(No Model.) 2 Sheets—Sheet 1.

E. J. NOLIN.

BOOK SAWING MACHINE.

No. 254,883. Patented Mar. 14, 1882.

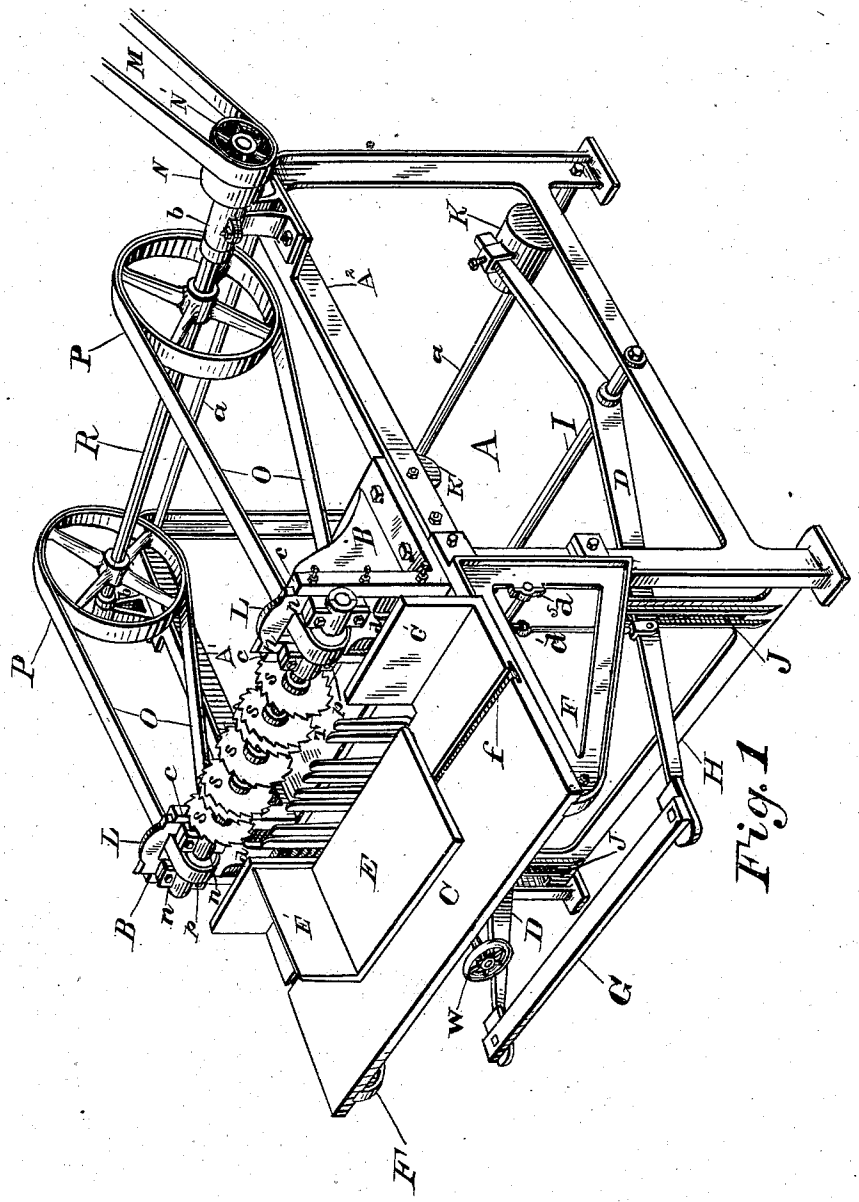


Fig. 1

WITNESSES:

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(No Model.) 2 Sheets—Sheet 2.

