

No. 853,087.

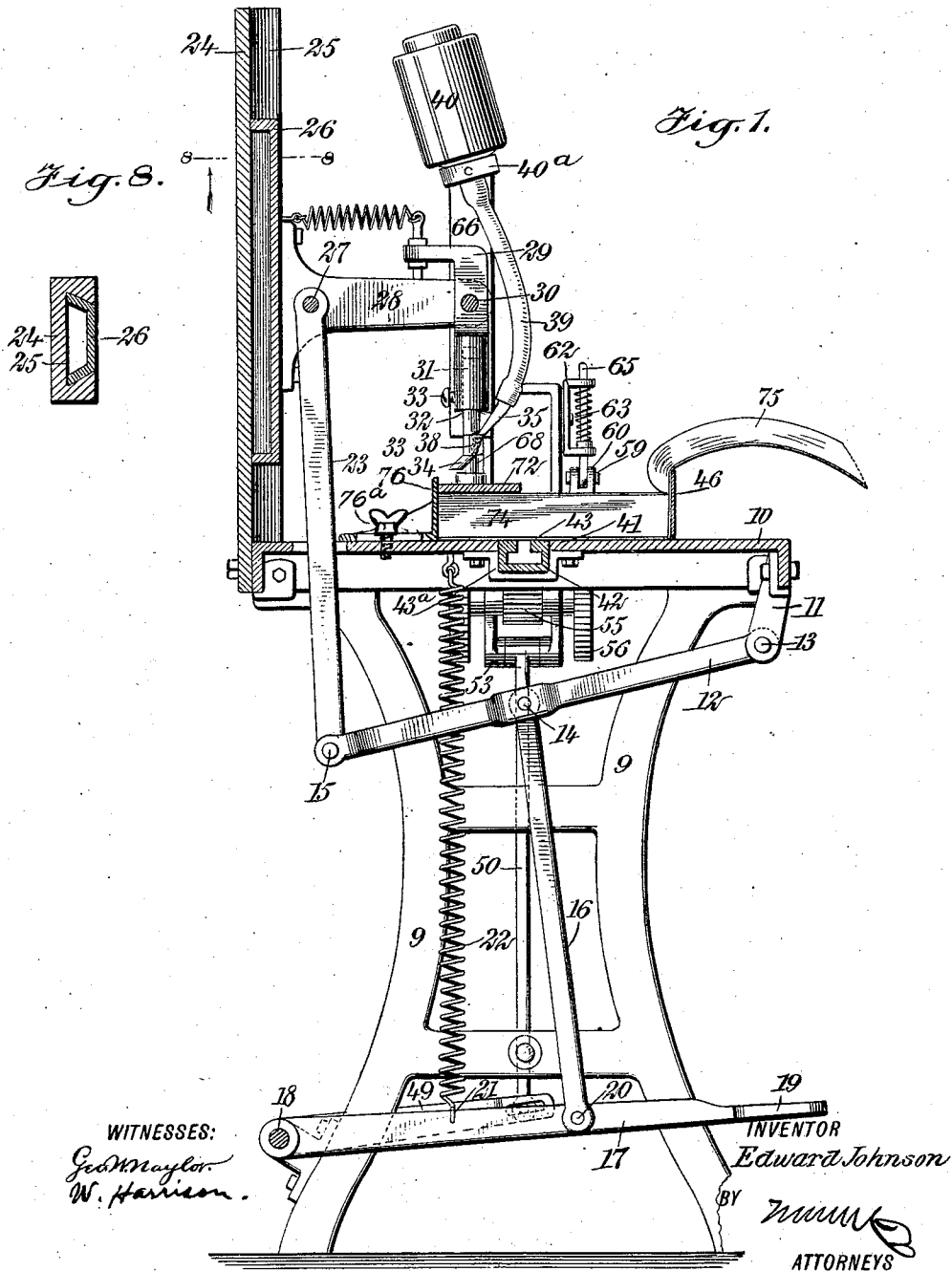
PATENTED MAY 7, 1907.

E. JOHNSON.

THUMB NOTCH INDEXING MACHINE.

APPLICATION FILED JUNE 23, 1905.

