

H. S. DUELL.
 LOOSE LEAF LEDGER CONSTRUCTION.
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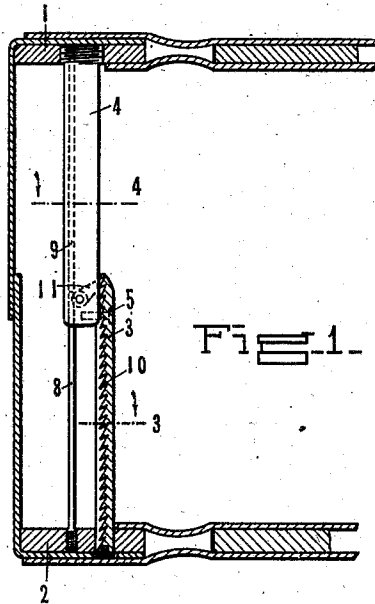


Fig. 1.

Fig. 2.

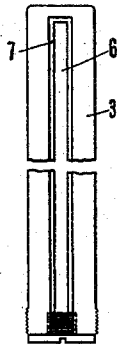


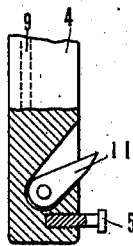
Fig. 3.



Fig. 4.



Fig. 5.



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LOOSE-LEAF-LEDGER CONSTRUCTION.

981,179.

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To all whom it may concern:

Be it known that I, HOLLAND S. DUELL, a citizen of the United States, residing at New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Loose-Leaf-Ledger Construction, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to loose-leaf ledger construction, and more specifically to means for releasably locking the covers of expandible ledgers at various degrees of expansion, so that loose leaves may be readily inserted and retracted and may be firmly held in position.

One of the objects of my invention is to provide a simple and inexpensive construction eliminating the necessity for the use of keys, tubes and casings.

Another object is the provision of a construction which shall possess positiveness and precision of action with a minimum risk of disalignment of leaves in accidental operation.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the claims.

In the accompanying drawings, wherein is shown one of various possible embodiments of my invention, Figure 1 is a sectional elevation taken lengthwise of a portion of the loose leaf ledger whereof certain parts have been cut away. Fig. 2 is a rear elevation of the member 3. Fig. 3 is a sectional view of the member 3 taken on the dotted line, as shown in Fig. 1. Fig. 4 is a sectional view of the member 4 taken on the dotted line shown on Fig. 1. Fig. 5 is a sectional view of the lower portion of the member 4 showing certain features of the locking mechanism.

Similar reference characters refer to similar parts throughout the several views of the drawings.

While the general objects desired to be attained in loose leaf ledger construction are comparatively well known to those skilled in the art, it should be noted that for reasons of economy in manufacture among others it is highly desirable that tubes and casings be eliminated. The roughening of the inner surface of tubes has been found to entail considerable expense, and the provision of any other form of casing has not only been found to be subject to the objection of expense but owing to cumbersomeness and the necessity of a large amount of mechanism both from the standard of number and size of parts, has been found to result in unsatisfactory utility. Inasmuch also as the use of keys in either accomplishing the locking or the unlocking of loose leaf ledgers is highly undesirable for obvious reasons, among which are the time required for the operation and cumbersomeness and cost of devices requiring the use of keys, and the likelihood of mislaying or losing the latter, advanced loose-leaf ledger construction has eliminated these adjuncts. Precision of action without likelihood of causing accidental operation in the handling of ledgers is also desirable. It is accordingly important to provide not only a keyless but a gravity controlled expandible construction. The foregoing are among the objects attained by the employment of a device such as hereinafter more specifically set forth.

Referring to Fig. 1 of the drawings, clamping plates or expandible back frames 1, 2 are connected by bolts 3, 4 slidably held together by a guide-pin or bolt 5 positioned near the end of bolt 4 and passing through a slot 6 in bolt 3, as indicated more clearly in Fig. 2. It will of course be understood that these backframes will ordinarily be united by two or more connections in actual practice. Loose leaves will be perforated in the customary way to fit about such connections. The head of the pin 5 is adapted to rest in a groove or channel 7 so that the bolt 3 cannot become separated from the bolt 4. A guide-rod 8, of which there are preferably two, positioned in clamping plate 2, is adapted to slide in a guide-hole 9 drilled in the bolt 4. This guide-hole is located to one side and rearward of the center of the bolt 4, so that the guide-rod will not

