

The present invention relates to a cutting machine intended for digging trenches in the ground, having a new device for fixing the drive units.

5 Machines which permit trenches of great depth filled with bentonite mud to be dug in the ground are already known, for example from Patent FR-A-2,211,327. These machines have in their lower part two drive units each supporting two half-drums with a common axis turning in opposite directions and provided with teeth which are
10 mounted symmetrically on either side of a vertical supporting core, the upper part of which is integral with a horizontal sole plate which serves to fix the drive unit onto the lower part of the cutting machine. The motors are generally situated inside the half-drums.

15 Such cutting machines require relatively frequent disassembly of the drive units, which constitutes a considerable waste of time and money owing to the difficulties of gaining access to the central part of the device between the two drive units.

20 The subject of the present invention is a machine of this type which has a new device for fixing the drive units which makes it possible to carry out their assembly and their disassembly in a rapid and simple manner without the quality of the fixing thereby being affected.

25 The subject of the invention is a cutting machine intended for digging trenches in the ground, of the type having in its lower part two drive units each supporting two coaxial half-drums provided with teeth, each of the drive units being provided with a fixing device comprising a central core provided with a horizontal sole plate
30 in its upper part, characterised in that the fixing of each sole plate of the central core to the lower part of the cutting machine is achieved by the fact that the end of the sole plate directed towards the centre of the machine has on its lower face a bevelled shape which fits
35 against a bearing plate of corresponding shape which is secured to the lower part of the cutting machine, the said sole plate being pushed back with force in the direction of the centre of the machine and being

maintained at its other end against the lower part of the machine with the aid of bolts for example.

5 In a particular embodiment of the invention, the lower part of the cutting machine consists of a base plate which has at the centre of its lower face a bearing plate forming abutments for the bevelled ends of the sole plates of the drive units.

10 This base plate also has two longitudinal openings arranged on the axis of the cores of the drive units, the sole plates of the drive units having bosses which fit into the said longitudinal openings during assembly.

15 In a particular embodiment, a bolt arranged in the thickness of the base plate permits a sufficient horizontal force to be exerted on the end of the boss of the sole plate concerned in order to push back the latter towards the bearing plate, while at the same time permitting the tightening of vertical bolts which join the sole plate firmly to the base plate of the machine in the
20 vicinity of the end of the sole plate which is situated on the side of the machine.

For the purpose of providing a better understanding of the invention, a description will now be given, by way of illustration and without any limitation being
25 implied, of an embodiment taken as an example and shown in the accompanying drawing.

In this drawing:

30 - Figure 1 is a diagrammatic view in elevation of the two drive units fastened onto the base plate of the cutting machine.

- Figure 2 is a plan view of Figure 1,

- Figure 3 is a plan view of the sole plate of the left-hand drive unit of Figure 1, and

35 - Figure 4 is a perspective view of the device for fixing the drive units.

The drawing shows diagrammatically the central cores 1 and 2 which each support an assembly consisting of the drive device and the cutters, which, for the sake of simplicity, have not been shown in the drawing.

The cutters consist of two half-drums provided with teeth at their periphery which are driven in rotation about the axes 3 by a drive device.

5 Each core 1, 2 is provided in its upper part with a horizontal sole plate 4, 5 which permits the fixing of the drive unit to the lower part of the cutting machine, which lower part consists of a steel base plate 6 in the embodiment described.

10 According to the invention, the ends of the sole plates 4 and 5 which are directed towards the centre of the machine each have a bevel 7 which fits against an abutment 8 of corresponding shape, formed on a bearing plate 9 which is fastened to the lower part of the base plate 6.

15 The shape of the surfaces 7 and 8 is such that, when a sole plate 4, 5 is pushed in the direction of the centre of the machine, its inside edge is wedged against the bearing plate while being strongly pressed against the base plate 6.

20 In the particular embodiment shown in the drawing, the base plate 6, which constitutes the lower part of the cutting machine, has two longitudinal openings 10 and 11 inside which fit bosses 12 and 13 of elongated shape which are formed on the upper surface of the sole plates on the axes of the cores 1 and 2.

25 The fitting of a boss 12, 13 into one of the slots 10 and 11 ensures the correct positioning of the corresponding drive unit, which can nevertheless slide horizontally in the plane of the core in order to be able to be moved away from or closer to the centre of the cutting machine.

