No. 638,208. Patented Dec. 5, 1899.

J. W. AMRATH.

LOOSE LEAF LEDGER OR FILE.

(Application filed Mar. 24, 1899.)

(No Model.)

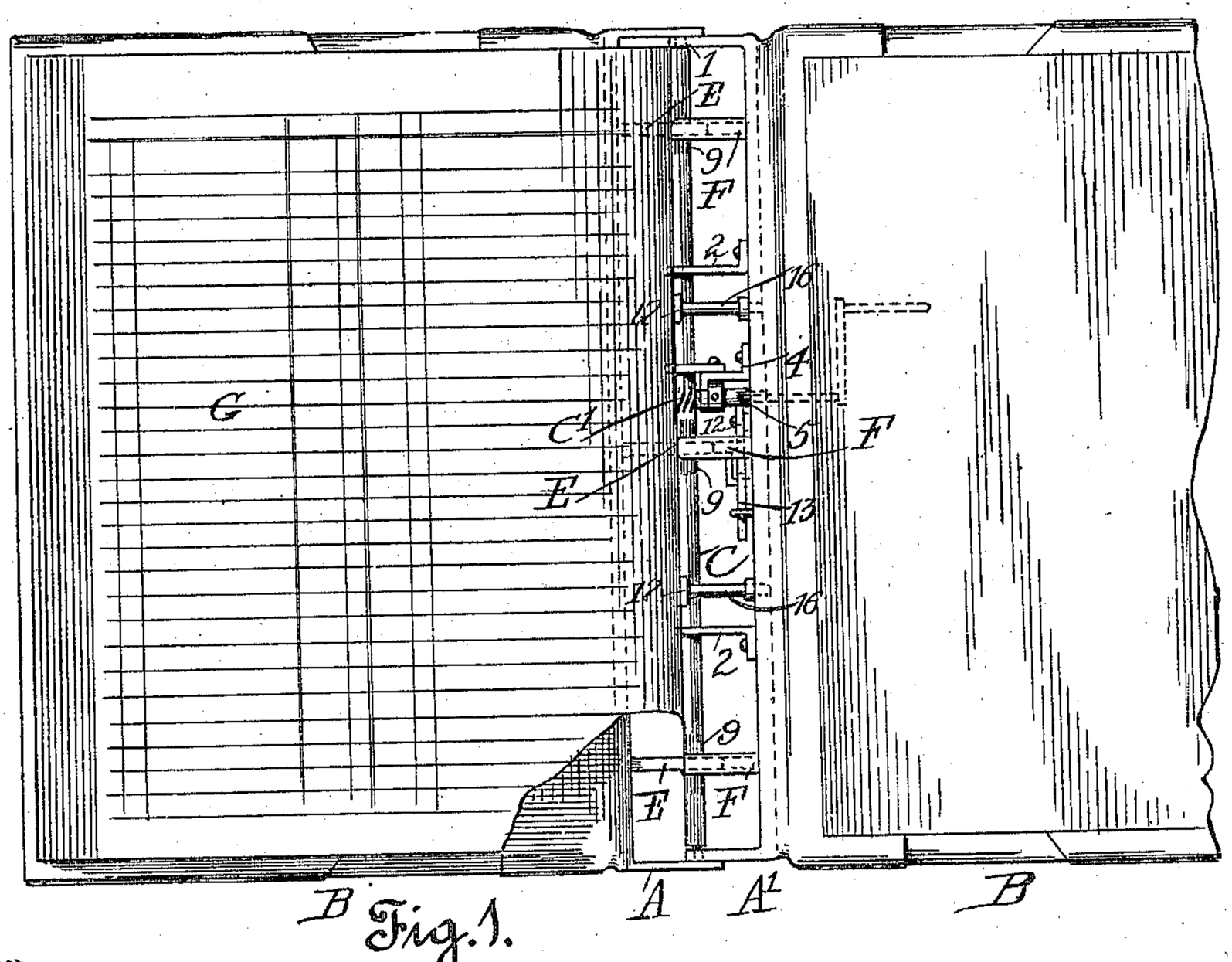


Fig. 1.

