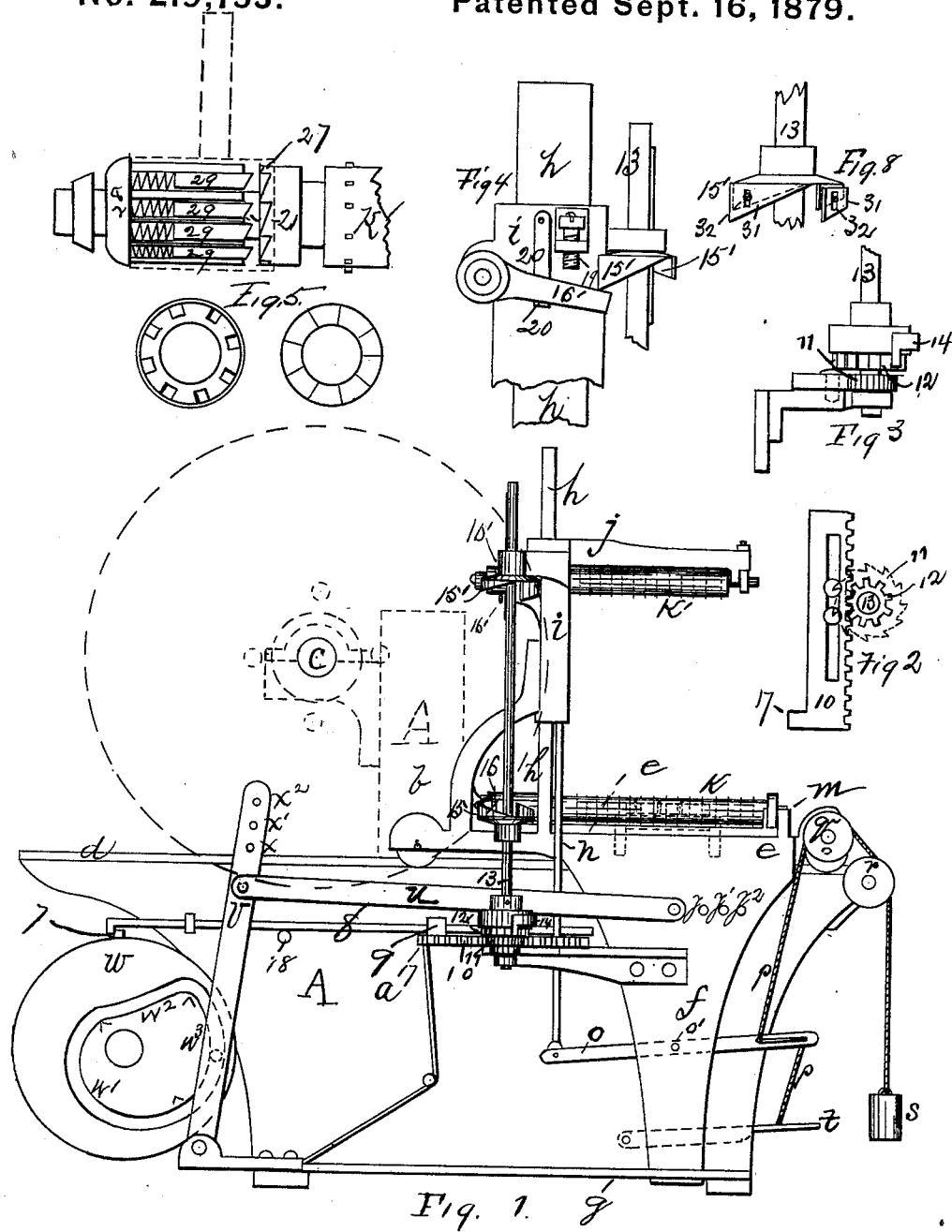


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Shingle-Sawing Machine.

No. 219,755.

Patented Sept. 16, 1879.



