2 Sheets--Sheet 1.

H. H. EDWARDS.

Machine for Cutting and Printing Indexes.

No. 168,468. Patented Oct. 5, 1875.

Fig. 1.

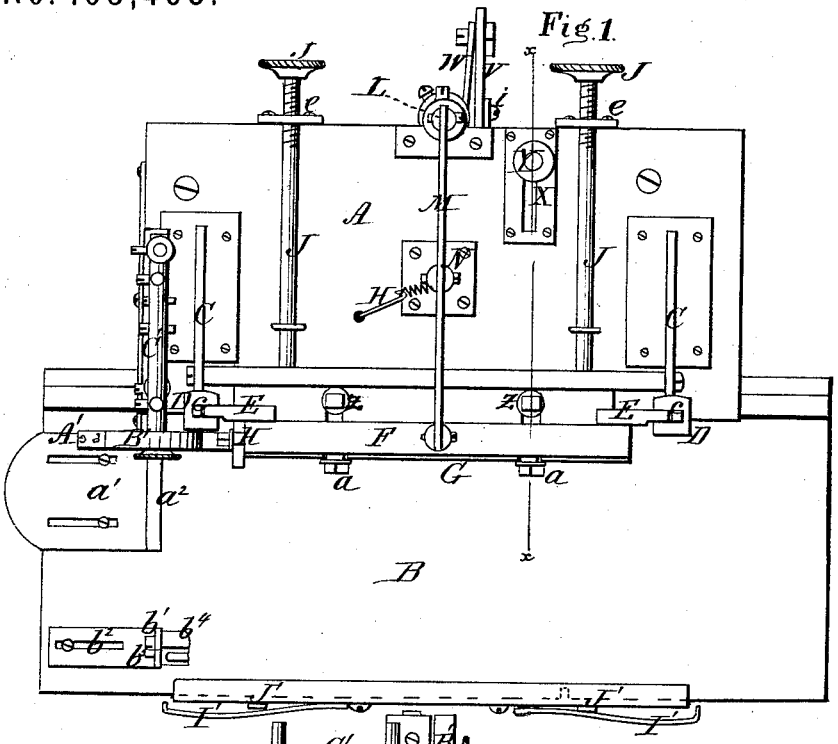
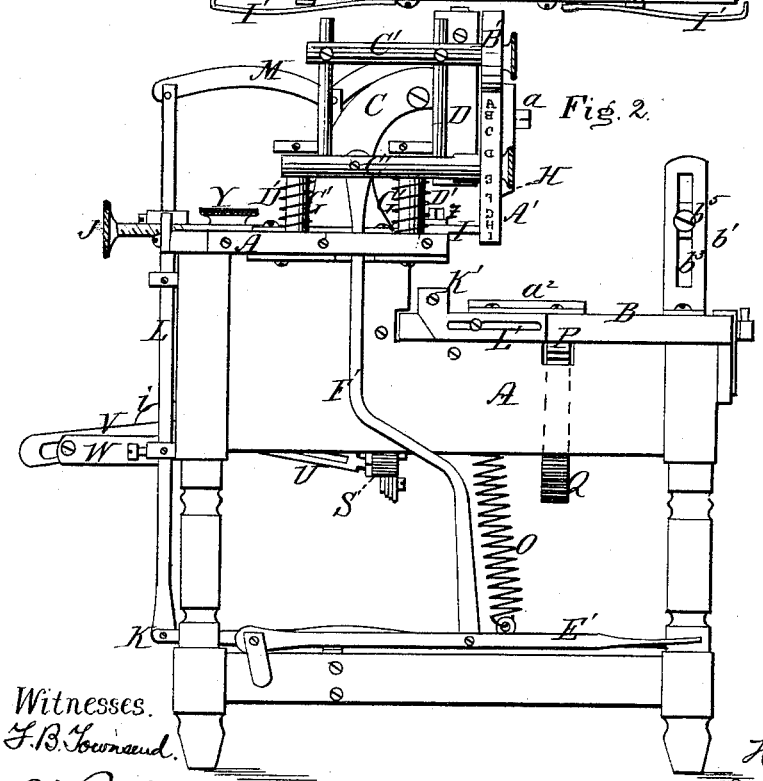


Fig. 2.



