No. 816,030. PATENTED MAR. 27, 1906.

J. H. NEVILLE.

MACHINE FOR SHAPING WOOD ARTICLES.

APPLICATION FILED MAR. 10, 1904.

2 SHEETS—SHEET 1.

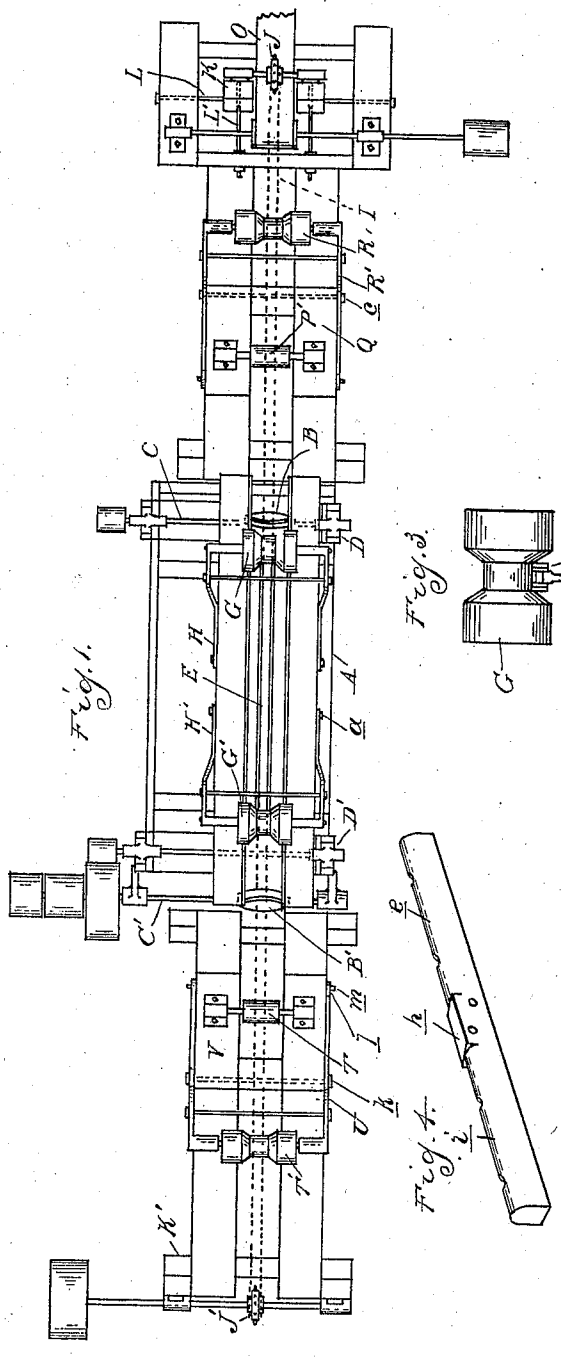


Fig. 1.

Fig. 3.

Fig. 4.

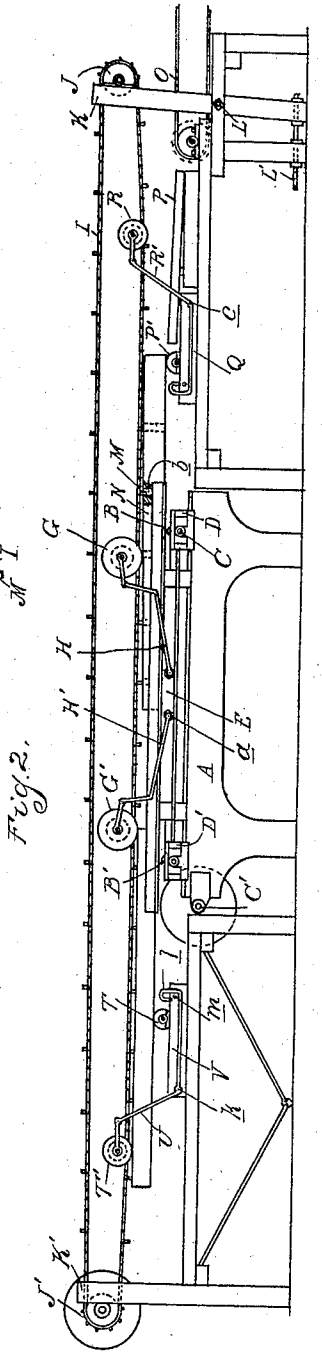


Fig. 2.

