2 Sheets--Sheet 1.

F. R. ALDERMAN.

Machine for Indexing Books.

No. 160,137. Patented Feb. 23, 1875.

Fig. 1.

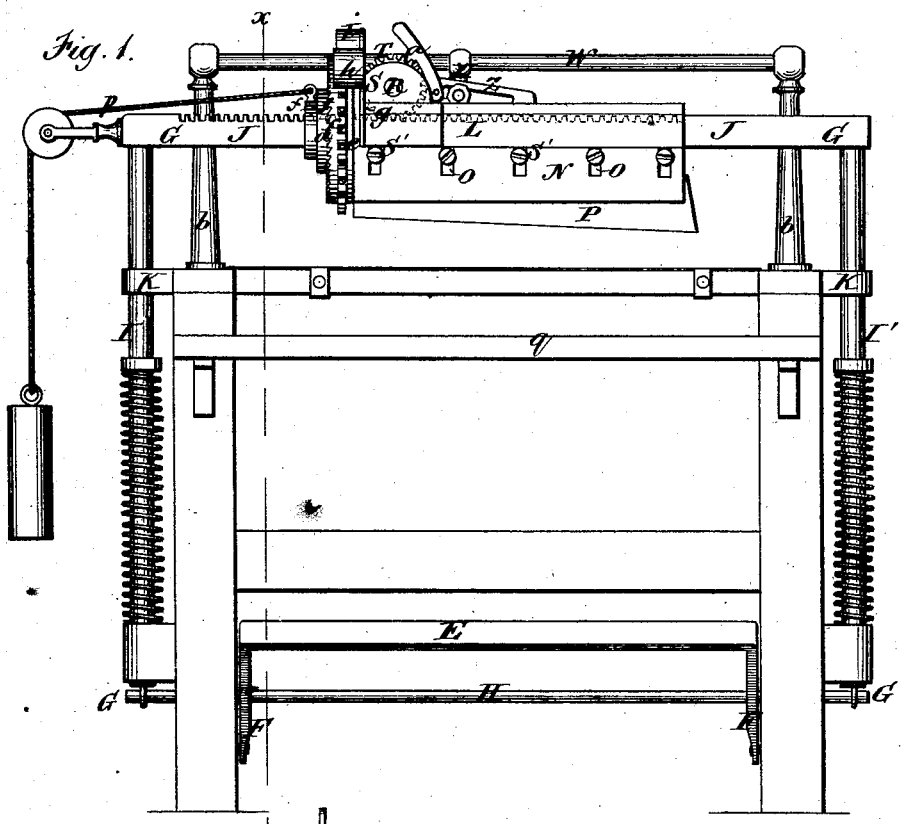
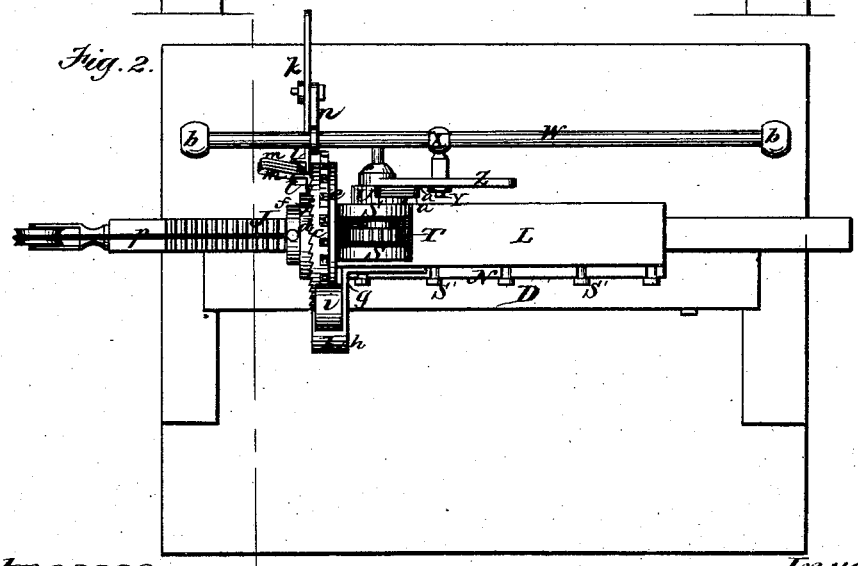


Fig. 2.



