2 Sheets—Sheet 1.

E. & B. HOLMES.

Keg-Trussing Machine.

No. 212,381. Patented Feb. 18, 1879.

Fig. 1a.

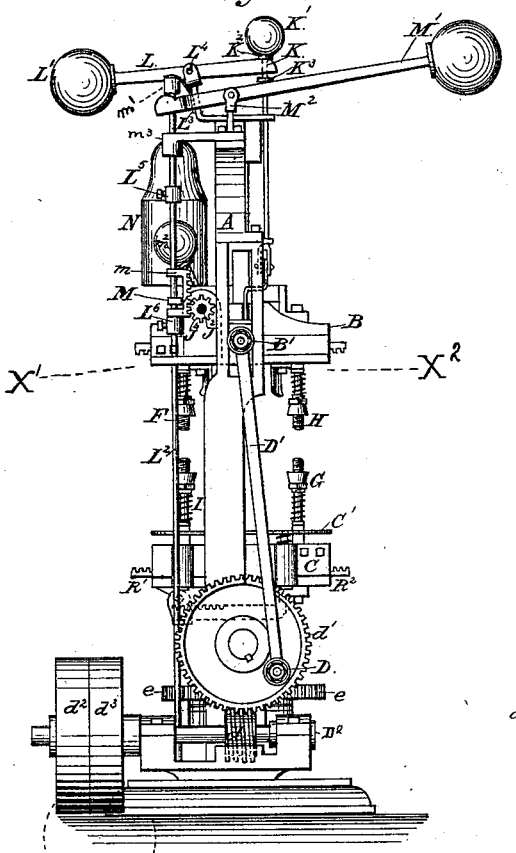


Fig. 1.

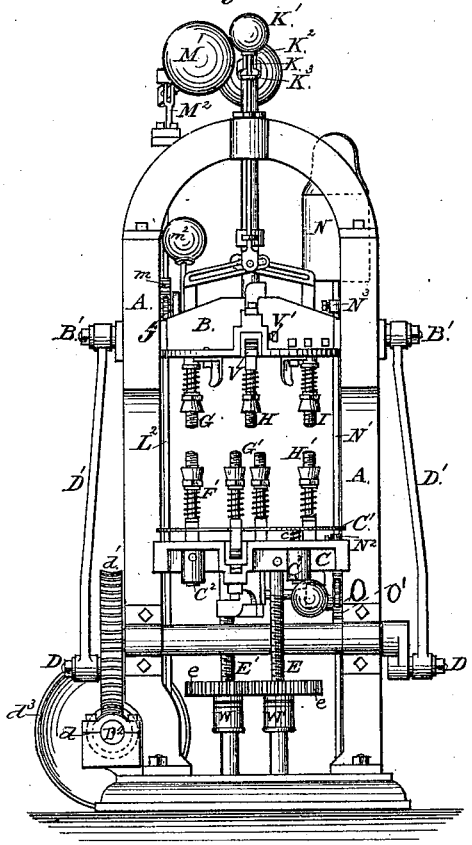


Fig. 2.

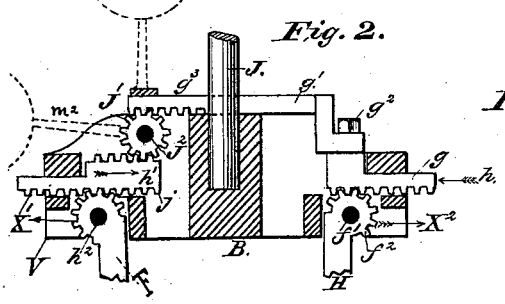


Fig. 4.

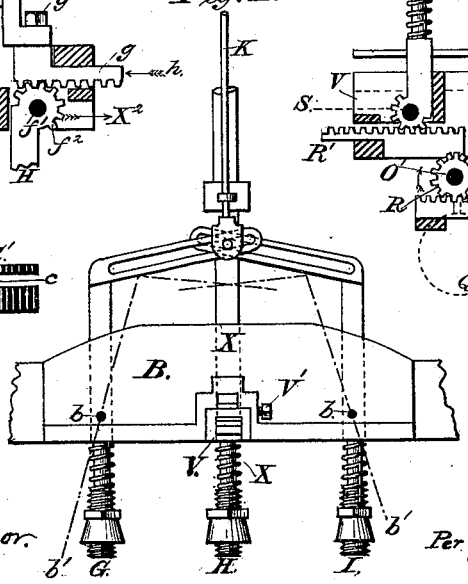


Fig. 5.

