

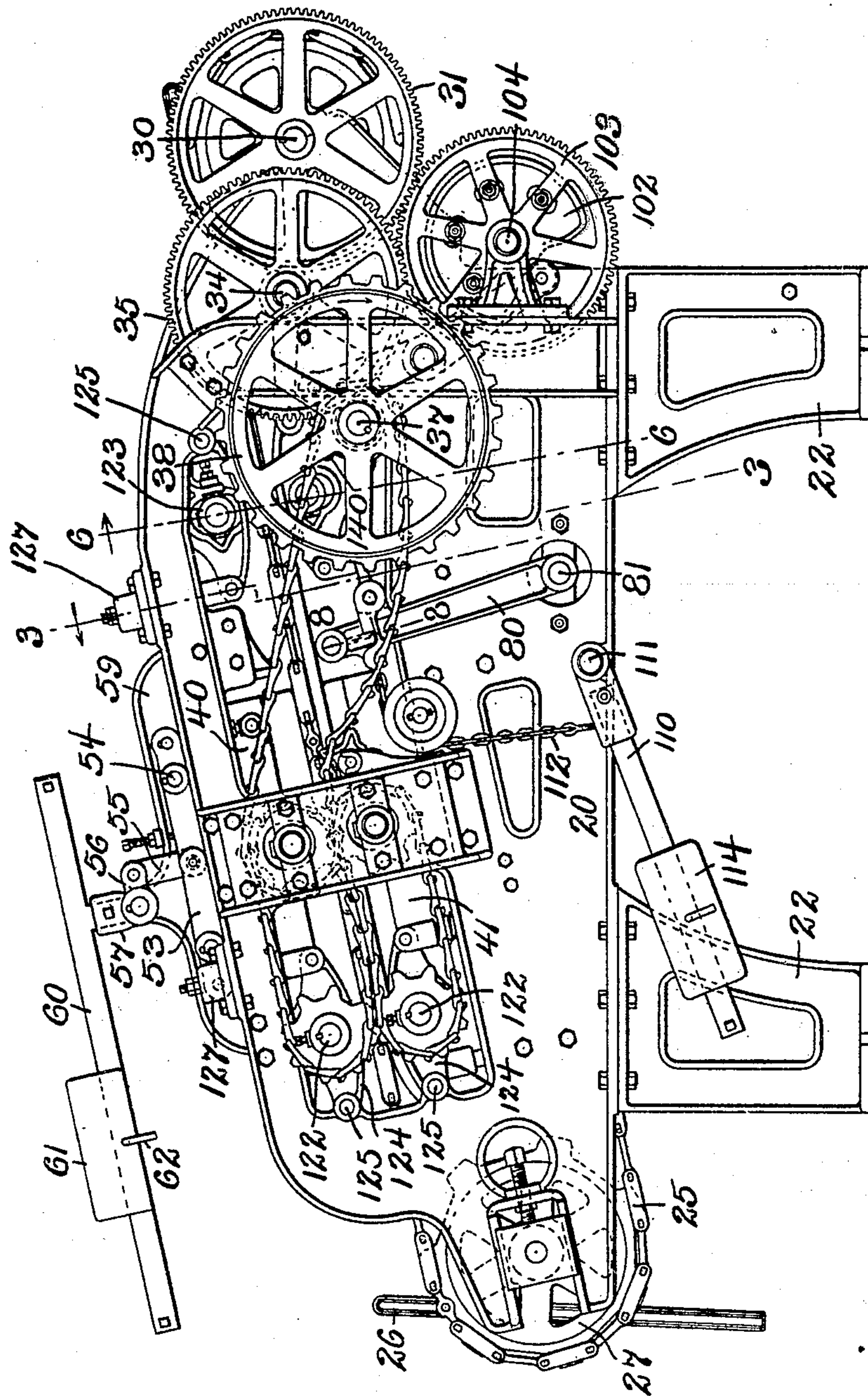
No. 835,399.

PATENTED NOV. 6, 1906.

E. E. CHAIN.
LEATHER TREATING MACHINE.
APPLICATION FILED DEC. 12, 1904.

7 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

Walter P. Ahl.
C. C. Stecher

INVENTOR:

E. E. Chain
by Coughlin, Brown & Dumbay
his attys

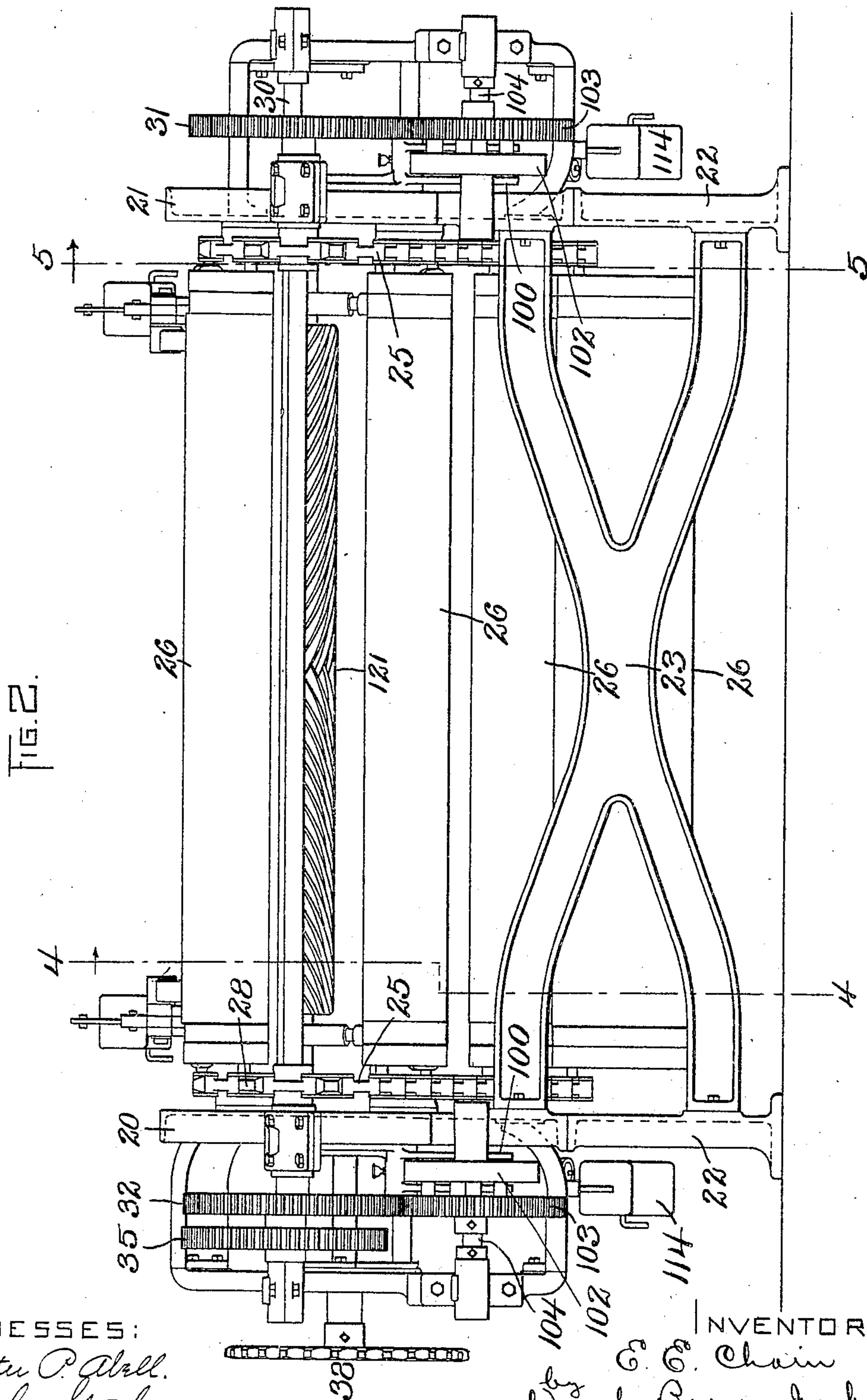
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7 SHEETS—SHEET 2.



