No. 829,463. PATENTED AUG. 28, 1906.

E. L. DUNBAR.

MACHINE FOR MAKING WOODEN SHANK STIFFENERS.

APPLICATION FILED OCT. 5, 1905.

3 SHEETS—SHEET 1.

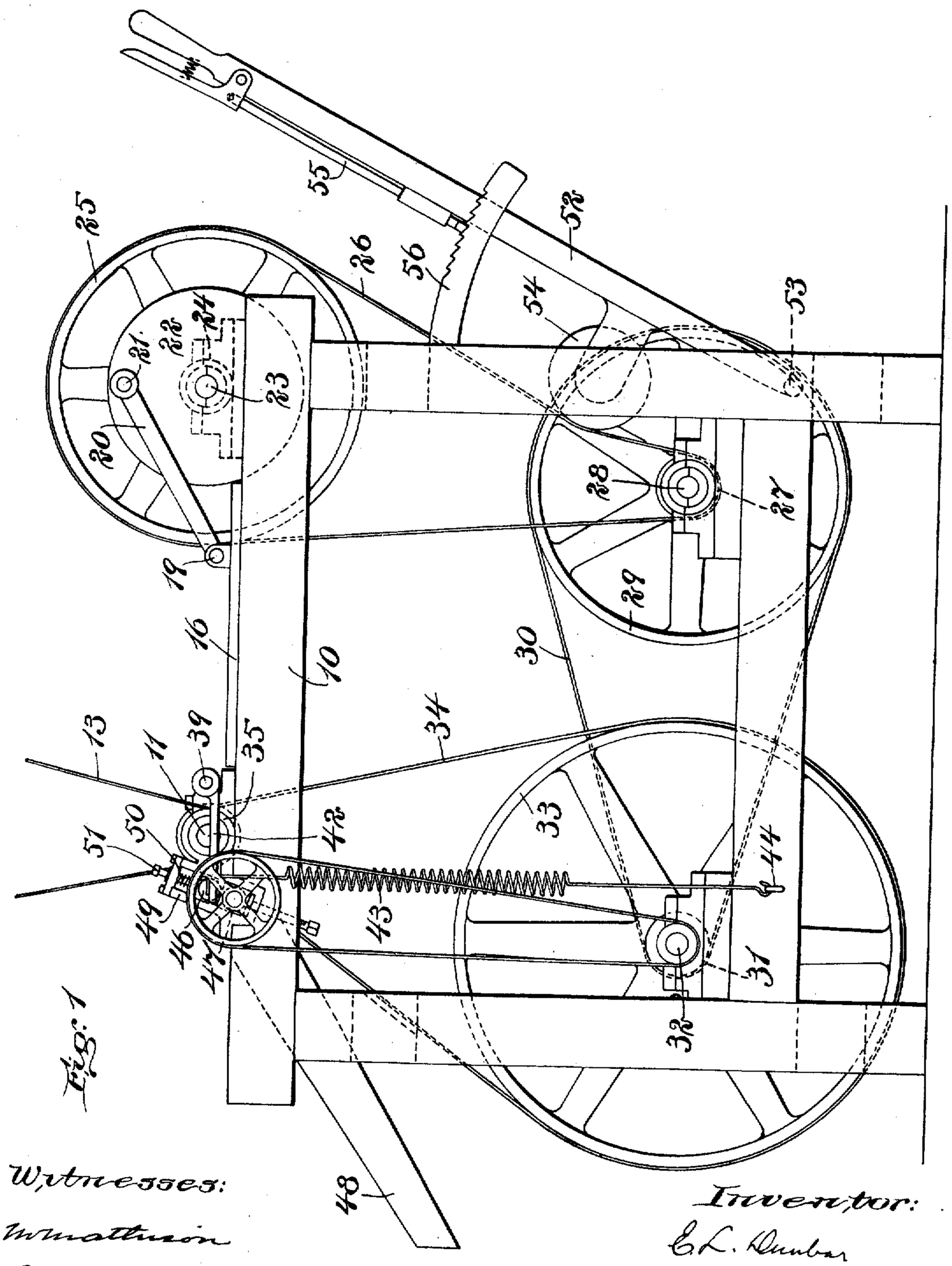

Fig. 1.

