J. H. SILKMAN.

WOOD SPLITTING MACHINE.

No. 52,215. Patented Jan. 23, 1866.

Plate 1.

Fig: 3.

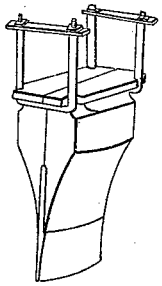


Fig: 1.

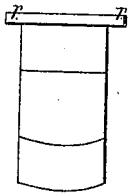


Fig: 2.

Plate 2.

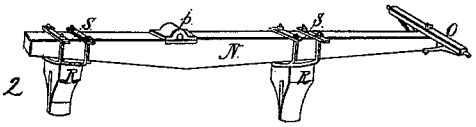


Plate 3.

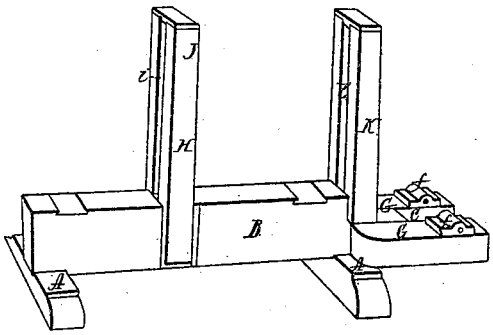
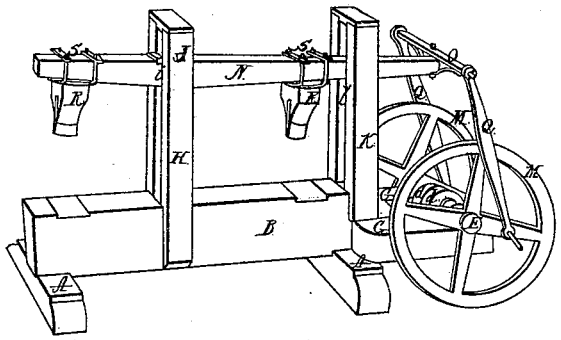


Plate 4.



Witnesses:

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IMPROVEMENT IN WOOD-SPLITTING MACHINES.

Specification forming part of Letters Patent No. **52,215**, dated January 23, 1866.

To all whom it may concern:

Be it known that I, JOHN H. SILKMAN, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in the Machine Employed for Splitting Fire-Wood; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Plate 1, Figures 1, 2, and 3, gives different views of the ax or wedge employed, with its means of attachment to the vibrating helve or working-beam, and a view of its action in the wood cleft as regards self-clearance, a claim for which ax or wedge, however, I do not make under this specification, having made a separate application for a distinct patent for the same. Plate 2 is a perspective view of the vibrating working-beam or helve, with its two axes or wedges, its fulcrum-box, and cross-head in place. Plate 3 is a perspective view of a convenient frame in which to operate the vibrating helve or working-beam; and Plate 4 is a perspective view of an entire machine as operated.

The nature of my invention consists in the employment of a helve or working-beam vibrating on a central axis and fulcrum, in combination with two axes or wedges, one to be attached to the helve or working-beam on either side of the axis or fulcrum, thus obtaining a double action in the machine in the process of splitting fire-wood.

To enable others skilled in the art to construct and use my invention, I will proceed to describe its construction and operation.

I construct a strong frame with its appendages of the form, or its equivalent, shown in Plates 3 and 4 of the drawings, in which A A are two or more cross-bed sills. Upon these I fix firmly the main longitudinal sill B. (Shown in the same plates.) To the sides of this sill, and near the forward end thereof, the blocks G G, Plates 3 and 4, are strongly attached in such a manner and of such a length that, while each block will lap upon the sill B sufficiently to admit of solid attachment to it, they will both project forward of the sill a sufficient distance or length to form the crotch C, Plate 3, in which the pulleys *d d* are to work, as shown in Plate 4, and a sufficient length to serve as bearings for the crank-shaft E, Plate 4. Each of the projecting arms or prongs of this crotch is furnished with a metallic box, *f f*, Plate 3, in which the bearings or journals of shaft E are to work.

