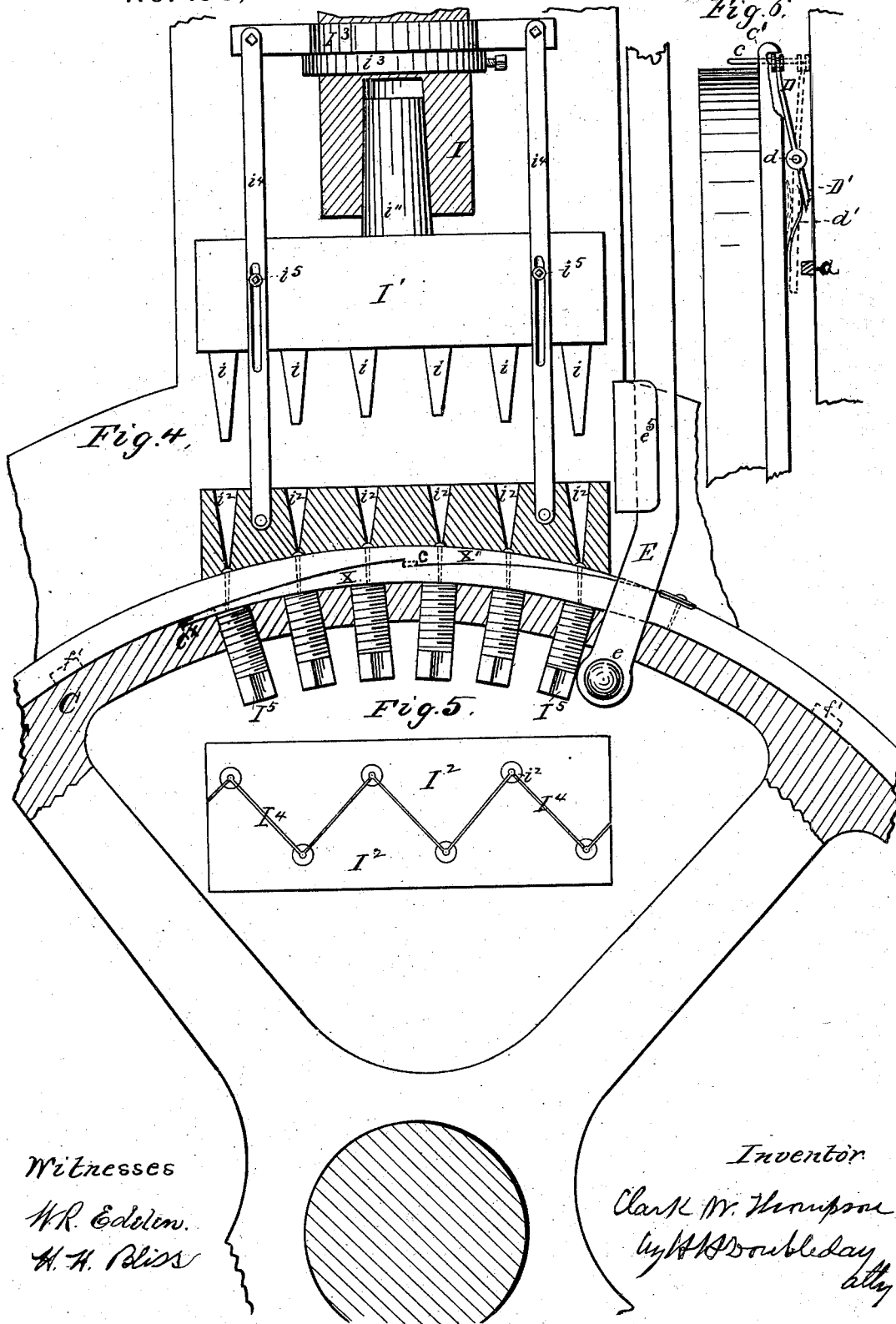


C. W. THOMPSON.
Barrel-Hoop Machine.
No. 198,825. Patented Jan. 1, 1878.



Witnesses
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UNITED STATES PATENT OFFICE.

