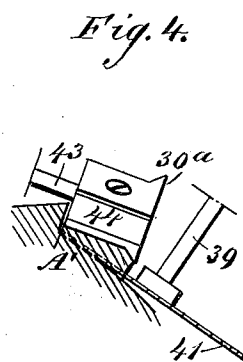
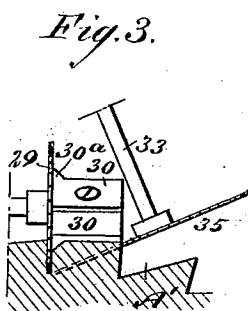
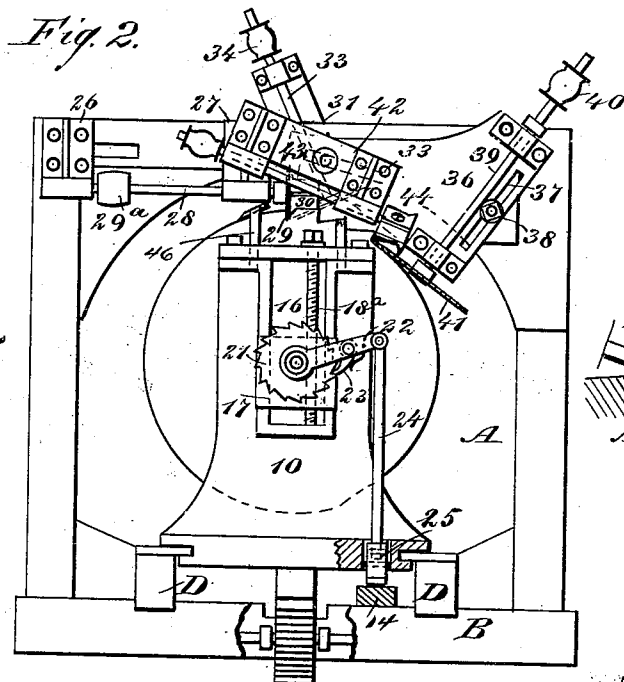
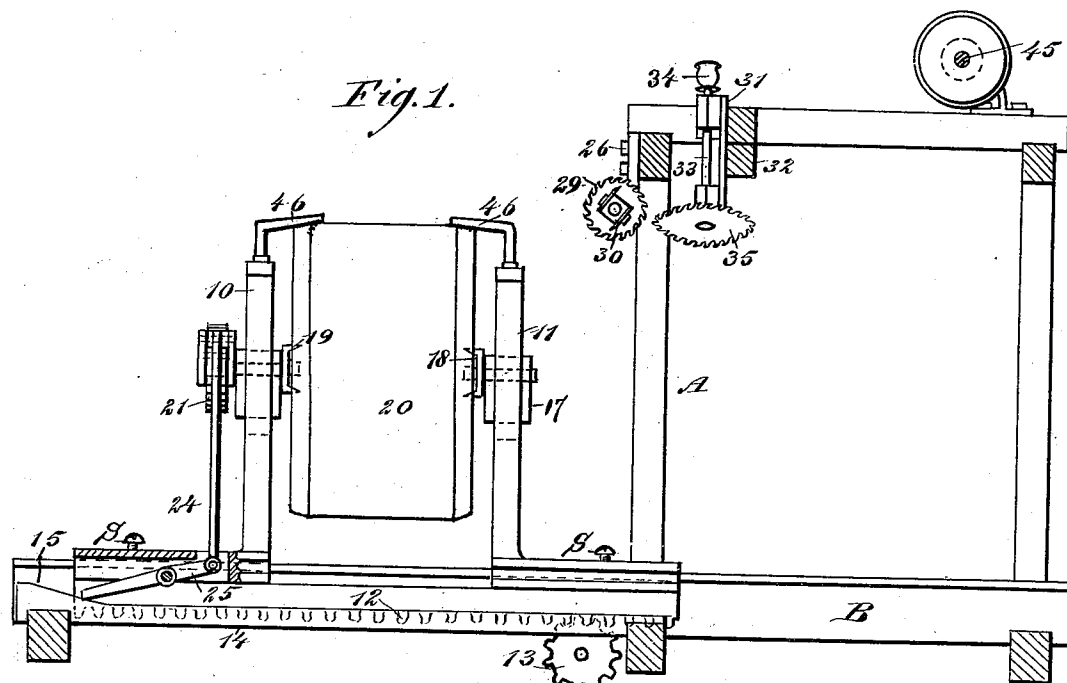


(No Model.)

E. O. HALL.
HOOP SAWING AND SHAPING MACHINE.

No. 508,309.

Patented Nov. 7, 1893.



WITNESSES:

Donn Twitchell
L. Sedgwick

INVENTOR

E. O. Hall

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EPHRAIM O. HALL, OF MARSHFIELD, OREGON.

HOOP SAWING AND SHAPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 508,309, dated November 7, 1893.

Application filed September 11, 1891. Serial No. 405,398. (No model.)

