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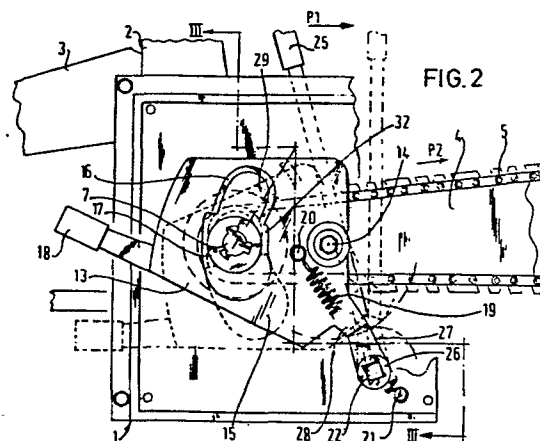
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54 **Sawing device.**

57 A sawing device mainly comprising a housing (1) with handles (2, 3), a motor arranged in said housing (1) and driving through a transmission with a starting clutch a sprocket for a saw chain (5) passed around a guide and a mechanism for putting said drive out of operation as quickly as possible in order to prevent injury of the user, wherein said mechanism comprises a plate member (13), pivotable about the axis (14) and provided with a relief rim (16) controlling a second clutch arranged between the sprocket and the starting clutch in the transmission, said plate member being retained against a bias force (19) by means of a safety pawl (27) actuatable by a lever (25) in a position in which the clutch is in mesh.



### Sawing device

The invention relates to a sawing device mainly comprising a housing with handles, a motor arranged in said housing and driving through a transmission with a starting clutch a sprocket for a saw chain passed around a guide and  
5 a mechanism for putting said drive out of operation.

When using chain sawing machines of the kind set forth it is important, in the event of accidents, to be able to put out of operation the drive between the motor and the chain saw as quickly as possible in order to prevent injury of the  
10 user. The hazards are even greater when the motor has high inertia as in the case of electric motors.

The invention has for its object to provide a device provided with a mechanism such that upon actuation thereof the chain stops substantially without delay without the need  
15 for the motor to halt.

This device is distinguished in that the mechanism comprise a member controlling a second clutch arranged between the sprocket and the starting clutch in the transmission, said member being retained against a bias force by

means of a disengageable safety pawl in a position in which the clutch is in mesh.

Thanks to the pawl mechanism the control-member can be displaced by the bias force immediately after the pawl is released, said control-member putting the clutch out of operation. Thus the drive between motor and sprocket is interrupted.

The pawl is preferably actuated by a mass which is rotatable about an axis transverse of the sawing plane. The mass has a given inertia so that it disengages the pawl when the housing experiences an abrupt movement in the sawing plane, for example, the saw "bites". The mass is preferably formed by a lever which can be manually operated so that in the event of a conscious or unconscious awkward movement the user can release the pawl and cut off the drive.

According to the invention a solid structure requiring little space is obtained when the control-member is formed by a plate pivotable about an axis parallel to the driving shaft and provided with a relief rim for the axial movement of the second clutch constructed in the form of a claw clutch.

Said plate can furthermore carry a skid which comes into contact with a brake surface connected with the sprocket.

A disturbance-free construction is ensured because, in accordance with the invention, the control-member, the pawl and a tensile spring supplying the bias force are accommodated in a closed housing part, which is releasably fastened to the housing part holding the motor and the drive. Thus the safety mechanism remains free of dust and dirt, for example, carried along by the sawdust.

The invention will be described more fully with reference to an embodiment shown in the Figures.

The drawing shows in

Fig. 1 a perspective view of a sawing device,

Fig. 2 a side elevation of the control-member used in the sawing device of Fig. 1,

Fig. 3 a sectional view taken on the line III-III in Fig. 2.

The sawing device shown in Fig. 1 mainly comprises a

housing 1 with two handles 2, 3, said housing accomodating a motor, for example, an electric motor and a drive for a sawing chain 5 passed around a master blade 4.

Figs. 2 and 3 show more in detail the drive which 5 comprises a gear wheel transmission 6 rotating a main driving shaft 7. At the end remote from the pinion 6 the driving shaft 7 is provided with a claw clutch 8, the outer part 8' of which is non-rotatably, but slidably arranged on said end of the shaft. The inner part 8" is rotatably journalled on 10 the shaft 7 and constitutes the core of a centrifugal clutch 9, which is coaxial with the driving shaft 7. The housing 10 of the centrifugal clutch is connected with a sprocket 11. The centrifugal clutch comprises centrifugal shoes 12, which come into contact upon rotation of the inner part 8" with the 15 housing 10.

The part 8' of the claw clutch can be displaced by a control-ember formed by a plate 13 (see Fig. 2), which is pivotable about a shaft 14 and accomodated in a releasable housing part 15. The shaft 14 is parallel to the main driving 20 shaft 7. The plate has a reniform opening 15, which is narrow at the top end and has a relief rim 16 gripping below the collar 17 of the part 8' of the claw clutch. The width of the opening 15 exceeds the diameter of the collar 17 of the part 8'.

25 The plate 13 is movable up and down in the housing part 15 around the spindle 14 by means of a handle 18 against the action of a bias force supplied by a tensile spring 19 stretched between a point 20 of the plate and a point of engagement 21 of the housing part 15.