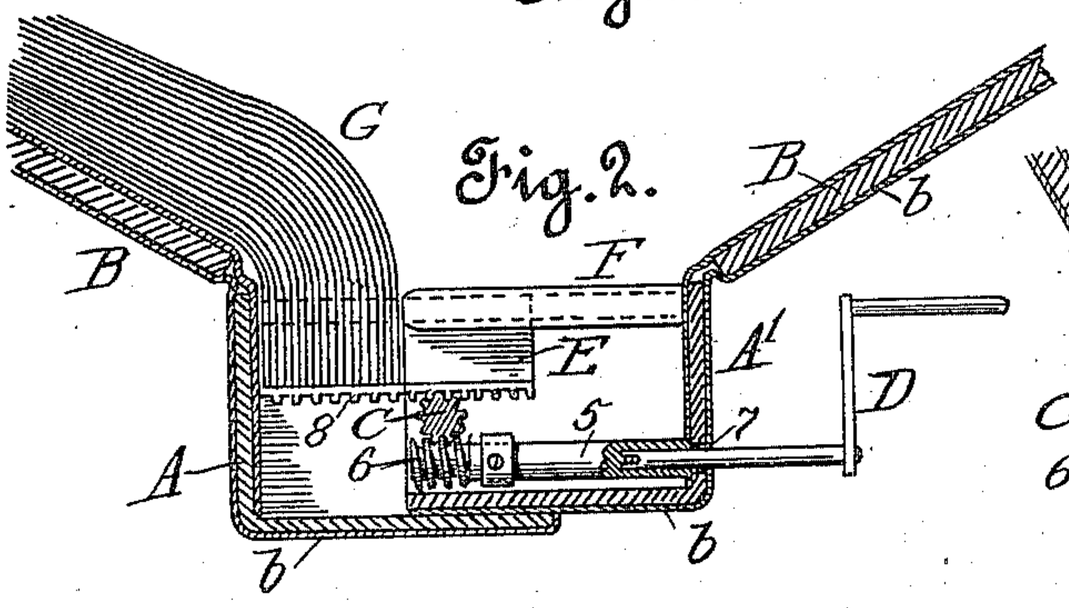


Fig. 2.

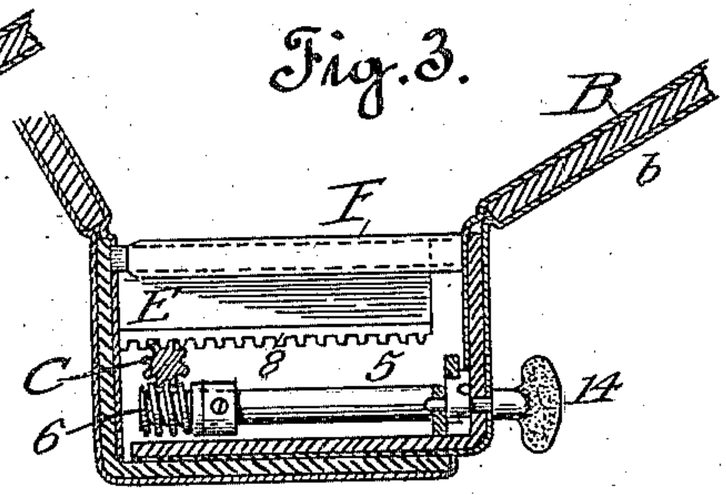


Fig. 3.

Fig. 4.

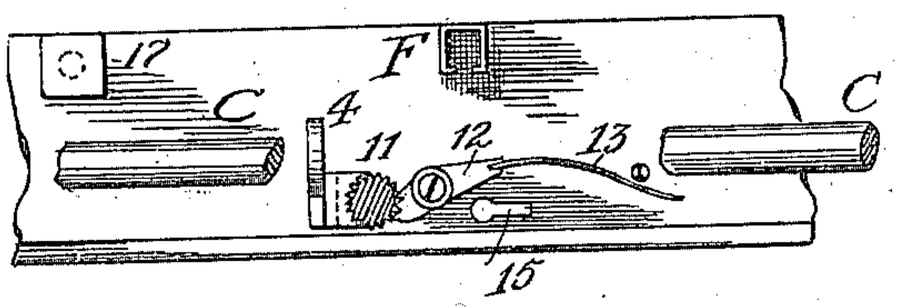


Fig. 5.