CLARK W. THOMPSON, OF WELLS, MINNESOTA.

IMPROVEMENT IN BARREL-HOOP MACHINES.

Specification forming part of Letters Patent No. **198,825**, dated January 1, 1878; application filed May 1, 1877.

To all whom it may concern:

Be it known that I, CLARK W. THOMPSON, of Wells, in the county of Faribault and State of Minnesota, have invented certain new and useful Improvements in Machines for Making Hoops; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a front elevation of my machine. Fig. 2 is a side elevation of the same; Fig. 3, the devices for locking one of the gear-wheels and releasing the same. Fig. 4 is an enlarged view of the flanged wheel upon which the hoop is formed, and of some of the parts immediately connected therewith. Fig. 5 is a view of the nail-holder detached. Fig. 6 is a detached view of the griping-pin and its actuating-lever.

A A represent the legs; A¹, the cross-girt connected with the uprights A² A³ A⁴ of the main front portion of the supporting-frame, which part I usually cast in one piece of metal, and connect with the rear portion A⁵ of the frame by means of girts A⁶ A⁷, Fig. 2. B is a shaft, carrying an open pinion, B¹, and a bevel friction-pulley, *b*. B² is a counter-shaft, carrying at its inner end a bevel friction-pulley, *b*¹, and at its outer end a keyed pulley, B³, and a loose pulley, B⁴, driven by belt B⁵, the inner end of shaft B² being mounted in an eccentric-lever, *b*², through which the friction-pinion can be made to engage with friction-pulley *b* at the will of the operator, as will be readily understood. C is a forming-wheel, provided with a flange, C¹, and mounted upon the front end of a shaft, C², carrying a spur-gear, C³, driven by spur-pinion B¹.

The outer face of forming-wheel C is of the same diameter as the inner diameter of the hoop which is to be made upon it, and is beveled or made tapering to correspond with the outline of that part of the barrel to which the hoop, when completed, is to be applied.

c is a griping-pin, arranged in a slot, *c*¹, in the flange C¹, Fig. 6, and is connected at its rear end with a lever, D D', pivoted at *d* to

the inner or rear face of wheel C. *d*' is a tongue-spring secured to wheel C, with its free end resting against the end D' of the lever, to thrust the griping-pin through the slot *c*¹ into the position shown in Fig. 6, except when the pin and its lever are forced into the position shown in dotted lines, Fig. 6, as will be explained. *c*^x is a recess in the face of the forming-wheel C, to receive one end of the hoop. E is a presser-bar, mounted upon the front end of a rock-shaft, E¹, seated to rotate in the upright A² of the frame. The lower end of this presser-bar is shaped to conform to and press the hoop firmly upon the forming-wheel. A handle, *e*, at the lower end of the presser-bar is used to swing it up until it is caught in a notch, *e*⁴, in the curved supporting-standard E³. (See Fig. 1.) B² is a crank-arm on the rear end of rock-shaft E¹. *e*¹ is a link connecting this crank-arm with disk or ring F through bell-crank levers *e*² *e*³, there being one bell-crank at each side of the disk; or, when preferred, link *e*¹ may be attached to an arm projecting centrally from a rock-shaft, carrying at each end a downwardly-projecting arm, connected with ring F by links *f*². This ring or disk F is supported upon ways attached to the girt A⁶, but not shown.

f are fingers projecting horizontally from ring F, and there are slots or openings *f*¹ in the flange C¹ of the forming-wheel, through which these fingers pass in close proximity to that part of said wheel in which the anvils are placed, for a purpose which will be explained. G is a hand-lever, pivoted at *g*, and connected by a link, *g*¹, with the free end of eccentric-lever *b*². G' is a notched arm projecting from the frame, and when lever G is thrust into the position shown in dotted lines, Fig. 2, it (the lever) rests in a notch, *g*², in the arm G', and the friction-pulley *b*¹ is pressed against friction-pulley *b* in such manner that the spur-gear C³ and the forming-wheel are driven in the direction indicated by the arrow 1, Fig. 1. *g*³ is a wedge-shaped spur projecting from hand-lever G.

