

Grinding machine

The invention relates to a grinding machine comprising a frame having a rotary casing that bears rotary holders for grinding discs, as well as a drive motor
5 which is mounted on the frame and interacts with the casing and the holders to drive the machine.

A grinding machine of this type is disclosed in US-A 1 928 390. This known grinding machine has a drive shaft which is connected to the drive motor via a gear transmission. The drive shaft is directly connected to the casing, which can thus be
10 brought into rotation.

With this arrangement, the holders for the grinding discs are brought into rotation via a V-belt, which is fed around a stationary pulley on the frame, and pulleys on the shafts of the holders.

A drive system of this type has various disadvantages. For instance, it is not
15 easy to change the relative speeds of rotation of casing and holders with respect to one another, nor is it easy to change their relative direction of rotation. Because the drive shaft is connected directly to the casing, a reduction unit has to be incorporated between drive motor and said drive shaft, since otherwise the casing would rotate too rapidly.

20 The aim of the invention is to provide a grinding machine which does not have these disadvantages. Said aim is achieved in that the drive motor is connected by means of a continuous flexible or articulated element to the holders for driving the latter in the direction of rotation, and in that at least one of the holders is coupled to the frame by means of a gear transmission, in order to bring the casing into rotation
25 when said holder is driven.

With the grinding machine according to the invention the drive motor is connected to the grinding discs, which can be driven at a relatively high speed of rotation. It is therefore not necessary to provide a reduction transmission in the drive shaft: any necessary reduction in speed can easily be obtained by selecting, in a
30 suitable manner, the diameters of the pulleys concerned.

The casing can rotate at an appreciably reduced speed of rotation, in which context the reduction in speed can be supplied by the gear transmission.

Said gear transmission can be obtained in wide variety of ways. However, an embodiment in which the frame has a sun gear that interacts with at least one satellite gear, which is rotatably connected to the casing and interacts with the at least one holder, is preferred.

- 5 In order to obtain the desired reduction in speed and/or relative direction of rotation of holders and casing, the at least one holder can have a shaft with a gear, which gear interacts with the satellite gear.

The invention will be explained in more detail below with reference to an illustrative embodiment shown in the figures.

- 10 Figure 1 shows a partial view, in cross-section, of the grinding machine according to the invention.

Figure 2 shows a top view.

Figure 3 shows the cross-section III-III according to Figure 1.

- The grinding machine according to the invention shown in Figure 1 comprises
15 a drive motor 1 with drive shaft 1a. Said drive motor 1 is mounted on a frame 2, on which an operating device, which is not further shown, can be mounted.

The frame 2 has a sun gear 2a and is further connected via bearing 8 to the casing 3, which can be rotated relative to the frame 2.

- Three holders 7 for grinding discs are rotatably mounted in the rotary casing 3.
20 Each holder has a shaft 4, which is rotatably connected to the casing 3 by means of bearings 9, 10.

- A pulley 4a is mounted on each shaft 4, whilst a pulley 1b is mounted on the drive shaft 1a. As can be seen in the cross-section according to Figure 3, a drive belt 6 is fed around said pulleys such that the holders 7 together with grinding discs rotate
25 in a direction counter to the drive shaft 1a. Tensioning wheels 11, 12 also engage on the drive belt 6, the latter tensioning wheel 12 being able to maintain the pre-tension in the drive belt 6 by means of spring contact.

- A gear 4b is mounted on each shaft 4, which shafts 4 protrude above the casing 3. Said gears 4b interact with planetary gears 5a, which are each supported by
30 means of bearings 13 on a shaft 14. The planetary gears 5a, which on rotation of the holders 7 with grinding discs are driven by the gears 4b, turn around the sun gear 2a on the frame such that the casing 3, as shown in Figures 2 and 3, acquires a direction of rotation which is counter to that of the holders 7 with grinding discs.

By using gears 4b and planetary gears 5a with different diameters, the relative speed of rotation of the holders 7 with grinding discs, on the one hand, and of the casing 3, on the other hand, can easily be varied. By making the gears 4b engage directly on the sun gear 2a, it is also possible to make the casing rotatable in the
5 same direction as the holders 7 with grinding discs.

Claims

1. Grinding machine comprising a frame (2) having a rotary casing (3) that bears rotary holders (7) for grinding discs, as well as a drive motor (1) which is
5 mounted on the frame (2) and interacts with the casing (3) and the holders (7) to drive the machine, characterised in that the drive motor (1) is connected by means of a continuous flexible or articulated element (6) to the holders (7) for driving the latter in the direction of rotation, and in that at least one of the holders (7) is coupled to the frame (2) by means of a gear transmission (2a, 4b, 5a), in order to bring the
10 casing (3) into rotation when said holder (7) is driven.

2. Grinding machine according to Claim 1, wherein the frame (2) has a sun gear (2a) that interacts with at least one satellite gear (5a) which is rotatably connected to the casing (3) and interacts with the at least one holder (7).

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3. Grinding machine according to Claim 2, wherein the at least one holder (7) has a shaft (4) with a gear (4a), which gear interacts with the satellite gear (5a).

4. Grinding machine according to one of the preceding claims, wherein three
20 holders are provided.

5. Grinding machine according to one of the preceding claims, wherein the flexible or articulated element (6) is fed around a pulley (1b), coupled to the drive motor (1), and pulleys (4a), connected to the holders (7), in such a way that the
25 direction of rotation of the holders (7) is counter to that of the drive motor (1).