

(No Model.)

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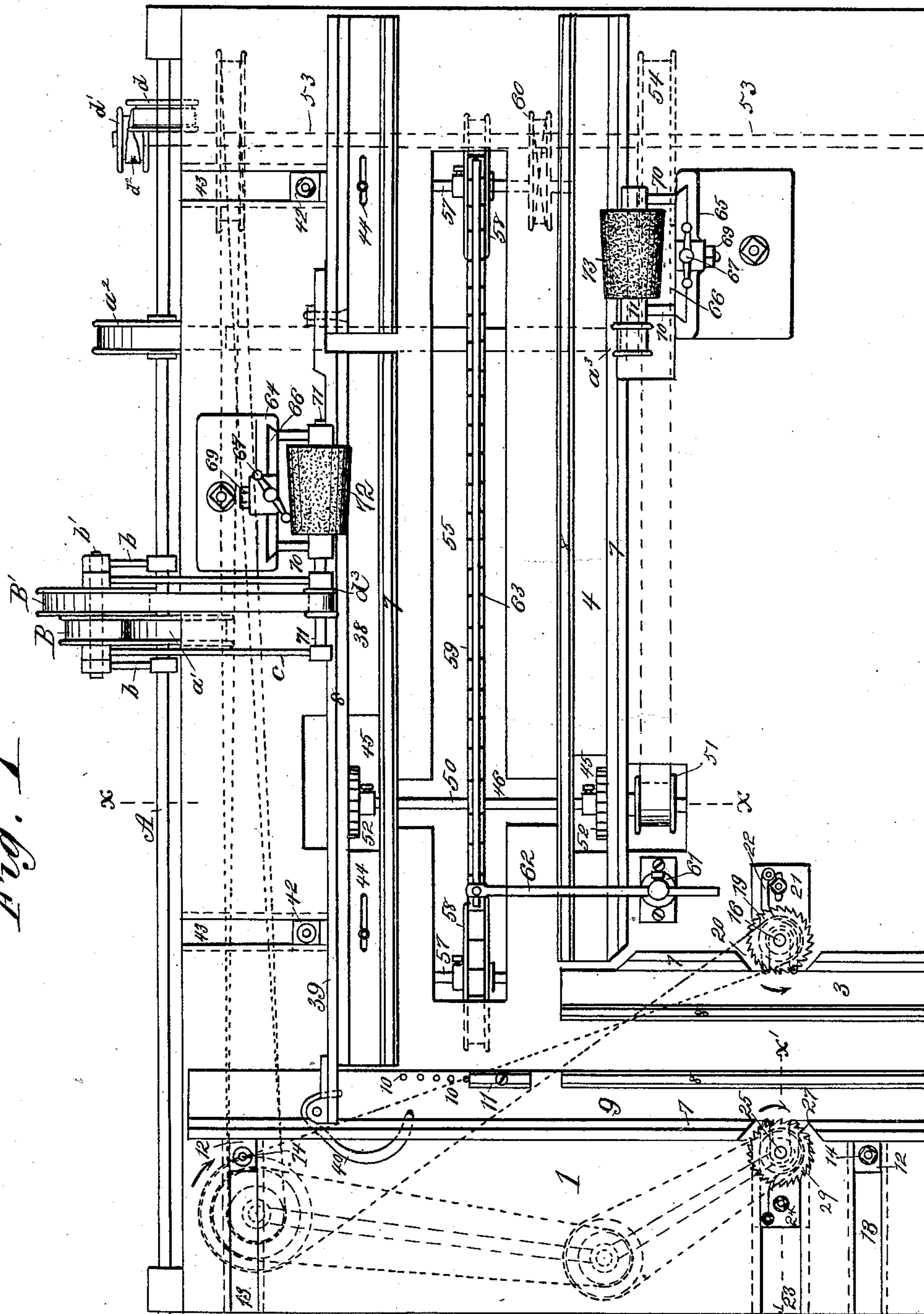
H. LEIMAN.

CIGAR BOX TRIMMING MACHINE.

No. 389,708.

Patented Sept. 18, 1888.

Fig. 1



WITNESSES:

C. Neveu
Co. Seaguiry

INVENTOR:

H. Leiman

BY

Munn & Co.

ATTORNEYS.

(No Model.)

