

(No Model.)

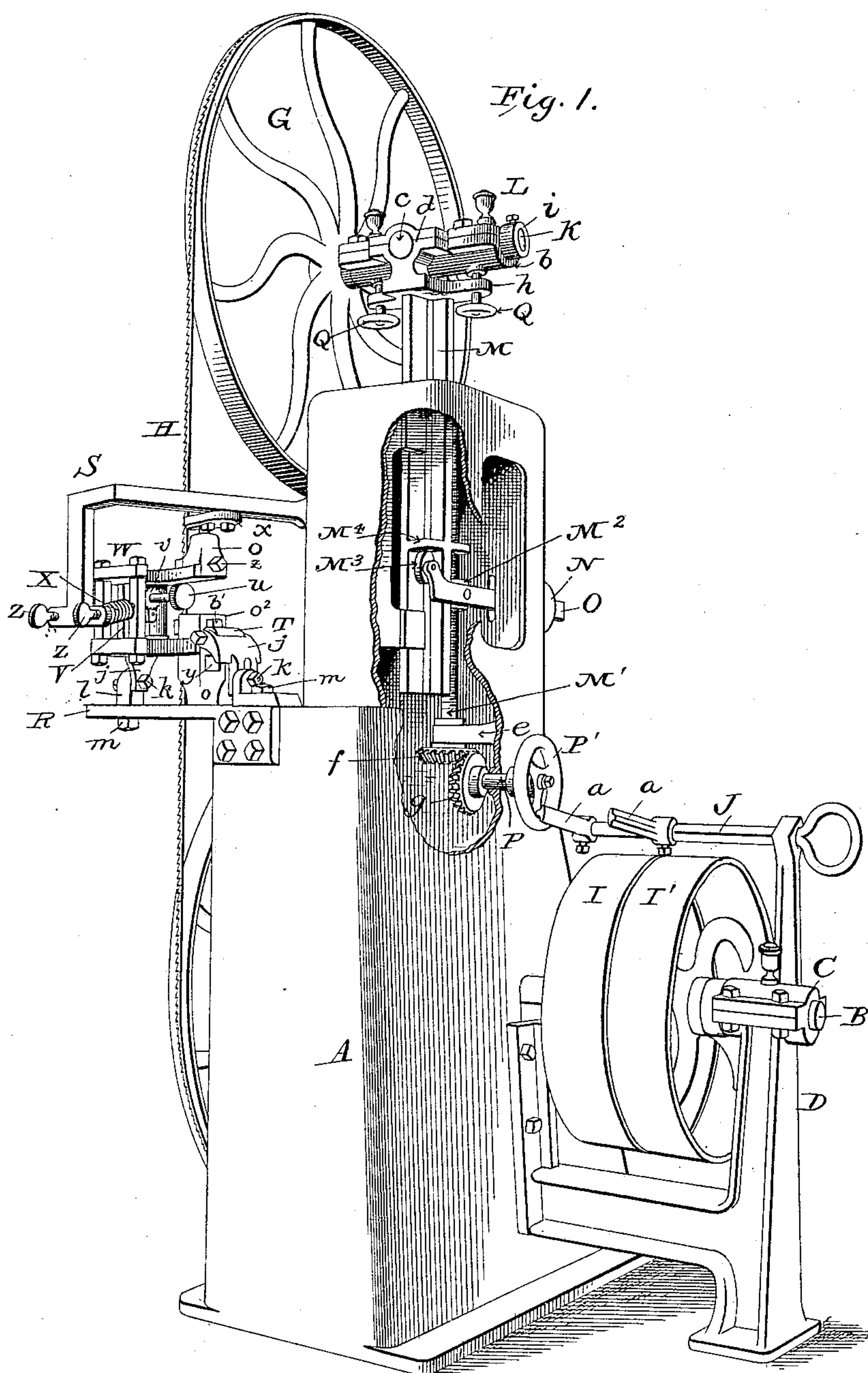
3 Sheets—Sheet 1.

J. C. BALLEW.

MACHINE FOR SAWING BARREL HOOPS.

No. 372,446.

Patented Nov. 1, 1887.



Witnesses
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Inventor:
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(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