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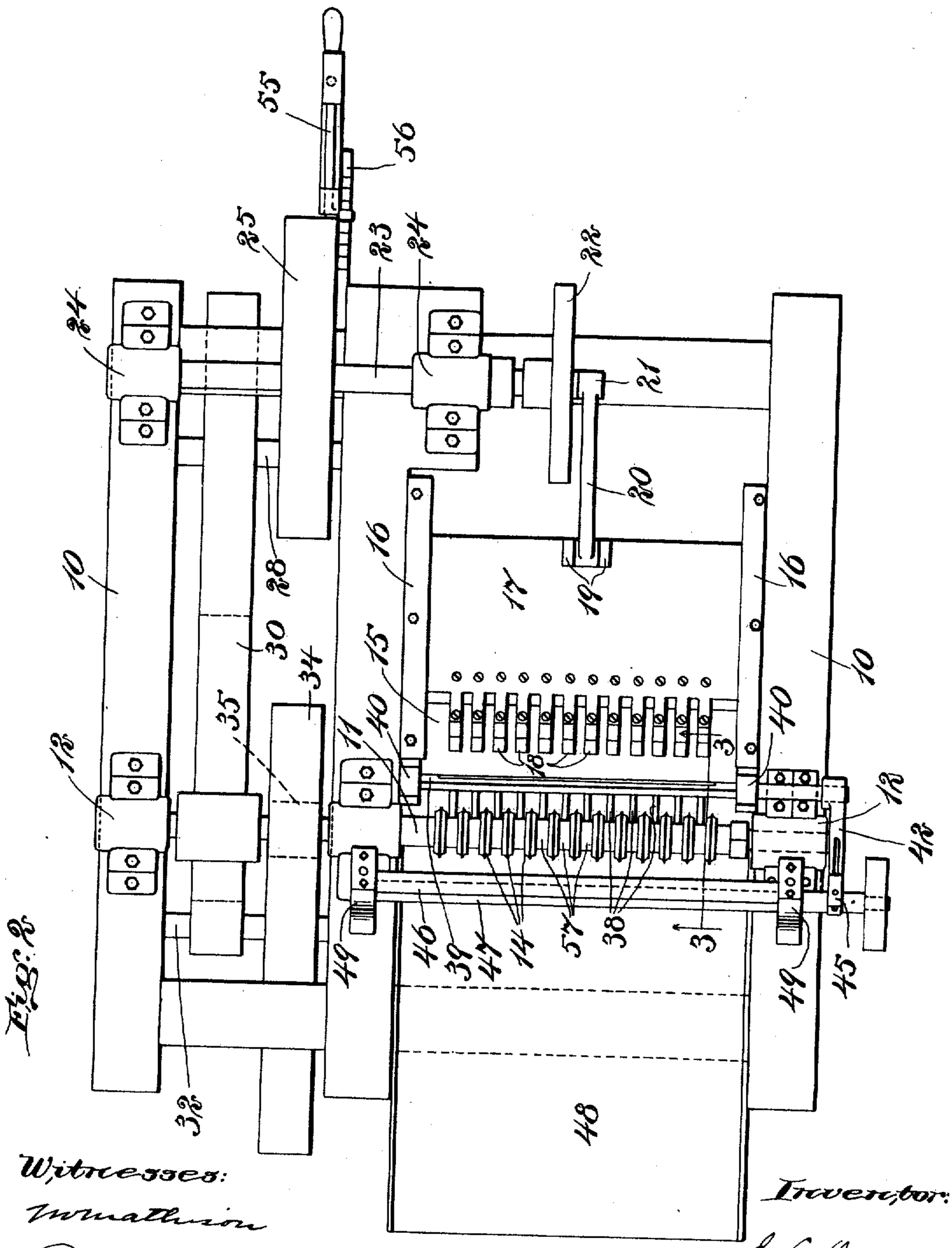

Fig. 2.

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3 SHEETS—SHEET 3.