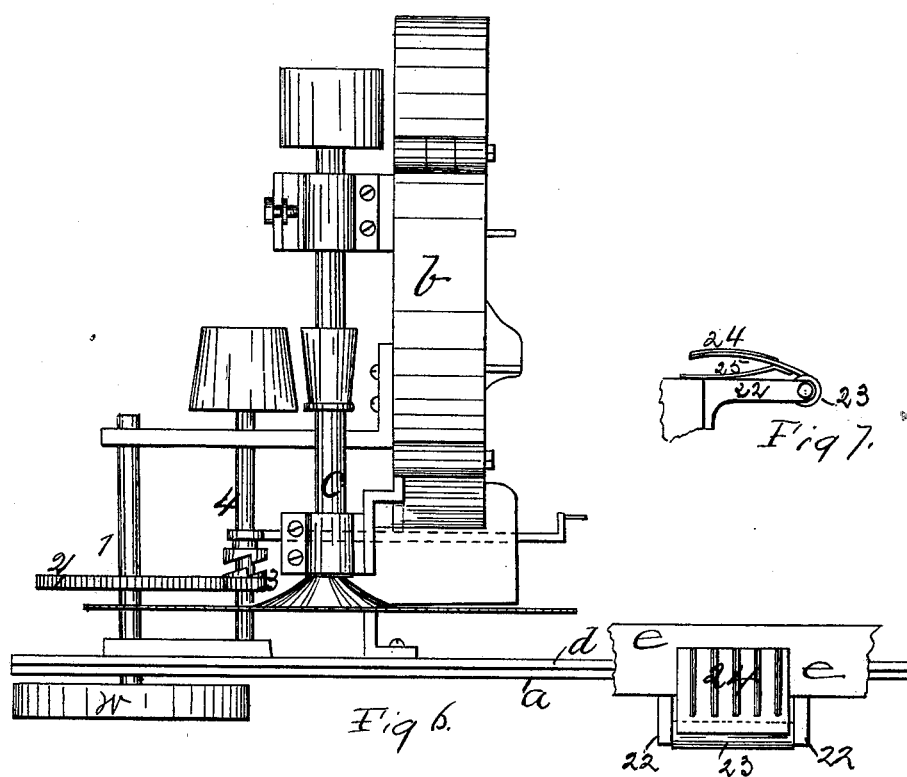
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M. S. NORTON.
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UNITED STATES PATENT OFFICE.

MASON S. NORTON, OF BANGOR, MAINE.

IMPROVEMENT IN SHINGLE-SAWING MACHINES.

Specification forming part of Letters Patent No. 219,755, dated September 16, 1879; application filed April 19, 1879.

To all whom it may concern:

Be it known that I, MASON S. NORTON, of Bangor, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Shingle-Sawing Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 shows an elevation of my invention; Fig. 2, detail, part of set mechanism; Fig. 3, detail, elevation of same; Fig. 4, detail, set mechanism; Fig. 5, detail, set mechanism; Fig. 6, plan of machine; Fig. 7, detail; Fig. 8, detail, modification of set-cams.

Same letters show like parts.

My invention consists of an improved shingle-machine, embodying in its construction many novel and improved devices, which can be best explained by reference to the drawings.

The frame A of my machine is preferably constructed of metal, and consists of the part *a*, supporting the bolt-carriage and operative mechanism, and the part *b*, secured thereto at right angles, which part *b* serves as the box for the shingle-jointer, and also as a support for the saw-arbor *c*, with its appropriate pulleys, saw, &c. The saw-arbor may be attached at the rear of the jointer-box *b*, as shown, or may be placed on the top, as preferred.

It will be observed that by this arrangement the jointer-box forms a component part of the frame of the shingle-machine, and that the jointer is brought into the most convenient position possible for use, the shingle falling from the saw close to the hand of the operator.

The part *a* of the frame A has upon its top a track, *d*, upon which the carriage *e* runs. This carriage has a downward extension, *f*, the bottom of which runs in a groove, *g*, at the base of the frame *a*, the track and groove forming together the guides for the carriage. This leaves the upper part of the carriage unobstructed.

At *h*, and forming a part of the carriage *e*, is an upright, having a vertically-moving slide, *i*, thereon, which slide carries an arm, *j*, sup-

porting the upper set-roll, K', and also the cam 15' operating it. The lower set-roll, K, is attached to the carriage at *m*. From the slide *i* extends downward a rod, *n*, attached to a lever, *o*, pivoted at *o'* to the extension *f* of the carriage. To the opposite end of this lever is attached a cord, *p*, passing upward over a pulley, *q*, upon the carriage *e*, and from thence over a pulley, *r*, upon the frame *a*, and having a weight, *s*, attached thereto. This cord also passes downward, and is connected with a foot-treadle, *t*.

