

[54] **SAFETY MEANS FOR POWER-DRIVEN CHAIN SAWS**

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[56]

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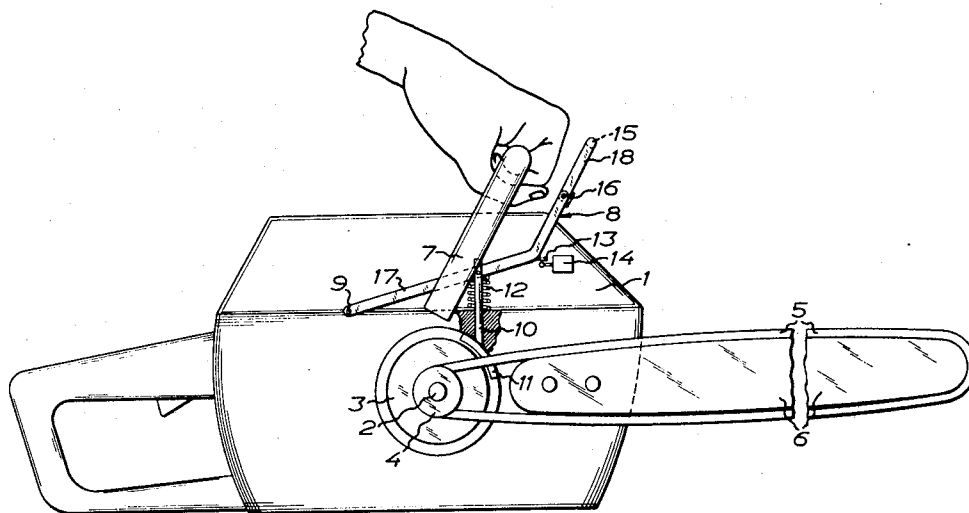
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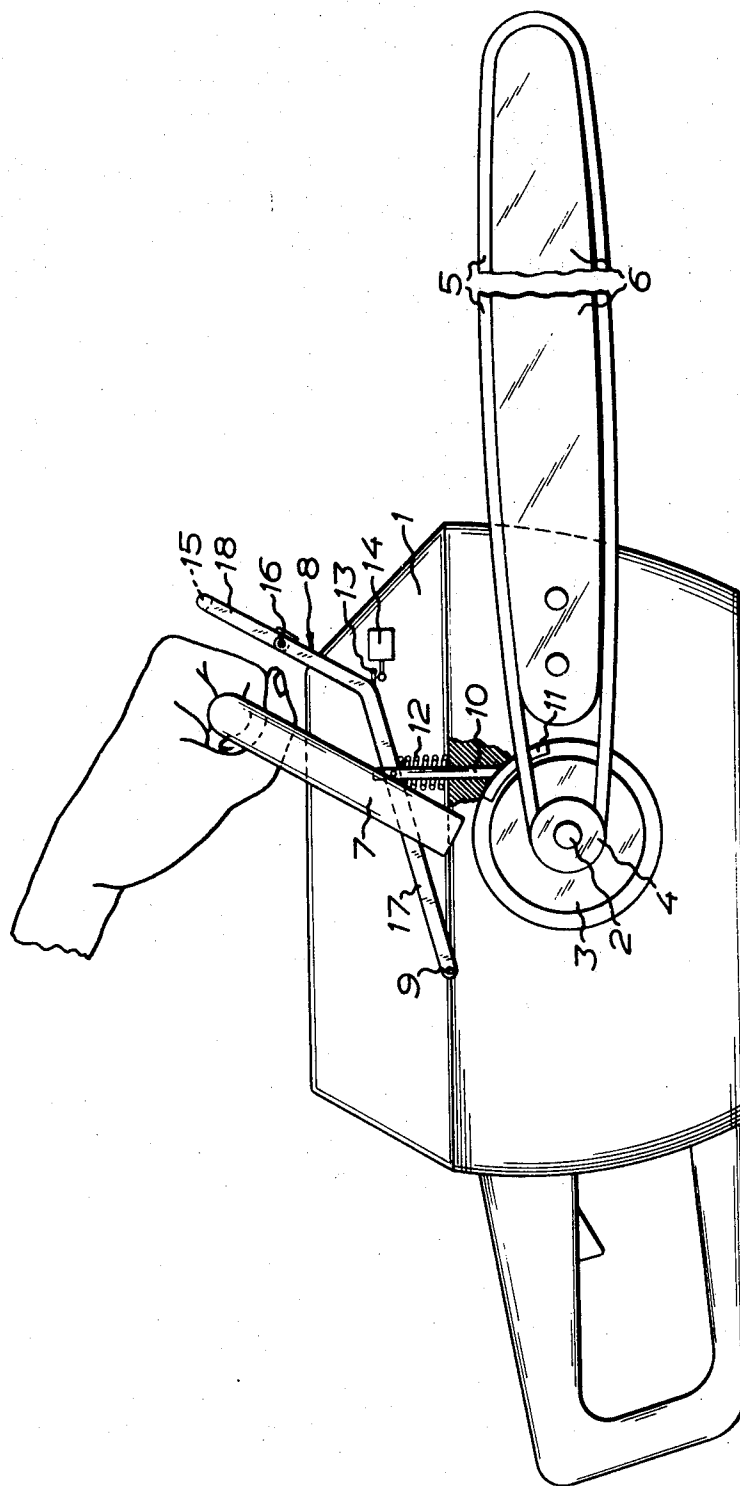
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ABSTRACT