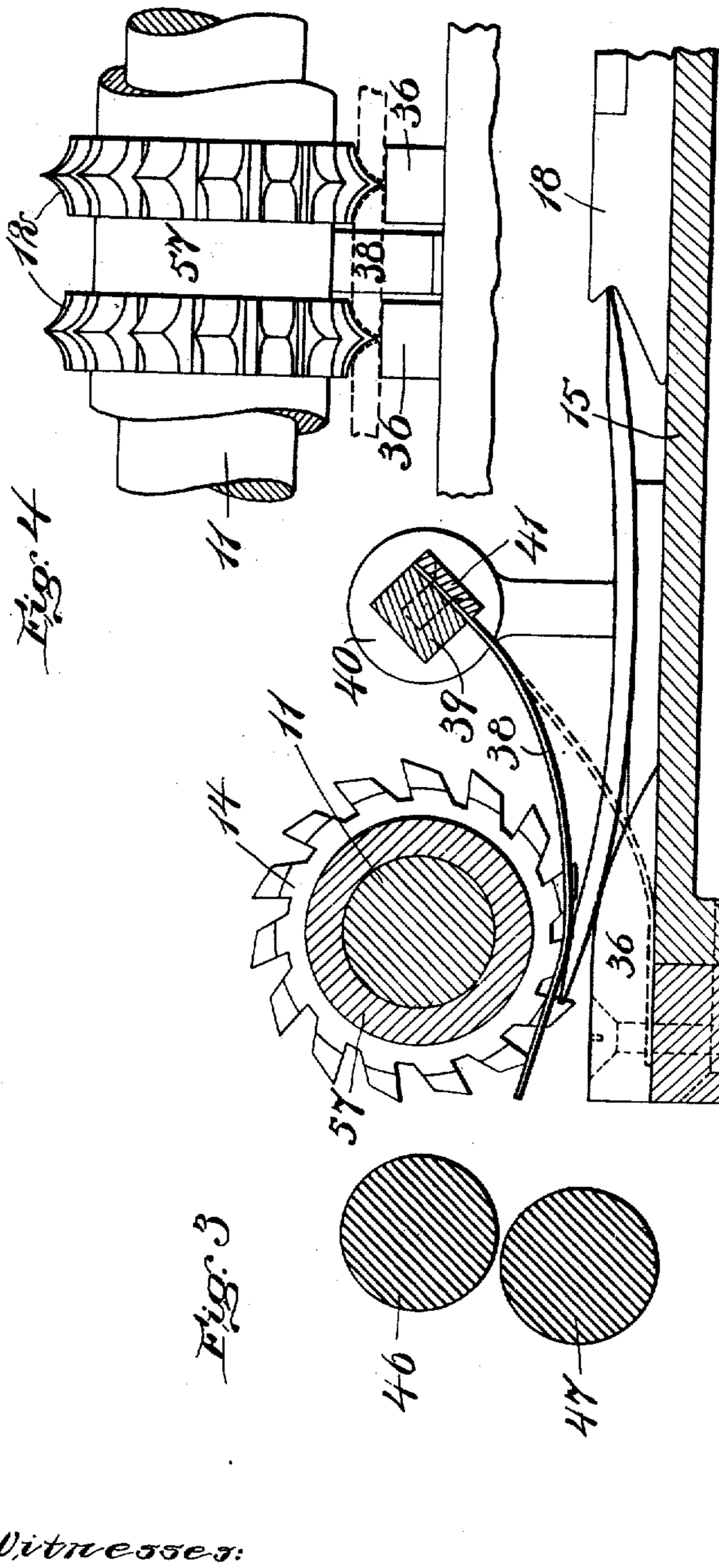

Fig. 4

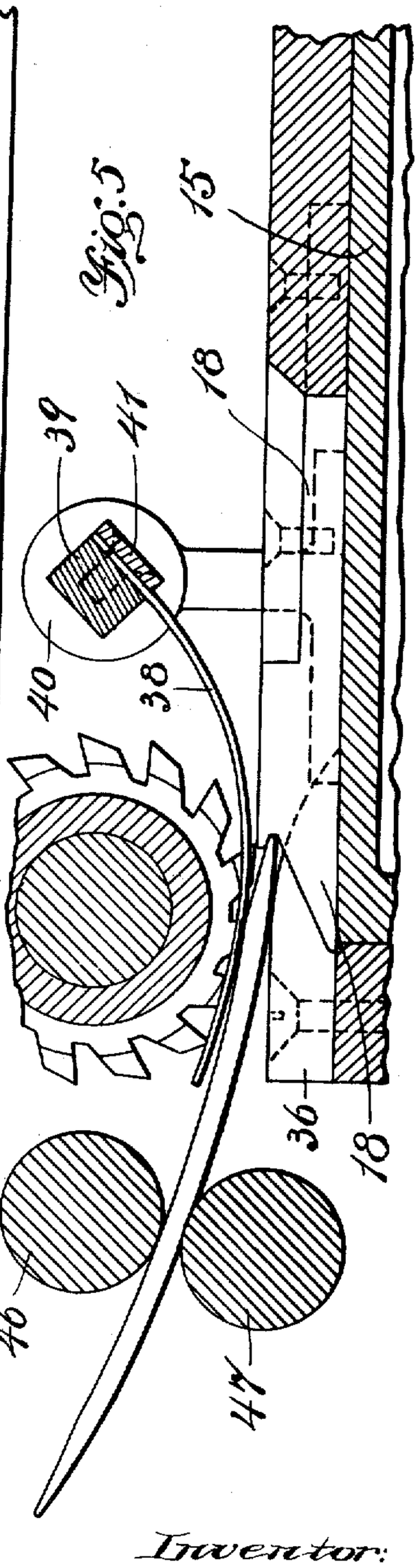

Fig. 5

Fig. 3

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UNITED STATES PATENT OFFICE.

