

(No Model.)

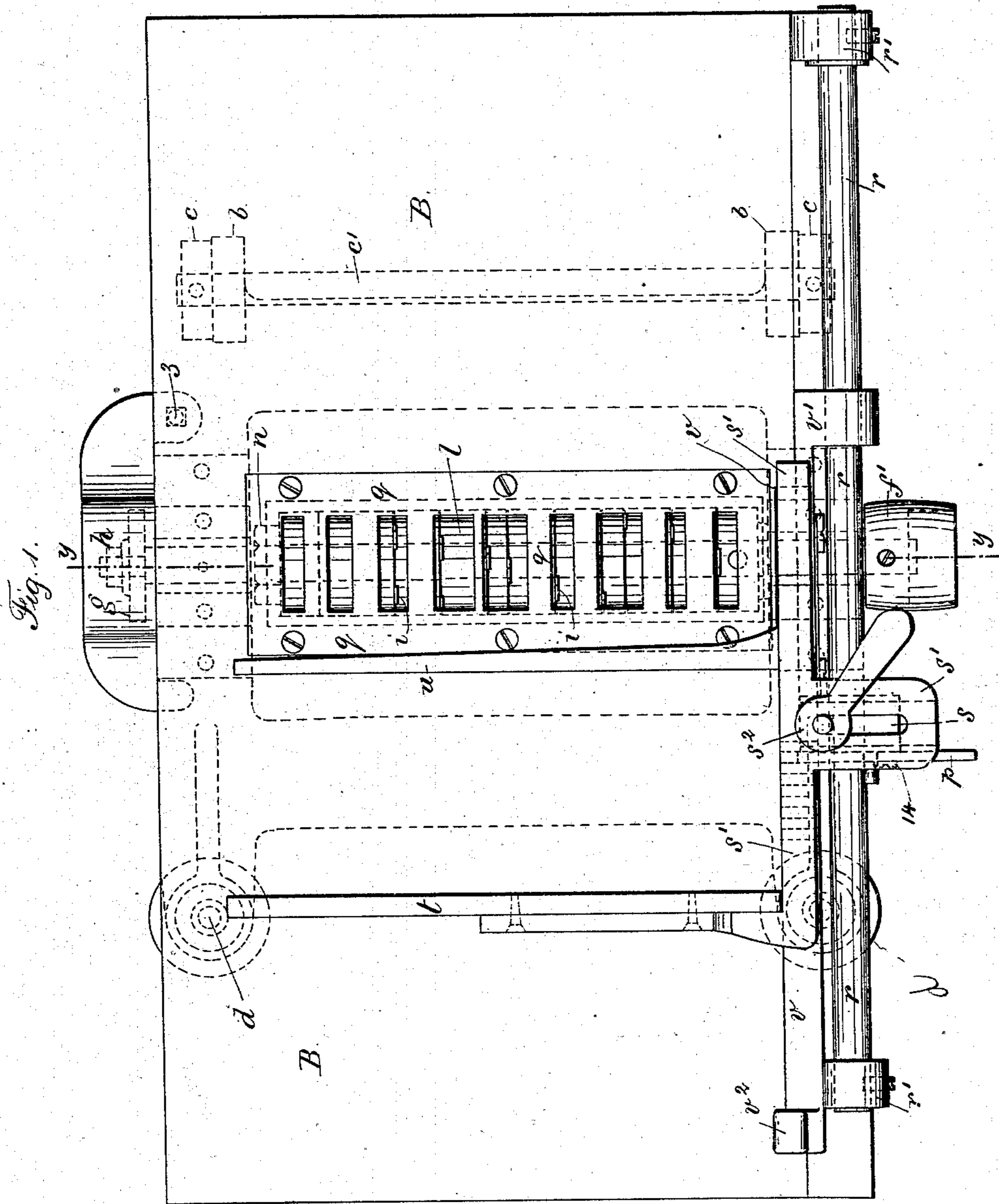
2 Sheets—Sheet 1.

D. M. SMYTH.

MACHINE FOR CUTTING NOTCHES IN THE BACKS OF BOOKS.

No. 276,296.

Patented Apr. 24, 1883.



Witnesses

J. Fraib
Chas. H. Smith

Inventor:

