

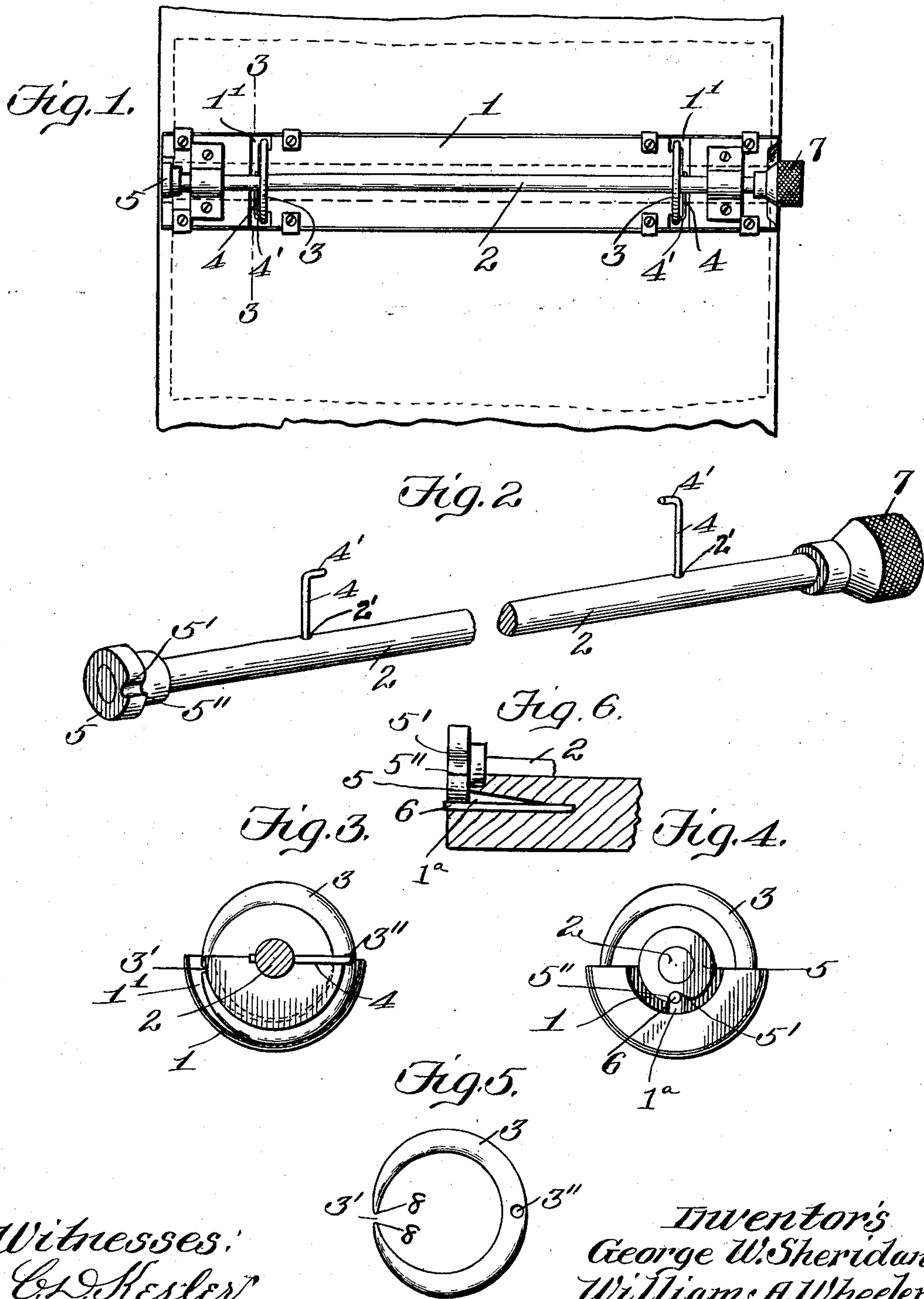
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G. W. SHERIDAN & W. A. WHEELER.
LOOSE LEAF BINDER.

APPLICATION FILED JAN. 22, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

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LOOSE-LEAF BINDER.

SPECIFICATION forming part of Letters Patent No. 734,474, dated July 21, 1903.