WITNESSES:

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7 SHEETS—SHEET 3.

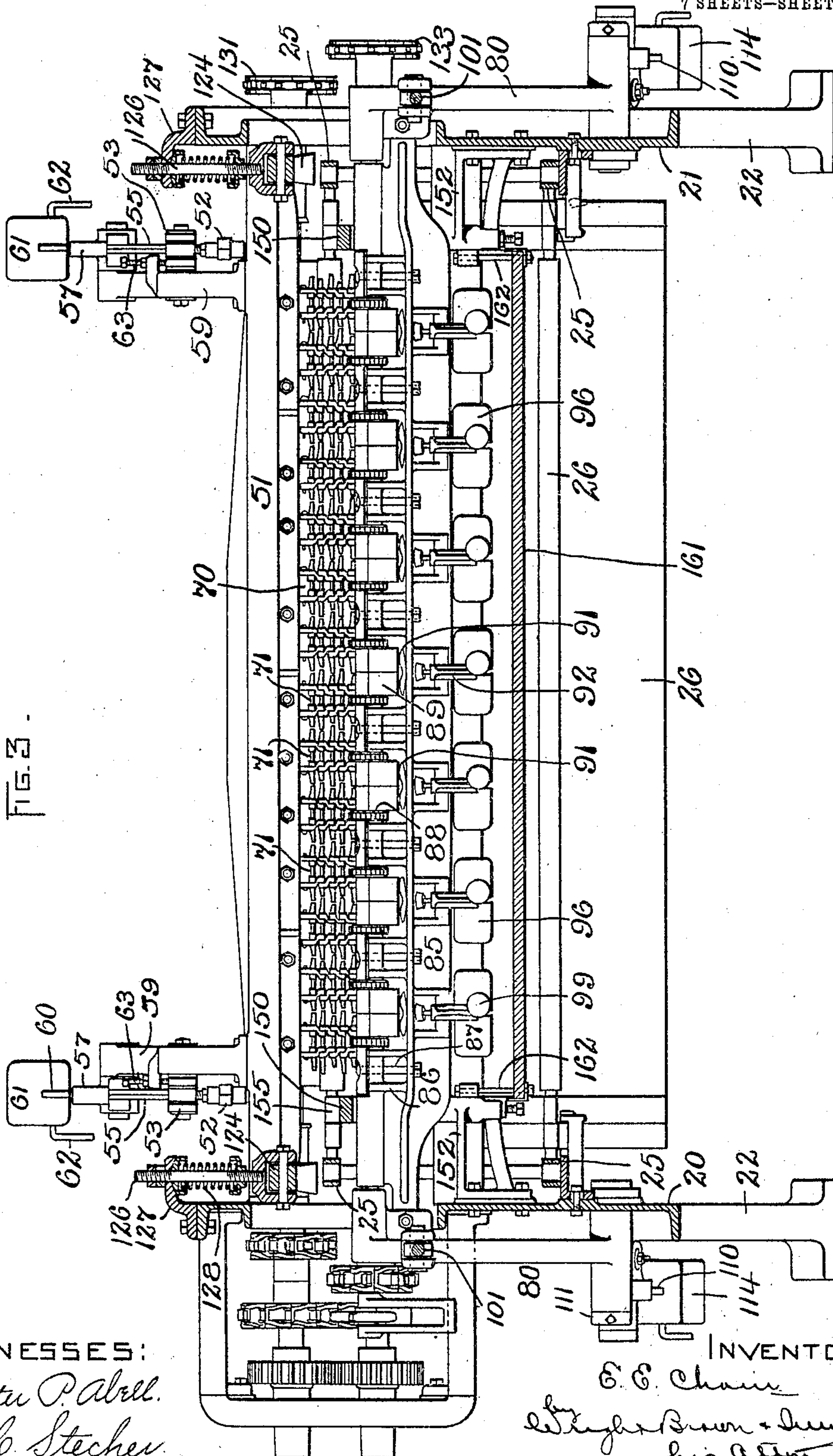


FIG. 3.

