2 Sheets--Sheet 1.

A. G. HAGERSTROM.

Machines for Sawing and Splitting Wood.

No. 135,332. Patented Jan. 28, 1873.

Fig. 1.

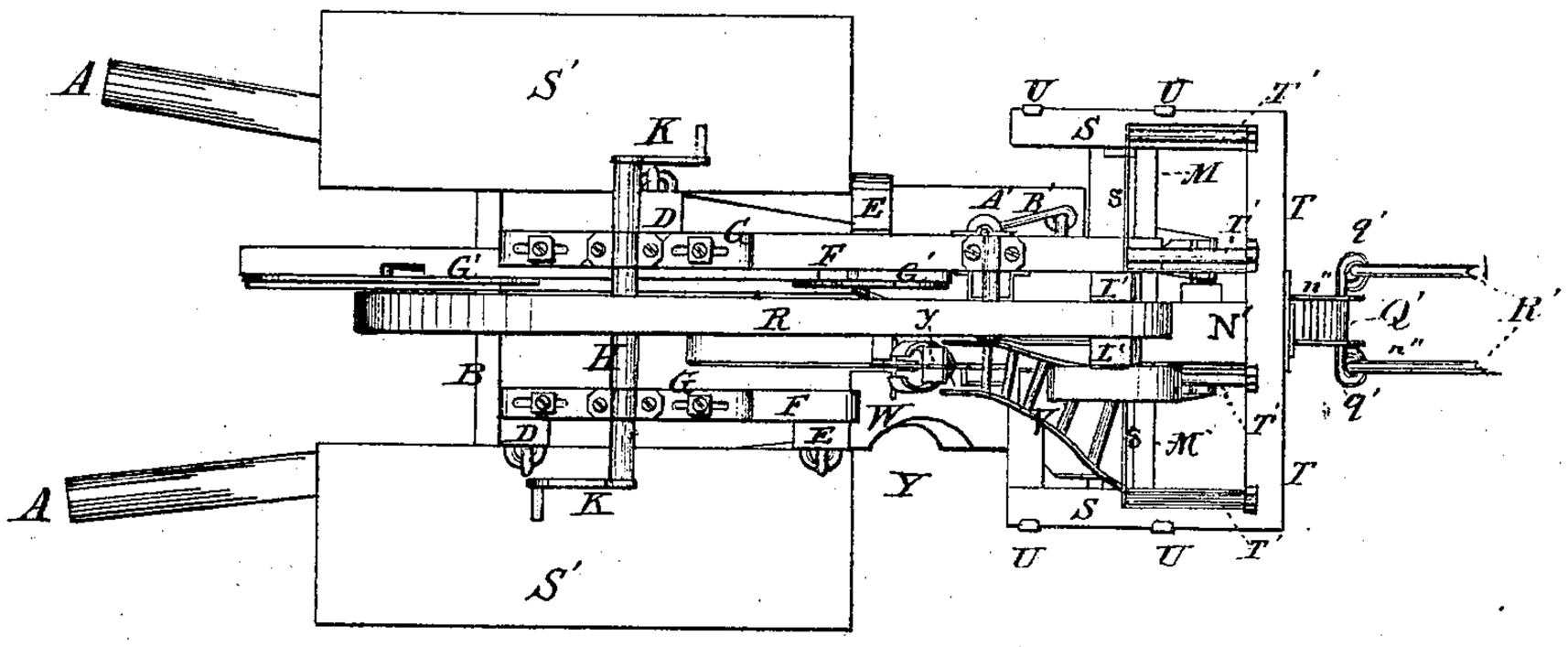
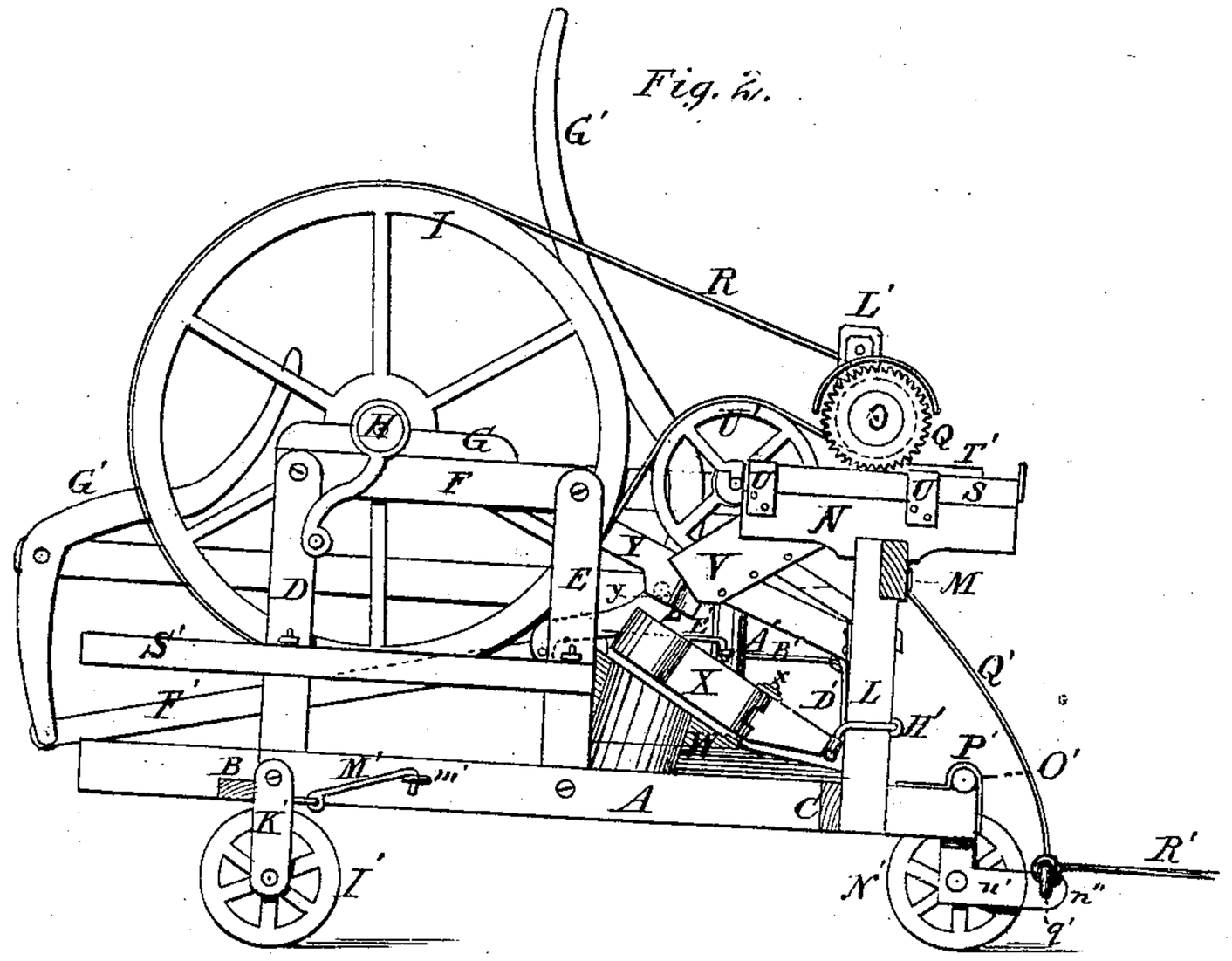


