Jan. 2, 1923. 1,441,140.

V. A. WIRT.

LOOSE LEAF BINDER.

FILED MAR. 7, 1921. 2 SHEETS—SHEET 1.

Fig. 1.

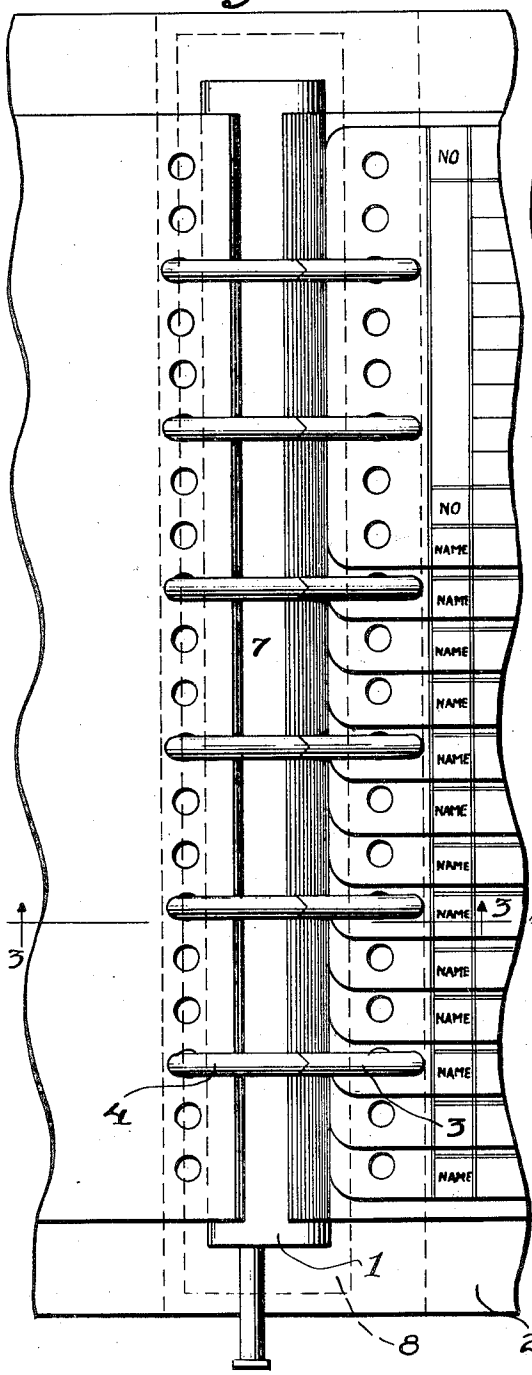
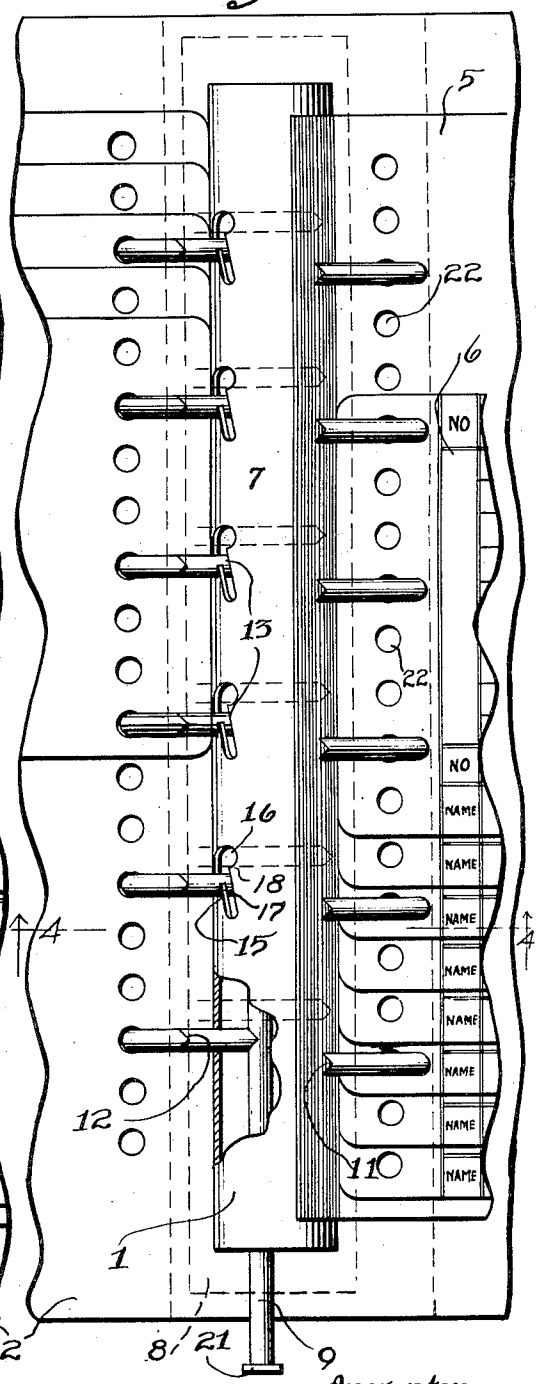