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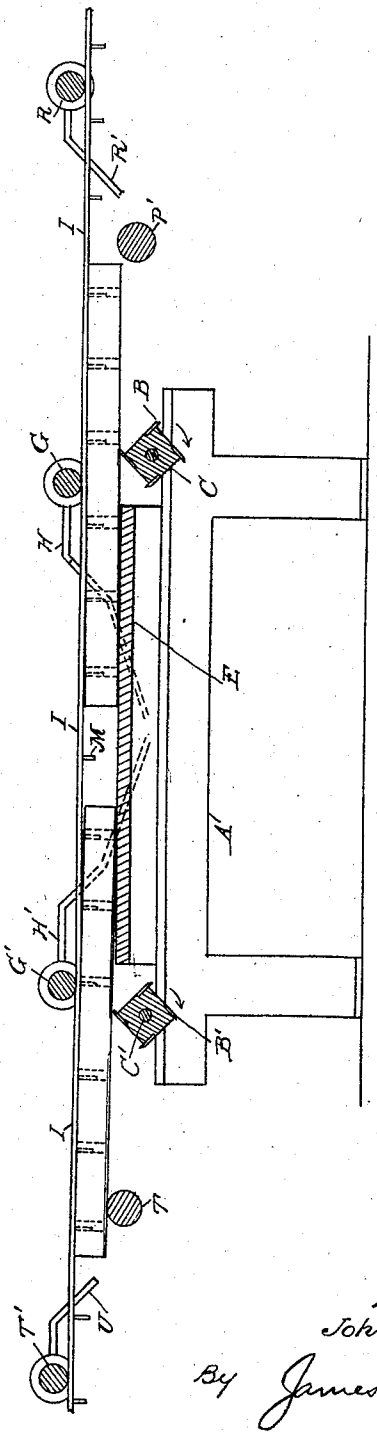


Fig. 5.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR SHAPING WOOD ARTICLES.

No. 816,030. Specification of Letters Patent. Patented March 27, 1906.

Application filed March 10, 1904. Serial No. 197,541.

To all whom it may concern:

Be it known that I, JOHN H. NEVILLE, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Machines for Shaping Wood Articles, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates generally to machines for shaping bars of wood, and more particularly to a machine especially designed for shaping cross-arms for telegraph-poles. These cross-arms are formed from wooden bars substantially rectangular in cross-section, and the object of the shaping is to give sufficient curvature to the upper face of the bar to cause it to readily shed water. As a telegraph-pole is gained to receive the cross-arm it is desirable to leave a portion of the cross-arm rectangular in cross-section, and my machine is designed to shape the end portions of the arm and leave this square portion unshaped and also to provide means for shaping arms of different lengths and sizes.

The invention consists in a machine having cutters to do the shaping, a feed device and guides for causing the feeding device to move a bar or blank into and out of operative relation to the cutters, so as to perform the necessary work.

The invention further consists in the construction, arrangement, and combination of the parts, as more fully hereinafter described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a plan of my improved machine. Fig. 2 is a side elevation thereof. Fig. 3 is an elevation of one of the guide-rollers, showing the feed-chain in the groove thereof. Fig. 4 is a perspective view of the finished cross-arm which my machine produces. Fig. 5 is a longitudinal central sectional view.

A is the frame of the machine, in which are the cutters B and B′, supported on suitable drive-shafts C and C′, driven from any suitable source of power, which I do not deem it necessary to describe.

D and D′ are adjustable blocks in which the cutter-shafts are journaled, so that the cutters may be adjusted nearer together or farther apart for different sizes of work. Between the cutters is a guide-bed E, upon which the work rests during the cutting operation.

