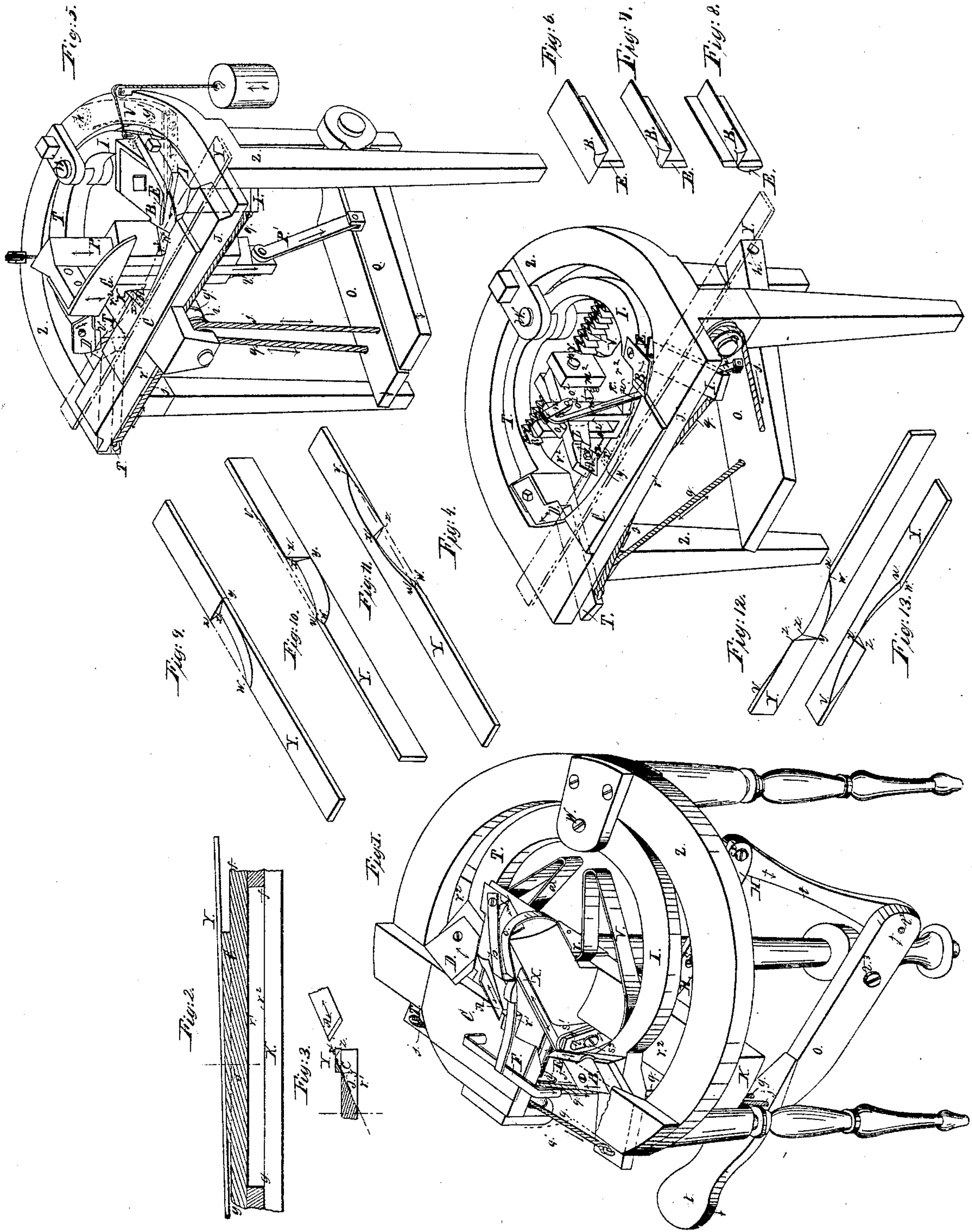


H. Littlejohn, Making Hoops.

N^o 21,508.

Patented Sep. 14, 1858.



UNITED STATES PATENT OFFICE.

HIRAM LITTELJOHN, OF TROY, NEW YORK.

MACHINE FOR CUTTING AND FINISHING THE LOCKS OF WOODEN HOOPS.

Specification of Letters Patent No. 21,508, dated September 14, 1858.