Fig. 2.



Witnesses.
C. A. Poole
John R. Young

Inventor,
A. G. Hagerstrom, by
Pindle and Co., his Attys

2 Sheets--Sheet 2.

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Fig. 3.

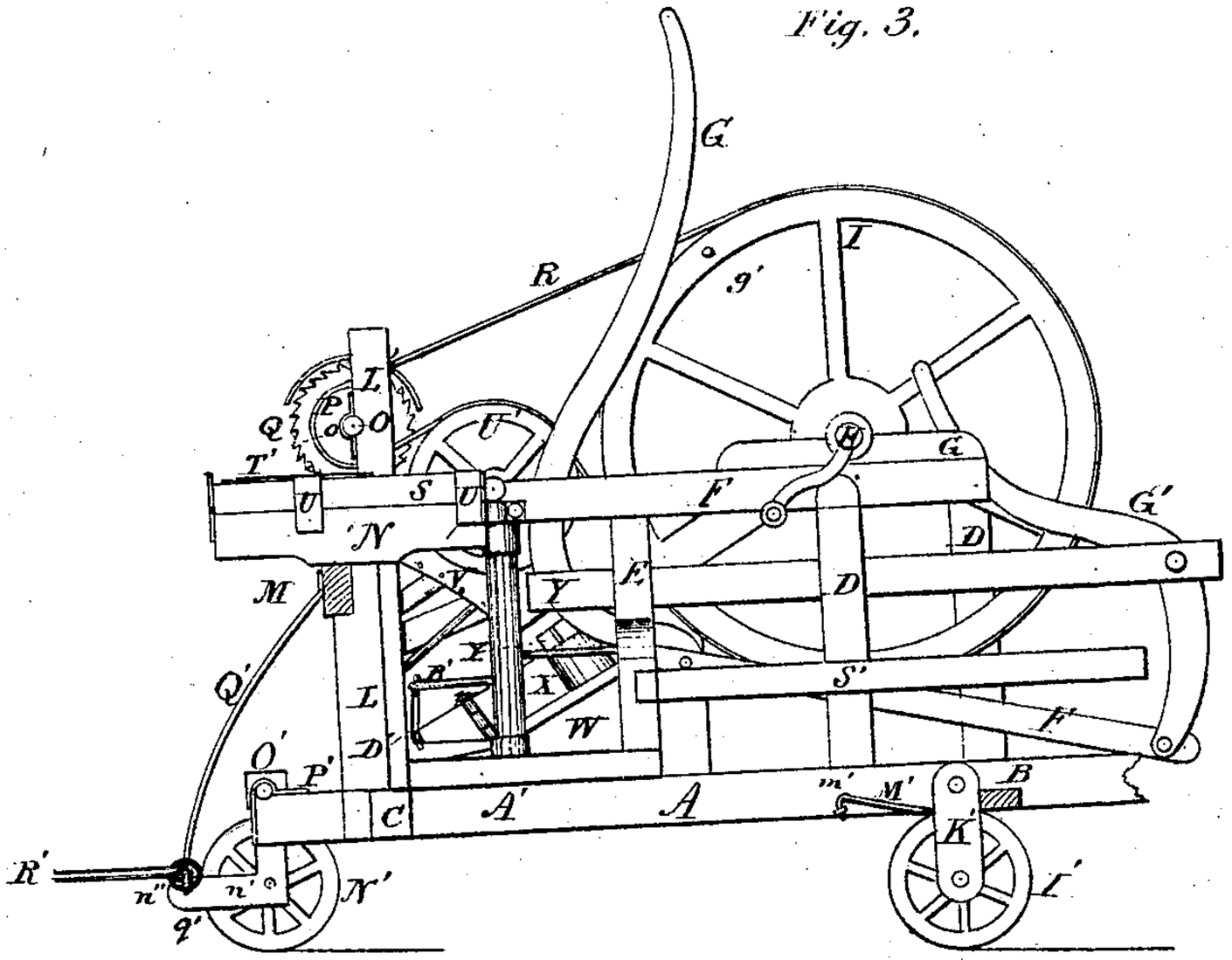
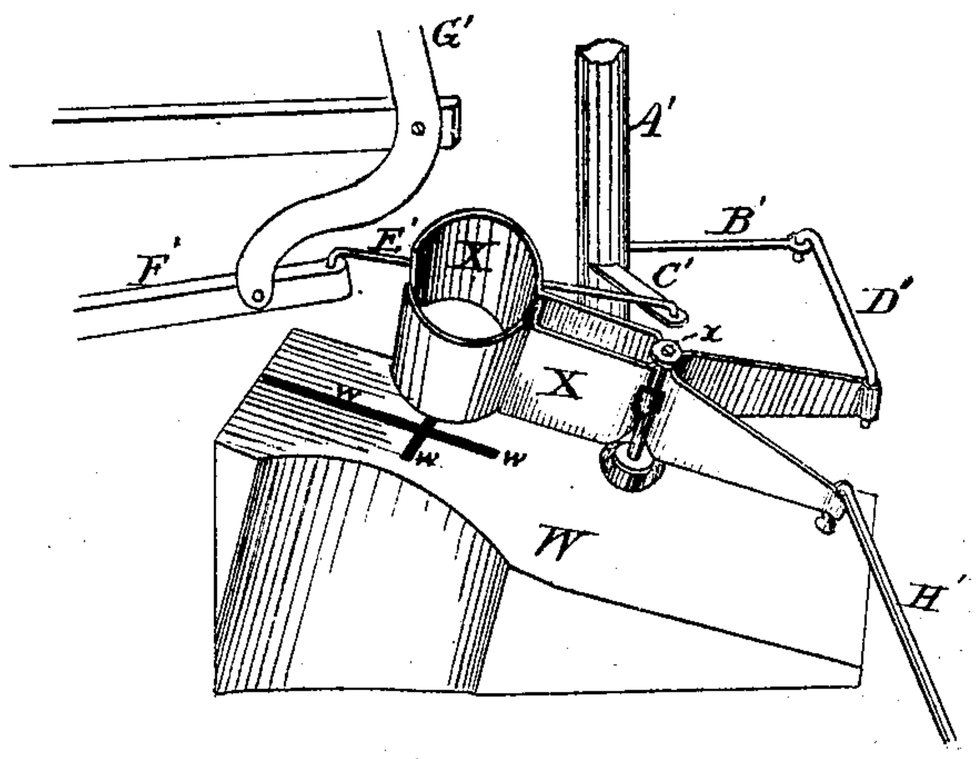


