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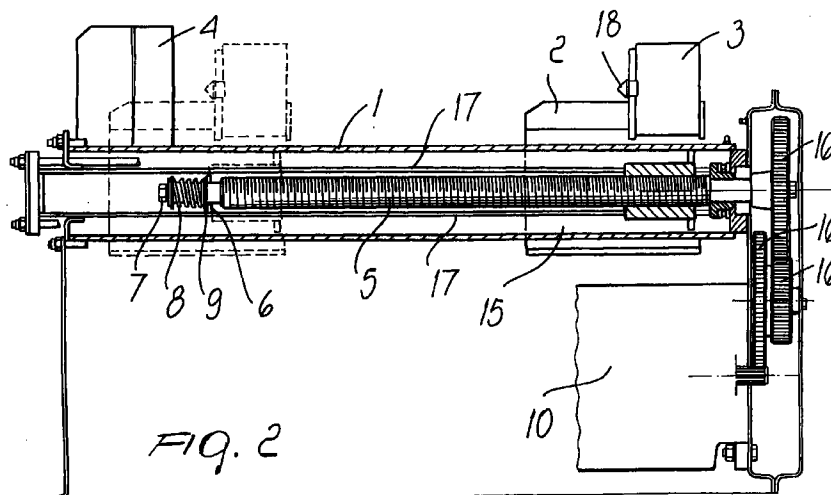
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(54) Transportable wood splitting machine

(57) A transportable wood splitting machine includes a supporting structure (100) having a wood block pusher (3) and a cutter (4) operated by a motor

(10) through a worm screw and slider assembly (5,15).



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Description

[0001] The present invention relates to a transportable wood splitting machine.

[0002] In the past, wood was split domestically by using manual methods based on the use of impact tools (for example axes) which require an intense physical effort to perform this function.

[0003] A bench-mounted device is now currently commercially available which is driven by an electric motor and which, being based on a hydraulic system (an oil pump), is suitable for this purpose. This system, however, has some drawbacks which arise from the fact that its operation is based on hydraulic systems. First of all, the device must in fact be subjected to frequent maintenance in order to obviate the drawbacks that often affect these systems, such as for example solving gasket tightness problems, eliminating air from the hydraulic circuit or simply wear of the moving parts. Furthermore, commercially available devices are characterized in that their motor is not enclosed and they are accordingly exposed to the effects of weather.

[0004] Another drawback of these devices is their low safety; since the controls are located too close to the wood block to be cut, the operator is exposed to the risk of being hit by splinters or even being caught in the moving parts. Furthermore, when the wood block pusher encounters an obstacle (for example a particularly rigid nervation, a knot, et cetera) the pressure required to overcome the resistance is such as to put the user's safety at risk.

[0005] An aim of the invention is therefore to provide a wood splitting device which is capable of eliminating the disadvantages and drawbacks mentioned above without reducing the performance of the apparatus during use.

[0006] An object of the present invention is to provide a device in which the transmission of motion from the electric motor to the wood block pusher is not mediated by hydraulic-type systems.

[0007] A further object of the invention is to provide a device whose safety parameters are improved, protecting both the safety of the user and the integrity of the device itself.

[0008] This aim, these objects and others which will become apparent hereinafter are achieved by a transportable wood splitting machine as claimed in the appended claims.

[0009] Further characteristics and advantages will become apparent from the description of a preferred but not exclusive embodiment of the invention, illustrated only by way of nonlimitative example in the accompanying drawings, wherein:

FIG. 1 is a perspective view of the machine according to the invention;

FIG. 2 is a lateral sectional view, taken along a lon-

gitudinal plane, of the machine.

[0010] With reference to the above Figures, the machine according to the invention is constituted by a support structure 100, having feet 13 and 14, and a resting bed 1 which is rigidly coupled thereto and to which a blade 4 is welded.

[0011] A kinematic system is contained in the support 100. According to the invention, the kinematic system comprises a worm screw 5 on which a slider 15 slides axially.

[0012] The worm screw 5 is driven by a motor 10 which, by virtue of a transmission system constituted by gears 16 such as for example cogwheels, according to a preferred embodiment of the invention and adapted to rotate the worm screw 5. The consequence of this rotary motion is the axial sliding of the slider 15. According to a preferred embodiment of the invention, the worm screw 5 is provided with a stroke limit safety 6, which is fitted on the pivot at the end that lies furthest from the transmission system 16 and is adapted to limit the wear of some mechanical parts which might otherwise make contact and consequently be damaged.

