2 Sheets—Sheet 1.

J. A. PEOPLES.

HOOP-MACHINES.

No. 194,842. Patented Sept. 4, 1877.

Fig. 1.

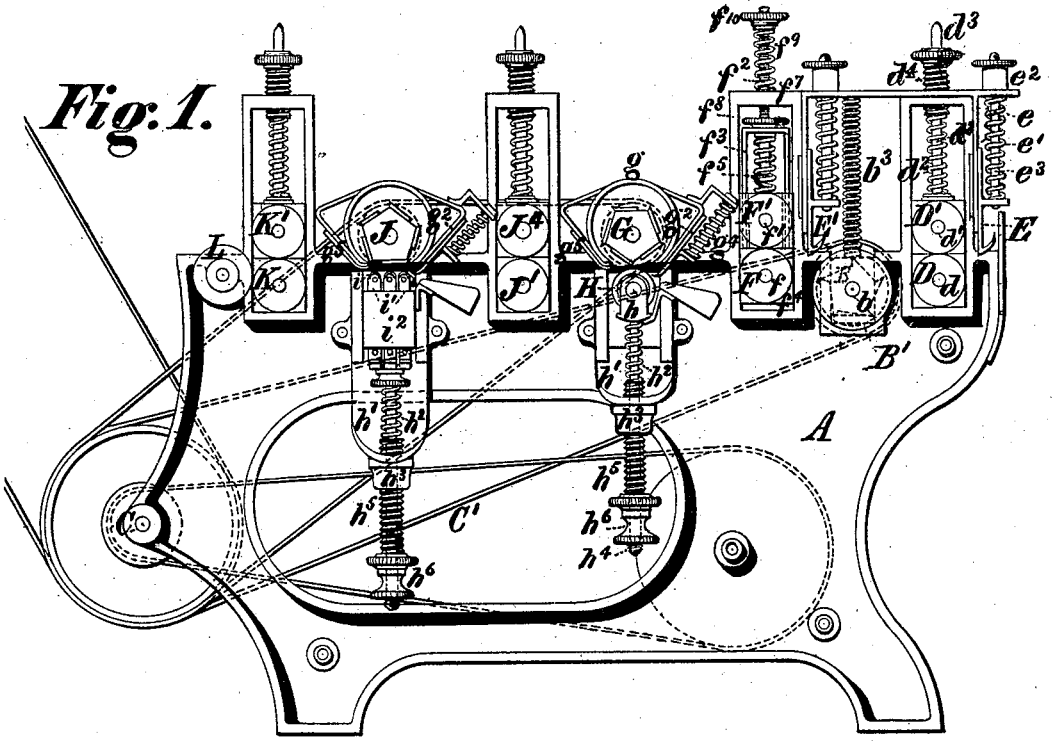
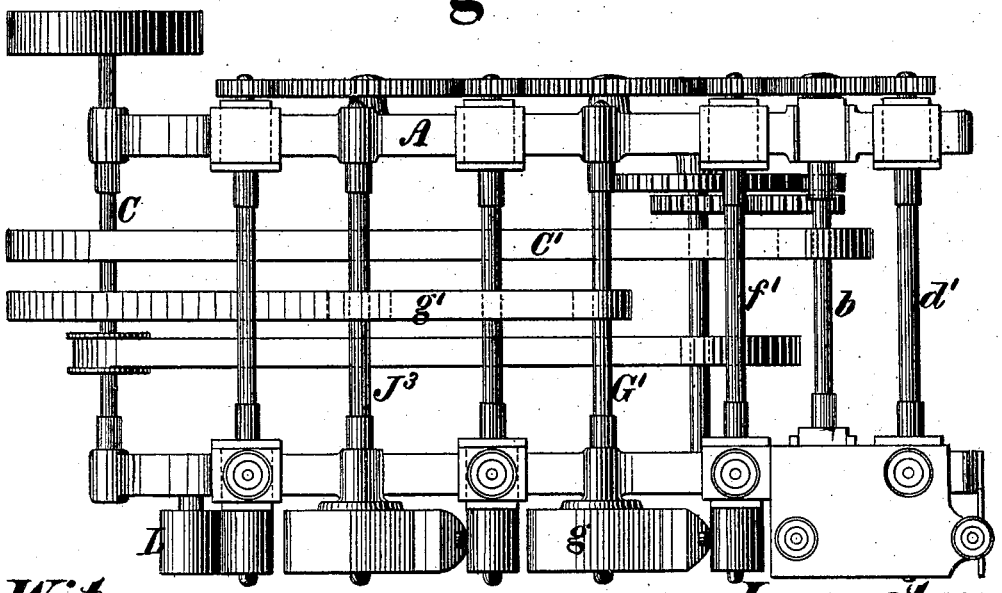


Fig. 2.