WITNESSES:
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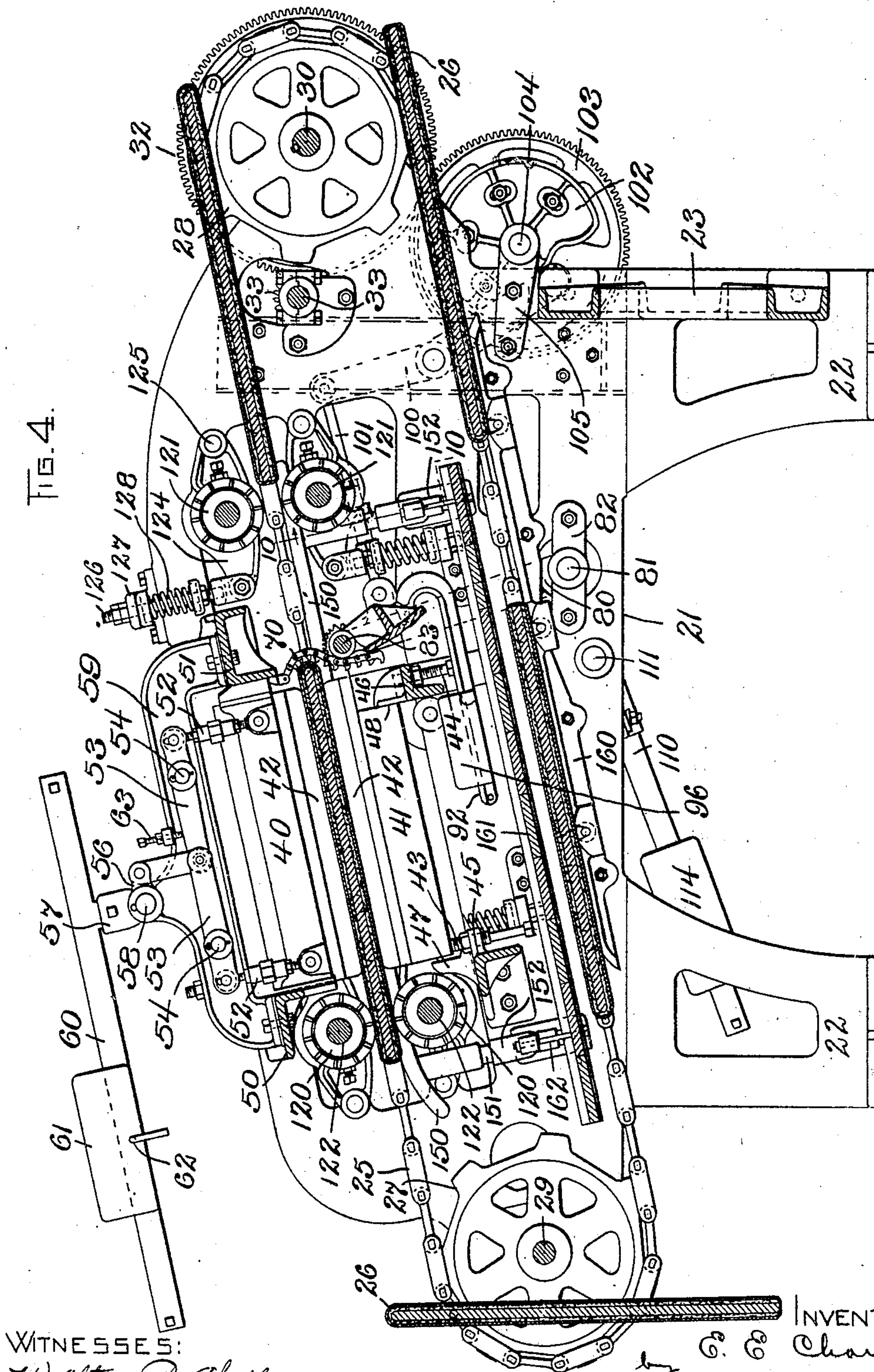
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7 SHEETS—SHEET 4.



WITNESSES:

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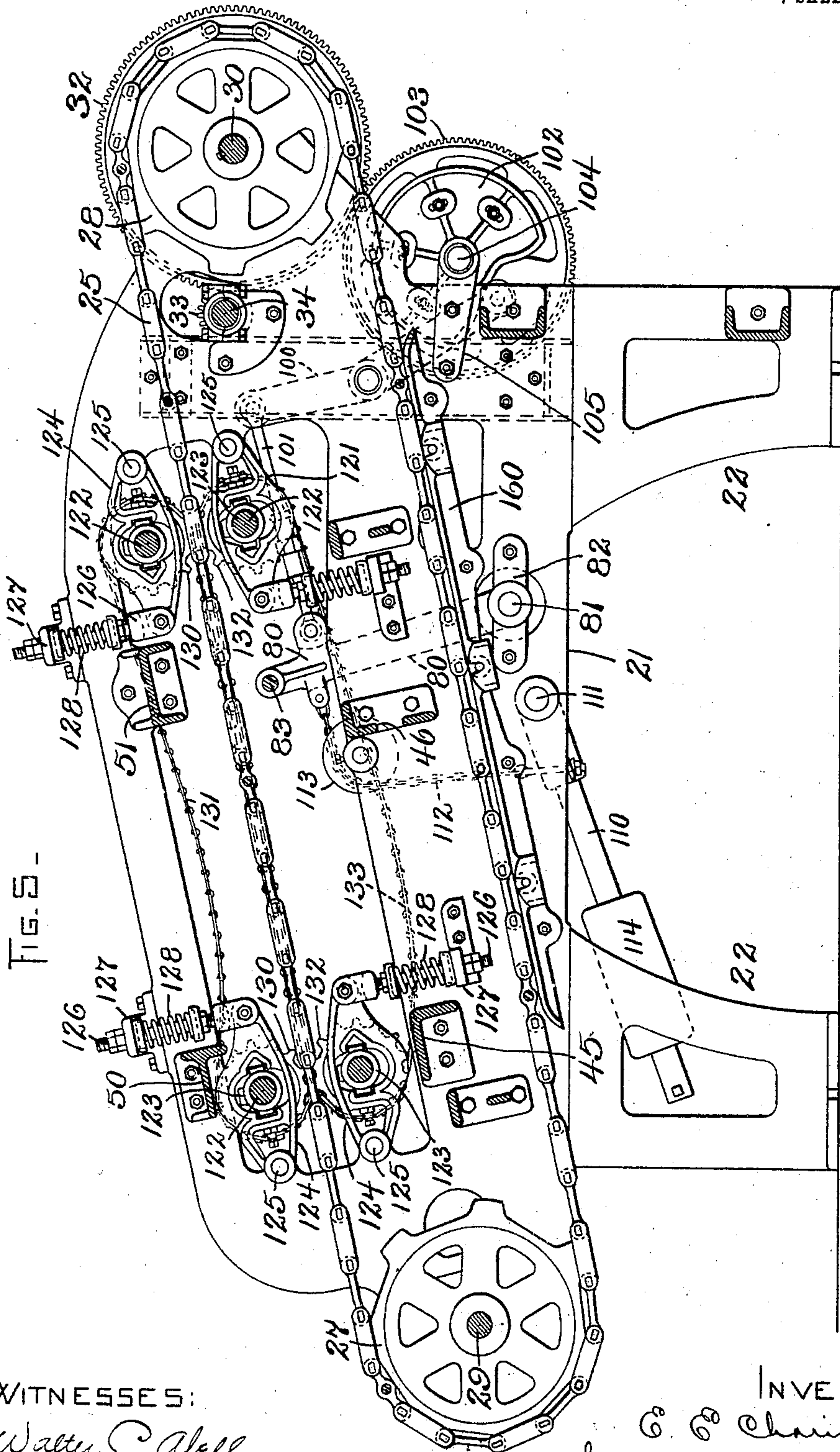
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PATENTED NOV. 6, 1906.

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APPLICATION FILED DEC. 12, 1904.