EDSON L. DUNBAR, OF MILFORD, NEW HAMPSHIRE.

MACHINE FOR MAKING WOODEN SHANK-STIFFENERS.

No. 829,463. Specification of Letters Patent. Patented Aug. 28, 1906.

Application filed October 5, 1905. Serial No. 281,384.

To all whom it may concern:

Be it known that I, EDSON L. DUNBAR, of Milford, in the county of Hillsboro and State of New Hampshire, have invented certain new and useful Improvements in Machines for Making Wooden Shank-Stiffeners, of which the following is a specification.

This invention relates to woodworking machinery, and particularly to mechanism for cutting a sheet or veneer of stock into a plurality of pieces shaped to adapt them for use without further treatment as shoe-shank stiffeners.

One of the objects of the invention is to provide a machine of this character having a plurality of cutters on one shaft or arbor, said cutters being adapted to divide a sheet of stock or veneer into a number of strips which are so shaped as to form finished stiffeners.

Further objects of the invention are to improve machines of this character so as to secure the utmost rapidity of operation and simplicity of construction and to produce a machine which will result in a minimum of waste of stock.

To these ends the invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

Of the accompanying drawings, Figure 1 is a side elevation of a machine embodying my improvements. Fig. 2 is a plan view of the same. Fig. 3 is a detail section, enlarged, on line 3 3 of Fig. 2. Fig. 4 is a detail elevation looking from the left of Fig. 3 omitting the delivering-rollers. Fig. 5 is a view similar to Fig. 3, showing the parts in different positions.

Similar reference characters indicate similar parts in all the figures.

A suitable frame, preferably of such wood as oak, is indicated at 10. The cutter-shaft 11 is mounted in bearings 12, which bearings are supported by the frame. The shaft 11 is driven by a belt 13 from any suitable source of power.

The cutters 14, mounted upon the shaft 11, are of a form substantially as illustrated in Figs. 3 and 4, the blades of the cutters being centrally raised and pointed, so that when a piece of stock is fed so as to be acted on by said cutters the sides of each section of stock that passes between two of the cutters will have its sides rounded or beveled, the apexes of the cutting-blades cutting or severing the sheet or stock of veneer into separate strips.

A table 15 for the stock or veneer is suitably secured to the frame 10. In a plane slightly above the surface of the table guides or ways 16 are secured to the frame 10, a plate 17 being mounted to reciprocate between or on said guides or ways and formed with fingers 18 to engage the rear edge of the piece of veneer. Said plate and fingers form the feed device for advancing the veneer under the cutters. The plate 17 is formed with ears 19, to which a crank-arm 20 is pivoted, the other end of said arm being connected with the crank 21 of a disk 22, said disk being carried by the feed-shaft 23, the latter being mounted in suitable bearings 24 on the frame 10. The feed-shaft is provided with a belt-wheel 25, which is driven by a belt 26, said belt passing around a pulley 27 on a counter-shaft 28, which is mounted in suitable bearings in the lower portion of the frame of the machine. The shaft 28 is provided with a belt-wheel 29, which is connected by a belt 30 with a pulley 31 on a second counter-shaft 32, which is also mounted in suitable bearings carried by the lower part of the frame 10. The shaft 32 is provided with a belt-wheel 33, which is connected by a belt 34 with a pulley 35 on the cutter-shaft 11. Therefore when the cutter-shaft is operated by power through the belt 13 power is communicated from the said cutter-shaft through the belts 34, 30, and 26 and the respective pulleys and belt-wheels mentioned so as to rotate the shaft 23 at a greatly-reduced speed relatively to the speed of the cutter-shaft 11, so as to reciprocate the feed-plate and its fingers 18 slowly. In practice the usual rate of reciprocation of the feed-plate and fingers is about thirty a minute, giving time for the attendant to place a sheet of veneer in position while the slide is in its retracted position.