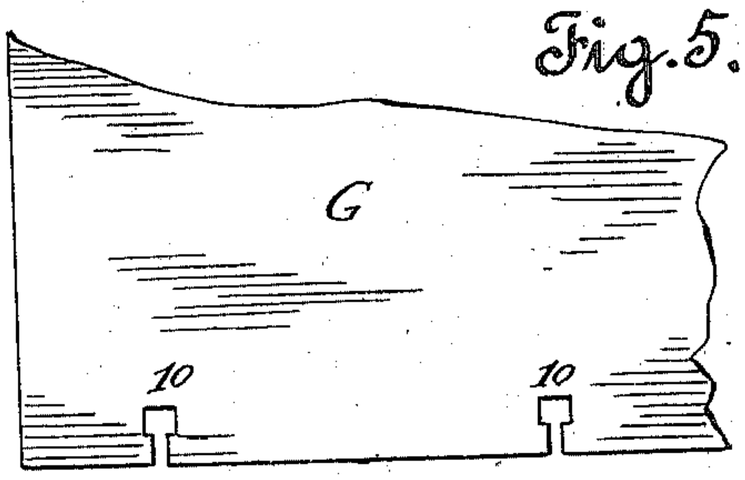
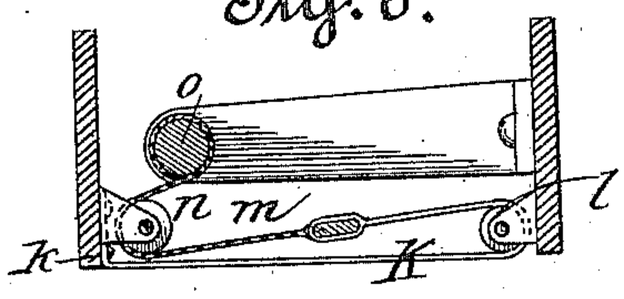


Fig. 6.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOSEPH W. AMRATH, OF SAN FRANCISCO, CALIFORNIA.

LOOSE-LEAF LEDGER OR FILE.

SPECIFICATION forming part of Letters Patent No. 638,208, dated December 5, 1899.

Application filed March 24, 1899. Serial No. 710,352. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. AMRATH, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Loose-Leaf Ledgers or Files, of which the following is a specification.

My invention relates to ledgers, files, and the like of the class in which the leaves of the book or papers of the file are removably bound in a back-frame provided with means for expanding it in order to permit new leaves to be inserted. My invention is designed to produce a simple, cheap, and convenient device of this kind in which the adjustment of the frame shall be certain and positive, as well as uniform.

I have embodied my invention in a mechanical construction which I have fully hereinafter described and have shown in drawings accompanying.

In the drawings, Figure 1 is a plan view of the ledger with all its leaves turned to one side. Fig. 2 is a cross-section of the book-frame expanded. Fig. 3 is a similar view with the frame contracted. Fig. 4 is an inside elevation of one of the sides of the frame, showing the locking device. Fig. 5 is a detail view of one of the ledger-leaves. Fig. 6 is a cross-section showing a special arrangement of leather back for the ledger.

The back of the ledger is composed of an expansible frame formed in two parts A A'. The pieces of the frame overlap at the bottom and also at the ends, as shown in Figs. 1 and 2, the whole forming a shallow adjustable casing. The covers B of the book are hinged to the side edges of the casing by a leather binding *b*, which is secured to said covers as well as to the inside, outside, and the bottom of each part of the frame. The part A' of the frame is provided with end bearings 1, and, if necessary, with a sufficient number of intermediate bearings 2, in which is journaled the longitudinal shaft C. This shaft is provided with a worm C' at a point about midway its length. Journaled in the bracket 4 is a shaft 5, having a screw-threaded end 6, which engages with the worm C'. An aperture 7 is made through the side of the casing A', through which a handle D may be inserted, such handle extending into the shaft 5 and forming the means for operating it. The part A of the frame is adjustable upon the part A' by means of mechanism best illustrated in Figs. 2 and 3. Secured to the side wall of the part A is a slide E, having its lower edge formed into a rack 8. This slide engages with a guide F, secured to the part A' of the frame. When the handle is turned, motion is communicated through the worm-gear of the main longitudinal shaft, and the latter is provided with teeth 9, which engage with the rack 8. By this means the adjustable part A may be caused to travel in either direction in its guides, being expansible to the position of Fig. 2 or capable of being contracted to the position of Fig. 3, thus making a wide or a narrow back for the ledger, as may be required. The number of these adjustable slides and guides may vary according to the size of the book; but I prefer in all cases to have at least three of them, one located near the middle of the back and one near each end, in order to obtain a positive application of power at different points, and thus make the adjustment uniform and unobstructed throughout the length of the book.

