

D. W. EMERY.
Shingle-Machine.

No. 215,197.

Patented May 6, 1879.

Fig. 1.

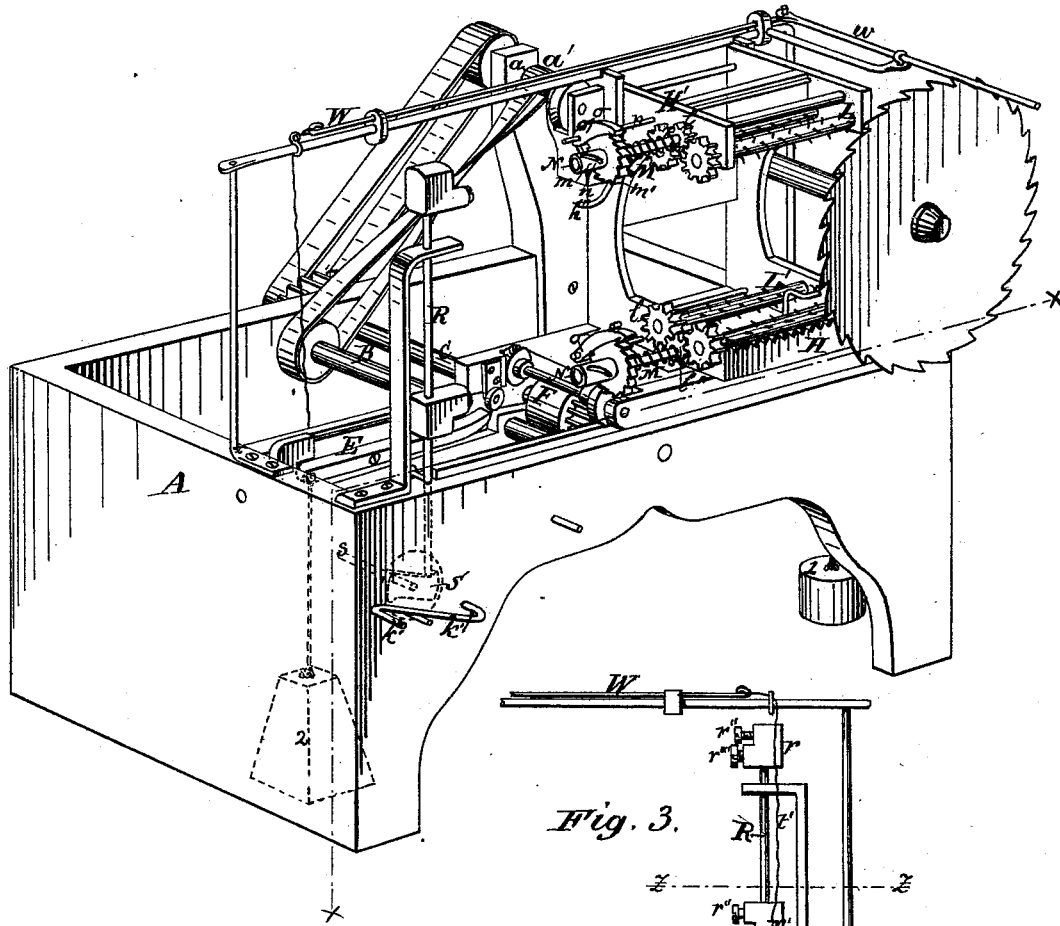
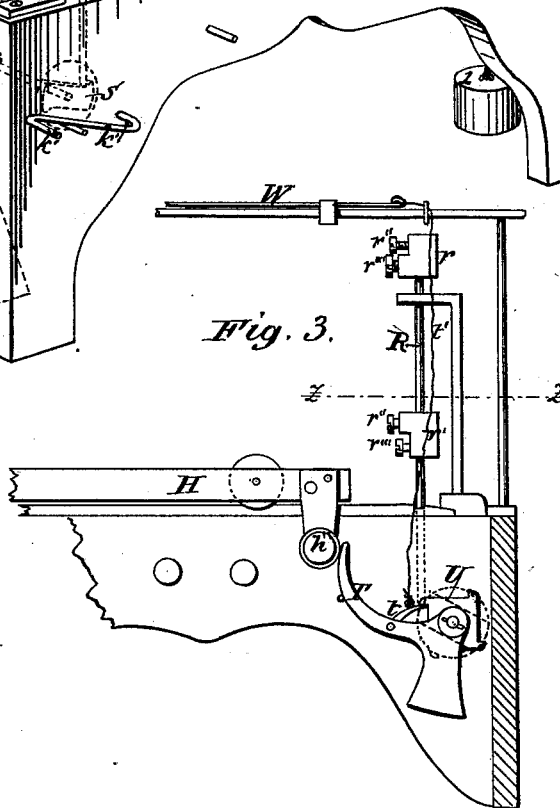