Fig. 4.



Witnesses,
A. Poole
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UNITED STATES PATENT OFFICE.

ANDREW G. HAGERSTRÖM, OF RED WING, MINNESOTA.

IMPROVEMENT IN MACHINES FOR SAWING AND SPLITTING WOOD.

Specification forming part of Letters Patent No. **135,332**, dated January 28, 1873.

To all whom it may concern:

Be it known that I, ANDREW G. HAGERSTRÖM, of Red Wing, in the county of Goodhue and in the State of Minnesota, have invented certain new and useful Improvements in Wood Sawing and Splitting Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view of the upper side of my improved device; Figs. 2 and 3 are elevations of opposite sides of the same; and Fig. 4 is a perspective view of the block and holder employed for sustaining the stick of wood while being split.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to enable wood to be sawed and split by the continuous operation of one machine, so as thereby to simplify the operation, and reduce the cost of the mechanism employed; and to this end said invention consists, principally, in the construction of the splitting blade or ax and the supporting-block, and their combination with each other and with the operating mechanism, substantially as and for the purpose hereinafter shown. It consists, further, in the means employed for sustaining in an upright position the stick to be split, and for automatically moving the same to one side after having been operated upon, substantially as and for the purpose hereinafter set forth. It consists, finally, in the rolling supports for and by means of which the machine may be moved from place to place, substantially as is hereinafter shown and described.

