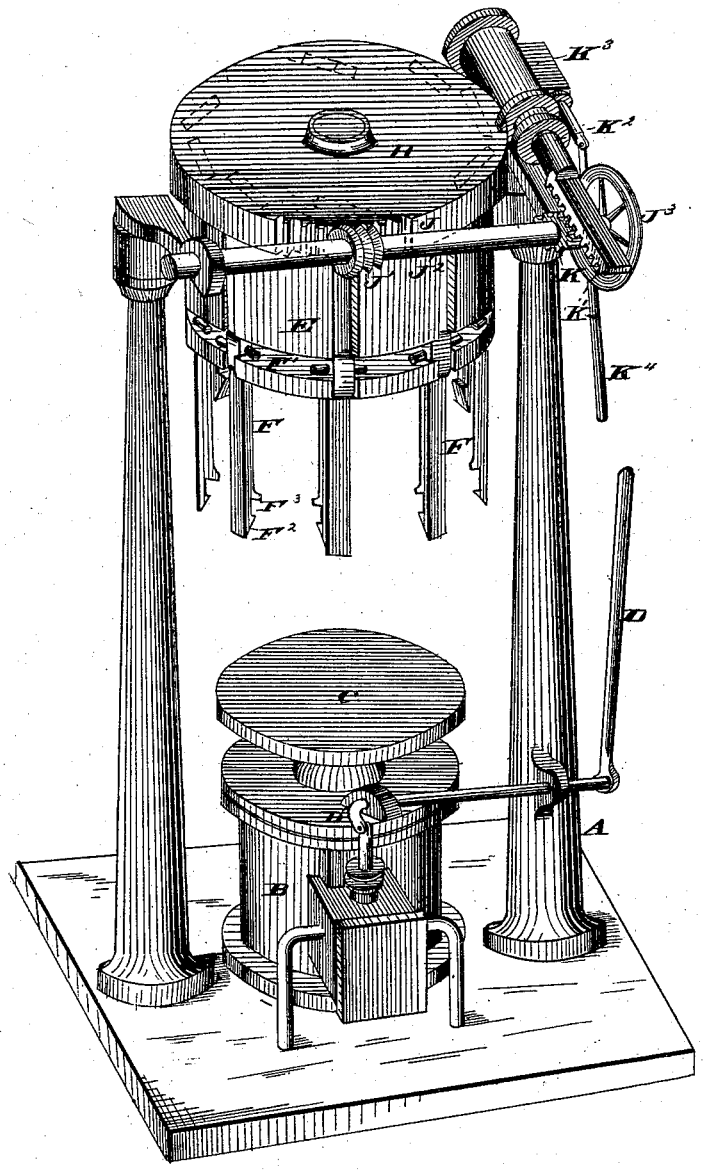
2 Sheets—Sheet 1.

M. L. DEERING.

BARREL-TRUSSING AND HOOPING-MACHINE.

No. 194,335. Patented Aug. 21, 1877.

Fig. 1.



WITNESSES

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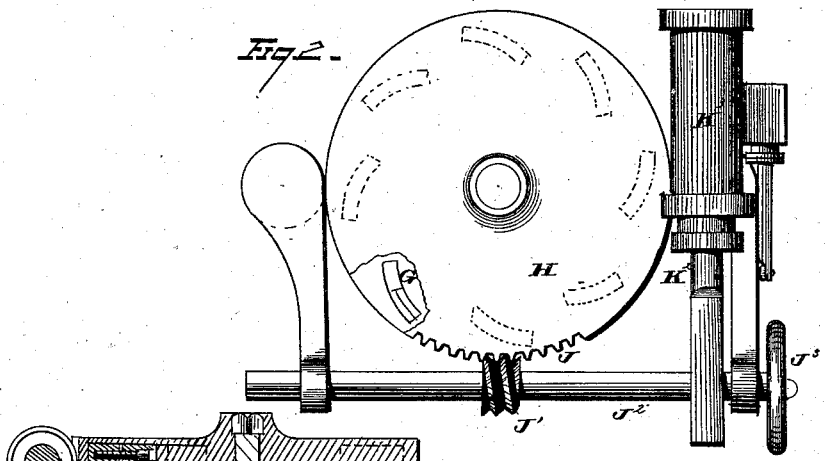
2 Sheets—Sheet 2.

