

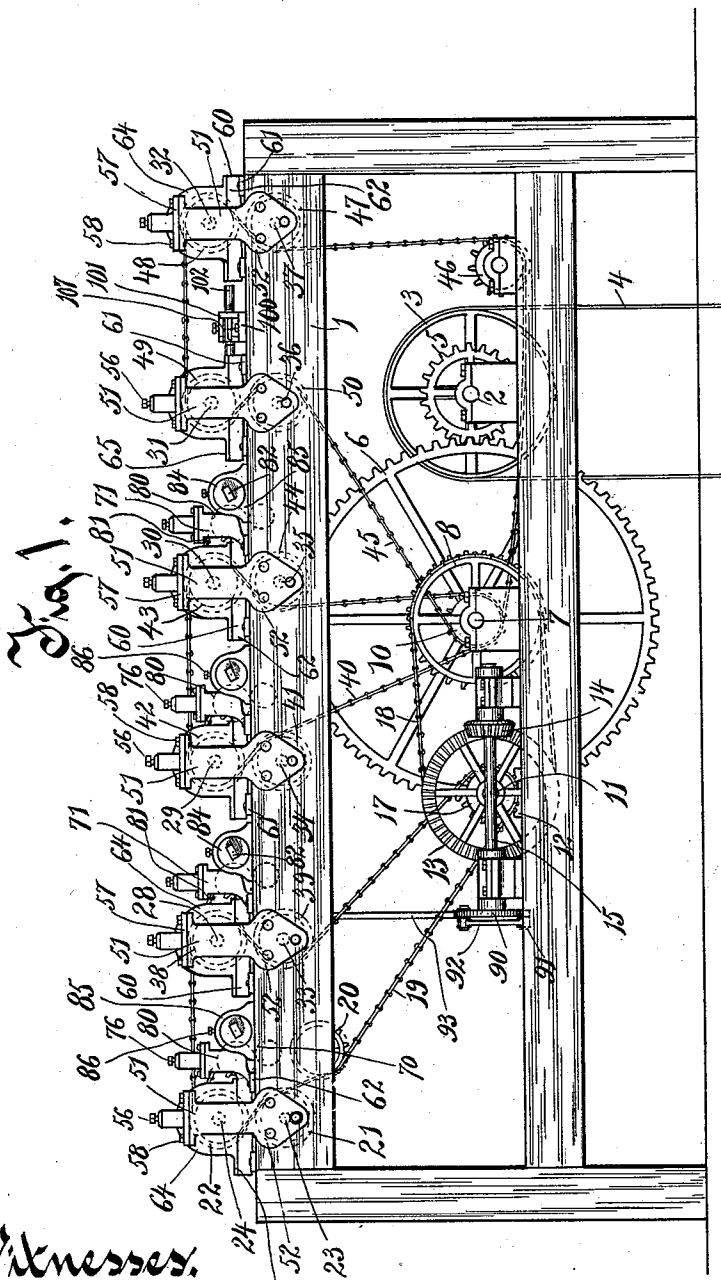
(No Model.)

7 Sheets—Sheet 1.

D. MURRAY & A. ROBBINS.
HOOP DRESSING MACHINE.

No. 507,920.

Patented Oct. 31, 1893.



Witnesses.

A. Keeney,

Anna V. Faust.

Inventors.