As is well known, wooden shank-stiffeners for shoes are curved from end to end to fit the curvature of the shank of a shoe. In practice the stock is cut by a suitable ma-

chine or mechanism (not shown) to the required thickness and having its edges beveled, the piece of stock itself being curved transversely, so that the stiffeners themselves will be curved longitudinally. Such a piece of stock is cut to a length which may be about twelve inches, and then the said piece is placed on the table 15 with one tapered edge resting in the notches 37 of the fingers 18 and with the other edge extending under the springs 38, which will be presently described, and then the advance of the fingers pushes the piece of stock edgewise under the cutters, so that the cutters will sever the piece into strips, each of which is curved and has rounded or beveled sides, as will be clearly understood by the dotted lines in Figs. 3, 4, and 5, said dotted lines representing the material being treated by the machine.

In order that the curved stock may be properly presented to the cutters, a number of supports 36 are secured to the frame of the machine, one of such supports being located under each cutter. The rear ends of these supports are curved or inclined, so as to enable the material to readily ride over them when advanced by the feed-fingers. It will be noticed in Fig. 3 that the notches 37 in the ends of the fingers 18 are somewhat elevated above the level of the table 15. This position of the notches is so as to enable them to properly engage the thin edge of the piece of veneer while the central or thicker portion is upon the table 15.

In order to properly hold the material, even when it has been pushed under the cutters far enough to sever it into separate shanks, I provide pressure-springs 38, which operate upon the stock between the supports 36. Said springs yield to the advancing movement of the stock, and since they may be raised to a position close to the hubs of the cutters they will permit the front ends of the fingers to push them up, so that said fingers may advance to a point under or even a little beyond the cutters, so as to clear the material from the latter.

In order that the pressure of the springs 38 may be adjusted, I connect them to a bar 39, which is mounted in bearings 40, said bar having a clamping-strip 41 for securely holding the springs to the bar. The bar 39 is formed with an arm 42 at one end, which is connected, by means of a spring 43, with a suitable fixed part of the frame of the machine, such as indicated at 44 in Fig. 1. In order that the amount of pressure imparted by the spring 43 may be varied, the upper end of said spring passes through a slot in the arm 42 (see Fig. 2) and is connected to a clip 45, which is adjustable along the arm 42. By varying the distance of the connection of spring 43 with the arm 42 toward or from the axis of movement of the bar 39 I can obtain any desired tension within practical limits of the pressure-springs 38 upon the material.

The veneer stock frequently is warped, due to the drying thereof or other causes, and any considerable amount of variation of the sheet or strip from accuracy would be liable to result in the cutters throwing some of the shanks backward, if no mechanism were employed for actually withdrawing or delivering the shanks from the machine. To receive said shanks and deliver them to a suitable chute 48, I employ upper and lower rollers 46 and 47, respectively. The ends or shafts of said rollers are mounted in suitable bearing-boxes, which in turn are carried by brackets 49, supported by the frame of the machine. Springs 50 and adjusting-screws 51 of a form commonly employed for obtaining yielding pressure of one roller against another bear upon the boxes of the upper roller.

In order to control the operation of the feed-slide so as to either start or stop it without stopping the operation of the cutters, I employ a controlling-lever 52, pivoted at 53 to the frame of the machine and having a roller 54, adapted to bear against the belt 26, which belt will be in practice sufficiently loose so that power will not be communicated from shaft 28 to shaft 23 when the roller 54 is withdrawn. To hold said roller with sufficient pressure against the belt 26 to cause the shaft 23 to be driven, I employ a latch 55, which is adapted to coöperate with a ratchet-segment 56, secured to the frame of the machine. The lever 52 and latch 55 are of a type commonly employed in machinery of various kinds and require no further description than to state that the operator may grasp the handle end of the lever and the handle-piece of the latch with one hand, so as to release the latch from the segment and enable the lever to be moved outward, so as to release the roller 54 from the belt 26. A simple push upon the lever 52 toward the machine will cause the roller 54 to sufficiently tighten the belt, the latch automatically engaging the desired tooth of the ratchet 56.

In operation the attendant simply places a sheet of the veneer stock on the table 15 in front of the feed-fingers 18 when the latter are retracted. The advancing movement of said fingers 18 push the sheet forward under the springs 38, the latter yielding, and the said sheet is guided by the supports 36, so that the cutters will sever the sheet into strips having a shape in cross-section similar to that indicated by dotted lines in Fig. 4. Continued movement of the fingers in the advancing movement pushes the thin ends of the shanks between the rollers 46 and 47, the upper roller 46 yielding sufficiently so as to per-

mit said shanks to pass between them. The power that is applied to the shaft of the lower roll 47 is sufficient to positively draw the shanks from the machine after the fingers 18 have ceased to advance and deliver the shanks to the chute 48.

