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William L. Williams.  
Machine for splitting Kindling Wood.

PATENTED AUG 8 1871

Fig. 1.

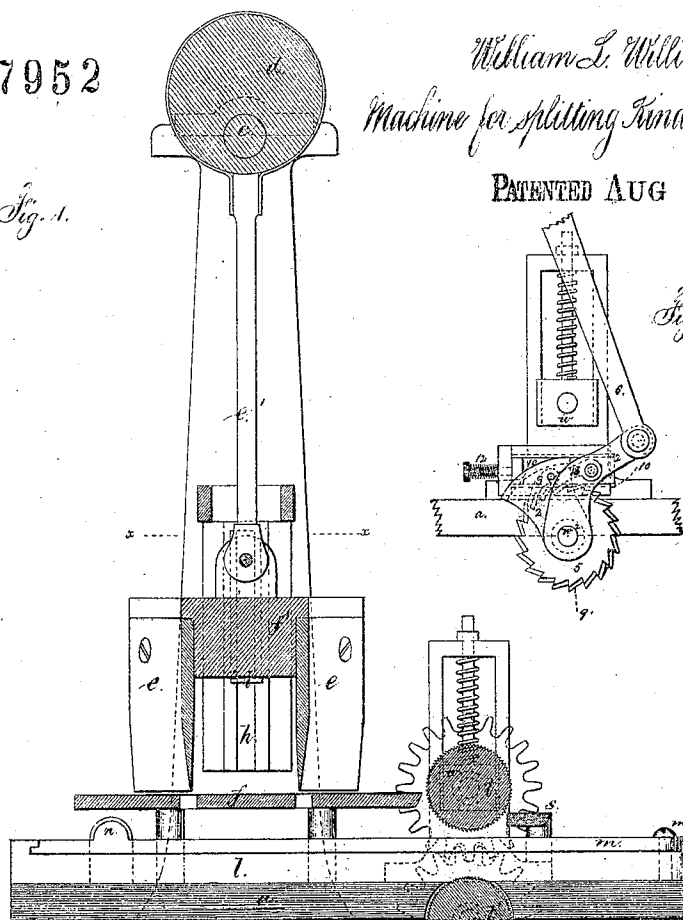


Fig. 3.

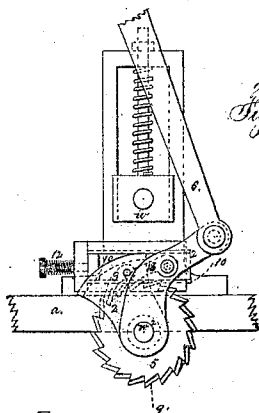


Fig. 2.

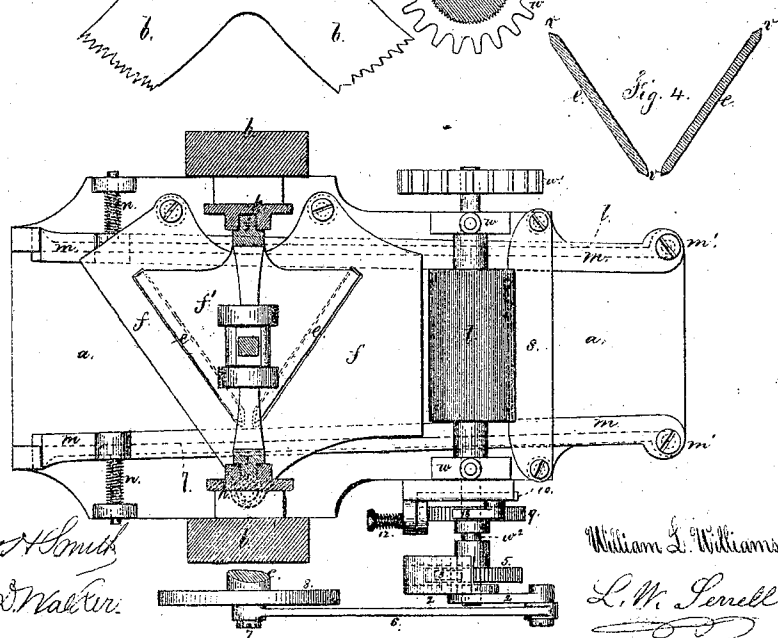
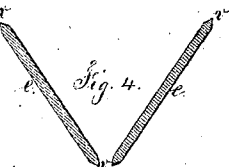


Fig. 4.



Witnesses,

Chas. H. Smith  
Geo. A. Walker.

William L. Williams  
L. M. Penell atty.

# UNITED STATES PATENT OFFICE.

WILLIAM L. WILLIAMS, OF NEW YORK, N. Y.

## IMPROVEMENT IN MACHINES FOR SPLITTING KINDLING-WOOD.

Specification forming part of Letters Patent No. 117,952, dated August 8, 1871.

*To all whom it may concern:*

Be it known that I, WILLIAM L. WILLIAMS, of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Splitting Kindling-Wood; and the following is hereby declared to be a full and correct description of the same.

My invention relates to that class of machines for splitting kindling-wood in which the wood, as passed into the feeding-trough by hand or otherwise, is fed along to the reciprocating knives by means of rollers, to which a partial revolution is given each reciprocation of the knives by a connection from the main driving-shaft to a ratchet-wheel upon the shaft of one of the feed-rollers. A machine of this general character may be seen in Letters Patent No. 81,123, granted to me August 18, 1868.