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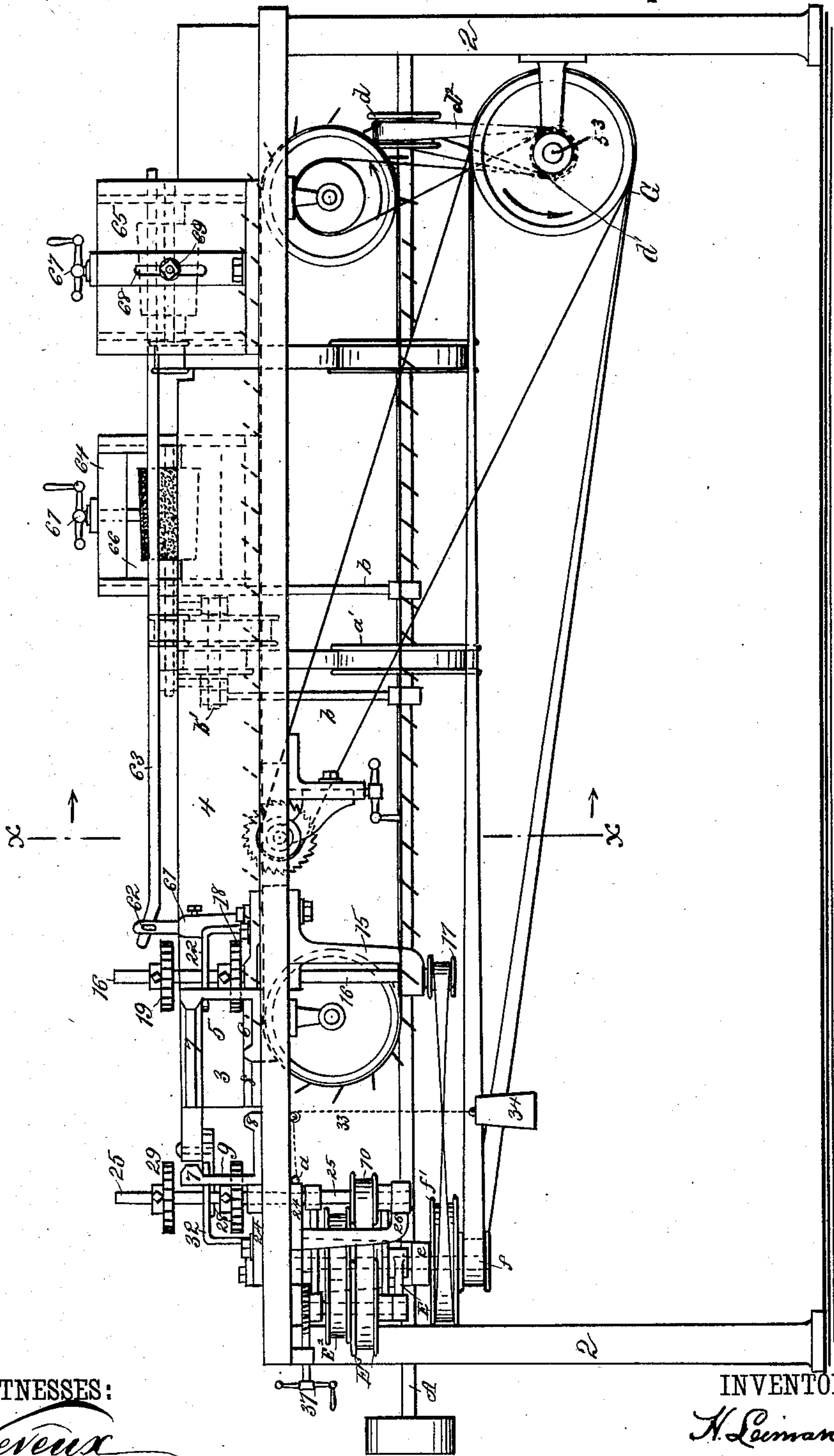
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Fig. 2