Fig. 2.



Witnesses
Geo. L. Lawrence
Arthur C. Wright.

Inventor
Van A. Wirt,
By Lummus & Lummus
Attorney.

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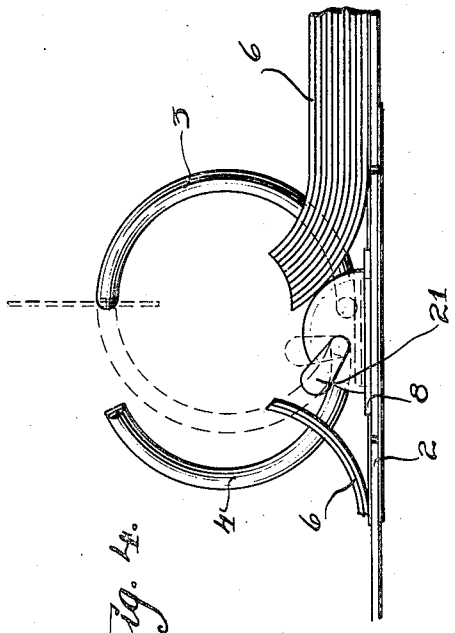

Fig. 4.

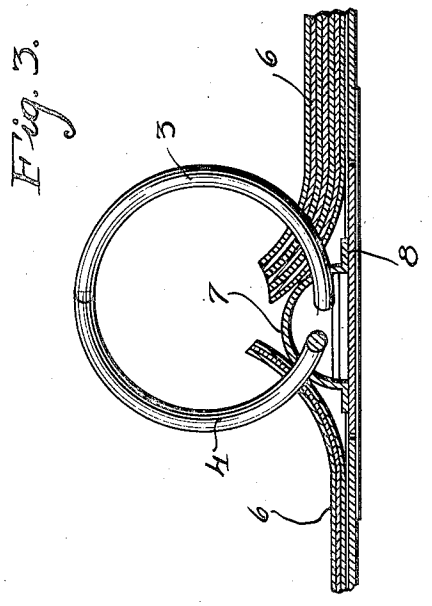

Fig. 3.

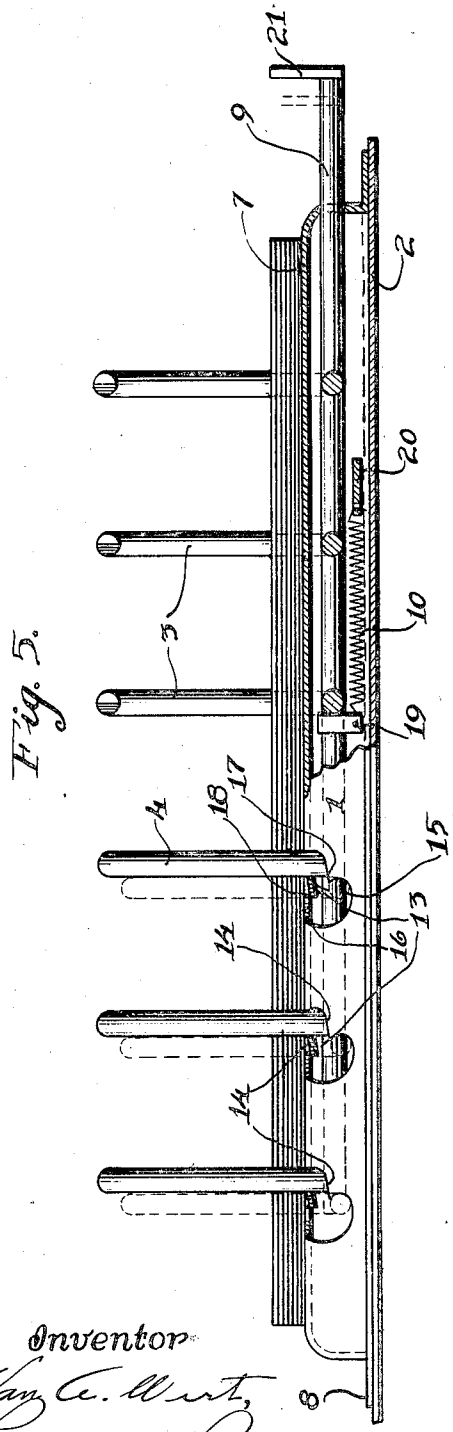

Fig. 5.