David Murray and
Addison Robbins,
By
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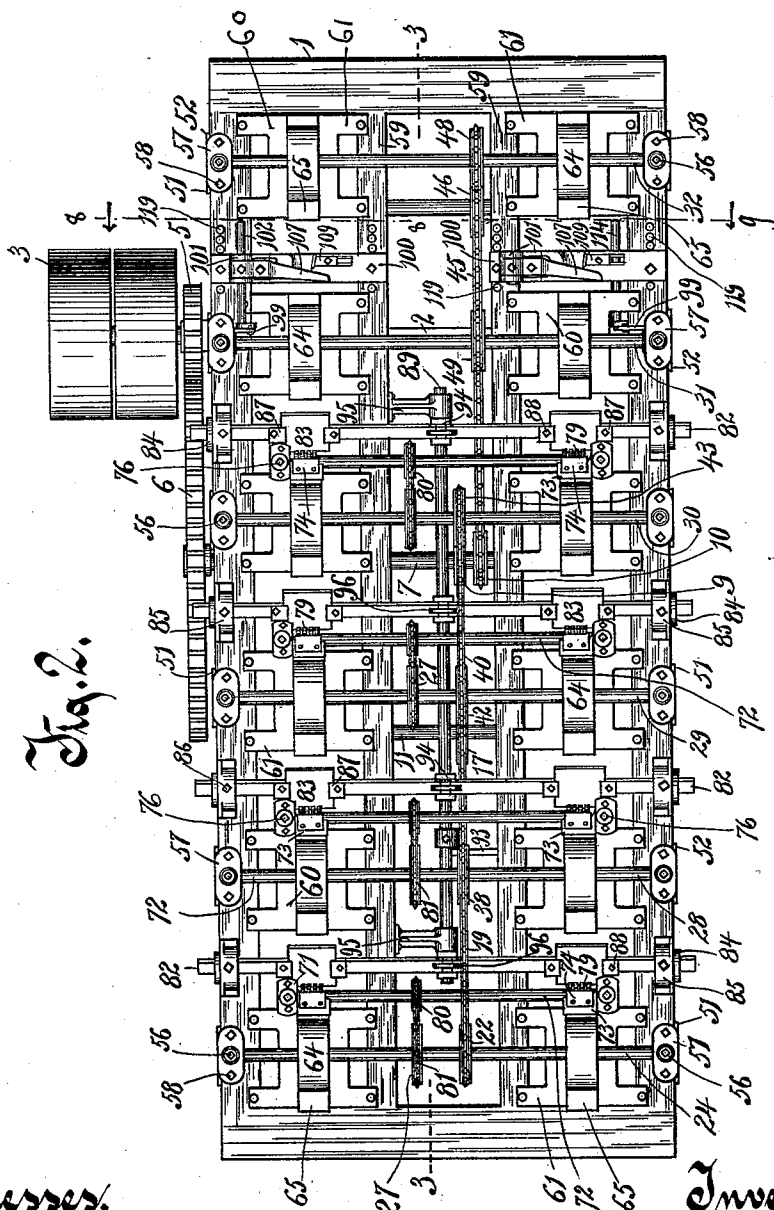
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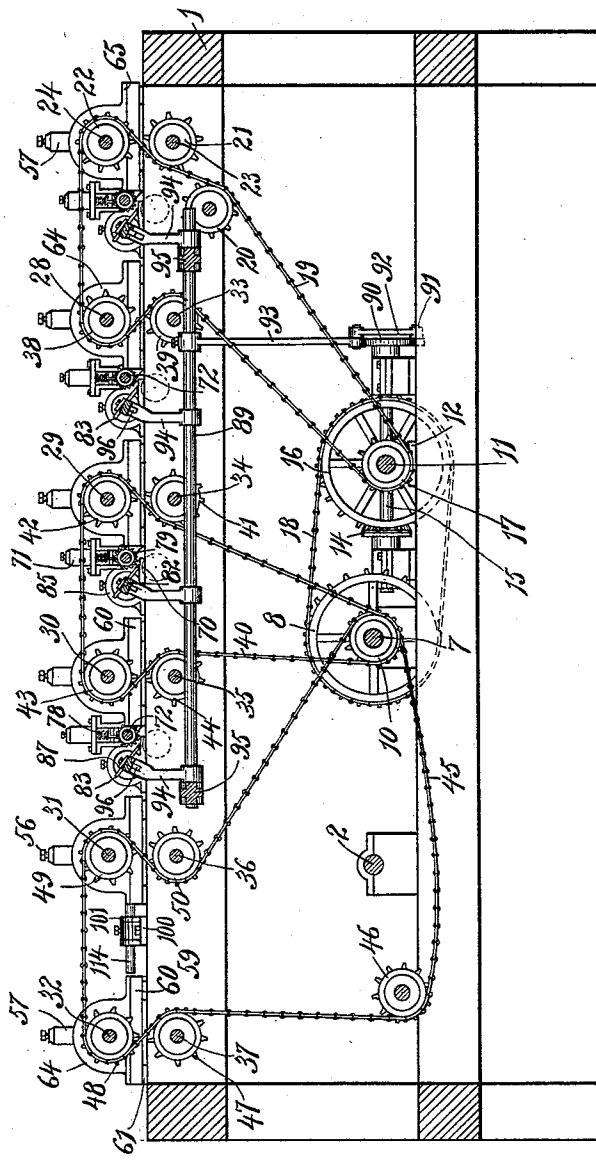
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Fig. 3.



