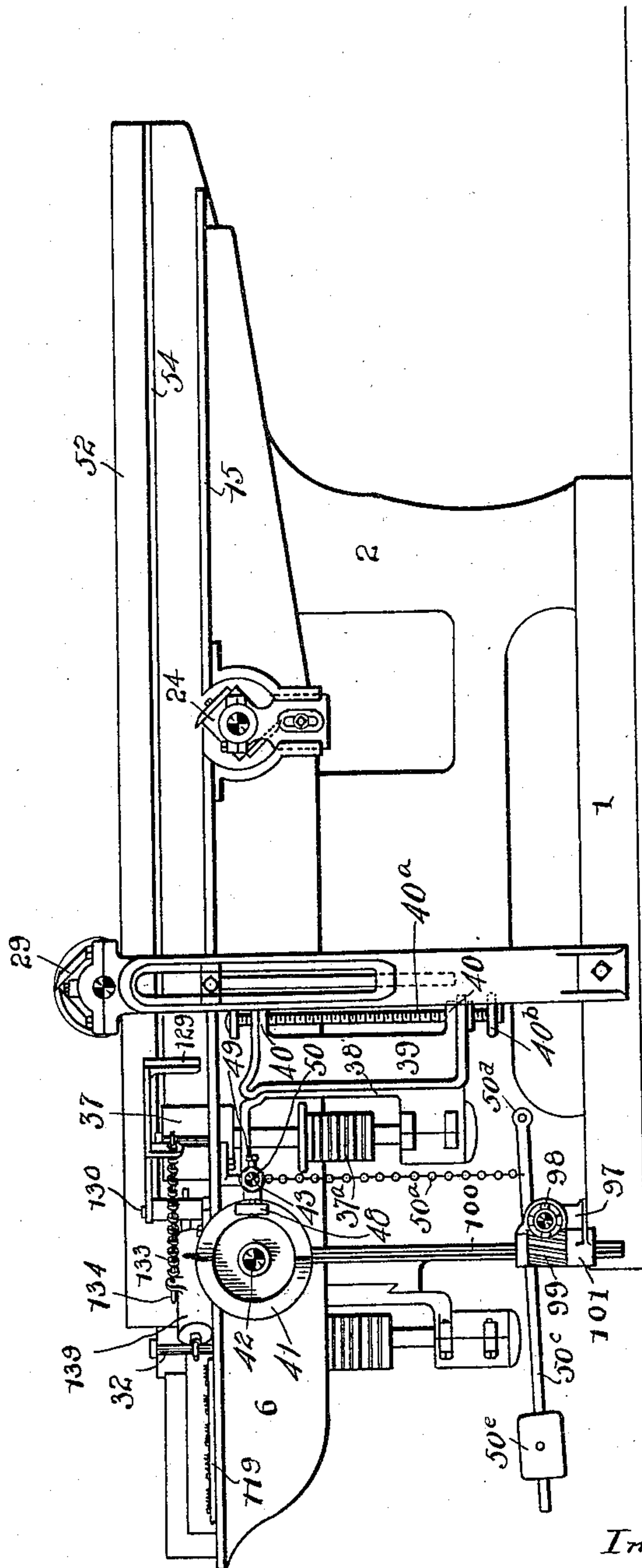
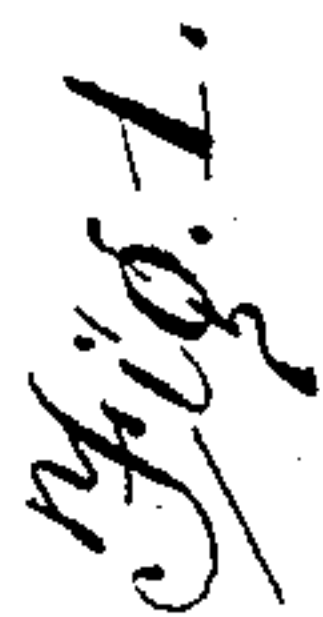


## GUIDE AND CHIP BREAKER FOR WOODWORKING MACHINES.

965,984.

Patented Aug. 2, 1910.