Witnesses
Geo. L. Lawrence
Arthur C. Wright.

Inventor
Van A. Wirt,
By Lummus & Lummus
Attorney.

Patented Jan. 2, 1923. 1,441,140

UNITED STATES PATENT OFFICE.

VAN A. WIRT, OF CHICAGO, ILLINOIS.

LOOSE-LEAF BINDER.

Application filed March 7, 1921. Serial No. 450,276.

To all whom it may concern:

Be it known that I, VAN A. WIRT, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

The main objects of this invention are to provide an improved construction of binders for visible loose leaf records by which to facilitate the insertion, removal and rearrangement of the leaves; to provide an improved construction for binders of the type known as ring binders for use with a plurality of leaves arranged in groups, each group comprising a plurality of superimposed leaves with each leaf exposed beyond the next; to provide improved means for opening the several rings to permit the insertion and removal of leaves; to provide improved means for shifting the sections of the ring relatively of each other for the purpose of permitting an adjustment of any portion of a group of sheets longitudinally of the binder; and to provide a binder of this kind which will permit the leaves to lie flat so that writing on any portion of a leaf is possible and easy.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which—

Fig. 1 is a plan view of a binder constructed in accordance with this invention, the same being shown in its open position with the ends of the cover, index sheets and leaves broken away.

Fig. 2 is a similar view but showing in full outline the binding posts shifted to their relatively open positions and in dotted outline in their relatively offset positions.

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a similar view taken on the line 4—4 of Fig. 2.

Fig. 5 is a longitudinal and partly sectional view of the binder.

In the specific embodiment herein shown the binder comprises a member 1 secured to a cover or suitable support 2 and upon which is arranged a plurality of pairs of binding posts 3 and 4 adapted to secure in proper relation index sheets 5 and record leaves 6 in such a way that upon the relative shifting of said pairs of binding posts leaves 6 may be inserted, removed or rearranged, as will more fully hereinafter appear.

The member 1 is preferably a sheet-metal stamping having an arcuate body part 7 surrounded by a flange 8 by means of which the member is secured in any suitable manner to the cover or support 2. The arcuate body part 7 provides a channel or housing for the shifting rod or bar 9 and the spring 10 which normally urges the rod 9 toward its retracted position.

The binding posts for this binder are arranged in pairs, each post being of arcuate form so that a pair of posts in their closed position form substantially a ring, as most clearly indicated in Fig. 3, wherefore a binder of this type is known as a ring binder. The posts 3 are rigidly secured in any suitable manner to the body 7 of the member 1 and the posts 4 are rigidly secured to the shifting rod 9 and extend through slots 13 in the body 7. The number and spacing of the pairs of posts 3 and 4 may be varied to suit various conditions. The abutting ends of the posts 3 and 4 are provided with tapered recesses 11 and points 12 respectively, in order that the ends may have perfect interfitting engagement so that the shifting of the leaves on the posts is easily effected.

The shifting of the posts 4 relatively to the posts 3 is effected by means of the rod 9 and the posts 4 coacting with the slots 13. These slots are each provided with a part extending nearly longitudinally of the member 2 but slightly inclined downwardly and with another part extending transversely to the first-mentioned part. Said first-mentioned part of the slots 13 provides cams 14 which act against the adjacent portion of the posts 4 so that upon the longitudinal shifting of the rod 9 the posts are slightly rotated or swung transversely to the member 2 so as to properly move the points 12 out of the recesses 11. The other portion of the slots 13 provides recesses 15 and 16 in which the adjacent portions of the posts 4 are received and held in place by the respective shoulders 17 and 18 in what are designated as the open or offset positions of the posts. The positions of the recesses 16 with regard to the normal positions of the posts 4 is such that when the posts 4 are seated in said recesses the ends of the pairs of posts 3 and 4 overlap with the posts 4 in position to

register with the next adjacent hole 22 in the leaves 6. The position of the recesses 15 is intermediate that of the recesses 16 and the normal positions of the posts 4.