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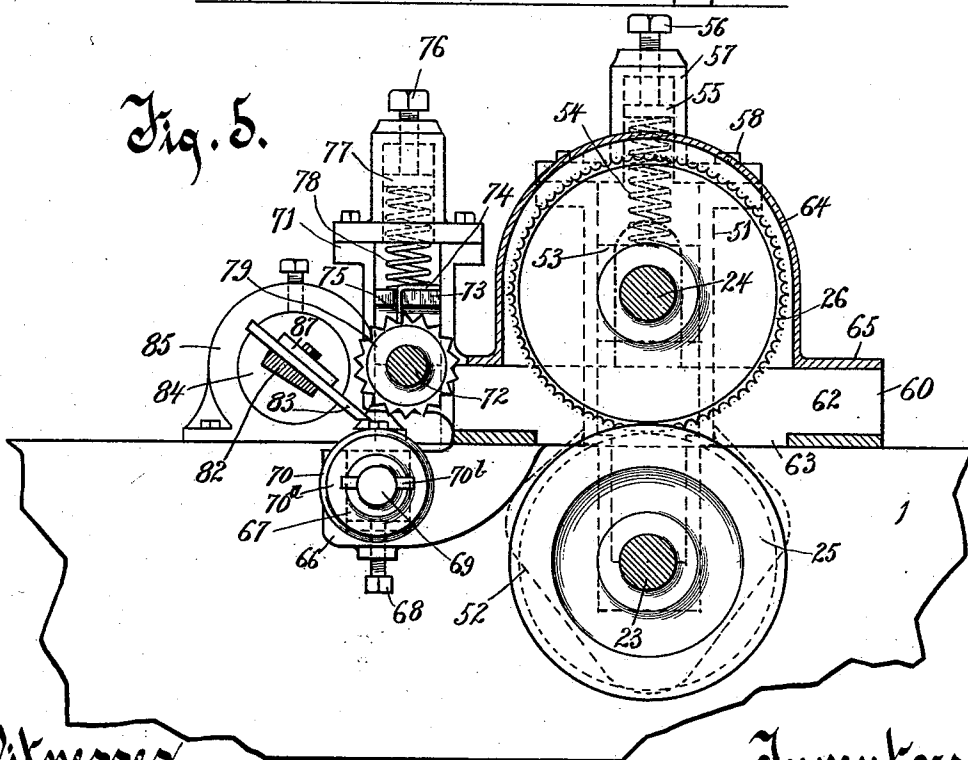
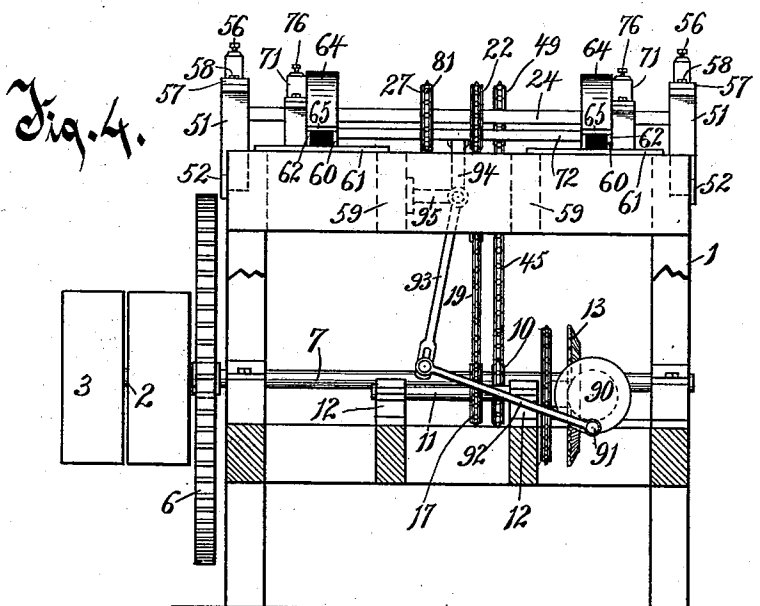
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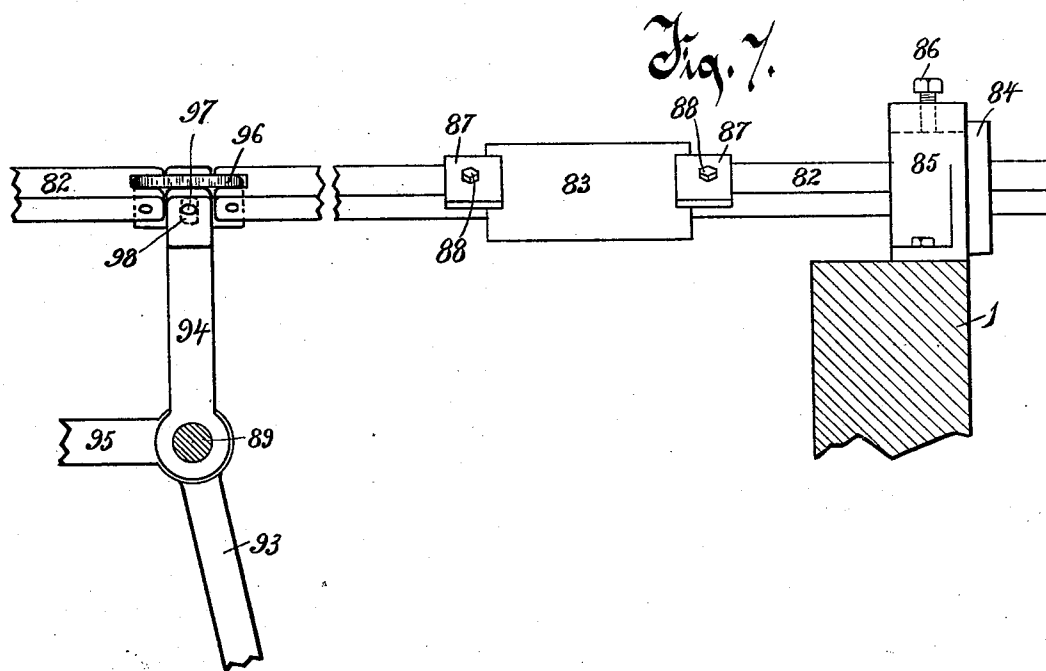
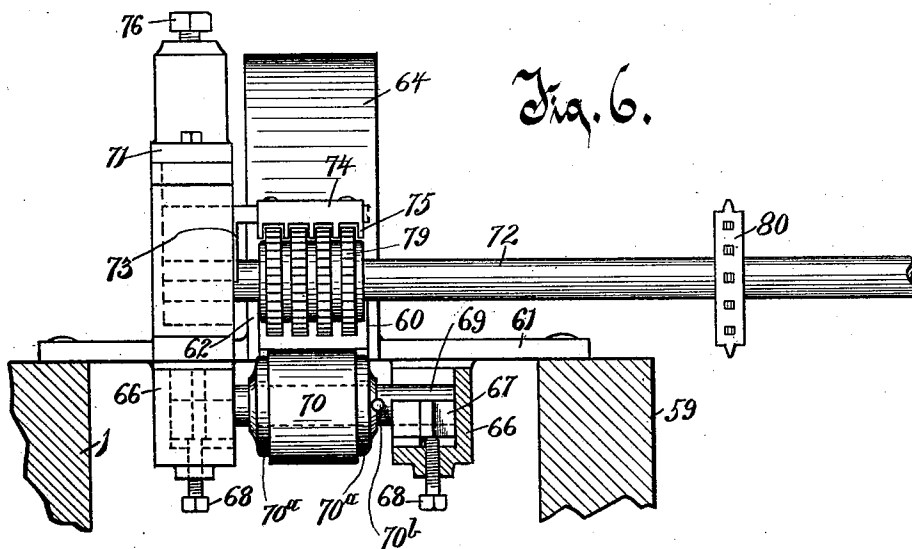
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Fig. 8.