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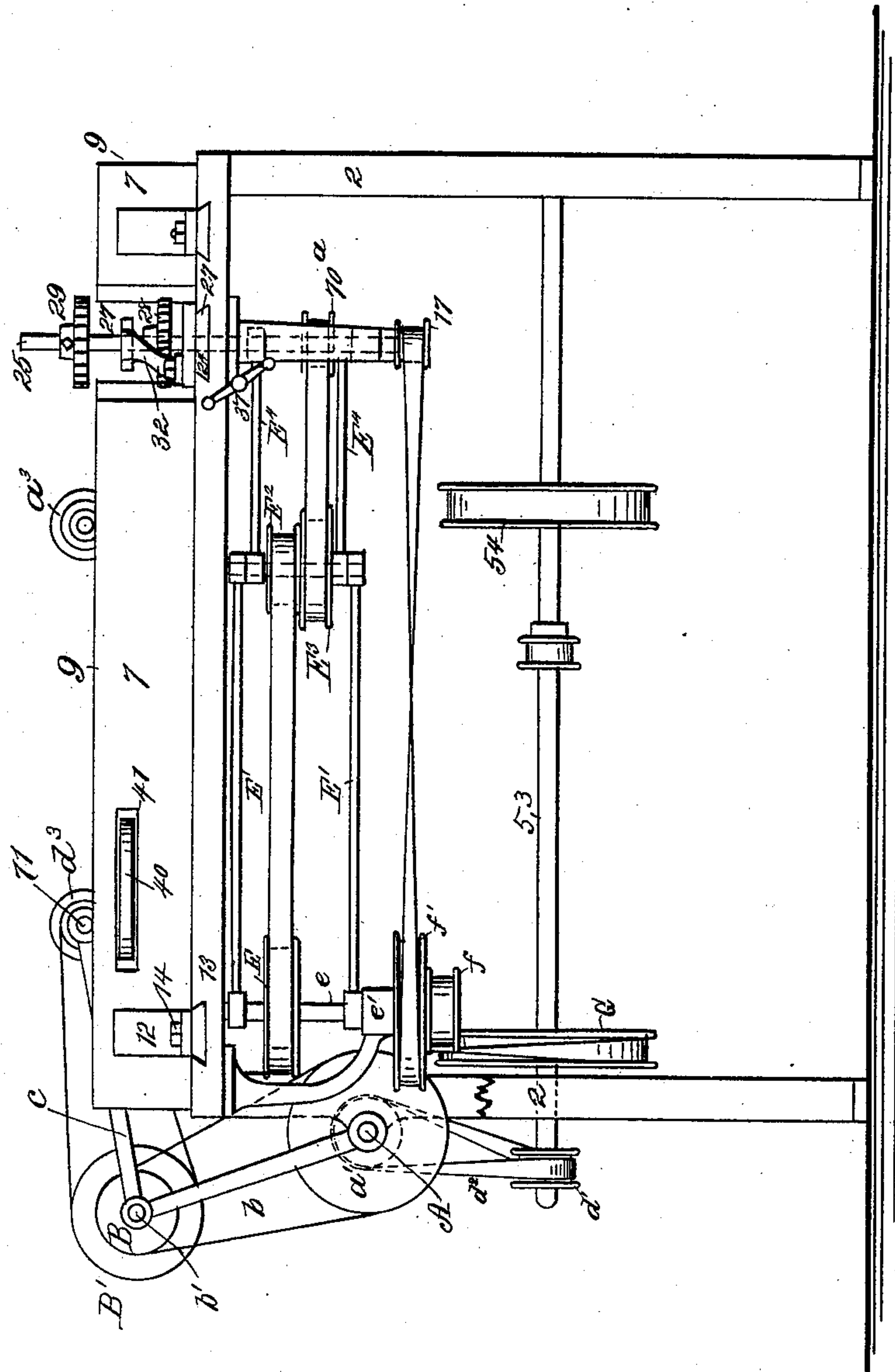
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CIGAR BOX TRIMMING MACHINE.

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Fig. 3.



