E. A. TRUSSELL.

BINDER.

APPLICATION FILED NOV. 12, 1908.

969,923. **Patented Sept. 13, 1910.**

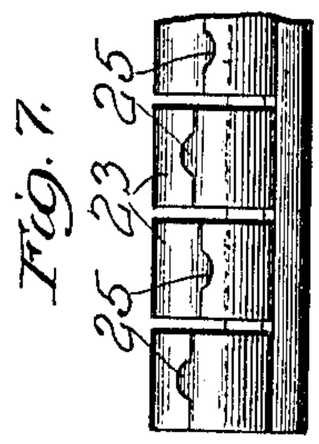


Fig. 1.

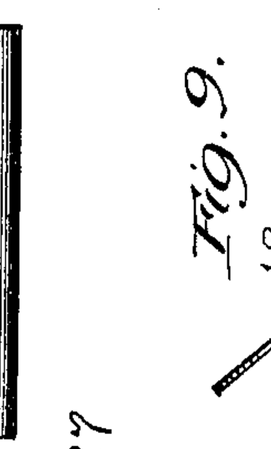


Fig. 2.

Fig. 3.

Fig. 9.

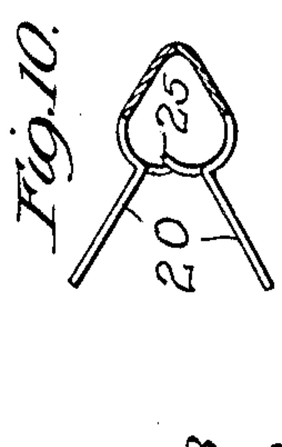


Fig. 10.

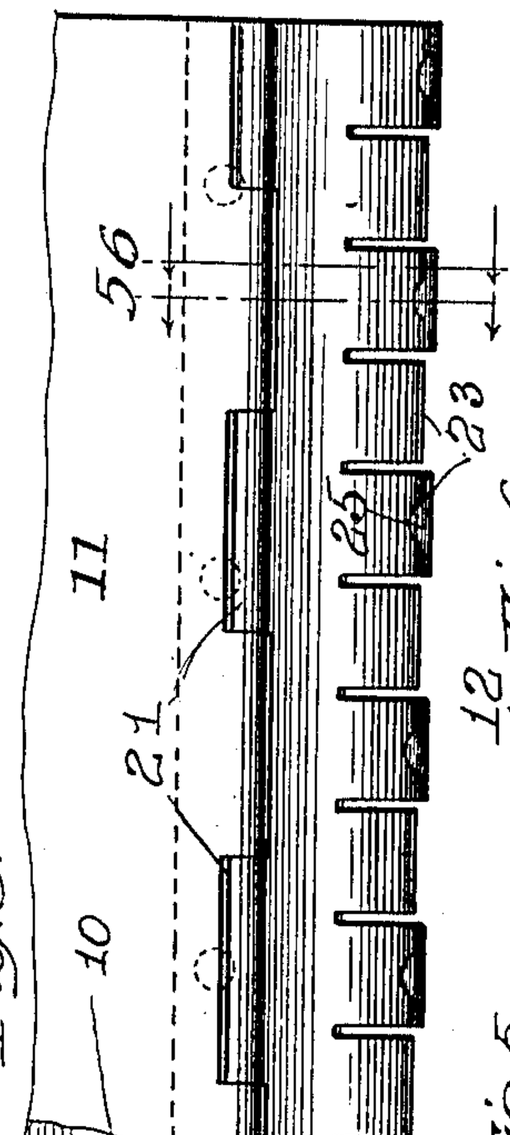


Fig. 8

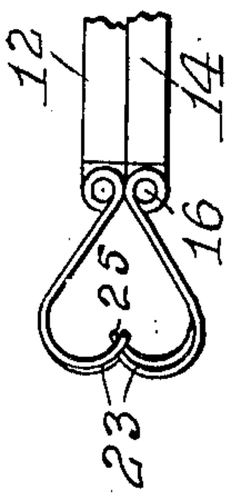


Fig. 6.