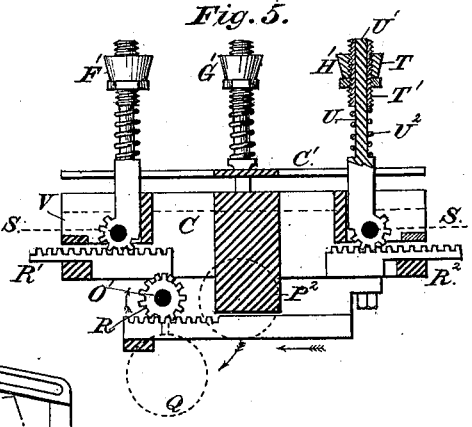
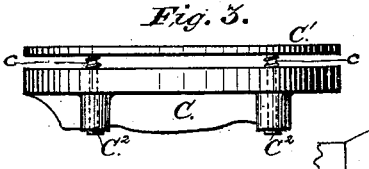


Fig. 3.



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2 Sheets—Sheet 2.

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Fig. 6

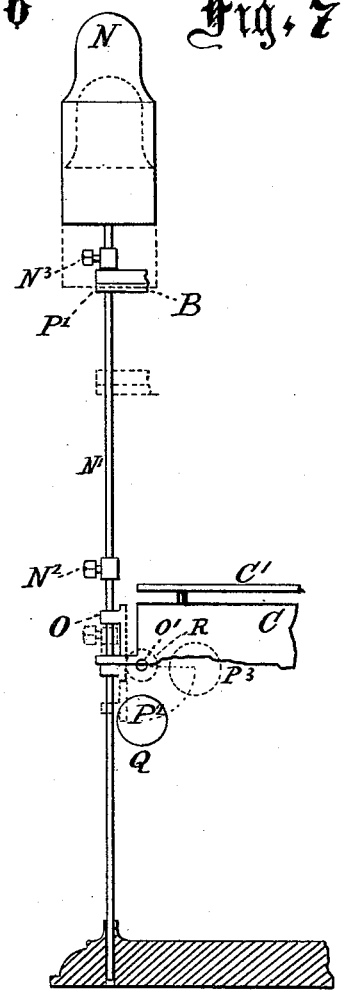
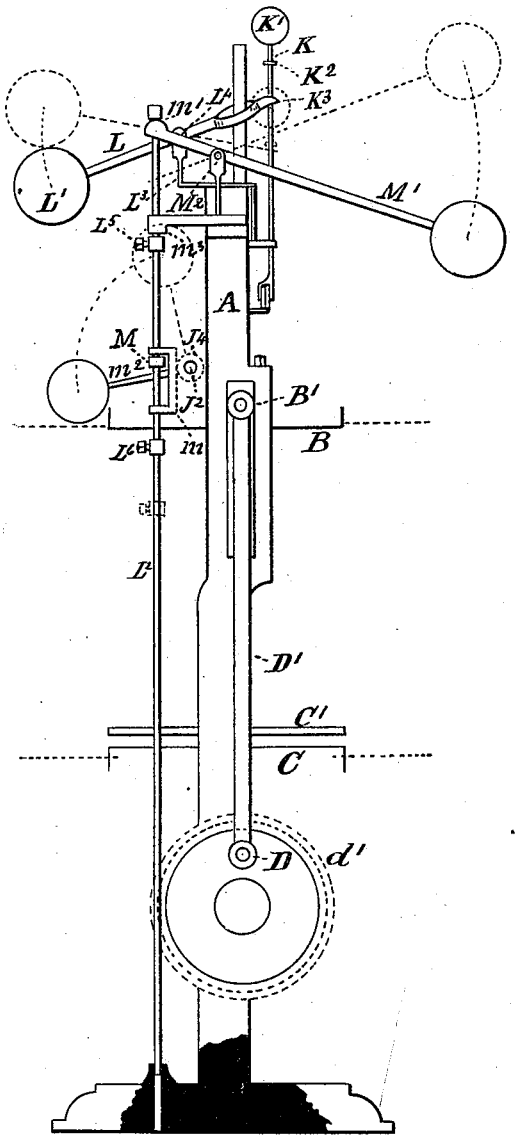


Fig. 7



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UNITED STATES PATENT OFFICE.