register with the customary cut through the rear edge of a loose leaf to each of the holes therein through which loose leaf holding means ordinarily pass, but may form an abutment tending to hold the loose leaves in proper alinement regardless of the expanded condition of the ledger. The inner or rearward face of the bolt 3 is corrugated or roughened to provide depressions or notches 10 in which the point of a loosely pivoted pawl 11 located in a suitable opening in the lower end of the bolt 4 may rest and engage with the bolt 3 through the operation of gravity when the ledger is in one position 15 and from which it may be disengaged through the same interposition when in the opposite position.

The operation of my expansible ledger construction is in a great measure obvious. It should be noted, however, that when the covers are pressed together with the book in position shown in Fig. 1 the leaves are slightly compressed and exert a tension tending to force the covers apart. This eliminates any possibility of an accidental operation of the mechanism when the book is in the opposite position. When it is desired to remove a leaf the book is placed in a position opposite to that indicated in Fig. 1, and the back frame 2 is slightly pressed. This releases the tension and permits the pawl 11 to drop out of engagement with the corrugated face of bolt 3. The upper cover may then be lifted, or if it is spring pressed, will automatically rise. After leaves have been withdrawn or inserted in the book it is only necessary to reverse the position of the latter and press back frame 1 to produce the interlocked engagement desired. It will accordingly be seen that I have provided a construction and arrangement of parts that are not only simple and inexpensive but attain the objects and advantages hereinbefore indicated. Not only are expensive tubes eliminated, but the alinement of leaves is better preserved when the book is expanded owing to the relatively closer alinement between the outer surfaces of the bolt 3 and guide-rods 8, 8 with that of the bolt 4, than would be the case with bolt 4 encircled by a corrugated tube.

The term "exteriorly" used in the claims is intended to exclude an arrangement of parts wherein the bolt is inclosed in a tube or casing.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the follow-

ing claims is intended to cover all of the generic and specific features of the invention herein described.

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

1. In loose-leaf ledger construction, in combination, expansible back members, members secured to said expansible members relatively movable exteriorly with respect to each other, and gravity controlled locking means therefor.

2. In loose-leaf ledger construction, in combination, expansible back members, members secured to said expansible members relatively movable exteriorly and in parallelism with respect to each other, and gravity controlled locking means therefor.

3. In loose-leaf ledger construction, in combination, expansible back members, three reciprocating members, two of said members being respectively secured to one of said back members and a third to the other thereof, and gravity controlled locking means to produce interlocked relation between two of said members.

4. In loose-leaf ledger construction, in combination, expansible back members, three co-acting reciprocating members, two of said members being respectively secured to one of said back members and a third to the other thereof, and locking means to produce interlocked relation between two of said members.

5. In loose-leaf ledger construction, in combination, expansible back members, members secured to said expansible members relatively movable exteriorly with respect to each other, and locking means therefor, adapted upon positioning the ledger in one position to disengage said lock and upon positioning the ledger in another position to engage said lock.

6. In loose-leaf ledger construction, in combination, expansible back plates, a member secured to one of said plates, a second member secured to the other of said plates and exteriorly reciprocable with reference to said first member, and gravity controlled means adapted to produce interlocked relationship between said members.

7. In loose-leaf ledger construction, in combination, expansible back plates, a member secured to one of said plates, a second member secured to the other of said plates and exteriorly reciprocable with reference to said first member, means adapted to maintain said members in juxtaposition, and gravity controlled means adapted to produce interlocked relationship between said members.

8. In loose-leaf ledger construction, in combination, expansible back plates, a bolt secured to one of said plates, a second bolt secured to the other of said plates and ex-

teriorly reciprocable with reference to said first bolt, said second bolt having a corrugated face, a member secured to one of said back plates and reciprocable with reference to said first bolt, and a gravity controlled device adapted to engage said corrugated face for interlocking said bolts.

9. In loose-leaf ledger construction, in combination, expansible back plates, a bolt secured to one of said plates, a second bolt secured to the other of said plates and exteriorly reciprocable with reference to said first bolt, said second bolt having a corrugated face, means adapted to maintain said bolts in juxtaposition, a member secured to one of said back plates and reciprocable with reference to said first bolt, and a gravity controlled device adapted to engage said corrugated face for interlocking said bolts.

