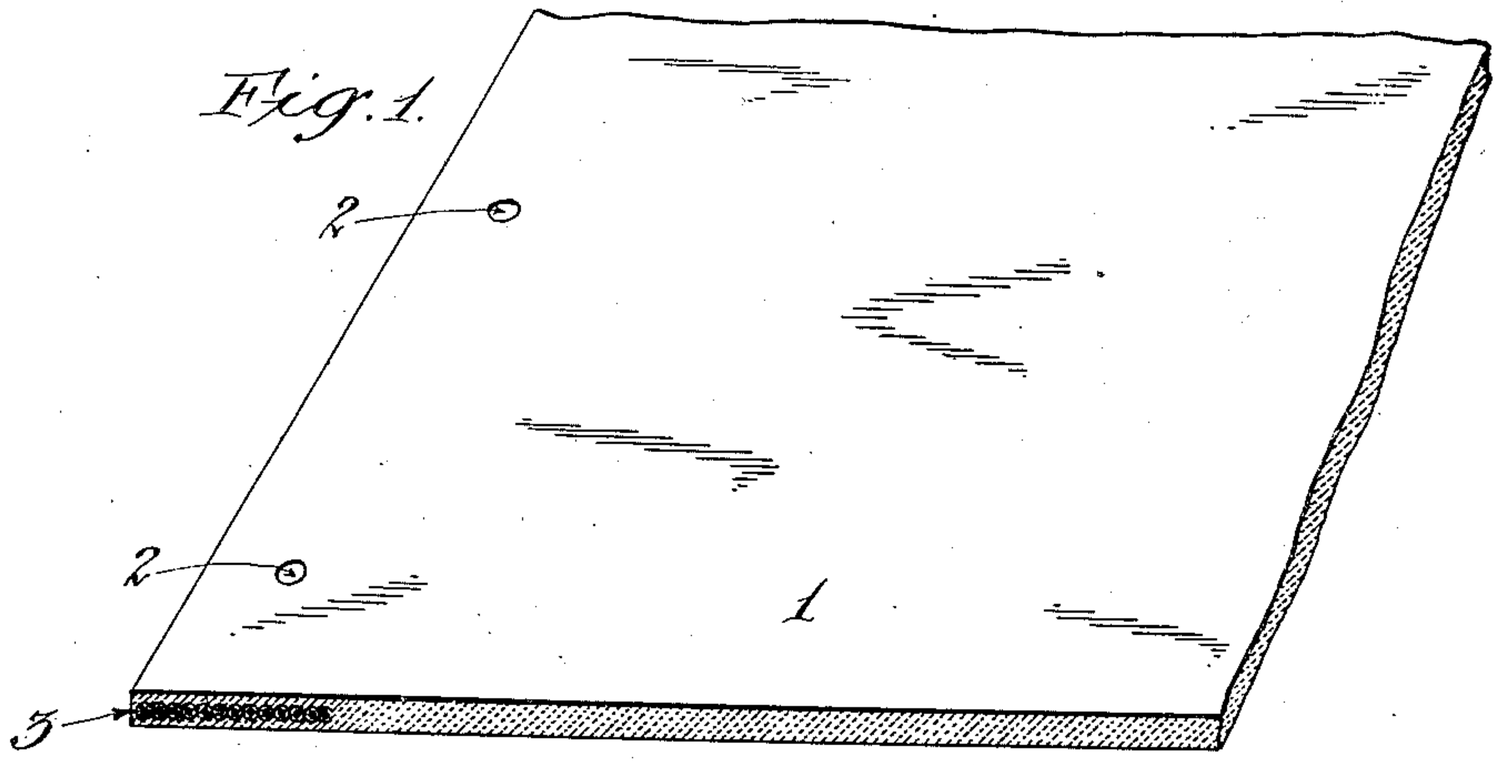


Fig 2

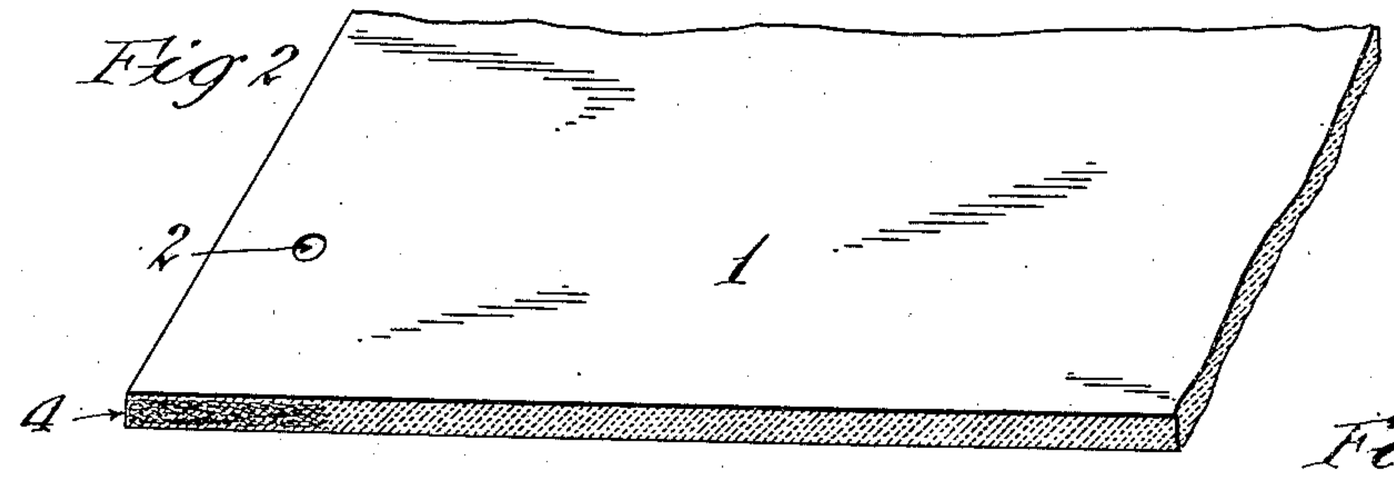