To all whom it may concern:

Be it known that I, HIRAM LITTELJOHN, of the city of Troy, in the county of Rensselaer and State of New York, have invented a new and useful Machine for Cutting, Barking, and Trimming the Locks of Wooden Hoops for Barrels and other Similar Vessels; and I do hereby declare that the following is a full, clear, and exact description of the construction, operation, and distinguishing features of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view and Figs. 4 and 5 isometrical projections of different forms of my said machine. Fig. 2 is a longitudinal section, and Fig. 3 a cross-section of the hoop-supporting-bed of the machine. Figs. 6, 7, and 8 illustrate the construction of the knives used. Figs. 9, 10 and 11 are isometrical projections of a part of a hoop having a right-hand lock, such as is cut, barked, and trimmed by the machine when formed as represented in Fig. 1 or 5; and Figs. 12 and 13 are similar drawings of a hoop having a "left-hand" lock, such as is produced by the machine when made as represented in Fig. 4.

The same letters refer to like parts in all the figures; and the arrows indicate the directions in which the parts move.

In this specification, the phrase "cutting the locks" of the hoops denotes producing the surfaces $z y x$ and $y x w$; that of "barking the lock" imports forming the beveled surfaces $z x v$; and that of "trimming the lock" implies cutting the inclined surfaces $x w u$,—all substantially as shown in or by Figs. 4, 5, 9, 10, 11, 12 and 13.

The first part of my invention consists in cutting the locks of wooden hoops by means of two straight or nearly straight and separate knives, A, B, which cut the lock by different movements; one knife, A, cutting the transverse part, $z y x$, by being moved, or by having the hoop moved, in a transverse direction to the hoop, and the other knife, B, cutting the other portion, $y x w$, by being moved substantially in the longest direction of the longitudinal part of the lock, the knives A B being arranged together and in combination with a suitable hoop-supporting bed, C, substantially as

hereinafter described; whereby the locks of thin flat hoops which require the locks to be cut under nearly or quite across the hoop are cut with much less tendency to move the hoop sidewise on the bed than when the locks are cut, as heretofore and as described in Nos. 13,097 and 15,768 of United States patents, by a knife or knives having substantially the form of the lock to be made and cutting both transversely and longitudinally by the same transverse movement.

The construction of the mechanism which I use in cutting the locks of wooden hoops may be as represented in either of the Figs. 1, 4, and 5, and varied as hereinafter specified, without affecting the feature by which the said mechanism is distinguished from every other. The hoop, Y, shown in red lines, is in all cases supported by the bed C during the cutting of the lock; and in each of the Figs. 1, 4, and 5, the knives A B are in the positions which they occupy when ready for cutting.

In Fig. 1 the knife A is secured to a slide, X, which is fitted to move in ways in the frame Z which supports the machine. This slide X is so arranged in respect to the bed C as shown, and so connected to a treadle, O, hung to the frame-work at t^3 , that when the end t of that treadle is depressed, the knife A is thereby drawn in a transverse direction through the hoop, Y, as indicated by Figs. 1 and 3, so as to cut the transverse part, $z y x$, of the lock shown in Figs. 9, 10, and 11. The slide X is thus connected to the treadle O by means of a lever, H, which is hung at s to the frame-work, and united to the slide at s' by a pin, s^3 , in the slide, and a slot, t^4 , in the lever, and linked at s^2 by a rod t' to the end t^2 of the treadle; or the slide X may be thus connected with the treadle by any other suitable means. The knife B in Fig. 1 is secured to an arm I which is hung at W to the frame-work and fitted to slide between the parallel faces r' , r^2 , of the fixed bars J K, which faces are parallel or nearly parallel to the bed C. The arm I is so connected with the treadle O that when the end t is depressed the knife B is carried in an arc of a circle lengthwise of the hoop so as to cut the longitudinal part $y x w$ of the lock shown in Figs. 9, 10, and 11, at the same time that the knife A is cutting the transverse portion. The arm I is

