No. 878,281. PATENTED FEB. 4, 1908.

A. DOM.

LOOSE LEAF BINDER.

APPLICATION FILED MAY 28, 1906.

Fig. 1.

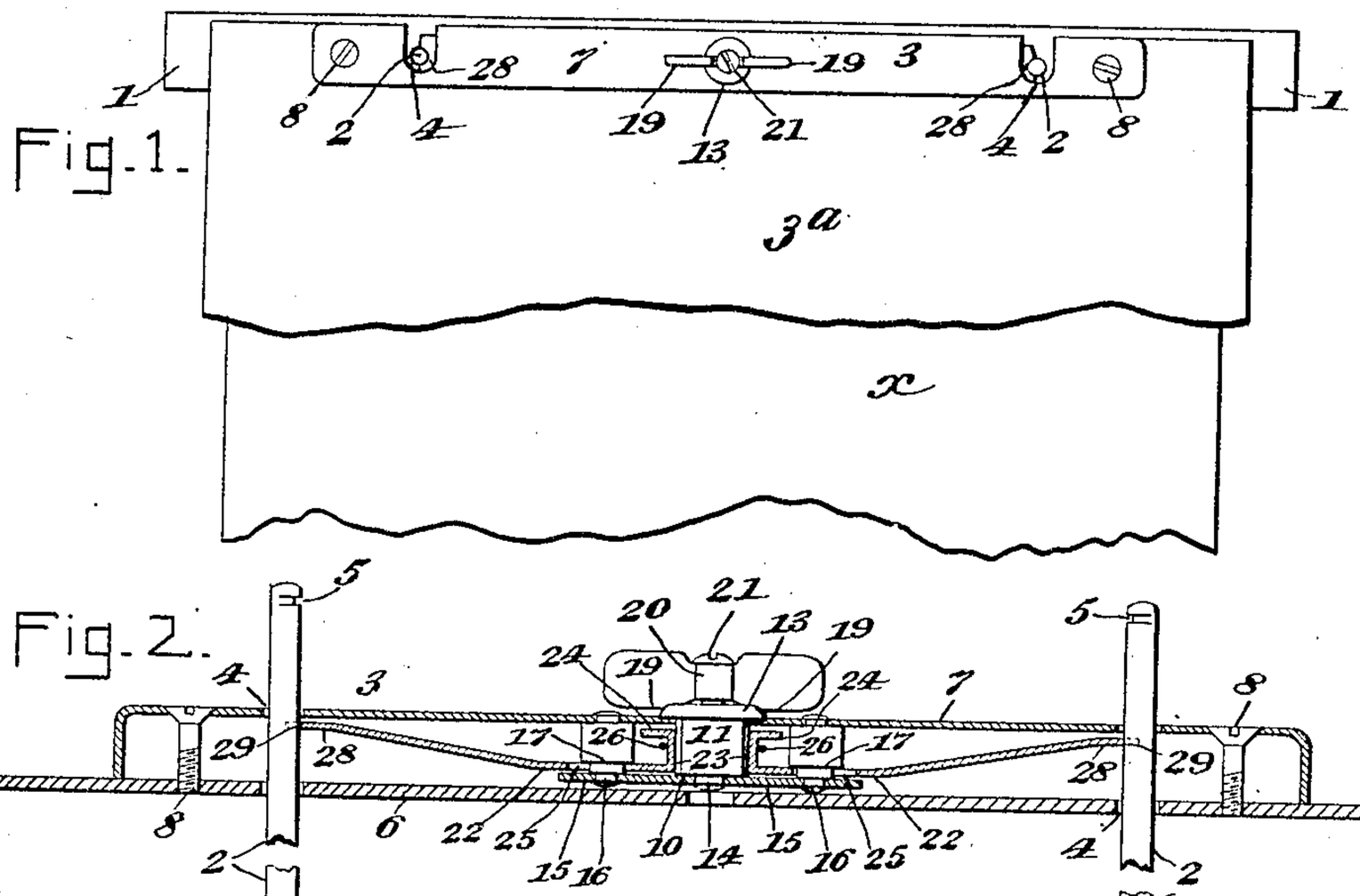


Fig. 2.

