

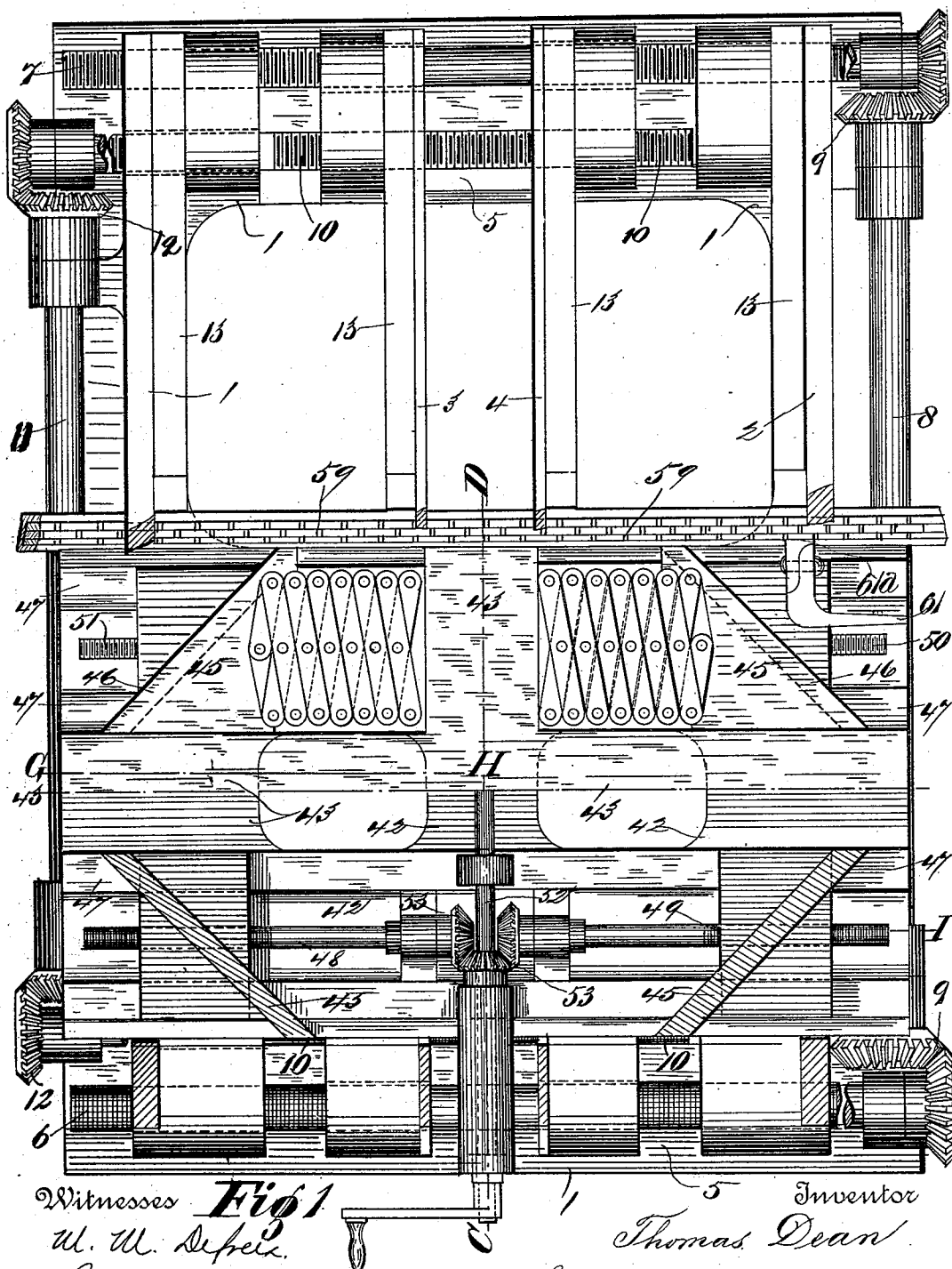
(No Model.)

6 Sheets—Sheet 1.

T. DEAN.
CASE FORMING APPARATUS.

No. 549,498.

Patented Nov. 12, 1895.



Witnesses
W. W. DeFez.
Jno. G. Thurst.

Inventor
Thomas Dean
By his Attorney
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(No Model.)