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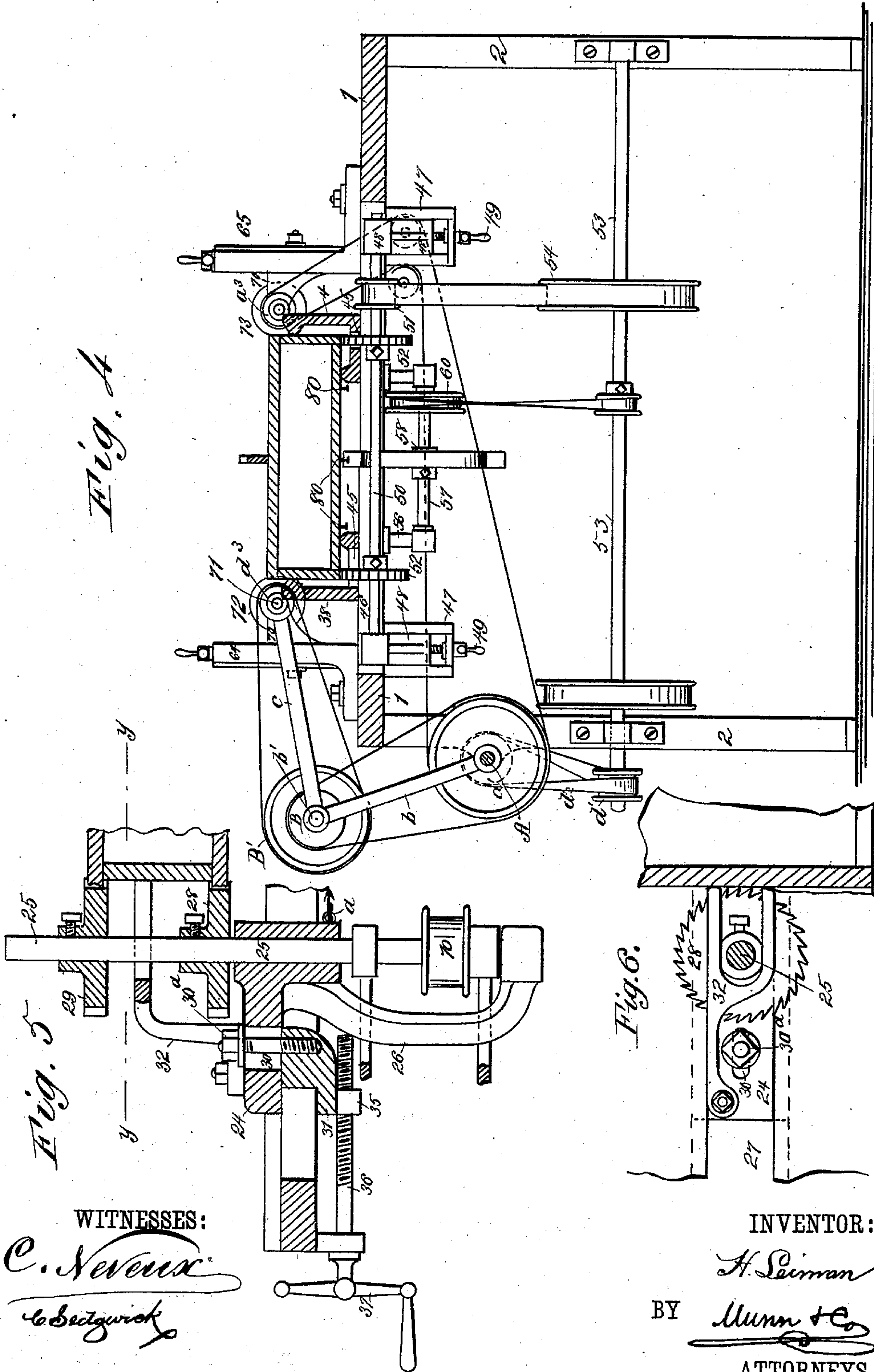
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CIGAR BOX TRIMMING MACHINE.

No. 389,708.

Patented Sept. 18, 1888.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY LEIMAN, OF BROOKLYN, NEW YORK.

CIGAR-BOX-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 389,708, dated September 18, 1888.

Application filed October 5, 1887. Serial No. 251,512. (No model.)

To all whom it may concern:

Be it known that I, HENRY LEIMAN, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Cigar-Box-Trimming Machine, of which the following is a full, clear, and exact description.

My invention relates to an improvement in machines for trimming cigar-boxes, and has for its object to provide a means whereby a box adapted to hold cigars, when nailed together, may be placed in a machine and the edges automatically trimmed and finished.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a plan view of the machine. Fig. 2 is a side elevation, and Fig. 3 is an end view thereof. Fig. 4 is a transverse section on line $x x$ of Figs. 1 and 2. Fig. 5 is a transverse section partially on line $x' x'$ of Fig. 1, and Fig. 6 is a section on line $y y$ of Fig. 5.

In carrying out the invention a frame, 1, is constructed, preferably rectangular, supported by suitable legs, 2. At the front end of the machine an L-shaped bed, 3, is secured, extending longitudinally, the inner edge of the short arm of the frame to the intersection of the long arm, as shown in Fig. 1, and a second and similar bed, 4, is secured longitudinally the inner edge of the long arm, the two beds 3 and 4 being then at right angles to each other. At the inner extremity of the vertical member 5 of each bed and the upper surface of the extremity of the horizontal member ribs 7 and 8 are produced, extending the length of the said beds. Upon the short arm of the frame a second and adjustable bed, 9, is provided, of similar shape and construction to the aforesaid bed 3, and adapted to be slid to and from the latter until the distance intervening the ribbed portion of the vertical members of each bed 3 and 9 is substantially equal to the width of the box to be trimmed.