Fig. 3.

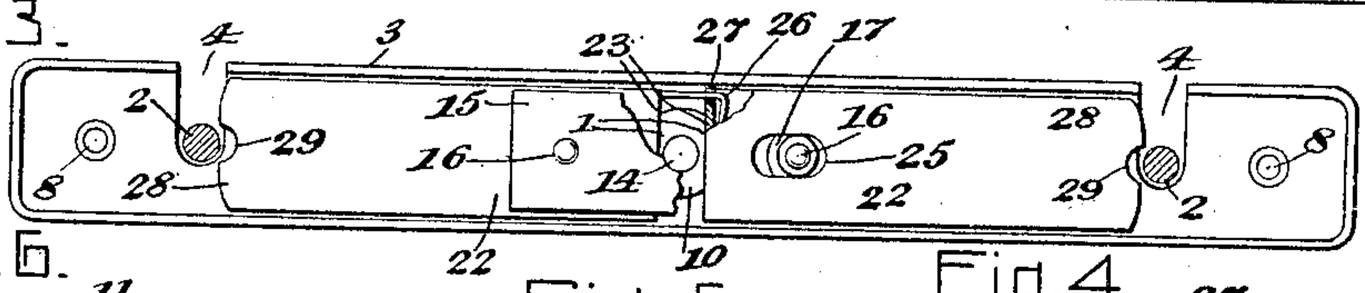


Fig. 6.

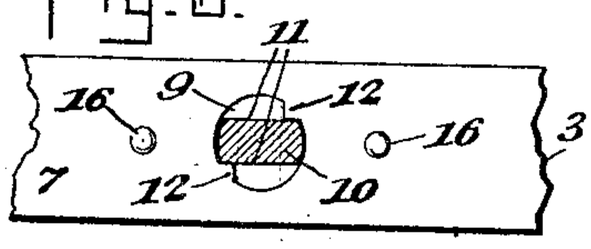


Fig. 5.

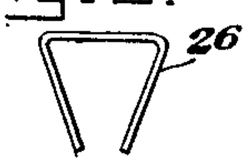


Fig. 4.

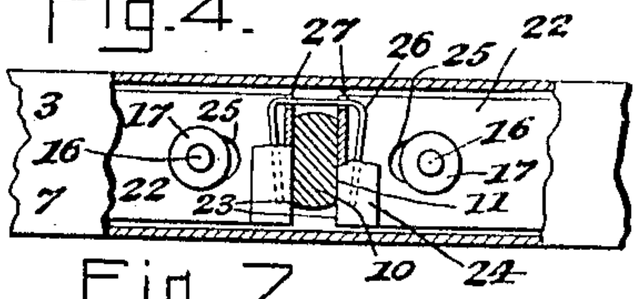


Fig. 9.

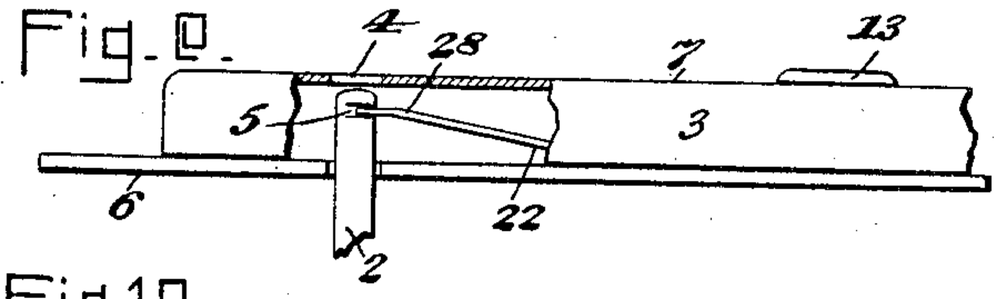


Fig. 7.

