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E. A. HILDRETH.
SPLITTING MACHINE.
APPLICATION FILED NOV. 5, 1906.

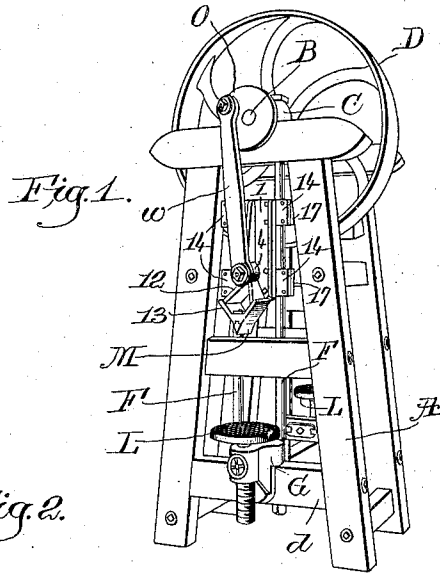


Fig. 2.

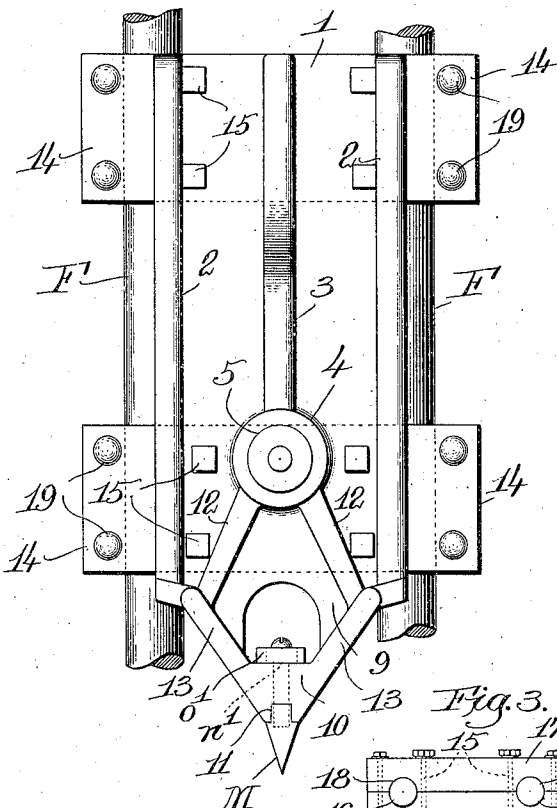


Fig. 4.

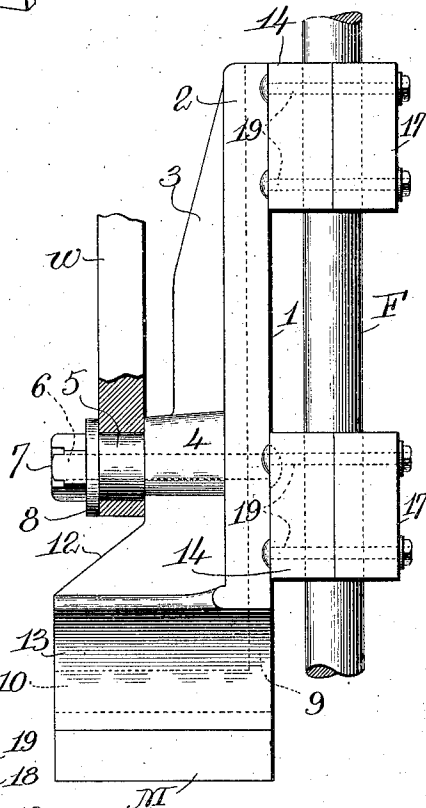
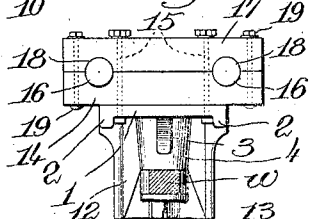


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWIN A. HILDRETH, OF HARVARD, MASSACHUSETTS.

SPLITTING-MACHINE.

No. 845,954.

Specification of Letters Patent.

Patented March 5, 1907.

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To all whom it may concern:

Be it known that I, EDWIN A. HILDRETH, a citizen of the United States, residing in Harvard, county of Worcester, and State of Massachusetts, have invented an Improve-
5 ment in Splitting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like
10 parts.