3 SHEETS—SHEET 1.



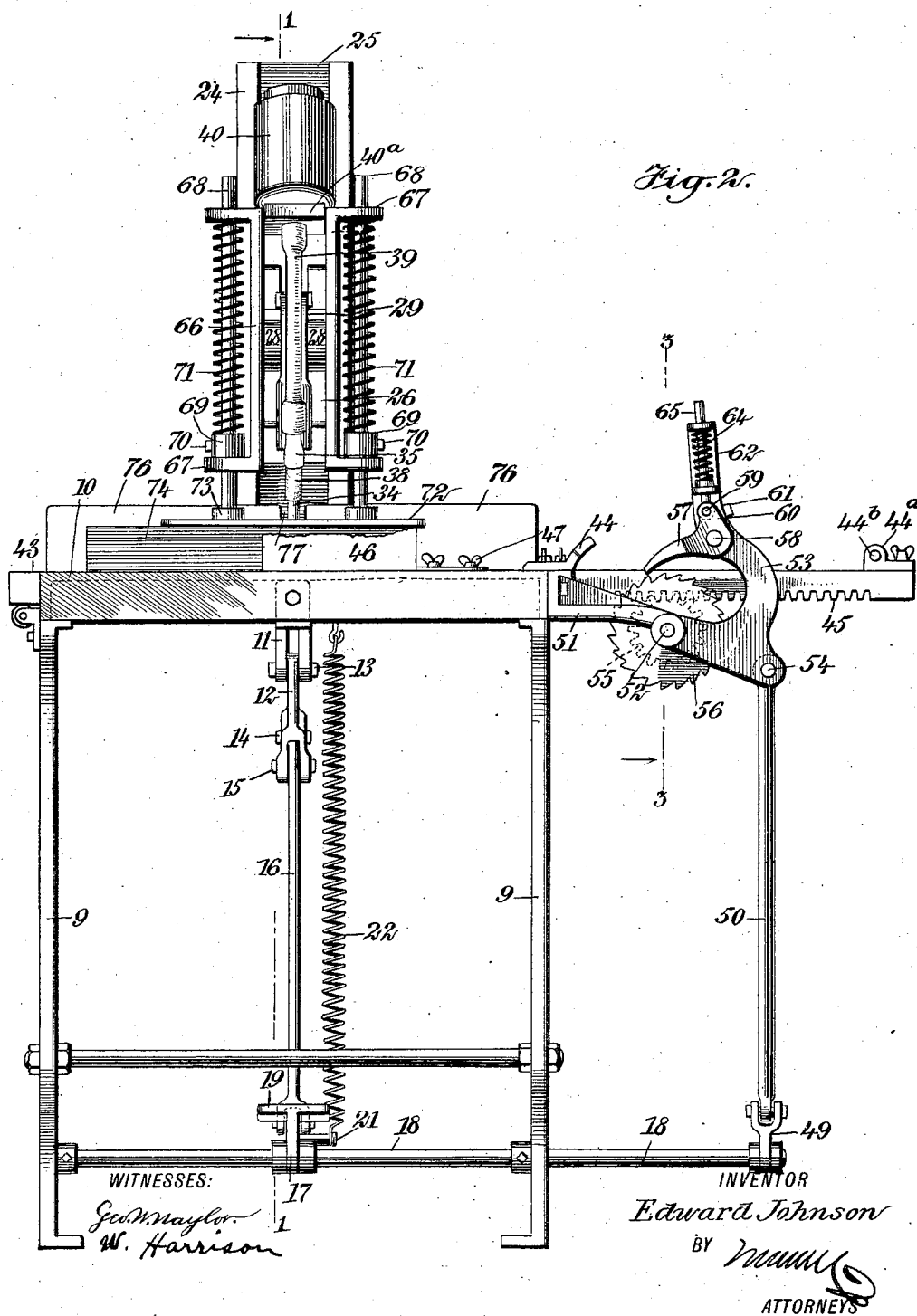
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3 SHEETS—SHEET 3.

Fig. 3.