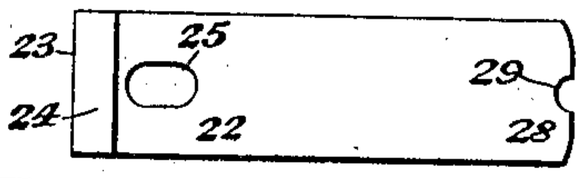


Fig. 10.

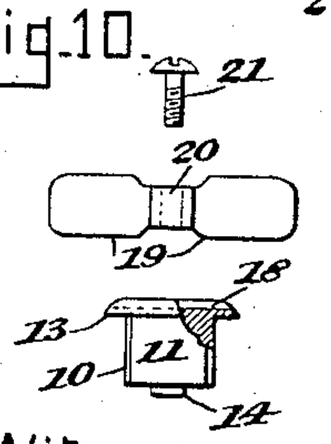


Fig. 11.

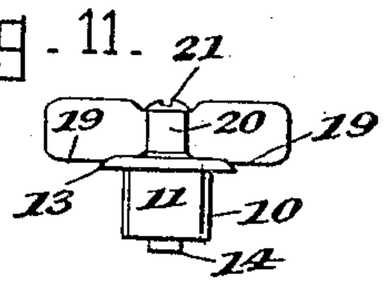


Fig. 8.

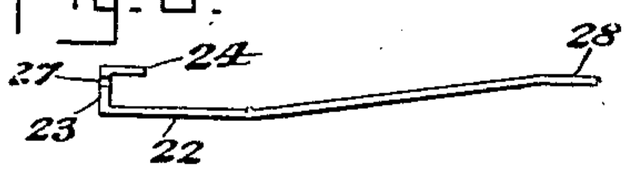
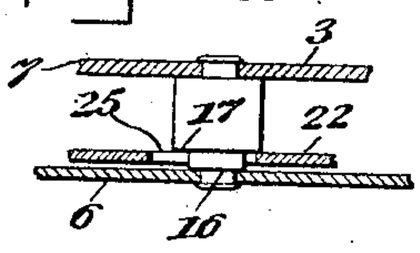


Fig. 12.



Witnesses.

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L. W. Irwin

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Alexander Dom,

by John Elias Jones,

his Attorney.

UNITED STATES PATENT OFFICE.

ALEXANDER DOM, OF HARTWELL, OHIO, ASSIGNOR TO THE TWINLOCK COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

LOOSE-LEAF BINDER.

No. 878,281. Specification of Letters Patent. Patented Feb. 4, 1908.

Application filed May 28, 1906. Serial No. 319,106.

To all whom it may concern:

Be it known that I, ALEXANDER DOM, a citizen of the United States of America, and a resident of Hartwell, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

This invention relates to certain improvements in loose-leaf binders and more particularly in that class of such devices which are especially designed for use as account or order books, bill or document files, and the like, and the object of the invention is to provide a device of this general character of a simple and inexpensive nature and of a strong and durable construction having improved and simplified means capable of convenient and rapid operation to either securely hold the leaves or sheets in the binder or to relax pressure thereon so that said leaves or sheets may be removed, inserted or transposed as may be desired.

The invention consists in certain novel features of the construction, and combinations and arrangements of the several parts of the improved loose-leaf binder, whereby certain important advantages are attained and the device is rendered simpler, cheaper and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings which serve to illustrate my invention—Figure 1 is a partial plan or top side view of the binder constructed according to my invention; Fig. 2 is a sectional view drawn to an enlarged scale and taken axially through the locking means carried by the upper or adjustable members of the binder; Fig. 3 is an underside view of the upper or adjustable member of the binder, certain parts thereof being broken out to illustrate the inclosed locking means; Fig. 4 is a fragmentary view taken from above the adjustable member of the device, certain of the upper parts thereof being broken out for illustration of the underlying elements; Fig. 5 is a view of the retracting-spring for retracting the resilient detents of the device; Fig. 6 is a view similar to Fig. 4, but showing the central part of the casing of the adjustable-member intact, the head of the actuating bolt or element being, however, in section to illustrate the means for limiting the movement thereof; Figs. 7 and 8 are, respectively, plan and edge views showing one of the resilient detents of the device, detached; Fig. 9 is a view somewhat similiar to Fig. 2, but showing a different position of the adjustable-member of the binder; Fig. 10 is a view showing, in side elevation, the several parts of the actuating-bolt detached; Fig. 11 is a side elevation of the actuating-bolt with its parts in relation, and Fig. 12 is a fragmentary detail view somewhat similar to Fig. 2, but showing a modified arrangement of the parts.

