The invention concerns digging or gripping equipment with a gripper shell on which at least one tooth tip is positioned. According to the invention, at least one tooth holder is positioned on the digging or gripping equipment, into which said tooth holder at least one tooth can be inserted, guided lengthwise, and locked.
DIGGING OR GRIPPING EQUIPMENT

[0001] The invention concerns digging or gripping equipment, for example a spoon or a shovel, or gripping equipment with a gripper shell, on which at least one tooth tip is positioned.

[0002] In particular, it concerns multiple gripper shells for loading and unloading materials. These gripper shells are used in particular for loading bulk materials, fine and coarse scrap iron, and demolition material, and also for loading VA steels. Particularly in the case of multi-shell grippers for this type of materials loading, it has previously been necessary for the applicant to strip off worn gripper shell tips and weld on new gripper shell tips. Other known multi-shell grippers have screw-type or insertion-type tooth tips that are replaced with new tips after the wear-and-tear limit has been reached.


[0004] It is the task of the within invention to improve on digging or gripping equipment with a gripper shell on which at least one tooth tip is positioned, in such manner that changing at least one gear tooth can be done simply and at low cost.

[0005] According to the invention, this task is performed by means of generic digging or gripping equipment having the characteristics of the typifying portion of claim 1. According to said claim, at least one tooth holder is positioned on the digging or gripping equipment, into which said tooth holder at least one tooth tip can be inserted, guided lengthwise, and locked. A long tooth tip is thus positioned at the bottom end of the gripper shell, is guided in a tooth holder that is, for example, welded, and is locked so that it cannot fall out. The tooth holder is designed appropriately so that penetration behavior is not disrupted. The tooth tip extends far enough beyond the front opening of the tooth holder to allow the gripper to close tightly. According to the invention, the tooth tip is designed in such manner that it can be guided lengthwise and after appropriate follow-up can be attached, i.e., it can be locked.

[0006] In this way, when an advanced stage of wear and tear is reached, the tooth tip can be released, a perforated grid is then put in farther, and is again locked. Expensive and complicated changing of tooth tips is thereby less often necessary.

[0007] Particular embodiments of the invention are described in the sub-claims following the main claim.

[0008] According to the embodiment, the tooth holder and/or the tooth tip can be made of abrasion-resistant material, for example cast steel.

[0009] It is particularly advantageous if the tooth tips have pockets arranged in stepped form on one side, with an opening at an appropriate position in the tooth holder, so that the pockets are accessible from outside. After appropriate loosening of the locking pins, an appropriate tool and an associated hammer can be used to push out the tooth tips, that is, to loosen and move them forward.

[0010] It is additionally advantageous if an abrasion plate made of abrasion-proof material is positioned above the tooth holder. The tooth tip can have multiple lateral holes that form a perforated grid to hold locking components.

[0011] Heavy-type dowel pins can advantageously be used as locking components.

[0012] However, screw or clamp components, like wedges, gripper tongues, or similar components are also used for locking purposes.

[0013] With the digging or gripping equipment according to the invention, cutting off and welding on of a new tooth tip become unnecessary. The tooth tip is changed easily and quickly. The solution leads to a definite extension of the regeneration interval. The large area of wear and tear is particularly important in the loading of VA steels. Overall, operating costs are lowered considerably. Highly abrasion-resistant steels are used as tooth tips, since the solution according to the invention does not require steels that can be welded.

[0014] Additional characteristics, details, and advantages of the invention are apparent from the advantageous embodiment of the invention illustrated in the drawing, which shows:

[0015] FIG. 1: a side view of a gripper shell according to the invention, tooth tip inserted,

[0016] FIG. 2: a top view from the front of the tooth tip according to FIG. 1,

[0017] FIG. 3: a sectional view along intersection line A-A according to FIG. 2, and

[0018] FIG. 4: a section along intersection line B-B according to FIG. 1.

[0019] FIG. 1 shows a gripper shell 10 of a common design, the tip of which is sectioned off. In the place of the sectioned-off tip a tooth holder 12 is welded to gripper shell 10, which has a location hole to hold a tooth tip 14. The tooth tip 14 consists of abrasion-proof cast steel.