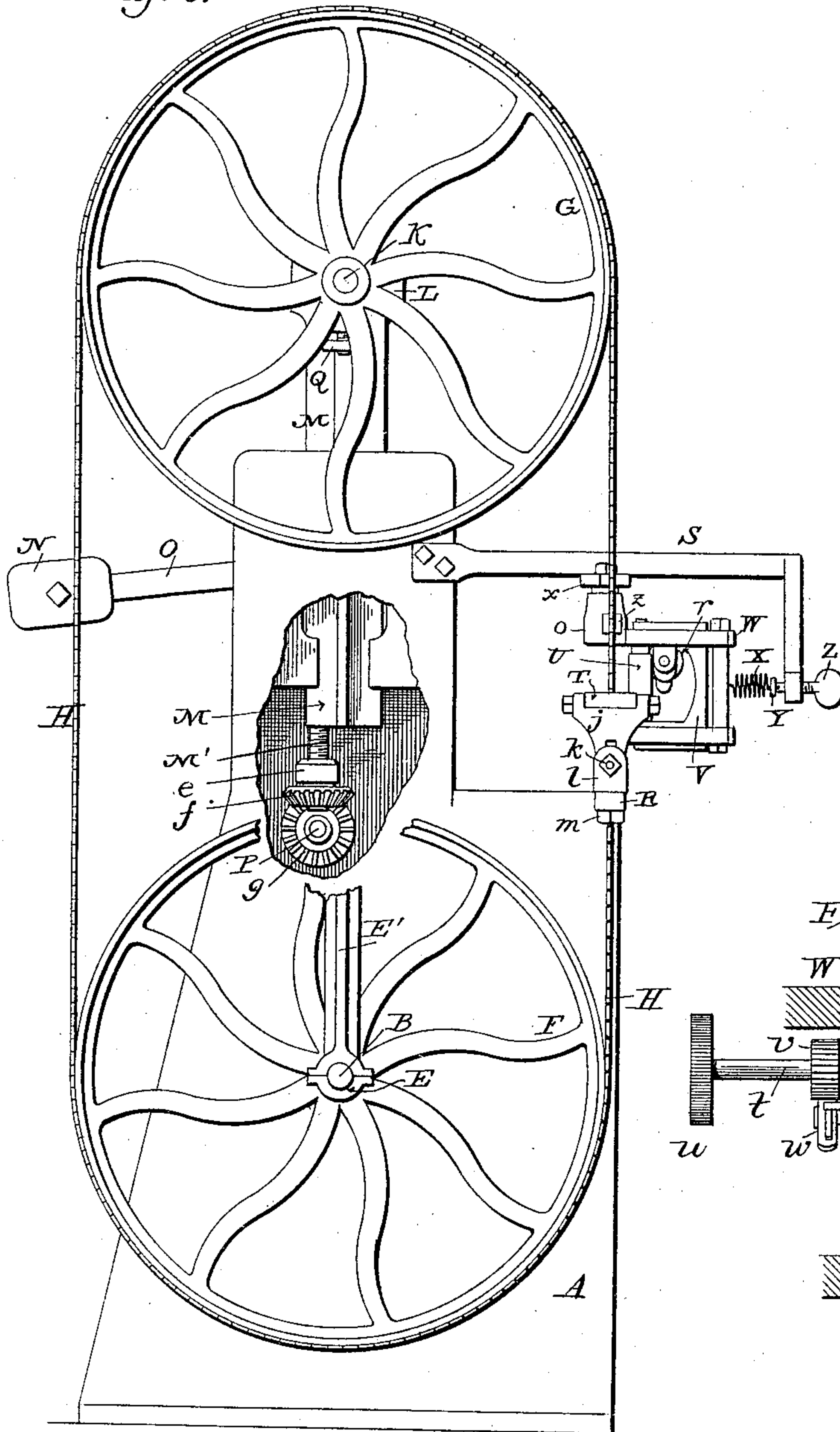
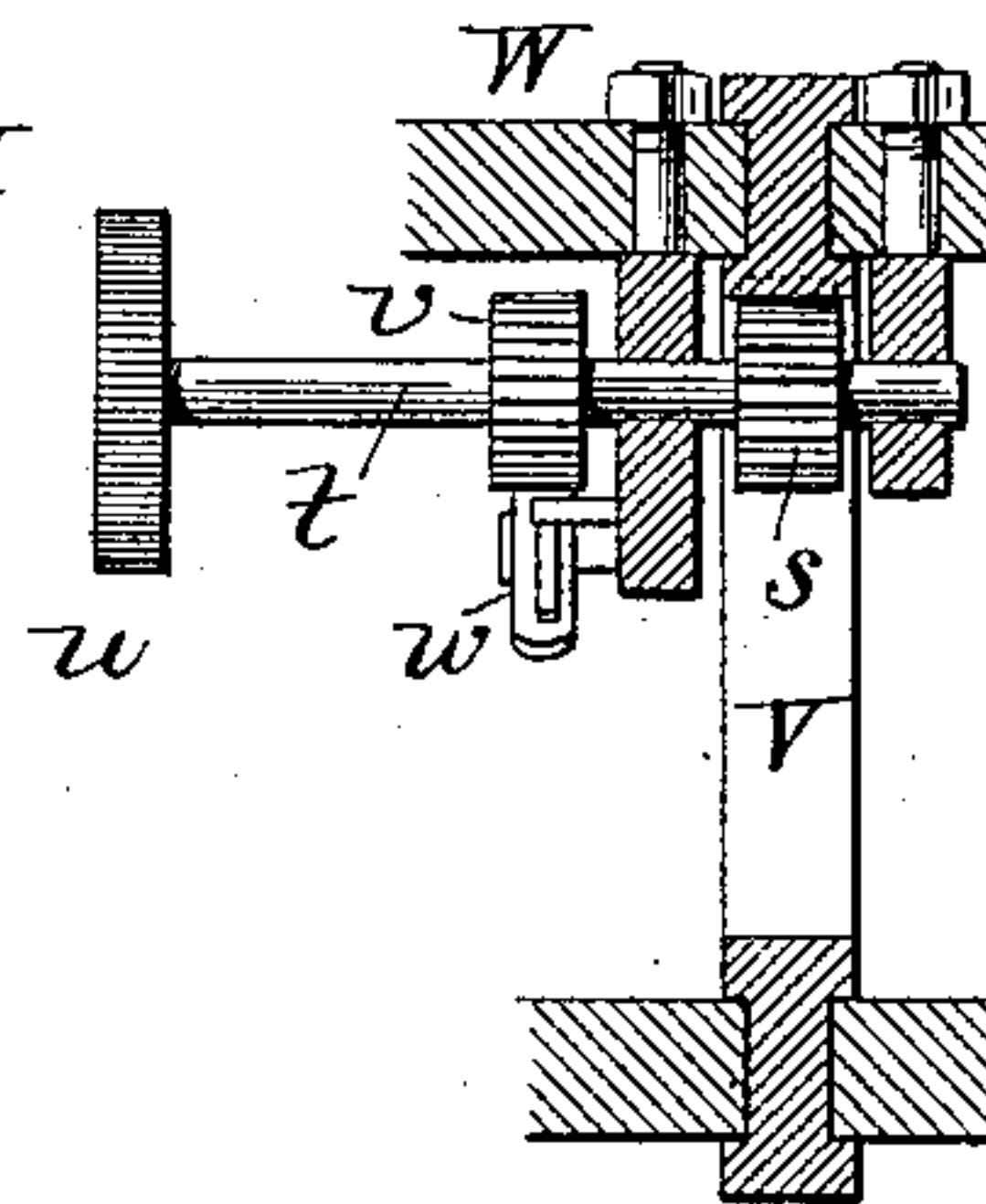