30 Located at each of the ends of the base plate 6 is a bolt 14 which is fitted into a threaded horizontal orifice in such a way that the end of the bolt 14 comes to bear on the side of the boss 12, 13 in order to push back the corresponding drive unit towards the centre of the machine.

35 Also located at each end of the base plate 6 are bolts 15, the heads of which are below the sole plates 4

and 5 and which pass through the latter via oblong orifices 16.

5 To perform the assembly of a drive unit, the first step is to fit the end 7 of its sole plate 4, 5 onto the bevel 8 of the bearing plate 9, whilst the boss 12, 13 fits into the corresponding opening 10, 11 of the base plate 6, then with the aid of the bolts 15 the drive unit is provisionally maintained, the latter thus being supported while at the same time being capable of slight
10 displacement in the plane of the core.

The next step is to tighten the bolt 14, which pushes back the drive unit towards the centre in such a way that the inner end of sole plate 4, 5 is wedged by the action of the inclined surfaces 7, 8 of the bearing
15 plate 9.

Once its horizontal clamping has thus been carried out, all that is then required is to perform the tightening of the bolts 15 in order to ensure that the drive unit is completely fixed onto the base plate of the
20 cutting machine.

The various elements of the invention are again found in Figure 4, which is a perspective view corresponding to Figures 1 to 3.

In particular, it is possible to see how the
25 bearing piece 9 provided with the bevels 8 is fixed underneath the base plate 6, as well as the bosses 12, 13 which penetrate into the orifices 10 and 11 in order to ensure the guidance of the drive units.

It is also possible to see how the ends of the
30 sole plates 4 and 5 which are located at the centre of the machine are fastened exclusively by the wedging effect between the bevelled parts 7 and 8, whilst their other end is fastened by the bolts 15 after the bolt 14 has pushed back the drive unit towards the centre of the
35 machine.

It will be understood that it is thus possible to achieve in a simple and rapid fashion the fixing of a drive unit onto the base of the cutting machine by acting exclusively on bolts which are situated on the sides of

the machine and without having to intervene at the centre of the latter.

5 Contrary to what one might have feared on account of the very large vibrations and the very great stresses to which the cutters of these machines are subjected, this fixing method, which has been tested by the applicant company under particularly difficult conditions, has proved to be particularly reliable.



CLAIMS

1. Cutting machine intended for digging trenches in the ground, of the type having in its lower part two drive units each supporting two coaxial half-drums provided with teeth, each of the drive units being provided with a fixing device comprising a central core (1, 2) provided with a horizontal sole plate (4, 5) in its upper part, characterised in that the fixing of each sole plate (4, 5) of the central core (1, 2) to the lower part (6) of the cutting machine is achieved by the fact that the end of the sole plate (4, 5) directed towards the centre of the machine has on its lower face a bevelled shape (7) which fits against a bearing plate (9) of corresponding shape which is secured to the lower part (6) of the cutting machine, the said sole plate (4, 5) being pushed back with force in the direction of the centre of the machine and being maintained at its other end against the lower part (6) of the machine with the aid of bolts (15) for example.
2. Machine according to Claim 1, characterised in that it is provided in its lower part with a base plate (6) which has at the centre of its lower face a bearing plate (9) forming abutments (8) for the bevelled ends (7) of the sole plates (4, 5) of the drive units.
3. Machine according to Claim 2, characterised in that the base plate (6) has two longitudinal openings (10, 11) arranged in the plane of the cores (1, 2) of the drive units, whilst the sole plates (4, 5) have bosses (12, 13) which fit into the said longitudinal openings (10, 11) during assembly of the drive units.
4. Machine according to either one of Claims 2 and 3, characterised in that the base plate (6) has on the edge of each of its ends a bolt fitted into a horizontal threaded orifice, the end of which bolt permits a horizontal force to be exerted on the boss (12, 13) integral with the sole plate (4, 5) so as to push back the drive unit towards the centre of the cutting machine.
5. Machine according to any one of Claims 1 to 4, characterised in that the lateral ends of the sole plates (4, 5) are fastened to the base plate (6) of the cutting



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machine with the aid of bolts (15) screwed into the base plate (6) and passing through elongated orifices formed in the sole plates (4, 5) parallel to the cores (2) (sic).