W. A. Allen,

Splitting Wood.

No. 110,415. Patented Dec. 27, 1870.

Fig: 1

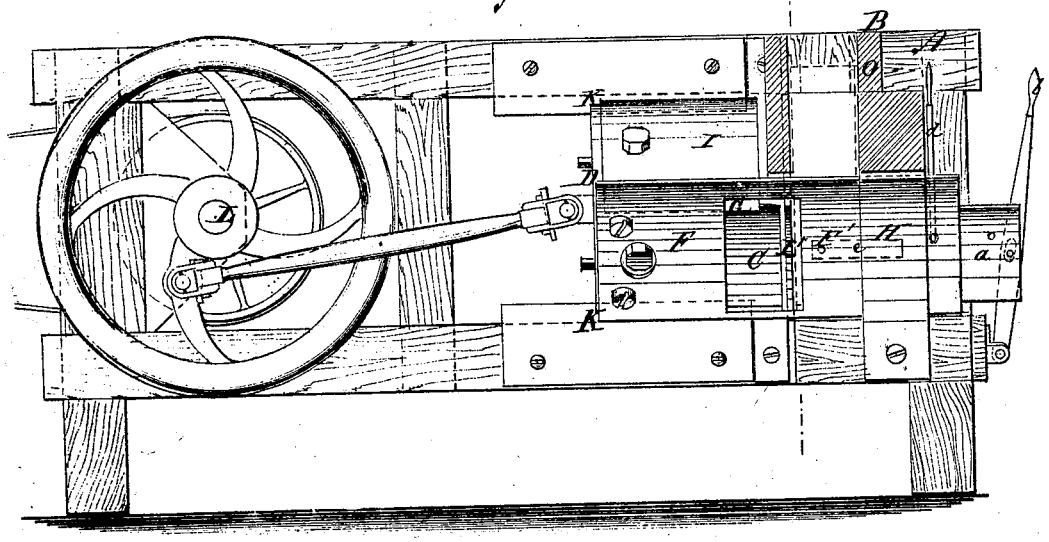


Fig: 2

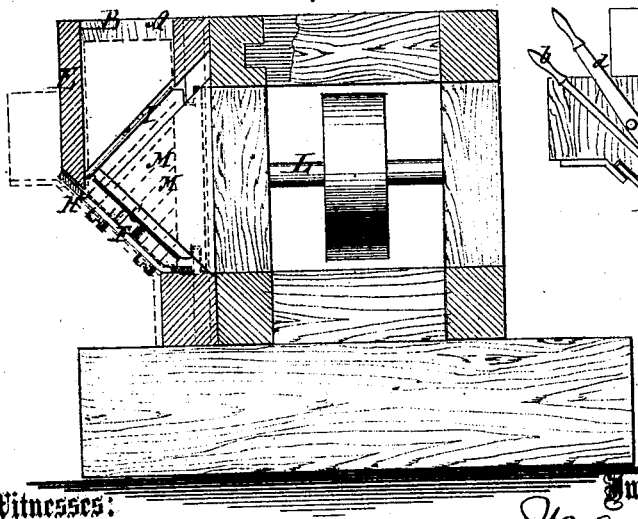
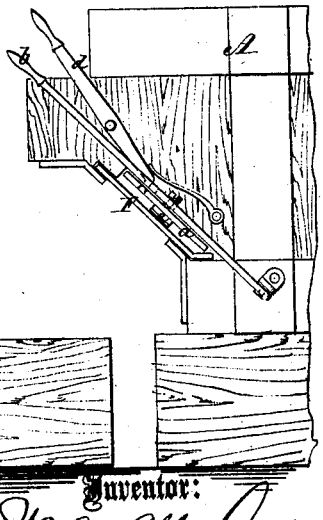


Fig: 3.



Witnesses:

C. Raettig.

L. S. Mabee

Inventor:

W. A. Allen

Per Munn & Co

Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM A. ALLEN, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN WOOD-SPLITTING MACHINES.

Specification forming part of Letters Patent No. **110,415**, dated December 27, 1870.

To all whom it may concern:

Be it known that I, WILLIAM A. ALLEN, of Baltimore, in the county of Baltimore and State of Maryland, have invented a new and Improved Wood-Splitting Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in machines for splitting kindling-wood; and it consists in a combination, with a fixed feeding-spout, of a pair of reciprocating splitting-blades and a holding and discharging plate in a manner to split the block into slabs and the slabs into small pieces and discharge the same after being split in a simple and efficient manner.

It also consists in an arrangement, with the hopper, of a gate for preventing the discharge of the wood in case the feeding is stopped while the machine continues to run, all as hereinafter described.

Figure 1 is a side elevation of my improved machine. Fig. 2 is a transverse section of the same, and Fig. 3 is a partial end elevation.

Similar letters of reference indicate corresponding parts.

A represents the frame of the machine, which may be of any approved shape.

B is a vertical spout or feeder, preferably of rectangular form, and inclosed on the four sides. It is mounted, by preference, on one side of the frame A, near one end, and is shaped at the lower end on an upward inclination with the frame of about forty-five degrees, as clearly shown in Fig. 2.