As herein shown, I have embodied my improvements in what may be termed a tablet-binder wherein there are provided two adjustably-connected members between which the binding edges of the loose leaves or sheets x are adapted to be clamped and held, one of said members being designed for connection with a flat board or tablet (not shown herein) affording a base upon which the leaves or sheets rest during writing thereon while the other member merely holds said leaves or sheets in place with their upper faces exposed to be within upon. I do not, however, desire to be understood as limiting myself to the employment of my present improvements in this class of binders alone, since it is evident that the invention may as well be applied to those binders having book form, the clamping-members being held to the respective sides or covers in such case.

As herein shown, 1 indicates the lower or base member of the binder, in the form of a flat metal strip or plate adapted for attachment to the wood or other tablet (not shown) and provided, adjacent to its opposite ends with upturned vertical posts or rods 2, 2, rounded in cross-section and designed to traverse apertures in the binding edges of the loose leaves or sheets x in a well-known way. Said posts or rods 2, 2 are herein shown as made integral throughout their entire lengths, but it is evident they may, when desired, be formed of screw-connected sections, detachable, in a well-known way, to permit adjustment of the lengths of said posts or rods to the thickness or number of leaves or sheets x to be held between the members.

3 represents, as a whole, the upper or clamping member of the binder, formed of a

hollow metallic shell or casing and a sheet top-board 3ª both of elongated form provided at the rear side or edge with apertures 4, 4, preferably open-slotted (as shown in Figs. 1 and 4) adjacent to its ends, and adapted to readily receive the projecting posts or rods 2, 2 of the lower member. The shell or casing of said upper member 3 carries within its hollow, locking devices for adjustable-engagement with said posts or rods 2, 2, and from the construction so far described it is evident that said upper member, on proper actuation of said locking devices, may be adjusted lengthwise upon posts or rods 2, 2, toward or from base-member 1 to clamp or release the respective sheets or leaves *x*, or may, by lateral movement toward the person be wholly disengaged from said posts or rods to permit free access to the leaves or sheets for removal or substitution thereof, the posts or rods passing, in such case, freely through the open ends of slots 4, 4 at the rear side of member 3, so that said member 3 can be wholly disengaged from said posts.

As herein shown, the upper clamping-member 3 has its shell or casing formed of a lower metal strip or plate 6, of flattened and elongated form, and an upper housing 7, formed up from sheet-metal with a recess in its underside, said housing 7 being detachably-held to plate 6 by means of screws 8 at its ends, so that access may be had to the contained locking devices on removal of said screws.

The housing 7 has in its top wall a central opening 9 of general rounded form (as shown in Fig. 6,) and adapted to receive an operating bolt or stud 10, formed with opposite flat sides 11 whereby said bolt or stud has an elongated form in cross-section. The bolt or stud 10 is adapted for turning or rotative movement in opening 9 for operation of the locking devices as will be presently described, and the edges of said opening 9 have projecting stops 12, 12, oppositely-arranged and adapted for engagement with the flat sides of said bolt or stud to limit the turning or rotative movement thereof.