EDWARD HOLMES AND BRITAIN HOLMES, OF BUFFALO, NEW YORK.

IMPROVEMENT IN KEG-TRUSSING MACHINES.

Specification forming part of Letters Patent No. **212,381**, dated February 18, 1879; application filed January 5, 1878.

To all whom it may concern:

Be it known that we, EDWARD HOLMES and BRITAIN HOLMES, both of the city of Buffalo, in the county of Erie and State of New York, have jointly invented certain new and useful Improvements in Keg-Trussing Machines, which improvements are fully described in the following specification and accompanying drawings, in which—

Figure 1ª is a side elevation, and Fig. 1 a front elevation. Fig. 2 represents a vertical section through the reciprocating cross-head through line X X, Fig. 4. Fig. 3 is a side elevation of a portion of the bed-plate, showing a similar view of the plate arranged above it and the manner of its connection therewith. Fig. 4 is a front view of the moving cross-head and a part of the mechanism for operating the upper-side truss-hoop drivers. Fig. 5 represents a vertical section through the bed piece and plate, near enough to the center to expose the rack arrangement and gearing for giving the proper movements to the lower truss-hoop drivers. Fig. 6 is a side elevation, showing the arrangement of the weight and some of its connections for operating the said lower truss-hoop drivers; and Fig. 7 represents a side elevation of a part of the machine, showing the construction and arrangement of the several levers and weights for operating the upper truss-hoop drivers.

This invention relates to the construction of machinery for driving truss-hoops on small casks and kegs of various sizes; and it consists, first, of a vertically-reciprocating cross-head having two or more automatically acting and adjustable truss-hoop-driving arms capable of an adjustment to or from each other in slots radiating from the center of the cross-head, so that they can be easily adjusted to receive kegs or casks of different diameters, in combination with a vertically-adjustable bed provided with two or more automatically-acting truss-hoop-driving arms capable of an adjustment to or from each other for the reasons above stated.

The second part of our invention consists in the combination of a spring-plate with the bed, for the purpose of holding the cask up when there is no power being applied to it or the hoops, so as to afford a smooth table on which to set and adjust it, and through which the drivers can pass.

The third part of our invention consists of a reciprocating cross-head provided with two vibrating side truss-hoop drivers, in combination with a vertically-moving weighted rod, and a vibrating weighted lever for operating the side truss-hoop drivers, as will be more clearly hereinafter shown.

The fourth part of our invention consists of two weighted vertically-movable rods, both having a rack and adjustable collars, in combination with the cross-head and bed plate or block, provided with a rack-and-pinion movement and weighted levers, arranged so that the upward and downward movement of the cross-head may be applied at any point of its motion to swing the truss-hoop drivers in or out, as will more clearly hereinafter appear.

The fifth part of our invention consists of an adjustable bed supported on screws for adjusting it up or down, so that it can be easily adjusted to drive hoops on casks or kegs of different sizes or lengths.

The sixth part of our invention consists in the combination of the truss-hoop-driving arms with spring-sleeves and driving-collars, for purposes which will be more clearly hereinafter described.

In the drawings, A represents the frame of the machine; B, the upper driving-head or cross-head; C, the bed or block. C^1 is a spring-plate, connected thereto by the bolts C^2, (shown in Fig. 3,) which pass up through the bed, so as to allow a free vertical movement of the plate. *c c* represent spiral springs for holding it up. The object of this plate C^1 is to hold the cask up when there is no power being applied to the hoops, so as to afford a smooth table on which to set and adjust it, and through which the drivers pass with sufficient force.