Fig. 7.



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(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

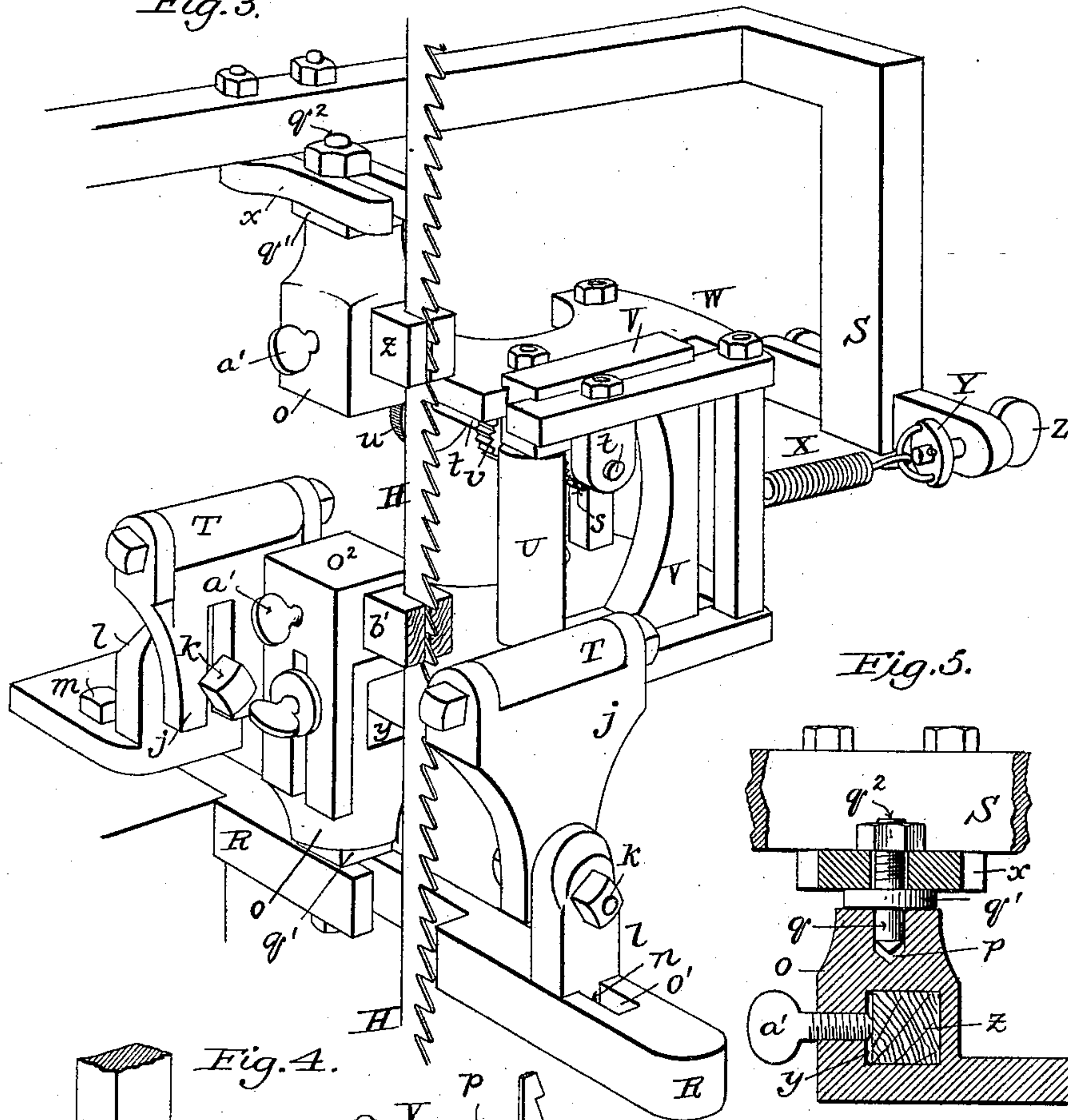


Fig. 5.