Fig. 3.



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Fig. 2.

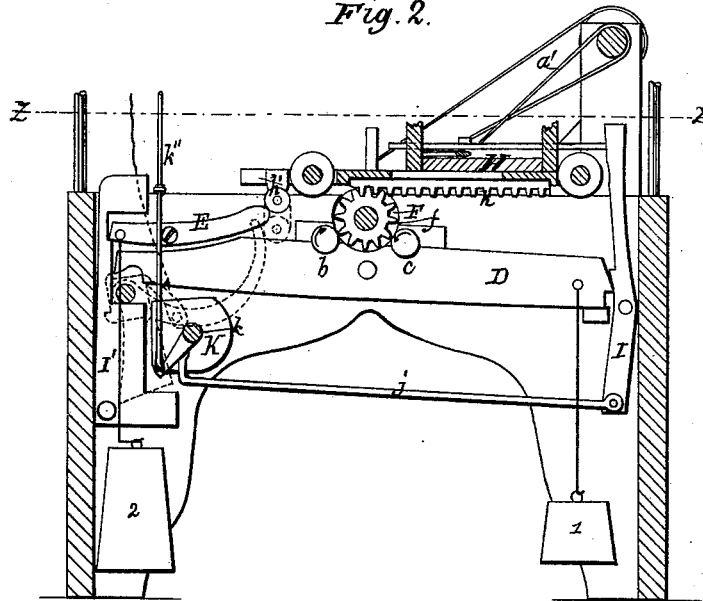
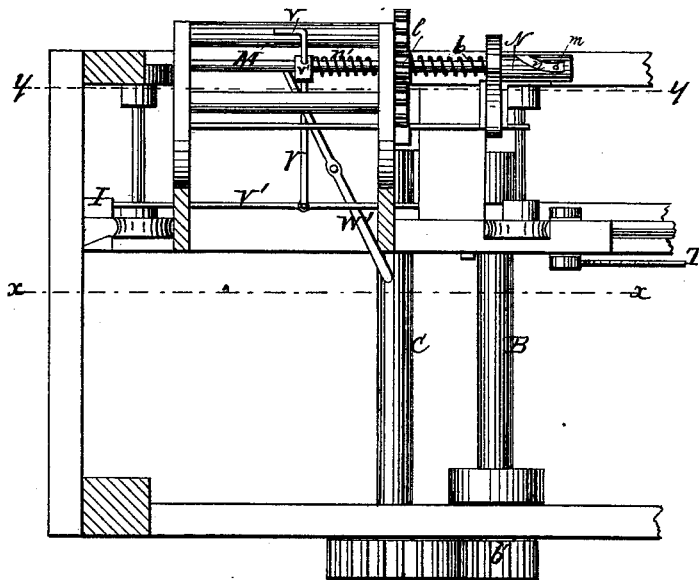


Fig. 4.