6 Sheets—Sheet 2.

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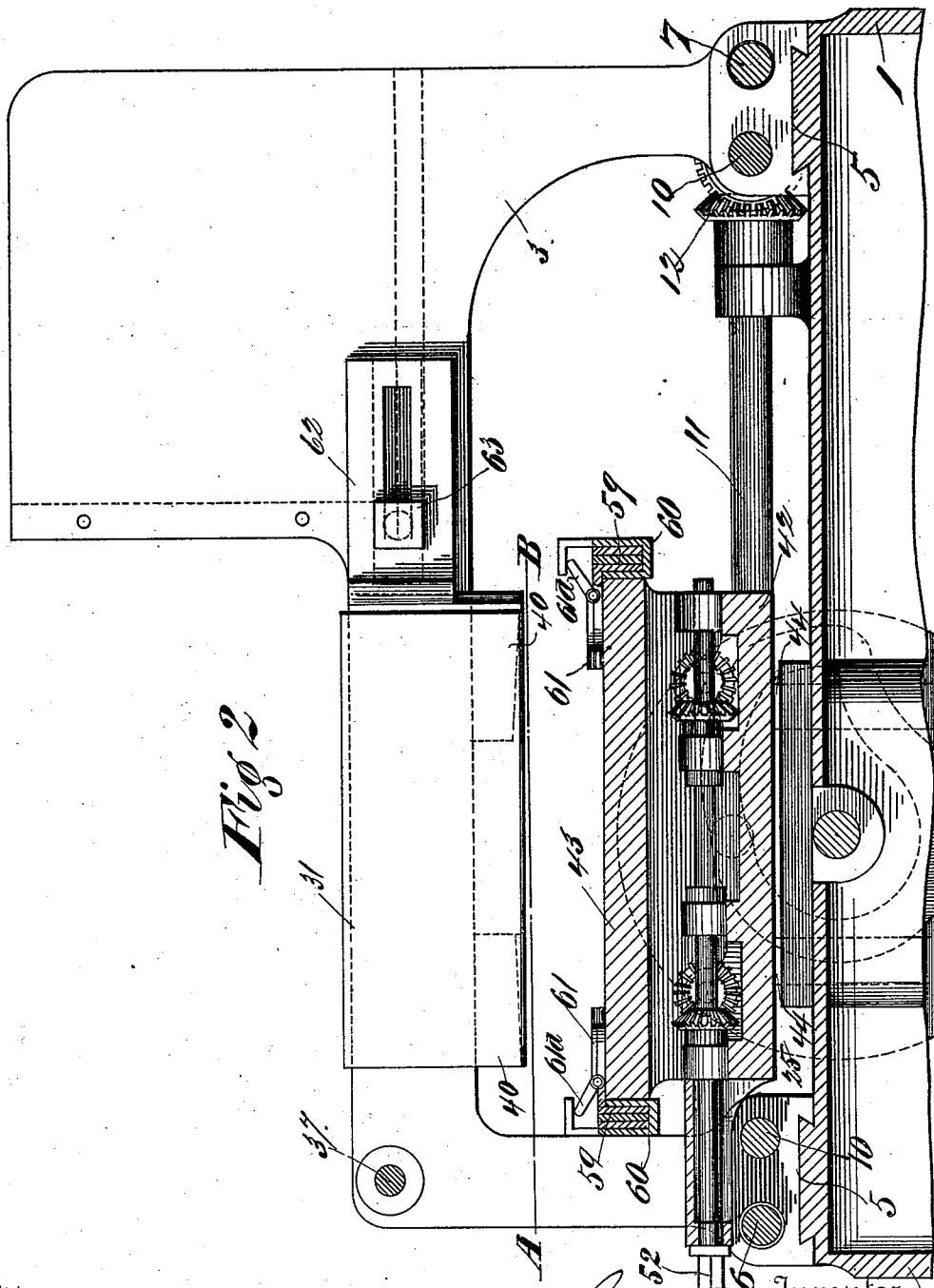