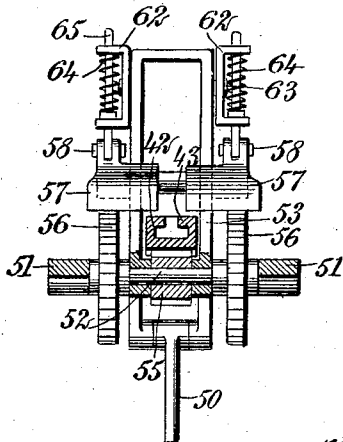


Fig. 4.

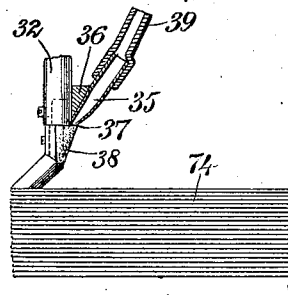


Fig. 5.

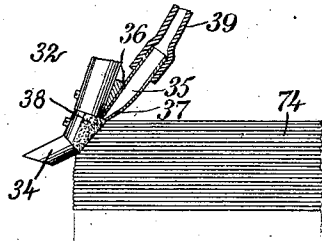


Fig. 6.

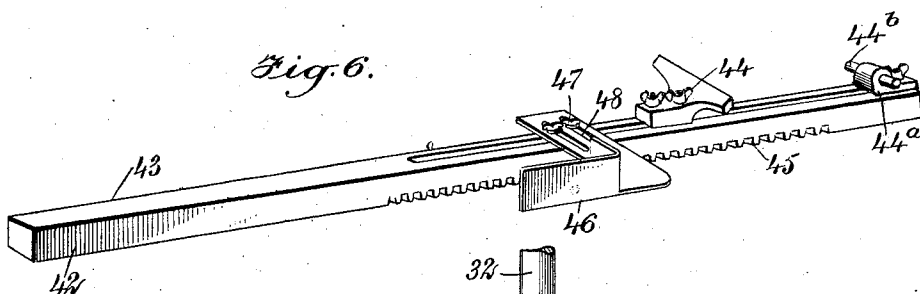
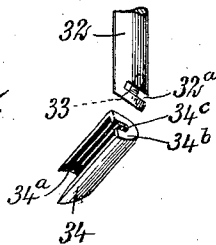


Fig. 7.



WITNESSES:

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THUMB-NOTCH INDEXING-MACHINE.

No. 853,087.

Specification of Letters Patent.

Patented May 7, 1907.

Application filed June 23, 1905. Serial No. 266,560.

To all whom it may concern:

Be it known that I, EDWARD JOHNSON, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and Improved Thumb-Notch Indexing-Machine, of which the following is a full, clear, and exact description.

My invention relates to indexing machines, my more particular object being to produce a device in which the leaves of books may be readily cut so as to produce the indentations commonly designated as "thumb-notches," whereby the different portions of the book may be readily accessible to the reader.

My invention further relates to mechanism for coloring the notches as the same are cut.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a substantially central vertical section through a machine embodying my invention, the section being taken on the line 1—1 in Fig. 2, looking in the direction of the arrow; Fig. 2 is a front elevation of the machine while in action; Fig. 3 is a fragmentary detail section upon the line 3—3 of Fig. 2, looking in the direction of the arrow and showing the ratchet mechanism for operating the feed; Fig. 4 is a fragmentary sectional detail of the gouge for cutting the notches and of the mechanism for coloring the same; Fig. 5 is a fragmentary sectional view somewhat similar to Fig. 4, but showing the coloring device as in action; Fig. 6 is a detail perspective view showing the rack bar for feeding the book step by step as the cuts are made; Fig. 7 is an enlarged perspective detail showing the gouge, together with means for carrying the same; and Fig. 8 is an enlarged fragmentary cross section upon the line 8—8 of Fig. 1, looking in the direction of the arrow and showing the main slide-way and the slide mounted therein.