G and G′ are two guide-rollers supported on the arms H and H′, respectively, which arms, as shown in the plan, Fig. 1, are of substantially U-shaped form and are pivoted upon suitable pivot-plates *a* at the side of the frame. These guide-rollers are grooved, as shown in Fig. 3, and in the groove of these rollers runs the feed belt or chain I, which I have shown as a sprocket-chain running over the sprocket-wheels J and J′ at the opposite ends of the machine. The sprocket-wheels J and J′ are supported between pairs of posts K and K′, the posts K being pivotally supported on the pivot-pin L and adapted to be adjusted by means of the adjusting-bolt L′ at the lower end, so as to tighten or loosen the chain, as desired. On the chain at suitable intervals are the depending hooks or lugs M, which are adapted to engage with the ends of the blanks or bars N or to engage in the apertures *b* therein, which I preferably bore in the bar before shaping or planing of the bar is effected.

O is a feed-belt which carries the blank or bar from the boring-machine and delivers it on the inclined guide P. Near the end of this guide is the stationary guide-roller P′, journaled in the adjustable block Q. The guide-roller P′ is below the conveyer-chain, and as the blank is fed by the belt O up onto the guide-roller P′ one of the hooks or lugs M on the feed-chain will engage in one of the apertures *b* in the blank and continue its motion through the planing-machine. The blank in being fed forward from this point will incline upwardly from its rear end to its forward end, because of its bearing upon the roller P′ until it passes the middle point, when its weight will tend to tilt it to incline in the opposite direction. This reverse tilting of the blank is prevented after a portion of the travel by the guide-roller R, journaled in the end of the frame R′, which in turn is pivoted at *c* on the block Q. This guide-roller R, combined with the guide-roller P′, maintains the forward end of the blank above the cutter B until the blank has been fed forward sufficiently far so that its forward end will strike the bed E and then resting on that bed and on the roller P′ it will still be free from the cutter B. As soon as the blank strikes the roller G that roller will be slightly lifted, which is permitted by the hinge-frame H, which supports the roller. The continued movement of the blank will finally move the

rear end off the roller P′, when the blank will drop by its own weight and be held down by the weight of the roller G in contact with the cutter B on the rear portion, (lettered *e* in Fig. 4,) which will be rounded off. It will be understood that the blank is fed forward more than half its length and beyond the center or square portion *h* of the blank before it is allowed to lower and come in contact with the cutter B. The blank will then be fed forward on the bed E, and its forward end will come in contact with the cutter B′, being held in contact therewith by the roller G′, and this cutter will operate on the forward end of the blank until the forward end thereof strikes the guide-roller T, when the blank will be lifted up so that its forward end rests on the roller T and its rear end on the table E, and it will be clear of the cutter B′. This lifting takes place when the portion lettered *i* of the blank has been planed.

It is necessary that the rear end of the blank should be free from the cutter B′ as it passes thereover, and this I accomplish by means of the guide-roller T′, journaled in the open frame U, which is pivoted at *k* on the adjustable block V and in which is journaled the roller T. Before the rear end of the blank or bar reaches a point where it will contact with the cutter B′ its forward end contacts the roller T′, and it is delivered into a horizontal position, as shown at the left hand of Fig. 2. This is permitted by the slight raising of the roller G′ as soon as the forward end of the blank strikes the roller T′. The blank is then fed out of the machine shaped as shown in Fig. 4.

I preferably provide the frames R′ and U with the hooks *l*, which are adapted to strike the pins *m* on the blocks Q and V, respectively, so as to prevent any undue jumping or movement of the rollers R and T′ caused by the blow of the blank thereon.

The blocks Q and V are adjustable to and from the cutters, and in adjusting the blocks the frames R′ and U, with their respective rollers, are likewise adjusted, so that the device may be adapted for blanks of different lengths.

In case any of the grab-hooks on the chain should rest over an imperforate portion of the blank it will not interfere with the operation of the device, as the guide-rollers G and G′ will simply rise at that point; but their weight will still be imparted to the blank at that point and hold it in contact with the cutters.