D^1 in Fig. 1 represents a connecting-rod, of which there are two, one on each side of the machine, for connecting with the cranks D and a pin, B′, projecting from each side of the cross-head. D^2 is the driving-shaft. It is provided with a screw, *d*, to work into the screw-gear d^1. d^2 d^3 is a tight and loose pulley for operating the machine.

The bed-plate C is arranged so as to be

moved up or down within the frame in guide-ways, and is so moved by means of the screw-rods E E′, which are rigidly fastened to the bed C, and are operated by the two wheels *e e*, which gear together and act together, when turned, as nuts for adjusting the bed up or down.

F G H I represent the truss-hoop-driving arms in the upper cross-head. Their connection and arrangement therewith is better shown in Figs. 2 and 4. The hoop-drivers F and H are arranged so that F will swing out in direction of the arrows X^1, and H will swing out in the direction of the arrow X^2, as shown in Fig. 1ª, or in the position shown in Fig. 2 by said arrows. The driving-arm H is jointed by a pin or bolt at f^1, and is provided with a half-pinion, f^2, which gears into the rack *g*.

g^1 is a bar, bent so as to pass around the shaft J. It is rigidly fastened to the rack *g* by means of a bolt, g^2, and is provided with a rack, g^3, which gears into the pinion J^1 on shaft J^2. A double rack, *j*, is geared between pinions J^1 and the toothed portion of F. It will be seen that a movement of the rack *g* in the direction of the arrow *h*, Fig. 2, will cause H to swing in the direction and position of the arrows X^2, and at the same time the rack g^3, moving in the same direction, will, through the pinion J^1, cause the double rack *j* to move in the opposite direction, as shown by the arrows h^1, thereby swinging the truss-hoop driver F out in the direction and position of the arrow X^1 on the center h^2.

The drivers G I receive their motion from the combined action of the upper cross-head, the weighted rod K, and lever L, which is pivoted at L^4 to an arm, L^3, fastened to the top of the frame. K^1 L^1 in Figs. 1 and 7 represent the weights on said lever and rod. L^2 represents a rod arranged to move vertically up or down. L^5 L^6 are collars fastened to said rod by set-screws, as shown. M is a piece projecting from, or an extension of, the cross-head B, and moving with it. It is arranged so as to clasp over the rod L^2 and move easily up or down thereon. *m* represents a rack also arranged to move easily up or down on said rod. It gears into the pinion J^4 on shaft J^2, as shown in Figs. 1ª and 7.

M^1 is a weighted lever jointed to a piece, M^2, which is fastened to the frame of the machine. It is forked at the end, so as to clasp over the rod L^2 just under the head m^1. (Shown in Figs. 1ª and 7.) m^2 represents a weighted lever attached to shaft J^2.

The operation of this part of our invention is as follows: When the cross-head B is in its lowest position, the rod L^2 and collars L^5 L^6 are also at the same point. A movement of the cross-head B upward causes the part M to move up, the rack *m* and rod L^2 being made to follow by means of the weighted lever M^1 until stopped by the collars L^5 coming in contact with the piece m^3, (see Fig. 7,) after which the part M moves up away from the lower part of the rack, and allows the weighted lever m^2 to act by falling forward and downward, thereby turning the pinion on shaft J^2, and operating on the racks and upper truss-hoop drivers, F H, substantially as shown in Fig. 2. At the same time the truss-hoop drivers G I, Fig. 4, are made to swing apart on the centers *b b* into the position shown by the dotted lines *b′ b′*, by means of the cross-head B carrying the weighted rod K up so that its collar K^2 shall be above the highest point of the upward movement of the forked end K^3 of weighted lever L, thereby allowing the weight K^1 to move said truss-hoop drivers, as shown. In the downward movement of the cross-head B the weight L counteracts the force of the weight K^1, and causes said truss-hoop drivers to move inward toward each other in the proper position to reach the truss-hoops and drive them, the other devices being brought into the same position by the action of the several parts for operating them being reversed. The lower truss-hoop drivers are also operated in a similar manner by means of the cross-head B and weight N, provided with a vertically-movable rod, N^1, having collars N^2 N^3, and a rack, O, which gears into a pinion on shaft O′, (shown in Figs. 5 and 6,) the shaft O′ being provided with a weighted lever, P^2. (Shown in said figures.)