Witnesses.
F. B. Townsend.
J. H. Rutherford

Inventor.
H. H. Edwards,
By Johnson & Johnson
his Attys

2 Sheets--Sheet 2.

H. H. EDWARDS.

Machine for Cutting and Printing Indexes.

No. 168,468. Patented Oct. 5, 1875.

Fig. 3.

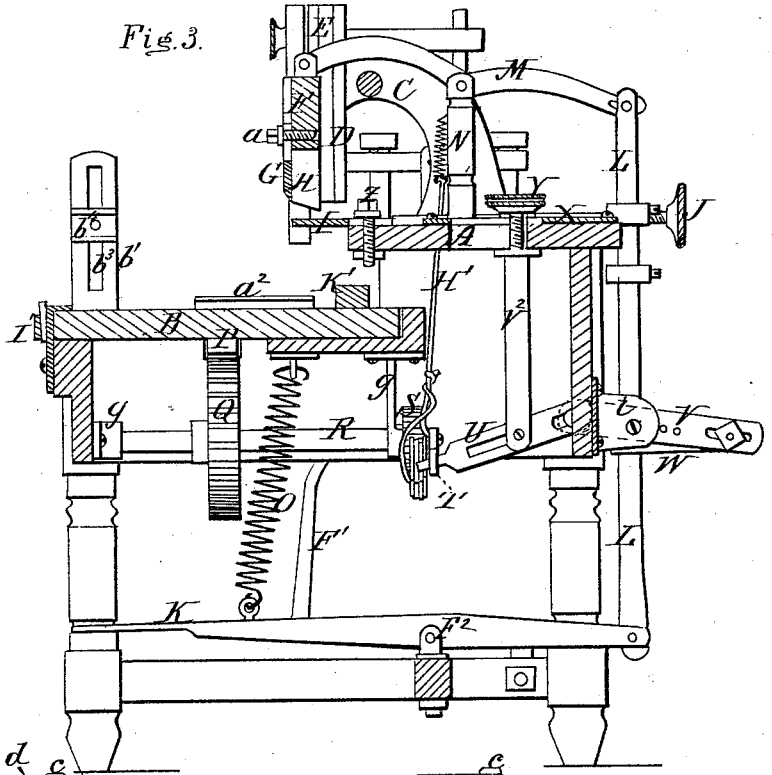
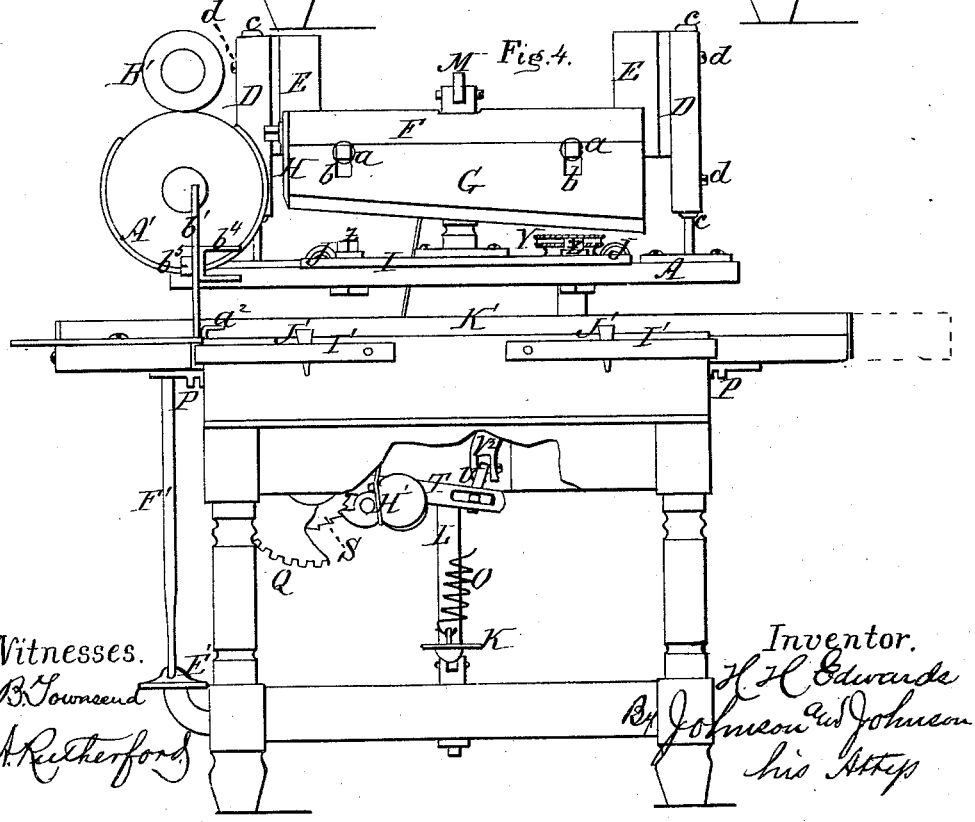