C represents one of the knives, which is a broad plate as wide, or thereabout, as the oblique opening at the lower end of the feed-spout. It is attached to the reciprocating cross-head D so as to be parallel with the plane of the oblique cross-section of the lower end of the spout, said plane being about as much above the plane of the lower end of the front side, E, of the spout as the required thickness the pieces of wood are to be when split, and said knife works between the front and rear sides of the spout across the space within it. Below this knife is the holding and discharging plate F, which is attached to the cross-head parallel with the knife and as much below it as the required thickness of the split sticks. It has a wide opening, G, as wide as the oblique cross-section of the feed-spout, and arranged relatively to the said knife, so that the main portion is behind the cutting-edge, only about one-fourth, or thereabout, being in advance of the cutting-edge. This plate extends considerably in advance of the edge of the knife, and works behind a supporting-guide, H, suitably attached to the frame. The other cutter, I, is attached to the cross-head above the first, and in a plane perpendicular to it and inclining downward from the frame. This cutter also works back and forth nearly across the space of the feeder. The cross-head is arranged in suitable ways, K, in the frame, and may be worked back and forth by any suitable driving mechanism—for instance, a driving-shaft, L—to which it may be connected in any approved way.

The blocks of wood are to be fed into the spout A sidewise, one upon another, as they are received from the saw. They fall downward, by gravity, upon the extension F′ of the plate F when the knives are withdrawn, and are split first into the slabs M (indicated by dotted lines in Fig. 2) by the knife I. Then the slabs are split crosswise by the lower knife, when they come down to it, and the pieces split off from the lower edges of the slabs are discharged between the edge N of the part F′ of the plate F and the edge of the lower cutter immediately after the splitting is effected, the said part F′ of the plate being moved from under the pieces as the knife moves forward to effect the splitting, and the pieces split off the slabs being held against moving with the plate by the side O of the feeder, which in this case is formed by the strong beam P of the frame to resist the force of the cutters. The said pieces are prevented from being carried back with the knife C by the plate L. When the cutters move back again the blocks of wood and slabs feed downward to the place made vacant by the pieces discharged for the next cut. In commencing the operation the part of the block split off by the knife at the first movement will be a thick piece, not split into slabs, as here indicated, which piece will be discharged in slabs formed by the lower knife; but the subsequent movement of the upper cutter will form slabs cut obliquely

across the block, as shown, which, feeding down in the order indicated, will be presented edgewise to the lower knife and split thereby into the pieces required. In order to prevent making these slabs as often as the feeding to the hopper is renewed, after stopping long enough for all the blocks in the hopper to become worked up while the machine continues running, as often occurs in case of failure of the sawing-machines to keep up the supply and by other causes, I have provided the sliding gate *a*, for sliding in above the plate F F′ from the side of the hopper opposite the cutters, to be shoved in at each time the feeding stops, to close the hopper just below the cutter C and retain the supply in the hopper until the feeding commences again, when on withdrawing the said gate the discharging will be resumed. This gate is operated in this instance by the hand-lever *b*, and a spring-stop, *d*, is formed to catch in notches in the gate to hold it open or closed. The said gate is beveled at the end next the cutter C on the upper side, so that it will not interfere with the edge of the cutter, and a spring, *e*, is provided to hold the gate up snugly against the upper bearing, to allow it to be held downward when the knife has split off the pieces from the sticks remaining, and so that when the knife C goes back the gate will rise and lift the wood high enough for the edge to enter under the wood when moving forward or in the same place at each movement. I do not limit myself, however, to the arrangements here shown for working this gate, as it is obvious that other means may be employed as well.

It may sometimes be necessary to reduce the breadth of the hopper for shorter wood, it being made broad enough in the direction in which the cutters move for the largest wood, and for this purpose I propose to provide plates for temporary attachment to the plate L′, and to the side of the hopper above, inside of the latter, for contracting the space on that side, said plates to be attached by dowel-pins and screws, or by any equivalent device admitting of changing them readily. Several sets of these plates may be employed of different thicknesses for different lengths of wood.

By reason of the vertical arrangement of the feeding-hopper the blocks of wood being piled one upon another will be moved down instantly when the cutters are drawn back, and the feed will be accelerated by the weight of the column, so that the machine may be run much more rapidly than when the feed depends upon the weight of a single slab. Another peculiarity of the arrangement is that as both knives move forward and back together the feeding for both is effected by each movement of the blocks. The machine may therefore be run with great rapidity.

It will be observed that the lower knife is made longer than the upper one, also that it is arranged to move entirely across the feeding-hopper, which is done to insure the complete separation of the pieces from the slabs, so as to prevent any possibility of clogging by the failure of the pieces to become completely severed in case the timber is tough and stringy, as would be the case if the cutter did not move wholly across the said hopper or feeder.

The essential features of my invention are, first, the arrangement of the cutters, so that while they are perpendicular to each other they both work across the feeder so as to split the wood in the cross directions required, and, secondly, the arrangement of the holding and discharging plate relatively to the cutter and the feeder, as shown, whereby the said plate becomes the bottom of the feeder, when the knives are withdrawn, arresting and holding the blocks for the next operation, and admitting the discharge of the split sticks by moving from under them when the cutters move forward for the next operation.

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

1. The combination of the feeder, reciprocating cutters, and the reciprocating plate, all substantially as specified.

2. The combination, with the cutters and the hopper, of the gate *a*, substantially as specified.

The above specification of my invention signed by me this 20th day of September, 1870.

WILLIAM A. ALLEN.

Witnesses:

GEO. W. MABEE,

ALEX. F. ROBERTS.