[0013] The stroke limit safety 6 is the arrival point of the slider 15 during the operation of the machine.

[0014] The kinematic system is fastened by means of a screw 7 with a trapezoidal profile and a square female thread 8, which are mutually rigidly associated so as to withstand the mechanical stresses to which they are subjected during the normal operation of the machine according to the invention. A washer 9 is provided together with the trapezoidal screw 7 and the square female thread 8. Two sliding shafts 17 are provided parallel to the worm screw 5 and facilitate the axial movement of the slider 15 along the worm screw 5.

[0015] The trapezoidal-profile screw 7 is obtained by roll forming. The worm screw 5 and the sliding shafts 17 act as a guide for the slider 15 along the resting bed 1.

[0016] According to a preferred embodiment, the resting bed 1 on which the wood block moves is 50 to 100 cm long, preferably 60 to 75 cm long. The slider 15 is rigidly coupled to the wood block pusher 3 and is provided with lateral brackets 2 which, according to the invention, are adapted to accommodate the wood block and support it during its translatory motion toward the blade 4.

[0017] According to the present machine, the wood block to be split is placed on the resting bed 1 between the two supporting brackets 2, in contact with the wood block pusher 3, in front of the blade 4. The wood block pusher 3 is provided with a point 18 which facilitates the riving of the wood block when it makes contact with the blade 4.

[0018] When the machine is operating, the rotary motion applied by the motor 10 to the worm screw 5 causes the advancement of the slider 15, which by virtue of the wood block pusher 3 moves the wood block toward the blade 4, where the block is split. The motion

of the slider 15 is interrupted by the stroke limit safety 6 before reaching the blade 4.

[0019] In order to control the machine according to the invention, at a safe distance from the wood block pusher 3 and from all the other moving parts a control panel 11

[0020] According to a preferred embodiment of the present invention, an emergency button is arranged on the control panel 11 of the machine according to the invention.

[0021] Furthermore, on the upper part of the motor assembly there is a handle 12, whilst on the lower side of the device there are the feet 13 and 14, which are adapted to improve the stability of the machine according to the invention on the supporting surface during its operation.

[0022] Another characteristic of the present invention is the enclosure of the motor and of the parts that constitute the motion transmission system with sheet metal, in order to limit wear and the effects of weather on the internal parts of the machine according to the invention.

[0023] Another advantage of the present invention is the easy assembly of its components. This simplicity is also matched by a lower cost of the machine, which is a further advantage of the invention.

[0024] It has been found in practice that the invention achieves the intended aim and objects. The machine according to the invention has been improved as regards operator safety and as regards the drawbacks and disadvantages arising from the use of a machine which operates with hydraulic-type systems. In particular, the invention considerably reduces the maintenance required to maintain the efficiency of the machine.

[0025] The wood splitting machine according to the invention is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept; the details may furthermore be replaced with technically equivalent elements.

[0026] The materials used, as well as the dimensions, may of course be changed according to the requirements and the state of the art.

Claims

1. A transportable wood splitting machine, comprising: a supporting structure, (100) for a cutting means (4); a wood block pusher (3) and a member (1) for supporting a piece to be cut; said cutting means (4) and said wood block pusher (3) being controllably movable with respect to each other by a motor means (10) associated with said supporting structure (100), in order to cut said piece arranged on the supporting member (1); characterized in that either one of said wood block pusher (3) and cutting means (4) is actuated by said motor means through a kymematic means (5,15) comprising a screw (5).

2. A machine according to claim 1, characterized in

that said kymematic means comprises a worm screw (5) and a slider (15) which is rigidly coupled to said wood block pusher (3) and/or said cutting means (4).

3. A machine according to claim 2, characterized in that said slider (15) is rigidly associated with said wood block pusher (3) and said blade means (4) is rigidly associated with said supporting structure (100).

4. A machine according to one or more of the preceding claims, characterized in that it comprises lateral wood block supporting brackets (2) associated with said slider (15).

5. A machine according to one or more of the preceding claims, characterized in that it comprises a stroke limit safety (6) for said slider (15).