Witnesses.

Geo. A. Vaillant

Wm E. Morgan.

Inventor.

Jas. A. Peoples,

by J. Snowden Bell, atty.

2 Sheets—Sheet 2.

J. A. PEOPLES.

HOOP-MACHINES.

No. 194,842. Patented Sept. 4, 1877.

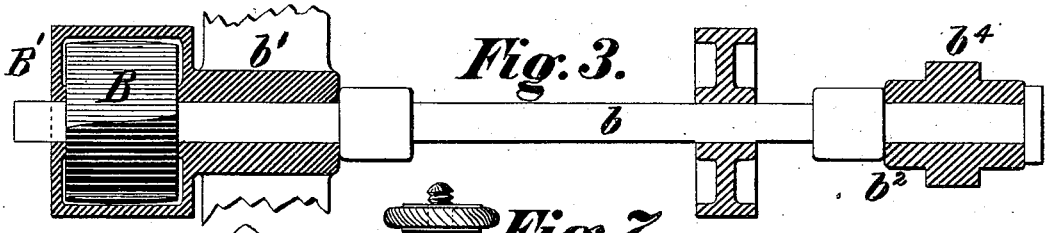


Fig. 3.

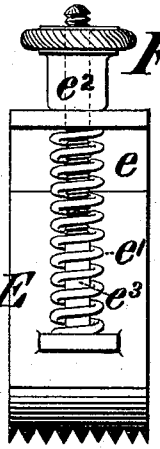


Fig. 7.

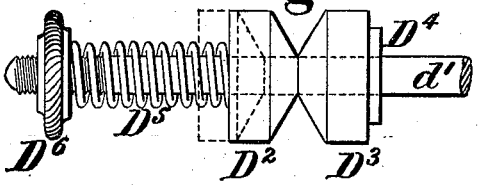


Fig. 8.

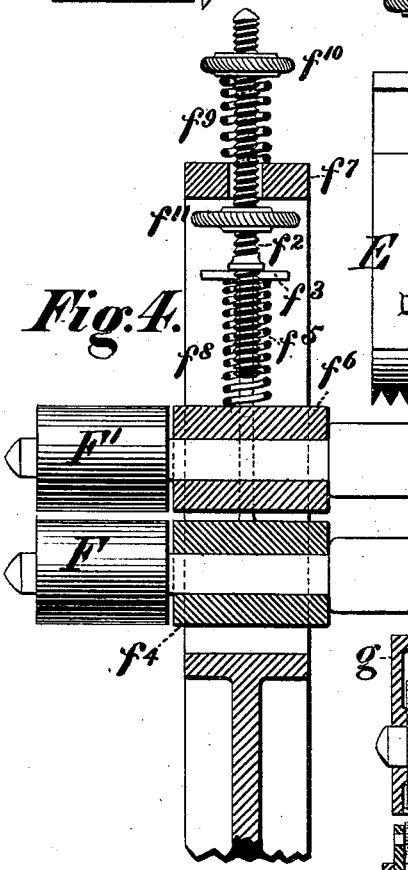


Fig. 4.

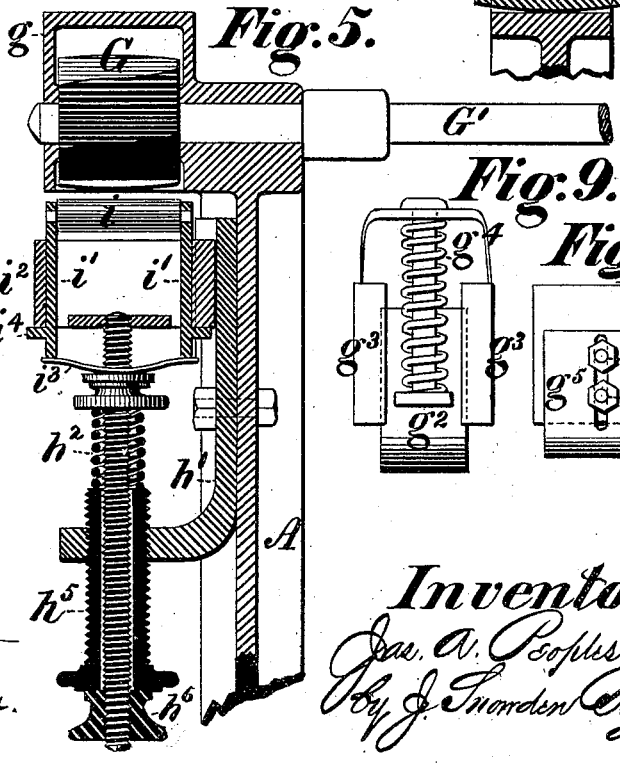


Fig. 5.