Witnesses.
C. F. Brown.
M. Church

Inventor
F. R. Alderman
by his Attys.
Hall & Ellsworth

2 Sheets--Sheet 2.

F. R. ALDERMAN.

Machine for Indexing Books.

No. 160,137. Patented Feb. 23, 1875.

Fig. 3.

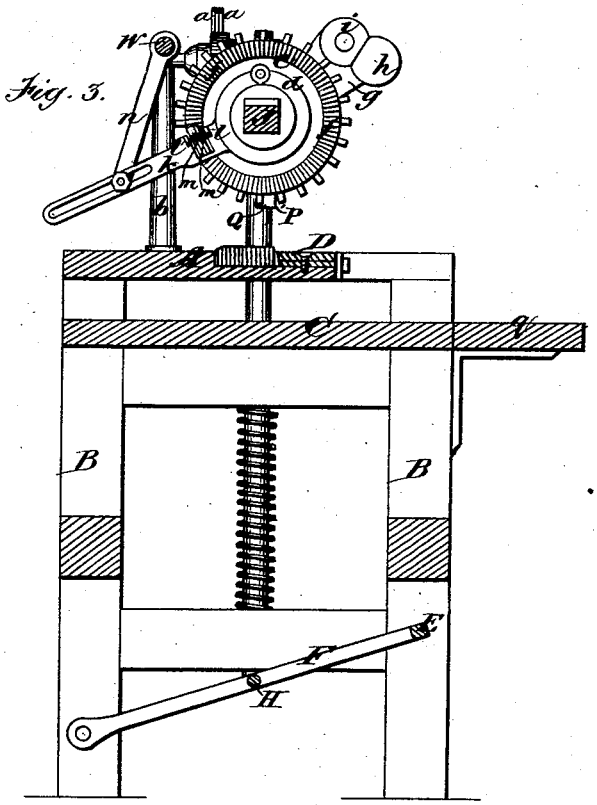


Fig. 4.

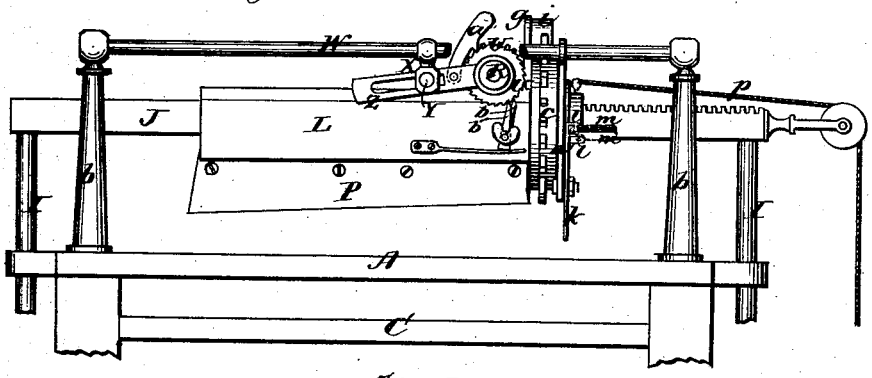


Fig. 6.

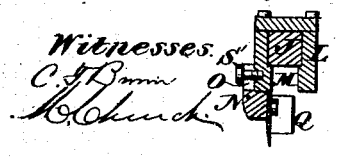
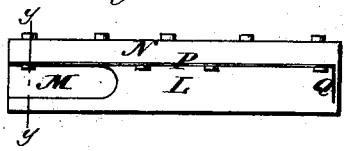


Fig. 5.



Inventor
F. R. Alderman
by his Attys.
Ellsworth

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

FRANK R. ALDERMAN, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF ONE-HALF HIS RIGHT TO FRED. B. PERKINS, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR INDEXING BOOKS.

Specification forming part of Letters Patent No. **160,137**, dated February 23, 1875; application filed September 8, 1874.