Upon examination of the combination of levers, pulleys, &c., it will be evident that the weight *s* operates to keep the upper set-roll, K, pressed into the shingle-bolt, while at the same time it serves to draw back the carriage after a shingle has been cut. The foot-treadle *t*, upon being pressed down, elevates the slide *i* and set-roll K' to admit or release a bolt.

After the bolt has been placed in the carriage ready for sawing, the mechanism operating to present it to the saw is as follows: To the extension *f* is attached a connecting-rod, *u*, its other extremity being secured to a lever, V, pivoted at the base of the frame *a*. This lever V is provided with a friction-roll running in a grooved cam, *w*, the groove of which is cut, substantially as shown, with an eccentric curve, *w*¹, feeding the carriage forward, a comparatively straight portion, *w*², allowing it to be drawn back by the weight *s*, and a concentric curve, *w*³, allowing it to remain stationary while the set-works are operating.

The throw or distance through which the carriage travels may be adjusted by changing the points of connection of the connecting-rod *u*.

To feed the bolt past a greater extent of saw, the end attached to the lever V is raised and secured in the holes *x*, *x*¹, or *x*², or to follow up the edge of a saw as it wears down, the opposite end attached to the extension *f* is moved back and secured at the points *y*, *y*¹, or *y*², as the case may require.

The cam *w* receives its motion, as common, from a belt run by a pulley on the saw-arbor. As shown, the cam-shaft 1 has upon it a gear, 2, meshing into a pinion, 3, upon an intermediate shaft, 4, which receives the belt; but I do not consider this arrangement essential.

Upon the intermediate shaft is also placed a clutch mechanism of the ordinary character for disconnecting the cam-shaft from the driving-power; but this also is a mere matter of arrangement, and may be effected in other ways.

I will now proceed to describe the devices for setting the shingle-bolt. Upon the periphery of the cam-wheel *w* is a stud, 7, which, as the wheel revolves, acts against the curved end of a rod, 8, sliding upon the frame *a*, drawing it forward. At 9 upon this rod is a stud acting against a sliding rack, 10, attached to the carriage, and drawing said rack forward. Meshing into this rack is a loose pinion, 11, secured to a ratchet, 12, communicating revolution in one direction to an upright shaft, 13, through a pawl, 14, secured to said shaft. Upon this shaft 13, at the levels of the upper and lower set rolls, K' K, are horizontal set-cams 15' 15, the upper cam, 15', being secured to the slide *i* before mentioned, and being vertically adjustable upon the shaft 13, to which it is secured by a spline.

These cams have alternate long and short rises opposite each other upon the shaft, which, as the shaft revolves, act upon levers 16' 16, which operate through ratchets upon the set-rolls K' K, the long rise of the upper cam acting on the lever 16' of the upper roll at the same time that the short rise of the lower cam acts upon the lever 16 of the lower roll. This sets the bolt alternately for butts and points.

The operation is as follows: When from the shape of the cam *w*, as before described, the carriage is stationary, the stud 7, by the revolution of the cam-wheel, is brought under and acts upon the rod 8, drawing it forward. This brings the stud 9 upon said rod into engagement with the projection 17 upon the sliding rack, moving it forward and revolving the pinion and ratchet 11 12, and, through the pawl 14, the shaft 13, the set-cams 15' 15 thereon, also turning and operating the levers 16' 16, revolving the set-rolls K' K, and setting the bolt. This accomplished, the carriage begins its forward movement, during which the sliding rack comes into engagement with a stud, 18, in the frame *a* of the machine, which forces it back into its first position, preparing it to again set the bolt on the next forward stroke. The rod 8, being released by the stud 7, is returned to its former position by a spring or like device.

One of the important features of my machine consists of a device for regulating the amount of set of the rolls, enabling the proportionate thickness of the butts and points of the shingles sawed to be raised without change of parts of the machine.

From the preceding description it is evident that the set is regulated by the amount of revolution of the set-rolls K' K, and this in turn by the amount of motion communicated to the levers 16' 16 by the cams 15' 15, it being apparent that the less motion communicated to

the levers the less revolution will be transmitted to the rolls.

My device consists of a check-screw, 19, acting upon the levers and regulating their motion. Its operation will be understood by reference to Fig. 4, in which, attached to the slide *i*, is shown a projection through which the set-screw passes, bearing upon the upper surface of the lever 16'. As this lever, during the operation of setting, is pressed down by the cam 15' and upward by the supporting-spring 20, its motion is checked by the screw 19 instead of the face of the cam, the extent of motion being between the end of the check-screw and the rise of the cam instead of between the face of the cam and its rise. Similar devices are applied to the lower set-roll, except that the arrangement is reversed.