The stud or bolt 10 has a flat-topped head or enlargement 13 provided with a central threaded socket and with a diametrical groove or kerf 18 in its top surface, and the underside of said head or enlargement 13 rests on the top surface of housing 7 around opening 9 therein, while the lower end of said bolt or stud 10 has a reduced shank or bearing portion 14, held to turn in an opening in a bearing-plate 15 located in housing 7 just above plate 6, the shank or bearing portion being expanded beneath said bearing-plate 15 to hold the parts in relation. To hold the ends of the bearing-plate 15 to the housing 7, pins 16, 16 are provided at opposite sides of the bolt or stud 10, expanded above and below the housing and bearing-plate, and having central enlargements, the lower ends of which form shoulders 17 which are spaced above the bearing-plate 15.

22, 22, represent locking-members in the form of flat leaf-springs extended lengthwise in the hollow of the housing 7 at opposite sides of the stud or bolt 10, and having, adjacent to said bolt or stud straight lower or body portions provided with slotted openings 25, 25, said lower or body portions being arranged to slide lengthwise upon the opposite ends of the bearing-plate 15 below the shoulders 17 of the respective pins 16, 16, the lower reduced portions of which are passed through the slotted openings 25 in said springs 22 to guide the latter in their longitudinal movements.

By the construction described pins 16, 16 serve to hold the operative parts of the locking means to the housing 7 so that on removal of the lower plate 6 of member 3 free access may be had to all of said parts carried in said housing 7, but it is evident that this is immaterial to my invention, for if desired, the bearing-plate 15 may be dispensed with and (as shown in Fig. 12,) the lower ends of pins 16 may be passed directly through the lower plate 6 of member 3.

The adjacent inner ends of the spring locking-members 22, are upbent as shown at 23, and are designed for snug engagement upon opposite sides of the flattened operating bolt or stud 10, so that when said bolt or stud is turned, endwise movement may be imparted to said spring-members in one or the other directions, according as the longer or shorter transverse axis of bolt or stud 10 is alined with the lengths of said members 22, said bolt or stud operating after the fashion of a cam to move said members as will be readily understood.

The upper extremities of the upbent inner ends 23 of members 22, 22 are bent horizontally outward as shown in Figs. 2, 4, 7 and 8, away from bolt or stud 10, and said upbent parts 23, 23 have alined notches 27 to receive the body of a U-shaped retracting-spring 26, the arms of which are engaged outside said parts 23 beneath the outward overhanging extremities 24, so as to exert a tension normally tending to move the adjacent inner ends of springs 22 toward each other, whereby when the bolt or stud 10 has its shorter transverse axis alined with the lengths of springs 22, said springs will be moved toward each other and retracted from locking position by the tension of said spring 26. The opposite outer ends of the flat locking-springs 22, beyond the ends of bearing-plate 15, are inclined upwardly toward the top wall of housing 7 and have their extremities 28, 28 adjacent to and adapted to play across the open-slotted openings 4, 4 of the shell or casing of the clamping-member 3 when said springs 22 are moved endwise

against the tension of spring 26 by the turning of the bolt or stud 10 to bring its longer transverse axis in line with said springs and the extremities 28, 28 of said springs 22 have central notches 29, for interlocking-engagement upon the posts or rods 2, 2 when the same are in place in the openings 4, 4 of member 3 and said bolt or stud 10 is so actuated.

For turning the bolt or stud 10 for actuation of springs 22, a handle is provided having a central perforated part 20 through which is passed a screw 21, engageable in the central socket of the head or enlargement 13 at the upper end of said bolt or stud, said handle having wings 19 projecting oppositely from said central part with lower edges engageable in the transverse kerfs 18 of said head or enlargement of the bolt and adapted to be grasped between the fingers of a person using the binder for convenient actuation of the locking means.