David M. Smyth.
per Lemuel W. Ferrell atty

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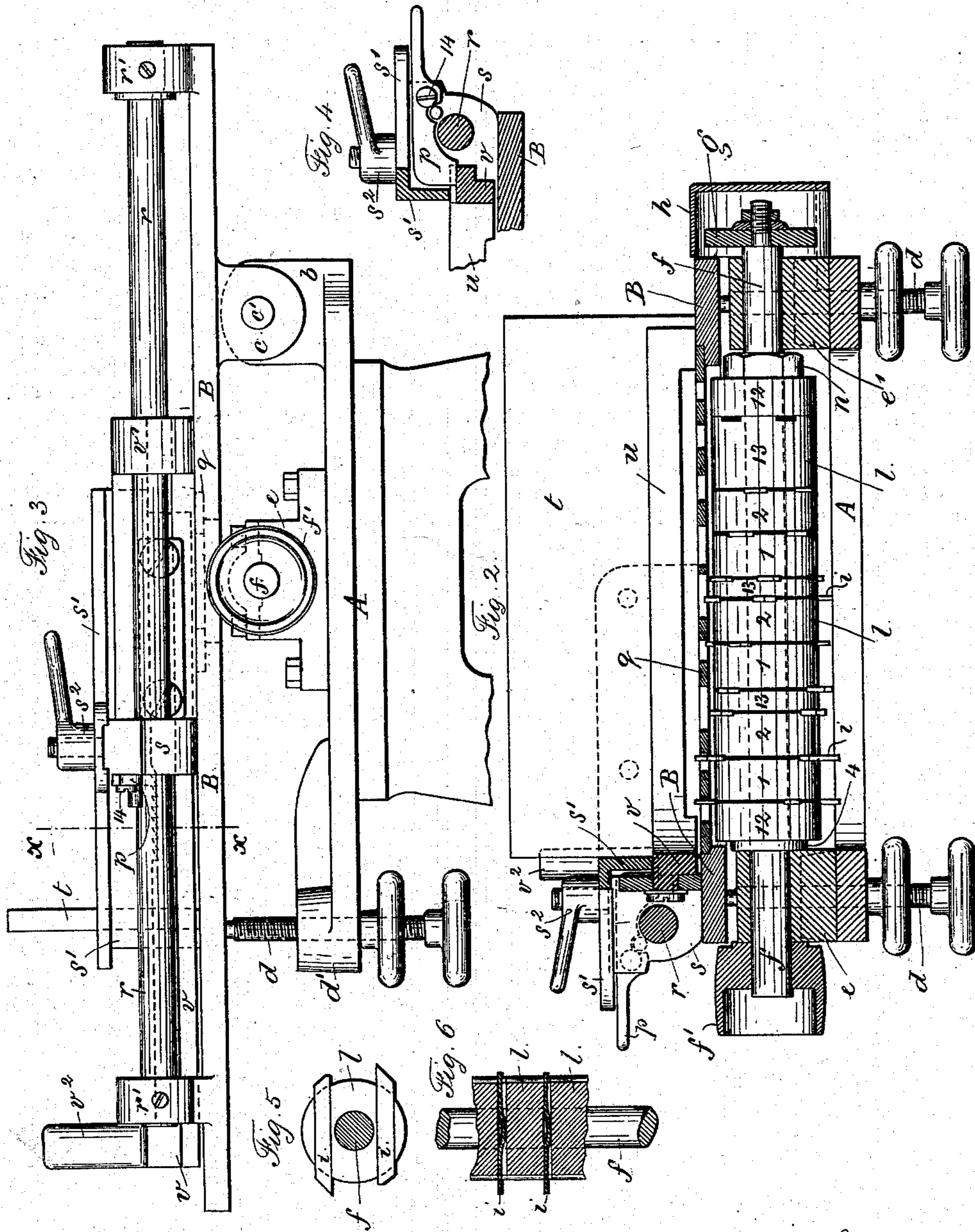
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UNITED STATES PATENT OFFICE.

DAVID M. SMYTH, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE SMYTH MANUFACTURING COMPANY, OF CONNECTICUT.

MACHINE FOR CUTTING NOTCHES IN THE BACKS OF BOOKS.

SPECIFICATION forming part of Letters Patent No. 276,296, dated April 24, 1883.

Application filed October 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, DAVID M. SMYTH, of Hartford, in the county of Hartford and State of Connecticut, have invented an Improvement in Machines for Cutting Notches in the Backs of Books, of which the following is a specification.

I have heretofore constructed machines for sewing books, and as these machines operate upon the entire length of the back-fold of each signature, it is important that all the notches be accurately placed.

My present invention is for cutting these notches with precision and rapidity; and the improvement consists in the combinations of parts hereinafter set forth.

In the drawings, Figure 1 is a plan of the machine; Fig. 2, a cross-section at the line *y y*. Fig. 3 is a partial side elevation. Fig. 4 is a section at *x x*, Fig. 3. Fig. 5 shows the cutter-holder endwise of the shaft, and Fig. 6 is a section of the cutter-holder.

A suitable frame, *A*, is provided with lugs *b*, over which is the table *B*, with lugs *c* adjacent to the lugs *b*, through which lugs the bolt *c'* passes and forms a hinge, upon which the table is raised and lowered by the adjusting-screws *d*, passing through arms *d'*, that project from the frame *A*. Upon this frame *A* are journal-boxes *e e'* for the cutter-shaft *f*. A pulley, *f'*, at one end, is driven by a belt, so as to revolve the shaft and cutter-head, and at the other end of the shaft *f* there is a removable emery-wheel, *g*, that is used for grinding or sharpening the cutters. A movable cap, *h*, covers up the emery-wheel when not in use, the said cap being held by a pivot-bolt, *3*, on which it can be swung in uncovering the emery-wheel for use.

