The invention relates to a chip outlet (1) in a disc chipper, said chip outlet comprising an elongated aperture extending through a tool wheel (2) included in the disc chipper and rotating around its centre axis. At least one of the ends (3, 4) of the chip outlet (1) is made in the basic material of the tool wheel (2) in a bevelled fashion relative to the centre axis of the tool wheel.
Abstract

The invention relates to a chip outlet (1) in a disc chipper, said chip outlet comprising an elongated aperture extending through a tool wheel (2) included in the disc chipper and rotating around its centre axis. At least one of the ends (3, 4) of the chip outlet (1) is made in the basic material of the tool wheel (2) in a bevelled fashion relative to the centre axis of the tool wheel.

Fig. 1
Chip outlet in a disc chipper

The present invention relates to a chip outlet in a disc chipper, said chip outlet comprising an elongated aperture extending through a tool wheel included in the disc chipper and rotating around its centre axis.

In view of assembling the components of a tool drive and discharging the chips produced in a chipping process, the disc chipper are generally provided with apertures, having a length which is at least equal to that of the tool. These chip outlets are typically arranged in radial direction or at a slight angle relative to radial direction. The number of chip outlets is equal to that of tools present in the chipper.

Generally in disc chippers, the ends of chip outlets, as well as the side surfaces of such outlets, are perpendicular to the face of the disc. Even if the outlet or aperture present in the basic material of a tool wheel has been perpendicular relative to the face of the wheel or disc, a possible bevelling of the end of a chip outlet has been rectified by means of a separate attachment fitted to the end of said chip outlet.

In a prior known arrangement, the straight end of a chip outlet is filled with an attachment which provides the end of the chip outlet with a bevel face for securing an unimpeded flow through the chip outlet for pieces of chips produced in a chipping process. Such an attachment reduces significantly the exploitable length of a chip outlet and a chipping tool, and moreover, it is inconvenient and expensive to manufacture, thus incurring continuously high costs as such attachments must be replaced from time to time as a result of wear and tear.

In order to eliminate these drawbacks, the arrangement of the invention is such and a chip outlet of the invention is characterized in that at least one of the ends of a chip outlet is made in the basic material of a tool wheel in a bevelled fashion relative to the centre axis of the tool wheel. The most
preferred arrangement is such that the end of a chip outlet is bevelled outwards relative to the centre axis of a tool wheel in the traveling direction of wood. The arrangement enables the use of a longer tool in comparison with a prior art tool wheel of the same size.

In one preferred embodiment of the invention, the arrangement is such that the end of a chip outlet has a bevelling of at least 10 degrees relative to the centre axis of a tool wheel. By virtue of this arrangement, the tension level of a tool wheel is reduced and the fatigue strength of the same is improved. By virtue of said bevelling of the end of a chip outlet, the tension peak shifts from the side surface of a tool wheel to the centre thereof. The reduction of tension level can be exploited e.g. by making the tool wheel from a thinner material.

In one preferred embodiment of the invention, the arrangement is such that the end of a chip outlet has the shape of a cylindrical surface segment. By virtue of this arrangement, the end of a chip outlet can be provided for protection with a protective sleeve, comprising a tubular element, the arrangement of the invention being preferably such that the end of a chip outlet is provided with a protective sleeve fitted against the cylindrical surface segment of that end.

The invention will now be described in more detail with reference made to the accompanying drawing, in which:

Fig. 1 shows in a schematic plan view the tool wheel of a disc chipper provided with chip outlets of the invention.

Fig. 2 shows a section along a line II-II in fig. 1.

Fig. 3 shows the chip outlet of fig. 1 in a larger scale.
Fig. 4 shows the end of a chip outlet of the invention fitted with a protective sleeve, in the section of fig. 2.

Fig. 1 illustrates schematically a tool wheel 2 for a disc chipper provided with chip outlets 1 of the invention. The chip outlet 1 comprises an elongated aperture extending through the tool wheel 2 of a disc chipper, rotating around its centre axis 5. Alongside each chip outlet, the tool wheel 2 is fitted with a chipper tool (not shown). In the case of fig. 1, the tool would be mounted on the side of the tool wheel 2 visible in fig. 1.