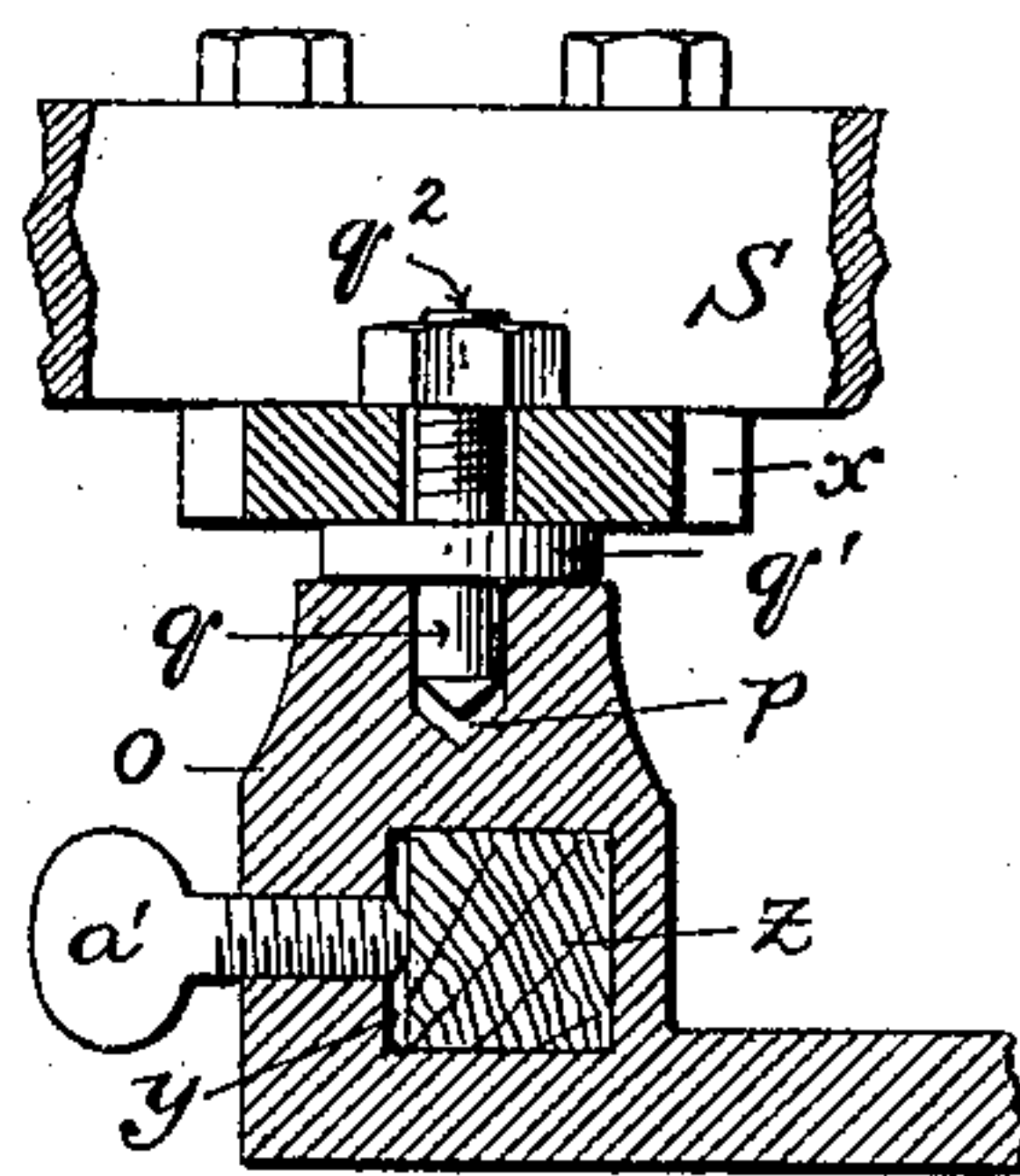
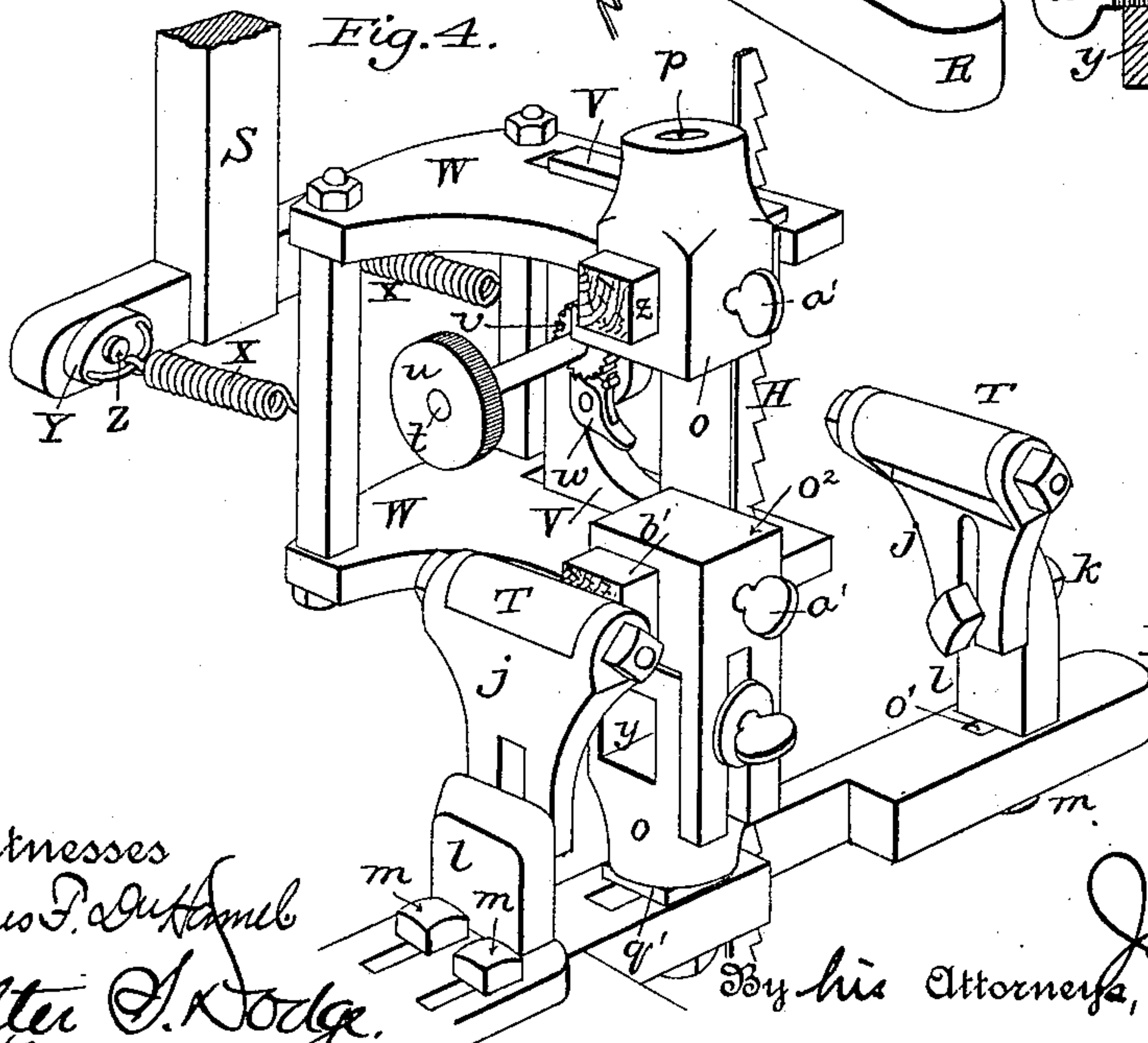