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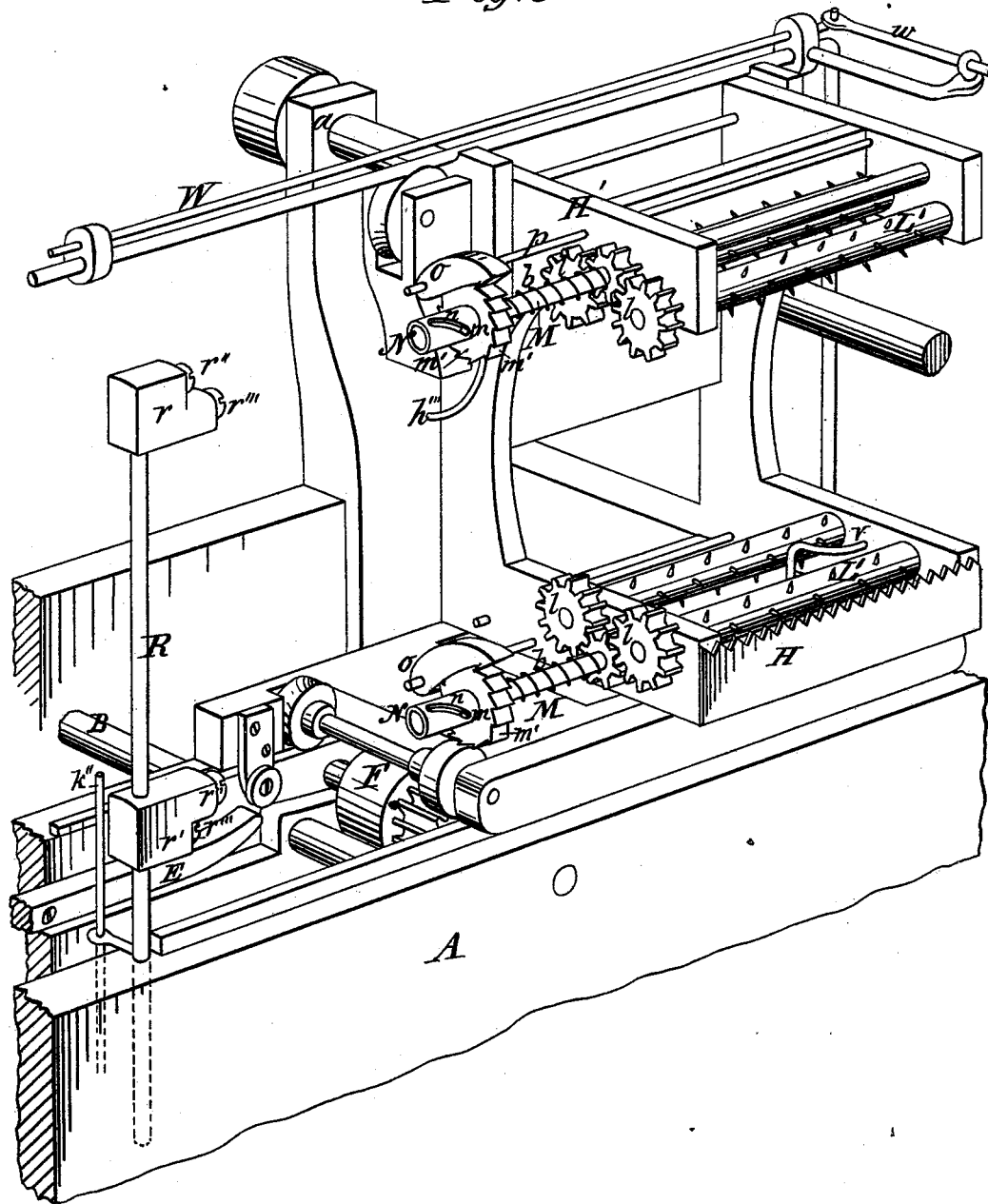
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Fig. 5



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UNITED STATES PATENT OFFICE.

DANIEL W. EMERY, OF AUGUSTA, MAINE.

IMPROVEMENT IN SHINGLE-MACHINES.

Specification forming part of Letters Patent No. **215,197**, dated May 6, 1879; application filed August 26, 1878.

To all whom it may concern:

Be it known that I, DANIEL W. EMERY, of Augusta, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Shingle-Machines, of which the following is a specification.

Figure 1 is a perspective view, showing a machine embodying the present invention. Fig. 2 is a side elevation, partly in section, on line *xx* of Fig. 1. Fig. 3 is a side elevation, partly in section, on line *yy* of Fig. 4. Fig. 4 is a top-plan view, in partial section, on line *zz* of Figs. 2 and 3. Fig. 5 is a perspective view, showing on an enlarged scale most of the operative portions of the machine.