Fig 2

Witnesses

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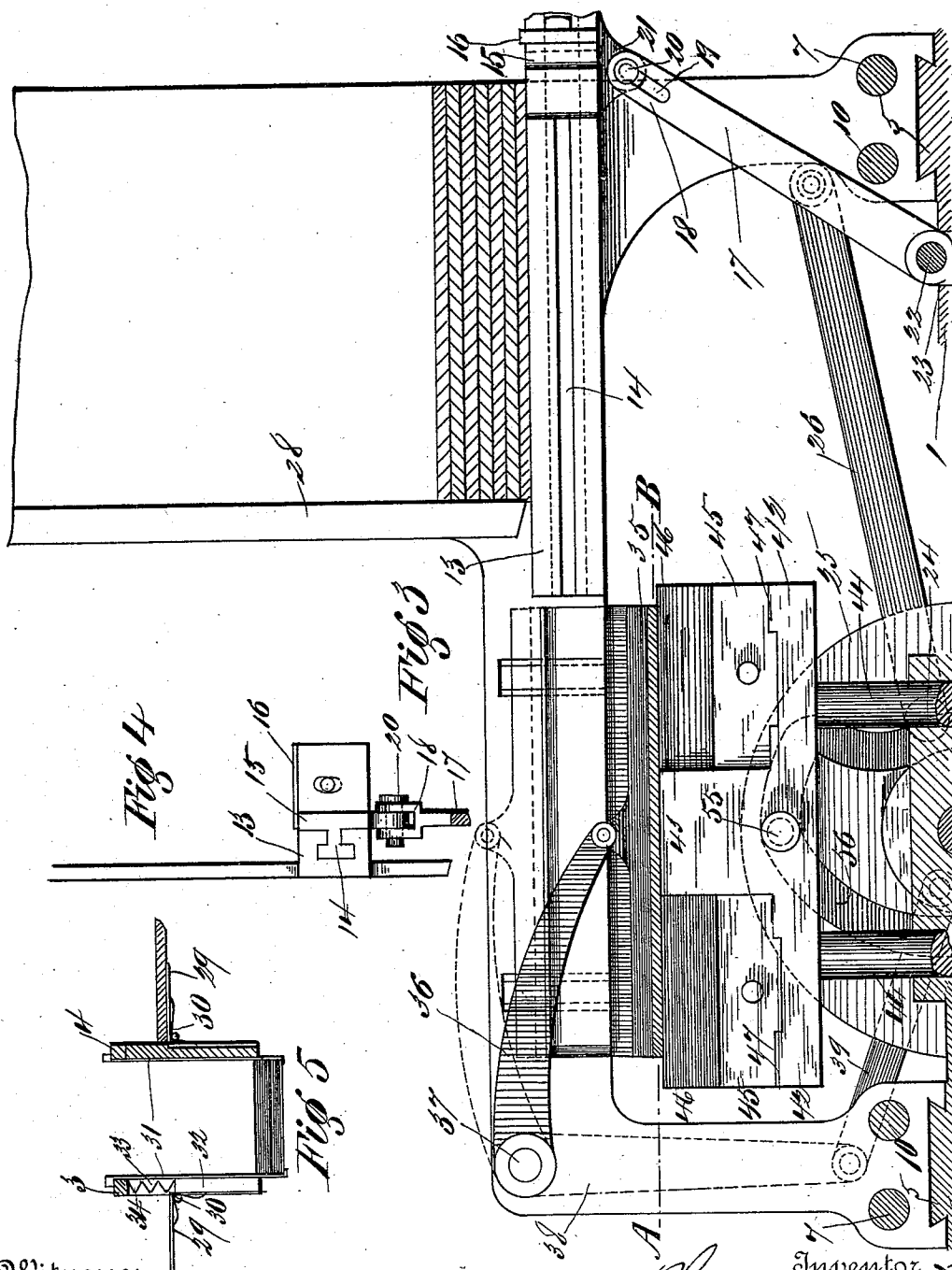
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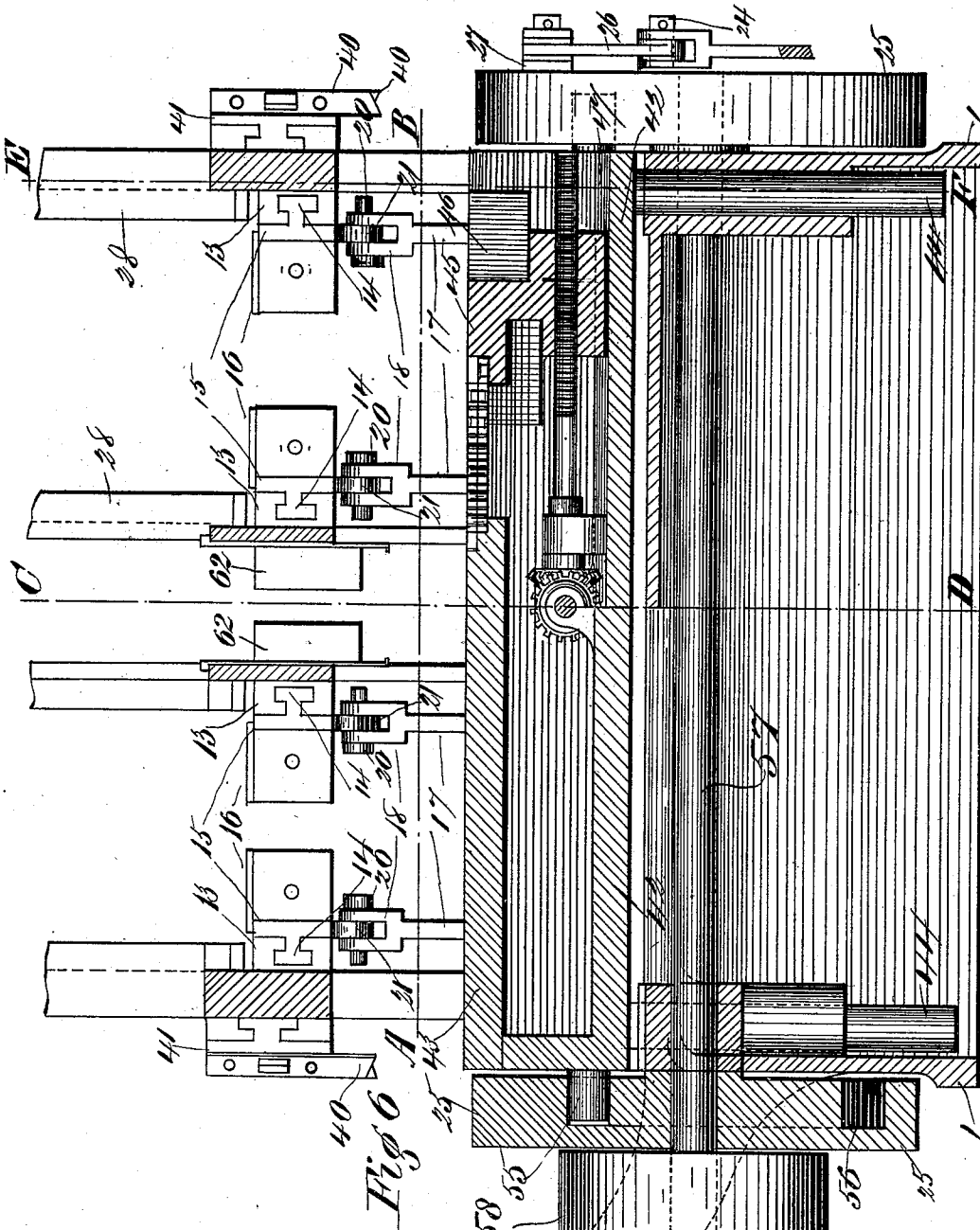