Fig. 4.

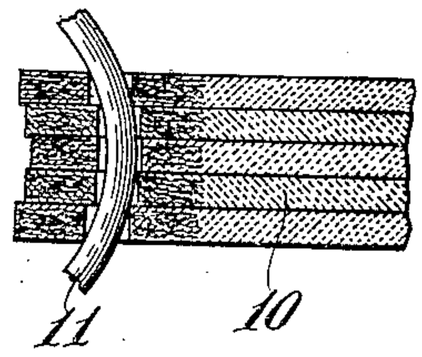
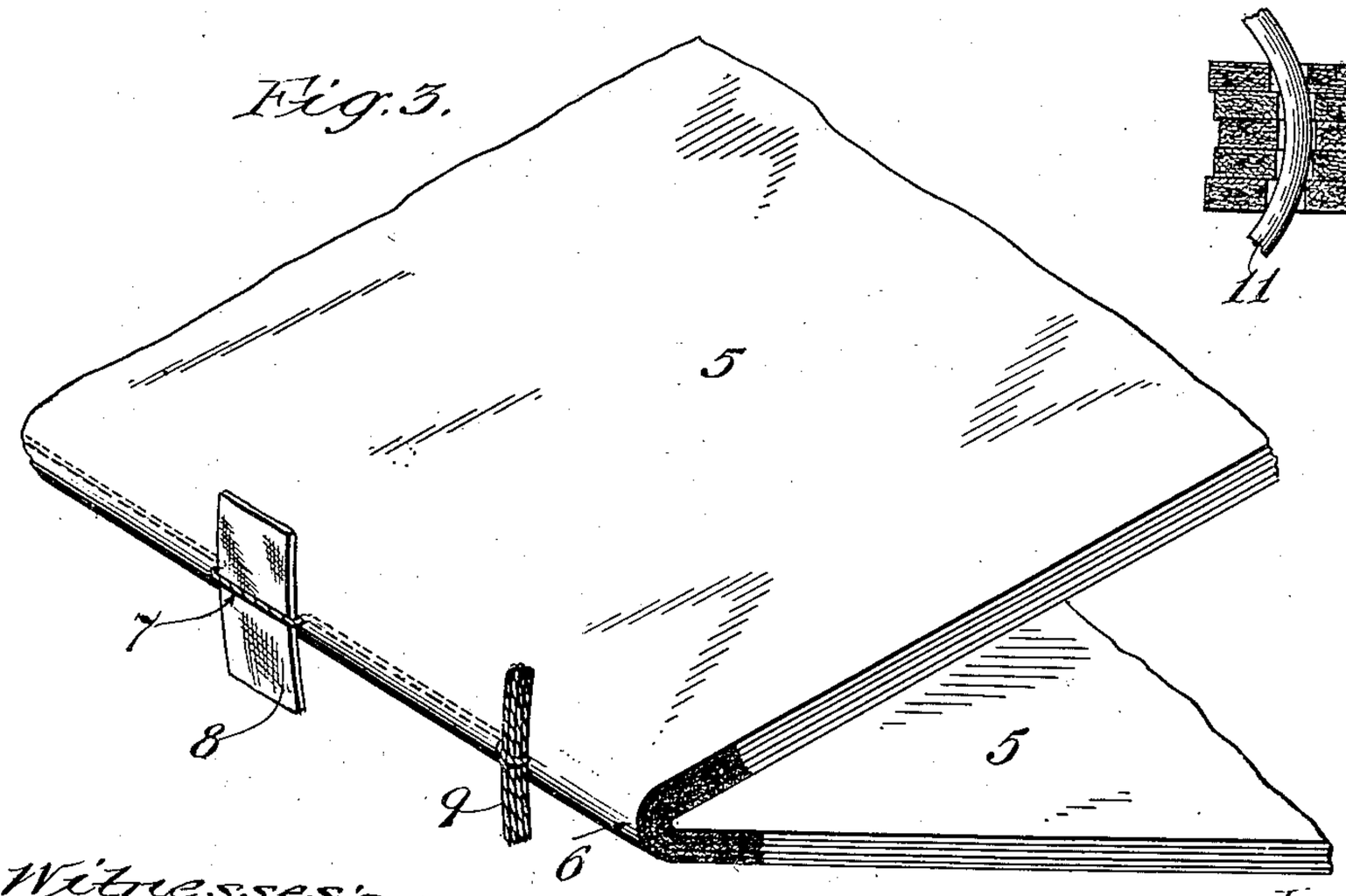