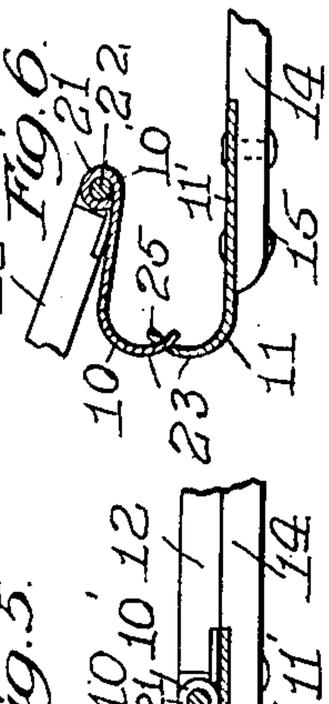
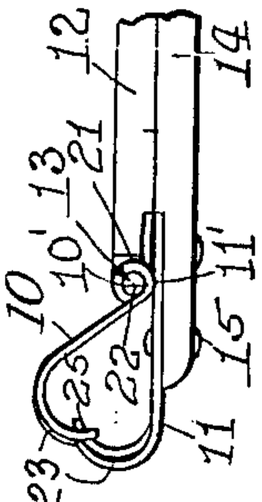


Fig. 5.

Fig. 4.



Witnesses

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BINDER.

969,923. Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed November 12, 1908. Serial No. 462,207.

To all whom it may concern:

Be it known that I, EMORY A. TRUSSELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Binders, of which the following is a specification.

This invention relates to improvements in binders and while it is designed more especially for holding loose sheets it can be adapted to a great variety of binders and like devices.

The object of the invention is to provide a binder of simple construction consisting of few parts which can be made inexpensively and readily assembled and which will hold the sheets securely in place and permit them to be easily inserted and removed.

A further object of the invention is to provide a yielding binder of strong and substantial construction, free from delicate and complicated parts, and adapted to withstand the rough usage to which binders of this character are often subjected.

In the accompanying drawings illustrating certain embodiments of the invention Figures 1 and 2 show the blanks for forming the two clamping members of the back of a binder for holding loose sheets in which only one cover is hinged. Fig. 3 is a plan view of said binder partly broken away and in section. Fig. 4 is an end view of the binder shown in Fig. 3. Fig. 5 is a sectional view on the line 5—5 of Fig. 3. Fig. 6 is a sectional view on the line 6—6 of Fig. 3 showing the binder in open position. Fig. 7 is a detail plan view looking at the back of the binder of Fig. 3. Fig. 8 is a view similar to Fig. 4 but showing a binder with both covers hinged. Fig. 9 is an end view illustrating another embodiment of the invention. Fig. 10 is a sectional view showing the invention embodied in a binder in the form of a clip.

Referring to the drawings, 10 and 11 designate the two members of the back of the binder which are yieldingly hinged together as hereafter described and which have clamping sections 10′, 11′. A cover 12 is hinged in a suitable manner at 13 to the member 10 and a cover (or base) 14 is fastened by rivets 15 or other suitable means to the member 11 in the construction of Figs. 1–6. Instead of fastening the cover 14 rigidly to the member 11 it may be hinged to said member at 16 in the same manner as the cover 12 is hinged to the member 10 (Fig. 8). In the latter construction the two members may be made, to all intents and purposes, exactly alike. Instead of using the upper cover 12 (Fig. 4) I may provide the upper member 17 with a handle 18 to be used in coöperation with the cover (or base) 19 to open the clamping members (Fig. 9). Or I may make a binder in the form of a clip, as shown in Fig. 8, but without the covers and provide both clamping members with handles 20 to open said members (Fig. 10). The sockets 21 to receive the hinge pin 22 are formed integral with each member along the edge of the clamping section thereon.

The two clamping members comprising the back are made of suitable metal and each comprises a plurality of transversely extending curved spring fingers 23 located back of the clamping sections 10′, 11′. These fingers are provided alternately with openings 24 and projections 25, the openings and projections on one member being in staggered relation to the openings and projections on the other member. The two members are pressed or cut out of sheet metal in the form of blanks 26, 27 (Figs. 1, 2) slitted transversely from one edge to make the fingers, after which the fingers are curved as indicated and then the members are oil tempered.