In my present improvement means are provided that allow a slight backward movement to the feed-rollers, so that the wood, as pressed toward the feeding-rollers by the action of the descending knives, may yield and prevent the mass of wood becoming wedged at this point or forced against the rollers to the injury of the machine. In front of the upper feeding-roller I provide a guard, under which the wood passes, so as to shield the hands of the operator from the feeding-rollers, and said guard prevents the wood rising up by swinging upon one edge or corner as the feed-roller grips one of the edges or ends of the blocks and not the other. This guard causes the wood to pass along without tipping up cornerwise.

In the drawing, Figure 1 is a vertical longitudinal section of my improved machine. Fig. 2 is a sectional plan of the same at the line *x x*, Fig. 1; and Fig. 3 is an elevation of the ratchets and connections which give motion to the feed-rollers.

*a* represents the bed of the machine, upon which the blocks of wood to be split are placed after being sawed into proper lengths, and this bed is supported by the standards *b b*, the upper part of said standards forming a frame to carry the driving-shaft *c*. Upon the driving-shaft *c* is an eccentric, *d*, and this eccentric *d* gives, by the pitman *e'*, the reciprocating movement to the head *f'* and knives *e e*, which knives pass through slots in the stationary stripping-plate *f*, and at *h h* slides are provided upon the standards *b b* for the ribs *i i*

of the head *f'*, so as to guide the knives *e* in their movement. The trough of the machine is formed by the bed or bottom *a* and stationary sides *l l*, and upon these sides *l l* are the yielding supports *m m*; said supports are hinged at *m' m'*, upon the forward part of the machine, and at the rear they are provided with springs *n n*, which springs press back said rear ends toward the center of the trough. The blocks of wood rest against these supports *m m*, and said supports, by the springs *n n*, keep the blocks of wood in their proper vertical position while being passed through the trough, but yield as the wood is pressed outwardly by the entrance of the knives *e e*, and, said supports being wider apart at the rear than at the front of the machine, the increased space necessary for the wood after being split is allowed for. The blocks of wood are placed upon the bed *a*, and pushed by hand or otherwise to the feed-rollers *t t'*, and pass under the guard-plate *s*; this guard-plate extends above and across the trough *a*, with its inner edge close to the feed-rollers *t*, and said plate prevents the blocks of wood rising upon one end or corner as they are grasped or nipped by one of the feeding-rollers, and before being acted upon also by the other feeding-roller. The upper roller *t* is set in yielding bearings *w w*, and is revolved by the gear *w'* upon the shaft *w''* of the lower roller *t'*. Upon the shaft is an arm, 2, carrying the pawl 3, and this pawl gives motion to a ratchet-wheel, 5, upon said shaft *w''*, and is itself moved by the connecting-rod 6 and crank-pin 7 upon the disk 8 of the main driving-shaft *c*. The motion given to this ratchet-wheel 5, and consequently to the rollers *t t'*, is intermitted, and only sufficient to feed the required amount of wood to the knives at each reciprocation of the same, and the feed-motion is brought into operation while the knives are out of the wood.

The wood in the trough *a*, between the feed-rollers and the knives, is liable to be forced by the knives back upon the feed-rollers at the risk of injury to said rollers or the parts connected with them, and sometimes the mass of wood gets firmly wedged at this part of the trough. To obviate this I place the stop-pawl 18, which engages the teeth of the wheel 9, upon a slide, 10, and this slide and pawl are kept in their proper position by the spring 12. If the knives, in descending, should force the wood back upon the feed-rollers, the pressure will give a slight back-

ward movement to the wheel 9, and said wheel will move the pawl 18 and slide 10 also backward, the spring 12 allowing of this movement, and consequently the feed-rollers yield to allow the wood to pass slightly backward between them and prevent all risk of the wood becoming wedged in the trough between the knives and rollers.

Splinters of wood sometimes become wedged between the vertical sides of the knives and inner sides of the trough, thereby injuring the machine. I therefore sharpen the vertical edges of the knives, as seen at *v*, Fig. 4, so that they will split any piece of wood that might otherwise impede their movement; and to prevent the wood becoming wedged in between the V-shaped knives I make the cutting-edges of such knives nearly on a line with the inner surfaces of the knives, and bevel the edges mostly on the outer sides of the knives; thereby knots will not become wedged between the V-shaped knives, but the wood will be cut without the knives having to follow the

grain of the wood, as now usual, thus preventing injury to the knives or the machine.

I claim as my invention—

1. The shield *s*, in combination with the feeding-rollers *t t'* and trough *a* of the wood-splitting machine, as and for the purposes set forth.

2. The pawl 18 upon the yielding slide 10, in combination with the feeding-rollers *t t'*, knives *e e*, and feeding-trough *a*, as and for the purposes set forth.

3. The knives *e e*, sharpened at their vertical edges as well as their under edges, and introduced in a wood-splitting machine, substantially as and for the purposes set forth.

4. The V-shaped knives with the cutting-edges nearly on a line with the inner surfaces of such knives, for the purposes set forth.

Signed by me this 6th day of January, A. D. 1871.

Witnesses:

W. L. WILLIAMS.

HAROLD SERRELL,  
GEO. T. PINCKNEY.