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(54) Fully automatic firewood cutting and splitting device

(57) A fully automatic firewood cutting and splitting device having feed rolls arranged in a feed hopper and mounted so as to be freely rotating and spring-loaded in the direction of an inserted log (11), which cause a log (11) inserted into the hopper to be turned after a possible cutting and splitting operation ready for a subsequent splitting operation, which splitting operation is effected by means of a splitter blade (7). At least one of the rolls is provided with ribs having spikes which can penetrate into the log (11).

The cutting and splitting operation is carried out by a V-shaped shear blade (3) and a splitter blade (2) located above and behind the shear blade (3), seen in the cutting direction.

The shear blade (3) at its rear end is provided with a carrier means (1), which pushes the cut and optionally split log (6) towards the splitter blade (7) for further splitting and transport out of the firewood cutting and splitting device.

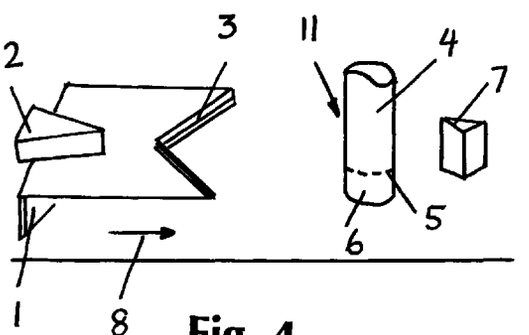

Fig. 4

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Description

The present invention relates to a fully automatic firewood cutting and splitting device of the kind as disclosed in the preamble of claim 1.

The object of the present invention is to produce firewood of a standard size from logs of variable size, without it being necessary to cut these up into workpieces for the splitting and cutting.

Firewood of standard size is normally 30 cm in length and on average 5 cm in diameter.

One of the objects of the present invention is to be able to carry out the wood cutting and splitting virtually automatically, without the operator sustaining any injuries resulting from vibration or impact since no manual feeding is involved. Furthermore, work strain on the operator will be avoided because the logs which are to be cut and split do not need to be lifted. It is also important that during the cutting and splitting the machine can operate more or less without supervision, thus allowing the operator to use the time for packing and stacking whilst the machine performs the cutting/splitting operation.

The foregoing is accomplished by means of a device of the type mentioned hereinabove, the characteristic features of which are set forth in claim 1. Additional features of the invention are set forth in the other dependent claims.

In the following the invention will be described in more detail with reference to the drawings, wherein:

Fig. 1 is a schematic illustration of the cutting and splitting device mounted on a tractor.

Fig. 2 is a schematic illustration of the insertion of the log that is to be cut and split.

Fig. 3 is a schematic illustration of the turning of the device into a working position for the cutting/splitting operation.

Fig. 4 is a schematic illustration of the cutting and splitting device positioned relative to a log.

Fig. 5 is a schematic illustration of a detail of the infeed.

Figure 1 shows a tractor 9 with a firewood cutting and splitting device 10 according to the present invention connected to the hydraulic system of the tractor.

In Figure 2 it is indicated how a log 11 is pushed into the firewood cutting and splitting device 10.

Once the log 11 has been pushed into the firewood cutting and splitting device 10, the device is turned so that the log 11 is gradually fed down owing to its own weight as it is cut and split, thereby avoiding heavy manual lifts to position a log which is to be cut and split into firewood.