The frame of the machine is shown at 9 and supports a horizontal table 10. Connected with the table is a stationary bracket 11, and connected with this bracket is a lever 12 which rocks upon a pivot 13. The lever 12 is provided intermediate of its ends with a pivot 14 and at its rear end with a pivot 15. A link 16 engages the pivot 14 and extends downwardly to a treadle 17 which is pivot-

ally mounted at 18 and is provided with a foot plate 19 whereby it is actuated. The connection between the link 16 and the treadle 17 is made by means of a pivot 20. Mounted upon the treadle 17 is a boss 21 projecting laterally therefrom, and engaging this boss is a spiral spring 22 which retracts the treadle after the downward movement thereof. The pivot 15 of the lever 12 engages the lower end of a link 23 and is adapted to draw this link downward. A vertical standard 24 is provided with a slideway 25 in which is mounted a slide 26. Brackets 28 are connected rigidly with this slide 26 and support a pivot 27 which is engaged by the upper end of the link 23. A tool holder 29 is journaled at 30 upon the brackets 28 and is provided with a socket 31 into which may be inserted a cylindrical carrier 32 provided with a slot 32^a, through which extends a screw 33. A gouge 34 is provided with a cutting edge 34^a of substantially semicircular form and with a web 34^b. This web is provided with a slot 34^d through which the screw 33 extends. The web 34^b is inserted within the slot 32^a and the screw 33 tightened in position, so as to clamp the web 34^b and thus hold the gouge 34 rigid relatively to the carrier 32 as will be understood from Fig. 7. A substantially conical nozzle 35 is connected at 36 with the carrier 32 and is provided with a small aperture 37 through which a coloring fluid may be discharged. A pad 38, made of cloth, felt or other absorbent material, encircles the carrier 32 at the upper edge of the gouge 34 as indicated in Figs. 4 and 5. This sleeve is in alinement with the aperture 37 and absorbs the coloring matter discharged therefrom, becoming completely saturated with the same and being capable of applying it to any surface with which the sleeve 38 may be brought into contact. A flexible duct 39, preferably having the form of a tube, leads upward to a reservoir 40 which is mounted upon a rocking plate 40^a so as to move slightly therewith, being held in a definite position by virtue of the resilience of the material of which the tube is made.

The table 10 is provided with a transverse slot 41, and mounted below this slot is a sliding bar 42 provided with a flat surface 43 which is flush with the top of the table 10. The sliding bar 42 is mounted within stirrups 43^a as will be understood from Fig. 1. Mounted rigidly upon the flat surface of the sliding bar 42 are brackets 44, 44^a, the latter having

a pin 44^b. The under side of the bar 42 is provided with rack teeth 45 whereby it is movable longitudinally. A feed guide 46 is provided with adjusting screws 47 entering slots 48 in the feed guide and a slot in the bar 42 whereby it may be moved relatively to the bar 42 and thus adjusted, the screws 47 being normally tight but adapted to be loosened at will by the operator.

Mounted upon one end of the shaft 18 is an arm 49, upon the free end of which is pivoted a link 50. A pair of bearing brackets 51 are mounted upon the frame 9 and support a revoluble shaft 52. A swinging head 53 is journaled upon the shaft 52 and is connected by a pivot 54 with the link 50. A gear pinion 55 and ratchet wheels 56 are rigidly mounted upon the shaft 52. Pawls 57 are pivoted at 58 upon the swinging head 53 and these pawls are provided with a pivot 59 carried upon a lug 60. A limiting stop 61 is disposed adjacent to the pawls 57 and in such position as to serve to obstruct the movements of the lug 60. Two brackets 62 are pivoted at 63, and consequently free to rock, each bracket being of substantially U-shape and inclosing a spiral spring 64. Sliding rods 65 pass centrally through the brackets as indicated in Fig. 3 and are encircled by the springs 64. Mounted upon the brackets 28 are vertical brackets 66 each provided with ears 67 as indicated in Fig. 2. Slidably engaging the ears 67 are vertical guide rods 68, and disposed upon these guide rods intermediate of the ends thereof are cylindrical stops 69 held in position by means of set screws 70. These cylindrical stops are adapted to press against the lower ears 67 and are adjustable by means of the setscrews. Spiral springs 71 encircle the guide rods 68 and serve to tension the same. By adjusting the cylindrical stops 69 the tension of the springs may be regulated at will. A clamping plate 72 is secured by means of fastenings 73 rigidly upon the lower ends of the guide rods 68 and is movable vertically therewith.

