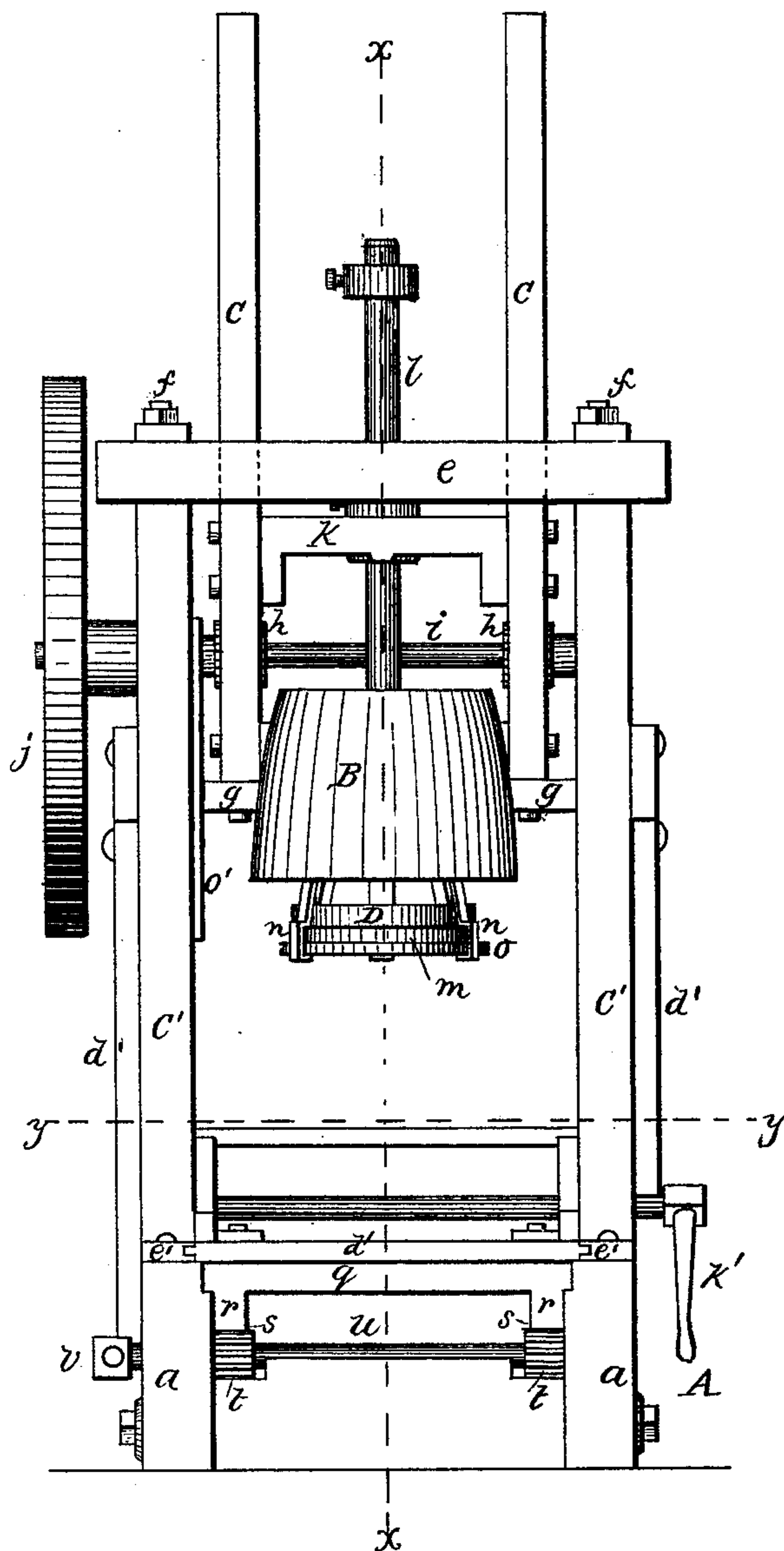


H. W. KING.  
Machine for Trussing Barrels.

No. 200,733.

Patented Feb. 26, 1878.