The present invention relates to improvements in shingle-machines, and more particularly in the detail of the feed-works, whereby certain and regular movements are secured, the meshing and unmeshing of rack and pinion avoided, the use of heavy weight upon the carriage dispensed with, and time and efficiency of operation gained; also, in the construction of the set-works for regulating the thickness of the shingle, and for regulating the thickness of each end without reference to the other, and for holding the bolt firm and secure against any turning; also, in the devices for regulating the cut of the bolt or shingle; also, in the general construction of said device and in the combination of its several parts, all as will now be more fully set out and explained.

In the accompanying drawings, A denotes the shingle-machine. The driving-power is communicated through shaft *a*, and thence by belt *a'* to shaft B. A cog-wheel, *b'*, or belt on this shaft carries shaft C. On the inner ends of these shafts are friction-pulleys *b* and *c*. These shafts revolve in boxes attached to and equidistant from the center of the long lever D, which is hung in the center, and operated by a small weight, 1, at the end under the saw, and a larger one, 2, at the opposite end, which latter acts through the double lever E. Above and between the pulleys *b* and *c* is another, F, attached to a short shaft, on which is a pinion, *f*, which engages with rack *h* on the carriage H, and is always in gear.

At the ends of the lever D are trips I I'.

The one, by suitable notch or projection, is adapted to engage on one end of the lever, and the other in like manner is adapted to act on the double lever E, which controls the opposite end of D. Thus, when the trip I' is disengaged, the weight 2 bears down its end of lever D and raises the opposite end, overcoming the light weight 1, and connects the friction-pulleys *c* and F, and causes the carriage H to be moved upward toward the saw. The trip I falls forward by its own weight, and receives the end of the lever D into the notch. As the carriage advances a small truck or wheel, *h'*, underneath, passing over the long end of lever E, raises its opposite end into the notch in trip I'. When the carriage has moved up to its limit the trip I is disengaged by the regulator, hereinafter to be described, and the weight 1 forces its end of lever D downward, connecting the friction-pulleys *b* and F, and moving the carriage back to its starting-point, where it strikes and disengages the trip I'. The motion of the carriage is stopped by means of a cam, K, under the lever D, attached to a rod, *k*, extending to the front of the machine, and having there a handle or crank, *k'*. The cam has a low, high, and a medium point. On turning the handle toward the saw the trip I is first disengaged by a long rod, *j*, attached to the cam; then the high point of the cam raises the levers till lever E engages in a notch in trip I'. The cam still turns till it presents its medium point to the lever D, leaving a small space between. The pulleys *b* and F being now connected, the carriage recedes till it disengages the trip I', and the lever D falls to the medium point of the cam, disconnecting all the friction-pulleys, and permitting the carriage to stop with the utmost certainty at this point.

Upon the carriage H are suitably mounted and arranged the double set of spurs or fluted rolls L and L'. These are placed parallel to the length of the machine, and the shingle-bolt rests on its end between the two sets. Each roll of said sets has a cog-wheel, *l*, of equal size, on the end, but not engaging. In connection with each set, a third roll, M, is situated parallel and between the two rolls, being somewhat above in the upper set and

below in the lower set. Each of the rolls M has a small pinion, which unites with cog-wheels *l l*. On the end of roll M is a sleeve, N, containing a spiral groove, *n*, winding from left to right, in which plays a pin, *m*, made fast in the roll M. On the end of sleeve N is a ratchet, *m'*, which is held from turning backward by a pawl, *o*, sliding on a pin, *p*, attached to the frame of the carriage. The sleeve N is forced toward the end of the roll by a spiral spring, *b*, behind it.

The upper set of rolls is arranged in the same manner, except that the spiral groove in the sleeves winds from right to left. At the end of the machine is an upright rod, R, on which are two buffers, *r* and *r'*, each having a long and a short arm, *r''* and *r'''*. Beneath and connected with the rod R is a cam, S, attached to a horizontal rod, *s*, extending toward the back of the machine, and having on its other end a ratchet-cam, U, operated by a lever, T, and pawl *t*.

