June 2, 1942. R. TAUBER 2,285,234

LOOSE LEAF BINDER

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Fig. 1.

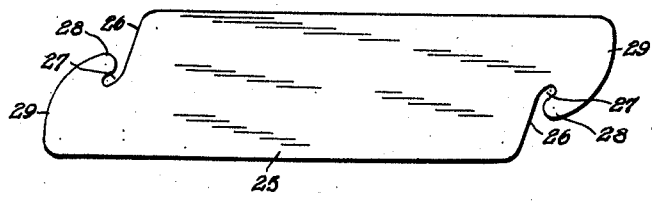


Fig. 2.

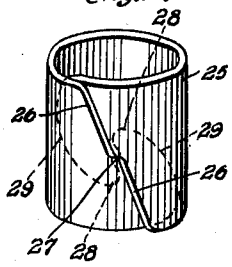


Fig. 3.

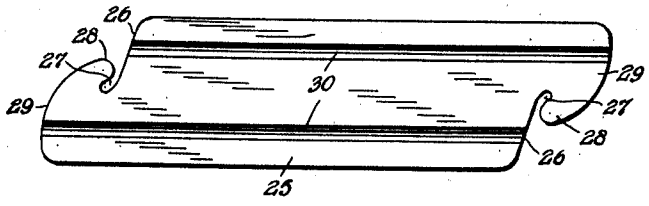


Fig. 4.

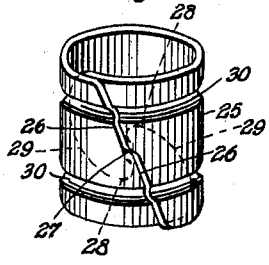


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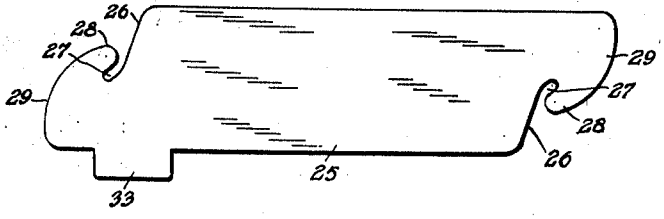


Fig. 6.

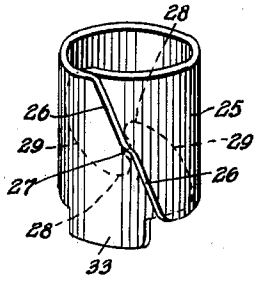


Fig. 7.

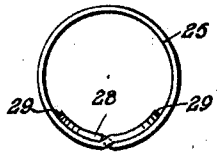
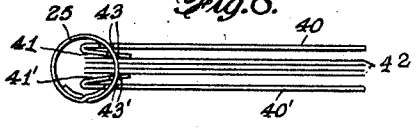


Fig. 8.



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Fig. 9.

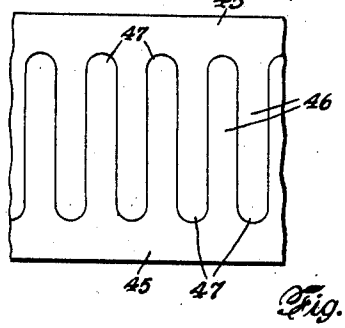


Fig. 12.

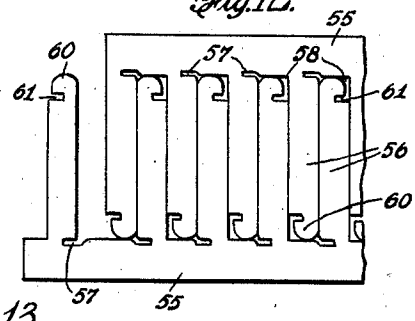


Fig. 10.

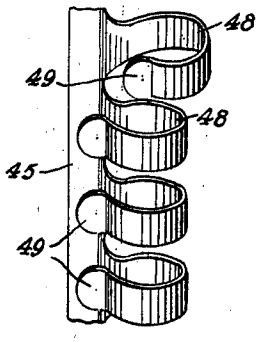


Fig. 13.

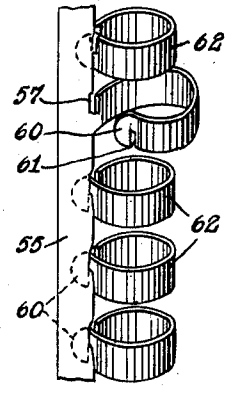


Fig. 14.

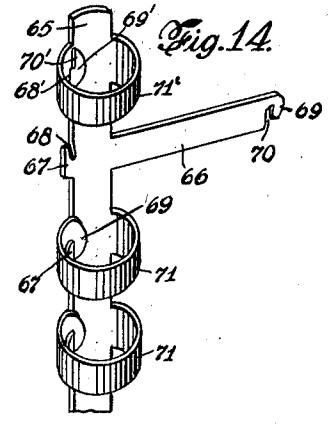


Fig. 11.