M. L. DEERING.

BARREL-TRUSSING AND HOOPING-MACHINES.

No. 194,335. Patented Aug. 21, 1877.

Fig. 2.



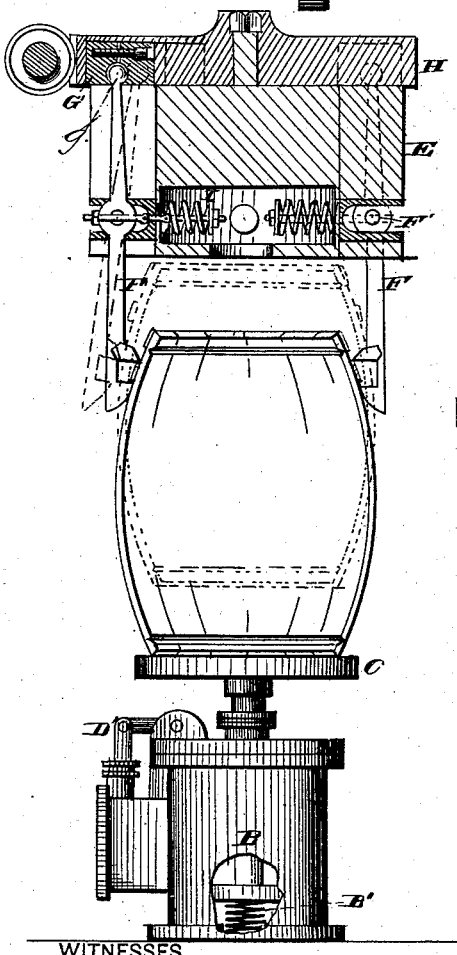
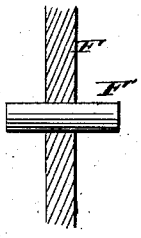
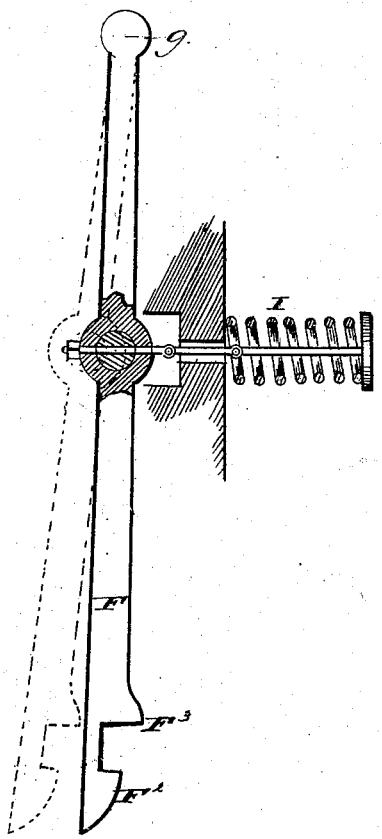


Fig. 3.





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UNITED STATES PATENT OFFICE.

MARK L. DEERING, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE H. HOPPER.

IMPROVEMENT IN BARREL TRUSSING AND HOOPING MACHINES.

Specification forming part of Letters Patent No. **194,335**, dated August 21, 1877; application filed June 23, 1877.

To all whom it may concern:

Be it known that I, MARK L. DEERING, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machine for Trussing and Hooping Barrels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to a machine for trussing and hooping barrels, and is designed more especially for setting the hoops to their proper positions; and consists in the combination of devices and appliances, as hereinafter set forth and claimed.

In the drawing, Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is a top view of the top of my machine. Fig. 3 is a longitudinal central section illustrating parts of my machine.

In the manufacture of barrels it is customary to drop the hoops loosely upon the body of the barrel before the truss-hoops are removed. Then, after the truss-hoops are removed, the barrel's hoops are forced by hand through the medium of a hammer and block or tool until they have reached their proper position. The operation, however, is slow and tedious, and when completed the hoop is rarely true or evenly set.

My invention consists in forming a machine that shall set the barrel-hoops at their proper positions truly and uniformly in every instance, and yet perform the operation in a few moments, whereby all the hoops of a barrel may be set snugly and correctly within a minute, more or less, and whereby the hoops may be set either by percussion or by steady pressure, or both.