I will now describe devices employed for nailing the ends of the hoop.

H is a band-wheel, provided with a clutch-faced hub, *h*, and mounted loosely upon the shaft of crank H¹ at the upper part of the

uprights $A^3 A^4$. h^1 is a clutch-faced sleeve sliding on the crank-shaft, and secured thereto by a spline or feather. H^2 is a shipping-lever, pivoted at h^2 . The upper forked end of lever H^2 enters a groove in the sleeve h^1 .

H^3 is a tongue-spring, to keep the clutch-sleeve h^1 disengaged from clutch-hub h , except as hereinafter noted. H^4 is a pitman, connecting crank H^1 with a bar, I , constructed to slide vertically in a boxing on the upright A^2 of the frame. I^1 is driver-head, attached to the lower end of the sliding bar I by means of a shank, i^1 , which enters a socket in the bar, or by any other desired connection. $i i$ are drivers, projecting from the lower face of the driver-head. $I^2 I^2$ is a nail holder and guide, made concave upon its under face, and provided with tapering sockets $i^2 i^2$, arranged zigzag to receive the nails. The drivers i are also arranged zigzag to correspond with the position of the sockets i^2 .

The nail-holder is made in two parts, divided vertically upon the zigzag line I^4 , Fig. 5, and is connected with the sliding bar I by means of four parallel elastic fingers, i^4 , attached at their upper ends to a block, I^3 , supported upon bar I by means of a set-collar, i^3 .

The fingers i^4 are slotted, and i^5 are set-screws, passing through these slots into the driver-head I^1 .

$I^5 I^5$, Fig. 5, are steel anvils, screwed into the forming-wheel C in such position as to receive upon their outer ends the nails which are driven through sockets i^2 and clinch them. c^2 is a dog, pivoted to and moving with the forming-wheel, as shown in dotted lines, Fig. 1. The dog is upon the rear or inner side of the wheel. c^3 is a tripping-pin, inserted in the wheel C^3 just below the rear end of the pivoted dog c^2 . i^6 is an elastic tripping-latch, attached to the lower end of the bar I , so as to rise and fall in the same vertical plane with dog c^2 .

In Fig. 3 I have shown an enlarged view of the devices for stopping the revolution of the forming-wheel and starting it again.

c^4 is lug projecting from the rim of said wheel, at a little distance from shaft C^2 .

c^5 is a locking-latch, pivoted to a suitable support, in such manner that its free locking end can fall far enough to engage with lug c^4 , but cannot engage with pin c^3 when this pin passes as the wheel rotates.

My machine may be operated as follows: When the forming-wheel C is in the position shown in Fig. 4, but without any hoop upon it, the griping-pin c will be thrust out over the beveled part, as indicated in dotted lines, Fig. 4, and in full lines, Fig. 6.

The ends of the strip from which the hoop is to be made are both beveled and shouldered, as shown in Fig. 4.

I insert one end, X , of a hoop-strip into a recess, c^x , formed for its reception in the wheel, and under the pin c , which brings the shoulder in front of the pin c . I then bend the strip around the wheel, and close the presser-

bar E firmly down upon it. I next move the hand-lever G into the position shown in dotted lines, Fig. 2, which forces the friction-pulley b^1 against the friction-pulley b .

By this movement of lever G , the spur g^3 lifts latch c^5 from lug c^4 , leaving the forming-wheel free to be revolved by pinion B^1 , gear C^3 , and shaft C^2 ; and as this wheel is thus rotated in the direction indicated by the arrow, (see Fig. 1,) the hoop-strip is drawn tightly around the wheel C , the presser-bar being held from moving with the wheel by a stop at c^5 on the upright A^2 .