In the annexed drawing, A and A represent two sills, connected together at or near their ends by means of two cross-bars, B and C, in the manner shown in Fig. 1, the forward ends of said sills being at but a short distance apart, while their rear ends are sufficiently separated to enable a man to stand between the same, the whole forming the base of the main frame of the machine. Extending vertically upward from each sill A, at points immediately in front of the cross-bar B, and midway the same and the forward cross-bar C, are two posts, D and E, the upper ends of which are connected together by means of a horizontal bar, F, which has a line corresponding to a line passing fore and aft through the center of the base. The bars F furnish bearings for two boxes, G, within which is journaled a shaft, H, that has secured to or upon its center a band-wheel, I, and upon each of its ends a crank, K, said shaft being so arranged as to permit said wheel to revolve in a vertical plane, and in a line, fore and aft, with the center of the frame. The forward cross-bar C extends laterally outward beyond the sills, and from its ends extend vertically upward two posts, L, which are connected together by means of a horizontal cross-bar, M, and are each provided with a rail, N, that rests upon and is secured to the upper end of said post, and extends horizontally forward and rearward to equal distances. Two other posts, L′, extend upward from near the center of the cross-bar C, and in a line with the posts L, and between the same is secured a third rail, N′, which from thence extends forward to a point corresponding to the ends of the rails N. The upper portions of the center-posts L′ furnish a support for a saw-arbor, O, which is suitably journaled within boxes *o* attached to the front side of said posts, and is provided between the latter with a pulley, P, and upon one of its ends with a circular saw, Q. A belt, R, passing around the wheel I and pulley P, enables the saw-arbor and saw to be rotated by the turning of said wheel. Resting upon the rails N and N′ is a frame composed of two bars, S, which correspond in general dimensions with said rails, and are connected together at their forward ends by means of a third bar, T, that has a length equal to the distance between the outer faces of said rails. The lower side of the frame is provided with friction-rollers, while its vertical and lateral position is insured by means of two guides, U, which extend upward from the outer sides of each rail N, along the corresponding face of the bars S, and have their upper ends turned horizontally inward over the latter, such arrangement leaving said frame free to move forward or back in a line with the saw. Four rollers, T′, pivoted within the frame, and within two right-angled braces, *s*, that extend inward and then forward from each bar S, furnish a rolling bed or support, upon which the sticks of wood to be sawed may be moved

longitudinally, or in a line at a right angle to the plane of the saw, for the purpose of bringing the different portions of said sticks at the points where they are to be severed in a line with said saw.

In order that the belt may be caused to embrace a larger portion of the periphery of the pulley P, and also that said belt may be elevated above the splitting mechanism, a pulley, U′, is pivoted within suitable supports immediately in front of the driving-wheel I, and a little below the level of said pulley P, and the belt R caused to pass over the same, as shown. If desired, the pulley U′ may be made adjustable vertically, so as to operate as a belt-tightener.

After having been cut from the stick, the length of wood passes downward and rearward through a suitable metal chute, V, and strikes endwise upon or against a supporting-block, W, that rests upon the sills A and extends upward and rearward upon a line with the center of the shaft of the driving-wheel, in which position said stick is sustained by means of a metal holder, X, that, as seen in Fig. 4, is constructed in two pieces, which are pivoted at or near their longitudinal centers to or upon a stud, *x*, so as to cause their forward ends to be spread apart by the closing together of their rear ends.

The forward end of the holder has the form of the cutting portion of a pair of "cut-nippers," and into the cylindrical opening shown is received the stick of wood as it falls from the sawing-frame, the sides of said holder furnishing a support for the same.

When held in the position described, the block of wood is split by means of an ax or blade, Y, which is secured to and extends radially outward from one side of the driving-wheel in such a position as to bring it in a line with the transverse center of said stick. The ax or blade is provided with one or more transverse blades, *y*, so as to enable the stick to be divided into as many parts as may be desired, while within the supporting-block W are formed suitable channels or openings *w*, through which said splitting-blade passes.