The log 11 is fed in through the hopper 12 of the firewood cutting device 10 until it reaches the bottom of the cutting device 10, cf. Fig. 4 where shear and splitter blades 3, 2 and splitter blade 7 are shown schematically. A splitter and shear blade 3, 2 is moved forward towards the log 8 with the aid of drive means that are known per se, e.g., hydraulic drive means. The blade 3 cuts the log 11 at 5, and the splitter blade 2 that is positioned somewhat further back splits the log in the region 4. The log is split by the splitter blade 2 only if the log is of more than a certain diameter because the splitter blade 2 is positioned so as to be offset behind the edge of the shear blade 3, seen in the cutting direction. This is because logs below a certain size do not need to be split more than once. The cut section 6 is conveyed by means of the carrier 1 on the blade assembly towards another splitter blade 7, from where the ready cut and split log is ejected through the hopper 19, cf. Fig. 2. The blade assembly 3, 2 is then moved back to its original position and the log falls down to rest again ready for a new splitting, splitting and cutting operation. Feed rolls 15, 16 are arranged in the feed hopper 12, as indicated in Fig. 5. The rolls revolve freely, and the rolls 15 are smooth, whilst the rolls 16 are provided with ribs 17, which are equipped with spikes 18 that penetrate into the log 11 and cause the log 11 to be turned so that the section which has been split by the blade 2 in the preceding cutting operation comes to rest transverse to the direction of feed, and on the advance of the blade splitter assembly 2, 3, the cut section 6 is pushed towards the blade 7 which splits it into a further two pieces, whereby the log is split into 4 pieces. The rolls are spring-loaded in the direction of the log, so that during the insertion the rolls 15, 16 are adapted to the diameter of the log. Furthermore, the ribbed rolls 16 are inclined relative to the log. The ribs 17 may be cylindrical rings having spikes 18, which are pushed onto the rolls 16 and secured thereto by means of, e.g., welding.

Claims

1. A fully automatic firewood cutting and splitting device having a movable shear blade (3) and a splitter blade (7), wherein the splitter blade (7) is arranged above and behind the shear blade (3), characterised in that
in connection with the cutting and splitting means there is provided a feed hopper (12) in which there are arranged feed rolls (15, 16) for turning the log, and also that opposite the shear and splitter blade there is provided another splitter blade (7) which is fixed, against which the log is pushed for further splitting by a carrier (1) arranged on the rear end of the shear and splitter blade (2, 3).

2. A fully automatic firewood cutting and splitting device according to claim 1, characterised in that the rolls (15, 16) are mounted so as to be freely

rotating and are spring-loaded in the direction of the inserted log (11).

3. A fully automatic firewood cutting and splitting device according to claims 1-2, characterised in that at least one of the rolls (15, 16) is provided with ribs (17) having spikes (18) which can penetrate into the log (11).

4. A fully automatic firewood cutting and splitting device according to claims 1-3, characterised in that at least one of the rolls (15, 16) has a smooth surface.

5. A fully automatic firewood cutting and splitting device according to claims 1-4, characterised in that the cutting and splitting operation is carried out in a way that is known per se by a V-shaped shear blade (3) and by a splitter blade (2) located above the shear blade (3) and behind the edge of the shear blade (3), seen in the cutting direction.