The bed 9, which, together with the bed 3, I denominate "transverse beds" for conven-

ience, is made to extend practically from side to side of the machine. The rib of the inner member of the said bed 9 is, however, cut away in alignment with the inner end of the bed 3, and the said member is provided with a series of longitudinal apertures, 10, aligning the standing portion of the rib, in one of which apertures the set-screw of a short independent rib section, 11, is entered. The rib-section 11 forms an extension of the rib 8, and its object is to permit the said rib to be shortened or lengthened by adjusting it to and from the rib, according to the length of the box to be trimmed. The bed 9 is provided near each end with a projection, 12, fitted in grooves 13 in the short arm of the frame, whereby the bed may be readily slid to or from the bed 3, being held in a given position by suitable set-screws, 14.

About centrally the inner side of the short arm of the frame 1, and to the under surface, a hanger, 15, is attached, in which is journaled a vertical shaft, 16, carrying at its lower end a pulley, 17, and above the frame or table two spaced circular cutters, 18 and 19, the vertical member of the bed 3 and the rib thereon being cut away, as at 20, Fig. 1, to admit of the cutters revolving in alignment with the inner surface of the rib 7 of said bed 3.

The cutters are so secured upon the shaft 16 that one cutter, 18, will project in immediately over the horizontal member of the bed 3 and the other above the vertical member, as shown in Fig. 2. A plate, 21, is attached to the frame immediately in front of the shaft 16, which plate is horizontally adjustable and provided with an angular guide-arm, 22, whose horizontal member is bifurcated and made to project each side of the shaft 16 over the table between the cutters and in vertical alignment with their peripheries, as illustrated in Fig. 2.

Immediately facing the shaft 16, outside the transverse bed 9, a groove, 23, is produced in the frame, and in said groove a block, 24, is adapted to slide, and the inner end of the block extending downward is vertically apertured to constitute a bearing for a second cutter-shaft, 25, parallel with the aforesaid cutter-shaft 16, the lower end of which shaft 25 is supported in a hanger, 26, integral with the block 24, as illustrated in Fig. 5.

In the vertical member of the bed 9 a recess,

27, is cut similar to and in alignment with the recess 20 in the opposing bed, 3, and upon the shaft 25 cutters 28 and 29 are secured, sustaining the same relative position to the adjustable bed 9 as the cutters 18 and 19 do to the fixed bed 3 aforesaid, the cutters upon both shafts 16 and 25 being adjustably attached by set-screws or otherwise.

Between the bearings in the block 24 and the outer end a slot, 30, is longitudinally cut, through which a set-screw, 30^a, is entered to a bearing upon the said block and into a second or lower and shorter block, 31, whereby the two blocks are held to slide together and the upper block permitted independent horizontal play limited by the length of the slot 30.

Upon the upper carrying-block, 24, near the outer end, one end of an angular guide, 32, is attached, similar to the guide-arm 22, provided the opposing cutters 18 and 19, and occupying the same relative position to the cutters 28 and 29 as the guide 22 does to the cutters 18 and 19.

The object of the guide-arms is to engage the sides of the box to be cut, as illustrated in Figs. 5 and 6, and permit the cutters to trim the top and bottom edges truly and only in conformity with the sides. This becomes necessary from the fact that when the parts of the boxes are nailed together the edges of the top and bottom boards are made to project slightly beyond the side pieces, and, as the thin boarding employed in constructing cigar-boxes has a tendency to warp at the sides, should the cutters trim in a positively straight line only the top and bottom edges and the sides would not in all cases be flush. The guide-arms are therefore made to follow the contour of the sides, and the cutters will, from the position they sustain to the said guide-arms, cut in a path aligning that of the guides. This is automatically accomplished by attaching a cord, 33, to the lower inner end of the block 24 below the frame at *a*, passing the said cord over a pulley secured to the frame, and attaching at the end of the cord a suitable weight, 34. Then, as the block 24, carrying the guide-arm 32, has a limited movement upon the lower block, which I denominate an "adjusting-block," the weight will cause the guide to be at all times when in operation in contact with the sides of the box, forcing the opposite side in contact with the opposing guide, 22.