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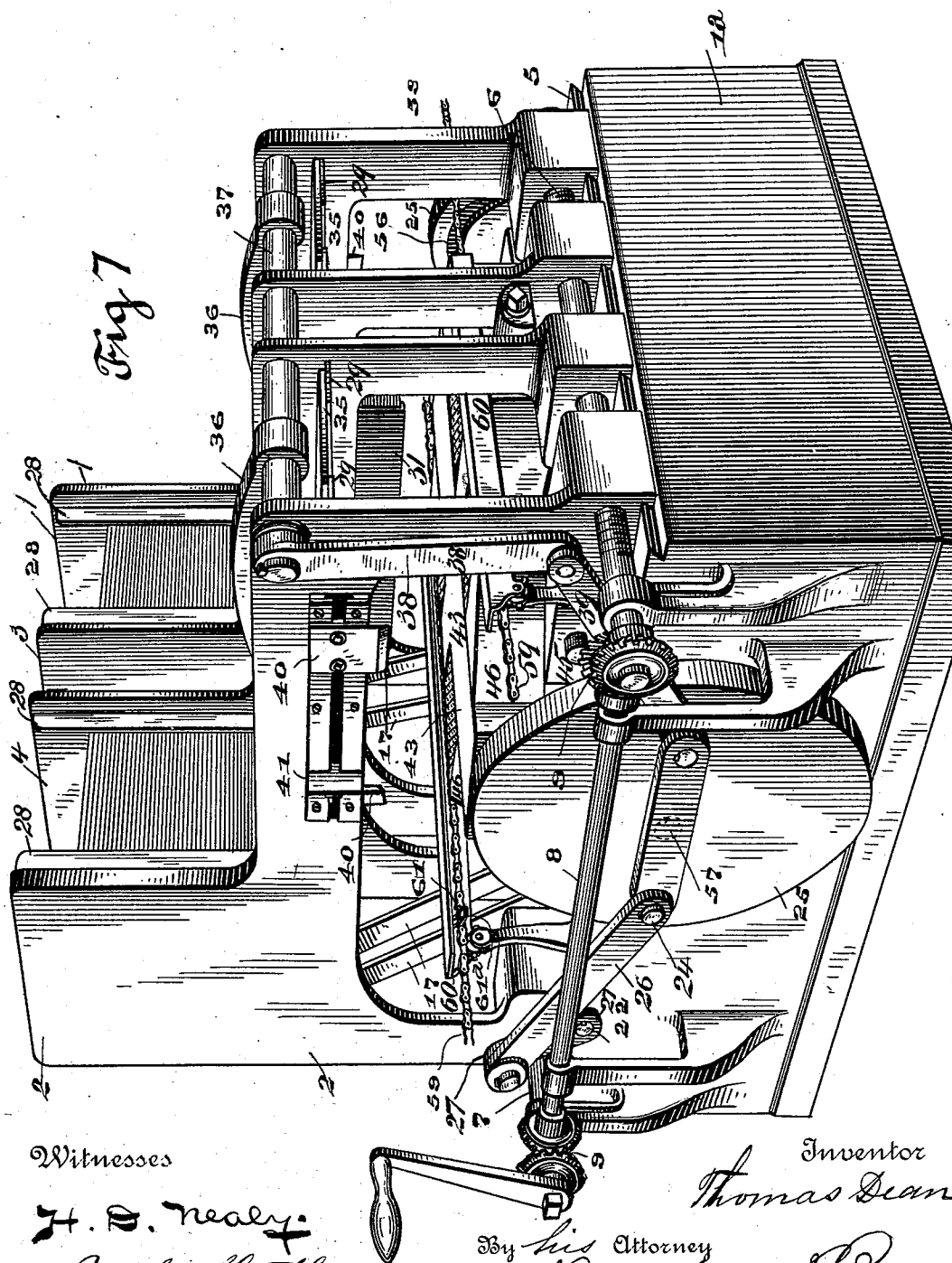
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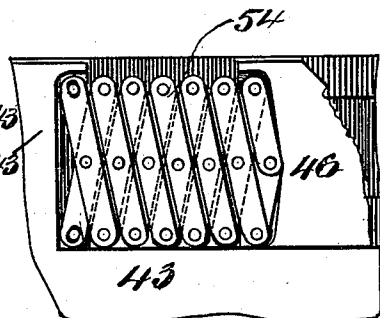
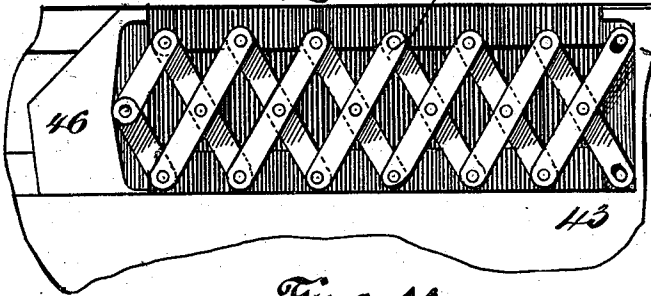