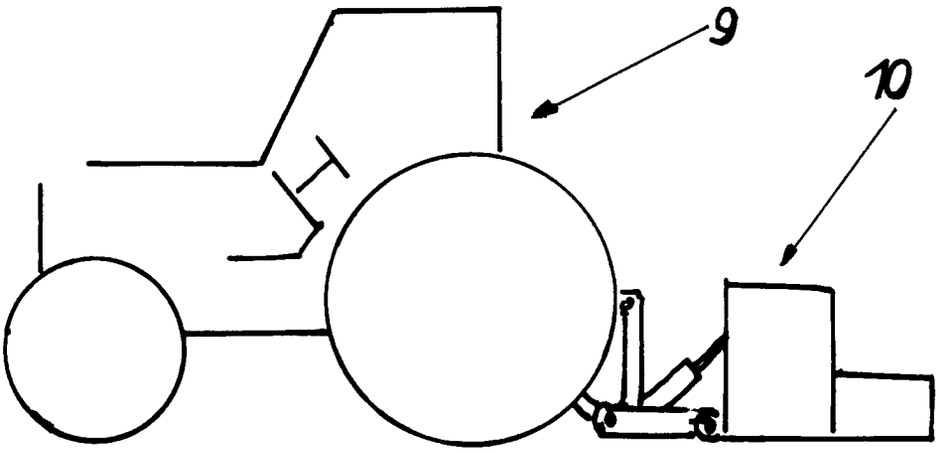

Fig. 1

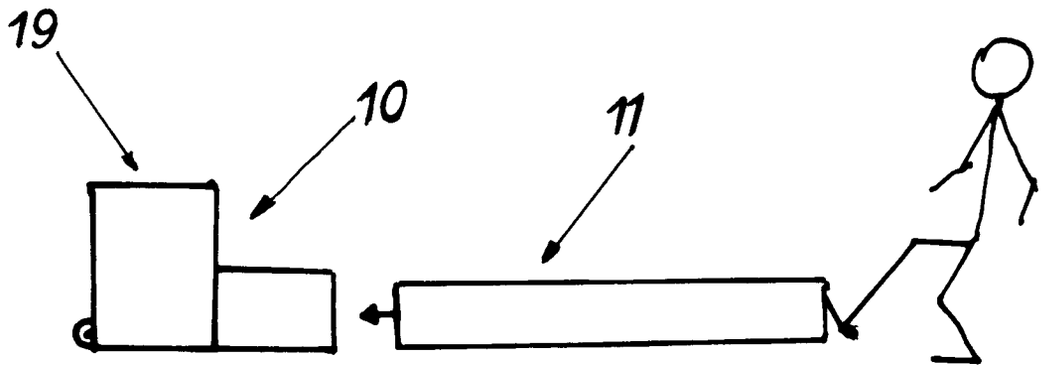

Fig. 2

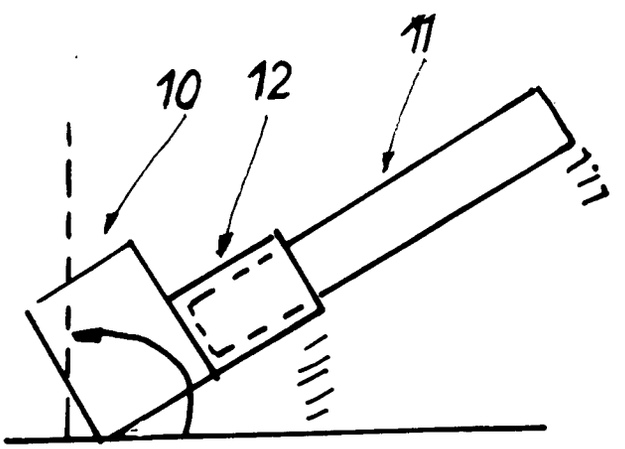