An interiorly-threaded eye, 35, is provided upon the under face of the adjusting-block 31, adapted to receive an adjusting screw, 36, held horizontally beneath the frame, which screw is manipulated by a wheel or handle, 37, as shown in Fig. 5. The object of the screw is to adjust the cutters 28 and 29 to boxes of various widths, the bed 9 having been previously adjusted by means hereinafter stated.

Opposite the fixed longitudinal bed 4 a similar bed, 38, is adjustably held upon the frame similar to the aforesaid beds 3, 4, and 9, which bed 38 is adapted to extend at one end in close

proximity to the bed 9, as shown in Fig. 1. To the rear of the bed 38 a plate, 39, is attached, adapted to project over the horizontal member of the bed 9, and upon the said projecting end of the plate a curved lever, 40, is pivoted, the one end of which projects forward through a slot in the plate and the other end through a slot, 41, in the vertical member of the bed 9, the lever being so pivoted that when the end passing through the plate is pressed the other end will be thrown inward over the bed 9, as shown in Fig. 1.

The adjustment of the bed 38 is effected by bars 42, sliding in grooves 43 in the frame and controlled by suitable set-screws, and the bed is further adjustable upon the bars by means of longitudinal grooves 44 in the former and set-screws passing through the grooves into the plates.

In the horizontal members of the beds 4 and 38, near their intersection with the transverse beds, slots 45 are cut, which slots intersect a transverse slot, 46, in the frame. At the ends of the transverse slots 46 in the frame brackets 47 are secured, adapted to extend perpendicularly downward, and within said brackets a block, 48, is made to slide, adjusted up or down by a screw, 49, passing through the base of the bracket into the block, as shown in Fig. 4.

In the upper portion of the blocks 48 a transverse shaft, 50, is journaled, carrying a pulley, 51, and adjustable cutters 52, the said cutters being secured to the shaft in such position that they will project upward through the slots 45 in the bed 38 and engage the under side edges of the box to be trimmed, as also shown in Fig. 4. The shaft 50 is revolved from a shaft, 53, extending transversely the frame, through the medium of the pulley 54.

In the frame 1, between the beds 4 and 38, a longitudinal opening, 55, is produced extending nearly an even length with said beds, and in brackets or hangers 56, secured to the under face of the frame upon each side at the ends of the said slot, transverse shafts 57 are journaled, provided with sprocket-wheels 58, adjustably secured thereto, adapted to carry an endless chain, 59, one of the shafts 57 being provided with a pulley, 60, having belt-connection with a smaller pulley upon the transverse drive-shaft 53. From a post, 61, secured to the top of the frame 1, an arm, 62, is projected over the bed 4, terminating in an eye aligning the chain 59, at which point another arm, 63, is inserted, adapted to extend at right angles to the first arm parallel with and above the said chain, the purpose of the arm 63 being to rest upon the box as it is carried by the endless chain and prevent the box from rising up from the cutters.

About centrally the bed 38 and to the rear of the same a standard, 64, is secured to the upper surface of the frame, and a similar standard, 65, is rigidly secured to the upper face of the said frame to the rear of the bed 4

at one side of the center, whereby the two standards are out of alignment, as illustrated in Fig. 1. The aforesaid standards are provided with a perpendicular groove upon their inner faces, in which a block, 66, is entered, and an adjusting-screw, 67, passing through a central cap located upon the standards, is received by the block 66, whereby the latter is raised or lowered, as desired. As a means for locking the block in a given position, a longitudinal slot, 68, is produced centrally at the back of each standard, and a set-screw, 69, is introduced into said slot and also into the sliding block 66, as illustrated in Fig. 2.

The blocks 66 are provided with inwardly-extending parallel arms 70, in which a shaft, 71, is journaled, carrying, respectively, conical sand-paper rollers 72 and 73, the enlarged end of said rollers being toward the delivery end of the machine.

In the system of gearing for the respective parts the main or longitudinal drive shaft A is journaled parallel with the rear side of the machine, and about centrally said shaft a pulley, a' , is keyed, and at each side of said pulley upwardly-extending arms b are pivoted, the upper ends of said arms being connected by a loosely-fitting or revoluble pin, b' , upon which pin between the arms b two pulleys, B and B', are keyed, one smaller in diameter than the other, the smaller pulley having a belt-connection with the pulley upon the main shaft.

Between the upper ends of the arms b and the outer sides of the pulleys B B' two other arms, c , are pivoted upon the pin b' , having their inner ends pivoted or collared upon the shaft 71 of the sand-paper roller 72, and between the inner ends of the arms c a small pulley, d^2 , is secured upon the said shaft 71, having belt-connection with the large pulley B'. By means of the aforesaid connection between the roller 72 and the main shaft A the said roller may be adjusted vertically or horizontally without trouble of shifting belts or changing pulleys.