Application filed January 22, 1903. Serial No. 140,136. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. SHERIDAN and WILLIAM A. WHEELER, both citizens of the United States, and residents of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

Our invention relates to improvements in loose-leaf binders, or what are otherwise sometimes known as "devices for holding or binding together in book form loose or removable leaves or sheets of paper;" and it has in contemplation mainly the production of a device of this character which shall by virtue of its novel and improved construction, arrangement, and operation of parts not only minimize but positively avoid and obviate the many difficulties, inconveniences, and annoyances which have in the past always asserted themselves with such distinctness and persistency as to seemingly constitute inherent or characteristic disadvantages of loose-leaf binders.

Our loose-leaf binder is simple in construction, convenient of manipulation, efficient in operation, and comparatively inexpensive in cost of manufacture. The ease with which it may be manipulated constitutes one of its most striking and characteristic advantages. In the normal position of the parts of the device they are automatically locked and held fixed or stationary, and the leaf-receiving openings of the rings are completely housed in the backing or casing, so that in such position the device answers all the purposes and possesses all the advantages of a permanently-bound and sewed book. When, however, it is desired to manipulate the device for the insertion or removal of a leaf, the same may be readily, easily, and conveniently accomplished by the simple manipulation of a handle or milled wheel. The construction and operation of the device are such that by manipulation of the handle or milled wheel the action of the locking mechanism upon the parts is immediately released, and the leaf-receiving openings of the rings may be quickly and conveniently brought around to any point or place at which the removal or

insertion is desired to be effected, contradistinguished from the practice of moving the leaf or leaves to accommodate the location of the leaf-receiving openings. When the insertion or removal of the leaf has been thus effected, by another simple manipulation of the handle or milled wheel of the device the parts can be readily returned to their normal position, where they are again automatically caught and held.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of our device inclosed in book form, the leaves of the book being shown in dotted lines and the covers partly broken away, the parts of the device in this view being illustrated in their locked position. Fig. 2 is a detail perspective view of the shaft carrying the ring-securing arms or fingers, the notched wheel, and the handle or milled wheel. Fig. 3 is a sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is an end elevation. Fig. 5 is a detail view of the ring. Fig. 6 is a partial longitudinal section of the backing, showing the mounting of the spring-bar and its relation to the notched wheel.

Similar numerals of reference refer to similar parts throughout these several figures of the drawings.

In the said drawings the reference-numeral 1 indicates the backing or casing of the device, which, as shown, is preferably supplied with book-covers, and thus made to constitute part of a complete book, though it will of course be also readily perceived that the device could, if desired, be made use of to advantage without the employment of book-covers. The backing or casing may be made of wood, leather, or other suitable material and may be either hollow or solid, accordingly as may be desired or required. In this backing or casing 1, transversely thereof, we form ring guideways or trackways 1' 1', as illustrated in Fig. 1 of the drawings.

2 indicates the shaft, which may be revolvably mounted in the backing or casing 1 in any approved manner, and said shaft is provided at suitable points in its length with apertures or sockets 2' 2', as shown.

3 3 indicate the leaf-holding rings, which

are adapted to travel in the guideways or trackways 1' 1', as best illustrated in Fig. 1 of the drawings.

3' 3' indicate the leaf-receiving openings of the rings, and 3'' 3'' the apertures or sockets formed in said rings, respectively, and located slightly to one side of a point opposite said leaf-receiving openings 3' 4'. The configuration of these rings, as clearly illustrated in Fig. 5 of the drawings, is preferably that of a gradual convergence or taper toward the leaf-receiving openings 3' 3' thereof. A fixed, clear, and unobstructed opening is thus provided in each of the rings, while at the same time by reason of this gradual convergence or taper there is not the least danger with the exercise of even ordinary care of any of the leaves becoming at all displaced while the rings are being advanced therethrough for the purpose of inserting or removing a particular leaf or leaves, because no shoulder or obstruction of any kind whatever is allowed to remain which could become entangled or engaged with the leaves and retard the progress of the rings.