In a chain saw driven by an internal combustion engine a safety means comprising switch and brake means adapted to break the ignition current of the engine and stop the saw chain, and actuating means which is situated in a position in front of the handle of the saw and arranged to be operated by the hand of the operator in case of an accident to bring said switch and brake means into operation to stop the engine and the saw chain.

6 Claims, 1 Drawing Figure





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SAFETY MEANS FOR POWER-DRIVEN CHAIN SAWS

This invention relates to safety means in power-driven chain saws which comprise an engine housing with a handle and a blade forming a guide for a saw chain driven by the engine via a drive wheel.

In certain circumstances, such as when felling is done at difficulty accessible sites and under bad weather conditions, the handling of such power-driven chain saws is always associated with risks of accidents. Thus, the saw operator may slip for some reason or other, reaching out with his hand so that it touches the rapidly moving saw chain. On sawing with the pushing, i.e., non-pulling, chain run it may happen that the saw is thrown back, particularly at the application thereof, if the engine has not been run up to full speed before application of the saw. Similar phenomena may occur on sawing with the pulling chain run, if the outgoing run is jammed. For instance on trimming trees when the saw is moved from below against a branch in an upward direction it has also happened that when the resistance to sawing suddenly ceases and the applied pull is not simultaneously decreased, that the sword is abruptly thrown upwards so that the chain hits the saw operator in the head.

The object of the present invention is to provide safety means to prevent such accidents. To this end the safety means according to the invention comprises a lever arm which is arranged to be swung about a pivot axis and part of which is situated in front of the side of the handle facing the blade and is spaced from the handle, a brake means connected to the lever arm and adapted, when the lever arm is swung about the pivot axis, to be urged against a member driven by the engine, such as a member partaking in the rotation of the drive wheel, to brake said member and thus the saw chain, and actuating means arranged on the lever arm and adapted, when the lever arm is swung towards the blade, to actuate a switch for breaking the ignition current of the engine.

The invention will be described more in detail hereinbelow with reference to the accompanying drawing which illustrated a side elevation of a power-driven chain saw having safety means according to the invention.

The power-driven chain saw illustrated in the drawing is a conventional chain saw which can be modified by simple measures for easy incorporation of the safety means therein.