It will be seen that when the cross-head B is down the weight N and rod N^1, with its connections, are also down to their lowest point, the rack O being forced down by the collar N^2. The extension P^1, forming a part of the cross-head B, having passed below the collar N^3, allows the whole weight of N and the rod N^1 to hold it in that position, and the weighted lever P^2 in the position shown in Fig. 5, and by the dotted lines P^3 in Fig. 6. An upward movement of the cross-head will cause the projection or extension P^1 to lift the weight N by pressing against the collar N^3, thereby allowing the weighted lever P^2 to fall into the position shown at Q in Figs. 5 and 6, thereby moving the rack O upward as the collar N^2 moves up, which operation also turns the pinion R and moves both racks R^1 R^2, thereby moving the hoop-drivers F′ H′ out into the position shown by the dotted lines S S, Fig. 5. Both the upper and lower truss-hoop drivers are thus simultaneously operated, so that the keg or cask may be readily put into the machine, the truss-hoops driven, and then released. The casks or kegs are also leveled by the head B at the time the truss-hoops are being driven.

The construction of the truss-hoop-driving arms is shown by the driving-arm H′ in section, Fig. 5.

T is a driving-head, arranged to screw up or down the sleeve T′. This sleeve is made to move easily along the shaft U of the driving-arm, which is provided with a head, U^1, to keep it on. U^2 is a spring for forcing it outward, for the purposes hereinbefore mentioned.

W W′ represent vulcanized-rubber springs. A strong spiral metallic spring would an-

swer as an equivalent. These springs are sufficiently strong, so that in case too great a strain is brought to bear on the hoops they will yield enough to allow the cranks D to turn, and still be rigid enough to drive the truss-hoops with sufficient force.

The driving-arms are made adjustable to or from the center, by means of grooves in both the upper and lower heads, by being fastened to sleeves V, Fig. 4, which are made to slide along said grooves, and are fastened at any point by set-screws V′.

We claim as our invention—

1. A reciprocating cross-head, B, provided with two or more truss-hoop drivers, in combination with a lower leveling-head provided with a similar arrangement of adjustable truss-hoop drivers, and with devices for adjusting the drivers operated by the movements of the heads as they approach and recede, substantially as set forth.

2. The reciprocating heads provided each with two or more truss-hoop drivers, and with devices for adjusting the same radially, substantially as specified.

3. The within-described mechanism for holding up the cask when no power is being applied thereto or to the hoops, consisting of the plate C^1, supported upon springs *c*, in combination with the connecting-bolts and bed C, substantially as set forth.

4. The side truss-hoop drivers, G I, pivoted at *b b*, in combination with the weighted rod K and vibrating weighted lever L, substantially as and for the purposes set forth.

5. The reciprocating driving-head provided with an extension, P^1, and the weighted rod N^1, provided with adjustable collars N^2 N^3, in combination with the bed C, having an extension connecting it with the rod N^1, as shown, and the rack-and-pinion movement, substantially as specified, for the purpose of operating the lower truss-hoop drivers, as described.

6. The cross-head B, provided with an extension, M, the weighted rod L^2, provided with adjustable collars L^5 L^6, and the weighted vibrating lever M^1, in combination with the rack *m*, pinion J^4, weighted lever m^2, double rack-bar g^1, and the rack-and-pinion movements, substantially as specified, for the purpose of operating the upper truss-hoop drivers, F H, as described.

7. The bed C, carrying the truss-hoop drivers, combined with the screws E E′ and geared nuts *e*, for the purpose of adjusting said bed vertically, as described.

8. The truss-hoop-driving arms composed of the parts U, hoop-driver T, screw-sleeve T′, and spring U^2, for the purposes specified.

9. The combination of the geared nuts *e*, supporting the screws E E′, connected to the bed C, and the springs W W′, as and for the purpose set forth.

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