Fig. 3

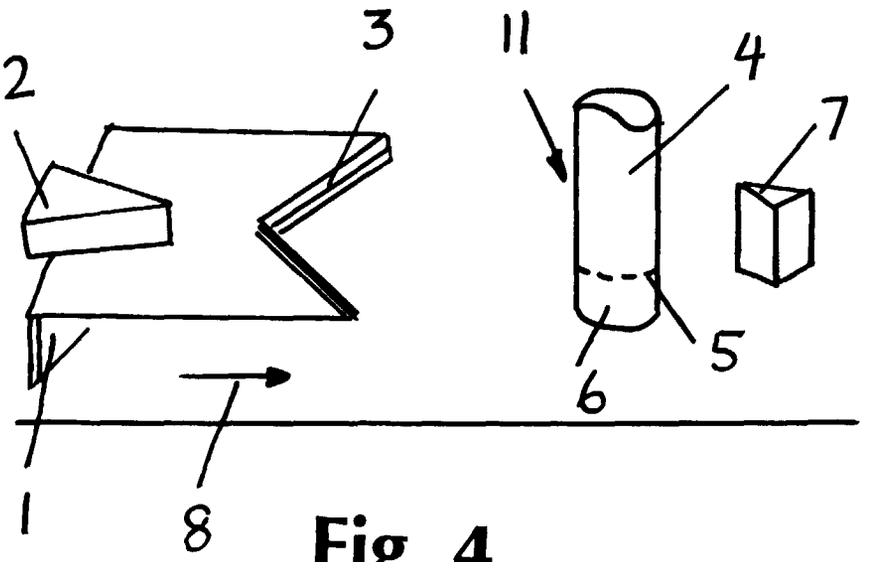

Fig. 4

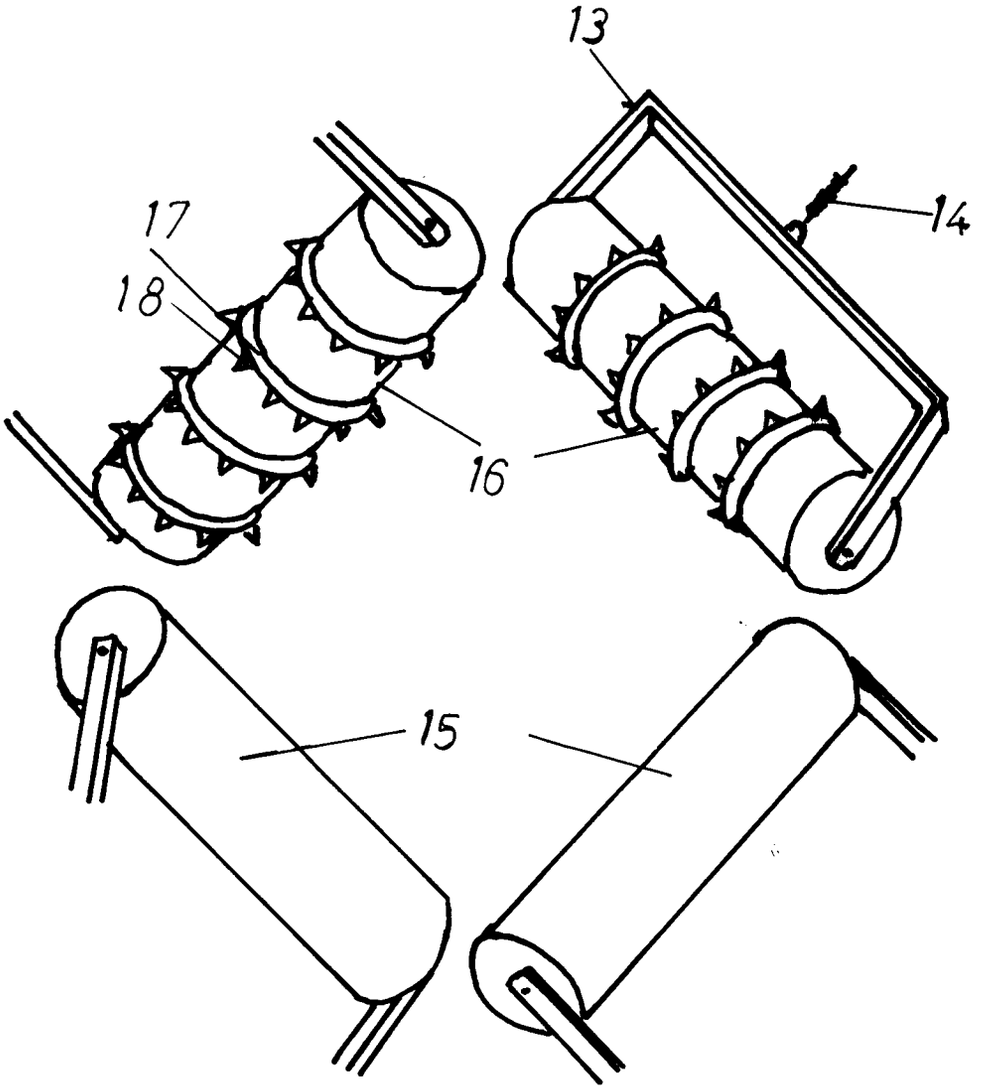

Fig. 5