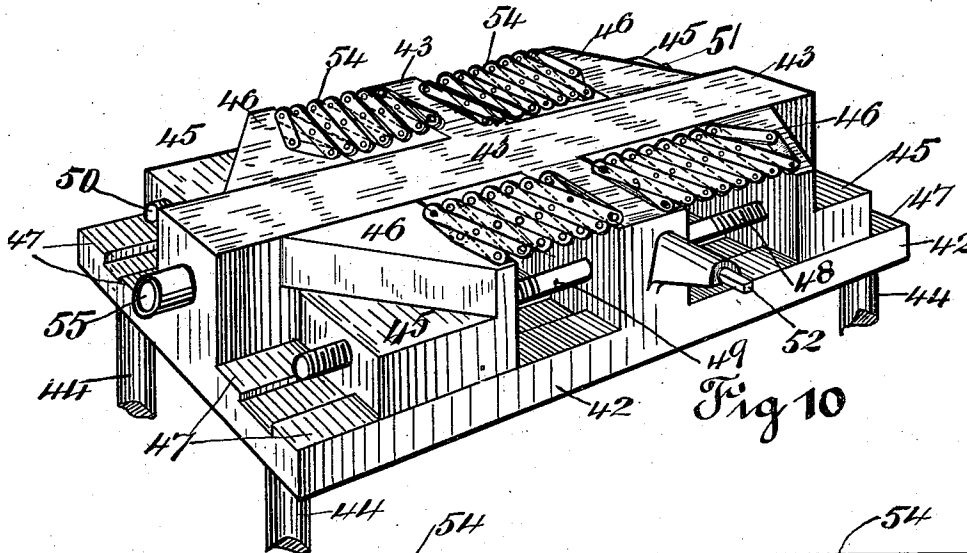
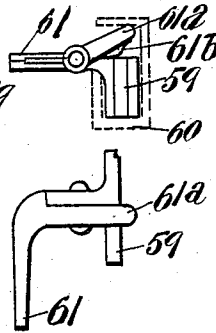
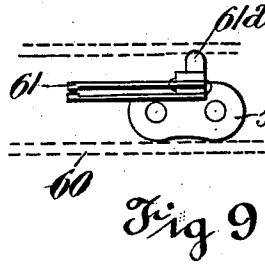
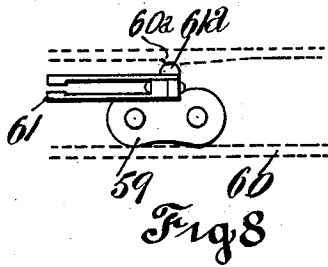
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6 Sheets—Sheet 6.