The machine described produces the work in a satisfactory and efficient manner, is very cheap in construction, and the adjustments are quickly and easily made for different lengths or sizes of cross-arms. Inasmuch as the guide-rollers R, G, G′, and T′ are all supported on hinged arms, blanks of different heights or thicknesses are readily passed through the machine without any adjustment, this difference in height being taken care of automatically by the hinged frames which support the rollers.

What I claim as my invention is—

1. In a machine for shaping cross-arms, the combination of a stationary cutter, a guide-roll upon which the work travels arranged in advance of the cutter, leaving an unobstructed space between the cutter and roll, a feed device for the cross-arm, and an auxiliary guide-roll arranged in advance of said first-mentioned roll and engaging the upper surface of the cross-arm, the two rolls coöperating together to maintain the cross-arm out of contact with the cutter for a portion of its length, the rolls allowing said cross-arm to automatically drop by reason of said unobstructed space between the cutter and roll into engagement with said cutter when released by the rolls, and means for maintaining the cross-arm in contact with said cutter for the remaining portion of its length.

2. In a machine for shaping cross-arms, the combination of a stationary cutter, a guide-roll upon which the work travels arranged in advance of the cutter, leaving an unobstructed space between the cutter and roll, a feed device for the cross-arm, and an automatically-adjustable auxiliary guide-roll arranged in advance of said first-mentioned roll and engaging the upper surface of the cross-arm, the two rolls coöperating together to maintain the cross-arm out of contact with the cutter for a portion of its length, the said cross-arm being adapted to automatically drop by reason of said unobstructed space between the cutter and roll into engagement with said cutter when released by said rolls, and automatically-adjustable pressure-exerting means for maintaining the arm in contact with said cutter for the remaining portion of its length.

3. In a machine for shaping wood, the combination of a pair of separated cutters, a feed device for the blank, and guides for guiding the blank over the first cutter for a portion of its length, then into operative relation to the cutter, and then raising the blank over the second cutter and feeding it away therefrom.

4. In a machine for shaping wood, spaced stationary cutters, a feed device for the blank, guide-rollers upon which the work travels arranged in advance of the foremost cutter and to the rear of the coöperating cutter, a stationary bearing for the blank arranged intermediate the cutters and thereabove, and oppositely-disposed hinged roller-guides engaging the upper surface of the blank adjacent opposite ends thereof to press the respective ends into contact with the respective cutters, the first-mentioned guide-rollers operating respectively to raise the work out of contact with said cutters

whereby a portion of the work is not operated upon by said cutters.

5. In a machine for shaping wood, the combination of a cutter, means for guiding a portion of the work over the cutter and out of contact therewith, including a stationary guide-roller below the work in advance of the cutter and an adjustable grooved guide-roller arranged in advance of the stationary roller and above the same, the respective rollers engaging opposite surfaces of the work and coöperating together to incline the forward portion of the blank upwardly, and a continuous feed for positively moving the work between said roller and past said cutter, including a belt moving above the stationary roller and in the groove of the coöperating roller.

6. In a machine for shaping cross-arms, the combination of a stationary cutter, a guide-roll upon which the work travels arranged in advance of the cutter, leaving an unobstructed space between the cutter and roll, a feed device for the cross-arm, and an auxiliary guide-roll arranged in advance of said first-mentioned roll and engaging the upper surface of the cross-arm, the two rolls coöperating together to maintain the cross-arm out of contact with the cutter for a portion of its length, and allowing the said cross-arm to automatically drop by reason of said unobstructed space between the cutter and roll into engagement with said cutter when released by said rolls, means for maintaining the arm in contact with said cutter for the remaining portion of its length, and a longitudinally-adjustable support for the knife, whereby the length of the cut of the cross-arm may be varied.

7. The combination of a pair of cutters for cross-arms, a feed device for the cross-arms, and separated guides upon the opposite sides of the respective cutters arranged to bring the respective ends of the work into operative relation with the cutters and to lift the work out of operative relation with the cutters.

8. The combination of a cutter, a feed device thereabove for the blank, means for guiding the forward portion of the blank above the cutter, including a roller arranged forwardly of and below the cutter, a hinged roller arranged forwardly of the cutter and above the blank, and a supplemental hinged roller arranged above the cutter, and spaced from said last-mentioned roller, said guide permitting the rear portion of the blank to engage the cutter.