E. J. NOLIN.

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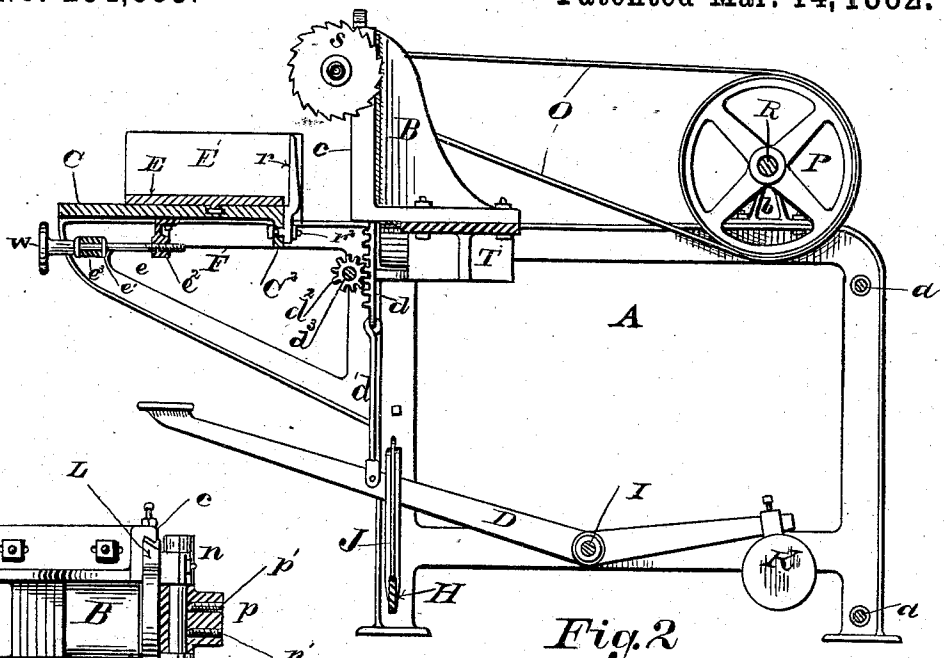


Fig. 2

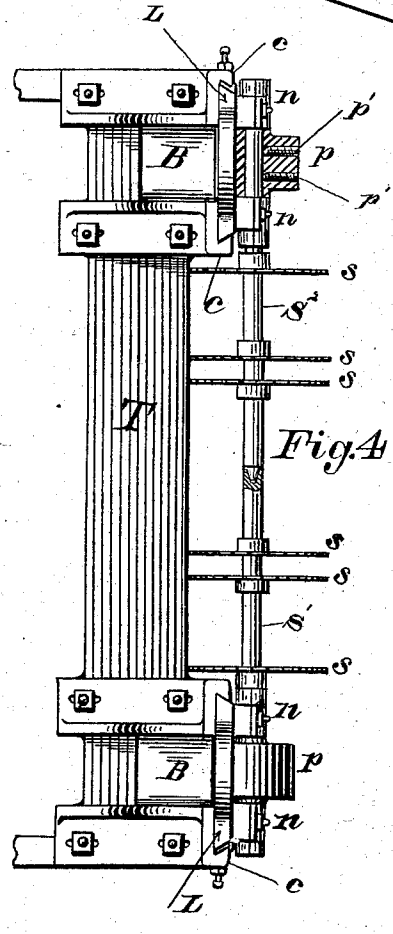


Fig. 4

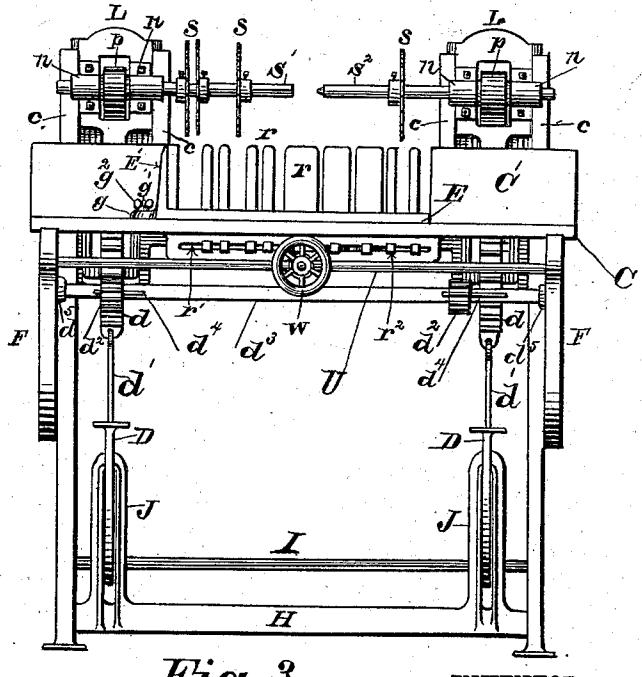


Fig. 3

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UNITED STATES PATENT OFFICE.