Fig. 1.



WITNESSES:

Henry N. Miller  
Alex F. Roberts

INVENTOR:

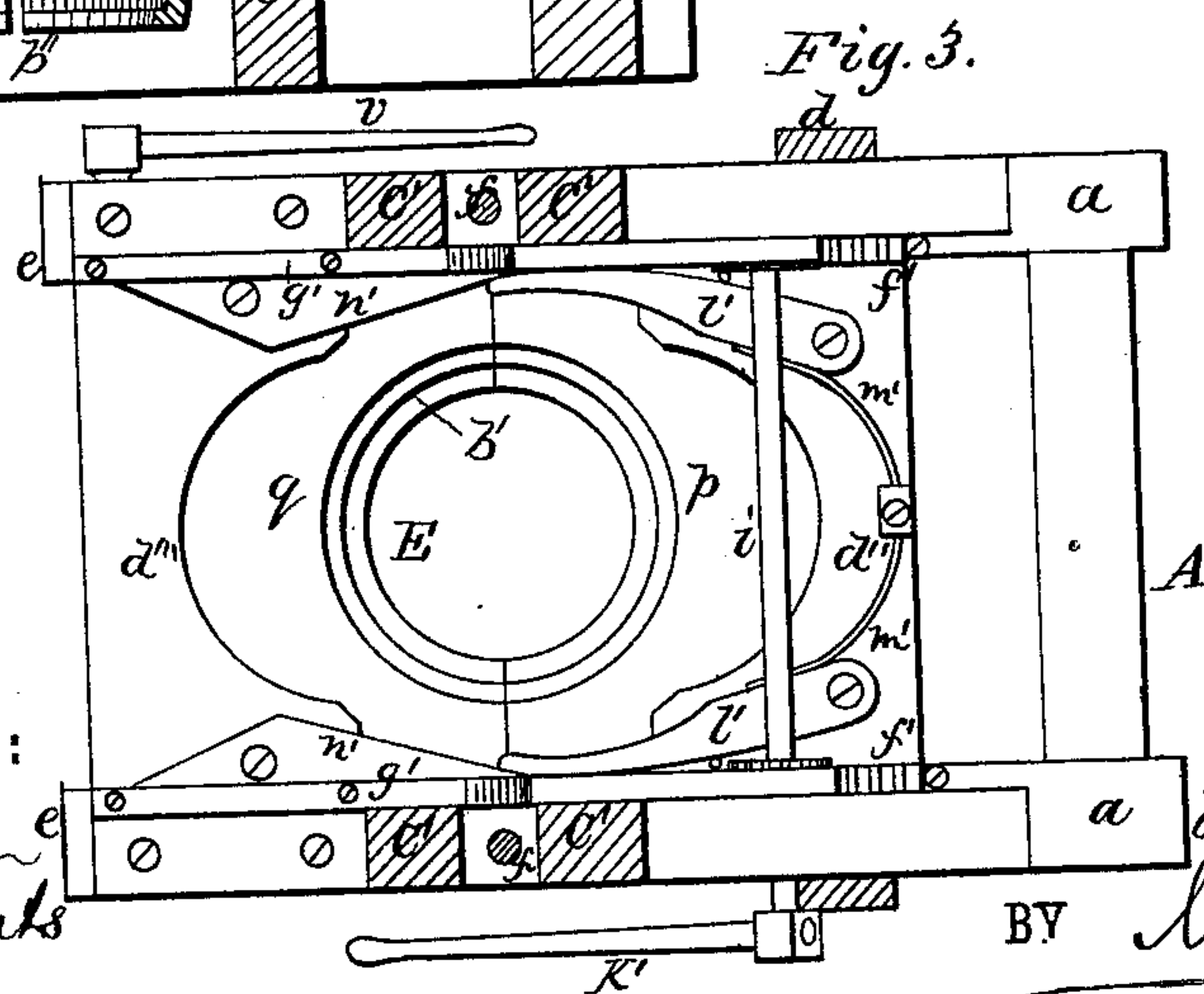
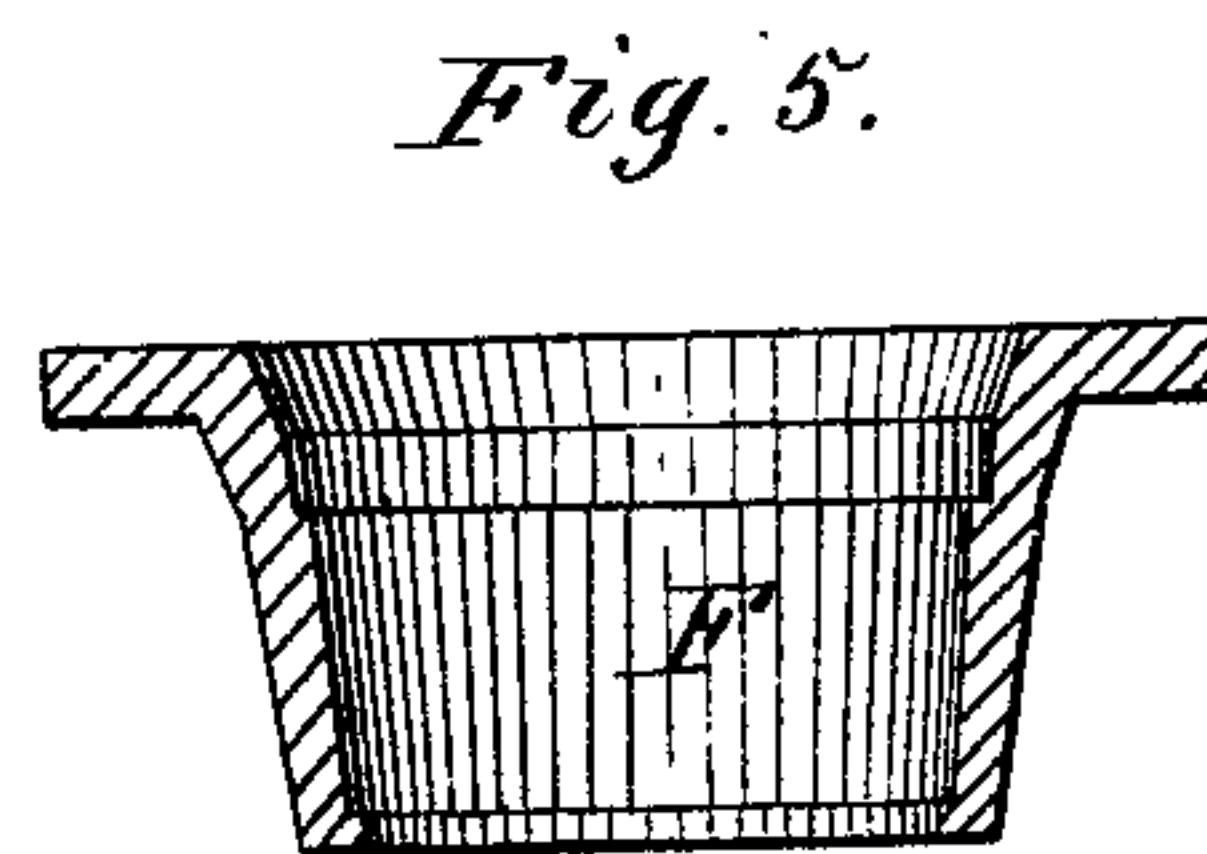