9. In a machine of the character described, the combination of the cutter, the feed device thereabove, for the blank, of the adjustable block Q, below said feed device, the roller P′ thereon, the frame R′ hinged to the block, and the roller R journaled therein, the two rollers constituting guides for the upper and lower surfaces of the blank.

10. In a machine for shaping wood, the combination of a cutter, means for guiding a portion of the work over the cutter and out of contact therewith, including a stationary guide-roller below the work in advance of the cutter and a grooved guide-roller arranged in advance of the stationary roller and above the same, a hinged support for the grooved guide-roller, the respective rollers engaging opposite surfaces of the work and coöperating together to incline the forward portion of the blank upwardly, and a feed-belt moving above the stationary roller and in the groove of the coöperating roller.

11. In a machine for shaping wood, the combination of a cutter, means for guiding a portion of the work over the cutter and out of contact therewith, including a stationary guide-roller below the work in advance of the cutter and a grooved guide-roller arranged in advance of the stationary roller and above the same, a hinged support for the grooved guide-roller, the respective rollers engaging opposite surfaces of the work and coöperating together to incline the forward portion of the blank upwardly, and a continuous feed for positively moving the work between said rollers and past said cutter, including a belt moving above the stationary roller and in the groove of the coöperating roller, and a series of depending grab-hooks thereon.

12. In a machine for shaping wood, the combination of a pair of separated cutters, a feed device for the blank, and guides engaging opposite surfaces of the blank for guiding the ends only of the blank into operative relation to the respective cutters, and for spacing the intermediate portion therefrom, whereby the same is not operated upon.

13. In a machine for shaping wood, the combination of a pair of separated cutters, a feed device for the blank, means for guiding the blank over the first cutter for a portion of its length, including a stationary roller arranged in advance of the cutter and below the same and a coöperating relatively movable roller arranged in advance of said first-mentioned roller and above the blank, the respective rollers engaging opposite surfaces of the blank, and means whereby the blank will then move into operative relation to the cutters and subsequently be raised over the second cutter and fed away therefrom.

14. The combination of a cutter for cross-arms, a device for feeding the cross-arm above said cutter, means whereby the arm may automatically tilt to bring one end only of said arm into operative engagement with the cutter, and means for retaining said end in contact with the cutter, including a hinged guide-roller exerting downward pressure thereon.

15. The combination of a pair of cutters, means for feeding a blank thereabove and past the same, guide-rollers permitting the blank to tilt alternately in opposite directions

to bring the respective ends into engagement with the cutters, and for spacing the blank from said cutters whereby its intermediate portion is not operated upon.

16. The combination of a pair of cutters, means for feeding a blank past the same, means permitting the blank to tilt and bring the respective ends into engagement with the cutters, and rollers for engaging respectively the upper and lower surface of the blank for spacing the blank from said cutters to prevent the intermediate portion thereof from being operated upon by said cutters.

17. In a machine for shaping wood, the combination of a pair of stationarily-journaled cutters, mechanism for feeding the work past the same, and roller-guides engaging opposite surfaces of the work and positioned to bring the end portions thereof into operative relation to the cutters, and to space the work from both cutters, thereby leaving an intermediate uncut portion.

18. In a machine for shaping wood, the combination of cutting instrumentalities, a feed device for the blank, and means for guiding the blank over said cutting instrumentalities and for then moving the opposite ends into contact therewith, leaving an intermediate uncut portion, said means including stationary guides arranged below the cutters and movable guides arranged thereabove.

19. In a machine for shaping cross-beams, the combination of a cutter, a bearing for the blank, the space between the cutter and bearing being unobstructed, means for feeding the blank above the cutter and allowing the end portion thereof to automatically drop into said unobstructed space whereby a portion of the blank will be operated upon by said cutter, and a hinged roller exerting downward pressure on the blank when in contact with said cutter.

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

JOHN H. NEVILLE.

Witnesses:

J. C. NEVILLE,

A. F. CROSBY.