A is a suitable frame-work for supporting the mechanism. B is a steam-cylinder; C, a platform attached to the steam-piston; D, a lever governing the steam-valve D′, that governs the admission of steam to the cylinder. B′ is a spring, or in place thereof there may at this point be a steam or any other cushion, the object being to form a cushion for the piston as it falls to the bottom of the cylinder when the steam is cut off. E is a guide-head and support for the arms or jaws that engage the barrel-hoops. F are the arms, which are each provided with trunnions F^1, also with bevels F^2 and steps or shoulders F^3. Each arm F is extended at its upper end into an inclined slot, G, in the revolving head or plate H. Any suitable connection may be made at this point for the purpose hereinafter described; but I have found it convenient to terminate the tops of the arms each in the form of a ball, *g*, embraced by a spherical boxing, G′, which said boxing slides freely in the slot G.

The function of the slots G is as follows: The hoop at the end of the barrel is of smaller diameter than the other hoops; therefore, by turning the plate H so that the boxes G′ shall rest in the outer end of slots G, the lower ends of the arms F will be thereby contracted to suit and engage with the smaller hoop.

Now, when it is desired to engage with the next larger hoop, the jaws are expanded by turning the plate or head H in the opposite direction, causing the boxes G′ to approach the inner ends of the slots G. Each arm F is arranged also to swing outward around the box G′ as a center, in which case the arm operates against the resistance of a spring, I, the object being that when the plate H has been turned sufficiently to have extended the arms F just far enough to pass over the first hoop, the arms will immediately strike the barrel, and as the barrel is forced up they will yield to conform to the increased diameter of the barrel, and be in position to engage the next hoop. The springs I also serve to give sufficient friction against the barrel that the barrel will be held suspended in case it is desired to lower the platform, and to afterward bring it up with a strong stroke against the end of the barrel, as will be hereinafter described.

The plate or head H may be moved in any suitable manner by any suitable machinery. That shown in the drawing, however, I have found to answer a good purpose.

A worm-gear, J, is formed at the periphery of the head H, and meshes with a worm, J^1, on the shaft J^2. This shaft may be operated

by hand, through the medium of a hand-wheel, J^3, or it may be arranged to operate by steam or other power. Thus, there may be a pinion, K, meshing with a rack-bar, K^1, connected with the piston K^2 of the steam-cylinder K^3, and be governed by a lever, K^4.

I would have it understood that I do not limit myself to any particular means for operating the movable head H. The means described are, of course, simply examples of such as I have employed; but others may be employed without departing from my invention.

The operation of this device is as follows: The hoops having been placed loosely upon the barrel, ready for being set or forced to their proper positions, the barrel is placed upon the platform C in its proper position, which may be indicated by a circular mark, or it may be centered in any other manner. The head H is then turned so as to contract the lower ends of the arms F. The operator then introduces steam into the cylinder B by means of the lever D; the barrel is thereby lifted until it strikes the bevels F^2; the arms will then yield, and the barrel will rise until the upper edge of the first hoop rests against the steps or shoulders F^3. The further pressure of the piston will drive the barrel up, while the resistance of the shoulders F^3 will force the hoop down upon the barrel; or, if desired, the steady pressure may be sufficient simply to partially set the hoop in place. Then, while the barrel is held suspended by the arms F acting with the tension of the springs I, the piston, with the platform C, may be dropped down and brought up again suddenly with a strong stroke against the lower end of the barrel, thus setting the hoop through the means of percussion; and it may be given as many such strokes as desired, and the strokes be delivered with greater or less force. The platform is then brought up against the lower end of the barrel to support it. The arms F are expanded sufficiently, by turning the head H, to permit the shoulders or steps F^3 to pass over the first hoop. More steam is then admitted into the cylinder B, and the barrel is forced upward, the arms F yielding to conform to its larger diameter, and the next hoop is engaged beneath the shoulders F^3, and the hoop is set in place in the same manner as the first hoop was set in place. When the hoops at one end of the barrel have been thus set, the barrel is dropped down, inverted, and the hoops at its other end are set in like manner, the whole operation of setting all the hoops of a barrel requiring but a very few moments of time.