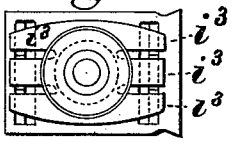


Fig. 6.

Fig. 9.

Fig. 10.

Witnesses.

Geo. H. Vaillant

Wm E. Morgan.

Inventor.

Jas. A. Peoples

by J. Snowden Bell

atty.

UNITED STATES PATENT OFFICE.

JAMES A. PEOPLES, OF CHICAGO, ILLINOIS, ASSIGNOR TO ROSWELL HART, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN HOOP-MACHINES.

Specification forming part of Letters Patent No. **194,842**, dated September 4, 1877; application filed January 6, 1877.

To all whom it may concern:

Be it known that I, JAMES A. PEOPLES, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hoop-Machines, of which the following is a specification:

The object of my invention is to provide, in a machine for shaving and dressing hoops, simple and efficient means for feeding either half-round, flattened, or angular splints to the cutters for removing the projections of knots from the splints, and for maintaining the splints in proper relation to the several cutter-heads in their passage through the machine.

To these ends my improvements consist, first, in the combination of a rotating cutter-head, a rotating feed-roll, and a yielding adjustable notched feed-rest or presser-slide; second, in the combination of a rotating cutter-head, feed-rolls mounted in movable bearings, and devices for regulating the movement of the feed-roll bearings; third, in the combination of a rotating cutter-head, a cylindrical feed-roll secured upon and rotating with a feed-shaft, and a feed-roll composed of two sections, one or both of which is loose upon a feed-shaft, said sections having their adjacent faces beveled or inclined, and pressed together by a spring or springs, with the capacity of longitudinal movement of one or both sections upon the feed-shaft; fourth, in the combination of a rotating cutter-head, a yielding knot-passer, and a device for regulating the position and degree of movement of the knot-passer; and, fifth, in the combination of a rotating cutter-head and a compound knot-passer, having a series of yielding rollers, each governed by an independent spring, all as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a side view, in elevation, of a hoop-machine embodying my improvements; Fig. 2, a plan or top view of the same; and Figs. 3 to 10, inclusive, are detailed views, upon an enlarged scale, of sundry portions of the machine.

The frame A of the machine is composed of two vertical members united by transverse bolts or braces, and supports upon its top the bearings of the several feed and cutter shafts. Upon the entrance of the hoop-splints to the machine they are first subjected to the action of a knot-cutter head, B, which is partly inclosed by a guard-casing, B′, and is secured upon a shaft, *b*, which is rotated by a belt, C′, passing around pulleys on the driving-shaft C and the knot-cutter shaft *b*. The shaft *b* is mounted in boxes b^1 b^2, Fig. 3, in the frame, the box b^2 on the side farthest from the cutter-head being pivoted to the frame by trunnions b^4, and the box b^2 adjacent to the cutter-head being fitted between vertical guides or ways on the frame without being attached thereto, and suspended by a spring, b^3, or a weight. The object of this arrangement is to admit of a limited range of vertical movement to the cutter-head for the purpose of enabling it to conform as far as practicable to the curves of the splints. The latter are fed to the knot-cutter by feed-rolls D D^1, secured to the shafts *d* d^1, which are rotated by suitable intermediate gearing from the driving-shaft C.

The feed-rolls D D^1 have the capacity of vertical movement either independently or together, the adjacent bearings of their shafts being fitted between vertical guides on the frame, and the upper bearing being pressed downward therein by a helical spring, d^2, which encircles a guide-rod, d^3, passing through a hollow screw, d^4, which engages a nut at the top of the framing in which the bearings rest. The upper end of the spring d^2 bears against the bottom of the screw d^4, by which its tension can be readily varied, as required. The boxes in which the opposite ends of the feed-roll shafts rotate are fitted to vertical guides in the frame, and are formed with curved bottoms to admit of the movement of the shafts, as clearly shown in Fig. 4, which exhibits another pair of feed-rolls and shafts, in this respect similarly arranged, and which will be hereinafter described.