To all whom it may concern:

Be it known that I, EPHRAIM OLIVER HALL, of Marshfield, in the county of Coos and State of Oregon, have invented a new and Improved Hoop Sawing and Shaping Machine, of which the following is a full, clear, and exact description.

My invention relates to an improvement in machines for the manufacture of hoops, and has for its object to provide a machine of simple and durable construction, whereby two hoops may be cut from a round log each time that the said log is fed to the machine, and whereby also the hoops may be perfectly formed, their upper sides planed, their edges scarfed, and their under side only left rough, which side is in the direction of the heart of the log; and a further object of the invention is to provide a machine capable of being superintended by a single attendant, and thus not only greatly facilitate the work of producing the hoops but also materially reduce the cost usually attendant upon such work.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a vertical section through the machine frame carrying the planes and saws, and is also a side elevation, partly in section, of the head blocks adapted to hold the log from which the hoops are to be cut. Fig. 2 is a front elevation of the frame and the cutting and planing mechanism, and an end view of the head block. Fig. 3 is a detail sectional view enlarged, illustrating the first cut of the log; and Fig. 4 is a similar view, illustrating the second cut, or the production of the second hoop.

A frame A, preferably in skeleton form and rectangular is erected upon a base B, which base may be of any desired length, and extends some distance beyond the front of the machine frame. The base has erected thereon slide-ways D, located one at each side of the center, and two head blocks 10 and 11,

have lateral movement upon the said slide-ways D, said head blocks being connected by a rack 12. The said rack is manipulated through the medium of a pinion 13, operated by any desired motor. The head blocks are adjustable upon the rack, being made to slide thereon, and the adjustment may be made by hand or otherwise, for instance by the means of set screws S, as shown and longitudinally beneath the head block a beam 14, is secured to the sills of the base, the upper surface of which is straight with the exception of the extreme outer end which is beveled, forming an inclined plane 15. Each head block is provided with a vertical slot 16 therein; and in each slot a bearing block 17, is located, which blocks are capable of being raised and lowered through the medium of screws 18, as shown in Fig. 2, or the equivalent thereof may be used. The bearing blocks 17, are provided respectively with dogs 18 and 19, pivoted therein, the said dogs being adapted to clamp opposite end faces of a round log 20, from the peripheral surface of which the hoops are to be cut. The dog 19 located in the bearing block of the outer head block has secured upon the outer end of its trunnion a ratchet wheel 21; and the members of a bifurcated arm 22, are made to span the ratchet wheel and are pivotally attached to the trunnion of the dog 19, the said bifurcated arm being provided with a spring-pressed dog 23, engaging with the teeth of the ratchet wheel; and the outer end of the arm 22 is connected by a link 24 with a spring-pressed lever 25, fulcrumed in a suitable recess produced in the base of the forward head block. The spring acting on the lever is not shown in the drawings, but a flat or a torsional spring or any other suitable spring may be employed. This lever is preferably centrally fulcrumed, and one end rests upon the upper face of the beam 14 of the carriage, as I denominate the head blocks and the rack connecting them. Thus, each time that the carriage is carried far enough outward to cause the end of the lever 25 to travel up the inclined plane 15, the inner end of the lever is depressed, and the bifurcated arm 22, is carried downward, causing the dog 23 to act upon the ratchet wheel 21, turning said wheel

a sufficient distance only to impart rotary movement to the log a distance equivalent to the width of the hoop to be cut.

Upon the front of the frame A, at one side of the top thereof, a hanger 26, is secured; and a second hanger 27, is attached at or near the center of the upper portion of the frame. In these two hangers a horizontal shaft 28, is journaled, driven through the medium of a pulley 29^a. The shaft terminates near the inner end of the inner hanger 27, and has attached at its inner end a vertically disposed saw 29, and a stock or block upon which four or more planer blades 30, are secured, the said planer blades being essentially rectangular the greater portion of their length, are provided, however, at one end with an angular projecting spur 30^a, as best shown in Fig. 3, the spurs of the blades being located adjacent to the saw 29. Four planer blades are usually employed, and the block or stock upon which they are secured in that event is provided with four faces.

A long hanger 31, is attached to a suitable support 32, some distance back of the front beam of the frame A, to which the hangers carrying the shaft 28 are secured, as is best shown in Fig. 1. The hanger 31 is diagonally placed inclining, as shown in the drawings, from the upper left-hand corner of the frame in the direction of the lower right-hand corner. In this hanger a shaft 33, is journaled, provided with a suitable driving pulley 34, usually located at its upper end; and upon the lower end of the shaft a saw 35, is secured, which saw is adapted to cut a kerf in the log at an angle to the kerf produced by the vertical saw 29, and meet the latter kerf, as is indicated in Fig. 3.