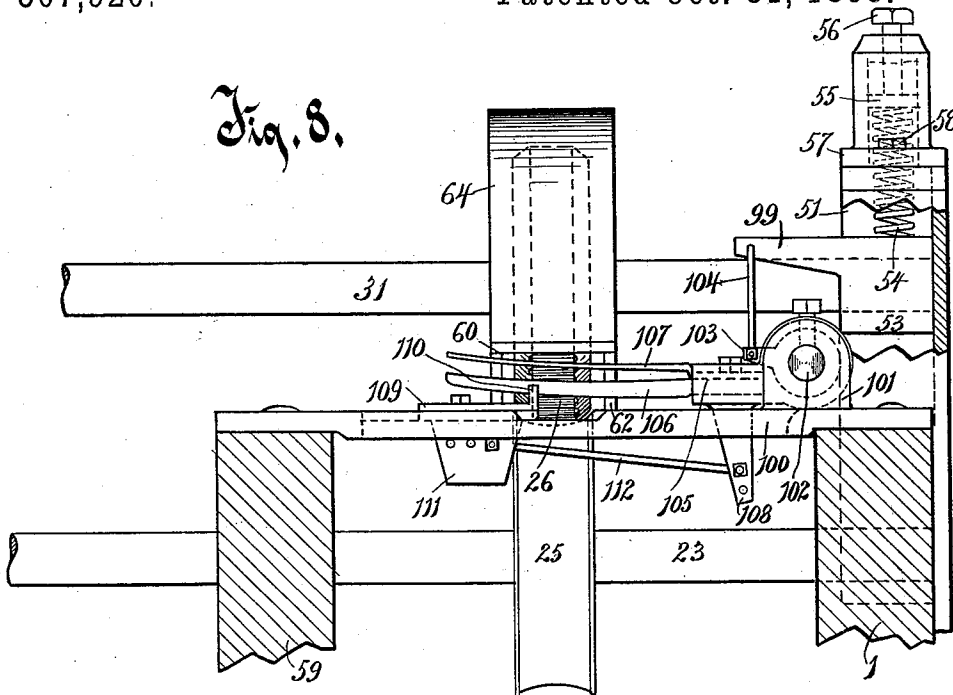


Fig. 9.

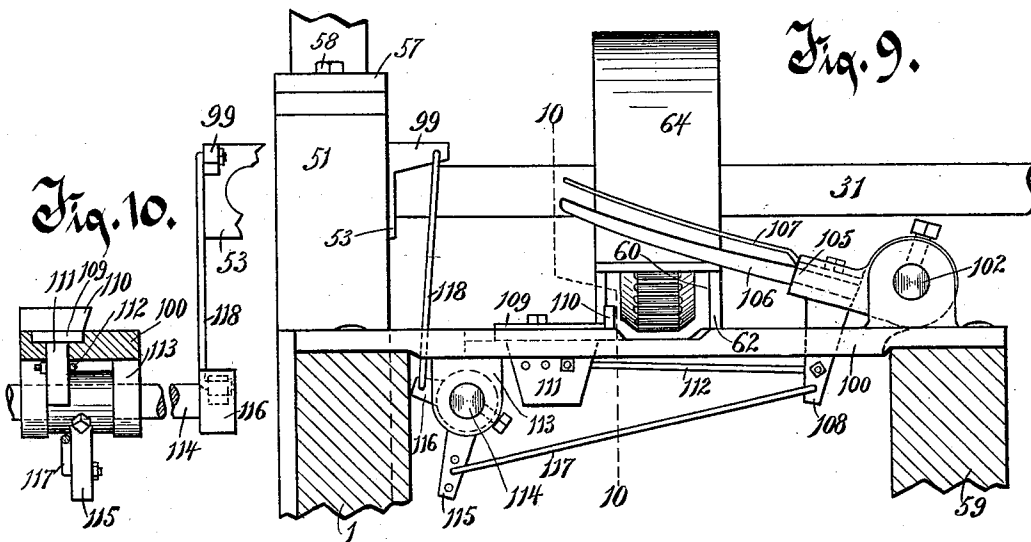
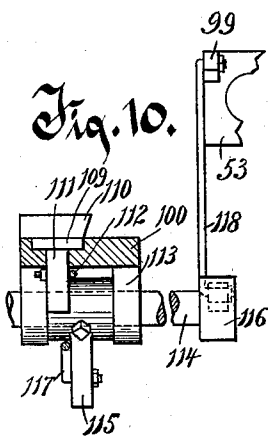


Fig. 10.



Witnesses.

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7 Sheets—Sheet 7.

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Fig. 11.

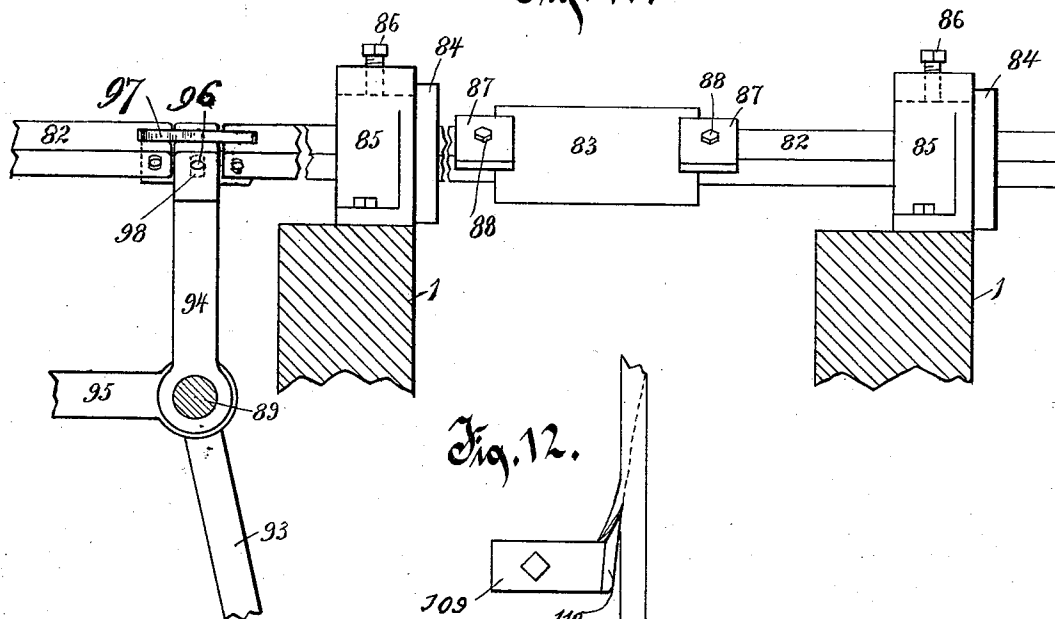


Fig. 12.