Fig. 4.



Witnesses.
F. B. Townsend
J. A. Rutherford

Inventor.
H. H. Edwards
By Johnson and Johnson
his Attys

UNITED STATES PATENT OFFICE.

HENRY H. EDWARDS, OF GRAND RAPIDS, MICHIGAN.

IMPROVEMENT IN MACHINES FOR CUTTING AND PRINTING INDEXES.

Specification forming part of Letters Patent No. **168,468**, dated October 5, 1875; application filed July 20, 1875.

To all whom it may concern:

Be it known that I, HENRY H. EDWARDS, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Index-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to furnish an improved machine for indexing books, in which the index-strips are cut and the letters printed in a more perfect and satisfactory manner than in machines heretofore devised for the same purpose.

The invention consists, first, in the combination of a sliding or reciprocating feed-table, upon which the book is placed with a vertically-operating knife or knives, and a horizontal bed-knife, the feed-table being provided with a rack on its under side, into which meshes a spur-wheel, driven or rotated through the medium of a ratchet-and-pawl mechanism, which is actuated through the medium of a double lever and a treadle-and-lever mechanism connected with the knife. The feed-table is so arranged that it will be moved from the left to the right in cutting the indexes, and the cutting mechanism is so arranged that whenever the double knife is depressed to cut the index-strip the feed-table will be held stationary, and when the knife rises or ascends the latter will be moved forward to such an extent as will bring a succeeding page of the book in proper position to be cut.

The invention also consists in the combination, with the feed-table and cutting mechanism, of a revolving type-wheel, having letters alphabetically arranged upon its periphery, and an elastic inking-wheel arranged above the type-wheel, both wheels being mounted in an independent vertically-movable frame located at the end of the machine, so that after the cutting operation has been performed, the feed-table can be moved to the left to bring the different index-strips under the type-wheel when the printing operation is performed, by alternately depressing the type-wheel and moving the feed-table forward to the left.

The invention further consists in the combination, with the feed-table, of a horizontally-adjustable slotted bracket or angle-iron, carrying a vertically-adjustable holder for one of the book-covers, the lower cover being held by a flanged plate adjustably fitted to the table.

The invention also consists in making the cutting-knives adjustable in a vertical direction by means of slots and screws, and adjustable in a lengthwise or longitudinal direction through the medium of gibs and screws, which double adjustment will, in connection with a horizontal adjustment given to the bed-knife, enable the different knives to be always maintained in a proper position for perfectly performing the cutting operation.

The invention also relates to means for enabling the movable knife or knives to make a short or long cut, to regulate the length of cut in index; and it consists of a slotted guide-plate on the raised stationary part of the table, and a horizontally-adjustable fulcrum-post of the lever mechanism employed for moving the feed-table forward, said fulcrum-post being retained when adjusted by means of a nut applied to its threaded upper end, whereby adjusting the fulcrum-post nearer or farther from the bed-knife, will cause the feed-table to be moved a greater or less distance, according to the length of the index-strip or the spaces required for one, two, or more letters during the movement of the table.