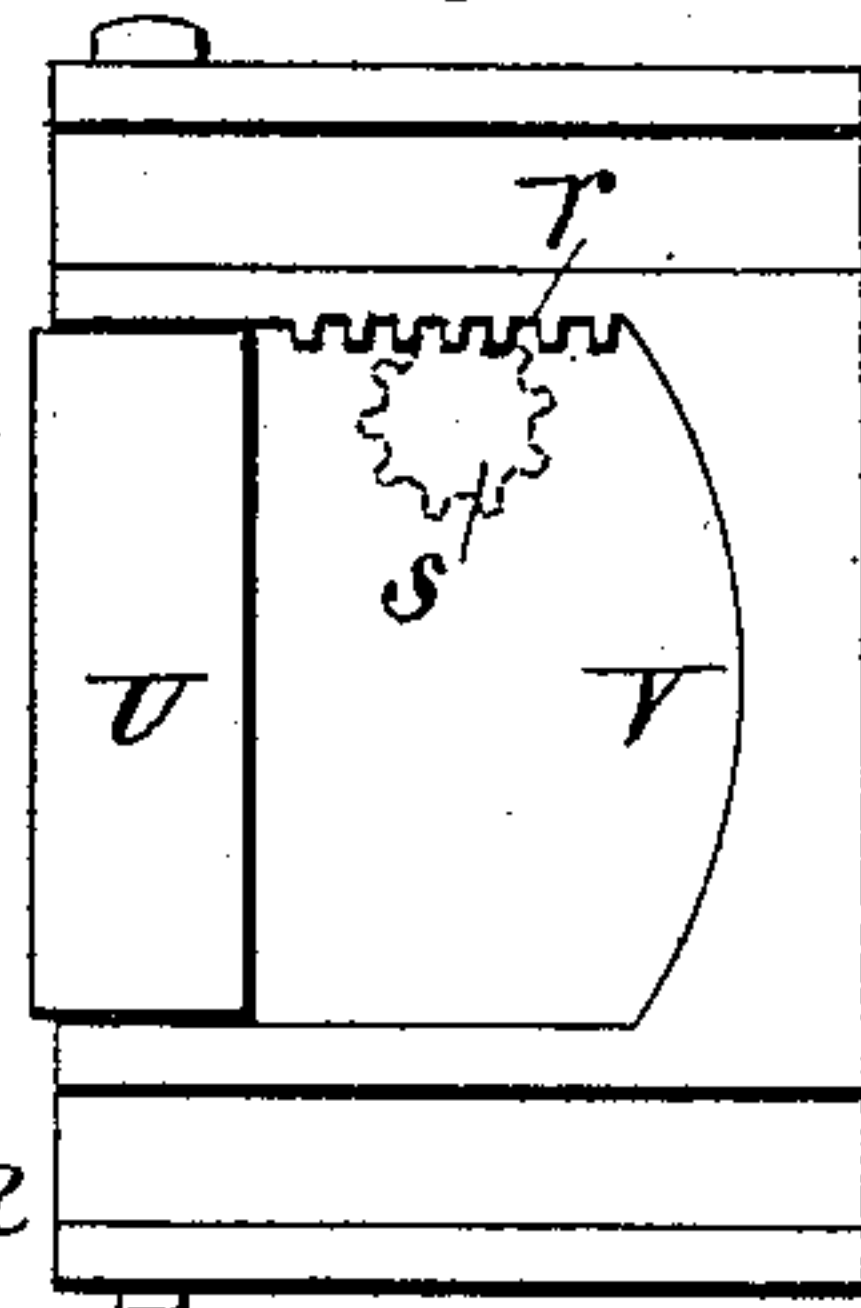