7 SHEETS—SHEET 5.



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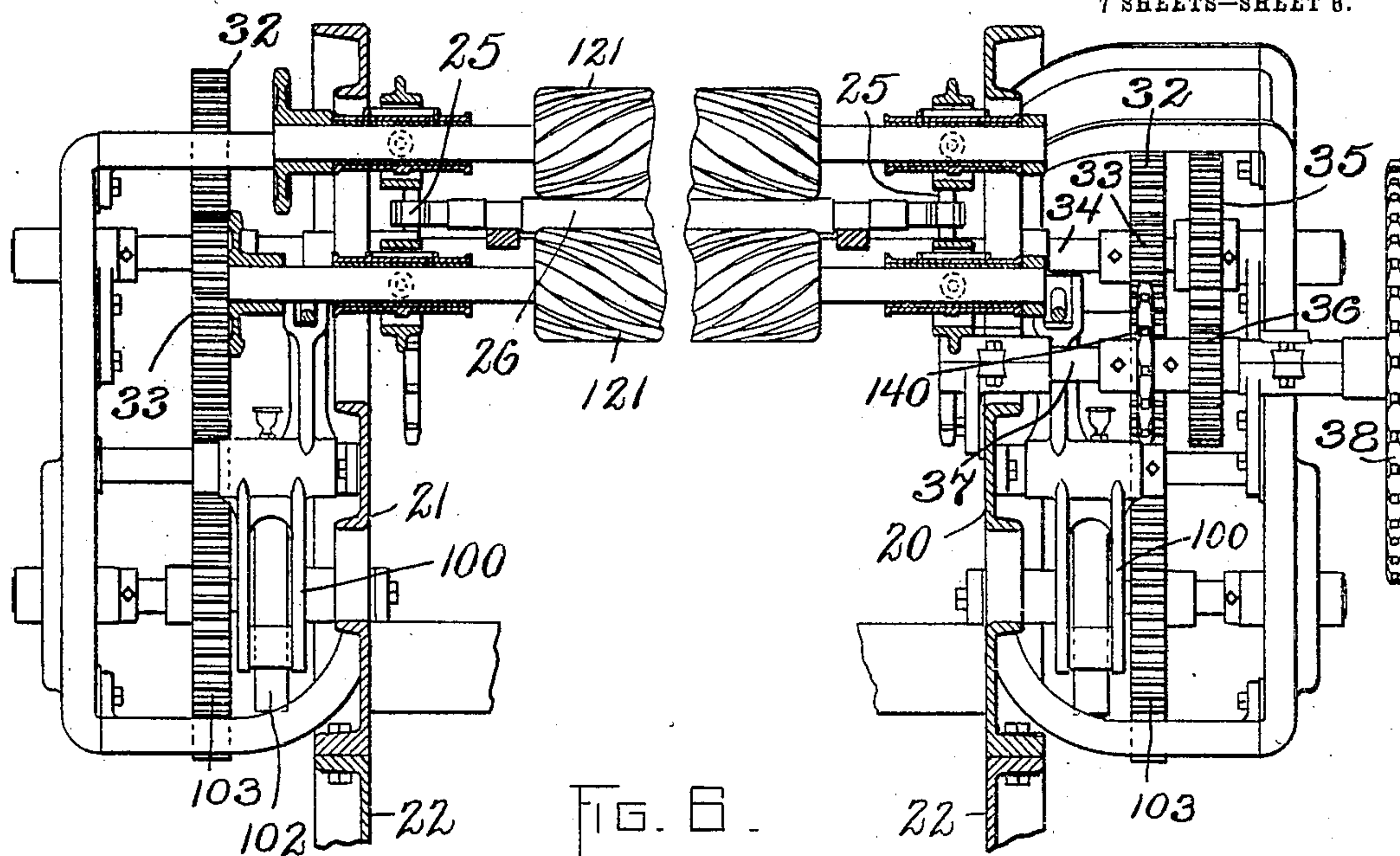
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APPLICATION FILED DEC. 12, 1904.

