(No Model.)

E. A. & S. B. HILDRETH.

WOOD SPLITTING MACHINE.

No. 262,591. Patented Aug. 15, 1882.

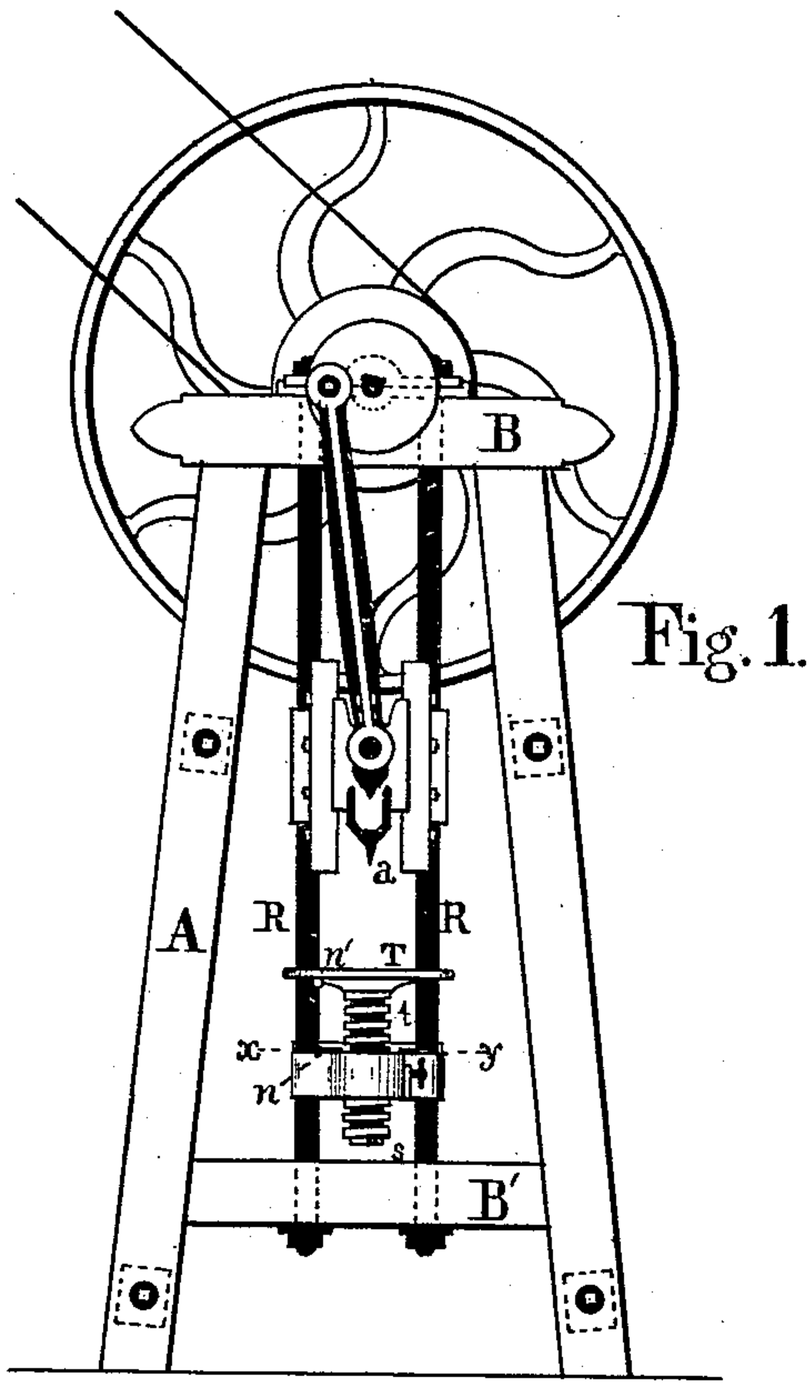


Fig. 1.