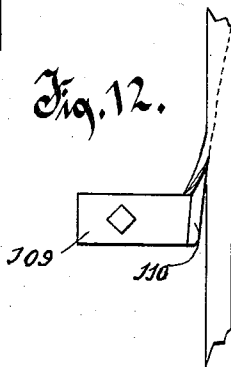


Fig. 13.

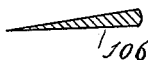


Fig. 14.



Fig. 15.



Witnesses.

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UNITED STATES PATENT OFFICE.

DAVID MURRAY, OF MILWAUKEE, WISCONSIN, AND ADDISON ROBBINS, OF
FITCHBURG, MASSACHUSETTS.

HOOP-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 507,920, dated October 31, 1893.

Application filed October 8, 1892. Serial No. 448,181. (No model.)

To all whom it may concern:

Be it known that we, DAVID MURRAY, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, and ADDISON ROBBINS, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Hoop-Dressing Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

Our invention has relation to improvements in machines for shaving or dressing hoops.

The objects had in view are to provide a rapid and automatic means for dressing a pole or stick, or a plurality of poles or sticks, simultaneously; to provide improved means for automatically shaving and dressing poles and sticks, and chamfering the ends thereof; means for carrying away the waste shavings during the progress of the stick through the machine; means for pointing the ends of the pole upon the top and side; means for adjusting this pointing mechanism, whereby varying lengths of points or tapers are secured; provision for allowing for inequalities in the thickness of the pole or stick in its passage through the machine; and, furthermore, to provide a device of this character capable of ready dismantling, whereby convenient access may be gained to the principal working parts.

With the above objects, and others, in view, the invention consists in the improved construction as hereinafter more fully set forth.

In the accompanying drawings, forming part of this specification, Figure 1, is a side elevation of the complete machine. Fig. 2, is a plan view thereof. Fig. 3, is a longitudinal vertical section on the line 3—3 Fig. 2. Fig. 4, is a front end elevation, certain parts being broken away for the sake of clearer illustration. Fig. 5, is a view of one of the grooved rollers and the contacting milled roller, the cover or casing of the latter, and the guide-way, being shown in section, said view also illustrating the rolls to the rear of the first named rolls, the bearing box of the same, and one of the shaving or dressing knives. Fig. 6, is an elevation of a fragment of the machine illustrating the rollers located

immediately in front of the dressing or shaving knives, one of the bearing boxes of the lower of these rollers being shown in section. Fig. 7, is an elevation of the laterally reciprocating knife-carrying bar and attached parts. Fig. 8, is a transverse section on the line 8—8 of Fig. 2 with parts broken away, showing the mechanism for chamfering the end of a stick or pole, said view illustrating the mechanism for accomplishing this at the upper side of Fig. 2. Fig. 9, is a transverse section on the line 9—9 of Fig. 2 showing mechanism for accomplishing the same function, located at the lower side of Fig. 2. Fig. 10, is a sectional view upon a plane indicated by the line 10—10 of Fig. 9. Fig. 11 is a similar view to Fig. 7 showing the additional bearing for the knife-carrying bar. Fig. 12, is a plan view of the knife 110, and the part to which it is attached, also showing the pole or stick in plan, and as being acted upon by said knife. Fig. 13, is a transverse section of knife 106. Fig. 14, is a plan view of a completed stick, looking upon the upper side, said side having been acted upon by the knife 106. Fig. 15 is an edge view of the pole or stick, after having been acted upon by knife 110.

Like numerals of reference designate similar parts throughout the several views.

Referring to the drawings, the numeral 1 indicates the frame or table of the machine, and 2 the drive shaft mounted in suitable bearings therein, said shaft provided with pulleys, 3, and operated by a belt, 4, in the usual manner. This shaft also carries a gear, 5, which meshes with a large gear wheel, 6, upon the corresponding end of a central shaft 7, and thereby imparts rotation thereto. The central shaft carries medially a sprocket wheel, 8, and also smaller sprocket wheels 9 and 10.

A short transverse shaft 11 is journaled in bearings, 12, 12, toward the front end of the machine, said shaft carrying upon one end a beveled gear 13, which meshes with a similar beveled pinion, 14, mounted fixedly upon a longitudinal shaft, 15, and also carrying two sprocket wheels 16 and 17, the former connected to sprocket wheel 8, of shaft 7 by a sprocket chain, 18, whereby the motion of said shaft 7 is communicated to shaft 11. A

sprocket chain 19 runs around sprocket wheel, 17, one portion thereof acting upon an idle guide sprocket wheel, 20. The chain is then passed up between two sprocket wheels 21 and 22, mounted respectively upon shafts 23 and 24, the former of said shafts also carrying fixedly two grooved wheels 25, 25, and the latter two milled wheels, 26, 26, and a sprocket 27.

A series of shafts, identical in every respect with shafts 23 and 24, and carrying similar wheels, are arranged transversely throughout the length of the machine, the upper ones of which being numbered 28, 29, 30, 31 and 32 respectively, and the lower ones, 33, 34, 35, 36, and 37 respectively.

After passing between the sprocket wheels 21, and 22, chain 19 passes over and between similar sprocket wheels, 38 and 39, located, respectively, upon shafts 28 and 33, and thence downwardly again around sprocket 17.

