No. 758,292. PATENTED APR. 26, 1904.

H. W. AYRES.

LOOSE LEAF LEDGER.

APPLICATION FILED APR. 20, 1903.

NO MODEL.

Fig. I

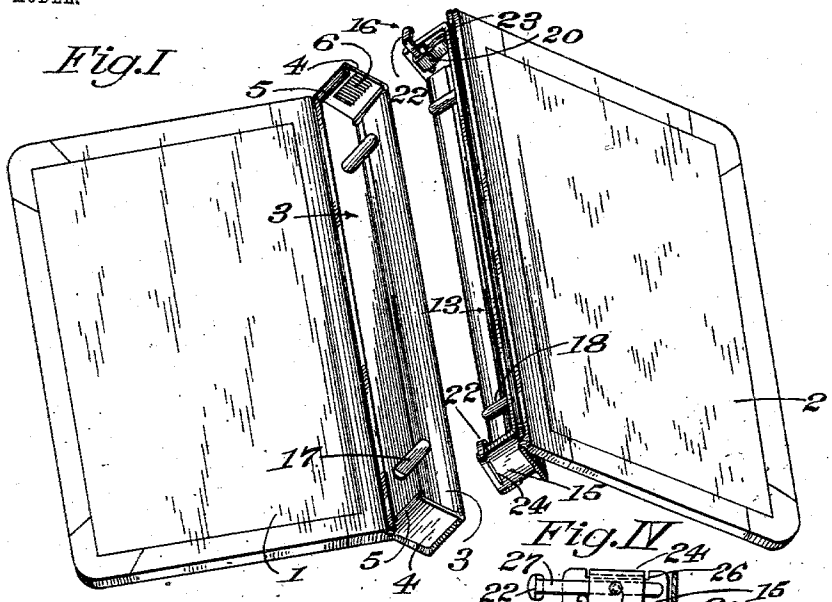


Fig. IV

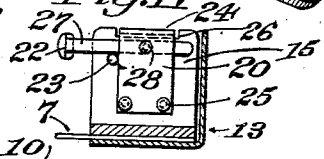


Fig. II

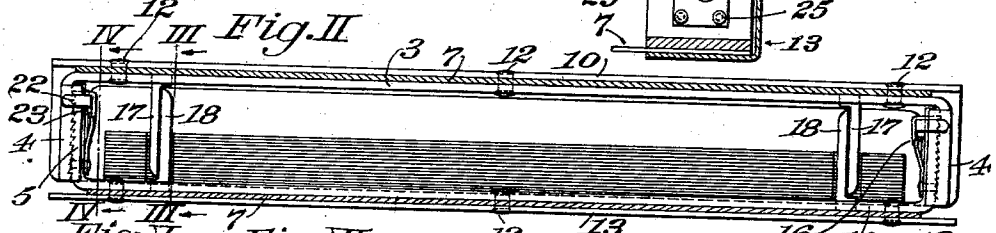


Fig. V

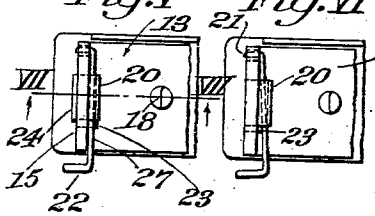


Fig. VI

Fig. III

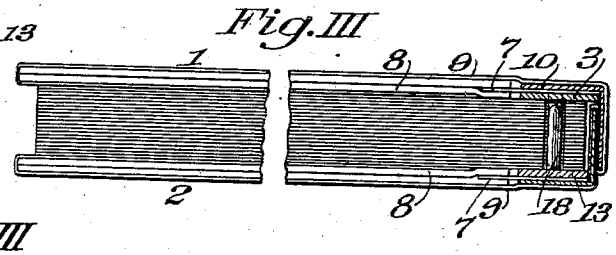


Fig. VII

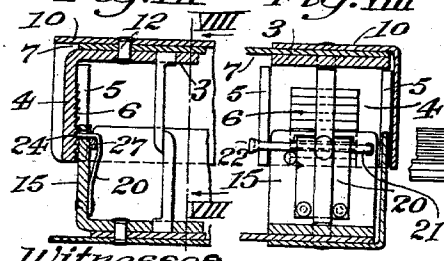


Fig. VIII

Fig. IX

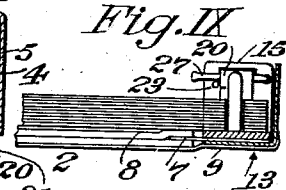
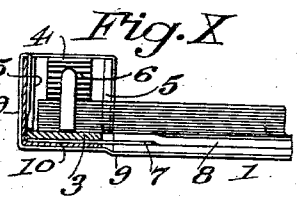


Fig. X



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THE NORRIS PETERS CO., WASHINGTON, D. C.