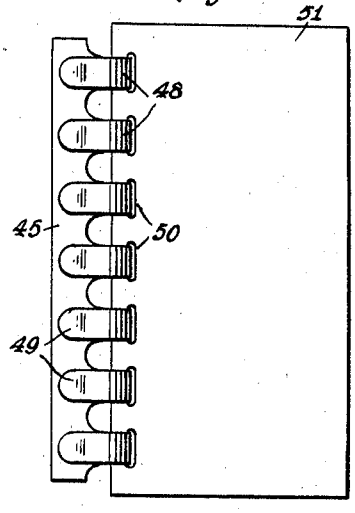


Fig. 15.

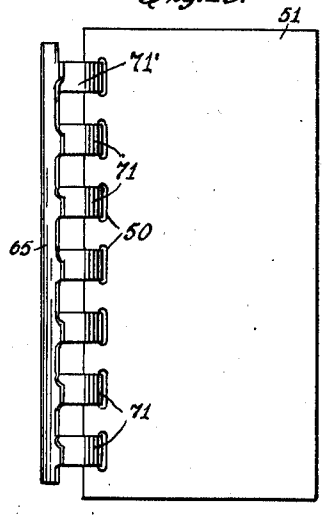


Fig. 16.

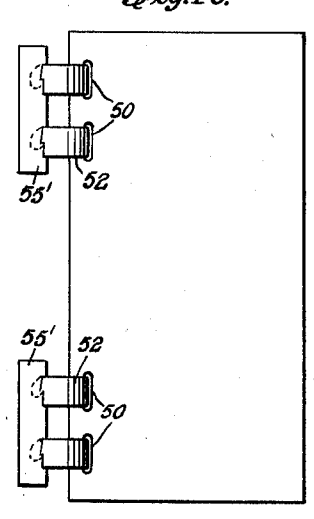


Fig. 17.



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Patented June 2, 1942 2,285,234

UNITED STATES PATENT OFFICE

2,285,234

LOOSE LEAF BINDER

Rudolf Tauber, New York, N. Y.

Application May 6, 1941, Serial No. 392,041

2 Claims. (Cl. 129—1)

This invention relates to the art of bookbinding, and more particularly to means for fastening together a plurality of loose leaves, as sheets of paper or similar thin, flat material, assembled in definite sequence, this application being a continuation, in part, of a former application, filed May 26, 1938, Serial No. 210,105.

Devices for binding large books in such manner as to permit the addition, removal or substitution of one or more pages, are often required, as in loose-leaf catalogues and books of reference in which changes take place with the passage of time, and other examples well known to the public.

More important is the demand for secure, but removable binding means for small collections of blank sheets, printed matter and the like, such as note books, calendars, display or counter cards, monthly publications, pamphlets, price lists, etc., on which covers are used.

The outstanding requirements of such binders may be briefly enumerated as follows: inexpensive construction; ease of application; security in clasping; positive non-interference in turning pages, which must be smoothly accomplished; flat opening, that is, the leaves must lie flat when extended, and the binders should permit the pages to be turned over upon themselves, and still maintain their flat condition; to these must be added attractive and pleasing appearance.

It is the object of this invention to provide binding means that include all of the foregoing features, together with others which will hereinafter appear.

In the drawings, constituting a component of this disclosure—

Figure 1 is a plan view of a blank from which the binder is formed.

Figure 2 is a perspective view of the binder as coiled and its ends interengaged.

Figure 3 is a plan view of a modified form of blank with longitudinal grooves.

Figure 4 is a perspective view of the blank coiled and its ends connected.

Figure 5 is another plan view of a blank having means to prevent displacement.

Figure 6 is a perspective view of the blank with its ends interconnected.

Figure 7 is a top plan view of the binders.

Figure 8 is an end view of a loose leaf book, showing the arrangement of covers, pages and binder.

Figure 9 is a plan view of a blank from which binding devices may be formed without waste.

Figure 10 is a perspective view of a binder strip formed by the blank.

Figure 11 is a side elevational view showing the application of the binder to a book.

Figure 12 is a view similar to Figure 9, but showing interengageable binder blanks.

Figure 13 is a perspective view of a binder strip made therefrom.

Figure 14 is a perspective view showing a further slightly modified form of binder strip.

Figure 15 is a side elevational view showing the application of the binder strip shown in Figure 13.

Figure 16 is a side elevational view of paired elements applied to a book.

Figure 17 is a perspective view of a single binder, its ends secured by an adhesive.

Referring in further detail to the drawings, all of the several binder blanks are cut from thin, flat sheets of any preferred, resilient material, such for instance, as Celluloid.

The blank **25** is generally an elongated rectangle having straight parallel side edges and oblique ends **26**, extending midway the width of the strip thus produced, thence blending into narrow, reentrantly curved recesses **27**, partially enclosed by lobes **28** extending past the longitudinal center of the strip from outwardly curved arcuate extensions **29** on the opposite side edge and constituting the terminals of the binder blank.