- thus connected to the treadle O by means of a cord, q , passing over a pulley, q' ; or it may be thus connected by any other suitable means. After the knives A B have cut the
- 5 lock, they are, when the treadle is released, returned to their positions for a new cut by means of a spring V secured at r to the frame-work or by means of any other suitable appliance.
- 10 In Fig. 4 the hoop, Y, is laid with its back on the bed C, and the knife A is fastened to an arm L which is hung at p to the frame work, Z, and so connected to the treadle O hung at p' that when the treadle is depressed
- 15 the knife A is thereby forced down upon the hoop so as to cut the transverse part, $z y x$, of the lock shown in Figs. 4, 12, and 13. The connection of the knife-arm L with the treadle is made by means of a cam, o , having
- 20 an axis o' which passes loosely through the posts o^2 , o^2 and has a crank-arm, n , on one end, which latter is linked to the treadle by a rod n' , the cam o being so formed and arranged that it will make the knife A cut
- 25 only the required depth however far the treadle O is depressed; or the treadle O may work the knife-arm L by means of any other suitable connection. When the treadle is released the spring m^2 returns the knife A to
- 30 its position for a new cut. The knife B is, in Fig. 4, mounted so as to move above the bed C, instead of below; but it is in other respects arranged and operated in substantially the same manner as in Fig. 1.
- 35 In Fig. 5 the knife A is fixed immovably to the frame work of the machine with its edge projecting up in an inclined position above the bed C, so that the transverse part $z y x$ of the lock may be cut by pressing the
- 40 hoop down upon the knife until the inner side of the hoop rests on the bed C. G is a foot or clamp attached to the slide P which works in ways in the frame-work and which is linked by a rod P' to the treadle Q so
- 45 that by pressing down that treadle the foot G will press the hoop, Y, down upon the fixed knife A so as to make the latter cut the transverse part of the lock shown in Figs. 9, 10, 11; or the foot G may be con-
- 50 nected with the treadle Q by any other suitable mechanical device; or with the treadle O by a device like that shown in Fig. 4 for operating the knife A. When the treadle is released the foot G is elevated by a spring l'
- 55 or by some other suitable means. The knife B, in Fig. 5, is arranged and operated in substantially the same manner as in Fig. 1.
- It is obvious from the foregoing description that the knife A, instead of being ar-
- 60 ranged as hereinbefore particularly described may be fixed above the bed C in about the position which that knife occupies in Fig. 4, and the bed C mounted so as to be moved up to that knife and thereby cut
- 65 the transverse part of the lock and bring the hoop into the proper position for the action of the knife B: and that the knife A when made movable may in each case be secured to either a reciprocating slide or a vibrating arm; and that the foot G, of Fig. 5, may be
- 70 secured to a movable arm instead of to a slide. It is also evident that the axis of the arm which carries the knife B may be located in various positions higher, and lower, than the bed C; and that the knife B may be
- 75 fixed to a movable slide instead of to a vibrating arm, and still move in substantially the direction of the longest sides of the longitudinal part of the lock to be cut. It is also apparent that the knives A B,
- 80 (and foot G,) instead of being connected to a treadle, as shown in the drawings, to be worked by the foot or feet of the operative, may be equally well connected to a lever, crank, or other mechanical contrivance to be
- 85 worked by hand or by some constantly moving force. But these and similar changes are but mere modifications such as would readily occur to any competent mechanist.
- The second part of my invention consists
- 90 in so arranging, substantially as herein set forth, a knife D in combination with the herein described combination of the knives A B, or their substitute, and the bed C, that the operator may, by means of the said
- 95 knife D, conveniently bark the lock while the lock is being cut by the machine, or while the hoop remains in the same place on the bed C that it occupied during the cutting of the lock; whereby the locks of all
- 100 the hoops are all barked alike in respect to the cut of the lock; and are cut and barked with much greater rapidity than if the hoop was required to be changed to another
- 105 place on the bed, or to another bed, after the lock was cut, before barking the lock.
- The knife D in Figs. 1, 4, and 5, is fastened to an arm T which is hung at W to the frame-work, Z, and fitted to slide between the two parallel faces r' , r^2 of the
- 110 fixed bars J, K. The arm T is so connected with the treadle O by a cord, j , passing over a fixed pulley, i , or by some other suitable means, that when the treadle O is depressed the knife D is thereby made to cut into
- 115 the hoop in a longitudinal direction, as is indicated by the drawings, and produce the beveled surface $z x v$, at the same time that the longitudinal part $y x w$ of the lock is being cut by the knife B. When the treadle
- 120 O is released, the knife-arm T is returned for a new cut by a spring, a , or by some other suitable means. It will be observed by inspecting Fig. 1, that if the knife A thereof was extended laterally about as the
- 125 foot G is in Fig. 5, so as to have the form of the lock to be made, and the lock then cut by such a knife, the knife D would in that case bark the lock while the lock was being cut, the same as if the lock was cut by the
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two separate knives A B. So this second part of my invention is not limited by the circumstance of employing the two separate knives A B to cut the lock.

5 A knife or knives having substantially the form of the lock to be made may be substituted for the knives A B; but I wish it distinctly understood that I am not the first to cut the locks of wooden hoops by means
10 of a knife having the form of the lock.

I prefer to so arrange the knife D, as shown in the drawings, that it shall cut the hoop in the longest direction of the surface $z x v$; but it is obvious that the location of the axis
15 W of the arm T may be changed, or the knife D secured to a movable slide instead of to a vibrating arm, even so that the knife D shall cut transversely across the hoop, and the knife D still in each case bark the lock
20 properly at the same time that the lock is being cut, or while the hoop remains in the same place on the bed C that it occupied during the cutting of the lock. So also the knife D may be worked by a crank or other
25 suitable means, instead of by a treadle O. But such changes are mere modifications which any capable mechanist will readily make, when desired, without further description.