3 SHEETS--SHEET 1.



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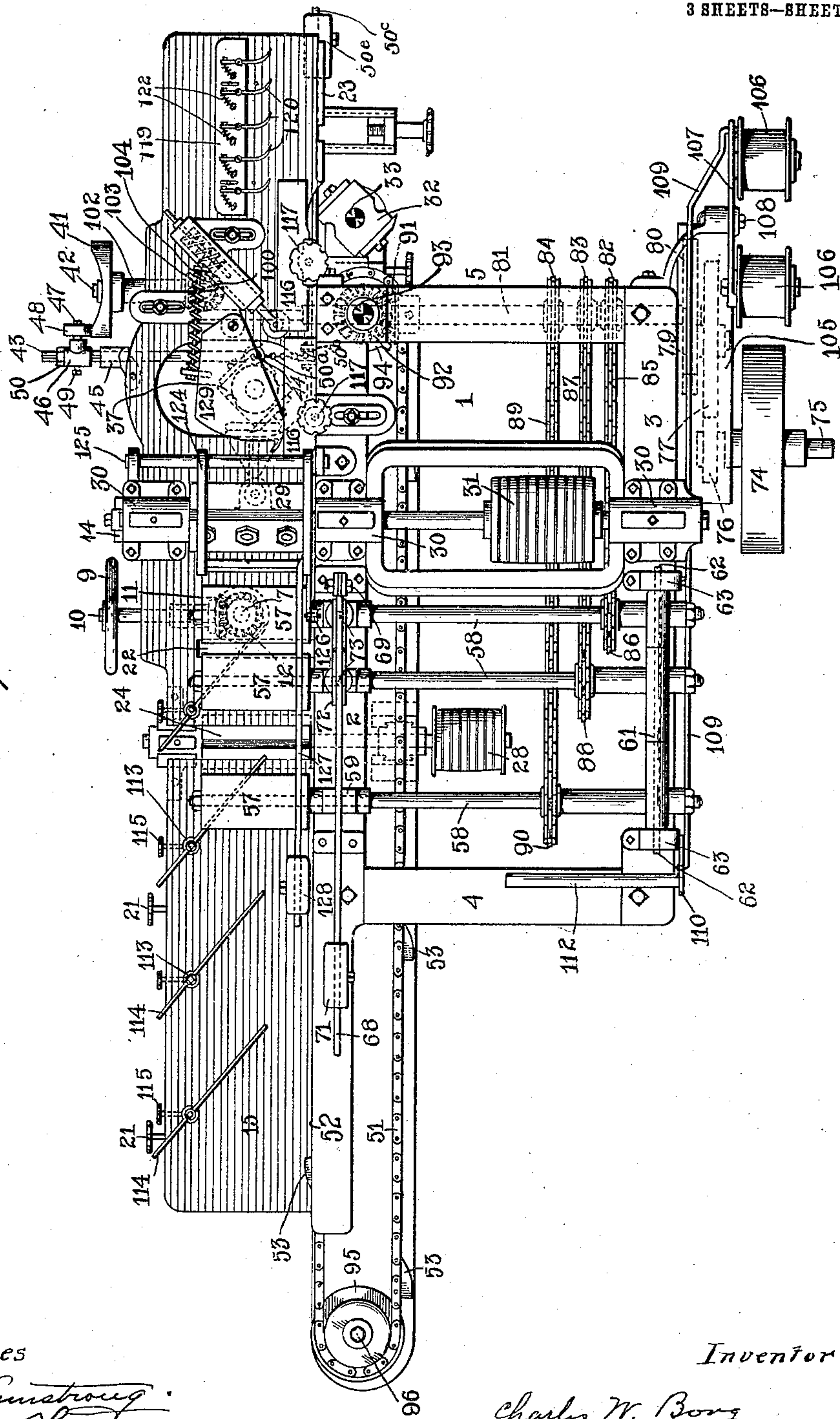
APPLICATION FILED JAN. 23, 1907. RENEWED DEC. 16, 1909.