ERNEST J. NOLIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO EDWARD P. DONNELL, OF SAME PLACE.

BOOK-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 254,883, dated March 14, 1882.

Application filed October 10, 1881. (No model.)

To all whom it may concern:

Be it known that I, ERNEST J. NOLIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Book-Sawing Machine, of which the following is a specification.

My invention relates to a machine for sawing the grooves in the back of a book necessary to the proper binding of the same.

To those familiar with the details of book-binding it is well known that sawing grooves in the back of an unbound book to receive the cords or pieces of parchment which serve as hinges to the book, and around which the thread is secured in sewing, especially in the case of blank-books and large printed works, is a laborious and tedious operation when done by hand, and a considerable amount of time and labor is consumed thereby, as the sections of which the book is composed must be evenly adjusted and firmly secured in a vise or press during the operation of sawing.

To simplify and expedite this operation, and to provide a machine whereby said operation may be easily, expeditiously, and accurately performed, said machine to be adaptable to saw any class of books, either blank or printed, and for any style of binding desired, are the objects of my invention; and it consists in an arrangement of parts hereinafter fully described.

In the accompanying drawings, in which like parts are referred to by similar letters of reference throughout the several views, Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is a sectional elevation. Fig. 3 is a front elevation, and Fig. 4 is a partial plan view of the same.

A represents a main frame, on which the working parts of the machine are supported, which is composed of side pieces, A′ and A², each of which is cast in a single piece and connected in front by cross-pieces T and H and at the rear by rods *a a*.

Secured to the front end of the main frame A, and connected at their outer extremities by a rod, U, are arms or brackets F F, on which rests a table, C, having at one edge an upright flange, C′, at right angles thereto.

Secured to the under side of the table C, near its center, is an angle-piece, e^2, on one end of which is a boss, tapped out to receive the threaded end of a rod, *e*, provided with a collar, *e′*, and hand-wheel W, and extending through a bearing, e^3, in the rod U. The collar *e′* coming against one end of the bearing e^3 and the hub of the hand-wheel W against the other prevents the rod *e* from moving endwise and furnishes a means for moving the table C in either direction by turning the hand-wheel W.

In the top of the table C is a T-groove, *f*, running parallel with the flange C′. Sliding on the table, and having a projection which works in the groove *f*, is what I term "the carriage" E, on one end of which is a flange, E′, at right angles thereto and forming a right angle with the flange C′ on table C. On one end of the carriage E is a lug, *g*, through which projects a bolt, *g′*, the head of which slides in the T-groove *f*. On said bolt is a thumb-nut, g^2, by which, when desired, the carriage E may be secured at any point along said groove *f*.

Secured to and supported on the cross-piece T of main frame A are heads B, provided with slides *c c*, in which work the vertical sliding heads L, on which are secured bearings *n n*, in which run shafts S′ and S², on which the saws S are arranged in any manner desired to suit the work to be done. On the shafts S′ and S² are pulleys *p p*, the hubs of which are faced off and fit between the bearings *n n* on the sliding heads L, and thus prevent end-play in said shafts S′ and S² when said pulleys are secured thereto by the set-screws *p′ p′*.

Cast onto the bottom of the heads L, and forming a part thereof, are racks *d*, which are connected at their lower ends by rods *d′* to the foot-levers D, vibrating on a rod, I, secured to the lower part of the main frame A. On the rear end of the foot-levers D are weights K, sufficiently heavy to overbalance the weights of the heads L and attachments. The front end of the foot-levers D work in loops or yokes J, cast on the cross-piece H of main frame A, which serve as guides thereto and limit their stroke in either direction.