7 SHEETS—SHEET 6.



WITNESSES:
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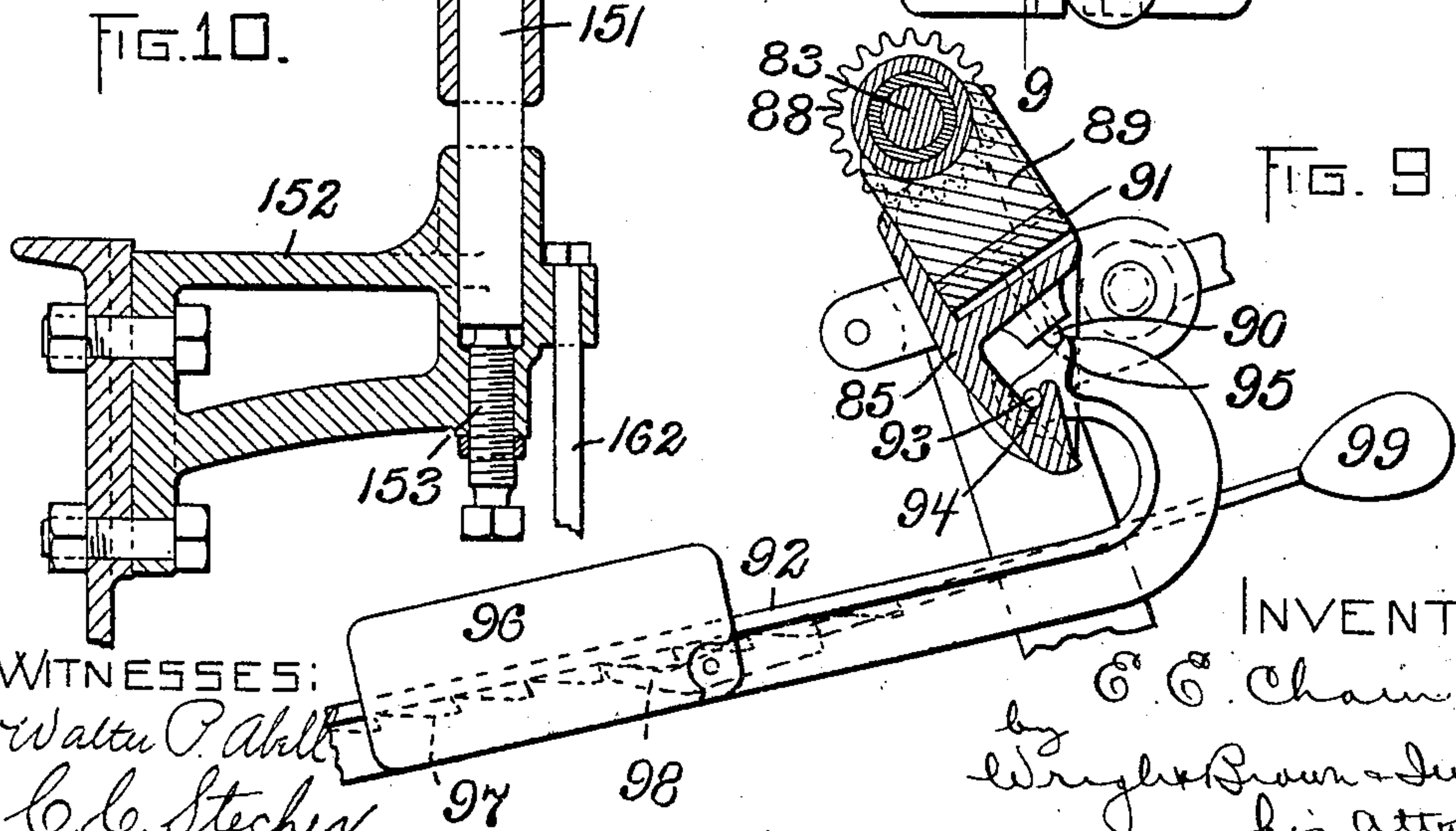
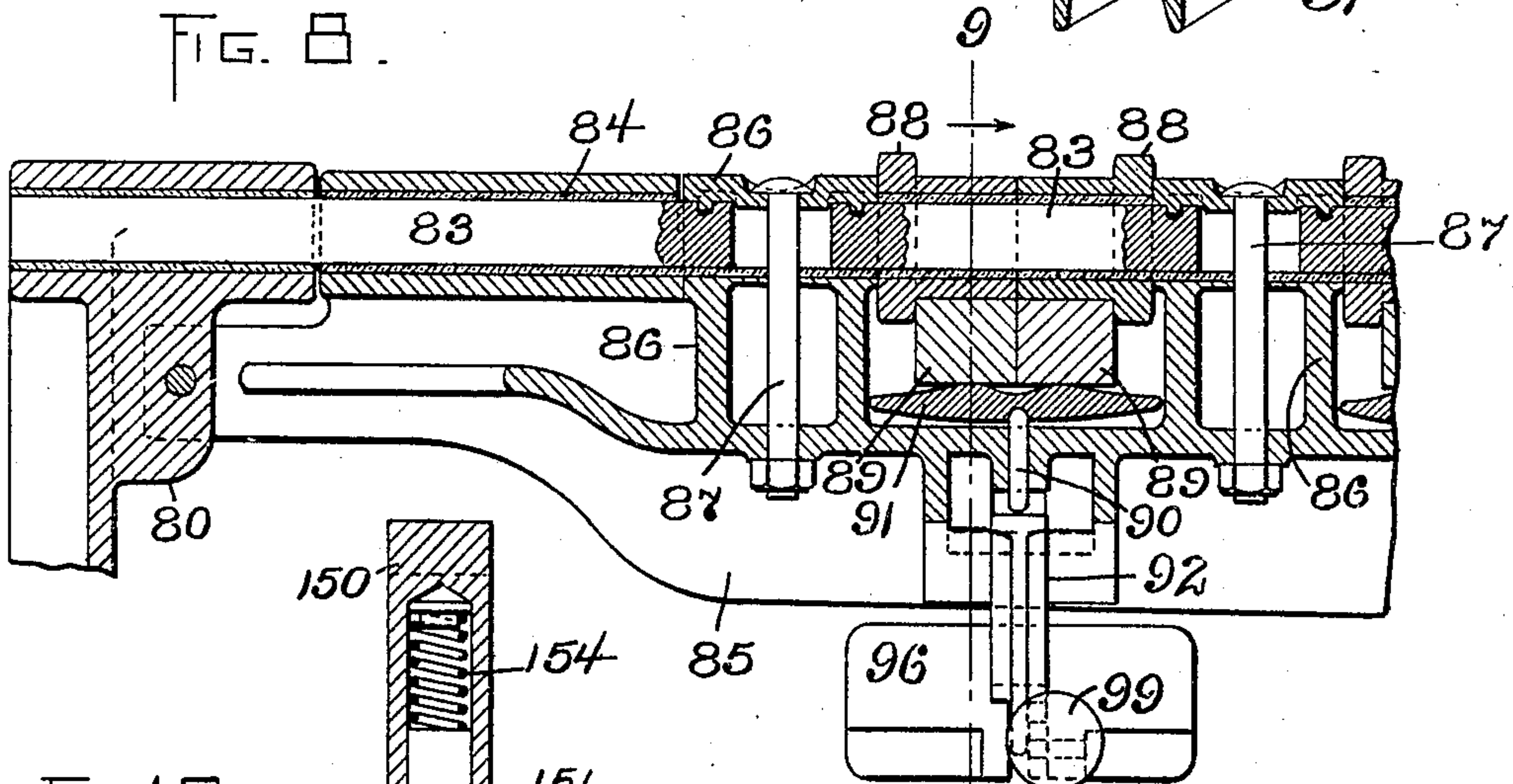
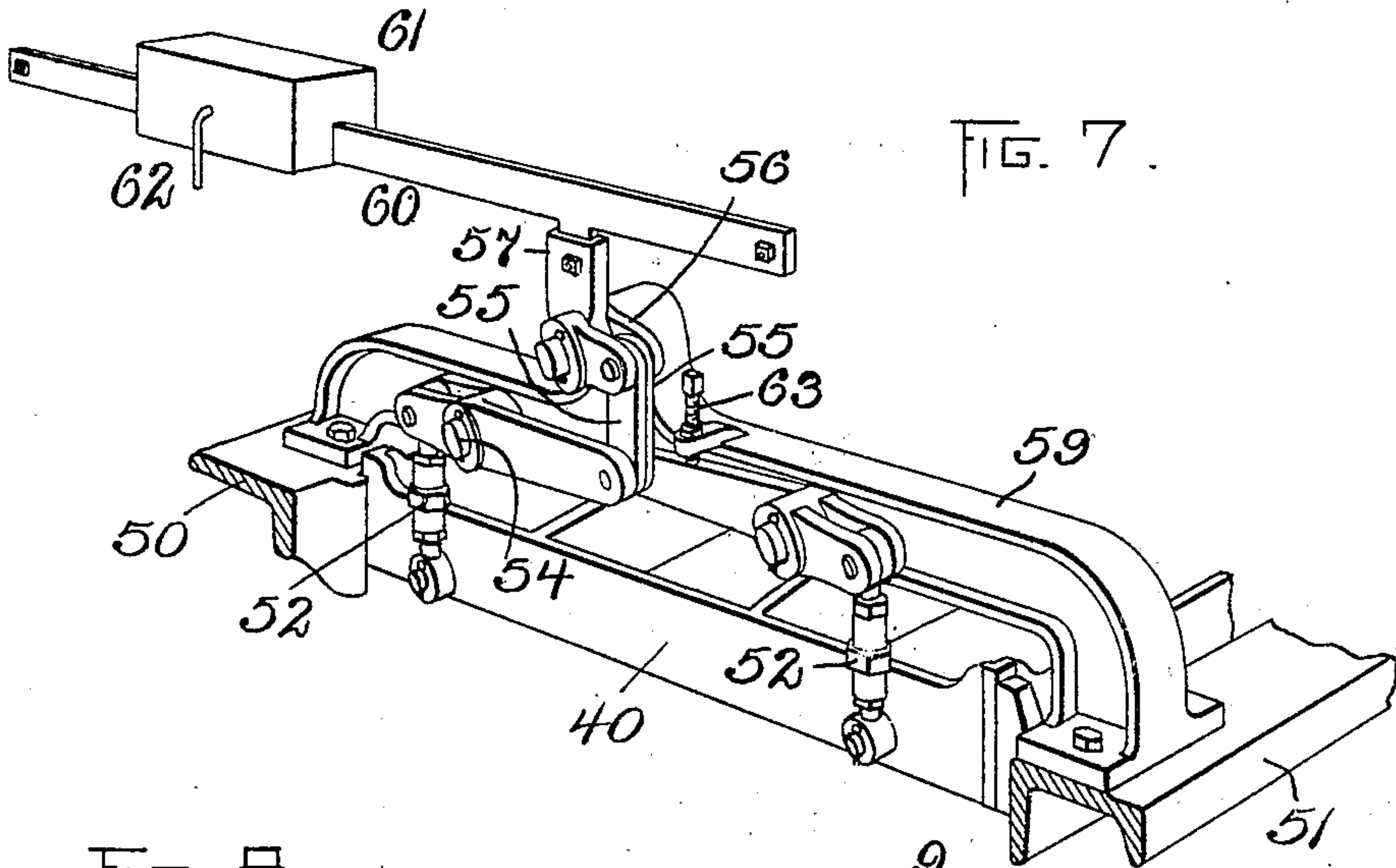
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PATENTED NOV. 6, 1906.