The loose leaves G of the ledger are provided with slots 10 along one edge, which slots should correspond to the number and also to the shape of the adjusting-slides in the book. These leaves are mounted, as shown in Fig. 2, upon the slides E. These leaves are held between the side of the frame A and the guides F, the book being expanded whenever it becomes necessary to insert new leaves. By expanding the frame and thus loosening the leaves new ones can be inserted either at the end of the series of leaves or at any intermediate point, the open slot in such leaves permitting them to be easily slipped over the slides E.

In order to lock the mechanism, so as to prevent the expansion or contraction of the book excepting by proper authority, and also to prevent the removal of leaves, I have provided a locking device, as shown in Fig. 4. The shaft 5, near the side of the frame, is provided with ratchet-teeth 11. A pivoted pawl 12, having a toothed extremity, is pressed by a spring 13 into normal engagement with the shaft 5, which is thereby locked.

This lock is inaccessible except by means of a key 14, inserted through a keyhole 15 in the side A′ of the frame, by means of which the pawl can be lifted, disengaging its teeth and permitting the shaft 5 and the other mechanism to be operated by the handle.

I prefer to provide the frame A′ with two or more bearing-pins 16, having square heads 17, and which are removable from the frame. These pins bear upon the series of leaves, as shown in Fig. 1, and keep them compressed. These pins have screw-threaded ends fitting threaded holes in the frame and are intended to be interchangeable with other and shorter pins, so as to keep the leaves from spreading too far. The pins shown in the drawings confine the leaves to about one-third the thickness of the whole structure. Another shorter pin, which will confine a greater number of leaves to about two-thirds of the thickness, will probably be found sufficient in practice. When filled up to these last pins, the latter can be removed and the remaining leaves inserted in the remaining space. More than two interchangeable pins can, however, compose each set.

In Fig. 6 I have illustrated a leather back which I sometimes use instead of that shown in Figs. 2 and 3. In this case the parts A and A′ of the frame, instead of being right-angular in cross-section, are plain flat pieces and form a bottomless compartment. The leather back K is permanently attached at *k* and extends across the book and over the guide-pulley *l*. The width of this leather strip is of course equal to the extreme expansion of the book, and it has an elastic connection *m*, which passes over a guide-pulley *n* to a roller *o*, around which it is wound. Consequently this leather back will adjust itself automatically to changes in the thickness of the book.

I do not limit myself to the exact construction herein described, and shown in the drawings, as I desire to avail myself of such modifications and equivalents as fall properly within the spirit of my invention.

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

1. In a loose-leaf ledger or file, a two-part expansible frame, a longitudinal shaft journaled in the relatively stationary part of the frame and in the space formed by the two parts, means for causing said shaft to rotate, and transverse bars secured to the relatively-movable part of the frame and geared to said shaft.

2. In a loose-leaf ledger or file, a two-part expansible frame, composed of relatively stationary and movable parts, a worm-shaft journaled in the relatively stationary part, a transverse shaft having a bearing in the same part and engaging said worm, and a plurality of slide-bars secured to the movable part of the frame, having racks and guided in the stationary part.

3. In a loose-leaf ledger or file, a two-part expansible frame, composed of relatively stationary and movable parts, a longitudinal shaft having a worm and journaled in the relatively stationary part, a transverse shaft journaled in the same part and engaging said worm, a plurality of slide-bars on the movable part adapted to support the loose leaves and guided in the stationary part, and transverse racks geared to the said longitudinal shaft and operated thereby.

4. In a loose-leaf ledger, and in combination, an expansible frame, composed of relatively stationary and movable parts, a longitudinal shaft journaled in the stationary part, a counter-shaft journaled in the same part and geared to said longitudinal shaft, a plurality of slide-bars on the movable part adapted to support the loose leaves and guided on the stationary part, transverse racks engaging with the longitudinal shaft so as to expand and contract the frame, and an automatic lock for said counter-shaft.

5. In combination with an expansible ledger-back a worm-shaft for causing such expansion through connections substantially as described, transverse shaft for operating said worm-shaft, a pawl engaging said transverse shaft in order to lock the same, and means for disengaging said pawl in order to permit said transverse shaft to be operated.

6. In a loose-leaf ledger, an expansible two-part frame, means for extending and contracting the same, means for supporting a series of loose leaves, and bearing-pins removably secured in one part of the frame and extending partially across said frame so as to bear upon the last of the said series of leaves.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 20th day of February, 1899.

JOSEPH W. AMRATH.

Witnesses:
L. W. SEELY,
M. J. DIETZ.