T. DEAN.
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No. 549,498.

Patented Nov. 12, 1895.



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UNITED STATES PATENT OFFICE.

THOMAS DEAN, OF INDIANAPOLIS, INDIANA.

CASE-FORMING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 549,498, dated November 12, 1895.

Application filed October 12, 1892. Serial No. 448,711. (No model.)

To all whom it may concern:

Be it known that I, THOMAS DEAN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Case-Forming Apparatus, of which the following is a specification.

My invention relates to new and useful improvements in machines for the manufacture of book covers or cases; and it consists in mechanism for applying the millboards and paper-stiffeners to the cloth covers and means and mechanism for trimming the corners of said cloth covers.

The object of my invention is to provide means whereby the machine can be quickly and accurately set to operate on various sizes of covers or cases; to provide means for automatically conveying the cloth (which has been previously cut to length and coated on one side with an adhesive substance) to the forming-table and holding it in position thereon while applying the millboards and paper-stiffeners thereto, and finally removing said partially-completed cover from the machine; and to provide suitable means whereby the corners of the cloth on the covers will be trimmed diagonally or at an angle of forty-five degrees, and for compressing the millboards and paper-stiffeners to the adhesive surface of the cloth covers. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in each of the figures of which similar numbers of reference designate like parts.

Figure 1 is a plan of my machine, showing a portion of the adjustable standards broken off, and showing a portion of the forming-table in section. (See Figs. 2, 3, and 6, line A B.) Fig. 2 is a sectional side elevation of the machine through the line C D. (See Figs. 1 and 6.) Fig. 3 is a side sectional elevation of the machine taken through the line E F, (see Figs. 1 and 6,) and showing the mill-board feeding and applying mechanism. Fig. 4 is a detail end view of the push or feeder head for sliding the millboards in position over the forming-table. Fig. 5 is a transverse detail sectional view of the receptacle for holding the paper-stiffeners in position over the center of the forming-table. Fig. 6 is a transverse sectional elevation of the machine through the lines G H I. (See Fig. 1.) Fig.

7 is a perspective view of the machine. Fig. 8 is a side elevation of one of the links of the traversing-chain, showing a grip formed thereon and in its open position. Fig. 9 is a group view of the grip, showing said grip-jaws in their closed position. Fig. 10 is a detail perspective view of the forming-table. Fig. 11 is a plan view of the lattice-work or lazy-tongs in their open or extended position, and Fig. 12 is a similar view showing said lattice-work in its closed or contracted position.

The machine is constructed with a main frame or sole-plate 1^a, whereon the movable standards 1, 2, 3, and 4 are supported and are adapted to slide on the ways 5.

The end or outer standards 1 and 2 are operated to move simultaneously by means of the traversing-screws 6 and 7, positively connected by means of the shaft 8, and the bevel-gears 9; and the center standards 3 and 4 are operated to slide on the center portions of the ways 5 by means of the traversing-screws 10, connected to be operated simultaneously and positively by the shaft 11 and the bevel-gears 12, secured thereon. This means of adjustment of the standards is provided for the purpose of facilitating their adjustment to fit and to receive any of the various sizes of millboards and paper-stiffeners required for a particular class and size of case or cover.

On the inner sides of the pairs of standards 1 and 3, 2 and 4 are formed the flanges or shelves 13, which are provided for supporting the millboards which have been previously formed and cut to the proper size, and for maintaining them in position to be fed out singly, as required.

The horizontal flanges or shelves 13, which extend horizontally on each of the standards 1, 2, 3, and 4, are of a sufficient depth and strength to permit the T-ways 14 (see Fig. 3 and detail, Fig. 4) to be formed therein and to extend throughout their entire length, and to receive the feed-heads 15, which accurately fit and slide therein.

The push-gages 16 are adjustably secured to the wings of the feeder-heads 15 and project above the top edge thereof a distance slightly less than the thickness of the mill-board to be used, for the purpose of securing the engagement of a single board at one stroke of said head.