In the solution of the invention, at least one of the ends 3, 4 of the chip outlet 1 is, but preferably both ends are made in the basic material of the tool wheel 2 in a bevelled fashion relative to the centre axis of the tool wheel, especially in such a manner that the end 3, 4 of the chip outlet 1 is in a wood traveling direction 15 bevelled outwards relative to the centre axis 5 of the tool wheel 2. A chip flow 6 is likewise directed outwards from the centre axis 5 of the tool wheel 2.

Regarding the fatigue strength of the tool wheel 2, a preferred arrangement is such that the end 3, 4 of the chip outlet 1 has an inclination 7 relative to the centre axis 5 of the tool wheel 2, which is at least 10 degrees. The inclination or bevelling of the end 3, 4 of the chip outlet 1 is preferably essentially equal at both ends of the chip outlet.

The end 3, 4 of the chip outlet 1 has the shape of a cylindrical surface segment 7, 8, said end 3, 4 of the chip outlet 1 being made by machining in the basic material of the tool wheel 2. By virtue of this, the end 3, 4 of the chip outlet 1 can be provided with a trough-like protective sleeve 12, matched against the cylindrical surface segment 7, 8 of the end 3, 4 and cut e.g. from a length of pipe.
The tool wheel 2 is preferably made from a blank sheet, the chip outlets 1 being initially made by acetylene cutting and then by machining the ends 3, 4.

In order to mitigate the blocking hazard in the chip outlet 1, the arrangement is such that the end 3, 4 of the chip outlet 1 has a width D, d which exceeds that a, b of a section of the outlet 1 adjacent to the end 3, 4, and especially such that the width a, b of a straight section 9 of the chip outlet 1 is dimensioned to be widening towards an outer rim 10 of the tool wheel 2 (a > b). If necessary, the blocking hazard can be further reduced in such a way that the end 3, 4 of the chip outlet 1 is designed eccentrically relative to a centre line 11 of the straight section 9 of the chip outlet 1, in other words the end 3 of the chip outlet 1 has its centre line 13 at a distance 14 from the centre line 11 of the straight section 9 of the chip outlet 1. The relative position of the centre line 11 and 13 is determined according to the rotating direction (an arrow A) of the tool wheel 2 in such a way that, as the tool wheel 2 is rotating, the centre line 11 precedes the centre line 13.
Claims

1. A chip outlet (1) in a disc chipper, said chip outlet comprising an elongated aperture extending through a tool wheel (2) included in the disc chipper and rotating around its centre axis, characterized in that at least one of the ends (3, 4) of the chip outlet (1) is made in the basic material of the tool wheel (2) in a bevelled fashion relative to the centre axis of the tool wheel.

2. A chip outlet as set forth in claim 1, characterized in that the end (3, 4) of the chip outlet (1) is bevelled outwards relative to a centre axis (5) of the tool wheel (2) in a traveling direction (15) of wood.

3. A chip outlet as set forth in claim 2, characterized in that the end (3, 4) of the chip outlet (1) has an inclination (Ó) of at least 10 degrees relative to the centre axis (5) of the tool wheel (2).

4. A chip outlet as set forth in claim 2, characterized in that the end (3) of the chip outlet (1) has an inclination which is essentially equal at both ends of the chip outlet.

5. A chip outlet as set forth in claim 1, characterized in that the end (3, 4) of the chip outlet (1) has a width (D, d) which exceeds that (a, b) of a section of the outlet (1) adjacent to the end (3, 4).

6. A chip outlet as set forth in claim 1, characterized in that the end (3, 4) of the chip outlet (1) has the shape of a cylindrical surface segment (7, 8).

7. A chip outlet as set forth in claim 6, characterized in that the end (3, 4) of the chip outlet (1) is provided with a protective sleeve (12) matched against the cylindrical surface segment (7, 8) of the end (3, 4).
8. A chip outlet as set forth in claim 1, characterized in that the end (3, 4) of the chip outlet (1) is made by machining in the basic material of the tool wheel (2).

9. A chip outlet as set forth in claim 1, characterized in that the tool wheel (2) is made from a blank sheet.

10. A chip outlet as set forth in claim 1, characterized in that the chip outlet (1) includes a straight section (9), having a width (a, b) which is dimensioned to be widening towards an outer rim (10) of the tool wheel (2) (a > b).

11. A chip outlet as set forth in claim 1, characterized in that the end (3, 4) of the chip outlet (1) is designed eccentrically relative to a centre line (11) of the straight section (9) of the chip outlet (1).
Fig. 3

Fig. 4

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