In the accompanying drawings, Figure 1 is a top view of a machine embracing my invention. Fig. 2 is an end view. Fig. 3 is a vertical cross-section. Fig. 4 is a front elevation.

In the drawing, A denotes the stationary table, which supports the entire cutting, printing, and operating mechanism. A sliding or reciprocating feed table or board, B, is arranged in a lower plane than the top of the table A, which feed-table is so fitted and guided upon horizontal ways that it can be moved to the right or left. Vertical standards or brackets C, rising from the ends of the raised stationary part of the table, are provided with vertical grooved front arms D,

into which are fitted slides E, on the ends of a longitudinal knife-carrying bar, F. To the front side of said bar is adjustably secured a long knife, G, by means of headed clamping or thumb screws *a*, passing through slots *b* in the knife, which can thus be adjusted in a vertical direction. A narrow knife, H, is fitted to one end of the bar F, for making the transverse cut in the leaf of the book. Said knife is also slotted and attached to the carrying-bar by a screw. Gibs or keys *c*, introduced between the slides E and grooved arms D, can be adjusted through the medium of screws *d*, for the purpose of imparting a longitudinal or lengthwise adjustment to the knives G H. The movable cutting-knives can thus be adjusted to enable the same to cut at all times against the edge of a bed-knife, I. Said knife rests horizontally upon the table A, and it can be adjusted in a forward or backward direction through the medium of clamp-screws *z* and long screw-stems J, which pass through stationary nuts *e* on the table A. A vertical reciprocating motion is imparted to the movable cutting-knives through the medium of a treadle, K, which is pivoted under the table at F^2, and carries a vertical rod, L, at its rear end, to the upper end of which is connected the rear end of a centrally-fulcrumed lever, M, its front end being attached to the knife-carrying bar F. N designates the fulcrum-post of said lever, which is fixed to the top of the table.

By depressing the treadle, the movable knives are carried down upon the bed-knife to perform the cutting operation, and upon the release of the treadle a coiled spring, O, connected therewith and to the table, serves to return said knives to their normal or raised position.

The feed-table B is moved forward, when the cutting-knives ascend, through the medium of a mechanism connected with and operated by the treadle which actuates the cutting-knives. A rack-bar, P, secured to the under side of the feed-table, is made to engage with a large spur-wheel, Q, mounted on a horizontal shaft, R, which is journaled in boxes or hangers *g* on the table, and carries a ratchet-wheel or disk, S, at its rear end. A longitudinal lever, T, journaled or hung upon the shaft R, is connected at its free end with a laterally-extending lever, U, which is itself connected with another lever, V, pivoted to a bracket, *i*, on the side of the table. Said lever V has its outer end connected with an arm, W, which is secured to the rod L by a collar and set-screw.

Thus it will be perceived that, by the system of levers shown, the feed-table will be carried forward after every stroke of the knives to such an extent as will properly bring a succeeding page of the book under the cutting-knives, to cut the index-strips at different points along the edges of the various leaves.

In performing the cutting operation the leaf of the book next the last, or the one which is to bear the letter Y, is cut first, and then the others are successively dropped as the table is fed along and the cutters caused to descend.

In cutting indexes in books, some require one, some two, and others three letters to the leaf. This is accomplished without changing the gage, by making a faint or slight cut, or by omitting to place the leaf under the bed-knife when the movable knives are brought down by the treadle.

In books of different lengths it is found necessary to increase or diminish the spaces allowed for lettering. This is effected by a slotted guide-plate, X, on the table A, through which passes the fulcrum-post V^2 of the intermediate slotted lever U, which fulcrum-post can be adjusted to change the throw of the levers and ratchet, thus enabling the feed-table to be moved fast or slow.

When a short cut is desired, the fulcrum-post is moved toward the knives; when a long one, it is moved in a reverse direction. A nut, Y, applied to the upper end of the fulcrum-post, serves to secure the same in position when adjusted.

