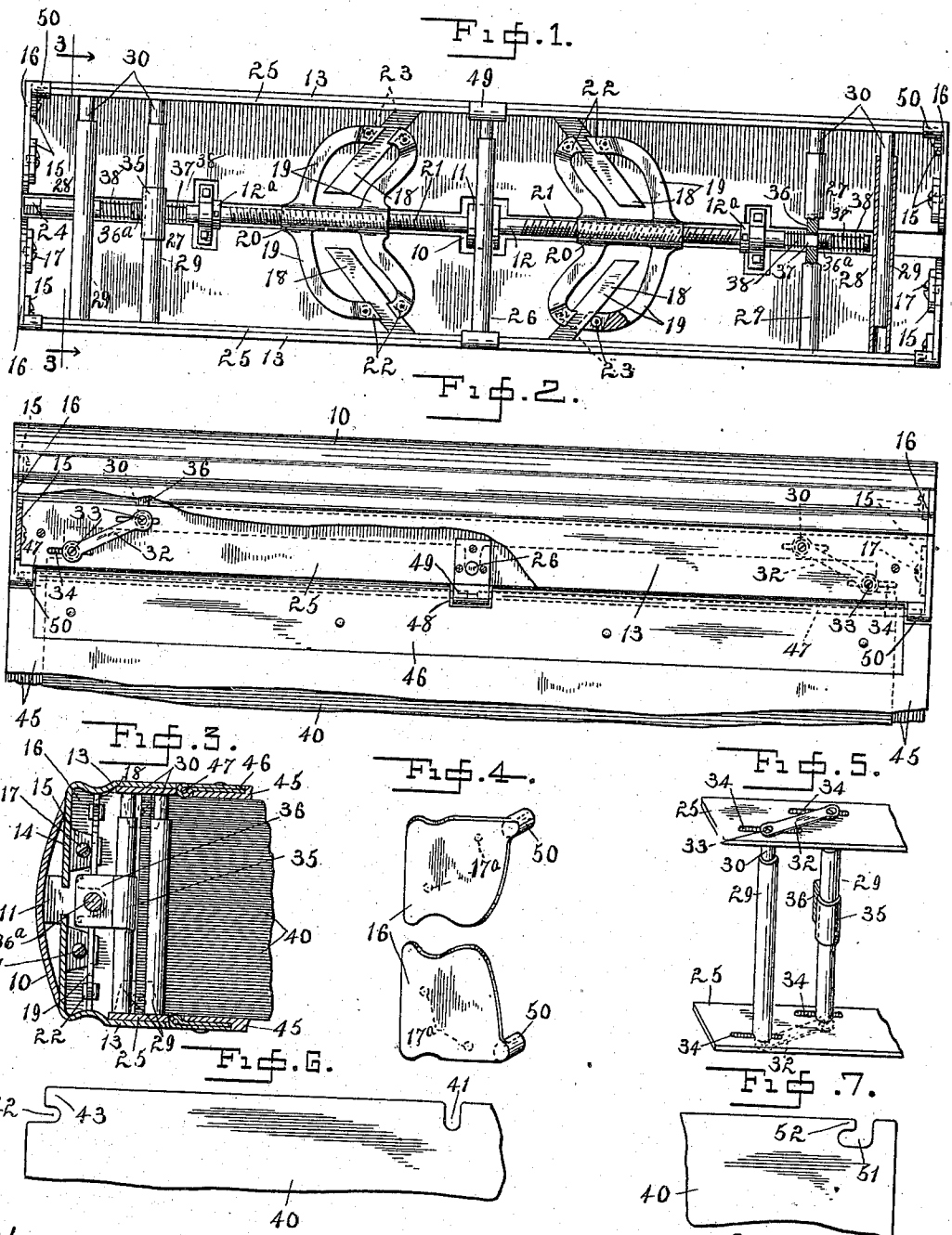


H. A. KRETSCHMER.
 LOOSE LEAF BINDER.
 APPLICATION FILED AUG. 9, 1909.

963,780.

Patented July 12, 1910.



WITNESSES:

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HENRY A. KRETSCHMER, OF PRINCETON, ILLINOIS.

LOOSE-LEAF BINDER.

963,780.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY A. KRETSCHMER, citizen of the United States, residing at Princeton, in the county of Bureau and State of Illinois, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

My invention relates to leaf binders and has especial reference to temporary or loose leaf binding devices.

The chief objects of the improvements which constitute the subject matter of this application are:—to provide a protective cover and clamping mechanism adapted to permit of the ready insertion and removal of one or more leaves; to furnish a simple, durable and comparatively inexpensive device for the purpose stated, and to produce a contrivance for retaining the individual sheets securely in position so that they will not become dislodged by the application of any force to which such leaves will ordinarily be subjected.

The above and other important objects are accomplished by the employment of the apparatus illustrated in the accompanying drawing, which forms a part of this application the details of construction being disclosed in the following views.