To all whom it may concern:

Be it known that I, FRANK R. ALDERMAN, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Machine for Indexing Blank-Books; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet 1, is a front elevation of my improved machine. Fig. 2, Sheet 1, is a top-plan view. Fig. 3, Sheet 2, is a section through line *x x*, Figs. 1 and 2. Fig. 4, Sheet 2, is a rear elevation of the upper portion of the machine. Fig. 5, Sheet 2, is a bottom-plan view of the slide removed from the rack-bar; and Fig. 6, Sheet 2, is a section through line 7 7, Fig. 5.

Similar letters of reference in the accompanying drawings denote the same parts.

The object of my invention is to provide for public use an improved machine for indexing books, cutting and printing the letters (one or two, as desired) on each leaf at the same time, and with one vertical reciprocating movement of the operative parts; and to these ends my invention consists mainly in the employment of a frame, suitably supported, to which a vertical reciprocating movement is imparted, preferably by a treadle and springs, the upper end of the frame carrying a slide, to which a revolving type-wheel and adjustable knife are attached. A horizontal movement of the slide carrying the revolving type-wheel and adjustable knife is imparted by a rack and pinion, in connection with other devices, by means of which the book is readily and rapidly indexed, as I will now proceed to describe.

In the accompanying drawings, A is the bed-plate or top of a table, provided with suitable legs, and consisting of an iron plate having a rectangular opening in its front, and securely attached to the legs B B by screws or other equivalent fastenings. D is a cross-plate extending longitudinally across the rectangular opening in the plate A, leaving a slight space or slot between the two as a socket for the reception of the knife for cutting the pages, hereinafter more fully described. C is a partition made in the table, preferably adjustable to adapt it to books of different thicknesses, as hereinafter more fully set forth. E is a treadle, the arms F F of which are pivoted to the rear supports B B of the table A. G is a frame, the lower horizontal rod H of which passes through orifices in the arms F F. I I′ are vertical rods, each of which is surrounded by a coiled spring abutting against collars attached to the vertical rods and the lower guides of said rods, the tension of the springs being exerted to throw the frame upward. The rods I I′ are provided with eyes at their lower ends, in which the ends of the horizontal rod H are inserted and secured, preferably removably. The upper ends of the vertical rods I I′ are attached to a horizontal rack-bar, J, and pass through guide-loops K K, attached to the sides of the frame of the machine. L is a slide, provided with a slot, M, in its outer end and lower face, which extends into the slide some distance, the purpose of which will presently be described. N is a plate, provided with a recess for the reception of the front lower edge of the slide L, to which it is attached by screws S′, the heads of which bear against the slots O O in the upper edge of the plate N, by which it is attached to the slide, thus rendering the plate N vertically adjustable relative to the slide. P is an inclined knife, provided with a right-angled projection, Q, at its left-hand end, and attached to the plate N by screws or other equivalent means.

By this construction it will be seen that the inclined knife P, situated directly over the slot or socket in the bed-plate A, can readily be adjusted vertically to vary the depth of cut, the inclined edge of the knife giving it a shear-cut. A gage is preferably also employed in connection with the knife to regulate the cut of the latter. R is a horizontal shaft, having its bearings in trunnions S S, rising from the upper surface of the slide L, and carrying the pinions T U, the former of which engages with the teeth of the rack-bar J. *b b* are vertical posts attached to the bed-plate A, and con-

nected together at their upper ends by the horizontal rod W, which passes through the upper eye of a double eyebolt, X, the lower eye of said bolt receiving the outer end of the rod Y, the opposite end of the latter passing through an elongated slot in the arm Z, and secured therein, in any desired position, by a nut passing over the screw-threaded inner end of the rod Y. *a a* are pawls, hinged to the inner face of the slotted arm Z, and engaging with the pinion U on the shaft R. *b b* are spring-pawls pivoted to the rear face of the slide, and engaging also with the pinion U on the side opposite the pawls *a a*. *c* is the type-wheel, hung on a sleeve, *d*, surrounding the rounded end of the slide.