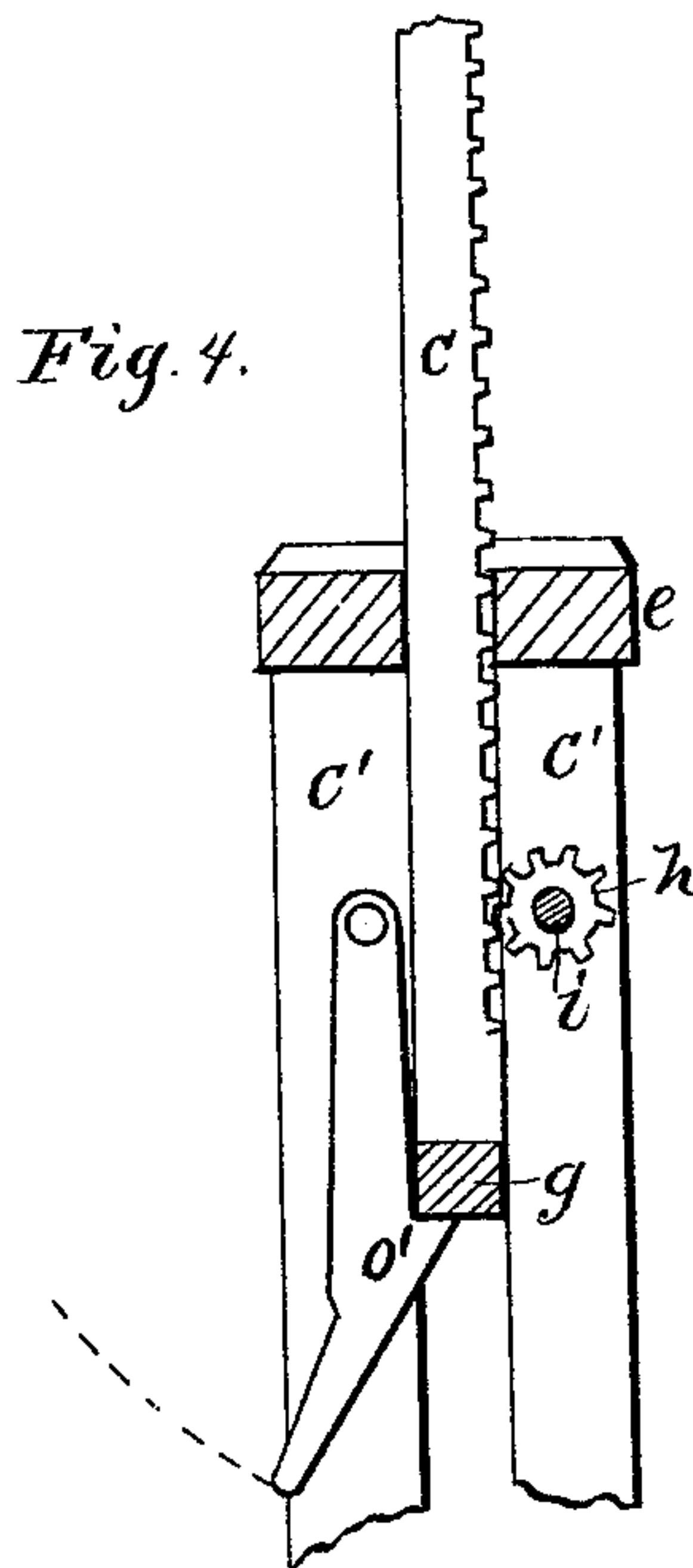