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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

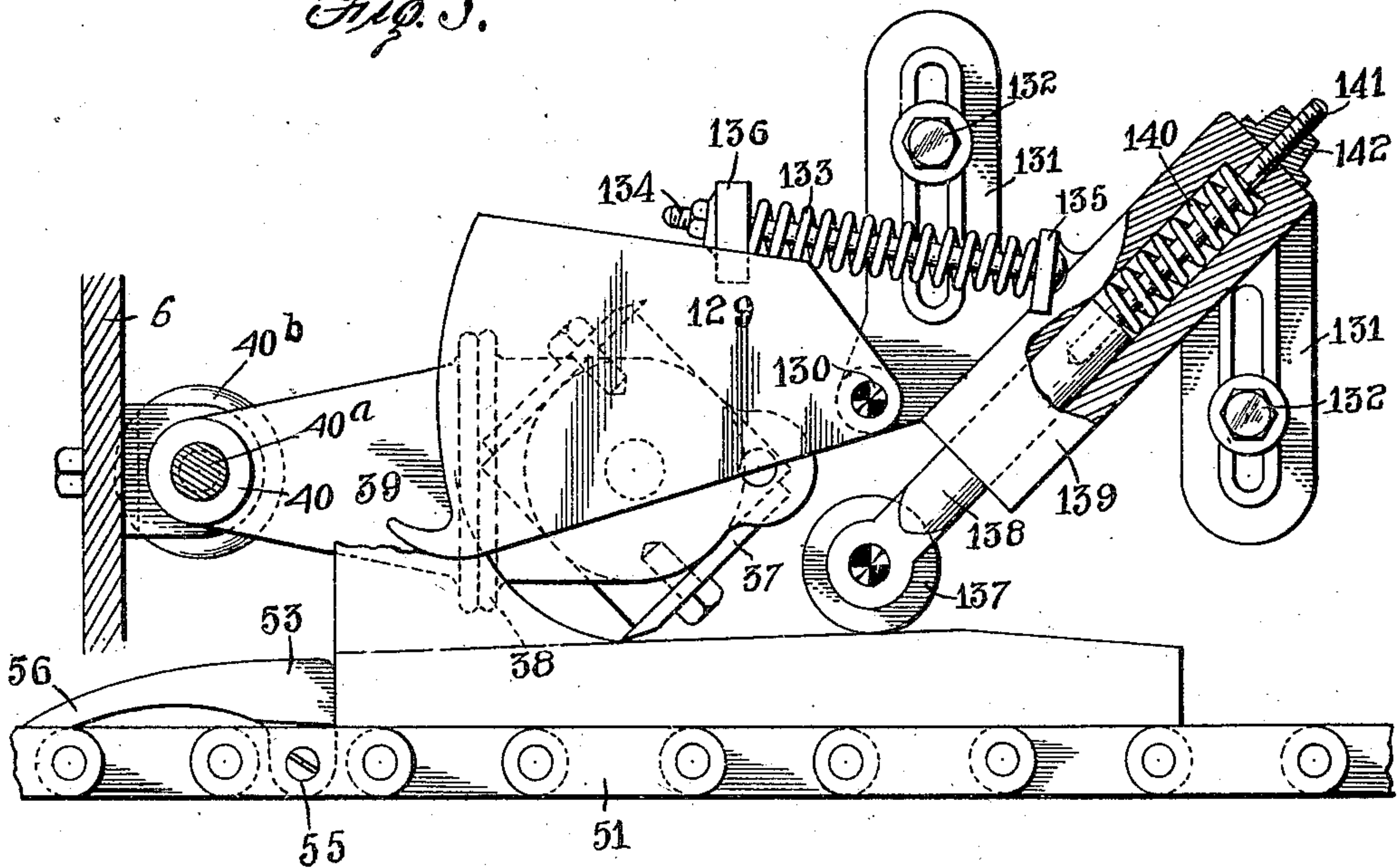
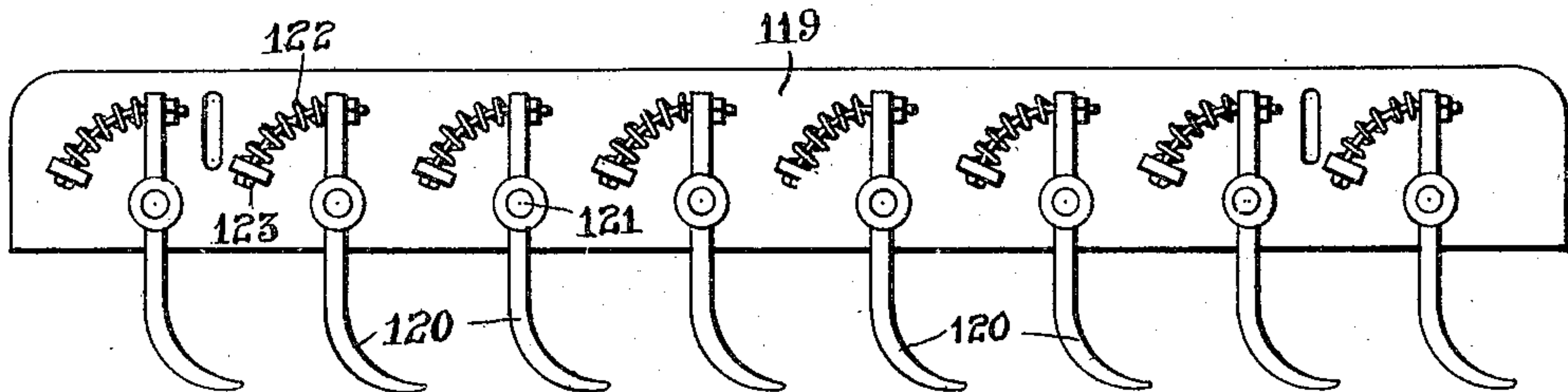