To the rear of the pulley a' upon the main shaft a second pulley, a^2 , is keyed, having a belt-connection directly with a small pulley, a^3 , upon the shaft 71, carrying the sand-paper roller 73, as shown in Figs. 1 and 4.

The shaft 53, which is at the rear or delivery end of the machine, is driven from the shaft A by the pulleys d d' and the quarter-turn belt d^2 , as aforesaid. From this shaft the belt 59 and cutters 52 are driven. The cutter-shafts 25 and 16 are likewise driven from this shaft.

The cutter-shaft 25 is provided with a system of gearing similar to the sand-paper roller 72 and for the same purpose, as illustrated in Figs. 1, 2, and 3, the arrangement being as follows: At the rear side of the machine a shaft, e , is vertically supported in a bracket or hanger, e' , and in the frame, carrying between the bracket and frame a horizontal pulley, E, and having pivoted above and be-

low said pulley arms E', connected by a revoluble pin, upon which pin a large and small pulley, E² and E³, are keyed, and at each side of the pulley a second set of arms, E⁴, are pivoted upon the pin, and likewise upon the cutter-shaft 25, as set forth in Fig. 3, the pulley E having belt-connection with the pulley E², and the pulley E³ having a like connection with a pulley, 70^a, keyed upon the shaft 25.

Below the hanger e' upon the shaft e a large and small pulley, f f' , are keyed, the larger pulley being connected by a twist-belt with the pulley 17 upon the cutter-shaft 16. Thus the cutter-shaft 25 may be adjusted vertically or horizontally without interfering in the least with the arrangement of the driving-pulleys.

The shaft e is driven from the small end pulley f by a belt-connection with a large aligning vertical pulley, G, keyed upon the transverse drive-shaft D, as shown in dotted lines, Fig. 1, and positive lines, Figs. 2 and 3.

When the parts of a cigar-box are put together, in addition to having their edges project, as heretofore stated, the lid is simply attached to the body by three nails, 80, two being driven in one edge a distance apart and one in the opposite edge to form a triangle, which nails are left only partially driven in, as shown in Fig. 4.

In operation the box to be trimmed is placed lengthwise, lid down, upon the beds 3 and 9, the nails being inside the bed or the ribs 8, and as the boxes are fed forward the rotary cutters 18 and 19 and 28 and 29 trim the projecting longitudinal edges of the lid and bottom flush with the outer face of the side pieces. After having their sides trimmed the boxes are still pushed forward until the end comes in contact with the arm of the lever 40, directly ahead, which causes the other arm of the lever to push against the side of the box and carry the same at right angles to its former course sidewise upon the beds 4 and 38, whereupon, the single nail coming in contact with the belt 59, the box is carried automatically forward the remainder of the distance. In traveling sidewise the arm 63 rests upon the upper surface of the box, keeping it down in contact with the cutters 52, which trim the edges of the end pieces, against which the lid abuts, and in the further progress of the box the end edges of the bottom are made perfectly smooth by the sand-paper rolls 72 and 73. This operation has heretofore been done by hand with planes and sand-paper blocks, consuming much time and necessitating the employment of expert hands. With the machine above described the work may be expeditiously and effectively performed by a boy.

It will be understood that all the cutters are detachable from their shafts or spindles, as different sized or shaped cutters may be necessary for different classes of work; and it will be further understood that the gearing carrying the belt-connections from the drive-shaft

to the sand-paper rollers may be, and preferably are, of like character, thus making both sand-paper rollers alike adjustable. The trip-lever 40 may also be made spring-actuated
 5 without departing from the spirit of my invention.

The bearings in which the shaft or spindle 16 is journaled are adapted to have a slight adjustment toward the opposite shaft or spindle, 25, this adjustment being provided to compensate for wear upon the cutters due to sharpening them.

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

1. In a cigar-box-trimming machine, the combination, with a bed, of vertical shafts arranged at each side of the bed and spaced cutters thereon for trimming the longitudinal
 20 edges of the lid and bottom of the box at one and the same operation, substantially as described.

2. In a cigar-box-trimming machine, the combination, with a bed and spaced cutters at each side of the said bed, of a second bed at
 25 right angles to the first bed, cutters projecting through the bottom of the second bed, and means for transferring the box from the first bed to the second, substantially as described.