The spring 10 has one end thereof attached to a collar 19 rigidly secured on the rod 9 and the other end attached to a plate or lug 20 secured within the body 7. The rod 9 is provided with a finger grip 21 by which the rod is actuated.

It will be noted from Figs. 3 and 4 that this arrangement of the binding posts permits the leaves 6 to lie flat upon the cover or support 2 so that writing on any or all parts of the leaves is possible and easy.

The operation of the device herein shown and described is substantially as follows: The usual sheets 5 having apertures 22 punched therein at definitely spaced intervals are arranged upon the rings between which are located a group of leaves 6. The leaves 6 are also provided with apertures 22 at definitely spaced intervals so that a leaf may be placed anywhere in the binder and will always engage at least two of the posts. The normal arrangement of the leaves is such that one edge of each leaf projects beyond the next leaf. As herein illustrated, the lower edges of the leaves project a distance substantially equivalent to the distance between apertures 22.

The principal purpose of this device is to make the insertion or removal of one or more leaves in one of the groups simple and easy and yet have all of the leaves of a group properly arranged in their desired alphabetical or numerical order without any gaps between the leaves and without any two leaves being directly superimposed. For example, if a leaf near the midle of a group were to be removed, the rod 9 would be actuated so as to move the sections 4 longitudinally of the member 1 into engagement with the recesses 16 so as to locate the posts in their relatively offset positions, as indicated in dotted outline in Figs. 2 and 4. All of the leaves above the one which is to be removed would then be swung over from the sections 3 onto the sections 4. The rod 9 would then be actuated to shift the sections 4 to be engaged in the recesses 15, thus locating the post sections in their relatively open positions, as indicated in full outline in Figs. 2 and 4. The leaf would then be removed, whereupon the rod 9 would be actuated to release the sections 4 from the recesses 15 and upon throwing the leaves from the sections 4 back over onto the sections 3 all of the leaves of that group would be probably arranged in their desired order.

If, on the other hand, a leaf were to be inserted midway in a group it would be necessary to move all of the leaves above that point one space up on the posts so as to provide the room necessary for the leaf to be inserted and still leave the group in their proper order. This would be effected by first swinging the leaves above the point where the insertion is to be made over onto the post sections 4, shifting the post sections 4 so as to be held in their relatively open positions, placing the leaf in proper position upon the post sections 3, shifting the post sections 4 into engagement with recesses 16 to occupy their offset positions, then throwing the leaves from the post sections 4 over onto the post sections 3, and then returning the post sections 4 to their normally closed positions.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. A loose-leaf binder comprising a base member, a support for said base member, a plurality of leaf posts arranged in pairs on said member, and means for relatively shifting the posts of each pair longitudinally of said member, independently of said support, and from positions with the ends of the posts in abutting interfitting relation to positions with said ends in offset overlapping relation.

2. A loose-leaf binder comprising a base member, a support for said base member, a plurality of leaf posts arranged in pairs on said member, and means for relatively shifting the posts of each pair independently of said support and longitudinally of said member a predetermined distance, the initial portion of said movement being adapted to separate the abutting ends of said post parts and the final portion of the movement of said means being adapted to locate said ends in offset overlapping relation.

3. A loose-leaf binder comprising a base member, a support for said base member, a plurality of leaf posts arranged in pairs on said member, means for relatively shifting the posts of each pair independently of said support and longitudinally of said member a predetermined distance, the initial portion of said movement being adapted to separate the abutting ends of said post parts and the final portion of the movement of said means being adapted to locate said ends in offset overlapping relation, and resilient means normally urging said shifting means into a retracted position to locate the posts of each pair with the ends in interfitting abutting relation.

4. A loose-leaf binder comprising a base member, a support for said base member, a plurality of leaf posts arranged in pairs on said member, means for relatively shifting the posts of each pair independently of said support and longitudinally of said member

a predetermined distance, and cam means on said base member adapted, during the relative longitudinal shifting of said posts, to also simultaneously shift the posts of each pair relative to each other transversely to said member, away from each other at the beginning of said relative longitudinal movement so as to separate the abutting post ends and then toward each other at the end of said longitudinal movement so as to overlap said post ends in said longitudinally spaced relation.