The heads are operated simultaneously by

means of the rocking-arms 17, having their forked ends 18 slotted longitudinally to receive the keeper-pins 20, said pins passing through said slots 19 and tightly or neatly fitting in the lugs 21, formed on the bottom edges of the heads 15.

The rocking arms 17 are firmly secured on the shaft 22, journaled in suitable bearings 23, formed on the main frame 1^a, said rocking-shaft operated by means of the crank-pin 24, secured on the outer face of the disks 25 and connected by the connecting-rod 26, and the crank-lever 27, secured on the end of the shaft 22.

On the inner sides of the standards 1, 2, 3, and 4 are adjustably secured the gage-strips 28, which I provide for the purpose of retaining the front edges of the millboards in perfect alignment and position, and which have their bottom ends raised slightly above the top horizontal edges of the shelves 13 to form an opening slightly in excess of the thickness of the millboard used, said opening not sufficiently great to permit the passing through of more than one of the boards from each of the holders for each stroke of the feeder-head 15.

The millboards are traversed horizontally or fed from their holders in pairs, out to and on the collapsible or hinged supporting-wings 29, which are hinged on the inner sides of the standards 1, 2, 3, and 4, and are held in their horizontal positions by means of suitable springs 30 (see detail Fig. 5) which are constructed with a tension sufficient to sustain the weight of the milling-board.

Intermediate between the central standards 3 and 4 are the paper-holders 31, (see Figs. 2, 3, and 5,) which have their bottom edges flanged to pass under and to support the paper-stiffeners and are provided with the V-guides 32, which are adapted to accurately fit and to slide in their ways 33, formed in the sides of said standards, said holders held in position nearer to the forming-table by means of the compression-springs 34, secured in said ways and engaging said V's 32.

The follower-boards 35 are suspended on the ends of the arms 36, which are firmly secured on the rocking shaft 37 and operated by the rocking lever 38 (see dotted lines in Fig. 3, also perspective view, Fig. 7) and the connecting-rod 39, working on the crank-pin secured on the face of the cam-disk 25.

40 designates the knives for trimming diagonally the corners of the cloth of the covers and are secured on their heads 41, said heads adjustably secured on the standards 1 and 2 and adapted to be moved in the ways formed therein.

42 designates the bed of the forming-table provided with the vertical and parallel guiding-standards 44, adapted to accurately fit and to slide longitudinally in the ways formed in the main frame 1 or bed-plate.

The top portion of the forming-table 43 is composed of a longitudinal and a transverse central portion and is provided with the ad-

justable corner-pieces 45, which have their diagonal or mitered edges 46 formed integral thereon, said corners moved simultaneously and adjusted on their ways 47, formed on the base or the bed 42 of the said table 43, by means of their traversing-screws 48, 49, 50, and 51, operated manually by the shaft 52 and the bevel-gears 53, keyed on said shaft and screws. (See Figs. 1 and 6.)

Intermediate between the movable mitered corners 46 and the central transverse portion of the operating or forming-table 43 are located the lattice-work or lazy-tongs 54, which I provide for the purpose of sustaining the cloth from sagging, said cloth, being rendered pliable by the application of its coating of glue, is incapable of sustaining its own weight.

The bed 42 and its operating-table are raised upwardly and downwardly intermittently by means of the pins or cranks 55, secured on the ends of said bed of the forming-table and engaging the camways 56, formed in the face of the cam-disk 25.

The cams are firmly secured or keyed on the shaft 57, on the opposite ends thereof, the shaft being journaled in suitable bearings formed in the main frame 1^a and rotated by a suitable driving-pulley 58 by a belt in the usual manner. (See Fig. 6.)

59 designates the traversing-chains, which are adapted to slide in their ways 60, supported in any suitable manner to the permanent portion of the operating-table, and is driven by any suitable drive-chain mechanism. (Not shown in the drawings.)

To the chains 59, at intervals apart, are secured the gripping-clips 61, which are arranged to grip the ends of the cloth after receiving the coating of glue and conveying said glued cloth in position on and over the forming-table. (See detail, Figs. 8 and 9.) The grippers 61 are operated to open by means of the inclined cam or trip 60^a, formed on the guideways 60, contacting with the arm 61^a to depress it and to open the jaws of the said grip 61. The arm 61^a of the grip, when released from the trip 60^a, permits the spring 61^b to immediately operate to close the jaws 61 of the grips.

The type of chain used for the traversing-chains in this machine and illustrated in the drawings is what is commonly termed the "plate-and-pin" chain, and is formed of a series of parallel plates loosely riveted together to form hinged joints, and is different from the link-chain used in connection with sprocket-wheels, the latter chain being known as the "plain-link" chain.