The cutter-head is made with a stationary collar, *4*, around the shaft *f*, and with movable cutter-heads *l*, that are cylindrical, and each is grooved transversely in one of its flat faces for the reception of the cutters *i*. Each groove is of the same width as the cutter and not quite as deep as the thickness of the cutter, so that the cutters will all be clamped and held between the respective cutter-heads by the action of the nut *n*, that clamps all the heads and cutters together. Each cutter has a slight bend in it flatwise, as shown to an exaggerated

extent in Fig. 6, so that the cutter will have a slight spring flatwise, and the screwing up of the cutter-heads to clamp them will tend to flatten out this bend, and the bend and consequent spring of the metal will prevent any risk of looseness through inequalities in thickness of the metal. The ends of the cutters are either chisel-shaped or pointed, so as to cut either rectangular or V-shaped grooves in the book-back. The cutters are grouped—that is to say, the cutter-heads 1 and 2 are the same thickness—and the three ranges of cutters make three grooves adapted to the pair of semicircular needles that work together, as in my Patent No. 235,466. The end cutter-heads, 12, and the intermediate heads, 13, may be varied as desired, so as to bring the groups of grooves farther apart or nearer together.

In the table *B* there is a slotted plate, *q*, that is let in flush. It may be removed and another substituted to suit different arrangements of cutters. At one side of the table *B* there is a guide-rod, *r*, sustained by the fixed lugs *r'*. Upon this rod there is a sliding collar, *s*, that is made with a transverse rib (see Fig. 3) on its upper surface, upon which is the angular gage-plate *s'*, that is slotted, and a clamp-nut, *s²*, serves to hold the plate *s'* firmly to the top of the collar *s*. This gage-plate determines the position of the top of the folded signatures in relation to the cutters; hence it is adjustable for varying the distance between the top back angle of the signature and the first saw cut or groove.

The clamp-plate *t* is fastened upon an arm that extends from the gage-plate *s'*, and is at right angles thereto. Against this clamp-plate the bundle of folded signatures to compose one or more books is placed, and in order to hold them together the clamping-bar *u* is employed. This clamping-bar *u* is parallel to the clamp-plate *t*, and it extends out from the longitudinally-sliding rod *v*, at one end of which there is a handle, *v²*, by which the rod *v* can be drawn endwise to bring the bar *u* to press the pile of signatures toward the plate *t*. In doing this the rod *v* slides in a space provided for it in the bar that extends from the collar *s* to the collar *v'*, and there is a latch, *p*, that is upon a pivot-screw, *14*, on one face of the collar *s*, and the lower side of the latch

engages with teeth in the upper surface of the slide-rod *v*, so as to hold the same and keep the clamps against the opposite sides of the book, while the book and clamps are passed
 5 along the bed over the cutters, and the channels are formed in the backs of the signatures. During this operation the collars *s* and *v'* have been slipped along with the other parts and moved endwise over the stationary guide-rod
 10 *r*. After the channels have been cut by the rotary cutters the book is drawn back and the handle of the latch *p* depressed, so as to liberate the end thereof from the teeth on rod *v*, and the book is released and another is to be
 15 substituted. The bed is adjusted by the screws *d*, so that the rotary cutters project up through the bed the proper distance to cut the required depth of grooves.

This sawing-machine is adapted to cutting
 20 the channels in book-backs in the most accurate manner, and to doing the same with great rapidity, and the parts can be adjusted whenever necessary.

I am aware that book-backs have been
 25 notched by a gang of saws upon an arbor revolving beneath a slotted bed; but these are very difficult to sharpen and to adjust accurately to place after removal for sharpening.

I am also aware that cutters in planing-machines have been made of bars that are arched
 30 in a plane passing at right angles to the axis of the cutter-head, and placed between sections of a cylinder. In this case the pressure against the cutters by the cylindrical sections

does not tend to straighten the cutters, as in
 my machine; hence there is no spring action to hold the cutters in place.

I claim as my invention—

1. In a machine for cutting notches in the backs of books, the combination, with the table
 40 *B*, its supporting-frame *A*, hinges *c c'*, adjusting-screws *d*, of the revolving shaft *f* in bearings on the frame *A*, the movable cutter-heads *l*, formed as cylindrical segments, with
 45 grooves across their flat ends, the cutters introduced in such grooves, the clamping-nut *n*, and clamps for grasping the pile of signatures, substantially as set forth.

2. The combination, with the revolving shaft, cutter-heads with grooves, and the clamping-
 50 nut, of cutters having slight bends flatwise of the cutters, for the purposes set forth.

3. The combination, in a machine for cutting channels in book-backs, of the revolving
 55 cutters, the table, the guide-rod *r*, sliding collar *s*, angular gage-plate *s'*, and clamping-nut *s*², substantially as set forth.

4. The gage-plate *s'*, clamp-plate *t*, and collar *s*, in combination with the clamping-bar *u*,
 60 sliding rod *v*, and holding-pawl *p*, substantially as set forth.

Signed by me this 26th day of September,
 A. D. 1882.

DAVID M. SMYTH.

Witnesses:

GEO. T. PINCKNEY,
 WILLIAM G. MOTT.