Into and upon the main sill B, and about equidistant from each end, I frame a large post, H, Plates 3 and 4. This I designate the "fulcrum-post." In or near the top of this post I cut a crotch or slot in the direction of the main sill, as shown at *i*, of the same width with the thickness of the vibrating helve or working-beam, and sufficiently deep or long to receive the same and allow its vibratory motion. Transversely through this post and crotch or slot, and at the proper point, a hole, *j*, is made to receive a bolt, to serve as an axis and fulcrum to the helve or working-beam. Into and upon or near the forward end of the main sill I frame a similar post, K, Plates 3 and 4, which I denominate the "guide-post." As this latter post is intended as a guide merely to the helve or working-beam to prevent its lateral vibration, it need not be so large or strong as the fulcrum-post H; but the crotch or slot *l*, Plates 3 and 4, should be enough deeper or longer than that in post H to admit of the greater extent of vibration in the helve or working-beam at this point. Each end of the crank-shaft E is provided with a balance-wheel, M, Plate 4, (the arms of each of which should be adjusted parallel to the arms of the other,) and its center within crotch C, with two pulleys, *d d*, (of the proper size for the motion desired,) one of which should be a fixed and the other a free pulley. The shaft, with the fly-wheels and pulleys attached, is adjusted and appended to the frame by means of the boxes *f f*, in which it works.

When thus far constructed and adjusted the frame is ready to receive the vibrating helve or working-beam N, Plate 2, the construction and operation of which I will next proceed to describe.

It should be of length sufficient to extend, when in place, from a point three or four inches forward of a vertical line over shaft E back to and a little beyond a point over the rear end of sill B, where, if need be, it may be worked in another guide-post, similar to K. It may be made of either wood or iron, and of any

shape adapted to its purpose, and the size is required to be only such as to secure the requisite strength.

Upon the forward end of the helve or working-beam, and directly over shaft E, I securely attach a cross-head, O, Plates 2 and 4. This should be of equal length with shaft E, or a little longer. At the proper point on the upper edge of the helve or beam, (if it be a straight beam with parallel surfaces,) I attach another metallic box, *p*, Plate 2, which I style the "fulcrum-box," through which the fulcrum-bolt *j* passes when the helve or beam is in place. The proper point in or upon the helve or beam at which the center aperture of this box should be adjusted is indicated by the exact distance from a point directly over the center of shaft E to the center of bolt *j*, on a line horizontal to that bolt. The helve or working-beam should then be placed in the crotches or slots *i* and *l*, and there suspended in place by means of bolt *j* and fulcrum-box *p*. Each end of the cross-head O is to be connected with a crank-pin on an appropriate arm of its corresponding fly-wheel by means of the pitman Q or Q, Plate 4.

The stroke of the helve or working-beam may be regulated by using or employing an adjustable crank-pin and moving the same from or toward the shaft. The axes or wedges to be employed, as at R R, Plates 2 and 4, are then to be adjusted and firmly secured to the helve or working-beam by such means as their construction may require—one on either side of the axis or fulcrum, and about equidistant therefrom and as far as the stroke desired may demand. But they may be readjusted from time to time at any desired points. The pole or head of the ax or wedge which I employ in actual use is made broad and level, and is extended or projected over at the ends, so as to form a flange at each end of the pole or head, as shown at *r r*, Fig. 2, Plate 1. By means of these flanges, and of the clips or staple clamps or collars S S, Plates 2 and 4, I am able to secure and fasten the axes to the helve or beam with the greatest ease and most perfect steadiness and solidity.

To operate my invention, power sufficient is communicated to the machine by means of a belt from a pulley on the power to the fixed pulley *d*, Plate 4. When the power produces a rotary motion in the shaft E and fly-wheels M the pitmen connecting the crank-pins with the cross-head O impart a vibratory motion to the helve or working-beam N, and the axes or wedges R R are, in consequence, alternately elevated and depressed with a stroke greater or less, as they are more or less removed from the axis and fulcrum *j*, or as the crank-pin is adjusted more or less remote from shaft E. The machine is fed by men standing at its side, one opposite to each ax. When the ax has ascended he places the stick, bolt, or block of wood upon its end on the main sill B in such a situation that when the ax descends it will make the first split or cleft toward the side of the bolt or block farthest from the feeder. When the ax again ascends the feeder moves the bolt more centrally under the ax, which, when it again descends, makes the second split or cleft nearer the center. This operation is repeated, as the ax ascends and descends, until the bolt or block is split in one direction of the size desired, when it is quickly turned, so as to receive in the same manner successive strokes of the ax and to be successively split transversely of a like desired size, when the cleft pieces are pushed over to the opposite side of the machine.

I do not claim as my invention a wood-splitting machine, nor do I claim as any part of my invention a vibrating working-beam or helve of itself, as herein described; but

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

In wood-splitting machines, the arrangement of the working-beam or helve oscillating centrally on pivot *j* in post H between two splitting-axes that are firmly fixed to said beam, when said beam is extended beyond one of the axes to receive the operating power, substantially as herein described.

JOHN H. SILKMAN.

Witnesses:
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THEO. F. RODOLF.