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN C. BALLEW, OF EVANSVILLE, INDIANA.

MACHINE FOR SAWING BARREL-HOOPS.

SPECIFICATION forming part of Letters Patent No. 372,446, dated November 1, 1887.

Application filed May 11, 1887. Serial No. 237,872. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. BALLEW, of Evansville, in the county of Vanderburgh and State of Indiana, have invented certain new and useful Improvements in Machines for Sawing Barrel-Hoops, of which the following is a specification.

My invention relates to machines for sawing barrel-hoops from poles; and it consists in various features and details of construction hereinafter set forth, whereby the machine is rendered simple, strong, and efficient, and the saw-blade is caused to follow the irregularities of the pole.

In the accompanying drawings, Figure 1 is a perspective view of my improved machine looking at the driving side, a portion being broken away to show the interior; Fig. 2, an elevation of the opposite side, partly broken away; Figs. 3 and 4, views of the saw-guiding device on a larger scale, and Figs. 5, 6, and 7 detail views.

In the drawings, A indicates a hollow or box frame, in and upon which are mounted the various working parts of the machine, said frame being spread out at the base to give a broad and firm bearing, and being closed at all points, except where it is necessary to gain access to the inclosed mechanism. The openings left for this purpose may be closed by doors or plates, if desired, and thus the exclusion of dirt and dust be made more perfect than can otherwise be done.

B indicates the driving-shaft, which is carried at one end in a box or bearing, C, supported by a stand or post, D, bolted to the rear side of frame A, and it is further supported and carried by a box, E, at the front side of the frame A and by an overhanging arm, E', which prevents the springing of the shaft and undue wear of box E.

Outside or in front of the frame A and box E is a band-wheel, F, which, together with a second wheel, G, above, carries an endless saw-blade, H, to which motion is imparted by wheel F, the shaft B being furnished with fast and loose pulleys I and I' to receive a driving-belt from any convenient prime motor. Above the pulleys I and I' is a sliding bar, J, provided with belt-shifting fingers a to throw the belt from one pulley to the other.

The uppersaw-carrying wheel, G, is mounted

upon a shaft, K, which rotates in boxes of a frame, L, provided with journals c, which journals are carried in boxes or bearings d on the top of a vertically-adjustable post or standard, M. This standard is preferably cruciform in section, its webs or flanges being planed true and fitting accurately the walls of an opening in the top of frame A, through which it passes.

M' indicates a screw rod or stem which is swiveled at its lower end in a bracket, e, and carries a bevel-pinion, f. This screw passes through a nut or block, M², threaded internally, upon which is pivoted a lever, O, carrying at one end a roller, M³, which bears beneath a web or plate, M⁴, of post M, and at its opposite end a counter-weight, N, which is adjustable upon the lever, and is of such weight that with the advantage due to leverage it serves to counterbalance post M and its attendant parts and to maintain a proper tension upon the saw, though yielding in case of sudden and excessive strain upon the same. The bevel-pinion f is rotated by means of a second pinion, g, keyed or otherwise made fast upon a shaft, P, which extends outward beyond the side of frame A and is furnished with a hand-wheel, P'. (Shown in Fig. 1.)