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LEATHER TREATING MACHINE.

APPLICATION FILED DEC. 12, 1904.

7 SHEETS—SHEET 7.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ELMER E. CHAIN, OF WINTHROP, MASSACHUSETTS, ASSIGNOR TO THE
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LEATHER-TREATING MACHINE.

No. 835,399.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed December 12, 1904. Serial No. 236,430.

To all whom it may concern:

Be it known that I, ELMER E. CHAIN, of Winthrop, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Leather-Treating Machines, of which the following is a specification.

This invention has relation to leather-working machinery, and particularly to that class of machines which are employed for putting out, striking out, unhairing, or otherwise treating hides and skins in the manufacture of leather.

Classifying the invention more particularly, it may be stated to relate to that type of such machines in which a plurality of tables are moved by an endless carrier successively between the members which work upon the skins folded over the ends or edges of the table, whereby those portions of each skin lying on opposite sides of the table are simultaneously treated, as illustrated in the patent to Chain and Turner, No. 691,306, dated January 14, 1902.

The object of the invention is to provide certain improvements in machines of the class mentioned, for enhancing their efficiency and durability, and adapting them for heavy work, as upon "sides," so called.

Referring to the drawings, Figure 1 represents a side elevation of a machine embodying the invention. Fig. 2 represents a rear end elevation of the same. Fig. 3 represents a section on the line 3 3 of Fig. 1. Fig. 4 represents a longitudinal section of the machine on the line 4 4 of Fig. 2. Fig. 5 represents another section on the line 5 5 of Fig. 2. Fig. 6 represents a section on the line 6 6 of Fig. 1. Fig. 7 represents a perspective view of one of the equalizing devices for one of the blade-carrying beds. Fig. 8 represents a section through the shaft which supports the devices which engage the end-treating mechanism and effects its pressure against the skin on the end of the table. Fig. 9 represents a section on the line 9 9 of Fig. 8. Fig. 10 represents a section through one of the devices which supports one of the guides for the table-carrier, said figure being an enlarged section on the line 10 10 of Fig. 4.

The machine comprises side standards 20 21, which rest upon and are supported by the legs 22. The standards and the legs are suit-

ably connected and braced by cross-pieces, of which one is illustrated in Fig. 2 at 23. The framework thus constituted is made strong and durable to withstand the strains which are put upon it.

As previously indicated, the machine is provided with an endless carrier, comprising two endless chains 25 25, upon which are supported a plurality of tables or work-supports 26. The chains are passed around chain-wheels 27 28, respectively, said wheels being respectively mounted upon shafts 29 30. (See Fig. 4.) These shafts are arranged in different horizontal planes, so that the upper stretches of the chains travel upwardly and rearwardly from the front of the machine at an angle to both the vertical and the horizontal. The tables are connected to the chains in the usual manner, each table having at each side, relatively near its ends, two points of connection with the chains, one of the connections being loose, so that the tables may be carried easily around the wheels, as usual in this class of machines. It may be briefly stated that each table consists of a flat support, preferably made up of a number of boards placed edge to edge and secured at their sides to metallic side pieces, said supports being covered on both faces and on one end with a layer of cushioning material, as felt, and with a superimposed bolster of proper material, such as rawhide or vulcanized rubber.

The shaft 30 projects at each end beyond the standards 20 21 and is equipped with gears 31 32, which intermesh with and are driven by pinions 33 (see Fig. 4) on a transverse shaft 34, mounted in suitable bearings on the standards. This shaft 34 has a large gear 35, which is driven by a pinion 36 on the prime power-shaft 37. The last-mentioned shaft 37 has upon its projecting end a sprocket-wheel 38, through which it receives power from a counter-shaft or motor. Through the medium of the devices thus described power is transmitted to the shaft 30 to rotate the chain-wheels 28 and effect the movement of the endless carrier, so as to present the tables connected therewith successively to the action of the working members.

It will be observed that in this case the upper stretches of the carrier are drawn up-

wardly by the chain-wheels 28, so that there is a direct pull on the tables as they are passing between the working members, this being in contradistinction to the machine of the prior patent hereinbefore referred to, in which power was transmitted to the carriers through the chain-wheels 27 at the front end of the machine. This change in construction obviates the many severe strains to which the machine was previously subjected.

The main working members for treating those portions of the skins which lie upon the two faces of each table as it passes between them comprise confronting blades secured to beds. Preferably the beds and blades are constructed as set forth in a copending application, Serial No. 236,429, filed by me on the 12th day of December, 1904. It may here be stated that each bed is preferably rectangular in shape and bears upon its face nearest the carrier a plurality of blades arranged substantially in U or V form, with their edges adapted to engage and properly treat the skin upon the table. Two beds, as stated, are employed, and they are indicated, respectively, at 40 41, said beds having the blades as indicated at 42 42 in Fig. 4. The lower bed 41 rests rigidly upon adjustable set-screws 43 44, which are passed upwardly through and are supported by cross-braces 45 46, said bed being held against movement longitudinally of the travel of the tables by guides 47 48. By the provision of the set-screws, of which there may be as many as desired, the bed may be adjusted at right angles to the travel of the tables, so as to bring the edges of the blades in proper relation to the tables as they pass thereabove. The upper bed alone is adapted to yield to permit the passage of the tables, as will be explained. It is guided vertically toward and from the lower bed by the cross-braces 50 51, which, like the cross-braces 45 46, extend from one of the side standards 20 to the other, 21. The cross-braces 50 51 are provided with guides in coacting relation with the bed to hold it against movement in a plane parallel with the plane of the face of the table therebeneath or parallel with the working surface formed by the edges of the blades. At its side edges and near its front and rear ends the bed 40 is pivotally connected by adjustable links 52 52 with the shorter ends of two levers 53 53. Each of these levers is fulcrumed upon a stud 54, as best shown in Fig. 7, and their longer ends project toward each other so as to overlap. Links 55 55 connect the longer ends of the two levers with the arms 56 of a bell-crank lever 57, fulcrumed upon a stud 58, supported by arches 59, whose ends rest upon the cross-braces 50 51. These arches 59 support the studs 54, hereinbefore referred to. The upwardly-projecting arm of each bell-crank 57 is socketed to receive an arm projecting

downward from a substantially horizontally-arranged bar 60, which projects on either side of said arm. Upon each of these bars is adjustably placed a weight 61, which may be held in any position to which it is adjusted by a set-screw 62. By means of the supporting and equalizing devices thus described the bed 40 is adapted to yield to permit the passage of a table between it and the bed 41, the two sides of the bed yielding independently of each other, but the front and rear edges being always maintained in parallelism, so that the plane of the face of the bed is always parallel to a line longitudinal of the path of movement of the table. To maintain the bed 40 at a proper distance from the bed 41, each of the arches 59 carries a set-screw 63 in the path of one of the levers 53 to limit the upward movement of the longer arm thereof. By adjusting the weights 61 upon the bars 60 the degree of pressure of the bed 40 against the table may be varied, as will be readily understood. As each table passes between the beds the skin on the faces of the table is properly spread and treated by the blades 42 42.