5. A loose-leaf binder comprising a base member, a bar rotatably and shiftably mounted on said member, a plurality of ring-shaped binding posts each formed with two separate arcuate sections, one section of each post being rigid on said member and the other section of each post being secured to said bar, and cam means on said member adapted to coact with said bar when shifted longitudinally, whereby during the initial portion of the longitudinal movement thereof the respective sections of said posts are shifted transversely of said bar to retract the abutting ends of said post sections, and whereby during the final portion of said longitudinal movement said post sections are shifted transversely of said bar in the opposite direction to locate the opposed ends of said sections in offset overlapping relationship.

6. A loose-leaf binder comprising a base member, a bar rotatably and shiftably mounted on said member, a plurality of ring-shaped binding posts each formed with two separate arcuate sections, one section of each post being rigid on said member and the other section of each post being secured to said bar, cam means on said member adapted to coact with said bar when shifted longitudinally, whereby during the initial portion of the longitudinal movement thereof the respective sections of said posts are shifted transversely of said bar to retract the abutting ends of said post sections, and whereby during the final portion of said longitudinal movement said post sections are shifted transversely of said bar in the opposite direction to locate the opposed ends of said sections in offset overlapping relationship, and a spring normally urging said bar into its retracted position whereby the posts of each pair are arranged with the ends in interfitting abutting relation.

7. A loose-leaf binder comprising a base member, a bar rotatably and shiftably mounted on said member, a plurality of ring-shaped binding posts each formed with two separate arcuate sections, one section of each post being rigid on said member and the other section of each post being secured to said bar, cam means on said member adapted to coact with said bar when shifted longitudinally, whereby during the initial portion of the longitudinal movement thereof the respective sections of said posts are shifted transversely of said bar to retract the abutting ends of said post sections, and whereby during the final portion of said longitudinal movement said post sections are shifted transversely of said bar in the opposite direction to locate the opposed ends of said sections in offset overlapping relationship, and shoulders associated with said cam means and adapted to hold said binding post sections in their retracted positions and in their offset overlapping positions respectively.

8. A loose-leaf binder, comprising a channel-shaped base member, a bar slidably and rotatably supported in the channel of said member, and ring-shaped binding posts each formed of two separate arcuate sections, one section of each post being secured to said member and the other section of each post being secured to said bar, said bar being actuatable longitudinally of said member, said member having slots formed therein through which extend the binding post sections secured to said bar, each of said slots comprising a portion extending substantially lengthwise of the member and another communicating portion extending transversely of the member, said slots coacting with said post sections so that when said bar is actuated longitudinally the respective binding post sections are first shifted transversely of said member into open positions with respect to the sections secured on said member, and then shifted transversely of said member in the opposite direction to locate the ends of said coacting post sections in offset overlapping relation.

9. A loose-leaf binder, comprising a channel-shaped base member, a bar slidably and rotatably supported in the channel of said member, ring-shaped binding posts each formed of two separate arcuate sections, one section of each post being secured to said member and the other section of each post being secured to said bar, said bar being actuatable longitudinally of said member, said member having slots formed therein through which extend the binding post sections secured to said bar, each of said slots comprising a portion extending substantially lengthwise of the member and another communicating portion extending transversely of the member, said slots coacting with said post sections so that when said bar is actuated longitudinally the respective binding post sections are first shifted transversely of said member into open positions with respect to the sections secured on said member, and then shifted transversely of said member in the opposite direction to locate the ends of said coacting post sections in offset overlapping relation, and shoulders at the ends of said lengthwise and said

transversely extending slots and adapted to hold said binding post sections in their retracted positions and in their offset overlapping positions respectively.

10. A loose leaf binder, comprising a channel-shaped base member, a bar slidably and rotatably supported in the channel of said member, and ring-shaped binding posts each formed of two separate arcuate sections, one section of each post being secured to said member and the other section of each post being secured to said bar, said bar being actuatable for swinging the post sections secured thereto transversely of said member into an open position and for shifting said sections longitudinally of said member into an offset position, said member having slots formed therein through which extend the binding post sections secured to said bar, each of said slots comprising a portion extending substantially lengthwise of the member and another communicating portion extending transversely of the member, said slots coacting with said ring post sections to permit said bar to shift said binding post sections longitudinally and transversely of said member into open and offset positions with respect to the sections secured on said member, the ends of said transverse part of said slots providing recesses in which said post sections are seated for holding said sections in their open or offset positions respectively.

Signed at Chicago this 4th day of March, 1921.

VAN A. WIRT.