For the purpose of enabling the operator to tip wheel G forward or backward, as required by the condition of the saw and the work being performed, the shaft K is mounted in the tipping-frame L, as above mentioned, and two set-screws, Q, passing through lugs h, projecting from post M, are arranged to bear against the under face of frame L on opposite sides of its pivotal axis, so that by turning one screw forward and the other backward the wheel may be tipped as desired.

The tipping-frame L is made with half-boxes b, of ordinary form, beneath which is an oil-space capable of holding a supply of oil sufficient to last a long time, the shaft running in oil, and hence being constantly and effectively lubricated.

The rear end of shaft K is provided with a collar, i, to prevent end-play.

Referring now to Figs. 3, 4, 5, 6, and 7, the saw and pole guiding devices will be explained.

R indicates an arm, which may be more conveniently made separate from and bolted to frame A, and together with an arm, S, also

overhanging the table, supports the guiding devices. These devices consist, essentially, of two horizontal rollers to support the hoop-pole, a vertical roller to hold the pole in given relation to the saw and to determine the thickness of the hoop, and guide-blocks through which the rear edge of the saw-blade travels to retain it in proper position. All these parts are made adjustable, and the vertical roll and grooved guide-blocks are carried by a pivoted frame capable of turning or swinging about a vertical axis to permit or cause the saw-blade to follow the sinuosities of the pole from which the hoop is being cut. The horizontal hoop-supporting rollers T T are each carried by a yoke or plate, *j*, slotted for the passage of a bolt, *k*, by which the plate is clamped to a post, *l*. The posts *l* are made adjustable toward and from the saw, and are held at the required adjustment by clamping-nuts *m*, applied to threaded stems or bolts *n*, the post *l* in front of the saw having said stem formed upon its lower end and extended down through a slot, *o'*, in arm or support R, and the post *l* in rear of the saw being made with a foot-plate slotted in the direction of its movement for the passage of the clamping bolts or screws *n*, which may be screwed into holes tapped in frame A.

Upon loosening the bolts *k*, the yokes or plates, *j* with rollers T T, may be raised, lowered, and tipped in the direction of the axis of the rollers, as desired, and they may be clamped in the desired position by tightening the bolts. In like manner the rollers T may be adjusted toward or from the saw upon loosening the clamping bolts or screws *n*, and they may be secured at the desired adjustment by tightening the said bolts or screws.

The vertical roller U is carried in a sliding head or yoke, V, mounted in a horizontally swinging or oscillating frame, W, which is formed with two vertical necks or heads, *o*, each having a vertical socket, *p*, in its end to receive a pintle or gudgeon, *q*, the two sockets and their pintles being axially in line, so that the frame may swing about the pintles in a horizontal plane. Each pintle is formed with a shoulder or boss, *q'*, and with a threaded stem, *q''*, which latter passes through a slot in the support which carries it, in which slot it is held fast by a nut applied to its end and screwed tight to clamp the support between the nut and shoulder, as shown in Fig. 5. By this means of attachment I am enabled to adjust the axis of the frame W relatively to that of the saw-blade, as required. This roller-carrying head or yoke V is provided with a toothed rack, *r*, (shown in Figs. 2, 6, and 7,) with which meshes a pinion, *s*, carried by a stem or spindle, *t*, journaled in the outer frame, W. This spindle *t* is furnished with a milled head, *u*, by which to turn it in order to advance and recede the head or yoke V, and it is further provided with a ratchet-wheel, *v*, with which a dog, *w*, pivoted to frame W, Figs. 4 and 7, engages to hold the spindle against turning, and thus to prevent the roller-carrying head

or yoke from moving after being properly adjusted.

The pintle *q* of the upper head *o* is carried by a bracket, *x*, bolted or otherwise made fast to the overhanging arm S, and the pintle *q* of the lower head is secured in a slot in the lower arm or bracket, R, as seen in Figs. 3 and 4.

Each head *o* is formed with a horizontal opening, *y*, through it from front to rear for the reception of a guide-block, *z*, which is preferably made of wood, and is clamped by means of a set-screw, *a'*. By this arrangement the blocks may be set forward from time to time as rendered necessary by wear, and they may likewise be readily renewed.

Frame W is held normally in fixed relation to the saw-blade by means of two springs, X, attached thereto at opposite sides and each in turn attached to a swivel, Y, carried by an adjusting-screw, Z, passing through a depending branch or extension of overhanging arm S. By adjusting these screws the tension of the springs and the position of the vertical roller U relative to the saw-blade may be varied.

It is to be noted that I employ but one vertical roller and that said roller is directly behind or that its axis is in a plane perpendicular to the face of the saw-blade, instead of being either forward or backward of the front or rear edge of the saw, as has heretofore been customary. This is a matter of importance, for the reason that it insures the deflection of the saw-blade at the time and place where such deflection is needed, instead of causing the deflection of the saw before the irregularity of the pole reaches or after it passes the saw, as is inevitably the case where the roller is either in advance or in rear of one or the other edge of the saw. It will also be seen that the saw is not so sharply twisted under this arrangement as under that referred to, but that it is bodily drawn aside and slightly turned.

I do not in this application make broad claim to the combination of a horizontally-swinging roller-frame and saw-guide, as such combination is embraced in an earlier application filed by me.