A sprocket chain 40 runs around wheel 9 of shaft 7, and extends up between wheels, 41 and 42, located respectively upon shafts 34 and 29, and thence over and between and around sprocket wheels, 43 and 44, located, respectively, upon shafts 30 and 35. Another sprocket chain, 45, runs around wheel 10 also located upon shaft 7, one portion of said chain passing around an idle sprocket, 46, and thence upwardly around and between sprocket wheels 47, and 48, located respectively, upon shafts 37 and 32, and thence over and around and between sprocket wheels, 49 and 50, located, respectively, upon shafts 31 and 36.

It will be noticed that shafts 23 and 24 and each set of similar shafts throughout the series have their ends mounted in peculiar bearing boxes, 51, shown most clearly in Fig. 5 of the drawings. Each box is let into a socket formed therefor in the sides of the frame, said socket indicated clearly by dotted lines in Fig. 5, with the open side of the box inward. The outer closed sides of the boxes have their lower ends widened, as indicated at 52, said widened portions extending down below the bottom of the boxes and forming surfaces for the accommodation of securing screws. The bottoms of the boxes are formed with semicylindrical bearings in which the ends of the lower shafts are journaled, while the ends of the upper shafts turn in square bearings, 53, which move freely in the boxes. A coiled spring, 54, is confined between this movable bearing and an annular plate or disk, 55. An adjusting screw, 56, passes through the top, 57, of the box and bears upon the disk or annular plate, whereby the tension of the spring upon the movable bearing may be regulated. The top, 57, of the box is secured by means of bolts, 58, whereby said top may be detached when it is desired to remove the shafts. It is also to be noted that the entire bearing box, 51, may be removed, when necessary, by merely unscrewing the screws passing through the lower widened portion 52.

The top of the frame or table between the side pieces is provided with two longitudinal strips, 59, 59, which, together with said side pieces, form supports for two longitudinal lines of guides, 60, said guides provided with laterally extending end arms, 61, which are bolted down upon the longitudinal strips and side pieces, respectively. The construction of these guides will be readily understood by reference to Figs. 1, 4 and 5. Running centrally of the length of each are two upwardly extending walls, 62, 62, forming a passage way, for the insertion of the pole or stick. Shaft 24, and analogous shafts, normally rest upon these side walls, the latter being preferably concaved slightly for their accommodation. It will also be seen that the bottom of the guide is provided with an opening, 63, which permits the grooved wheel and the milled wheel normally to contact. A semicylindrical cover or casing, 64, extends over and protects the milled wheel, said cover or casing resting upon and secured to the edges of the side walls 62 of the guide in any desirable manner. This cover is also provided with a forwardly projecting extension, 65, which, together with the side walls, forms a closed passage way at the front of the guides. Rearwardly from each guide project two boxes, 66, 66, provided with adjustable bearings, 67, 67, the adjustability being secured by means of set screws, 68, 68, passing up beneath the box. Journaled in each of these bearings is a shaft, 69, having fixedly mounted thereon a roller 70, composed of two disks 70^a, 70^b, one being rigid with the shaft and one held in place by a pin 70^b. Between these disks is arranged a rubber ring. This, therefore, affords a thick yielding surface which gives to inequalities in the wood, and is decidedly advantageous over merely a rubber tire, besides being adapted to be readily removed when worn and a new one substituted. Each guide 60 is also provided with a journal box 71, located upon the outer side of the guide. Each of these journal boxes is constructed upon the same principle as boxes 51, a shaft 72 resting upon and turning in the bottom thereof. Each end of the shaft has bearing thereon a block 73, which projects laterally beyond the box, and has secured thereto a plate 74, said plate provided at its free end with a series of downwardly projecting teeth, 75. An adjusting screw, 76, passes through the box and its lower end bears upon a disk 77, and between this disk and the block 73 a coiled spring, 78, is confined, said spring holding the shaft yieldingly in its bearings.

Mounted upon shaft 72 is a roll, 79, having a series of V-shaped projections arranged annularly and circumferential grooves therebetween, said grooves receiving the teeth 75. Shafts 72 have also mounted thereon sprocket wheels, 80, which receive the motion of the several wheels, 27, through sprocket chains 81. Slightly to the rear of the sets of rollers 70 and 79 are laterally reciprocating bars, 82,

each carrying two shaving and dressing knives, 83, 83, said knives located directly in line with the rollers, with their cutting edges intermediate the peripheries thereof. Each reciprocating bar has its ends passing freely through openings formed therefor in circular bearings, 84, said bearings located within boxes, 85, 85, and held in adjusted positions by means of set screws, 86, 86, said screws adapted to change the inclination of the bar, 82. Each knife is removably attached to its bar by means of small plates, 87, 87, overlapping the ends of the knives, and receive securing bolts 88, 88, which pass into the bar.

In Figs. 2 and 7 the bearings 84 and boxes 85 are only shown as secured to the side pieces 1, 1 of the frame. It will be understood, however, that there are also duplicates of these secured to the longitudinal strips 59, and forming bearings for the inner ends of the sections composing a bar, as clearly shown in Fig. 11.

Beneath the upper portion of the table or stand is located a longitudinal shaft, 89; and upon the end of the shaft, 15, hereinbefore referred to, is a disk, 90, having a crank pin 91 projecting therefrom, said pin having the lower end of a crank arm 92, attached thereto, the upper end of said crank arm articulating with the end of a pitman, 93, the other end of said pitman connecting with the longitudinal shaft, 89. Upon said longitudinal shaft are secured a number of upwardly-extending arms 94. Shaft 89 is supported at opposite ends by means of arms, 95, 95, projecting from one of the longitudinal beams or strips, 59, the shaft being free to turn in the apertured bearing ends of said arms. Each bar 82 is made up of two parts connected centrally by a plate, 96, fitting in recesses in the adjoining ends of the sections of the bar. The upper bifurcated end of each arm 94 straddles this plate, and is secured thereto by means of a bolt, 97, passing through slot, 98, in the plate. The connection between the plate 96 and the ends of the sections of the bar is made by pins passing through elongated or oblong openings in the ends of the sections, and openings in the ends of the plate. The object of making bar 82 in sections is to permit of the adjustment of one section independently of the other. Different kinds of wood, such as oak and hickory or birch, require different inclinations of the knife in order to effect the cutting, so that if two sticks or poles, one of oak, and the other of hickory, are passing through the machine at opposite sides simultaneously, one knife can be adjusted to a certain inclination without effecting the inclination of the other. This is accomplished merely by unloosening set screws 86 of the bearings 84 of one of the sections of the bar, and turning said bearings slightly. The adjustment of one section of the bar 82 will not effect the other as the thickness of plate 96 is sufficiently less than the width of the spaces between the furcated ends of the bars 82 to