No. 758,292. Patented April 26, 1904.

UNITED STATES PATENT OFFICE.

HENRY W. AYRES, OF LOS ANGELES, CALIFORNIA.

LOOSE-LEAF LEDGER.

SPECIFICATION forming part of Letters Patent No. 758,292, dated April 26, 1904.

Application filed April 20, 1903. Serial No. 153,431. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. AYRES, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Loose-Leaf Ledger of which the following is a specification.

My invention relates to books in which the leaves are detachably held and which is adjustable to hold various numbers of leaves.

Loose-leaf ledgers have been constructed in which the sheets have been provided with perforations through which posts, carried by the back or covers of the book, pass to hold the sheets in place. The posts have been made to be detached at one or both ends to permit of the insertion or removal of a leaf or leaves. In other forms the posts have been made telescopic and detachable when extended. The present invention is an improvement over such devices in that the possibility of the tearing of the leaves adjacent the perforations is reduced and much of the difficulty which heretofore existed in inserting leaves has been removed. In devices such as described to prevent the leaves from shaking out of line and to maintain them exactly true along their edges the posts have necessarily been of a size which substantially filled the perforations. Consequently in placing a leaf in position on the posts the perforations must be brought exactly into register with the ends of the posts in order to enable the latter to slip through the perforations. This is a difficult matter, and in the hands of careless persons leaves have frequently been damaged when being placed on the posts. Moreover, when a pack or number of leaves are to be inserted at a time it has been extremely difficult to get all of the perforations in the sheets into register in order to slip them into place. The leaves consequently frequently became torn or damaged around the perforations which allowed them to sag, making it difficult to handle the leaves when using the book and also detracting from the appearance of the book.

An object of the present invention is to provide devices for fastening the leaves which will overcome the foregoing difficulties and which will enable either a single leaf or a number of leaves together to be quickly placed in position without requiring as great attention to be paid to the alinement of the perforations as heretofore has been necessary. The devices are so constructed that the leaves are brought into alinement automatically. When the book is opened, a leaf or number of leaves may be inserted, or a single leaf can be transferred from one cover to the other or removed, or a number of leaves together can be transferred from one cover to the other or removed with facility. When the covers are separated, part or all of the leaves may remain with either cover, which allows the book to be opened at the exact leaf desired, and the covers lie flat. In the present invention the posts which pass through the perforations in the leaves are constructed in pairs, each member of a pair being semicircular in cross-section—that is, each member comprising a post is half-round, so that when the book is opened and the covers lie flat four members are presented, which may carry the sections of leaves which lie on each cover, while when the book is closed the separate members of the post become united and form cylindrical posts. In bringing the covers of the book together the members of the posts automatically slide together, but do not catch at the edges of the perforations. Means are also provided for locking the two sections with the respective pairs of posts together.

The accompanying drawings illustrate the invention and form part of this application.

Referring to the drawings, Figure I is a perspective view showing the two covers of a book opened and slightly separated and equipped with the present invention. Fig. II is a longitudinal section of a book closed, looking toward the back of the book, and shows the book-covers in section. The leaves are also in section on the line of their perforations, while the fastening devices and other features of the present invention are shown in elevation. The book is shown as half-filled with leaves. Fig. III is a transverse sectional view taken through the book looking toward one end thereof, the section being taken on line III III, Fig. II. Fig. IV is a detail section taken on line IV IV,

Fig. II. Fig. V is a plan view of one end of the lower section of the fastening device, showing the lock "locked." Fig. VI is a view similar to Fig. V, showing the lock "unlocked." Fig. VII is a section of the end of the fastening devices, showing the two members drawn to their maximum receiving distance apart. The view is taken on a plane which would lie through the line VII VII, Fig. V. Fig. VIII is a sectional view taken on line VIII VIII, Fig. VII. Fig. IX is a transverse sectional view through one leaf with its attached member of the fastening device, the view being taken on a line which passes through a perforation in the leaves, a few leaves being shown in position. The view shows the upper member. Fig. X is a view similar to Fig. IX, showing the lower cover and its attaching member of the fastening device.