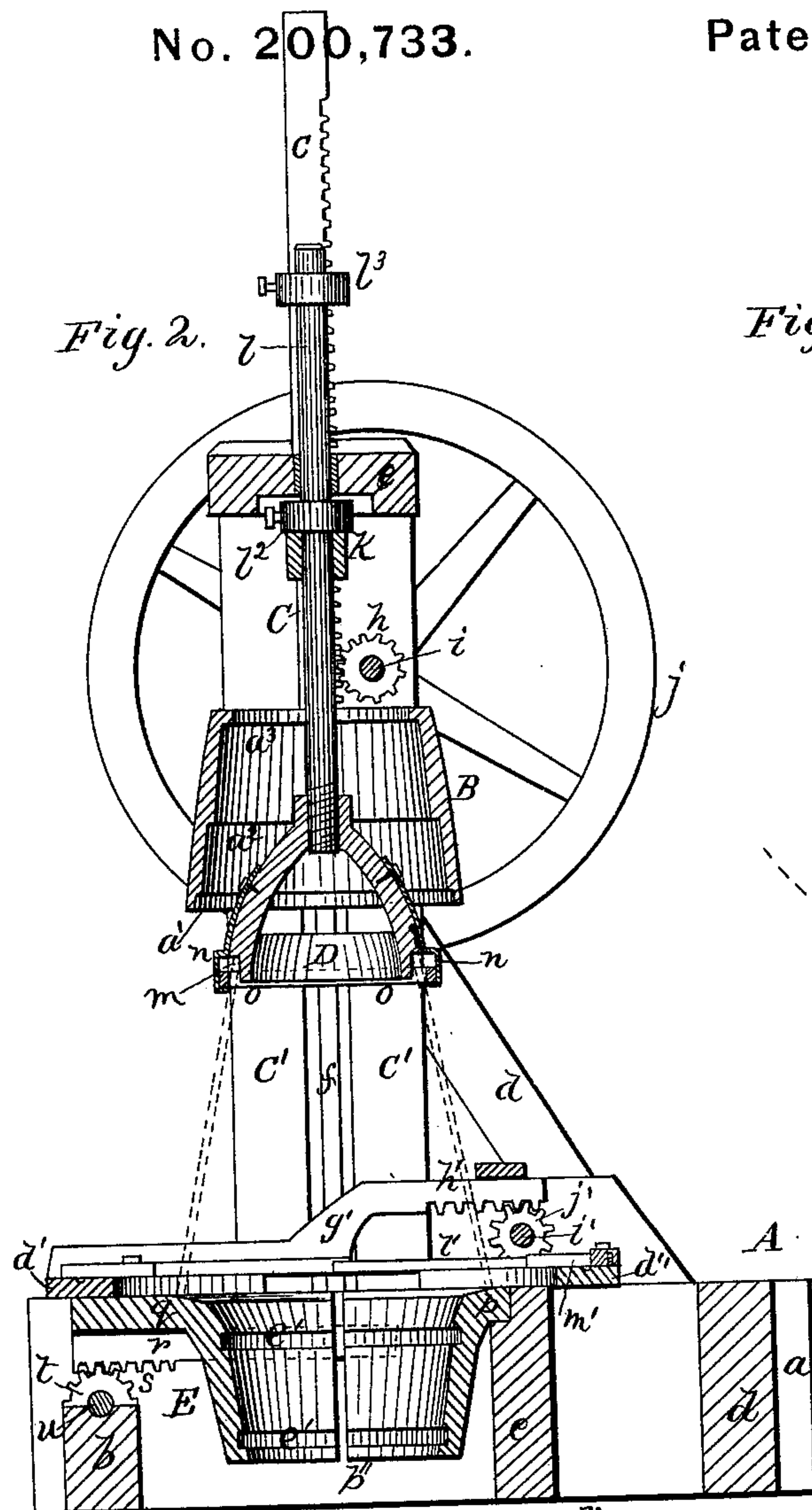
H. W. King  
BY *[Signature]*