Fig. 3.



Witnesses:-
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UNITED STATES PATENT OFFICE.

MARTIN C. NEUNER, OF LOS ANGELES, CALIFORNIA.

BOOKBINDING.

No. 879,573. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed November 11, 1907. Serial No. 401,761.

To all whom it may concern:

Be it known that I, MARTIN C. NEUNER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Bookbinding, of which the following is a specification.

This invention relates to improvements in book binding, and the main object of the invention is to prevent the leaves from tearing out at the sewing, or in the case of loose leaf systems to prevent tearing at the binding devices, while in either case maintaining an even thickness throughout the pack of leaves.

The improvement is of very great value particularly in binding governmental, municipal, or other permanent records. For example, a book in which transfers of real estate are recorded is in constant use and the leaves soon become torn out and it is necessary to recopy these records in a new book which entails great labor and expense. Books of this character constructed in accordance with this improvement will last indefinitely, and the enormous expense of recopying is avoided, and besides this, loss of sheets torn from the binding threads or devices is obviated. In binding such books it is particularly desirable to embody the greatest number of pages possible within a given thickness between the covers, and with this improvement the thickness of a leaf is the same throughout, so that in the book there is no swell at the binding edges of the leaves at the back of the book. With the voluminous records this is essential, as it is thus possible to concentrate the greatest number of leaves within a given compass, whereas if the back edge of the leaves were swelled, a book, when bound, would contain, for example, only about half as many leaves as would be contained by a book constructed with this improvement.

The improvement is of equal value in the construction of loose leaf books such, for example, as price books or catalogues, as it is a considerable job to transcribe data or prices in a catalogue or price book, and such books as are ordinarily constructed very quickly wear out at the binding and necessitate rewriting on fresh sheets. Again, in certain well known types of loose leaf binders the sheets are attached to rings, and the perforated portions of the sheets have a sliding motion circumferentially on the rings as the sheets are turned over, thus quickly wearing out the paper even though the papers are not carelessly pulled edgewise. The present improvement is thus of great advantage in this type of book.

A further advantage is that it is possible to write clear to the extreme inner edge of the leaf on either face of the leaf.

In the drawings I have shown leaves of various types with portions of the associated binding threads or devices, and referring to the drawings:—Figure 1 is a perspective view, partly in cross section, of a sheet adapted for a loose leaf book. Fig. 2 is a similar view showing a modified form of a reinforcement. Fig. 3 is a perspective view showing a folded leaf constructed with this improvement and adjacent portions of the binding elements, this form of leaf being used in a sewed book. Fig. 4 is a sectional view showing a series of leaves as employed in a loose leaf binder of the ring fastener type.

In all views of the drawing the thickness of the leaves has been greatly magnified in order to illustrate the construction clearly.