30 On the right-hand side (see Fig. 2) below the housing part 15 holds a spindle 22 of square cross-section. The spindle 22 is journalled at 23 in the housing part 24 of the housing 1 comprising the motor and the transmission gear. The spindle 23 is bent over upwards and terminates in a handle 35 25 located in front of and near the handle 2 of the sawing device.

The end of the spindle 23 located in the housing part 15 extends into a sleeve 26, which is rotatably journalled

in the housing part 15. The sleeve has a pawl 27, which can be brought into contact with a nose 28 of the control-plate 13.

The continuous hole in the sleeve 26 has a star-shaped cross-section such that a turn of the handle 25 in the direction of the arrow P1, that is to say, away from the handle 2 ensures a turn of the sleeve 26 and hence a turn of the pawl 27. In the reverse sense, however, a free stroke is ensured.

On the side facing the centrifugal clutch the control-plate 13 has a skid 29, which in the lowermost position of the plate 13 shown in Fig. 2 by broken lines comes into contact with the housing 10 of the centrifugal clutch which is linked to the sprocket 11.

The device operates as follows.

After the handle 18 is moved upwards, the plate 13 is turned upwards around the pin 14 so that the claw clutch parts 8' and 8" engage one another. Then the connection between the main driving shaft 7 and the central part of the centrifugal clutch is established. After the motor is started, for example, by means of the conventional switches near the handle 3, the centrifugal clutch will become operative as a result of the rotation and the sprocket will rotate so that the chain 5 is moved along the blade 4 in the direction of the arrow P2.

Switching off normally occurs by changing over the main switch near the handle 3 so that the motor stops and the centrifugal clutch gets out of operation at a given number of revolutions.

In the event of an emergency stop the user can move the handle 25 in the direction of the arrow P1 so that the pawl 27 turns in clockwise direction and the plate 13 is moved downwards by the tensile spring 19. This results in that the claw clutch parts 8' and 8" are drawn away from one another so that the link of the main driving shaft 7 to the centrifugal clutch is interrupted.

The skid 29 then comes into contact with the housing 10 of the centrifugal clutch so that the sprocket and hence the chain 5 are immediately halted. The motor can run on in an unaltered manner.

Even if the user does not touch the lever 25, the

housing may be thrust upwards in the direction of the arrow P3 as the result of an abrupt shock, for example, due to "biting" of the saw at the tip, so that owing to inertia the handle 25 with the lever moves in the direction of the arrow 5 P1 with respect to the housing 1. Then the mode of switching off is the same. As soon as the cause of the emergency stop is repaired, the user can again move the lever 18 upwards so that the claw clutch 8 becomes operative and the saw can again be used.

10           The maintenance of the whole device is facilitated by accomodating the entire safety mechanism comprising the plate 13, the pawl 27, the spring 19 in the separate housing part 15 , which has a separating wall 30 on the inner side. The partition 30 is releasably fastened by bolts 31 in the 15 housing part 15 and constitutes an effective screen between the sprocket 11 drawing in the sawdust and the compartment in the housing 15. The partition 30 has an opening which is sufficiently large for passing the housing 10 of the centrifugal clutch, and in the engaged state of the claw clutch 20 8 the width of the reniform opening 15 is such that the housing part 15 with the partition 30 can be removed so that the claw clutch, the centrifugal clutch and the sprocket are freely accessible.

          The invention is not limited to the embodiment de- 25 scribed above. For example, the inertia mass formed by a lever may have a different shape and it need not be manually operable. The star-shaped hole in the sleeve 26 may be square or have a different shape. The claw clu-ch may be a dry-plate coupling.

CLAIMS

1. A sawing device mainly comprising a housing with handles, a motor accommodated in said housing and driving through a transmission with a starting clutch a sprocket for a sawing chain passed around a guide and comprising a mechanism  
5 for putting said drive out of operation characterized in that the mechanism comprises a member for actuating a second clutch arranged between the motor and the starting clutch of the transmission, said member being retained against a bias force by means of a releasable safety pawl in a position in which  
10 the clutch is in engagement.

2. A device as claimed in claim 1 characterized in that the pawl is controlled by a mass rotatably arranged around an axis transverse of the sawing plane.

3. A device as claimed in claims 1 and 2 characterized  
15 in that the inertia mass is formed by a manually operable lever.

4. A device as claimed in claims 1 to 3 characterized in that the second clutch is a claw coupling.

5. A device as claimed in claims 1 to 4 characterized  
20 in that the control-member is formed by a plate which is pivotable about an axis parallel to the driving shaft and is provided with a relief rim for the axial movement of one part

of the claw coupling.

6. A device as claimed in claims 1 to 5 characterized in that the plate carries a skid which can engage a brake surface connected with the sprocket.

5 7. A device as claimed in claim 6 characterized in that the brake surface is formed by a housing of the starting clutch constructed in the form of a centrifugal clutch.

8. A device as claimed in anyone of the preceding claims characterized in that the bias force is supplied by  
10 a tensile spring arranged between the housing and the control-member.

9. A device as claimed in anyone of the preceding claims characterized in that the control-member, the pawl and the tensile spring are accommodated in a closed housing  
15 part, which is releasably connected with the housing part comprising the motor and the drive.

10. A device as claimed in anyone of the preceding claims characterized in that the motor is an electric motor.