In assembling the members, the fingers of each member having the projections 25 are lapped slightly over the fingers of the other member having openings 24 and the projections enter said openings. The edge 28 of the fingers having the projections, on each side of the projections, binds upon the fingers having the openings with sufficient friction, and the curvature of the fingers causes the projections to enter the openings sufficiently, to secure the clamping members together. When the members are interengaged the arc of the overlapping fingers will be somewhat greater than that of the underlapped fingers and hence the projections will enter the openings without being actually in hooked engagement therewith, but, in view of the frictional engagement of the fingers and the fact that the overlapped and underlapped fingers are staggered, the clamping members are held securely but yieldingly together so that they will not become separated

even when the binder is subjected to very rough usage.

To open the binder the cover (or base) 14 is held rigid and the cover 12 is pressed backward as indicated in Fig. 6; if both covers are hinged they are both pressed backward; in the construction of Fig. 9 the handle is pressed backward while the cover (or base) 19 is held rigid; and in the construction of Fig. 10 the handles are pinched or compressed. When the binder is opened the frictional engagement of the overlapped fingers is increased and the projections are swung into the openings (Fig. 6).

The binder can be made of sheet metal of any desired weight and even when light weight metal is used the back will be so rigid and stiff by reason of its peculiar construction that it will not yield or crush if subjected to heavy weights or blows. When a heavy crushing strain is applied to the back the fingers will yield slightly but the ends of the projections will engage the back wall of the openings to prevent the fingers from collapsing.

What I claim and desire to secure by Letters Patent is:

1. In a binder, a back consisting of two members having a plurality of interengaged spring fingers yieldingly connecting said members together.

2. In a binder, a back consisting of two members having a plurality of interengaged curved spring fingers yieldingly connecting said members together.

3. In a binder, a back consisting of two members each having throughout its length a plurality of parallel separated curved spring fingers, the fingers of one member being engaged with the fingers of the other member to connect said members together.

4. In a binder, a back consisting of two members each having a plurality of spring fingers and the fingers of one member having alternate overlapped and underlapped engagement with the fingers of the other member.

5. In a binder, a back consisting of two members each having a plurality of interengaging spring fingers, the fingers of each member being alternately provided with openings and with projections to engage said openings.

6. In a binder, a back consisting of two members each having a plurality of spring fingers alternately provided with openings and projections, the fingers having the projections on one member being arranged in staggered relation to the fingers having the projections on the other member and adapted to have overlapping engagement with the fingers having the openings on the other member.

7. In a binder, a back consisting of two members each having a plurality of spring fingers alternately provided with openings and projections arranged in staggered relation on said members, the fingers having the projections on each member being adapted to have overlapping engagement with the fingers having the openings on the other member and the projections being arranged and adapted to enter said openings.

8. In a binder, a back consisting of two metallic members provided with a plurality of curved spring fingers, the fingers on each member being adapted for interlocking engagement with the opposing fingers on the other member.

9. In a binder, a back consisting of two metallic members each having a plurality of curved spring fingers in alternate overlapped and underlapped engagement with the fingers of the other member.

10. In a binder, a back consisting of two metallic members each having a plurality of curved spring fingers in alternate overlapped and underlapped engagement with the fingers of the other member, and means connected with said members to open them.

11. In a binder, a pair of clamping members each having a clamping section and a plurality of spring fingers extending back from said clamping section and adapted to interlock with the fingers of the other member, and means for opening said members.

12. In a binder, a pair of clamping members, each of said members having a clamping section, cover hinge sockets integral with said section along one edge thereof and spring fingers projecting from the other edge of said section to interlock with the spring fingers on the other member.

13. In a binder, a back consisting of two members having a plurality of interlocking spring fingers to hinge said members together.

14. In a binder, a back consisting of two members having a plurality of interlocking spring fingers to hinge said members together, and means connected therewith for opening said members.

15. In a binder, a spring back consisting of only two members, each member having a plurality of fingers adapted for interlocking engagement with the opposing fingers on the other member, whereby a yielding connection between said members is established.

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Witnesses:
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