The invention comprises upper and lower supporting members, which are attached to the respective covers, each member being provided with at least two half-round posts which are adapted to slide together when the upper and lower members are united. The two half-round members form when together a cylindrical post, and means are furnished for locking the upper and lower members at various distances apart.

1 designates the upper cover of the book.

2 designates the lower cover.

3 designates the upper supporting member, which in the present embodiment is L-shaped in cross-section and is provided at the ends with plates 4. The edges of the plates 4 are provided with flanges 5. The inside faces of the plates 4 are provided with lock-engaging means or seats, in the present embodiment a series of notches or V-shaped grooves 6.

Referring to Fig. III, it will be seen that each cover comprises two layers of pasteboard or other stiff material 8. The two layers of pasteboard 8 may be covered with any suitable wearing material, such as canvas or leather. Canvas may preferably be employed for the main portion of the cover, as it is not so expensive as leather, while the latter may be employed for the back portion, as it receives the most wear, and leather affords a good material to which to fasten. The leather also serves as a hinge and reinforces or strengthens the hinge proper about to be described.

The supporting member 3 is provided with a top plate 10, (see Fig. III,) and between the two pieces of pasteboard 8 is glued or otherwise secured a piece of canvas or other flexible material 7. The canvas extends from the edges of the pasteboard to between the main portion of the supporting member 3 and the plate 10, and the plate 10 may be secured to the supporting member by screws or, as shown in the present embodiment, by rivets 12. The leather 9 is continued around the back of the supporting member 3 and is folded over the same and pasted thereto. The rivets 12 pass through the three thicknesses of the upper plate 10, canvas 7, and supporting member 3. The upper plate 10 should be of very thin material. The leather 9 passes over the heads of the rivets and entirely conceals them and forms a covering for the fastening device and gives a finished appearance to the book. Where the leather curls over, it may be pasted to the inner side of the plate.

The lower supporting member may comprise a bar 13, L-shaped in cross-section, the ends of which are upturned to form wings 15. The wings 15 form a support for catches or locking devices, (designated in general by 16.) The plates 4 of the supporting member 3 slide over the wings 15, and the latter guide the movement of the upper member and insure the accurate positioning of the two members. The lower supporting member is attached to the pasteboard 8 of the lower cover by canvas and rivets, as shown. As will be seen by reference to Figs. II, III, VII, and VIII, the upper member envelops the lower member, so to speak, and the leather 9 of the lower member is extended completely over the entire back face of the L-shaped plate, so that as the latter is moved out and more of the plate exposed the leather covers the same and provides a good appearance. This face may or may not be covered with leather. In some books I desire to cover it and in other books I propose to finish the metal. The supporting member carries half-round posts 17. The free ends of the posts are rounded or beveled, as shown, so as to enable the leaves to slip over the ends thereof or to enable the post to be readily seated in the perforations in the leaves and also to prevent catching of the leaves on the ends of the posts. The lower supporting member carries a pair of half-round posts 18, which are constructed in a manner similar to the posts 17 and are adapted to be brought into alinement with the post 17 when the two supporting members are closed together, forming a single cylindrical post. The two supporting members may be moved toward or away from each other to expand or contract the space between them to allow for the requisite number of leaves, and the posts 17 and 18 readily slip or shift by each other and form a continuous connection between the two supporting members. The leaves are thus held fastened in the book until the two supporting members are disengaged from each other, at which time the posts separate and allow leaves to be inserted or removed. The rounded or beveled ends of the posts 17 and 18 prevent them from catching on the edges of the leaves. The size of the two half-round members when together, forming a single cylindrical post, is such that the perforations in the leaves are nearly filled by the posts. The posts 17 are of the same length as the posts 18, so that when the two supporting members are brought to-

gether to the limit the ends of the posts 18 will rest against the upper supporting member, while the ends of the posts 17 will rest against the lower supporting member. Moreover, when the supporting members are separated each of the posts will separate simultaneously, and, conversely, when the two members are brought together the ends of the posts will meet simultaneously. The end wings 15 serve to guide the movement of the two members in parallel planes and prevent binding. The main object of providing the parallel motion of the supporting members is to insure that the posts will always be in line and to prevent the posts from becoming crossed at an angle to each other, which would cause them to catch in the leaves. The flange 5 prevents any rocking of the supporting member 3 relatively to the lower supporting member.