4 4 represent the ring-securing arms or fingers, through the intervention of which the rings 3 3 are adapted to be fixedly connected with the shaft 2, so that upon the manipulation of the shaft the rings may be moved therewith. These ring-securing arms or fingers 4 4 are each provided at one end thereof with a bent formation 4', as shown, these bent formations being adapted to fit neatly yet slidably into the apertures or sockets 3'' 3'' of the rings 3 3, while the opposite extremities of these arms or fingers are adapted, as shown, to fit neatly yet slidably into the apertures or sockets 2' 2' of the shaft 2, and in virtue of the location of said apertures or sockets 3'' 3'' of the rings to one side of a point opposite the leaf-receiving openings 3' 3', as hereinbefore set forth, it will be readily perceived that when these leaf-receiving openings are in their normal or housed position the arms or fingers 4 4 will be flush with the upper or flat surface of the backing or casing 1, and thus in no wise obstruct or interfere with the convenient use of the leaves of the book. The particular formation of the arms or fingers 4 4 with the bent portions 4' 4' we do not, however, regard of so much importance as the general idea of providing an arm or finger, irrespective of its particular construction, adapted at one end to be neatly yet slidably fitted into an aperture or socket of the shaft and at its other end adapted to be neatly yet slidably fitted into an aperture or socket of the ring in order that the finger or arm while always maintaining a fixed connection between the shaft and the ring may yet permit of any variation in the radius of the ring guideway or trackway from the shaft as a center to be readily taken up by the finger or arm automatically adjusting itself, both in the ring and shaft, during the operation of advancing the ring

through the leaves. This feature of improvement is found to be especially desirable and valuable where the backing or casing is made of leather or other flexible material, by reason of which the guideway or trackway for the ring is liable to undergo some slight variations. It will, however, be of course apparent that this slidable feature of our device can in many instances be entirely omitted, if desired, without in any wise impairing the general utility of the device itself, and more especially is this true in constructions in which the ring guideway or trackway is perfectly formed and is composed of non-expandible and non-contractible material, and in all such cases it would answer all purposes to rigidly connect the ring and shaft together in any desired manner.

The shaft 2, as shown, is provided at one end thereof with a notched wheel 5 of any approved construction, the said wheel being provided upon one side of the notch thereof with a curved formation 5', leading to the outer circumference of the wheel, and upon the other side of the notch with a shoulder 5''. This notched wheel 5, as best illustrated in Fig. 4 of the drawings, is adapted for engagement with a spring-bar 6. This spring-bar 6, as shown, is merely embedded in the material of the backing or casing 1 and exerts its tension in an upward direction against the notched wheel. In order to admit of the proper action of the spring-bar 6, the backing or casing 1 is provided at one end thereof, as best illustrated in Fig. 4, with a groove 1^a.

7 indicates the handle or milled wheel of our device and is formed on the opposite end of the shaft 2 from that on which the notched wheel 5 is provided, this handle or milled wheel constituting the means by which the working parts of the device may be caused to operate when desired.

The numeral 8 indicates a piercing or indenting point formed at the leaf-receiving openings of each of the rings and upon either side thereof, as illustrated in Fig. 5 of the drawings.

As is well known, the use of perforated sheets of paper in loose-leaf binders has been found by experience to be not only very desirable, but quite essential, and it is a matter of no little moment, therefore, that each binder should itself possess means for indicating upon leaves or sheets of paper at just what points the perforations should be made in order to adapt the paper for use in such binder. These perforations have heretofore been attempted to be properly located and provided by first laying the sheet of paper in the binder, then marking with a pencil the location or supposed location of the holes to be punched, and afterward punching the same with a hand-punch; but this process in addition to being very troublesome and inconvenient is also most unreliable and uncertain, as will be readily perceived. In some instances also double punches have, we understand,

been manufactured to suit the particular location of the points of retention in some particular binder; but such punches in addition to being somewhat expensive are of course only suited to the particular binder for which they were manufactured. It is therefore of prime importance that every loose-leaf binder should embody in its make-up some means of indicating upon sheets of paper the particular location of its points of retention. In our device we have provided a very simple and convenient method of accomplishing this. The parts are released from their locked position by slightly turning the handle or milled wheel 7 toward the left. Then continuing this turning operation the leaf-receiving openings 3' 3' may be brought around to any desired point and a leaf or leaves placed therein. By then again manipulating the handle or milled wheel 7 the points 8 of the rings may be made to indent or slightly pierce the sheet or sheets of paper lying in said leaf-receiving openings and the location of the perforations to be punched very clearly and distinctly indicated.