It is apparent that the hoops will be set truly and evenly in every instance, and the operation is more effective than is possible with hand-work. Moreover, my machine accomplishes what has not been accomplished heretofore, in giving a percussive blow to all parts of the hoops simultaneously.

The shoulders or steps F^3 may, if desired, be made removable, so that, as they become worn or broken, new steps may be inserted without renewing the entire arms.

The platform or floor upon which the operator stands should be on a level with the top of the platform C when at its lowest position, though it will be understood that this is a mere matter of convenience, and is not absolutely essential.

So, also, instead of employing steam as the power for driving up the platform C, that platform may be driven up by any other suitable power—as, for instance, by hydraulic power, air, or by lever-power; but I have confined my description of this invention simply to that instance wherein the machine is operated by steam-power.

So, also, it will be understood that there are many ways for causing the arms F to expand and contract, and that my invention is not limited solely to that plan of revolving head H with inclined slots or grooves G, but any suitable arrangement may be employed for this purpose. I have, however, found the above construction to work well.

In order to provide for wear at the trunnions F^1 the trunnions may be made removable, so as to be readily removed, and boxing may be introduced, within which the trunnions may operate. Such a boxing is shown in the sectional view.

This device is equally well adapted for forcing the truss-hoops upon a barrel, and for straightening the barrel and evening up the ends of the staves for that purpose. The device is used precisely as hereinbefore described for the hoops, so far as relates to the forcing of the truss-hoops upon the barrel.

The stroke of the platform from beneath upon the ends of the staves will of itself, in many instances, even the staves or drive their ends all into the same horizontal plane; but the arms F may be expanded sufficiently far to permit the platform to drive the barrel through freely until its top end strikes the flat metallic base of the head E. Then a slight pressure or stroke from the platform below will even the ends of the staves.

Thus it will be seen that this machine is equally well adapted for pressing or driving the hoops upon the barrels, either by steady pressure or by percussion, or by both; that it is also adapted for pressing or driving the truss-hoops upon barrels, and is adapted for evening the ends of the staves and straightening the barrel. Moreover, the chine-hoops may be driven down flush with the ends of the staves by simply opening out the arms F, so as to drive the barrel up against the flat under surface of the head E.

What I claim is—

1. In a barrel-hooping machine, the combination, with a vertically-moving platform for supporting the barrel, of a series of dependent arms secured to an independent head, which latter is located above the movable platform, substantially as described.

2. In a barrel-hooping machine, the combination, with a vertically-moving platform, of a superposed head provided with a series of dependent arms, and means for imparting a radial movement to said arms, substantially as described.

3. In a barrel-hooping machine, the combination, with a vertically-moving platform, of a superposed head or frame, provided with a series of dependent arms, the latter trunnioned below their upper ends to the head, while the extreme upper ends have their bearings in a rotary head or plate, substantially as described.

4. In a barrel-hooping machine, the combination, with a vertically-moving platform, of a superposed head, provided with dependent arms, the latter trunnioned at F^1, and the movable head H constructed with inclined slots H′ for the reception of the upper ends of said arms, substantially as described.

5. The combination, with the head H, of the worm-gear J J^1 and hand-wheel J^3 for operating the same, substantially as described.

6. The combination, with the head H, of the worm-gear J J^1, rack and pinion K K^1, and steam-power for operating the said rack, substantially as described.

7. In a barrel-hooping machine, the steam-cylinder B and vertically-moving platform C, the whole governable by a lever, D, operating a valve, substantially as and for the purposes described.

8. The barrel-hooping machine, consisting of the vertically-moving platform C, cylinder B, and lever D, in combination with the adjustable spring-arms F, and governing-lever K^4, or its equivalent, substantially as described.

9. In a barrel-hooping machine, the combination, with the arms F and trunnions F^1, of the rotary head H, provided with boxings G, substantially as described.

10. The combination, with the vertically-moving platform and the guide frame or top E, having a flat surface underneath, of the arms F and mechanism for expanding them so as to stand free from the barrel, substantially as and for the purposes described.

11. The combination, with the arms F, of removable trunnions F^1, substantially as and for the purposes described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARK L. DEERING.

Witnesses:

FRANCIS TOUMEY,

W. E. DONNELLY.