Each lock 16 comprises a latch 27, which is pivoted at 21 to a wing 15 and which is provided with a finger-button 22, whereby it may be manipulated.

23 designates a stud on the wing 15, which serves to support the latch 27 when the catch is raised free from its engaging means. The end of the spring-catch 20 is turned over to form a lip 24, which is adapted to engage with the grooves 6 in the end plates 4. The grooves 6 are sufficient in number, so that the latches 20 will be engaged irrespective of the space between the supporting members.

Fig. IV shows another form of constructing the wings 15 and the catch, in which the catch 20 is fastened at each of its lower corners by rivets 25. The lip 24 lies through a notch 26, formed in the upper edge of the wing 15. 27 is a finger lever or latch pivoted at 28 to the spring-catch 20, and its inner end bears against the wings 15 and acts as a fulcrum when the lever 27 is rocked and lifted up over the top of the stud 23.

In both of the embodiments described I employ pivoted latches or catch-holding means for manually releasing the catches, said latches having both a swinging and a lifting movement; but I do not wish to be understood as limiting myself to the specific construction described.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. Upper and lower supporting members slidable together, half-round posts carried by the respective members adapted to pair together when the supporting members are brought together, one of said supporting members being provided with a series of notches, a spring-catch fastened to the other member and adapted to engage with said notches, a pivoted latch adapted to lift said catch out of said notches, and means for supporting said latch in raised position.

2. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of the upper member being slidable over the end plates of the lower member, the end plates of the upper member being provided with a series of notches, spring-catches secured to the inner sides of the end plates of the lower supporting member, said spring-catches being provided with lips which project through slots in the plates which support said spring-catches the lips of said catches adapted to engage with the aforesaid notches, and means extending beyond the edges of said end plates for manually releasing said catches.

3. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of the upper member being slidable over the end plates of the lower member, the end plates of the upper member being provided with a series of notches, spring-catches fastened to the end plates of the lower supporting member, said spring-catches being provided with lips which project through slots in the plates which support said spring-catches the lips of said catches adapted to engage with the aforesaid notches, and studs mounted on the respective end plates of the lower supporting members, said spring-catches being movable over the heads of their respective studs.

4. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of the upper member being slidable over the end plates of the lower member, the end plates of the upper member being provided with a series of notches, spring-catches fastened to the end plates of the lower supporting member, said spring-catches being provided with lips which project through slots in the plates which support said spring-catches the lips of said catches adapted to engage with the aforesaid notches, and studs mounted on the respective end plates of the lower supporting members, said spring-catches being provided with latches movable over the heads of their respective studs, and finger-buttons attached to the respective latches.

5. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of one member being slidable over the end plates of the other member, the end plates of one member being provided with series of seats, spring-catches carried by one member, said catches having lips adapted to project through cut-away portions

of the end plates of the member carrying said catches, said lips adapted to engage the aforementioned seats, and catch-holding means for holding said lips out of engagement with said seats.

6. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of one member being slidable over the end plates of the other member, the end plates of one member being provided with series of seats, spring-catches carried by one member, said catches having lips adapted to project through cut-away portions of the end plates of the member carrying said catches, said lips adapted to engage the aforementioned seats, catch-holding means for holding said lips out of engagement with said seats, and means for manually throwing the latches into engagement with said holding means.

7. In a loose-leaf book, upper and lower supporting members slidable together, leaf-holding means between the members, one of said supporting members being provided with a series of notches, a spring-catch fastened to the other member and adapted to engage said notches, a pivoted latch adapted to lift said catch out of said notches, and a stud for supporting said latch in raised position.

8. In a loose-leaf book, upper and lower supporting members slidable together, leaf-holding means between said members, one of said members being provided with a series of seats, a spring-catch carried by the other member and adapted to engage said seats, a latch having a lifting movement and a pivotal movement, said latch being adapted to lift said catch out of said seats, and means for supporting said latch in raised position.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 11th day of April, 1903.

HENRY W. AYRES.

Witnesses:

GEORGE T. HACKLEY,

FREDERICK S. LYON.