Just before the griping-pin c reaches the presser-bar E , the end D' of the lever $D D'$ is thrown into the position indicated by dotted lines, Fig. 6, in order that the shoulder of the part X' of the hoop may be locked with the shoulder of the part X as the hoop passes under the presser-bar, this movement of the lever being effected by contact of said lever with a rib, a , on the frame, (shown in section, Fig. 6,) where the lower end of the lever, in full lines, is broken away.

A further advance of the forming-wheel brings pin c^3 into contact with lever G , (see Fig. 2,) pushing the lever out of its notch in arm G' , when the spring g^4 retracts the lever and disengages friction-pulley b^1 from pulley b , and the latch or detent c^5 stops the forming-wheel in the position shown in Fig. 4.

Just before the latch c^5 stops the forming-wheel, the dog c^2 , carried by this wheel, pushes forward the lower end of shipping-lever H^2 and clutches band-wheel H to the crank-shaft, the revolution of which forces down the driver-head and drivers i , as in Fig. 1; and as one nail had been placed in each of the sockets i^2 of the nail-holder, the six nails are driven through the hoop and clinched upon the anvils I^5 , the elastic fingers i^4 permitting the two halves of the nail-holder to separate sufficiently to let the heads of the nails pass.

As the bar I is raised by the crank to the point of its greatest elevation, the elastic tripping-latch i^6 lifts the rear end of the pivoted dog c^2 , thus depressing its front end until the lower end of the lever H^2 is released, when the spring H^3 unclutches the crank-shaft from the band-wheel H , and bar I is left in its elevated position, with the nail-holder lifted from the hoop.

The presser-bar is then swung into the position indicated in dotted lines, Fig. 1, by which movement the rock-shaft E^1 , link e^1 , and bell-crank levers $e^2 e^3$, and ring F , the fingers f are thrust forward through the slots f' in the flange C^1 , and the hoop is detached from the forming-wheel, the machine being now ready to receive a new hoop-strip.

What I claim is—

1. In a hoop-machine, the combination, with the forming-wheel, of a vibrating griping-pin, c , which engages with the lock of the hoop, and is withdrawn to permit the ends of the hoop to be secured to each other, substantially as set forth.

2. In a hoop-machine, the combination, with the forming-wheel, of fingers operated to thrust the formed hoop from its position upon the wheel, substantially as set forth.

3. The combination, in a hoop-machine, of a forming-wheel, fingers to thrust the hoop from its position upon the wheel, and a compressor, which presses the hoop upon the forming-wheel, whereby, when the compressor is removed from contact with the hoop, the hoop is thrust from said forming-wheel, substantially as set forth.

4. In a hoop-machine, a forming-wheel provided with anvils I^2 , substantially as set forth.

5. In a hoop-machine, the combination of a forming-wheel and a series of reciprocating nail-drivers, which force nails through the hoop before the hoop is removed from the wheel, substantially as set forth.

6. In a hoop-machine, the combination, with the forming-wheel and its driving mechanism, of a shipping-lever or its equivalent, actuated by the forming-wheel at each revolution to throw the said forming-wheel out of action, substantially as set forth.

7. The combination, with the forming-wheel,

of a detent, which stops the rotation of said wheel at the proper point for nailing the ends of the hoop, and a shipping-lever or its equivalent, which automatically throws said wheel out of action at each revolution, and permits the detent to act upon the wheel, substantially as set forth.

8. In a hoop-machine, the combination, with the forming-wheel, of a reciprocating nail-driver and a shipping-lever or its equivalent, actuated by the forming-wheel to throw the nail-driver into action, substantially as set forth.

9. In a hoop-machine, the combination, with the nail-driver, of a tripping-latch, which automatically throws the driver out of action after the ends of the hoop have been secured to each other, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CLARK W. THOMPSON.

Witnesses:

H. H. DOUBLEDAY,
M. P. CALLAN.