Figure 1 is an inside view of a loose leaf binder embodying my improvements; Fig. 2 is a side view of the binder portions being broken away; Fig. 3 is a sectional view on the line 3—3 of Fig. 1; Fig. 4 is a perspective view of one pair of end plates; Fig. 5 is a fragmentary perspective view showing one end of the post supporting plates connected by the leaf retaining posts; Fig. 6 is a fragmentary view, showing a part of the rear margin of one of the loose leaves, and Fig. 7 is a fragmentary view of a modified form of leaf.

Referring to the details of the drawing, the numeral 10 indicates a curved back plate, extending the full length of the binder, and provided on the inner surface along the median line at the middle and near the ends with integral lugs or blocks 11, which form bearings for an operating shaft 12, extending longitudinally and retained by collars 12^a. Immediately in front of the said back plate are arranged clamping or cover plates 13. These plates are angular, being L-shaped in cross section, and the flanges 14 lie in the same plane in front of the back 10,

but with an interval between their margins through which the lugs 11 project. The said cover plates are furnished at each end with integral lugs 15 which extend at right angles 60 from the cover plates and form supports for end plates 16. There are four of these end plates, arranged in pairs and secured to said lugs 15 by screws 17, inserted from the inside, and passing through the lugs to enter 65 threaded holes 17^a extending partially through the end plates, so that the screws do not show upon the outer side.

The cover plates 13 are held in proper relation with each other by inclined arms 70 18, arranged in pairs upon each plate, the arms borne by each plate being oppositely inclined as shown in Fig. 1. The said arms 18 are composed of rectangular flat bars, and are slidably supported by curved arms 75 19 which extend in the same plane from threaded sleeves or nuts 20, engaging threaded portions 21 of the said shaft 12. The ends 22 of said arms 19 are forked to form notches or grooves in which the margins 80 of the inclined arms 18 slide, and these forks are furnished with suitable anti-friction rollers 23 which engage said arms 18. The screw portions 21 of the shaft 12 are furnished with right and left hand threads, 85 so that when the shaft is turned the sleeves or nuts 20 will travel toward or away from each other according to the direction of the shaft movement. One end 24 of this shaft projects between the end plates 16 when it is convenient of access and is squared so as to be readily turned by means of a suitable key.

Immediately beneath the cover or clamping plates 13 are longitudinal strips 95 25 which support leaf securing members in the form of posts 26, 27, 28, extending between the opposite strips. These posts are composed of sleeves 29 attached to one of the strips, while from the other strip project 100 pins 30 which slidably engage said sleeves. The post 26 is fixed midway between the ends of the strips. The posts 27 and 28 are duplicated at each end of the binder, and are connected by thin bars or links 32, which 105 lie between the strips 25 and the cover plates 13, and are secured to the ends of the post members 29, 30, by screws 33, which pass through slots 34 in the said strips. The posts 27 have slidable ferrules 35, provided 110 with threaded projections or nuts 36, which engage threaded portions 36^a of the shaft

12. Upon each side of these threaded parts the shaft is reduced, as indicated at 37, so that the nut will become disengaged from the threads 36 when the shaft is given a few turns in either direction. Upon the reduced portions 37 of the shaft 12 are mounted coiled springs 38 which press against the nuts 36 and force it into engagement with the threads 36^a when the shaft movement is reversed. The inserts or leaves that are to be bound together are indicated by the reference numeral 40. A portion of the rear margin of one of these sheets or leaves is shown in Fig. 6. This margin is provided at the middle point with a notch 41, which extends perpendicularly to the edge of the sheet. This notch is adapted to be engaged by the middle post 26. A similar notch 42 is formed near each back corner, but is made from the end borders of the leaf so as to lie parallel with the rear edge, leaving a tongue 43 between the notch and said edge, and the end of this tongue is cut off so that the rear margin of the sheet is shortened to this extent. These side notches 42 are adapted to be engaged by the posts 28, and when the latter are located in the notches the leaf is held from displacement by the retaining tongues 43.

In order to furnish a protection to the inserted leaves I provide rigid covers 45, which are attached to the cover plates by hinges 46 formed by folding a piece of thin metal longitudinally to embrace rods or pintles 47, the folded margin of each hinge having a notch 48 at the middle point to receive an apertured lug 49, secured to the adjacent strip 25, and adapted to support the inner ends of said pintles 47. The outer ends of the pintles are received in knuckles 50 formed integral with the end plates 16.

A modification in the manner of slotting the leaves is shown in Fig. 7 the change being made in the lateral notches only. In this case the notch 51 is L-shaped and enters from the rear margin, thus leaving a tongue 52, projecting in the same direction as the tongue 43 and having an identical function.