6. A machine according to one or more of the preceding claims, characterized in that said screw (5) is rigidly associated with a trapezoidal profile with a square female thread.

7. A machine according to one or more of the preceding claims, characterized in that it comprises a control panel (11) which is arranged at a safe distance with respect to the moving parts of the machine.

8. A machine according to one or more of the preceding claims, characterized in that the motor assembly and the transmission mechanisms are provided with a sheet metal enclosure.

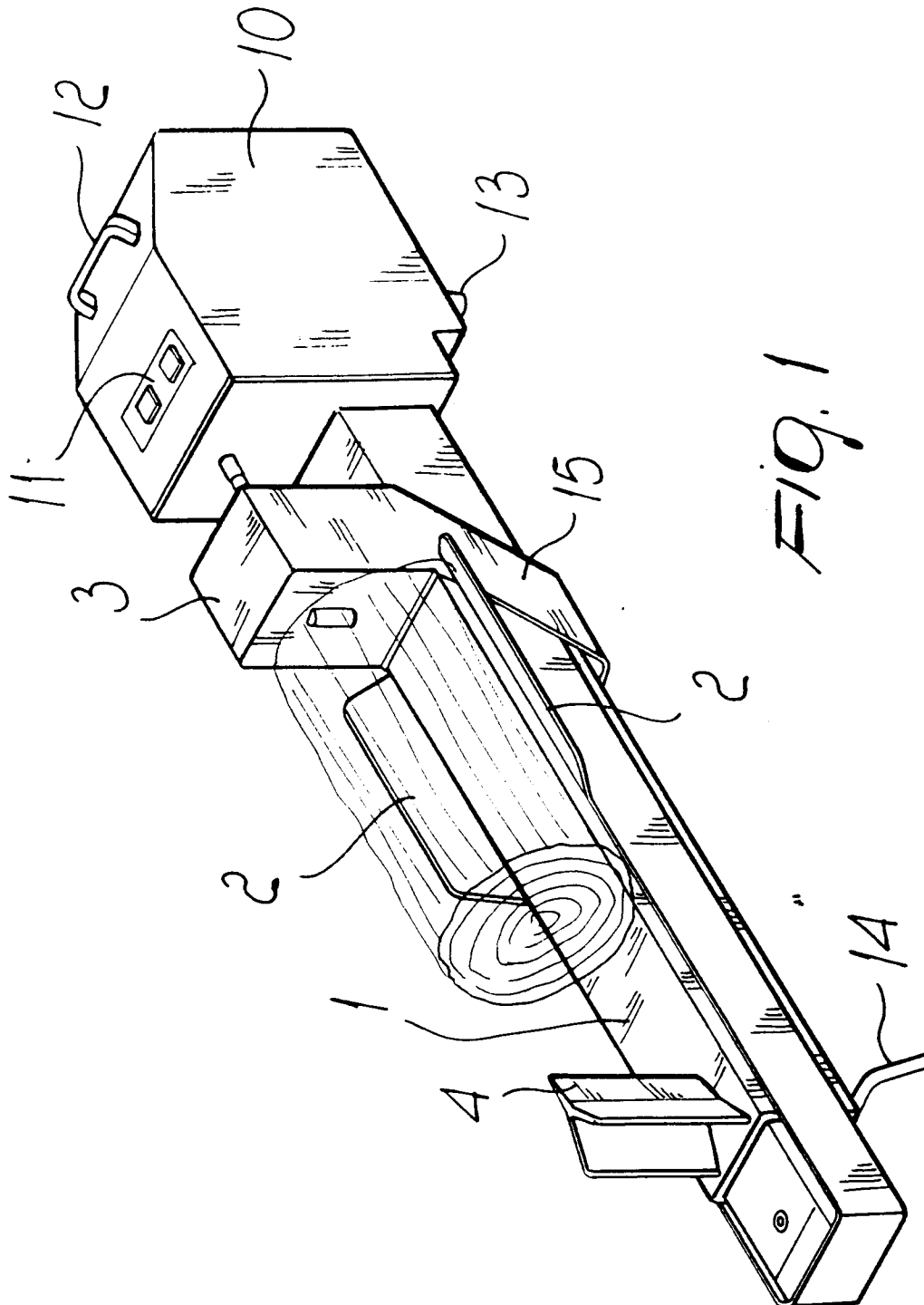


Fig. 1