The adjustably-secured knives are illustrated in Fig. 6 and the new perspective view Fig. 7, and are designated in each of the figures by the numeral 40.

62 designates the adjusting-gages of the paper-stiffeners, holder, or receptacle, and is removably secured to the center standards 3 and 4 by the securing-bolt 63. (See Fig. 2.)

The operation of my machine is as follows:

The standards 1, 2, 3, and 4 are previously set the proper distance apart by the their traversing and adjusting screws 6 and 7 and the screws 10 to receive the millboards, and the paper-holder or paper-stiffeners are built up or banked in their respective sections or holders, from whence they are automatically fed singly, as required, over the top and on the forming-table. The cloth having been previously coated with an adhesive substance, as glue, is gripped or caught by the grippers 61 and conveyed from the machine wherein the cloth is coated with adhesive material by the continuous conveyer-chain 59 to and on the forming-table, whereon it rests. The forming-table 43, whereon it lies a small period of time, is now elevated by the simultaneously-acting cams 25, till the adhesive surface of the cloth contacts with the millboards suspended or resting on the supporting-shelves and till said adhesive surface contacts with the lower paper-stiffener supported in its holder. Simultaneously with this operation also operate the knives 40 to diagonally cut the corners of the cloth and the followers to press the millboards and paper-stiffeners firmly against the adhesive surface of the cloth. The followers 35 now ascend to their former position, the table 43 descends, and the conveyer-chain removes the partially-worked case from the machine to a suitable place where it is further operated upon to finish the operation. Simultaneous with this latter movement another set of milling-boards are fed in position over the forming-table and another cloth of suitable size is conveyed on said forming-table to be treated as before, and so on, continuously, the millboards and the cloth are fed to be operated upon.

Having thus fully described the operation and construction of my invention, what I claim as new and useful, and desire to cover by Letters Patent of the United States therefor, is—

1. In a machine for manufacturing covers or cases for books, the combination with the main supporting frame thereof, a table having depending supporting standards adapted to slide vertically in suitable ways formed in said frame, of continuous conveyer chains adapted to traverse along the parallel sides of said forming table, chain guide ways having the cams or trips 61^a. formed on their inner surface engaging grips composed of upper and lower hinged jaws and arranged at regular intervals along said chains, and projecting arms on the upper hinged jaws of said grips adapted to contact with said trips, substantially as and for the purpose set forth.

2. In a machine for manufacturing covers or cases for books, the combination with the main supporting frame thereof, a table having movable mitered corners and depending supporting standards adapted to slide vertically at regular intervals in suitable guide ways formed in said supporting frame, of continuous conveyer chains adapted to traverse

along the parallel sides of said forming table, chain guide ways secured to the sides of said table, and having the trips 61^a. formed on their top inner guiding surfaces, engaging grips composed of upper and lower hinged jaws and arranged at regular intervals along said traversing chains, and projecting arms on the upper jaws of said grips adapted to contact said trips, and suitable means for automatically raising and lowering said forming table at the proper times, all substantially as and for the purpose set forth.

3. In a machine for manufacturing covers or cases for books, the combination with the forming table thereof having its movable mitered corners adapted to slide longitudinally on the base of said forming table, suitable traversing screws journaled in the fixed portion of said table and screwed in said corner pieces, and suitable gearing connecting said screws whereby they are operated to simultaneously traverse said corner pieces, and suitable extensible lattice connections between said movable corner pieces and the fixed portion of said forming table, all substantially as and for the purpose set forth.

4. In a machine for manufacturing covers or cases for books, the combination with a main supporting frame, suitable end and intermediate standards adjustably secured on said main frame, traversing screws journaled in main frame and connected to traverse said end standards simultaneously and said intermediate standards simultaneously and independently of the former standards, of a paper holding receptacle having guides adapted to slide vertically in suitable ways formed in the inner sides of said intermediate standards, and a forming table between said standards and said main frame and adapted to move vertically toward said paper receptacle and to recede therefrom and suitable means for automatically operating said table intermittently, substantially as and for the purpose set forth.

5. In a machine for manufacturing cases or covers for books, the combination with the forming table thereof adapted to move upwardly and a supporting main frame, of suitable mill-board and paper receptacle supporting standards, extending over said forming table, follower boards suspended on suitable rocker arms over said forming plate or table between said end and intermediate standards, and means whereby said boards are caused to descend to compress said millboards and paper stiffeners on said forming table at the proper instant, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THOMAS DEAN.

Witnesses:

THOMPSON R. BELL,
JNO. G. THURTT.