In order to secure an accurate adjustment, it is of course necessary that the ratchet-gear between the set-rolls and the cams upon which the levers 16' 16 act should be adapted to engage with and rotate the rolls through any required portion of a revolution.

I have shown in detail one method of constructing such a ratchet. Upon the end of the set-roll K', I form a spindle, 21, the shoulder upon the roll thus made being provided with ratchet-teeth 27. Over this spindle is placed a sleeve, 28, provided with grooves, each containing a spring and tooth, 29, adapted to fit the teeth of the ratchet. These teeth 29 are unequal in number to the teeth of the ratchet 27, thus insuring their engagement when the sleeve is but slightly turned.

In order to prevent any twist of the shingle-bolt while being sawed or when first struck by the saw-teeth, I attach to the carriage arms 22 22, supporting a shaft, 23, having a ribbed plate, 24, attached to it, as shown. This plate is supported by a spring, 25, the ribs being intended to enter into the lower side of the bolt sufficiently far to prevent any side motion, while at the same time the setting of the bolt is unimpeded.

Nearly all the improvements above described may be applied to advantage to machines having the carriage guided in the usual way by tracks above and below the set-rolls, and the form and proportions of the various parts may be altered without departing from the spirit of my invention.

In Fig. 8 I show a modification of the cams 15' 15 actuating the levers 16' 16 and set-rolls. This modification renders the cams adjustable as to the height of rise, enabling both wings to be made equal, if desired.

By this means the machine may be adapted to sawing parallel stuff for boxes, &c., while the adjustability of the levers 16' 16, as before described, permits its thickness to be regulated.

One method of rendering the cams adjustable consists in fixing a slide, 31, on each ring, this slide being capable of vertical adjustment by means of a slot and retaining-screw,

32. The lower edge of the slide forms the face of the cam.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a shingle-machine, the carriage *e*, having a downward extension, and guided by a track, *d*, below the lower set-roll and groove *g*, at the base of machine, as herein set forth.

2. The carriage *e*, provided with the upright *h*, supporting by the slide *i*, secured to one end of said arm, the vertically-adjustable and horizontally-projecting arm *j*, carrying the feed-roll *K'*, substantially as set forth.

3. In combination with the vertically-adjustable feed-roll *K'*, the rod *n*, lever *o*, and weighted cord *p*, passing over pulleys *q r*, holding said roll upon the shingle-bolt, substantially as set forth.

4. The combination of the rod *n*, lever *o*, and cord *p* and treadle *t*, with the vertically-moving feed-roll *K'*, substantially as and for the purposes specified.

5. The stud or pin 7 and sliding rod 8, having a stud, 9, thereon, in combination with the sliding rack 10 upon the carriage *e*, and mechanism operating the set-rolls, substantially as and for the purposes described.

6. In combination with the sliding rack 10 and mechanism actuating it, the shaft 13, loose pinion and ratchet, pawl 14, and cams 15' 15, actuating through appropriate intermediate mechanism, substantially as described, the set-rolls *K' K*, as and for the purposes set forth.

7. The upright shaft 13, with its actuating

mechanism, in combination with cams 15' 15, levers 16' 16, operated by said cams, set-rolls *K' K*, and intermediate ratchet-gear, substantially as set forth.

8. In combination with the vertically-adjustable set-roll *K'*, lever 16', and intermediate ratchet, the cam 15', vertically adjustable on the shaft 13, substantially as set forth.

9. In combination with the set-rolls *K*, levers operating the same and connecting mechanism, the check-screw 19, whereby the amount of revolution communicated to the rolls is regulated, substantially as set forth.

10. In combination with the set-roll of a shingle-machine having a spindle, 21, thereon, the ratchet-teeth 27, formed upon the shoulder of said roll, and sleeve 28, grooved and provided with spring-teeth 29, unequal in number to the teeth of the ratchet, substantially as and for the purposes set forth.

11. In combination with the set-rolls of a shingle-machine, a ratchet-gear operating as set forth, a lever actuating the same, a check-screw or like device regulating the operation of the lever, and an adjustable actuating mechanism communicating motion to said lever, substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of April, 1879.

MASON S. NORTON.

Witnesses:

WM. FRANKLIN SEAVY,
JOHN R. MASON.