In order to vary the width of the product of the machine, the cutters are mounted upon the shaft so as to be adjustable lengthwise thereof to vary the distance apart of said cutters. To properly space the cutters on the shaft, I employ washers 57, which with the cutters may be removed from the shaft 11. By substituting washers 57 of a different width for those illustrated the cutters may be set closer together or farther apart, and consequently the width of the shanks produced by the machine will be varied in a manner that will be readily understood without further description. It will be understood that the entire operation of the machine after the piece of properly-shaped veneer has been introduced in front of the fingers 18 is entirely automatic, and any desired width of shank may be obtained, and the beveling of the edges of the same may be varied by using cutters of different shapes. There will be as many shanks produced at one advance of a piece of stock as there are cutters upon the shaft, less one. In practice the cutters are of such number and are so spaced that the extreme end cutters will simply shape the edges of the sheet of stock. Therefore there will be no waste of stock further than what is due to the beveling of the sides of the shanks.

Having now described my invention, I claim—

1. A machine for dividing a curved sheet of stock into a plurality of strips, comprising a table for the stock, a shaft carrying a plurality of spaced cutters, and supports for the stock located under the cutters and having their upper surfaces above the plane of the table to raise the stock from the table to the cutters as the stock is advanced under the cutters.

2. A machine for dividing a curved sheet of stock into a plurality of strips, comprising a table for the stock, a shaft carrying a plurality of spaced cutters, said cutters being adjustable on the shaft and formed to sever the sheet into strips and bevel the sides of the strips, and supports for the stock located under the cutters and having their upper surfaces above the plane of the table to raise the stock from the table to the cutters as the stock is advanced under the cutters.

3. A machine for dividing a curved sheet of stock into a plurality of strips, comprising a table for the stock, a shaft carrying a plurality of spaced cutters, said cutters being formed to sever the sheet into strips and bevel the sides of said strips, spacing devices being introduced between said cutters, and the said spacing devices and cutters being removably mounted on the shaft, and supports for the stock located under the cutters and having their upper surfaces above the plane of the table to raise the stock from the table to the cutters as the stock is advanced under the cutters.

4. A machine for dividing a curved sheet of stock into a plurality of strips, comprising a table for the stock, a shaft carrying a plurality of spaced cutters, notched feed-fingers, and means for moving said fingers under the cutters, supports for the stock located under the cutter and having their upper surfaces above the plane of the table to raise the stock from the table to the cutters as the stock is advanced under the cutters.

5. A machine of the character described, comprising a shaft having a plurality of cutters, feed-fingers for advancing the material, and supports for raising the material from the bed as it advances under the cutters.

6. A machine of the character described, comprising a shaft having a plurality of cutters, feed-fingers for advancing the material, and supports for raising the material from the bed as it advances under the cutters, said supports having inclined surfaces to guide the material.

7. A machine of the character described, comprising a shaft having a plurality of cutters formed to sever a curved sheet of material into strips and to bevel the sides of said strips, means for advancing the sheet to position to be operated upon by said cutters, means for gradually elevating the sheet under the cutters as it advances, and pressure-springs extending under the cutters to bear upon the strips as they are severed by the cutters.

8. A machine of the character described, comprising a shaft having a plurality of cutters formed to sever a curved sheet of material into strips and to bevel the sides of said strips, means for advancing the sheet to position to be operated upon by said cutters, means for gradually elevating the sheet under the cutters as it advances, and pressure-springs extending under the cutters to bear upon the strips as they are severed by the cutters, means being provided for adjusting the pressure of said springs.

9. A machine of the character described, comprising a shaft having a plurality of cutters formed to sever a curved sheet of material into strips and to bevel the sides of said strips, means for advancing the sheet to be operated upon by the cutters, means for gradually elevating the sheet under the cutters as it advances, rollers between which the strips pass after they are shaped, and means for ac-

tuating said rollers to positively withdraw the strips.

10. A machine of the character described, comprising a shaft having a plurality of cutters formed to sever a curved sheet of material into strips and to bevel the sides of the strips, means for feeding the sheet to position to be acted upon by said cutters, means for gradually elevating the sheet under the cutters as it advances, and means for controlling the operation of the feed without varying the operation of the cutters.

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

EDSON L. DUNBAR.

Witnesses:

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MARTHA L. OSGOOD.