[0020] The design of the tooth tip is particularly visible in particular in the sectional views according to FIGS. 3 and 4. They show that the tooth tip has a row of holes 16 that are positioned next to one another and which form a perforated grid to hold locking pins. As illustrated in FIG. 4, the locking pins 18 can be inserted on the one hand into the holes in tooth tip 14, and on the other hand into corresponding holes in tooth holder 12. Preferably, the locking pins 18 are Connex heavy-type dowel pins. In the embodiment illustrated here, there are two locking pins 18 side by side, as illustrated in FIGS. 1, 3, and 4.

[0021] If tooth tip 14 is worn out, the locking pins 18 can be removed and the tooth tip can be drawn out through a perforated grid so that the locking pins can be hammered back in.

[0022] To facilitate removal, tooth tip 14 has at one end pockets 20 arranged like steps to form a kind of stepped toothing. A tool for ejecting the tooth tip can be inserted into the stepped toothing through an appropriate opening 22 in tooth holder 12. Tooth tip 14 can be ejected by means of this tool, which is not shown here in greater detail, and which can be designed like a chisel.

[0023] An abrasion plate 24 can additionally be positioned above tooth holder 12.

1. Digging equipment, such as a spoon or shovel, or gripping equipment with a gripper shell, on which at least
one tooth is positioned, wherein at least one tooth holder is positioned on the digging or gripping equipment, into which said tooth holder at least one tooth tip can be inserted, guided lengthwise, and locked by means of locking components.

2. Digging or gripping equipment according to claim 1, wherein the tooth holder and/or the tooth tip consists of abrasion-proof material.

3. Digging or gripping equipment according to claim 1 wherein the tooth tip has on one side several pockets arranged like steps, and an opening is provided at an appropriate place in the tooth holder so that the pockets are accessible from outside.

4. Digging or gripping equipment according to claim 1 wherein an abrasion plate made of abrasion-proof material is positioned above the tooth-holder.

5. Digging or gripping equipment according to claim 1, wherein the sides of the tooth tip have several holes that form a perforated screen for holding locking components.

6. Digging or gripping equipment according to claim 5, wherein heavy-type dowel pins are used as locking components.

7. Digging or gripping equipment according to claim 1, wherein screw or clamp components, like wedges, gripping tongues, or similar components are used for locking purposes.

8. Digging or gripping equipment according to claim 2, wherein the tooth tip has on one side several pockets arranged like steps, and an opening is provided at an appropriate place in the tooth holder so that the pockets are accessible from outside.

9. Digging or gripping equipment according to claim 2, wherein an abrasion plate made of abrasion-proof material is positioned above the tooth-holder.

10. Digging or gripping equipment according to claim 3, wherein an abrasion plate made of abrasion-proof material is positioned above the tooth-holder.

11. Digging or gripping equipment according to one of claim 8, wherein an abrasion plate made of abrasion-proof material is positioned above the tooth-holder.

12. Digging or gripping equipment according to claim 2, wherein the sides of the tooth tip have several holes that form a perforated screen for holding locking components.

13. Digging or gripping equipment according to claim 3, wherein the sides of the tooth tip have several holes that form a perforated screen for holding locking components.

14. Digging or gripping equipment according to claim 4, wherein the sides of the tooth tip have several holes that form a perforated screen for holding locking components.

15. Digging or gripping equipment according to claim 8, wherein the sides of the tooth tip have several holes that form a perforated screen for holding locking components.

16. Digging or gripping equipment according to claim 9, wherein the sides of the tooth tip have several holes that form a perforated screen for holding locking components.

17. Digging or gripping equipment according to claim 10, wherein the sides of the tooth tip have several holes that form a perforated screen for holding locking components.

18. Digging or gripping equipment according to claim 11, wherein the sides of the tooth tip have several holes that form a perforated screen for holding locking components.

19. Digging or gripping equipment according to claim 12, wherein heavy-type dowel pins are used as locking components.

20. Digging or gripping equipment according to claim 13, wherein heavy-type dowel pins are used as locking components.