Near the center of the front upper beam of the frame A, one end of a hanger 36, is attached, the said hanger being carried horizontally in the direction of the right-hand side of the machine, as shown in the drawings. This hanger is adjustable vertically through the medium of a slot 37 produced therein, and a set screw 38, passing through the slot into the frame. The outer end of the hanger is diagonally disposed, and in it a shaft 39, is journaled in a diagonal position just the reverse of the shaft 33. The shaft 39, is also provided with a driving pulley 40 at its upper end, and to its lower end a saw 41, is secured, which saw strikes the surface of the log to be cut tangentially, as does practically the saw 35. The saw 35, however, strikes the log to be cut more in the direction of the center than does the saw 41, the latter engaging with the periphery of the log at a decided slant, as is shown in Fig. 4. The same pivotal bolt pivoting the hanger 36 also pivots a hanger 42, which hanger carries a shaft 43 provided at its lower end, as the hanger is somewhat diagonally placed, with a head or stock carrying planer blades 44, usually four in number and of like construction to the planer blades 30, heretofore de-

scribed. Instead of the spurs 30^a, however, being at the inner ends of the blades, they are at the outer ends thereof. The several shafts may be driven by properly arranged belts from the general line or drive shaft 45, or in any desired manner.

Upon the top of each head block two angular knives 46, are located, which engage with the peripheral surface of the log 20 at the end portions thereof; and the cutting surfaces of these knives have a decided slant, as shown in Fig. 1, being adapted, when the log is revolved to scarf the ends of the log at the portions from which the hoops are to be cut, that is, the knives impart to that portion of the log a transverse bevel or inclination.

In operation, when the log is carried forward to the machine, the saw 29 enters its edge at the periphery and produces therein a vertical groove; at the same time the planers connected with the same spindles as the saw 29 smooth the upper surface of the log in front of the saw kerf and impart to the plain surface immediately opposite the vertical kerf an inclination or bevel, as is best shown in Fig. 3. As the log advances, the diagonally located saw 35 enters the log and produces a diagonal kerf meeting the kerf produced by the vertical saw 29, and when the log has been fed entirely past the saws and planers a diagonal strip will have been cut from its periphery adapted to be bent into the shape of a hoop. This strip may be safely bent as it is with the grain of the log, and the upper surface of the hoop will be smooth, having been planed, and the inner surface, which was cut in the direction of the heart of the log only will be rough. It will be observed that when the strip from which the hoop is formed leaves the log, an angular recess, as indicated at A' in Fig. 3 is the result, and that the bottom inclined wall of this recess is rough, being left so by the saw 35. When the strip is cut from the log the carriage is taken backward until the lever 25 rides up the inclined plane 15 and acts upon the dog 19, holding the log in a manner to turn it a distance equivalent to the width of the hoop, and while turning the edge of the next strip to be cut is scarfed by the knives 46. The carriage is then carried forward and the log brought in engagement with the saws 29 and 35 and the planer 30, and another strip for a hoop is severed from the log. During this forward movement the lever 25, link 24, arm 22, and dog 23, resume their initial position, by the action of the springs connected with the lever and the dog. As soon as a sufficient number of strips have been cut to cause one of the recesses A', when the log is again fed forward to come beneath the planers 44, two hoops will be cut at that and at each subsequent operation, as the planers 44 will engage with and smooth the base wall of the recess A' beneath it and bevel the outer edge thereof, while the saw 41 will at the same time cut an angular strip from the log of which

the surface just spoken of as being planed will be the top, as shown in Fig. 4, and this strip will be the exact counterpart of that cut by the saws 29 and 35. The saw 41, strikes the log at such a slant that it leaves the peripheral surface of the log perfectly cylindric.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine for sawing hoops, the combination, with a vertically disposed saw and a saw diagonally disposed, located at the rear of the vertical saw, the diagonal saw being adapted to produce a kerf meeting that formed by the vertical saw, and a planer located by and operated in conjunction with the vertical saw, of an adjustable planer and an adjustable saw diagonally located, the latter saw being held to cut beneath the surface planed smooth by the planer, as and for the purpose specified.

2. The combination, with a cylindrical log and means for moving the same laterally, of a frame toward which and from which the log is moved, a vertical saw carried by the frame and engaging with the periphery of the log, a planer carried by the same spindle as the vertical saw and operating upon the periphery of the log adjacent to the kerf produced by the

saw, a diagonal saw carried by the frame and entering the periphery of the log tangentially beneath the planed surface and meeting the kerf of the vertical saw, an adjustable planer engaging with the surface cut by the diagonal saw, and a second diagonal saw tangentially entering the log beneath the surface as smoothed by the adjustable planer, substantially as described, whereby two hoops are cut from a round log simultaneously and the cylindric surface of the log preserved.

3. In a machine for sawing hoops, the combination, with a frame carrying a series of planers and saws, of a carriage, and a mechanism for moving said carriage, the said carriage consisting of a rack and head blocks connected by the rack, the said head blocks being provided with adjustable dogs to clamp a log, and knives carried by the head blocks engaging with the peripheral surface of the carried log at its ends, and a trip mechanism for turning one dog whereby the log is revolved a distance equivalent to the width of a hoop at each manipulation of the trip mechanism, as set forth.

EPHRAIM O. HALL.

Witnesses:

H. A. MOSS,

W. U. DOUGLAS.