permit of a slight play of the ends of said bars at the connection with the plate 97, there being also a slight play of the several connecting bolts. After the required adjustment is attained, the set screws 86 are again tightened. In order to accomplish the adjustment above referred to, however, two bearings similar to 84 are required, the arrangement of the additional bearing being clearly shown in Fig. 11 of the drawings.

It will be readily understood that as the disk, 90, is revolved with the shaft, 15, longitudinal shaft 89 is given a partial backward and forward turn through the medium of the crank arm and pitman connection with the disk, and the movement of said shaft, 89, imparts a laterally reciprocating movement to the several bars, 82, through the connecting arms 94.

Figs. 8, 9 and 10 of the drawings clearly illustrate the means for chamfering or beveling the ends of the stick or pole at the top and side thereof. This mechanism is located between the rear sprocket wheels 48 and 49. It will be noticed that the movable bearings 53, in the boxes 51, in which shaft 31 is journaled, are each provided with inwardly extending arms 99. The numeral 100 indicates a casting or plate provided with journal bearings 101, 101, in which is mounted a shaft 102, said shaft as illustrated in Fig. 8, (the figure showing the parts as arranged upon the left hand of Fig. 2,) is provided at one end with a crank arm 103, which is connected with the inwardly extending arm, 99, by means of a link 104. Located fixedly upon the shaft 102 intermediate the bearings thereof, is a plate 105, provided with a groove in which is secured one end of a knife, 106, and one end of a shaving expeller, 107, located above the knife. In Fig. 2 a plan view of this knife is shown, while in Fig. 13, a transverse section is illustrated, clearly showing the cutting edge thereof. The knife-carrying plate is also formed or provided with a depending arm 108. Working in a guide-way formed in casting or plate 100 is a slide 109 shown clearly in Fig. 10, said slide formed or provided at its outer end with a cutting knife, 110, at right angles to the end thereof, and arranged at an incline toward the side of the machine, as shown more clearly in Fig. 12, said cutting knife adapted to trim off and reduce the side of the stick or pole, giving the side or edge a gradual taper to the extremity of the stick. The slide is also provided with a depending arm 111, passing through a slot therefor in the casting or plate 100. This depending arm is connected with the similar arm 108 of plate 105 by a link 112. The slide projects laterally beyond its depending arm 111, whereby shoulders are formed, which rest upon, and slide on, the guide way formed in plate or casting 100. The knife 106 and shaving expeller 107 are normally in the position illustrated in Fig. 8. The moment, however, the advance end of the pole passes between the rolls immediately in front of the

knives, shaft 31 and its movable bearing 53 are raised upward, by the action of the pole in elevating the upper roll. The bearing 53 carries with its arm 99, which, acting upon link 104, turns crank arm 103, of shaft 102. As said shaft has mounted thereon the knife-carrying plate, the latter with its attached knife and shaving expeller, is elevated so that the pole may pass freely. As the knife-carrying plate is thus elevated, the lower end of the depending arm 108 is thrown toward the hoop and through its link connection with the slide 109, said slide, with its attached side-cutting knife, is forced away from the hoop. The moment the rear end of the pole has finally passed from between the rolls, movable bearing 53 returns to its normal position, and the cutting knife 106 and shaving expeller 107 are forced downwardly while the slide is simultaneously drawn toward the hoop in order to bring cutting knife 110 into operative position. This occurs just in time to allow the end of the pole to be engaged by cutting knife 106, which shaves off the top of the pole while expeller 107 takes up the shavings arising therefrom. That is to say, the shavings arising from the knife 106 pass between the upper side of said knife and the under side of the expeller, and by the latter are bent up or curled so as to be readily removed without detriment to the machine by clogging the working parts thereof. One side or edge of the pole or hoop next encounters knife 110, and is thereby likewise shaved and pointed. Upon the lower side of Fig. 2, the same principle is carried out, although a slightly different arrangement is employed, together with the introduction of an additional element. This is clearly illustrated in Figs. 9 and 10. It will be seen that instead of the journal bearings, 101, 101, being located upon plate 100 at a point near the side of the frame, as is the case upon the upper side of Fig. 2, the end of casting or plate 100 carrying the bearings 101, 101, is located above one of the medial longitudinal strips 59, and that the shaft, in this instance, is not provided with a crank 103. Depending from beneath casting 100 at the opposite end thereof is a bearing, 113, in which is journaled a shaft, 114, said shaft provided with two arms or cranks, 115, and 116, respectively, the former connected with depending arm by a link 117 and the latter connected with arm 99, by a link 118. The object of thus arranging the parts upon the lower side of Fig. 2 is to so dispose slide 109 that its cutting knife 110 will cut the pole upon the side corresponding to the side cut upon the left of the machine. It will be noticed from Fig. 2 of the drawings, that the side pieces and the medial longitudinal pieces of the frame are provided each with a series of apertures 119, whereby the plates or castings 100 may be adjusted in order to vary the length of the points or bevels of the sticks or poles.