3. In a cigar-box-trimming machine, the combination, with a bed and spaced cutters at each side of the bed, of a second bed at right
 30 angles to the first, cutters projecting through the bottom of said second bed, and abrading-rollers at each side of the second bed, substantially as herein shown and described.

4. In a cigar-box-trimming machine, the combination, with a bed and spaced cutters at each side of the bed, of a second bed at right
 10 angles to the first bed, cutters projecting through the bottom of the second bed, abrading-rollers at opposite sides of the said second bed, a lever for transferring the box from the first to the second bed, and a belt for moving
 45 the box along the second bed, substantially as herein shown and described.

5. In a cigar-box-trimming machine, the combination, with a fixed transverse L-shaped and longitudinally-flanged bed, an opposing
 50 similar yet longer adjustable bed, and a lever pivoted near the rear end of the adjustable bed, of a longitudinal fixed L-shaped and flanged bed at right angles to the fixed transverse bed, and an adjustable L-shaped and
 55 flanged bed parallel with the fixed longitudinal bed and at right angles to the adjustable transverse bed, substantially as herein shown and described.

6. In a cigar-box-trimming machine, the combination, with a fixed transverse L-shaped and longitudinally-flanged bed, an opposing
 60 similar yet longer adjustable bed, and a lever pivoted at the rear end of said adjustable bed, of a longitudinal fixed L-shaped and flanged bed at right angles to the fixed transverse bed,
 65 an adjustable L-shaped and flanged bed paral-

lel with the fixed longitudinal bed and at right angles to the adjustable transverse bed, and a carrying-belt longitudinally and adjustably held parallel with and between the longitudinal
 70 beds, as and for the purpose herein set forth.

7. In a cigar-box-trimming machine, the combination of a fixed L-shaped and flanged bed, spaced cutters at one side of the bed, with
 75 one cutter projecting over the horizontal member of the bed and the other cutter above the vertical member of the said bed, a similarly-constructed and adjustable bed, and spaced cutters sustaining the same relative position
 80 to the adjustable bed as the first-named cutters do to the fixed bed, substantially as herein shown and described.

8. In a cigar-box-trimming machine, the combination, with a fixed transverse L-shaped and flanged bed having a recess in its vertical
 85 member and spaced substantially stationary cutters revolving in said recess, provided with an intervening bifurcated guide-arm, of a similar opposing and parallel bed adjustable toward
 90 and from the fixed bed and provided with a recess aligning the recess in the fixed bed, rotary spaced cutters aligning the aforesaid opposing cutters and automatically adjustable
 95 over the movable bed, and a bifurcated guide-arm held between said cutters, substantially as shown and described, whereby the cutters
 will trim the top and bottom side edges of a box in conformity with the contour of the sides, as set forth.

9. In a cigar-box-trimming machine, the combination, with a fixed longitudinal flanged
 100 and L-shaped bed and a similar spaced and parallel adjustable bed, of a shaft extending transversely beneath the bed and cutters adjustably keyed upon said shaft and projecting
 105 upward through the horizontal members of the said parallel beds, substantially as shown and described, whereby the lower end edges of the boxes are trimmed when placed upon
 110 the beds, as set forth.

10. In a cigar-box-trimming machine, the combination, with a fixed longitudinal flanged and L-shaped bed and a similar spaced and
 115 parallel adjustable bed, of a shaft extending transversely beneath the bed, cutters adjustably keyed upon the said shaft and projecting upward through the horizontal member of said parallel beds, an endless carrying-belt longitudinally supported between the beds, and
 120 sand-paper rolls adjustably supported over the beds from the rear, substantially as shown and described, whereby the upper end edges of the box are trimmed and the ends of the bottom smoothed as the boxes are carried upon the
 125 beds, as set forth.

11. In a cigar-box-trimming machine, the combination, with a fixed longitudinal flanged and L-shaped bed and a similar spaced and
 130 parallel adjustable bed, of a shaft extending transversely beneath the bed, cutters adjustably keyed upon the said shaft and projecting upward through the horizontal members

of said parallel beds, an endless carrying-belt
longitudinally supported between the beds, a
guide-arm longitudinally held above the belt,
and non-aligning conical sand-paper rollers
5 adjustably supported above the beds from the
back, substantially as shown and described,
whereby the boxes to be trimmed are held in

engagement with the cutters and sand-paper
rollers, as set forth.

HENRY LEIMAN.

Witnesses:

GEO. H. HACHENBERG,
GEORGE MILLER.