ATTORNEYS.

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# UNITED STATES PATENT OFFICE.

HORACE W. KING, OF ALDEN, NEW YORK.

## IMPROVEMENT IN MACHINES FOR TRUSSING BARRELS.

Specification forming part of Letters Patent No. 200,733, dated February 26, 1878; application filed December 1, 1877.

*To all whom it may concern:*

Be it known that I, HORACE W. KING, of Alden, in the county of Erie and State of New York, have invented a new and Improved Barrel-Trussing Machine, of which the following is a specification:

Figure 1 is a front elevation of my improved barrel-trussing machine. Fig. 2 is a vertical section taken on line *x x* in Fig. 1. Fig. 3 is a horizontal section taken on line *y y* in Fig. 1, looking downward. Fig. 4 is a detail view of the latching device for holding up the followers while the staves are set up. Fig. 5 is a detail view, in section, of a portion of the heating attachment.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide a machine for rapidly applying truss-hoops to barrels, and also for confining barrels during the process of heating.

The invention consists in an annular head carrying a truss-hoop, between which and a form on the head the upper ends of the staves are placed.

It also consists in a movable frame carrying a hollow cone for driving down the truss-hoops, and giving form to the upper end of the barrel.

It further consists in a separable bed having a conical cavity, at the sides of which grooves are formed for receiving the truss-hoops to be applied to the lower end of the barrel.

It also consists in a device for contracting the lower ends of the staves after the upper ends are secured in the truss-hoop and hollow cone.

It also consists in an entire bed, having formed on it a hollow cone for confining the barrel during the process of heating.

Referring to the drawing, A is the bed-frame, consisting of the side pieces *a* and the cross-timbers *b c d*, and *C' C'* are vertical posts, arranged in pairs, a pair being placed on each side of the frame and rigidly supported by braces *d'*, and connected at their upper ends by a transom, *e*, which is secured to the bed-frame by long bolts *f*.

B is a hollow truncated cone, in which three offsets, *a<sup>1</sup> a<sup>2</sup> a<sup>3</sup>* are formed. Arms *g* project from the sides of the cone B, near its base, at

diametrically-opposite points, into the space between the posts *C'*, by which they are guided. Racks C are bolted to opposite sides of the cone B, and extend upward through mortises in the transom *e*. These racks are engaged by pinions *h* on the shaft *i*, the said shaft being journaled in boxes in the vertical posts *C'*. A wheel, *j*, is placed on one of the projecting ends of the shaft *i*, for operating the machine either by hand or power. The racks C are connected together by a cross-bar, *k*, through the center of which a rod, *l*, passes, which also passes upward through the center of the transom *e*, and downward into the center of the cone B.

An annular head, D, having in its lower edge a rabbet, *m*, is secured to the lower end of the rod *l*. A collar, *l<sup>2</sup>*, is placed on the rod *l*, above the cross-bar *k*, for supporting the head D at the required distance above the bed, and a collar, *l<sup>3</sup>*, is placed upon the upper end of the rod *l* to limit its downward movement.

The external diameter of the head in the rabbet is the same as the internal diameter of the barrel to be made at its chine. Three hooks, *n*, are pivoted to the head D, for supporting the upper truss-hoop *o*.

The bed E of the machine consists of two parts, *p q*, the part *p* being fixed to the bed-frame A, and the part *q* is movable, having attached to it guide-pieces *r*, that move in grooves formed in the side pieces *a* of the bed-frame. Upon the outer ends of the guide-pieces *r* racks *s* are formed, which are engaged by pinions *t* on the shaft *u*, the said shaft being journaled in the side pieces *a* at the front of the machine. A lever, *v*, is secured to the end of the shaft *u*, for operating the movable part of the bed.

An inverted hollow truncated cone, *b'*, is formed in the bed E, and at its sides two grooves, *c'*, are formed, for receiving the lower truss-hoops. The mouth of the cone is flared to facilitate the entrance of the staves into the cone when they are forced downward after being contracted, and the upper surface of the bed is beveled around the flaring mouth for the same purpose.

Upon the top of the bed E there are two oppositely-disposed plates, *d''' d''*, whose edges move in guides *e'*, secured to the side pieces



a. In each of these plates a semicircular notch is formed, the curve of which is of very little less radius than that of the flaring mouth of the cone  $b'$ . At the edges of the plate  $d'''$  there are racks  $f'$ , and at the edges of the plate  $d''$  arms  $g'$  are attached, which project over the plate  $d'''$ , and have formed on them racks  $h'$ . Between the racks  $f'$   $h'$ , and upon the shaft  $i'$ , pinions  $j'$  are placed. The shaft  $i'$  is journaled in the side pieces  $a$ , and is provided with a lever,  $k'$ , by which it may be turned, so as to move the plates  $d'''$   $d''$  simultaneously in opposite directions. To the plate  $d'''$ , near its edges, oppositely-disposed curved arms  $l'$  are pivoted. These arms extend over the face of the plate  $d'''$ , and are thrown outward by the spring  $m'$ . Upon the face of the plate  $d'''$ , near its edges, oppositely-disposed triangular plates  $n'$  are secured in position to engage the free ends of the curved arms  $l'$  as the two plates  $d'''$   $d''$  are moved toward each other.