The book to be operated upon is shown at 74, the portion 75 consisting of a number of leaves which have been thrown back as indicated in Fig. 1 for the purpose of preventing them from being affected by the machine. A gage is shown at 76 and may be adjusted in the usual manner well understood with reference to paper cutters for the purpose of guiding the book 74. The gage 76 is held in position by means of a bolt 76^a which passes vertically through the slot 77. This guide is provided with a slot 77 in alinement with the gouge 34 through which the bits of paper chiseled from the books are allowed to fall upon the floor.

The operation of my device is as follows:—The operator takes a book 74, for instance, a large dictionary or atlas, and puts it upon the table 10, having previously adjusted the

feed guide 46 and also the guide 76 so as to leave the book in a position favorable for the work to be done. Turning back a number of leaves 75 as indicated in Fig. 1, so as to reach that part of the book which is to be provided with a thumb notch, the operator depresses the treadle 17 by means of his foot. The descent of the treadle causes the link 16 to move downwardly, and this swings the lever 12 downward upon the pivot 13 as a center and thereby pulls the link 23 downward, this link having a considerably greater movement than that of the treadle 17 as will be understood from Fig. 1. The sliding head 26, carrying the brackets 28 and all parts connected with these brackets, therefore makes a comparatively rapid descent. The clamping plate 72 next engages the exposed surface of the book and the gouge 34 moves directly downward, and upon engaging the leaves of the book, makes its cut, meanwhile turning or glancing slightly, as indicated in Figs. 4 and 5, so as to travel through several thicknesses of paper. The nature of the movement may be understood by bearing in mind that the gouge 34 is inclined at an angle relatively to the leaves of the book upon which it operates, and has moreover a slight tendency to rotate around the pivot 30 as a center. The result is that the gouge makes a slanting cut of decreasing depth as it descends, and the chips thus severed are thrown through the slot 77. The sleeve 38, being saturated with coloring matter from the reservoir 40, next moves into the thumb notch thus formed and applies a small portion of the coloring matter directly to the fresh cut edges of the leaves. In other words, the sleeve 38, being saturated with coloring matter, follows the gouge 34 and slides into the thumb notch as indicated in Fig. 5, so as to ink the edges of the leaves affected. The downward movement of the treadle 17, in turning the shaft 18, also pulls down the link 50 and causes the swinging head 53 to rock a slight distance away from the frame 9 of the machine. A person seeing the mechanism as in Fig. 2 would observe the rocking head moving to his right, the pawls 57 slipping over the teeth of the ratchet wheels 56. The operator now relaxes the pressure of his foot, whereupon the spring 22 retracts the treadle, and this causes the slide 26 with all parts supported thereby, to be raised into normal position. The retractile movement also raises the link 50 and causes the swinging head 53 to rock toward the frame 9. The one or the other of the pawls 57 thereupon grips its ratchet wheel 56, turning the same slightly in a contra-clockwise direction according to the view shown in Fig. 2, and this movement turns the gear pinion 55 so as to move the sliding rod 42 a slight distance to the left. I employ two pawls 57 and two ratchet wheels 56 in order

to obtain a fine feed movement; or in other words, to prevent too much lost motion. To this end only one pawl acts at a time, the ratchet wheels being staggered relatively to each other. The clamping plate 72 being raised as above described, and the several other parts being in their respective normal positions, the operator raises some more leaves from the book 74 and replaces them by hand so that they will be superposed upon the leaves 75; or in other words, he opens the book at a place a little lower down and then depressing the treadle repeats the movement above described. This he does again and again quite rapidly, so that when the machine is in operation the sliding bar 42 moves to the left by a succession of step by step movements, the operator constantly turning back more leaves of the book until he reaches the bottom of the book, or finishes the thumb-notching before reaching the bottom, as the case may be. If the book is exceedingly large and is to be notched profusely the sliding bar 42 may reach the end of its stroke before the book is finished. In this event, I restore the rod to its normal position at the right, as indicated in Fig. 2, and the cutting is continued. This may necessitate changing the guides, and I therefore prefer to operate upon a number of books in succession, leaving them unfinished, and then to change the guides and finish them.