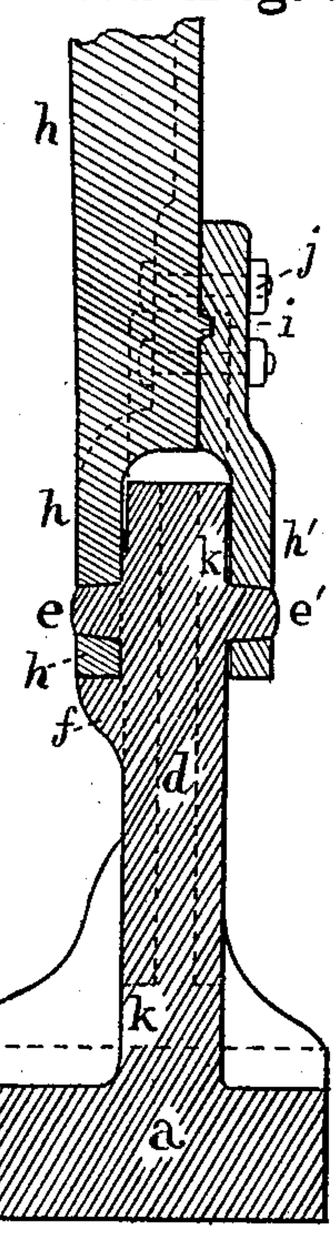
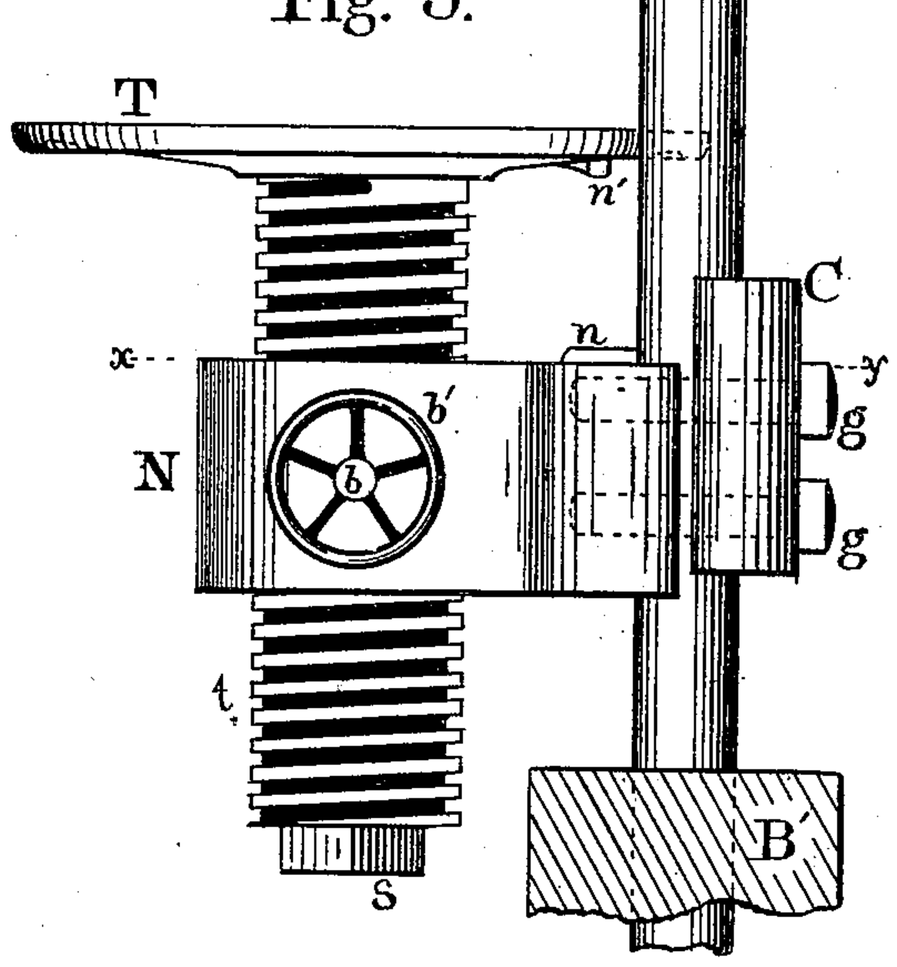


Fig. 3.

Fig. 2.



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UNITED STATES PATENT OFFICE.

EDWIN A. HILDRETH AND STANLEY B. HILDRETH, OF HARVARD, MASS.

WOOD-SPLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 262,591, dated August 15, 1882.

Application filed February 21, 1881. (No model.)

To all whom it may concern:

Be it known that we, EDWIN A. HILDRETH and STANLEY B. HILDRETH, both of Harvard, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Wood-Splitting Machines, of which the following is a specification.