The general operation of our improved loose-leaf binder is as follows: Open the binder to the place at which it is desired to insert a new leaf or take out an old one. Press the leaves on each side of the open binder down in the center with the extended fingers of the left hand. Grasp the handle or milled wheel with the thumb and fingers of the right hand and rotate same toward the left until the openings in the rings become visible at the desired point. Remove the left hand from the open binder, and with either hand place in or take out a sheet, slipping same through the openings. Then place left hand, as before, on open pages and rotate the handle or milled wheel with the other hand toward the right until you feel it automatically snap into a locked or held position. The leaves are now securely locked in the binder, and the same is ready for use, resembling in all essential particulars a permanently-bound and sewed book and may be so treated in every respect, as the parts of the binder are held fixed and stationary.

We do not wish to be understood as in any wise limiting ourselves to the particular details of construction disclosed in the drawings and above described, as many changes and modifications therein may be readily made within the spirit and scope of our invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a loose-leaf binder, the combination with a revolubly-mounted shaft, of a ring carried thereby and provided with a fixed leaf-receiving opening portion, a housing adapted to receive the leaf-receiving opening portion of the ring, means for automatically holding the shaft to shield said leaf-receiving opening portion in the housing, and means

whereby the shaft may be rotated against the action of the holding means, substantially as described.

2. In a loose-leaf binder, the combination with a revolubly-mounted shaft, of a ring carried thereby and provided with a fixed leaf-receiving opening portion, a housing adapted to receive the leaf-receiving opening portion of the ring, means for automatically holding the shaft to shield said leaf-receiving opening portion in the housing, and means whereby the shaft may be rotated against the action of the holding means, the construction of parts being such that the movement of the shaft from its held position may be only in one direction, substantially as described.

3. In a loose-leaf binder, the combination with a backing, of a shaft revolubly mounted therein and carrying a ring provided with a fixed leaf-receiving opening portion, said ring in its normal position being adapted to house said opening portion in the backing, a notched wheel carried by said shaft, a spring-bar adapted to engage with said notched wheel for automatically holding said leaf-receiving opening portion in its housed position in the backing, and means for rotating said shaft, substantially as described.

4. In a loose-leaf binder, the combination with a backing, of a shaft revolubly mounted therein and carrying a ring provided with a fixed leaf-receiving opening portion, said ring in its normal position being adapted to house said opening portion in the backing, a wheel fixedly mounted on said shaft and formed in its periphery with a notch and a curved formation leading into said notch from one side of the same, the opposite side of the notch constituting a shoulder, a spring-bar adapted to engage with said notched wheel for automatically holding said leaf-receiving opening portion in its housed position in the backing, and means for rotating said shaft, substantially as described.

5. In a loose-leaf binder, the combination with a backing, of a shaft revolubly mounted therein and carrying a ring provided with a fixed leaf-receiving opening portion, a trackway in which said ring is adapted to travel, means for automatically taking up variations in the radius of said trackway from the shaft as a center, means for holding the leaf-receiving opening portion in a housed position in the trackway, and means whereby the shaft may be rotated against the action of the holding means, substantially as described.

6. In a loose-leaf binder, the combination with the backing 1 provided with the ring-guideways 1', 1', of the shaft 2 revolubly mounted in said backing, the rings 3, 3, adapted to travel in said guideways, the connecting-arms 4, 4, the bent extremities 4', 4' of which slidably engage with apertures 3'', 3'' in the rings 3, 3, and the opposite extremities of which connecting-arms slidably engage with the apertures 2', 2' in the shaft 2, the

notched wheel 5 provided with the curved
formation 5' and shoulder 5'', the spring-bar
6 for engaging with said notched wheel, and
the handle 7 for manipulating the shaft 2, all
5 arranged and operating substantially as
shown and described and for the purposes set
forth.

In testimony whereof we have signed our

names to this specification in the presence of
two subscribing witnesses.

GEORGE W. SHERIDAN.
WILLIAM A. WHEELER.

Witnesses:

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