This invention relates to machines for splitting wood and other material of the type shown in United States Patent No. 321,969, granted July 14, 1885, to me and another; and
15 my present invention has for its object the production of certain novel features of construction whereby the durability of the machine is increased, wear very greatly decreased, and the operation improved.

20 Such novel features will be hereinafter fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a perspective view of a splitting-
25 machine of the type referred to with my invention applied thereto. Fig. 2 is an enlarged front elevation of the ax-carrier, its laterally-extended guide-members, and the rigid vertical guide-rods on which said members slide, the pitman being omitted. Fig. 3
30 is a top plan view of the ax-carrier and guide members. Fig. 4 is a side elevation of the parts shown in Fig. 2, the lower end of the pitman being shown in section.

35 In the machine shown in the patent referred to the main frame is provided with vertical rigidly-secured guide-rods, to which are clamped parallel guides, and the vertically-reciprocating ax-carrier is provided with side
40 grooves to be entered by the guides to direct the ax-carrier in its path of movement.

Machines of this type are subjected to the hardest kind of wear, and I have found that the construction just referred to is liable to
45 give way under the severe strains to which it is subjected, and, furthermore, that the wear between the ax-carrier and its guide is rapid and very considerable. As a result the ax-carrier soon becomes loose and wabbles or
50 shakes in its movement, so that the ax or knife will not strike a true blow, resulting in breakage of the ax or of other parts. Herein I have overcome these objections in a manner now to be described.

55 Referring to Fig. 1, the main frame A, the

driving-shaft B, journaled in suitable boxes C at the upper part of the frame, the fly-wheel pulley D, and the crank-disks O, (one of which is shown in Fig. 1,) fast on the ends of the shaft and each provided with a suitable wrist-pin for the upper end of a pitman
60 w, may be and are all substantially as in said patent. So, too, the pairs of vertical guide-rods F F, having their upper ends passed through and rigidly secured to the boxes C
65 and at their lower ends extended through and rigidly secured to the lower girths d of the main frame, are, as in said patent, heavy castings G, secured to the rods F F and resting on the girths, each casting supporting a
70 vertically-adjustable table L, on which the material to be split is sustained.

The apparatus so far described is found to be well adapted for the purpose designed, and I have made no material changes therein in
75 my present invention; but herein I have mounted the ax-carrier to travel upon and be guided in its movement directly by the guide-rods F.

It will be understood that I have illustrated
80 a double splitter, as in the patent referred to, one ax being elevated as the other descends; but it will be manifest hereinafter that the novel features of my invention are equally well adapted to a single-acting splitter.
85

The ax-carrier is made as a heavy casting comprising a flat plate-like body 1, stiffened and strengthened by upright side ribs 2 and a central rib 3, the latter terminating in a boss
4, which has a tubular forward extension 5,
90 Figs. 2 and 4, to receive the lower end of the pitman w.

A threaded stud 6 extends through the boss and extension from the back of the plate and at its front end receives a retaining-nut 7,
95 having an annularly-enlarged base 8 to retain the pitman in place.

The ax-carrier has at its lower end a depending extension 9, projecting forwardly at its lower end at 10 and provided on its bottom
100 with a seat 11, Fig. 2, for the ax or cutting-blade M, the latter being held in place by bolts n' and a locking-plate o', as in the patent referred to.

The casting is shaped to present two wing-
105 like deep webs 12, which diverge downward from the boss 4 and meet webs 13, which converge to the foot or projecting portion 10 of the extension 9, as clearly shown in Figs. 1, 2, and 4.
110

A very strong, rigid, and durable ax-carrier is thereby provided, the strain of the splitting action being transmitted through the extension and its deep webs to the heavy boss 4 and to the body portion 1 of the ax-carrier, insuring a very complete distribution of the strains over a large area.

To the ax-carrier I rigidly attach lateral guide members or boxes which embrace and slide up and down on the guide-rods F, and I prefer to make such members of non-metallic material, as I have found that the coöperation of metallic and non-metallic materials give rise to much less wear.

Preferably I make the guide members of hickory-wood thoroughly impregnated with oil or other suitable lubricant, and I have found that by such construction the wear is almost nothing, the wearing-surfaces of the guide members being very smooth and almost "glassy" in a very short time.