Fig. 4.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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GUIDE AND CHIP-BREAKER FOR WOODWORKING-MACHINES.

965,984.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Original application filed September 7, 1906, Serial No. 333,707. Divided and this application filed January 23, 1907, Serial No. 353,665. Renewed December 16, 1909. Serial No. 533,393.

*To all whom it may concern:*

Be it known that I, CHARLES W. BORG, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Guides and Chip-Breakers for Woodworking-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This application is a division of my prior application, filed September 7, 1906, Ser. No. 333,707, in which are fully described, features herein shown but not claimed.

The object of my present invention is to provide improved, yielding guiding means and improved chip-breakers for wood-worktion, showing the main frame in outline and blanks of irregular outlines; such as parts of wagons and agricultural machinery.

In the drawings, Figure 1 is a front elevation of a shaping machine of the character shown in my above-mentioned application, showing the main frame in outline and the manner of mounting and governing the laterally-movable shaping-cutter; Fig. 2 is a plan of the entire machine, showing the attachment and adjustments of my present improvements; Fig. 3 is an enlarged detail plan view of the combined chip-breaker and presser-roll for the movable cutter-head, and Fig. 4 is an enlarged detail of the yielding presser-mechanism.

In Fig. 1, 1 represents the base of the machine frame, 2 the front of the box frame mounted on said base, 6 the vertically-adjustable shaping-table which carries and controls a bottom jointing cutter, an outside shaping cutter and the associated side presser mechanism hereinafter more fully described. Said feed table is vertically adjustable by means of an elevating screw 7, all as fully described in my above named application. It is, accordingly, not deemed necessary to further describe said parts herein.

The cutters 24, 29 and 32 are "jointing" or surfacing cutters of the usual type, as will be understood from the figures, and need not be more fully described. The shaping cutter 37, whose function is to give any desired contour to the outer or free side of the blank is driven from the main countershaft (not shown) by a quarter turn belt passing over the pulley 37<sup>a</sup> and is suitably

mounted in a frame 38 which is adjustably secured to the hinge member 39 pivoted at 40, 40, on the vertically-adjustable shaping-table 6. Said frame 39 may be vertically adjusted with reference to the table 6 by means of a screw 40<sup>a</sup> and hand wheel 40<sup>b</sup>. Said cutter is controlled in its lateral movements by means of a pattern cam 41, which is removably mounted on a shaft 42 driven by means hereinafter described. Said frame 38 and hinge member 39 with the associated cutter are moved outwardly from the vertical face of the work table by means of a rod 43 pivoted to the frame 38 as at 44, and passing through a supporting lug 45 suitably attached to the table 6. Said rod 43 is splined and threaded at its free end and carries adjustably thereon a sleeve 46 having a stud 47 on which is rotatably mounted a roller 48 adapted to bear against the face of the cam 41. The sleeve 46 may be secured in any desired position by a set screw 49 and nut 50 as will be readily apparent and for a purpose hereinafter described. The cutter 37 is held against the work and the roll 48 is held against the cam 41 by means of a chain 50<sup>a</sup> passing over a sheave 50<sup>b</sup> and attached at its lower end to a lever 50<sup>c</sup> pivoted at 50<sup>d</sup> and carrying at its outer end an adjustable weight 50<sup>e</sup>.