In one form the invention comprises a paper leaf having an orifice in the binding portion thereof, a binding thread or device passing through the orifice, and a fibrous material permanently incorporated in the binding portion of the leaf, the pulp of the paper penetrating the interstices of the fibrous material and being intimately intercombined therewith, the fibrous material surrounding the orifice and binding device whereby the drawing strain of the binding thread or device is borne by the fibrous threads of the reinforcement and the pulp relieved of such strain.

In Fig. 1, 1 designates the sheet of paper the binding edge of which is provided with perforations 2 with which the fastening devices, not shown, are adapted to pass to hold the sheet in place. At this edge of the leaf a reinforcing material such, for example, as a fabric 3, is incorporated intimately with the pulp of the paper extending along the binding edge thereof and surrounding the perforations 2. This reinforcement is applied to the pulp of the paper while in process of manufacture, and the reinforcement displaces a corresponding amount of paper pulp whereby the thickness of the leaf is not greater at the binding edge than at any other place. The pulp of the paper interpene-

trates the interstices of the fabric and a permanent union is thus effected between the reinforcement and the pulp, the reinforcement being thus an integral part of the sheet.

Fig. 2 shows a slight modification in which, instead of the fabric 3, a number of threads or fibers 4 are incorporated in the binding edge. These threads are sprinkled on the pulp while the paper is in the process of manufacture, and this reinforcement has the same effect as the preceding one referred to.

Fig. 3 shows a double sheet 5 with a folded binding portion 6. Either the fabric 3 or threads 4 may be employed to reinforce the binding portion 6 as may be desired. 7 indicates the binding thread which is sewed through the binding portion and engages with tape 8 and threads 9 which are to be attached to the covers, not shown. It will be noted that the form of leaf shown in Fig. 3 is particularly liable to be torn at the binding part inasmuch as the thread 7 is small and easily cuts or tears the paper, but with the present improvement cutting or tearing is prevented, as the reinforcement bears the drawing strains and prevents the cutting action of the thread, thus relieving the pulp from strain.

In Fig. 4 a few leaves 10 are shown, which may be reinforced either as shown in Fig. 1, or as shown in Fig. 2, which are connected to a binding ring 11. This view clearly shows how the leaves may lie flatly against each other, there being no swell in the leaves, and graphically shows the contact of the reinforcement with the ring 11 so that as one or more leaves are turned over and their perforated portions slide circumferentially on the ring 11, the friction and sliding near is borne by the reinforcement, whereas without the reinforcement this sliding wear and friction very quickly wears the innermost edges of the leaves at the perforations so that in a short time, even with careful use, the perforations become opened clear to the edge of the leaves and the leaf becomes detached.

It will be observed that with any form of this improvement it is possible to write clear to the inner edge of each sheet on either face of the sheet, that the reinforcement is invisible and does not mar the appearance of the sheet, and that there is no protuberance to peel off the sheet.

What I claim is:—

1. A paper leaf having an orifice in the binding portion thereof, a binding thread or device passing through the orifice, and a fibrous material permanently incorporated in the binding portion of the leaf, the pulp of the paper penetrating the interstices of the fibrous material and being intimately intercombined therewith, the fibrous material surrounding the orifice and binding device whereby drawing strain of the binding thread or device is borne by the fibrous threads of the reinforcement and the pulp relieved of such strain.

2. A paper leaf in the binding portion of which a fibrous material is permanently incorporated, the pulp of the paper penetrating the interstices of the fibrous material, the paper being punctured through the reinforced portion for the passage of the binding thread or device, whereby drawing strain of the binding thread or device is borne by the fibrous threads of the reinforcement and the pulp relieved of such strain.

3. A series of paper leaves, a fibrous material permanently incorporated in the binding portion of each leaf, the fibrous material interpenetrating the interstices of the pulp of the paper, and binding threads or devices passing through the pulp and fibrous material, whereby the drawing strains of the threads or binding devices are borne by the fibrous material and the pulp relieved of such strain.

4. A series of paper leaves arranged in pack form, their binding edges having orifices, binding threads or devices passing through the orifices, a reinforcing material incorporated permanently in the binding portion of each leaf and displacing a corresponding amount of paper pulp whereby the pack of leaves has the same thickness throughout, the reinforcing material surrounding the orifices and bearing the strains of the binding threads or devices and relieving the pulp of the paper from such strain.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 4th day of November 1907.

MARTIN C. NEUNER

In presence of—

GEORGE T. HACKLEY,
FRANK L. A. GRAHAM.