Our invention relates to that class of wood-splitting machines in which a single knife plays up and down upon tracks or ways provided for the purpose, the wood to be split being held in the hands of the operator and resting upon a table below the knife referred to.

The nature of our invention consists in the construction of the various parts of a wood-splitting machine in such a manner that the connection between the pitman and the sliding ax-head may be capable of resisting the great strain to which these machines are subjected; also, in so constructing the table (and its connecting parts) upon which the wood is placed to be split that it can easily and quickly be raised or lowered to accommodate different lengths of wood and still be sufficiently strong to resist the great strain of splitting the hardest, toughest, and most knotty wood; also, in so constructing the screw-table that when screwed down to the lowest point to which it can go in the supporting bed-nut the table cannot become set or bound against the top of the bed-nut; also, in so clamping the screw of the table that the table will not turn down under the force of the blows of the ax, all as more fully set forth and described in the following specification and claims.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a front view of a wood-splitting machine embodying our invention. Fig. 2 is a sectional view upon the line *x y* of Fig. 1, showing the screw-table upon which the wood is placed to be split, the supporting bed-nut, and its connection to the main frame-rods. Fig. 3 is a side view of the main frame-rods, the screw-table with its supporting bed-nut, and the splitter ax-head, also showing the pivoted connection between the pitman and the sliding ax-head, the section of the ax-head being taken in a vertical plane through the center of the pivots and ax.

A represents the main frame of our improved wood-splitting machine.

B is the cap-piece to the main frame, and B′ represents a cross bar or rod sill directly beneath the cap-piece B.

R R are large strong iron rods, which we call the "frame-rods," extending through the cap-piece B and through the box in which the main shaft, which carries the balance-wheel, revolves. The frame-rods R R also extend through the sill cross-bar B′, and are secured by nuts resting upon the box above and by nuts beneath the sill cross-bar B′, these nuts fitting upon threads cut on each end of the frame-rods R R. To these frame-rods R R are secured the track-head and the tracks which guide the sliding ax-head. The table T, upon which the wood to be split is placed, is also secured to the main frame-rods R R, bringing all the various strains of the machine directly onto the frame-rods R R.

When a tough knotty stick is placed upon the table T to be split the knife *a*, as it descends, is forced downward by the pitman *h*, which connects the ax-head *k* with the crank-wrist and balance-wheel. The resistance of the wood brings a great pressure upward upon the knife and downward upon the table. If the connecting parts are all sufficiently strong, the upward and the downward strains will all be conveyed to the rods R R, and the wood will be forced asunder. The downward pressure of the pitman *h* upon the journals *e e′* on the ax-head is so great as to cause danger of breaking the journal when tough, cross-grained, and knotty blocks are inserted under the knife. If the operator places such a block of wood on the outer edge of the table, all the strain of splitting the block comes upon the outer end of the knife *a*. Under these circumstances the journal *e* receives all or nearly all the downward thrust of the pitman.

To guard against the possible danger of breaking the outer journal, *e*, upon the ax-head, we place an auxiliary support, *f*, upon the ax-head, upon which support *f* the end of the pitman *h* is formed to rest, relieving the journal *e* of a portion of the strain and avoiding all danger of breaking the journal *e*, even although tough knotty blocks are placed under the outer end of the knife *a*. By this arrangement a journal, *e*, corresponding in size with the journal *e′*, is sufficient under all circumstances, and it is much more convenient to form them of

equal size, and it is not desirable to be obliged to increase the size of either journal, as the pitman swings upon them and a small journal allows more stock to remain in the pitman without increasing the weight.

h' represents the cap of the pitman, secured to the main body of the pitman *h* by bolts *j*, and held in place by a small rib, *i*, to relieve the bolts *j* of the shearing strain.

T represents what we call a "screw-table." It is formed with a broad flat surface above, preferably round, as it is intended to be revolved to raise and lower the table; but it might be of any other shape, if desired. Upon the broad flat surface of the table T the wood to be split is placed and held by the hands of the operator. The table T is formed of cast-iron, with a large stout stem or central column, *t*, extending downward from the center of the lower side of the table T. The table T and column *t* are all cast in one solid piece. Upon the column *t* we cut a large strong screw-thread, as shown in Fig. 3.