The manner in which the rack bar is restored to its normal position is as follows: The bar having reached its extreme limit, that is, moved as far as it can to the left according to the view shown in Fig. 2, the pawls 57 are raised by the pin 44^b, which passes laterally under them. This automatically stops any further movement of the rack bar 42, because when the pawls 57 are thus raised the lugs 60 lodge against the limiting stops 61, the tension of the springs 64 holding the lugs 60 rigidly against the stop. The pawls are now unable to descend into engagement with the ratchet wheels 56, for the reason that the brackets 62 being mounted pivotally as above described, and the pivot 59 being thrown back so that the pressure of the spring 64 is "off the center" relatively to the pivots 58, the lug 60 is pinned tightly against the limiting stop 61 and will remain in that position until dislodged by some means. This leaves the operator free to retract the sliding bar 42, which he does by hand. The gear pinion 55 is now free to turn backward for the reason that the ratchet wheels 56 are not obstructed in their backward rotation. When, however, the sliding bar 42 is retracted to its normal position, the bracket 44 moves over the free ends of the pawl 57, and acting as a sort of cam forces the free ends of these pawls downward, thereby displacing the pivot 59 and throwing it upon the other side of the center by pres-

sure, thus causing the pawls to snap against the ratchet wheels 56. The machine is now ready for another book, or for a continuation of work upon the same book.

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

1. The combination of a gouge, a supporting member connected therewith and disposed at an angle relatively thereto, and mechanism pivotally connected with said gouge for actuating the same so as to cause said gouge to give a glancing stroke.

2. The combination of a movable head, a cutting tool mounted thereupon and carried thereby, a member of absorbent material mounted upon said cutting tool, and means for constantly supplying coloring matter to said member.

3. The combination of a tool holder, means for actuating the same, a gouge connected therewith and adapted to cut leaves of paper or the like, a member of absorbent material partially encircling said gouge, and means for supplying coloring matter to said member.

4. The combination of a table, cutting mechanism mounted thereupon, means for guiding said cutting mechanism, a bar connected with said table and free to slide relatively thereto, ratchet mechanism for moving said bar step by step, and means for automatically throwing said ratchet mechanism out of action in order to allow said bar to be retracted.

5. The combination of a gouge provided with a cutting edge, a cylindrical member connected with said gouge for supporting the same, said cylindrical member being disposed at an angle relatively to said gouge, a movable member upon which said cylindrical member is pivoted, and means for forcing said movable member toward a book so as to cause said gouge to strike the same off the center, thus producing a glancing blow.

6. The combination of a gouge provided with a cutting edge, a member disposed at an angle relatively to said gouge for supporting the same, a pivot connected with said member for allowing the same to swing slightly, and means for forcing said gouge against the leaves of a book.

7. The combination of a movable head, means for actuating the same, a cutting tool mounted upon said movable head, a reservoir of coloring matter mounted upon said movable head, and a pad of absorbent material communicating with said reservoir and connected with said cutting tool for supplying coloring matter from said reservoir.

8. The combination of a treadle, a lever, a sliding head, links connecting said treadle with said lever and said lever with said sliding head so as to give said sliding head a movement of great amplitude as compared

with the movement of said treadle, and a cutting tool mounted upon said sliding head and inclined angularly in relation to the general direction of movement of said head in order to strike a glancing blow.

9. The combination of a table, a movable member connected therewith for advancing a book step by step in one direction relatively to said table, means for throwing said member out of action when said member reaches its limit in one direction, means controllable by the position of said member for throwing the same into action when restored by hand to its limit in the other direction, and cutting mechanism coacting with said member for cutting said book after each step of the advance thereof.

10. The combination of a table, guides for locating a book thereupon, a clamping plate for temporarily securing said book, a cutting member for providing said book with thumb

notches, and a pad mounted upon said cutting member and carried thereby for applying coloring matter to the thumb notches thus formed.

11. The combination of a vertically movable slide, a supporting member pivotally mounted thereupon, a gouge connected with said supporting member and depending therefrom, said gouge being provided with a portion having a cutting edge, said portion being out of alinement with said supporting member for the purpose of enabling said gouge to strike a glancing blow, and means for actuating said slide.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD JOHNSON.

Witnesses:

CHARLES A. SCHAEFER,
LOTTIE WAECHTER.