The main blank-feeding means comprise a chain 51 adapted to feed the blanks along the guide-surface 52 of the main frame, by means of detachable feed-teeth 53 which project from an inclosed chain-way through a slot 54. These teeth are preferably secured between the side-links of the chain by readily-removable bolts 55, and are provided with rearwardly-extending members 56, which rest on links other than those to which the teeth are secured. Convertible feed- or presser-rolls 57 are also provided, which rolls are mounted on shafts 58, the foremost of which shafts is mounted in a bearing 59 which is held down by suitable means (not shown). The rear ends of the shafts 58 are mounted in separately movable members 61, mounted on a transverse shaft 62, held in lugs 63. The forward bearings of the second and third shafts 58 are held down by a lever 68, pivoted at 69 and carrying a weight 71, adapted to yieldingly depress the center of a bar 72, the ends of which bar rest upon plungers 73, carried by the forward bearings above mentioned. The feed-chain and



feed-rolls are driven from a belt-pulley 74, mounted on a stub-shaft 75, and transmitting power through a gear train 76, 77, 79, 80, to a shaft 81. The shaft 81 drives the chain through the medium of beveled gears 91, 92, a vertical shaft 93 and a sprocket 94; the opposite loop of the chain being carried on a toothless, flanged wheel 95, mounted on an adjustable stud 96. Sprockets 82, 83, 84, on the shaft 81, drive, by means of chains 85, 87, 89, the sprockets 86, 88, 90, respectively, on the shafts 58.

Referring now to the main power shaft 81, said shaft extends beyond the bevel-gear 91 (Fig. 2) and is provided with a clutch; said shaft being divided within the clutch so that the extreme end thereof may be disconnected from the remainder of said shaft as will be readily understood. The stub end of said shaft is suitably mounted in a bracket 97 and is provided with a worm 98 which meshes with a worm-gear 99 splined to the vertical shaft 100 in such manner that shaft 100 is vertically movable through the worm wheel 99 and a second bearing 101 of the bracket 97. The upper end of said shaft 100 is journaled in a bracket 102 (Fig. 2) suitably attached to or integral with the table 6 and depending therefrom. Secured to the shaft 100 above its upper journal is a bevel-gear 103 meshing with a second bevel-gear 104 secured to the cam shaft 42 which shaft is also suitably journaled in the bracket 102. Said shaft 42 carries at its outer end the cam 41 above described as actuating the laterally movable shaping head 37. In shaping pieces of different outlines and different lengths, cams 41 of different contours may be placed upon the shaft 42.

The work guiding means, as distinguished from the work propelling means, comprises the following; on the table 15 may be adjustably mounted a plurality of studs 113 carrying leaf springs 114. The studs 113 being vertically and rotatably adjustable in the table 15 and secured in any desired position by clamping screws 115. Such yielding guide means will be seen to be necessary when work of irregular outline is to be shaped and securely held in traveling contact with the vertical face 52 of the main frame. After the work-piece has passed the bottom jointing and top dressing cutters 24 and 29 and has been reduced to uniform depth and provided with smooth upper and lower surfaces, it may be further held to its path of movement by adjustable but rigid guides 116, 116, secured to the main frame and vertically movable by means of the adjusting screws 117.

The combined presser roll and chip-breaker for the shaping-cutter head is shown at 129 in Figs. 1 and 2, and in enlarged detail in Fig. 3. Said chip-breaker is pivoted as at 130 to a member 131 which is adjust-

ably secured to the table 6 by means of studs 132. The chip-breaker 129 is yieldingly held to its work by means of a spring 133 surrounding a rod 134 between the stationary lug 135 and the movable lug 136. In the rear of the shaping-cutter head 37 is a spring-pressed presser-roll 137 carried on a rod 138 which is longitudinally movable in a sleeve 139, said rod 138 being backed by the spring 140, said spring having tension adjusting means as at 141, 142. After the shaped piece has passed the presser roll 137, it is laterally held to its path, for the jointing action of the cutter 32, by the yielding guide 119, shown in Figs. 2 and 4. This guide has a series of yielding fingers 120, 120, pivoted as at 121 and held to their work by means of springs 122, located between the outer ends of the levers 120 and stationary lugs 123 on the body of the guide 119, as will be readily understood.