Referring to the drawings, I have shown the ax-carrier as provided with four guide members, two on each side extended laterally therefrom. I make such guide members by securing to the back of the ax-carrier two cross-bars 14 by bolts 15, one bar at the top and the other one lower down back of and just below the boss 4, the projecting ends of the bars having upright semicylindrical seats or recesses 16 formed in their back faces. (See Fig. 3.) A second cross-bar 17 is secured to the back of each bar 14, the bars 17 having semicylindrical seats 18, Fig. i3, to register with the seats 16, and thereby complete openings adapted to receive and easily slide upon the metal guide-rods F, as shown. Clamping-bolts 19, passed through the pairs of cross-bars 14 17, rigidly secure them together, and thereby form separable guide members or slide-boxes, said bolts preferably being located outside the rod-receiving openings, as shown.

It will be seen that the ax-carrier is thereby slidably connected with the guide-rods at four places, two on each side, the bearing-surface of each guide member being long enough to effectually prevent any twisting or distorting movement of the ax-carrier as it slides up and down when the machine is in operation.

By mounting the ax-carrier to slide directly upon the guide-rods I secure a much smoother, more accurate, and even movement of the ax-carrier and reduce to a minimum the chances for diverting the cutting member from an absolutely straight and true path of movement. Furthermore, by the use of wood on metal for the wearing or contacting surfaces of guide-rods and guide members or slide boxes I reduce the wear to such an extent that no wear is noticeable after long-continued and very hard service.

The separable structure of the guide members enables them to be readily applied to the

guide-rods or removed therefrom when necessary.

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

1. In a splitting-machine, the combination with a main frame provided with rigid, vertical, metal guide-rods, of an ax-carrier having an extension to support and maintain the ax in a path of movement at right angles to the plane of the guide-rods, detachable, two-part non-metallic guide members rigidly attached to the ax-carrier at its upper and lower ends and vertically slidable on the guide-rods, and means to vertically reciprocate the ax-carrier and the attached guide members, said means being pivotally connected with the ax-carrier between the upper and lower guide members and independent of the ax.

2. In a splitting-machine, the combination with a main frame provided with rigid, vertical guide-rods, of a heavy metallic ax-carrier, an extension thereon provided with an ax-seat movable in a path at right angles to the plane of the guide-rods, upper and lower guide members extended laterally from and rigidly attached to the ax-carrier, embracing and vertically slidable on the guide-rods, and means to vertically reciprocate the ax-carrier and attached guide members, connected with the ax-carrier independently of the ax-seat.

3. In a splitting-machine, the combination with a main frame provided with rigid, vertical guide-rods, of a heavy metallic ax-carrier, a depending, V-shaped extension thereon to support and maintain the ax in operative position, laterally-extended detachable non-metallic guide-boxes rigidly attached to the ax-carrier at its upper and lower ends, said guide-boxes embracing and vertically slidable on the guide-rods, and means to reciprocate the ax-carrier and its attached guide-boxes.

4. In a splitting-machine, the main frame provided with a shaft-bearing, a driving-shaft rotatable therein, vertical guide-rods rigidly secured at their upper ends to the shaft-bearing and at their lower ends secured to the frame, a metallic ax-carrier, laterally-extended, separable wooden guide-boxes rigidly secured to the ax-carrier at its upper and lower ends and embracing the guide-rods, pivoted to the latter between the upper and lower guide-boxes, to slide vertically thereon, an ax-supporting extension depending from and integral with the ax-carrier, and a connection between the driving-shaft and the ax-carrier, to vertically reciprocate the latter.

5. In a splitting-machine, in combination, the main frame provided with a bearing-box for the driving-shaft of the machine, vertical guide-rods extended through and rigidly fastened to said bearing-box and at their lower ends secured to the main frame, guide-boxes vertically slidable on the guide-rods, a verti-

cally-reciprocating ax-carrier rigidly and detachably connected at its upper and lower ends with said boxes, and an extension on and integral with the ax-carrier to support
5 and maintain the ax in a path of movement at right angles to the plane of the guide-rods.
In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

EDWIN A. HILDRETH.

Witnesses:

CHARLES P. ATHERTON,
HORACE E. HILDRETH.