The feed-rolls may be plain or fluted, and the arrangement above described is suitable for use in operating on flat or half-round splints, the upper feed-roll shaft yielding to admit of the passage of different or varying thicknesses. For use with angular splints, such as are formed by splitting a hoop-pole

into three or more portions, a divided feed-roll, substantially similar to that shown in Fig. 8, may be employed in substitution of one of the feed-rolls D D^1. The divided roll consists of two sections, D^2 D^3, each of which has an inclined or conical face on the side adjacent to the other, so that when in contact a V-shaped groove is presented. One of the sections, D^3, bears against a collar, D^4, which is fast upon the shaft, or may itself be made fast thereon, and the other section, D^2, is pressed up to it by a helical spring, D^5, the tension of which can be varied as required by a nut, D^6, engaging a screw upon the outer end of the shaft. By this means the section D^2 can be made to recede from or return to its position relative to the section D, to accommodate splints of various angles, the wedging action of the angular splints which pass through the V-groove formed by the angular faces of the sections tending to force the sections apart, and the tension of the spring to keep them together.

Instead of the divided feed-roll above described, a presser-slide, E, (shown on an enlarged scale in Fig. 7,) may be employed, for use, in connection with the lower feed-roll D, upon angular splints. The presser-slide is a metal rod or bar capable of vertical motion on a guide, *e*, upon the frame, above and as close as practicable to the feed-roll D, and having a foot or base about equal in length thereto, and provided with one or more V-shaped or incline-sided notches. The slide is pressed downward by a spring, e^1, the tension of which may be varied by a nut, e^2, engaging a screw on a vertical rod, e^3, secured to the slide; and the slide may be raised out of the path of the splint, when not in use, by the same device.

After passing the knot-cutter the splint is fed to the shaving-cutter head G by the feed-rolls F F′, Fig. 4, which are secured upon shafts f f^1, rotating in boxes arranged in vertical guides in the frame in a similar manner to those of the feed-shafts d d^1, hereinbefore described, so as to admit of vertical movement of the shafts and rolls.

Inasmuch as the shaving-cutter to which the splint is to be passed operates upon the upper side thereof, the feed-rolls F F′, in addition to their function of moving the splint longitudinally toward the cutter, are required to impart a certain degree of upward pressure to the splint in order to insure its proper presentation to the cutter. To this end I provide the arrangement of springs and adjusting devices shown in Fig. 4. A rod or stem, f^2, upon the upper portion of which a screw-thread is cut, is secured to a frame, f^3, which is rigidly connected with the bearing or box f^4 of the lower feed-roll F. A spring, f^5, bears against the upper portion of the frame f^3 and the box f^6 of the upper feed-roll F′, so as to press the latter downward to maintain proper bearing upon the splint passing between the rolls, while allowing the upper roll to yield to accommodate splints of different thicknesses.

The screwed stem f^2 passes freely through a cross-bar, f^7, connecting the tops of the two vertical guide-bars f^8, between which the boxes f^4 f^6 of the feed-rolls move. A spring, f^9, bears against the top of the cross-bar f^7 and against the lower side of a nut, f^{10}, working on the stem f^2. The tendency of the spring f^9 is consequently to press up the stem f^2, and with it the boxes of the feed-shafts. The range of vertical motion induced thereby may be regulated, as required, by a nut, f^{11}, on the stem f^2, which nut can be screwed to a bearing against the lower side of the cross-bar f^7, and will therefore prevent further upward traverse of the stem.

The tension of the spring f^9 can be increased or diminished by means of the upper nut f^{10}.

In operating on angular splints a divided roll like that shown in Fig. 8, or a presser-slide, E′, similar to the presser-slide E hereinbefore described, may be employed in connection with the lower feed-roll F.

The shaving-cutter head G is secured upon a shaft, G′, rotated by a belt, g^1, from the driving-shaft C, and is inclosed by a guard, *g*, which is open at bottom. The knives or cutters are, by preference, either formed with spiral edges, as shown in Figs. 3 and 5, or have their edges set at angle to the center-line of the cutter-shaft, and the same arrangement is desirable upon the knot-cutter B. A sliding guard, g^2, Fig. 9, is connected to the side of the casing *g* adjacent to the feed-rolls F F′, and moves in guides g^3, secured to the casing, being pressed downward by a spring, g^4, of such tension as to permit the guard to yield to inequalities in the thickness of the splints, while maintaining a sufficient degree of pressure thereon. A fixed guard, g^5, Fig. 10, is secured to the opposite side of the casing by bolts g^6, which pass through slotted holes to enable the guard to be adjusted, as may be rerequired to compensate for wear.