When the carriage advances the lever T falls forward and its pawl *t* slides over cam U. As the carriage recedes a small wheel or truck, *h''*, thereon strikes the lever T, pushing it backward, causing its pawl *t* to engage on a ratchet or spur of cam U, raising the rod R, so that the sleeve N on the carriage strikes against the short arm *r'''* on the rod, turning the lower rolls, L, a sufficient distance to set the point of a shingle, while the other sleeve N strikes against the long arm *r''*, and turns the upper rolls sufficient for the butt of a shingle. When the carriage next recedes the cam U is turned one-fourth of a revolution, as before, and the rod R falls by its own weight, the sleeve N strikes the long arm *r''*, setting a butt at the bottom, and the other sleeve N strikes the short arm *r'''*, setting a point at the top of the bolt. These arms are so arranged as to be screwed out or in to a longer or shorter length, thus driving the sleeve proportionally far onto the roll and setting the shingle to any thickness desired. The thickness of either end of the shingle can be altered without affecting that of the opposite end.

The particular object of the four rolls is to hold the bolt firmly and prevent its turning when it sets, thereby securing to both edges of the shingle a uniform thickness. These rolls will not prevent the tilting motion, but will prevent a lateral rotary motion. The back rolls, being also furnished with spurs, will act as a check to prevent lateral motion.

To the pawl *t* is attached one end of a cord or small chain, *t'*. The other end of the cord is fastened to a rod, W, which extends along on top of the guide-track to the upper end of the machine. To that end is hinged a light lever, *w*, hung near the center and extending to the left hand of the operator. By moving the lever toward him the pawl *t* is raised, the rod R remains stationary, and the machine continues

to cut the shingles from one end of the bolt till the lever is again moved.

The result attained by the suspension of pawl *t* is a saving of timber in case of a "churn" butted bolt—that is, a bolt having one end larger than the other. The alternation being interrupted, two or more butts can be cut from the large end of the bolt.

A rod, V, extends from the back of the carriage to the front side of the lower roll, and just inside the line of cut of the saw. The end nearest the saw is bent to form a finger, *v*, which rests against the shingle-bolt. This rod is hung near the center by a sleeve, *v'*, sliding on the roll M, running lengthwise the carriage, which has at its outer end the lower sleeve, N. To the other end of V is hinged the rod V', which slides through the carriage-frame on a direct line with the trip I. A spiral spring, *w''*, on the rod and attached to the sleeve *v'*, holds the regulator-finger *v* against the bolt. This draws the rod V' toward or recedes it from the trip I, disengaging it as soon as the shingle is cut, whether wide or narrow. A lever, W', is hung near the center, with one end resting against the sleeve *v'*. When the carriage recedes the other end strikes a pin, drawing the finger *v* backward from the bolt, allowing it to set, and also allowing room to set in a new bolt when necessary. When the rod V' strikes the trip I it forms a bind on the sleeve *v'* and prevents the slipping; but the spiral spring *w''*, acting on the center, draws the whole forward until arrested by the bolt.

The lever *h'''* is used to raise the head-block H' while setting in a bolt; and there is also attached to the stop-motion shaft K a vertical rod, *k''*, which engages in its motion upon an arm of R, and raises said rod far enough to permit the sleeves N to be raised when the head-block H is lifted.

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

1. The combination of shafts B and C, having pulleys *b* and *c*, with friction-wheel F and lever D, actuated as described, substantially as and for the purpose set forth.

2. The combination of hinged lever D, operated by trips I and I', lever E, and weights 1 and 2, cam K, and rod *j*, with the pulleys *b* and *c*, roll F, pinion *f*, and carriage H, substantially as and for the purposes set forth.

3. The combination of rod R, having buffers *r r'*, with vertical rod K', attached to and moved by shaft *k*, substantially as and for the purposes set forth.

4. The combination of arm T, pawl *t*, and ratchet-cam U, operated as described, with cam S and rod R, carrying buffers *r r'*, substantially as and for the purposes set forth.

5. The double set of rolls L, with rolls M, having rotating sleeves N, operated as described, combined with the carriage and suitable buffers, substantially as shown.

6. The combination of pawl *o* with ratchet-wheel *m'*, sleeve *N*, and rolls *L*, substantially as described.

7. The combination of rod *V*, having arm *v*, with spring *w'*, and pivoted to sliding rod *V'*, carriage *H*, and trip *I*, substantially as described.

8. The buffers *r r'*, having adjustable arms *r''* and *r'''*, substantially as shown.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

DANIEL W. EMERY.

Witnesses:

HIRAM SWAIN,
EUGENE S. FOGG.