The printing mechanism comprises a revolving wheel, A′, carrying letters, or alphabetically-arranged characters, upon its periphery, and located beneath a rubber-covered inking-wheel, B′. The printing and inking wheels are mounted on a frame, C′, which moves in a vertical direction upon stems D′, secured to the end of the table A. The frame is depressed to bring the printing-wheel upon the leaf to be indexed, by means of a treadle, E′, which is connected with said frame by a rod, F′. Coiled springs G′, encircling the guide-stems D′, serve to raise the wheel-frame when the treadle-pressure is removed.

The printing is commenced by moving the feed-table to the left, the ratchet mechanism having been previously disengaged through the medium of a wire or spring hook, H′, connected with the pawl-lever, and extending through the table, where it is attached within convenient reach to the operating lever of the cutting-knives to hold the pawls out of gear. Spring-hooks I^1, carried by a plate, I^2, at the side of the table B, spring into niches or notches in the edge of the feed-table, to hold the same locked, until wedges J′ are inserted between the hooks and table for disengaging the same.

A longitudinal gage-bar, K′, at the inner side of the feed-table, can be adjusted in a lateral direction by means of slotted end plates L′, to suit books differing in width. An adjustable slotted plate, a^1, having a flanged end, a^2, is applied to the feed-table in proper position to receive and hold the lower cover of the book. An angle-plate, b^1, having horizontal and vertical slots b^2 b^3, is also adjustably fitted to the table, and carries a vertically-adjustable forked holder, b^4, for the top book-cover. The cover rests within the forks of the holder, and the latter is secured at any height and angle by a clamp, b^5.

I claim—

1. In a machine for indexing books, the combination of the sliding or reciprocating feed-table B, vertically-movable knives G H, horizontal bed-knife I, treadle K, vertical connecting-rod L, and lever M, substantially as herein described.

2. The combination, with the movable knives G H and the feed-table B, of the centrally-fulcrumed lever M, treadle-connection K L, arm W, the connected levers T U V, the table-gear connection therewith, and the movable fulcrum-post V^2, whereby the same movement of the treadle operates the knives and effects the feed of the table for a long or short cut, as regulated by the adjustment of the fulcrum-post, substantially as herein set forth.

3. The combination, with the feed-table B and the cutting mechanism, of the printing-wheel A′, ink-roll B′, separate carrying end frame C′ D′, spring G′, and the treadle E′, whereby the printing-wheel is adapted to be operated independently of the cutting devices, and upon the reverse feed of the table, substantially as herein set forth.

4. The combination of the horizontally-adjustable bracket and cover, holding-guide a^1, and the vertically-adjustable cover-holder b^4, with the feed-table and cutting mechanism of a book-indexing machine, as and for the purpose set forth.

5. The separate movable knives G H, adjustable vertically and longitudinally, and combined with the horizontally-adjustable knife I, such adjustment being made in relation to each other, for the purpose set forth.

6. The combination of the slotted guide and movable fulcrum-post V^2 with the system of levers, and ratchet-and-pawl mechanism and feed-table, substantially as herein set forth, whereby the feed of the table is regulated to make a long or short cut, according to the length of the index-strip and the spaces required for the lettering.

7. The combination, with adjustable fulcrum-post V^2 and the devices for uniting it with the treadle K and the feed-table B, of the clamping-nut Y and the slotted table A, whereby the fulcrum-post is secured in position when adjusted.

8. The combination, with the adjustable slotted flanged plate a^1 a^2 and the angle-slotted plate b^1, having the adjustable forked holder b^4, of the longitudinally-adjustable gage-bar K′, and its slotted end plates L′, whereby the book is secured and clamped upon the table in proper relation to the movable and fixed knives, as described.

9. In a machine for indexing books, the main table A, for supporting the entire cutting, printing, and operating mechanism, in combination with the book-supporting and feeding-table B, placed in front of and at a lower level than the fixed table, and having a movement to the right and left to cut and print the leaves, as herein set forth.

10. The combination, with the separate knives G H I, of the screws J, *a*, *d*, and *z*, the slides E, and the adjustable gibs *c c* in the grooved arms C D, as the means whereby the said knives are adjusted in relation to each other, as described.

In testimony that I claim the foregoing as my own I have affixed my signature in presence of two witnesses.

HENRY H. EDWARDS.

Witnesses:
N. I. SMITH,
MILO B. STEWART.