N is a large, deep, and strong nut, fitted with a thread corresponding to and fitting easily upon the screw upon the column *t*. This nut N we call the "supporting bed-nut." The bed-nut N is formed with projecting arms having cylindrical grooves therein, which fit onto the main frame-rods R R, as shown in Figs. 2 and 3. A back clamp, C, as shown in Figs. 2 and 3, is firmly bolted to the arms of the bed-nut N by bolts *g g*, which are tapped into the arms of the bed-nut N. The frame-rods R R are firmly clasped between the arms of the bed-nut N and the back clamp, C, when the bolts *g g* are tightened. The bed-nut N can be raised or lowered and secured in any desired position upon the frame-rods, being held in position by the grip of the cylindrical recesses in the arms of the bed-nut and the back clamp upon the frame-rods. The bed-nut N being firmly secured in position, the table T can quickly and easily be raised or lowered by turning the table T around. By revolving the table T it can be screwed upward in the bed-nut N until the table comes almost in contact with the knife *a* for very short wood; or it can be screwed down until the base of the table T almost rests upon the top of the bed-nut N. By this arrangement the table T can in a moment be adjusted to different lengths of wood, and, if a stick comes shorter than the other sticks which are being split, the operator can quickly adjust his table to suit his convenience without moving from his seat, and can also adjust the table for a stick longer than usual, if required.

If the knife enters a tough knotty stick and does not split the stick, the table can be revolved once or twice, so raising the table that the stick will be rent asunder without difficulty. When the table T is screwed down in the bed-nut N until the base of the table approaches the upper surface of the bed-nut N, and should these two surfaces be allowed to come in contact, a blow from the ax upon a tough knot might set the screw down so tightly as to render it almost impossible to loosen the table again. To avoid all danger of setting the table when screwed down to its lowest point, we provide a stop, *n*, having a vertical face upon the bed-nut N.

Upon the lower surface of the table T we form a projection, *n'*, also having a vertical face at an equal distance from the center of the screw *t* with the stop *n*. When the table is turned down as far as possible, and just before the base of the table T comes into contact with the upper face of the bed-nut N the vertical face of the stop *n'* comes into contact with the vertical face of the stop *n* and prevents the table T from turning any lower. In this position the table can never set down onto the nut, as the base of the table never comes in contact with the upper face of the bed-nut. When from this position the table T has been revolved once in the direction to raise the table the table T and screw *t* will have been raised one thread upon the screw. If the stop *n'* does not lap onto the stop *n* more than the distance from one thread of the screw to the next, the stop *n'* will turn over the top of the stop *n* when the table is revolved one turn upward.

To prevent the screw-table from turning too loosely in the nut N in case the screw should be a loose fit, or in case the screw should become worn from use, or to fasten the screw-table at any desired height, if required, we provide a screw-bolt, *b*, turning in a thread formed in the side of the nut N, as shown in Fig. 2. A small wheel, *b'*, is secured to the set-bolt *b*, by means of which the bolt *b* is turned. The bolt *b* presses against a brass or copper block, *c*, which in turn presses against the screw-column *t* of the screw-table T. By turning up the set-bolt *b* any desired degree of friction may be brought against the screw-column *t*, and the table T can be prevented from turning too freely in the bed-nut N; or the table T may be fastened at any desired height.

Having thus described the nature and operation of our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a wood-splitting machine, of the balance-wheel, crank-shaft, and pitman driving the reciprocating ax *a*, the crank-box in which the crank-shaft revolves, main frame-rods R R, passing through said crank-box and connecting the same with the bed-nut N, which is rigidly secured to said main frame-rods below the table T, and the adjustable screw-table adapted to be raised or lowered in relation to the reciprocating knife *a* by revolving the screw-table in the bed-nut N, substantially as described.

2. The combination, in a wood-splitting machine, of the reciprocating knife *a* for splitting the wood, the adjustable screw-table T, upon which the wood to be split is placed, said table T being set nearer to or farther from the reciprocating knife *a* by revolving said screw-table and its supporting screw-column *t* in the bed-nut N beneath, and a suitable locking de-

vice to fasten the screw-table at any desired height to prevent it from working downward under the repeated blows of the ax *a*, substantially as described.

3. The combination, in a wood-splitting machine, of the adjustable screw-table T *t*, adapted to be raised or lowered by revolving the same in a bed-nut, N, and stops *n n'* to prevent the face of the bed-nut from coming in contact with the base of the revolving table T, preventing the screw-table from setting when down, substantially as described.

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