The box-frame A gives the machine great stiffness with comparatively little weight, is simple and cheap to make, and affords a housing for the adjusting devices of the upper wheel, protecting them from dust and dirt.

In some cases the lower head *o* is furnished with a supplemental head, *o'*, carrying a third guide-block, *b'*, said supplemental head being slotted and clamped by a set-screw which permits it to be adjusted. A single spring placed in line with the axes or pintles *q* and roller U may be employed instead of the two springs.

Having thus described my invention, what I claim is—

1. In combination with a frame, A, wheels F G, and a band-saw, H, a post or standard, M, adapted to support the upper wheel, G, a screw, M', journaled in the frame A, a nut, M², mounted upon the screw-stem, and a

weighted lever, O, fulcrumed on said block and serving to support the standard M, all substantially as shown.

2. In combination with a frame, A, wheels
5 F G, and a band-saw, H, a post or standard, M, adapted to support the upper wheel, G, and provided with a web or flange, M³, a screw-stem, M', journaled in the frame A and provided at its lower end with a bevel-pinion,
10 f, a shaft, P, mounted in frame A and provided with bevel-pinion g and hand-wheel P', a nut, M², mounted upon the screw-stem M', and a lever, O, fulcrumed upon the nut M² and provided at one end with a weight, N,
15 and at the other end with a roller, M⁴, all substantially as shown.

3. In combination with a main frame, A, having a wheel, F, a post or standard, M, mounted in frame A and provided with boxes
20 or bearings d, a frame or bearing, L, provided with lateral journals e, set-screws Q Q, carried by post M and bearing against the frame L on opposite sides of its journals, and a shaft, K, journaled in frame L and provided with a
25 wheel, G.

4. In a machine of the class described, the combination, with a frame-work, of a saw-blade, as H, a pivoted frame, W, a vertical
30 roller, U, carried by the latter directly opposite the face of the saw-blade, and a saw-guide, z, also carried by the frame W in line with the axis of the roller.

5. In a sawing-machine, the combination, with a saw, as H, of horizontal rollers T T, a
35 pivoted frame, W, a vertical roller, U, and saw-guide z, carried by frame W, the roller being arranged directly opposite the face of the saw-blade, whereby the latter will be deflected at the proper time.

40 6. In a sawing-machine, the combination, with a saw-blade, H, of a vertical roller, U, directly opposite the face of the saw, a frame, as W, for said roller, pivoted to one side of the axis of the roller, and a saw-guide, z, also
45 carried by the frame W, all substantially as shown, whereby the roller is caused to swing the frame laterally and deflect the saw at the time that the irregularity that causes the deflection passes the saw-blade.

50 7. In a sawing-machine, the combination, with a saw-blade, as H, of a vertical roller, U, directly opposite the face of the saw, a frame, W, for said roller, pivoted to one side of the axis of the latter, a guide, z, carried by frame
55 W, and a spring connected with said frame and serving to maintain the roller in a normally-fixed position.

8. In combination with frame A and saw H, horizontal pole-supporting rollers T T, slotted
60 yokes or plates j, posts l, and clamping-bolts k, whereby the rollers may be raised, lowered, and inclined longitudinally, as desired.

9. In combination with frame A and saw H, horizontal rollers T T, and posts l, for support-
65 ing said rollers, adjustable to and from the saw and provided with clamping screws or bolts, substantially as shown and described.

10. In combination with a supporting-frame and with a saw, as H, a frame, W, pivoted at
70 a point in rear of the saw and adapted to swing horizontally, a sliding yoke, V, mounted in said frame and provided with a toothed rack, r, a pinion, s, meshing with said rack, a spindle, t, carrying said pinion and pro-
75 vided with a ratchet-wheel, v, and a vertical roller carried by the sliding yoke V.

11. In a sawing-machine, the combination, with a suitable frame, of a saw mounted therein,
80 slotted arms R and S, projecting from the frame, shouldered pintles q q, carried by the arms and provided with clamping-nuts, a frame, as W, carried by the pintles, and a ver-
tical roller, U, carried by frame W, all sub-
stantially as shown.

12. The herein-described hoop sawing ma-
85 chine, consisting of a supporting-frame, a band-saw carried on wheels supported thereon, and hoop guiding and supporting devices consisting of horizontal rollers T T, horizon-
90 tally-swinging frame W, sliding head or frame V, mounted in said frame W and provided with vertical roller U, springs X, and adjusting-
screws Z, the frame W being pivoted at a point back of the rear edge of the saw, and
95 the several rollers being adjustable toward and from the saw, substantially as explained.

13. In a hoop-sawing machine such as de-
scribed, the combination, with a suitable frame, A, and the saw and its driving mechanism, of
100 a frame, W, a vertical guide-roller carried in said frame, pintles or gudgeons forming pivots for the frame and provided with threaded stems and nuts, and supporting-arms slotted to receive the threaded stems, whereby the
105 pintles may be adjusted to vary the position of frame W and its roller.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOHN C. BALLEW.

Witnesses:

ALEX. GILCHRIST,
HARVEY S. CLIFFORD.