The means for treating that portion of the skin which lies upon the end of each table does not in itself differ materially from the means described in the patent to Chain and Turner, hereinbefore referred to. It consists of an apron comprising a plurality of articulated edges or ribs, or, in other words, of a plurality of chains depending from the cross-bar 51, the links of each chain being provided with ribs or edges adapted to engage the skin on the end of the table. This chain apron, which is indicated as a whole at 70, in Fig. 4, and the separate chains of which are indicated in Fig. 3, depends in the path of the tables, so that it is engaged by the end of each table as the latter emerges from the beds 40 41. Novel mechanism, however, is provided for pressing the flexible end-treating member 70 against the end of the table, as will now be explained.

At each side of the machine there is an arm 80, which is fulcrumed at its lower end, as at 81, to a bearing member 82, attached to the standard. In the upper end of the arms 80 is secured a shaft or bar 83, which is formed in sections. Likewise attached to the upper end of the arms 80 is a cross-brace 85, having a plurality of supporting members 86, as shown in Fig. 8, in which the sections of the bar 83 are rabbeted. The said sections are engaged at their ends by caps 86, which are attached to the cross-brace 85 by bolts 87. Between each of two supporting members 86 are placed two sprocket-wheels or rotary members 88 88, each of said wheels being adapted to engage one of the chains 71 of the end-treating member 70. These sprocket-wheels 88 are frictionally retarded in rotation, and to that end each has an elongated

hub, with which is engaged a friction device or block 89. The blocks of each pair are placed side by side, and they are held against the hubs of the sprocket-wheels 88 by weight- and-lever mechanism, which will now be described.

Pins 90 pass through the cross brace or bar 85 and bear against equalizers 91, each of which is so formed as to bear against each of two friction-blocks 89. Each pin engages an equalizer substantially midway between its ends. Each equalizer consists of a member whose under side is curved to form two tapering ends and whose upper side is so curved as to form two engaging points to engage the two friction-blocks. Bearing upon each pin 90 is a lever 92. This lever has its end curved in the form of a semicircle and is provided with oppositely-projecting fulcruming-pins 93, which rest in sockets 94, formed in the cross-brace 85. When the free end of the lever is forced downwardly, a shoulder or supporting portion 95 thereof bears against the pin 90 and raises it, so as to lift the equalizer 91 and force the two friction-blocks 89 against the hubs of the two sprockets 88. On each of the levers 92 is adjustably placed a weight 96. This weight is conventionally illustrated, but is sufficient to impart enough pressure to the friction-blocks to cause them to perform their functions properly. Means are provided by which the weights may be adjusted longitudinally of the straight portions of the levers and held in their adjusted positions without the aid of set-screws. In this connection it will be remarked that upon the machine the straight portions of the levers are at an inclination to both the horizontal and vertical, as shown in Fig. 4. Each lever is formed of a T-shaped angle-bar and has a series of teeth 97. The weight 96 has pivoted to it a pawl 98, with a projecting handle 99. When the handle is lifted, the weight may be allowed to slide down the lever, or by drawing upon the handle it may be moved toward the fulcrum of the lever. The handle is of sufficient weight that when it is released it immediately engages the pawl with one of the teeth. From this construction and arrangement it will be observed, particularly in connection with Fig. 3, that there is one weight and lever for each pair of sprockets and friction-blocks and that the handles 99 are all accessible through the top of the machine.

It has been heretofore proposed in the Chain and Turner machine previously referred to to employ friction-blocks and sprocket-wheels for increasing the pressure of the end-treating member upon the skin upon the end of the table; but the present invention contemplates, in addition thereto, an equalizer for each pair of blocks and a separate weight for imparting pressure to each equalizer with means whereby the weights

may be adjusted to vary the pressure. By the removal of any adjacent pair of caps 86 the intervening pair of sprocket-wheels 88 and the sectional cross-bar 83, upon which they are mounted, may be removed and replaced by new appliances. As in the Chain and Turner machine, the pressure mechanism is moved away from the end-treating member at a predetermined time to permit said member to fall into proper position to engage the skin on the end of the next succeeding table; but the present invention contemplates improved mechanism for accomplishing this without straining the tables or the carrier, and the mechanism by which it is accomplished will be now described.

To each of the standards is fulcrumed a two-armed lever 100, the upper arm of which is connected by an extensible or adjustable link 101 with one of the arms 80. The lower arm of each of the levers 100 has a roll bearing against a cam 102, rotatively adjustable relatively to and supported by a gear 103. Each of these two gears is journaled upon a stud-shaft 104, secured to a support 105. (See Figs. 4 and 5.) The two gears 103 are engaged with and rotated by the gears 31 32, hereinbefore referred to, as shown in Fig. 2. The diametrical ratio of the gears 31 103 and the shaft of the two cams 102 is such that at the proper moment the pressure device is moved toward the rear end of the machine, so as to permit the end-treating member to drop into place, after which the pressure device is again returned to normal position, so that the sprocket-wheels will engage the chains 71. The pressure device is returned to operative position by a mechanism comprising two arms 110, fulcrumed at 111 on the two standards, said arms being flexibly connected by chains 112 with the arms 80. The chains pass over idler-pulleys 113, so that the traction upon the arms 80 is in the proper direction. Upon the levers 110 are adjustably secured weights 114. As hereinbefore indicated, the mechanism herein described provides for the automatic operation of the pressure device without subjecting the tables or their carriers to any strains whatever; said mechanism receiving its power from the weights 114 and from the main power-shaft through the secondary cross-shaft 34.