For the purpose of maintaining the splint in its requisite proximity to the cutter-head G, while preventing the latter from gouging or recessing the splint at points opposite to knots or other inequalities, I provide a yielding knot-passer, H, which is placed beneath the cutter-head, and is regulated in position relative thereto, as presently to be described. The knot-passer H shown in Fig. 1 is a roll, having its periphery covered with rubber or other elastic material, and mounted horizontally in bearings in a frame, *h*, which has the capacity of vertical movement in guides formed upon a plate, h^1, secured to the frame A below the shaft of the cutter G. The roll is pressed upward by a spring, h^2, bearing against the bottom of the frame *h*, and the top of a nut, h^3, formed upon or secured to a horizontal projection at the lower end of the plate h^1. A vertical-screwed stem, h^4, passes freely through a hollow screw, h^5, which engages the nut h^3,

and a nut, h^6, is fitted to the screwed stem h^4 below the hollow screw h^5. The tension of the spring h^2 may be varied at pleasure by the hollow screw h^5, and the roll may be raised or lowered by the nut h^6, which is brought to a bearing against the bottom of the screw h^5.

Instead of the single roll above described, a compound knot-passer, having a series of independently-yielding rolls, may be employed.

Referring to Figs. 1, 5, and 6, the compound knot-passer is shown as consisting of three independent rolls, $i\,i\,i$, each of which is provided with two vertical bearing-bars, i^1. The bearing-bars are inclosed in a frame, i^2, within which they have the capacity of vertical movement, each pair of bearing-bars being provided with a separate spring, i^3, by which the bars are pressed upward, their traverse being limited by stops i^4. By this means the rollers are enabled to yield separately to the inequalities of the splint passing over them, and thus more effectually maintain the splint in its proper relation to the cutters. The frame i^2 is free to move vertically in guides upon a plate, h^1, similar in all essential particulars to that of the single-roll knot-passer H. The frame i^2 is pressed upward by a spring, h^2, which is furnished with adjusting mechanism, as hereinbefore described, for the single roll, and which is clearly shown in Fig. 5.

The machine as hereinbefore described is fully capable of trimming the knots and excrescences from, and shaving the timber side of flat, half-round, or angular hoops. In some instances, however, where a higher degree of finish may be desirable, I employ a finishing-cutter, J, mounted on a shaft, J^3, rotated from the driving-shaft, and provided with sliding and fixed guards g^2 g^5 similar to those of the cutter G. A yielding knot-passer, which may be either of the single or compound plan before described, is arranged beneath the cutter J. The splints are fed to the cutter by feed-rolls J^1 J^4, and, after passing the cutter, are led between feed-rolls K K′, and crimped or curved by a crimping-roll, L. The feed-rolls J^1 J^4 K K′ are constructed and arranged similarly to the rolls D D^1 before described, and driven by gearing from the shaft C; and divided rolls or presser-rests are employed when operating on angular splints, as set forth in the description of said last-named rolls.

I claim as my invention and desire to secure by Letters Patent—

1. The combination, in a hoop-machine, of a rotating cutter-head, a rotating feed-roll, and a yielding adjustable feed-rest or presser-slide, having one or more V-shaped or incline-sided notches upon its base, substantially as set forth.

2. The combination, in a hoop-machine, of feed-rolls mounted in movable bearings, a guide-stem attached to the bearing of the upper roll and passing freely through a hollow screw engaging a nut on the frame of the machine, and a spring interposed between said hollow screw and the bearing of the upper roll, substantially as set forth.

3. The combination, in a hoop-machine, of a rotating cutter-head and a casing partially inclosing the same, with a fixed guard-plate and a sliding guard-plate governed by a spring, said plates being secured to the casing near the opening thereof, and upon opposite sides of the cutter-shaft, substantially as set forth.

4. The combination, in a hoop-machine, of a cutter head and shaft rotating in fixed bearings, a knot-passer sliding in guides at right angles to the cutter-shaft, and an adjusting device, substantially as described, whereby the position of the knot-passer relative to the cutter-shaft may be regulated, and the tension of its bearing-spring varied, substantially as set forth.

5. The combination, in a hoop-machine, of a roll or knot-passer mounted on a sliding frame, h, a screwed stem, h^4, secured to said sliding frame, a stationary nut on the bed-plate or guide-piece h^1 of the sliding frame, a hollow screw, h^5, engaging said nut to regulate the tension of the spring h^2 which presses against the sliding frame, and a nut, h^6, working on the stem h^4 to raise and lower said sliding frame, substantially as set forth.

JAMES A. PEOPLES.

Witnesses:

JAMES C. PARSONS,

JAMES HOGG.