The blank is shaped into a band by heat and compression in dies, its terminal lobes **28** engaging by lateral pressure, applied by the fingers of an operator within the recesses **27**, when assembling the leaves of the booklet, or dismounting them in an obvious manner, the material readily yielding, and thereafter, due to its resiliency, returning to the interlocked position shown in Figures 2, 4 and 6.

In the modification illustrated in Figures 3 and 4, the material **25** is shaped into a circular band and formed in the strip are spaced inreaching annular grooves **30**, their smoothly rounded inner surfaces constituting tracks on which the perforations in the pages freely slide in a substantially frictionless manner as they are turned.

Figures 5 and 6 show substantially the same binder, with these differences: the blanks may be of the same width; the locking recesses and curved terminals essentially the same, but extending from one of their edges is a lug **33** adapted to retain the engaged ends of the binder, on the outer edges of the booklet, the lug **33**

preventing the joint from slipping into the slots made in the pages of the booklet to receive the binder.

If preferred, the engaging ends of the various forms shown and described, may be secured by an adhesive, or any suitable permanent sealing means, thus preventing removal of the binder rings from the perforations in the sheets, resulting in a permanently bound unit.

In Figure 8 is shown a booklet having a cover in two parts **40** and **40'**, the material being creased lengthwise, adjacent the rear edges, to admit of binding flaps **41—41'** turned inwardly to contact the pages **42** therebetween.

Each of the covers and increasing flaps are provided with perforations **43—43'** through which are passed, either the tubular binders hereinbefore described, or plain ring binders.

The effect produced is, by reason of a quadruple bearing of the binders, to prevent lengthwise movement of the pages relative to the cover, the binders at all times extending inwardly with far greater rigidity than when merely passing through the covers and pages only.

The blank shown in Figure 9 consists of a tape-like strip of resilient non-metallic material, of uniform width and thickness, die stamped to produce opposed, straight marginal backings **45** from which extend uniform arms **46**, equally spaced and the spaces so proportioned as to form identical arms integral with the opposite backing.

The ends **47** of the arms are formed semi-circular and it is to be noted that no waste material results from the stamping operation.

After stamping, the ribs are curled, under heat and pressure, to present tubular bands or rings **48**, their curved end portions **49** again bent radially and adapted to be juxtaposed upon the backing **45**, after being passed through openings, as at **50**, in the cover **51** of a book, thereafter to be affixed to the backing, as will be clearly understood. These covers **51** may be constructed in the same manner as the covers **40** and **40'** shown in Fig. 8.

In Figure 17, a single band **52** is illustrated, having both ends **53** arranged in parallel to be firmly secured together by an adhesive suited to the material used.

The blank seen in Figure 12 has similar marginal backings **55** from which extend arms **56** partially separated by short transverse slots **57** at the junction with the backings.

Opposite the slots **57**, which enter the backings, are recesses **58**, by which the rounded ends **60** are formed, and further shaped as hooks by reason of notches **61**, the same being continuations of the recesses **58**; thus the arms **56** are formed in such manner that their curved hook ends **60** are engageable in the slots **57** by springing the arms laterally, thereby forming bands **62**, as best seen in Figure 13.

Figures 14 and 15 vary from the foregoing in that the backing strip **65** may be curved arcuately; it has similar arms **66** extending from one edge and on the opposed edge are hook formations **67** directly opposite the arms, these hooks being formed by recesses **68** adapted to engage the rounded ends **69** of the arms and held in position by end recesses **70** adapted to engage the hooks **67**, when the arms are bent to constitute circular bands **71**.

It is to be noted that in Figures 14 and 15, one or more of the arms **66**, preferably at the end portions of the strips, have their hook shaped end portions **69'** formed in a reverse direction to that of the remaining hooks **69**, and obviously the corresponding slots or recesses **68'** and **70'** are also directed oppositely in accordance.

This arrangement prevents any possible accidental displacement of the bands, as their interengaging elements are oppositely disposed.

The showing in Figure 16 is merely to illustrate that two or more of the bands **62**, connected by short strips **55'**, may be used when desired; obviously the arrangement indicated in Figures 10 and 11 may be substituted.

It is highly important that band or ring binding devices, used in connection with a connecting strip, have their respective engaging elements as close as possible to the edge of the strip for convenience in attachment and detachment, it being found that if the joints of the bands are midway their lengths, difficulty is encountered, a condition avoided by having the joints as shown and described.

Although the improvements have been described with considerable detail and with respect to certain particular forms of the invention, it is not desired to be limited to such details since many changes and modifications may well be made without departing from the spirit and scope of the invention in its broadest aspect.

Having thus described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. In combination with a book having a separate cover on each side, an inturned resilent flap formed at the rear edge of each side cover, said covers and flaps being plurally perforated, and binders passed through registering perforations in the covers, flaps and intervening material.

2. In combination with a book having a cover on each side, a reentrantly turned spaced flap at the rear edge of each cover, said covers and flaps being perforated, and loose-leaf binders set in registering perforations.

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