10. In loose-leaf ledger construction, in combination, expansible back plates, a bolt secured to one of said plates, a second bolt secured to the other of said plates and exteriorly reciprocable with reference to said bolt, said second bolt having a corrugated face, means adapted to maintain said bolts in juxtaposition, a guide rod secured to one of said back plates and reciprocable with reference to said first bolt, and a gravity controlled device adapted to engage said corrugated face for interlocking said bolts.

11. In loose-leaf ledger construction, in combination, expansible back plates, a bolt secured to one of said plates, a second bolt secured to the other of said plates and exteriorly reciprocable with reference to said first bolt, one of said bolts having a roughened surface adjacent to the surface of the other of said bolts, and gravity controlled interlocking means secured to one of said bolts and engaging with the other.

12. In loose-leaf ledger construction, in combination, expansible back members, relatively movable laterally spaced bolts secured to said members, and interlocking means therefor.

13. In loose-leaf ledger construction, in combination, expansible back members, relatively movable laterally spaced bolts secured to said members, and interlocking means therefor, located in one of said bolts.

14. In loose-leaf ledger construction, in combination, expansible back members, laterally spaced bolts relatively movable in parallelism with respect to each other secured to said members, and interlocking means therefor.

15. In loose-leaf ledger construction, in combination, expansible back members, laterally spaced bolts relatively movable in parallelism with respect to each other secured to said members, and interlocking means therefor, located in one of said bolts.

16. In loose-leaf ledger construction, in combination, expansible back members, rela-

tively movable laterally spaced bolts secured to said members, and gravity controlled interlocking means therefor.

17. In loose-leaf ledger construction, in combination, expansible back members, laterally spaced bolts relatively movable in parallelism with respect to each other secured to said members, and gravity controlled interlocking means therefor.

18. In loose-leaf ledger construction, in combination, expansible back members, relatively movable laterally spaced bolts secured to said members, means adapted to maintain said bolts in juxtaposition, and interlocking means therefor.

19. In loose-leaf ledger construction, in combination, expansible back members, laterally spaced bolts relatively movable in parallelism with respect to each other secured to said members, means adapted to maintain said bolts in juxtaposition, and interlocking means therefor.

20. In loose-leaf ledger construction, in combination, expansible back members, relatively movable laterally spaced bolts secured to said members, means adapted to maintain said bolts in juxtaposition, and gravity controlled interlocking means therefor.

21. In loose-leaf ledger construction, in combination, expansible back members, laterally spaced bolts relatively movable in parallelism with respect to each other secured to said members, means adapted to maintain said bolts in juxtaposition, and gravity controlled interlocking means.

22. In loose-leaf ledger construction, in combination, expansible back members, a bolt secured to one of said members, a second bolt, having a corrugated face, secured to the other of said members and exteriorly reciprocable with reference to said bolt, a guide pin secured to the latter passing through a slit in said second bolt and adapted to maintain said bolts in juxtaposition to each other, and a gravity controlled pivoted pawl in said first bolt adapted to engage with the corrugated face of said second bolt.

23. In loose-leaf ledger construction, in combination, expansible back members, a bolt secured to one of said members, a second bolt, having a corrugated face, secured to the other of said members and exteriorly reciprocable with reference to said bolt, a guide pin secured to the latter passing through a slit in said second bolt and adapted to maintain said bolts in juxtaposition to each other, and a gravity controlled pivoted pawl in said first bolt adapted to engage with the corrugated face of said second bolt, and guide means adapted to reciprocate with one of said bolts.

24. In loose-leaf ledger construction, in combination, expansible back members, a bolt secured to one of said members, a sec-

ond bolt, having a corrugated face, secured to the other of said members and exteriorly reciprocable with reference to said bolt, a guide pin secured to the latter passing through a slit in said second bolt and adapted to maintain said bolts in juxtaposition with respect to each other, a gravity controlled pawl in said first bolt adapted to engage with the corrugated face of said sec-

ond bolt, and a paper alinement guide rod secured to one of said back members and slidable in said first bolt.

In testimony whereof I affix my signature, in the presence of two witnesses.

HOLLAND S. DUELL

Witnesses:

H. M. SEAMANS,
PAUL A. WOLFF.