To insert the leaves the shaft 12 is turned in the proper direction to cause the sleeves or nuts 20 to travel away from each other, and thus separate the cover plates 13 by the action of the arms 19 on the inclined arms 18, to a sufficient extent to permit the insertion of the additional leaves. When the shaft is thus turned the nuts 36 which are normally disengaged from the threads 36^a will now become engaged therewith by the action of the respective springs 38, and will travel to the opposite side of the threaded portion 36^a, retracting the posts 28 from the notches 42 and releasing the loose leaves 40, so that the latter may be removed or others inserted as desired.

It will be noted that the cover operating sleeves 20 can travel a comparatively long distance upon the threads 21, while the nuts 36, and consequently the posts 28, will move only the width of the threaded portion 36^a when they will come to a stop, even though the shaft movement continues, this to and fro movement being just sufficient to carry the posts 28 into and out of engagement with their respective notches 42. After the desired changes have been made to the inserted leaves, the shaft movement will be reversed thus restoring the posts 28 to their positions within the notches 42, when the nuts 36 having traveled to the end of their threads said posts will be brought to a standstill, locking the leaves 40 in place and retaining this relation while the said shaft movement may be continued until the covers are firmly clamped upon the inserts 40, by the action of the sleeve 20.

Having thus described my invention, what I claim is:—

1. In a loose leaf binder, the combination of a back plate, a threaded shaft journaled on said plate, nuts on the shaft, oppositely arranged cover plates, inclined members on said cover plates, arms on said nuts engaging said inclined members, and a pair of extensible posts arranged at each end and between the said cover plates, links connecting the posts of each pair, said posts being adapted to be moved laterally.

2. In a loose leaf binder, the combination of a back plate, a threaded shaft supported on said plate, oppositely arranged cover plates, inclined arms on said cover plates, nuts on said shaft engaging said arms, supporting strips arranged between said cover plates, extensible posts connecting said strips, and arranged in pairs near each end of the binder, each pair of posts being adapted to be moved laterally, connections between the posts of each pair, and connection between one post of each pair and said shaft.

3. In a loose leaf binder, including a back-plate, a threaded shaft journaled on said plate, coöperating cover plates adapted to be moved toward and from each other, and means on said shaft for operating said cover plates, of leaf securing means comprising post supporting strips, a pair of laterally adjustable posts arranged near each end of the device and connecting said strips, links connecting the ends of said posts, a connection between one of each pair of posts and said shaft, and springs on said shaft tending to yieldingly hold the posts in operative position.

4. In a loose leaf binder, the combination of a back-plate coöperating cover-plates adapted to be moved toward and from each other, a threaded shaft supported in bearings on said back plate, nuts on said shaft, grooved arms on said nuts, inclined members

attached to said cover plates and adapted to be engaged by the grooves in said arms, and extensible posts arranged between said cover plates, and connections between some of said posts and said shaft.

5 5. In a loose leaf binder, the combination with a back plate, cooperating cover plates adapted to be moved toward and from each other, a threaded shaft supported on said back-plate, and means on said shaft for operating said cover-plates, of means for retaining inserts between said cover plates, said retaining means comprising a plurality of extensible posts arranged between the cover-plates, some of said posts arranged in pairs, and laterally adjustable, a connection between one post of each pair and the shaft, said connection being slidable on both post and shaft, and springs on the shaft tending to hold the corresponding posts in normal position.

6. In a binder, the combination with a back-plate, cooperating adjustable cover plates and means for adjusting said cover plates including a threaded shaft, of means for retaining inserts, said retaining means comprising extensible posts arranged between said cover plates, and adapted to be moved laterally, connection between some of said posts and said shaft, and means on said shaft tending to yieldingly hold the said posts in normal position.

7. In a binder, the combination with a back-plate, cooperating adjustable cover-plates, and a threaded shaft journaled on said back-plate, of two pairs of arms at-

tached to the cover-plates and inclined in opposite directions, nuts on said shaft having projections engaging said arms, said nuts being adapted to move in opposite directions when the shaft is rotated, posts connecting said cover-plates, and means on said shaft for moving said posts longitudinally to said back-plate.

8. In a binder, the combination with a back-plate, and cooperating adjustable cover-plates, of extensible posts connecting said cover-plates, and means for moving said posts longitudinally to said back-plate.

9. In a binder, the combination with a back-plate, cooperating cover plates, and a threaded shaft mounted on said back-plate, of a pair of extensible posts arranged between said cover plates at each end of the device, and means on said shaft for moving each pair of posts simultaneously in opposite directions.

10. In a binder, the combination with a back-plate, cooperating cover-plates and a threaded shaft journaled on said back plate, of a pair of extensible posts connecting said cover plates at each end of the device, connections between the posts of each pair, and means on said shaft for moving each pair of posts simultaneously in opposite directions.

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

HENRY A. KRETSCHMER.

Witnesses:

W. L. RICHARDSON,
J. A. GURNETT.