The periphery of the type-wheel is provided with slots for the reception of the different letters, alphabetically arranged, which are held in place by a cap, *e*, attached to the inner face of the type-wheel, and bearing against the type in their slots. The outer face of the type-wheel is provided with ratchet-teeth *f*, extending around its entire circumference. *g* is a bent arm attached to the slide, having on its outer end a receptacle, *h*, carrying a sponge or other fibrous material, saturated with ink, the inking-roller *i* having its bearing in the bent arm *g*, revolving in contact with the sponge and type-wheel, whereby the latter is inked. *k* is a slotted arm, attached to the sleeve *d*, on which the type-wheel is hung, provided near its inner ends with vertical lugs *l l*, in which are pivoted the pawls *m m*, which pass through an aperture in arm *k*, and engage with the ratchet-teeth on the outer face of the type-wheel, and revolve the latter on the upper movement of the frame G. *n* is a connecting-rod, adjustably attached at one end, by a nut or its equivalent, in the slot of the arm *k*, the opposite end of the connecting-rod being provided with an eye surrounding the horizontal rod W.

By changing the position of the end of the connecting-rod in the slot in the arm *k*, the throw of the latter may be varied at pleasure, causing the type-wheel to rotate more or less, as desired.

Another type-wheel, similarly constructed and operated, may be attached to the slide, so as to print two letters, if desired.

By changing the position of the end of the connecting-rod in the slotted arm Z, the throw of the latter may also be varied, thus varying the horizontal movement of the slide. The slot in the end, and extending partly into the lower face of the slide, is to allow the passage of the knife beyond the vertical rod I in printing and cutting at the lower ends of the pages.

p is a cord, attached to one end of the slide, passing over a pulley in the frame G, and adapted to move the slide forward after it reaches the opposite end of the rack, so that the machine is ready again for operation. *q* is a leaf or projection of the partition C.

To the slotted arm Z is attached a lever, so arranged that when the knife has run to the bottom of the book, the lever will strike a pin and raise the pawls, and a lever is also arranged to work on the pawls on the under side of the pinion U, and when these pawls are thrown off of the pinion it will free the slide, and the weight will draw it back into position to commence on another book, when the levers will strike other pins, which will throw the pawls back onto the pinion.

The horizontal shaft, having its bearings in trunnions S S, is preferably made long enough so that the pinion U can be reversed and set on the end of the shaft, and with an arm the reverse of arm Z the slide can be made to work the other way, and cut from the bottom of the book up.

The operation of my machine is as follows: The book to be indexed is placed on the leaf *q* of the partition C, which is preferably made adjustable vertically for books of different thicknesses, the leaf of the book to be printed and cut being placed on the plate A, under the slide. The treadle is then thrown down, the pawls engaging with the cog-wheels that give a horizontal movement to the slide, and also with the ratchet-teeth of type-wheel; and as the slide rises by the tension of the springs, the printing having been accomplished, and the cutting with a square edge under the letter printed, the type-wheel is rotated the distance of a letter, and the slide moved forward to repeat the operation for the next page, and so on for the succeeding pages.

I claim as my invention—

1. In a machine for indexing books, a slide provided with an adjustable knife, having a square projecting cutter at one end, to which a horizontal motion is imparted, the slide also carrying a type-wheel, to which a rotary motion is imparted, substantially as described, and for the purpose set forth.

2. The frame G, having a reciprocating vertical movement, and provided with the horizontal rack-bar J, in combination with the slide L, pinions T U, slotted arm Z, eyebolt X, sliding on the horizontal rod W, and pawls *a a*, substantially as described, and for the purpose set forth.

3. The slide L, having a slot, as set forth, and provided with a knife, P, in combination with the frame G, having rods I I′, forming its sides, by means of which the knife can be operated when it projects beyond one of the side rods of the frame, substantially as described, and for the purpose set forth.

4. The slotted arm Z, journaled on the shaft R of the pinion U, and provided with the hinged pawls *a a*, in combination with the double eyebolt X, rod W, and spring-pawls *b*

b, substantially as described, and for the purposes set forth.

5. The type-wheel *c*, hung on a sleeve on the slide, provided with ratchet-teeth on its outer face, and slots on its periphery for the reception of the type, held in place by the cap, substantially as specified.

6. The type-wheel *c*, constructed as set forth, in combination with the slide L, slotted arm *k*, rod W, connecting-rod *n*, and pawls *m m*, substantially as described, and for the purposes set forth.

FRANK R. ALDERMAN.

Witnesses:

PETER O. VOORHEIS,

E. J. SHINKMAN.