In the use of the improved binder, when the sheets or leaves *x* are in place upon the posts or rods 2, 2, the upper adjustable clamping-member 3 is applied with its open-ended slots 4, 4 in position to receive said posts or rods 2, 2 above the leaves or sheets, the locking springs 22, 22 being, of course, moved toward each other or retracted, by proper turning of bolt or stud 10 to clear their ends from the said openings 4, 4 of member 3. The bolt or stud 10 is thereupon reversely-turned to cause the notched ends 29, 29 of the resilient-springs 22 to be forcibly pressed into locking-engagement with posts or rods 2, 2 and to prevent the said posts or rods from slipping laterally out of the openings 4, 4. Thereupon it will be evident that any desired pressure may be applied to the upper member 3 to press it forcibly down in clamping-engagement on the loose leaves or sheets held on posts 2, 2, the said member, by reason of the upward inclinations of the notched outer ends of springs 22, 22, and the ample space allowed between said notched outer ends of the spring and the inner face of the housing 7, being adapted to slide freely upon said posts or rods when thus moved downward toward the lower or base member 1, but being securely held against reverse-movement away from the base-member, (whereby the leaves or sheets would be released) by the wedging action of said inclined ends of the springs. In this way it will be seen that the leaves or sheets *x* are securely clamped and held between the members until, on reverse-turning of bolt or stud 10, the notched ends of locking-springs 22 are disengaged from pressure upon said posts or rods 2, 2, whereupon, of course, the clamping-member 3 and its board 3ª may be readily elevated or withdrawn forwardly toward the person to release the leaves or sheets. This reverse-turning of bolt or stud 10 need not be sufficient to fully retract the notched ends of springs 22 from their position across openings 4, 4, it being possible to freely elevate member 3 and its board 3ª by retracting said springs but slightly, whereby their notched ends 29 yet serve to retain the posts or rods 2, 2 against slipping laterally out of openings 4, 4. Thus it will be seen that by only partially turning the bolt or stud 10 in the direction to retract springs 22, the clamping-member 3 and its board 3ª may be freely slid up on the posts or rods 2, 2 to permit removal, insertion or transposition of the sheets or leaves, and I provide means to prevent complete separation of the members upon such upward movement of the clamping-member 3, said means comprising terminal notches or shoulders 5, 5 produced in the inner or adjacent faces of the posts or studs 2, 2 near their upper extremities, the ends of springs 22 being designed to engage said notches or shoulders 5, 5 in such upward movement (as shown in Fig. 9,) whereby further upward movement of the clamping-member 3 is prevented.

From the above description, it will be seen that the improved binder constructed according to my invention is of an extremely simple and inexpensive nature and is especially well adapted for use by reason of the security with which the leaves or sheets are held and of the convenience and rapidity with which the locking means may be actuated when desired to release the sheets or to permit of wholly disconnecting the members of the binder from each other, and it will also be obvious from the above description that the device is susceptible of some change without material departure from the principles and spirit of the invention and for this reason I do not desire to be understood as limiting myself to the precise form and arrangement of the several parts of the device as herein set forth in carrying out my invention in practice.

Having thus described my invention, what I claim and desire to secure by Letters-Patent is:—

1. The combination of a base-member having posts, a clamping-member apertured to receive the posts and provided with an aperture having a projection at its edge, an operating bolt mounted to turn in the aperture and having a part engageable with said projection to limit its turning-movement, and locking means actuated from the bolt and engageable with said posts.

2. The combination of a base-member having posts, a clamping-member apertured to receive the posts, a central actuating means on the clamping-member, a bearing-plate wherein said means is held to turn, pins connecting the ends of the bearing-plate with the clamping-member at opposite sides of the operating means, and locking-members guided on said pins at opposite sides of the

operating means and actuated from said means for endwise movement in and out of locking-engagement with the posts of the base-member.

3. The combination of a base-member having a pair of spaced upright posts, a clamping-member having rearwardly-open slots adapted to receive said posts, resilient locking-members movable endwise on the clamping-member into and out of locking-engagement with the said posts, operating means for moving the locking-members in unison, and a single retracting-spring having a pair of inclined arms adapted to engage notched upbent parts at the inner adjacent ends of the respective locking-members to automatically retract the same away from locking-engagement.

Signed at Cincinnati, Ohio, this 17th day of May 1906.

ALEXANDER DOM.

Witnesses:

JOHN ELIAS JONES,

OLIVER J. TIMBERMAN.