In Fig. 5 a hollow truncated cone, F, is represented, which is to be used in place of the separable bed when a barrel is to be clamped and heated after having been trussed by the apparatus before described.

The operation of my improved machine is as follows: A truss-hoop,  $o$ , is supported by the hooks  $n$ , and one is also laid loosely on the head D. One is placed in each of the grooves  $c'$  in the cone  $b'$ , and the two parts  $p$   $q$  of the bed E are closed together. The upper ends of the staves are placed between the head D and truss-hoop  $o$ , and their lower ends are allowed to rest upon the bed E within the semicircular edges of the plates  $d'''$   $d''$ . The hooks  $n$  are removed from the truss-hoop  $o$  and turned up out of the way, and the hollow cone B, which is suspended by the hook  $o'$ , is permitted to fall by withdrawing the said hook. As this is done the hoop laid loosely upon the head D drops down upon the partly-formed barrel, and is received by the offset  $a^2$ . As the cone B descends over the follower D, and over the upper ends of the staves, the head remains stationary, and the truss-hoop  $o$  is engaged by the offset  $a^3$ . The truss-hoops and cone descend together until the hoops are forced down as far as may be desirable. If the weight of the cone and parts attached to it is insufficient to force the hoops as far as may be required, power sufficient to accomplish the object is applied to the wheel  $j$ . When the truss-hoop is forced down, and while the weight is still upon it, the lower ends of the staves are brought together by moving the plates  $d'''$   $d''$  by means of the lever  $k'$ , the plates engaging opposite sides of the barrel, while the curved arms  $l'$  engage the intermediate portions, the arms being thrown toward each other by the inclined surface of the triangular plates  $n'$  as the plates  $d'''$   $d''$  are brought together. When the lower ends of the staves are brought within the flared mouth of the cone  $b'$ , the weight of the cone B and

head D carry the barrel downward into the cone  $b'$  and truss-hoops supported by it until the edges of all the staves are in contact, and the truss-hoops are as tight as may be required. The bed E is then opened, and the motion of the wheel  $j$  reversed until the cone B is raised sufficiently high to permit the hook  $o'$  to again engage the arm  $g$ , when the barrel may be removed from the machine.

It will be observed that as the upper ends of the staves are placed against the shoulder formed by the rabbet  $m$ , they must all be even and true.

When it is desired to use the machine for heating the barrel, the head D and bed E are removed, and the cone F is put in the place of the latter.

A cresset is placed in the cone F, and the barrel is clamped between the cones B F, and the fire from the cresset is permitted to pass upward through the barrel.

When a fifth truss-hoop is applied to the barrel, it is received by the offset  $a^1$ , and is forced to its place on the bilge of the barrel as the cone B descends.

By means of my improved machine barrels are rapidly set up and trussed, and a great saving over hand-labor is effected.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The annular head D, provided with supporting-hooks  $n$  and rabbet  $m$ , in combination with the movable hollow cone B, substantially as herein shown and described.

2. The combination, with the separable bed E, of the semicircled plates  $d'''$   $d''$ , provided with mechanism for moving them simultaneously in opposite directions, substantially as herein shown and described.

3. The curved arms  $l'$  and triangular pieces  $n'$ , in combination with the plate  $d'''$   $d''$ , substantially as herein shown and described.

4. The combination of the spring  $m'$  with the curved arms  $l'$ , substantially as shown and described.

5. The separable bed E, having formed in it an inverted hollow truncated cone,  $b'$ , having a flaring mouth, for supporting the lower truss-hoops and contracting the partly-formed barrel, substantially as shown and described.

6. The combination, in a barrel-trussing machine, of the wheel  $j$ , pinions  $h$ , racks C, cone B, and head D, as herein shown and described.

7. The combination, in a barrel-trussing machine, of the plates  $d'''$   $d''$ , racks  $h'$   $f'$ , and pinions  $j'$ , substantially as herein specified.

8. The combination of two hollow truncated cones, B F, constructed, arranged, and operating together substantially as and for the purpose specified.

HORACE W. KING.

Witnesses:

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ALEX. F. ROBERTS.