On a shaft, d^3, supported in bearings d^5 on the arms or brackets F are pinions d^2, attached

to said shaft by feathered keys d^4, which arrangement permits them to be thrown in or out of gear with racks d, as desired.

A number of movable fingers, r, are attached to the table C in line with the flange C′, which is cut away, as shown, between the heads B. These fingers are secured to a flange, C^2, projecting downward from the edge of the table and provided with a slot, r'. The fingers are secured to the flange C^2 by bolts r^2, which extend through the slot r', each finger having a projection fitting in said slot, whereby said finger is kept at all times at right angles thereto. As stated above, any number of saws desired may be placed on the shafts S′ and S^2, arranged in a gang to suit the class of work to be done. In the case of large books, the shafts S′ and S^2 may be joined and form one continuous shaft, as shown in Fig. 4, by loosening the set-screws p' p' in pulleys p p and moving the shafts endwise until they meet, when a taper-pin on the end of shaft S^2 fits in a corresponding hole in the end of shaft S′, when set-screws p' p' in the pulley p are again tightened.

The power which revolves the saws is applied to a shaft, R, secured at the top and rear of the main frame A by bearings b b. On one end of said shaft are tight and loose pulleys N and N′, on which runs a belt, M. P P are driving-pulleys, also on shaft R, and connected to pulleys p p on shafts S′ and S^2 by belts O O.

The operation is as follows: The shafts S′ and S^2 being disconnected, and one of them, as S^2, being supplied with a single saw, as shown in Fig. 3, a book is placed upon the carriage E, the sections of which it is composed being evenly adjusted by coming in contact with the flange C′ or fingers r on table C and flange E′ on carriage E. The saw S having been started by shifting belt M onto tight pulley N, and the table C adjusted to secure the proper depth of cut by the hand-wheel W, the carriage E is moved along groove f until the part of the book to be cut comes opposite the saw S. By pressing down the foot-lever D the saw is now made to descend and saw the groove. Upon releasing the lever D the weight K returns the saw to its original position. Any number of grooves may be thus made at any distance apart by moving the carriage E the proper distance and repeating the operation. When a number of books of the same style or edition are to be sawed a number of saws may be placed on one of the shafts S′ and S^2, forming a gang, the removable fingers r being adjusted to form the proper openings for said saws, the carriage E is secured to the table C in the proper position by the thumb-nut g^2, and the saws made to descend, as before described, each book being finished at a single stroke, and all the books sawed precisely alike.

If the books to be sawed are very large, the shafts S′ and S^2 may be joined, as before described. In this case the sliding heads L are made to descend simultaneously by slipping the pinions d^2 in gear with the racks d, in the manner above described, and, if desired, the foot-levers D may be connected by a cross-piece, G.

From the above description it is evident the heads L, to which the saws are attached, may be made stationary and the table C made to move past them, and the same result be accomplished without departing from the spirit of my invention. It is also evident that any number of the heads B and sliding heads L may be used with the same result.

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

1. In a book-sawing machine, the combination, with a flanged table and an adjustable flanged carriage supported thereon, of one or more circular saws secured to shafts and journaled in vertically-sliding heads, substantially as shown and described.

2. In a book-sawing machine, a sliding head to which one or more saws are attached, in combination with a lever, said sliding head connected to and operated by said lever, substantially as described and shown, and for the purpose set forth.

3. In a book-sawing machine, the sliding heads L L, in combination with the adjustable shafts S′ S^2, carrying saws S, substantially as shown and described.

4. The sliding heads L L, to which are attached the shafts S′ and S^2, carrying saws S, provided with racks d, in combination with pinions d^2 on shaft d^3, whereby said heads may be connected and made to move simultaneously when desired, substantially as shown and described, and for the purpose set forth.

5. The table C, having the flanges C′ at right angles thereto, in combination with a movable carriage, E, having the right-angled flange E′, whereby the sections of the book are evenly adjusted for sawing, substantially as described and shown.

ERNEST J. NOLIN.

Witnesses:
JOHN MITCHELL,
J. TAYLOR HAIR.