Operation: In shaping an irregular work-piece, such, for example, as a bolster stake, shown in outline in Fig. 3, the leaf springs 114 may be adjusted to yieldingly hold the work against the vertical face 52 of the table; the chip-breaker 129 and its associated pressing mechanism may be secured to the table 6 and the spring presser 119 adjusted upon the rear end of said table. The shaping-cutter controlling-cam is then adjusted and arranged in timed relation to the feed teeth 53 and the work-pieces placed in the path of travel of the teeth. Thereafter, the shaping action of the machine on such irregular work-piece is entirely automatic; it being only necessary for the operator to place the work-pieces each in advance of a driving tooth, whereupon the blank is fed through the machine, automatically planed on three sides, shaped on the fourth side and discharged.

What I claim is—

1. In a wood-working machine, in combination, a cutter, pattern mechanism for laterally-moving said cutter, a support adjustable with respect to said cutter, a chip-breaker movably connected to said support and coöperating with said cutter, and a presser-member yieldingly mounted in said support and adapted to contact with a blank after said blank has passed the cutter; said chip-breaker and presser-member each being capable of a wide range of movement with respect to said cutter and blank.

2. In a wood-working machine, in combination, a laterally-movable cutter, a support adjustable with respect to said cutter, a chip-breaker movably connected to said support and coöperating with said cutter, and a presser-member yieldingly mounted in said support and adapted to contact with a blank after said blank has passed the cutter.

3. In a wood-working machine, in combi-



nation, a laterally-movable shaping cutter, a normally-stationary support adjustable with respect to said cutter, a chip breaker pivoted to said support and capable of a  
 5 wide range of movement with and independently of said cutter, and a presser-member yieldingly mounted in said support behind said cutter and adapted to follow the contour of blanks of irregular outline.

10 4. In a wood-working machine, in combination, a laterally-movable cutter, pattern mechanism for moving said cutter to shape blanks of irregular outline, a chip-breaker support adjustable with relation to said cut-  
 15 ter, a chip-breaker pivoted to said support and coöperating with said cutter, and a presser-member yieldingly mounted in said support and adapted to contact with the blanks after they have passed the cutter with  
 20 a pressure which increases in proportion to the width of the blank-portion with which said presser-member contacts.

5 5. In a wood-working machine, a presser-bar comprising a transversely-adjustable  
 25 base having a plurality of lugs, a plurality of presser-fingers pivotally mounted on said base and having their free ends curved in the direction of travel of the blank operated upon, curved guides passing through the  
 30 opposite ends of said fingers, and yielding members interposed between the perforated ends of said fingers and the lugs, to permit a wide range of movement to said fingers.

6. In a wood-working machine, a presser-  
 bar comprising a base, means for trans- 35  
 versely adjusting said base, a plurality of presser-fingers pivotally mounted on said base and each having a straight lever-arm and a curved lever-arm, the latter adapted  
 40 to contact with an irregular blank, and means for yieldingly supporting the straight lever-arms, to hold the curved lever-arms in contact with the blank with a gradually de-  
 45 creasing leverage and increasing pressure proportionate to the increasing thickness of the blank-portion with which the curved arm contacts.

7. In a wood-working machine, in combi-  
 nation, cutters for surfacing three sides of a  
 blank, a movable cutter for shaping the 50  
 fourth side of said blank, pattern-mechanism for controlling said movable cutter, means for feeding the blank in timed rela-  
 55 tion with said cutter-controlling mechanism, and a presser-bar in rear of the movable cutter, said presser-bar having fingers which contact with the irregular side of the blank with a pressure which increases with the  
 60 width of that portion of the blank held by the respective fingers.

In testimony whereof I affix my signature, in presence of two witnesses.

CHARLES W. BORG.

Witnesses:

MARSHALL BECK,  
 AUGUST NELSON.