In addition to the working members hereinbefore described the present machine is provided with two additional sets of members, one set operating upon the skin prior to its engagement by the blades on the beds and the other operating on the skin after the table has passed the blades on the beds and the end-treating mechanism. These working members consist of bladed rolls which, so far as the blades and rolls themselves are concerned, do not differ materially from those heretofore employed in the machine of the

Chain and Turner patent. The said bladed rolls are indicated at 120 120 and 121 121. As the two pairs of rolls are substantially similar and are mounted in substantially the same way only one pair of them will be described. The shafts on which said rolls 120 are mounted and which are indicated at 122 are journaled at their ends in the boxes 123. These boxes are pivoted in hangers 124 124, 10 pivoted on studs 125 to the side standards. The pivots for the boxes 123 are respectively at right angles to the pivots 125, so that the hanger at one end of each roll may be swung about its pivot without causing the 15 rolls to bind in their bearings. The hangers of the two coacting rolls are held yieldingly toward each other by spring-tension mechanism comprising rods 126, pivoted thereto and passing through stationary guides 127 on the 20 side standards, and springs 128, which bear against cups resting against said guides and against adjustable nuts on said rods. One of the advantages of the mechanism for thus mounting the rolls is that they are all similar 25 and interchangeable, the rolls themselves being interchangeable, as will be readily understood.

For the purpose of actuating the rolls the shafts of the two upper rolls have upon their 30 ends sprockets 130, around which is passed an endless chain 131. The shafts of the lower rolls carry similar sprockets 132, around which is passed a sprocket-chain 133. The main driving-shaft 37 has a sprocket-wheel 140, which, by means of suitable sprocket-gearing that need not be described in detail, imparts power to the shafts 122 of the rolls at the front end of the machine for effecting the rotation of the two sets of rolls. 40 One of the features of the present invention is the yielding guides for partially supporting the tables as they pass between the working members. These two guides are indicated at 150. (See Figs. 3 and 4.) They 45 are arranged at opposite sides of the machine and consist of elongated bars with their front ends downwardly curved or beveled. As shown in Fig. 10, they are socketed to receive upwardly-projecting pins 151, supported by 50 brackets 152, projecting inwardly from the side frames 20 and 21. The lower end of each pin 151 rests upon an adjusting-screw 153, and between the pin and the guide 150 there is placed in the socket a helical spring 55 154. Preferably there is a supporting device at each end of the guide. Between the tables and the carrier-chains on the bars, which connect the tables and chains, are rolls 155, (see Fig. 3,) which roll upon the guides 150, 60 said guides yielding sufficiently to permit the proper engagement of the skin on the tables with the blades on the lower bed 41. These guides serve to not only guide the table but also to relieve the excess pressure upon the 65 blades of the lower bed. Stationary guides

160 are attached to the side frames to support the tables on the lower stretches of the carriers as they are passing from the sprockets 28 to the sprockets 27.

As the unhairing operation and the putting-out operation both effect the removal of a substance either in the form of liquid or hair from the skin on the table, a guard is provided for receiving the same and preventing it from dropping immediately upon the 75 returning-tables. This guard consists in the present case of a plate 161, formed by a plurality of boards with their edges together, the ends of said boards being attached to suitable angle-pieces and being supported by 80 bolts or hangers 162 from the brackets 152.

It will be understood that while an effort has been made to show the herein-described machine with the parts in proper proportion, yet nevertheless the showing is more or less 85 conventional owing to the character of the drawings. It will be further understood that those features of the invention which are hereinafter claimed are not limited to the particular details of construction which are 90 herein illustrated and described and that the language employed in the specification and claims is for the purpose of description and not of limitation.

Having thus explained the nature of the 95 invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is— 100

1. In a machine of the character described, a pressure device for the end-treating member, pivoted arms for supporting said device, weighted arms flexibly connected to said pivoted arms to move them toward the end- 105 treating member, one or more rotary cams, and cam-actuated lever mechanism connected to said pivoted arms to move them in the opposite direction.

2. In a machine of the character described, 110 the combination with the end-treating mechanism, of a pressure mechanism comprising a support, a plurality of rotary members, friction devices for said members, and weighted levers bearing against said friction devices. 115

3. In a machine of the character described, the combination with the end-treating mechanism, of a pressure mechanism comprising a support, a plurality of rotary members, arranged in pairs, pairs of friction devices for 120 the respective pairs of rotary members, an equalizer for each pair of friction devices, and tension mechanisms bearing upon the equalizers.

4. In a machine of the character described, 125 the combination with the end-treating mechanism, of a pressure mechanism comprising a support, a plurality of rotary members, friction-blocks bearing upon the rotary members, a plurality of weighted levers fulcrumed 130

on said support, and pressure-transmitting devices interposed between the weighted levers and the friction-blocks.

5 In a machine of the character described, the combination with the end-treating mechanism, of a pressure mechanism comprising a support, a plurality of rotary members, friction members bearing upon the rotary members, levers for pressing the friction members
10 against the rotary members, weights arranged to slide on said levers, a pawl on each weight and ratchet-teeth on each lever, whereby the weights may be adjusted and held in any desired positions on said levers to
15 vary the pressure of the friction members against the rotary members.

6. In a machine of the character described, the combination with a carrier, and a work-support moved thereby, of working members
20 comprising a stationary bed having blades thereon, a movable bed having blades thereon, the said beds being oppositely arranged, means for yieldingly supporting said movable bed, and means for fixedly and rigidly
25 supporting said stationary bed.

7. In a machine of the character described, the combination with a carrier and a work-support moved thereby at an angle to the vertical, of working members, comprising
30 two oppositely-arranged beds having blades on their confronting faces and disposed in parallelism to the path of movement of the work-support to permit the passage of the work-support between them, adjustable
35 means for rigidly supporting the lower bed against movement, and means for yieldingly supporting the upper bed independently of the lower bed.

8. In a machine of the character described,
40 the combination with a carrier and a work-support moved thereby at an angle to the vertical, of working members comprising two oppositely-arranged beds having blades on their confronting faces and being disposed
45 in parallelism to the path of movement of the

work-support to permit the passage of said work-support between them, means for rigidly supporting the lower bed, weighted levers fulcrumed on stationary portions of the machine above the upper bed, and connections between said weighted levers and the
50 upper bed to yieldingly support it independently of the lower bed.

9. In a machine of the character described, the combination with a carrier and a work-support moved thereby at an angle to the vertical, of working members comprising
55 two oppositely-arranged beds having blades on their confronting faces and being disposed in parallelism to the path of movement of the work-support to permit the passage of said work-support between them, means for supporting one of said beds against yielding
60 movement, and means for yieldingly supporting the other bed, said means consisting of oppositely-extending levers at each side of said bed, stationary fulcrums for said lever, links connecting said levers with the sides of
65 said bed, weighted levers on stationary fulcrums, and links connecting said weighted levers with the first-mentioned levers, substantially as described.
70

10. In a machine of the character described, the combination with a carrier and a work-support moved thereby at an angle to
75 the vertical, of working members comprising two oppositely-arranged beds having blades on their confronting faces and being disposed in parallelism to the path of movement of the work-support to permit the passage of said
80 work-support between them, means for supporting said beds, and yielding guides for said work-support arranged in proximity to the said beds.

In testimony whereof I have affixed my
signature in presence of two witnesses.

ELMER E. CHAIN.

Witnesses:

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C. C. STECHER.