30 The third part of my invention consists in so arranging a knife, E, in combination with the herein described combination of the knives A B or their substitute and the bed C, that the operative may, by means of the said knife E, conveniently "trim" the
35 lock while the lock is being cut, or while the hoop remains in the same position on the bed C that it occupied during the "cutting" of the lock by the machine, substantially as herein described, whereby all the locks of the
40 hoops are trimmed alike in respect to the cut of the locks, and "cut and trimmed" with greater rapidity than heretofore.

In Fig. 1 the knife E is so connected with
45 the knife B, and in Figs. 4 and 5 so attached to the arm I to which the knife B is secured, that whenever the treadle O is depressed the knife E goes with the knife B and "trims" the lock or cuts the beveled surface $x w u$
50 at the same time and in the same direction that the knife B cuts the longitudinal part of the lock. The knives shown in Figs. 6, 7 and 8 are for use in the machine when made as shown in Fig. 4.

55 It will be obvious upon inspecting Fig. 1 that if the lock was cut by a knife or knives having the form of the lock to be made as hereinbefore suggested, instead of by the knives A B as herein described, then in that
60 case the knife E, arranged substantially as herein described, would trim the lock properly during the cutting of the lock, or after the lock is cut by such a knife without requiring the hoop to be moved from the position which it occupied during the cutting of

the lock. So it is not essential to the practice of this third part of my invention that the lock should be notched or "cut" by the two separate knives A B, for a knife or
70 knives having the form of the lock to be made and cutting the lock by a single transverse movement may be substituted for them. It is also evident that the knife E, instead of being secured to the knife B or arm I, may be fastened, as shown by red lines in
75 Fig. 5, to a separate movable arm, U, hung at h to the frame-work and linked at g' to the arm I, or otherwise suitably connected to the treadle or whatever other device is employed to work the knives of the machine;
80 also, that the knife E may be attached to a movable slide instead of to a movable arm, and so arranged as to cut the hoop in a transverse direction, after the lock is "cut" by the knives A B or their substitute, but
85 while the hoop remains in the same place on the bed C that it occupies during the cutting of the lock. But such variations in construction and arrangement are mere modifications which any competent mechanist will be able
90 to make from the foregoing description, if such change shall be desirable.

It is of importance in trimming the lock that the greatest portion of material should be cut from the hoop at the end of the lock
95 farthest from the transverse part, $z y x$, as shown in Fig. 13. To make the knife E, when attached to the arm I, thus cut the hoop, I so form the bed, C, substantially as shown by Figs. 2 and 4, that the hoop, when
100 laid thereon, will, in the part opposite to the knives B E, occupy an inclined position longitudinally in relation to the direction $f g$ in which those knives move.

In Fig. 1 the part F is a clamp or foot
105 which is secured by a spring c to the frame-work. b is an arm so fastened on the slide X and arranged in respect to the foot F that whenever the treadle O is depressed the arm b presses the foot F upon the hoop so as to
110 hold the hoop firmly upon the bed during the action of the knives. In Fig. 5 the foot G, besides forcing the hoop down upon the knife A, performs the same service as the foot F in Fig. 1. The surface of the bed C
115 should be like a rasp; so that the hoop will not easily slide thereon.

Sometimes, in half-round hoops, it is simply required to cut the lock. In such cases I use only the knives A B in connection with the bed C as described. At other times it is required to "bark" the lock as well as cut it; then I use the knife D in connection with the knives A B or their substitute and the bed C. Or it may be desired
120 to merely cut and trim the lock; then I use the knife E with the knives A B or their substitute and the bed C. But when the lock is required to be both barked and trimmed as well as cut, I use both of the
125 130

knives E and D in combination with the knives A B or their substitute and the bed C, all substantially as hereinbefore set forth.

What I claim as my invention and desire to secure by Letters Patent is,

1. The two separate knives, A, B, when arranged together and with a suitable bed, C, substantially as herein described, for use in cutting the locks of wooden hoops.

10 2. I also claim the knife D when arranged in combination with the knives A B or their substitute and the bed C substantially as herein described, for "barking" the lock

while the hoop remains in the same place on the bed that it occupies during the cutting 15 of the lock.

3. I also claim the knife E when arranged in combination with the knives A B or their substitute and the bed C, substantially as herein set forth, for trimming the lock while 20 the hoop is in the same place that it occupied during the cutting of the lock.

HIRAM LITTELJOHN.

Witnesses:

MARCUS BALL,
A. F. PARK.