After the stick has been split it is removed from the supporting-block by the following-described means: A shaft, A′, is journaled vertically upon or within the frame, upon the opposite side from the holder X, and in a line with its pivotal bearing *x*, and is provided at or below its longitudinal center with two arms, B′ and C′, that extend radially outward therefrom in lines having relative angles of about ninety degrees. From the arm B′, which projects forward, a connection, D′, extends across, and is attached to or upon the rear end of the contiguous section of the holder X, while from the second arm C′, which extends laterally outward toward the splitting mechanism, a connection, E′, extends forward, and is pivoted to or upon one end of a wooden bar, F′, that is suspended to or from the frame by means of two metal bars, G′, which are pivoted to the same, and to the ends of said wooden bar. By this arrangement it will be seen that if a longitudinal swinging motion be given to the bar F′ an oscillating movement will be communicated to the rock-shaft A′, and the rear end of the holder X caused to alternately swing laterally outward and then to return to position. In order that the desired movement of parts may be effected, each of the metal bars G′ is extended upward and inward in a curve, so as to engage with stud *g′* that projects horizontally and laterally outward from the rim of the driving-wheel, said bars being so arranged that said stud striking against the rear bar will force its upper end rearward, and through the intervening mechanism move the stick-holder outward to "dump" its contents, after which said stud, by striking against the forward bar, moves its upper end forward and returns said parts to place. A spring, H′, attached at one end to the forward end of the outer section of the stick-holder, and at its opposite end to or upon the contiguous post L, serves as an aid for returning said holder to place after having dumped its load, and also to give an elastic inward pressure to the forward ends of the same, so as to enable them to conform to the size of the stick that is to be held.

In order that the machine may be readily transported from place to place, and when in position caused to rest firmly upon the ground, the following-described means are employed: A small ground-wheel, I′, is suitably journaled within a forked bar, K′, and the upper end of the latter pivoted to or upon the outer face of each sill A, immediately in front of the cross-bar B, the projecting ends of which furnish a bearing for the rear side of said forked bar, and prevent it from swinging rearward beyond a vertical line. The forked bars are each prevented from swinging forward by means of a rod, M′, which is pivoted at one end to or upon the forward side of the same, and has its forward hooked end engaged with a staple, *m′*, that is secured within and extends outward from the face of the sill, the whole being arranged to permit said forked bars and their rollers to be released from their vertical positions, and turned upward and forward when it is desired to have the rear end of the machine rest upon the ground. The front end of the machine is supported upon a caster-wheel, N′, which is pivoted within the lower side of a roller, O′, that is journaled within suitable boxes P′, which are secured to or upon the upper sides and forward ends of the sills A, the caster-frame *n′* having a rotary movement in a horizontal plane within said roller. While in connection with the latter it is capable of an upward and forward movement in a vertical plane, and in a line fore and aft with the machine. The caster-frame *n′* has two horizontal arms, *n″*, which extend forward and afford a bearing for a metal brace, Q′, which from thence extends upward and rearward,

and is loosely connected to or with the forward end of the machine-frame, the office of which brace is to insure the radially-vertical position of the caster. By disengaging the upper end of the brace Q′ the caster may be turned upward, so as to enable the forward end of the machine-frame to rest upon the ground. To the outer ends of the rod *q′*, upon which the lower end of the brace Q′ is pivoted, are secured the ends of a draft-rod, R′, by means of which the machine may be drawn and its course guided. A platform, S′, hinged to or upon each side of the frame in a suitable position to support the persons who operate the driving-wheel, completes the device, which furnishes a simple, cheap, and efficient means whereby ordinary cord-wood may be prepared for consumption in stoves.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The splitting blade or ax Y and block W, when constructed as shown, and combined with the frame of the machine and with the operating mechanism, substantially as and for the purpose set forth.

2. The means employed for sustaining the block while being split and for afterward dumping the same, consisting of the holder X, the rock-shaft A′ provided with the arms B′ and C′, the connecting-rods D′ and E′, the wooden bar F′, and the metal bars G′, when constructed as shown, and combined with each other, with the frame of the machine, and with the driving-wheel, substantially as described.

3. The means employed for furnishing a rolling support to the machine, consisting of the ground-wheels I′, the forked pivoted bars K′, the hooked rods M′, the staples *m′*, the caster N′, the roller O′, the brace Q′, and the draft-rod R′, when constructed and combined with the frame of the machine substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 25th day of April, 1872.

A. G. HAGERSTRÖM.

Witnesses:
GEO. S. PRINDLE,
EDM. F. BROWN.