The chain saw comprises a housing 1 for an internal combustion engine (not shown). A drive wheel 4 for a saw chain 5 guided on the blade 6 is coupled to the outgoing shaft 2 of the engine by a clutch 3. A U-shaped handle 7 is mounted on the housing 1 and extends across the top of the housing. A lever arm 8 is mounted on the housing for pivotment about journals 9 so placed on the engine housing that the pivot axis of the lever arm 8 will be situated rearwardly of the handle 7. The lever arm 8 includes a part 17 which is obliquely forwardly directed from the pivot axis 9 and extends forwardly past the handle 7, and a part 18 which is bent at an angle obliquely upwardly away from said part 17 and is substantially parallel to the corresponding lateral limb of the handle 7. The outer end of the obliquely upwardly bent part 18 is thus situated on the front side of the handle 7, i.e., forwardly of the side of the handle facing the blade 6. A rod 10 is pivoted to the lever arm 8 and slidably guided in a guide in the engine housing, for example a bore formed in said engine housing and opening into an annular space between the engine housing and the periphery of the clutch housing 3. Located in said annular space is a brake shoe 11 which is connected to the rod 10 and provided with a brake lining on the side facing the circumferential surface of the clutch housing 3. The lever arm 8 is normally kept in a position of rest with the brake shoe 11 at some distance from the periphery of the clutch housing 3 by a return spring

12 which is a coil spring wound about the rod 10 and interposed between the engine housing 1 and the lever arm 8.

The lever arm 8 has a projection 13, for example at the angular bend between its two straight portions, to cooperate with a switch 14 located on the engine housing. The switch 14 is arranged and disposed in such a manner that by actuation of the switch the projection 13 breaks the ignition current of the engine when the lever arm 8 is swung forwardly and before the brake shoe 11 comes into braking engagement with the periphery of the clutch housing 3.

At its outer end the lever arm 8 carries a rod 15 which extends across the engine housing and is spaced such a distance from the handle 7 that should the saw operator's hand slip or move forward in any other unintentional manner towards the lever arm 8 and the rod 15 or should the saw as a result of a throw turn counterclockwise about the handle 7, the rod 15 actuated by the operator's hand will be swung towards the blade, whereby the above described safety means comprising the switch 14 and the brake means 10, 11 is made operative so that the ignition current of the engine is broken and in immediate conjunction therewith the brake is applied for braking the living force of the engine, transmission and chain so that the chain is rapidly stopped.

The lever arm 8 may be in the form of a U-shaped member which surrounds the upper part of the engine housing as does the U-shaped handle. Preferably, the lever arm is composed of two parts which are detachably connected together at 16. The brake rod 10 having the brake shoe 11 is secured to one part 17 of the lever arm as is the actuating means 13 for the switch 14. The other part 18 of the lever arm carries the transverse rod 15. In cases where the safety means 10, 11 and 14 is not desirable or where said means would impede a certain type of work, the upper part 18 of the lever arm can be swung at the hinge connection 16 towards the handle 7 so that the saw operator can move his hand freely.

What we claim and desire to secure by Letters Patent is:

1. In a power-driven chain saw having an engine housing with a handle thereon, and a blade forming a guide for a saw chain driven by an internal combustion engine via a drive wheel, safety means comprising a lever arm which is arranged to be swung about a pivot axis and part of which is situated in front of the side of the handle facing the blade and is spaced from said handle, a brake means connected to the lever arm and adapted, when the lever arm is swung about the pivot axis, to be urged against a member driven by the engine, and actuating means arranged on the lever arm and adapted, when the lever arm is swung towards the sword, to actuate a switch for breaking the ignition current of the engine.

2. Safety means as defined in claim 1, wherein the member driven by the engine is a member partaking in the rotation of the drive wheel for the saw chain.

3. Safety means as defined in claim 1, wherein the pivot axis of the lever arm is disposed on the engine housing rearwardly of the handle.

4. Safety means as defined in claim 1, wherein the lever arm is composed of two parts so as to include a first part carrying said brake means and said actuating means for the switch, and a second part which is hinged to the first part and has a rod extending across the engine housing, and said second part can be swung about the hinge connection to a position in which the rod is not in the way of the saw operator's hand.

5. Safety means as defined in claims 1 and 2, wherein the brake shoe is connected to a rod which is slidable in a guide connected to the engine housing and pivoted to the lever arm.

6. Safety means as defined in claims 1, 3 and 5, wherein a return spring is interposed between the lever arm and the engine housing to return the lever arm and the brake means to inoperative position.

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