The above being a description of the con-

struction of our invention, its operation is as follows: When the main drive shaft is set in operation through the medium of belt 4, the upper shafts carrying the rolls 25 and 26, are set in motion, as will be readily understood from the previous description. The rotation imparted to these several shafts in turn is communicated to the shafts carrying rolls 70 and 79 by the sprocket connections, and a laterally reciprocating motion is given to the knife carrying bars by the mechanism previously explained. The stick or pole to be dressed is now passed into the guide through the passage way clearly shown in Fig. 4 and is forced between the rolls 25 and 26, the latter yielding upwardly for its accommodation. The stick is now carried along to the rolls 70 and 79, and then subjected to the action of the laterally acting knives 83. The shavings resulting from the action of these knives upon the pole are crimped by the roller 79, while the teeth 75 serve to keep the grooves of said roller clear. Roller 79 also acts to hold the work or material down, in order to secure a uniform thickness throughout the entire length of the hoop, regardless of crooks or knots. The pole in its progress through the machine thus alternately passes between rolls 26 and 25 and 70 and 79, being subjected to the dressing process while passing between the latter. This is continued until the pole reaches the pointing and beveling mechanism, previously described, and is finally fed out of the machine by the extreme rear rolls 26 and 25.

The device described and illustrated by us is capable of dressing two hoops at one operation. It is to be understood, however, that a machine can be constructed capable of acting upon a much greater number by merely duplicating the parts herein shown and described.

It will be understood that in inserting the pole, it is so placed that the round side is carried into the grooved rolls, so as to present the split side to the shaving knife 83.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In a hoop dressing machine, the combination, of a series of shafts carrying a plurality of feeding rolls, a series of shaving knives in line therewith, means for operating the shafts carrying the rolls and for operating the knives, pointing mechanism, and means for throwing said pointing mechanism out of operative position at the time the forward end of the pole or stick passes between the rolls immediately in advance of said pointing mechanism, and for throwing the same into engagement with the rear end of the pole or stick as said rear end passes from between the advance rolls, substantially as set forth.

2. In a hoop dressing machine, the combination, of journal boxes, circular bearing blocks therein, adjusting screws bearing upon said boxes, a knife-carrying bar having its ends passing into the circular bearing

blocks, and means for imparting to said bar a longitudinal movement, substantially as set forth.

3. In a machine for dressing hoops, the combination of rolls between which the stick or pole is passed, one of said rolls being idle, and the other mounted upon a driven shaft and provided with a series of grooves, bearing boxes for the ends of the driven shaft, blocks bearing upon the opposite ends of the shaft within the bearing boxes, said blocks having inward extensions, plates secured to the extensions, and provided with teeth extending into the grooves of the rollers, springs bearing upon the blocks, and means for adjusting the tension of said springs, substantially as set forth.

4. In a machine for dressing hoops the combination of feed rolls, a guide formed or provided with upper and lower journal boxes projecting from one end thereof, said guide also forming a casing for the upper feed roll, an idle roll having its shaft journaled in the lower boxes of the guide, a shaft having its ends journaled in the upper boxes of the guide, said shaft having mounted thereon a crimping roll, and cutting mechanism adapted to act upon the pole or stick as it emerges from between the idle roll and the crimping roll, substantially as set forth.

5. In a hoop dressing machine, the combination, of feeding rolls, a shaft having a crank-arm extending therefrom, a spring-actuated bearing arranged to have a vertical movement, a link connecting the spring-actuated bearing with the crank, a plate secured to the shaft and provided with a knife, and rolls in advance of the knife, the shaft of the upper of said rolls journaled in the spring-actuated bearing, whereby, when the forward end of the stick passes between the rolls, the knife is thrown out of operative position, and, when the rear end of the stick passes from between the rolls, the knife is thrown into operative position, substantially as set forth.

6. In a hoop dressing machine, the combination, with feeding rolls of pointing mechanism consisting of a shaft having a crank arm extending therefrom, a spring actuated arm arranged to move downwardly as the stick or pole leaves the rolls in advance of the pointing mechanism, a link connecting said arm with the crank, a plate rotatable with the shaft and carrying a knife for pointing the upper surface of the stick or pole, said plate also provided with a depending arm, a

slide provided with a knife for pointing the side of the stick or pole and also provided with a depending arm, and a link connecting said arm with the arm of the knife-carrying plate, substantially as set forth.

7. In a hoop dressing machine, the combination, with feeding rolls of pointing mechanism, consisting of a shaft having a crank arm extending therefrom, a spring-actuated arm arranged to move downwardly as the stick or pole leaves the rolls in advance of the pointing mechanism, a link connecting said arm with the crank, and a plate rotatable with the shaft and carrying a knife for pointing the upper surface of the stick or pole and also carrying a shaving expeller, substantially as set forth.

8. In a hoop dressing machine, the combination, of feeding rolls, a shaft having a crank-arm extending therefrom, a spring-actuated bearing arranged to have vertical movement, a link connecting the spring-actuated bearing with the crank, a knife connected to the shaft, and rolls in advance of the knife, the shaft of the upper of said rolls journaled in the spring-actuated bearing, whereby, when the forward end of the stick passes between the rolls, the knife is thrown out of operative position, and, when the rear end of the stick passes from between the rolls, the knife is thrown into operative position, substantially as set forth.

9. In a hoop dressing machine, the combination, of feeding rolls arranged in longitudinal lines along the machine, of pointing mechanism consisting of shafts having crank arms extending therefrom, spring-actuated arms arranged to move downwardly as the sticks or poles leave the rolls in advance of the pointing mechanism, links connecting said arms with the cranks, knives for pointing the upper surface of the poles or sticks, knives for pointing the sides of the poles or sticks, and connections from the shafts whereby the several knives are operated, the side pointing knives cutting corresponding sides of the sticks, substantially as set forth.

In testimony whereof we affix our signatures in presence of witnesses.

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