July 21, 1936. F. B. HATEBUR 2,048,265

FEED MECHANISM FOR CENTERLESS GRINDING MACHINES FOR GRINDING AND POLISHING WORKPIECES

Filed April 24, 1935 2 Sheets-Sheet 1

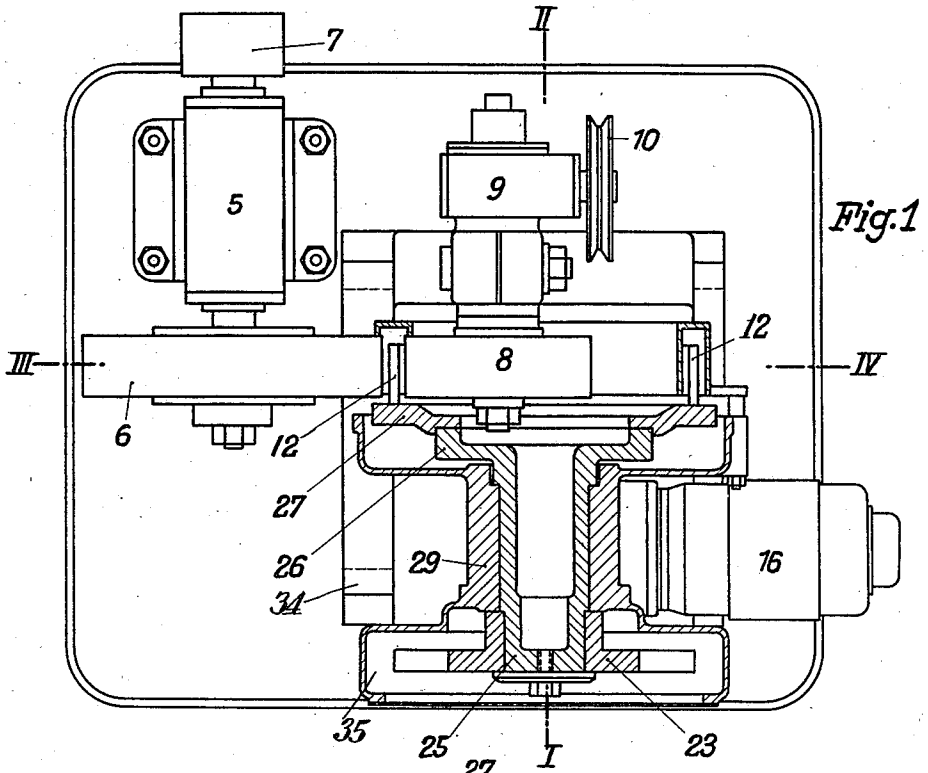


Fig.1

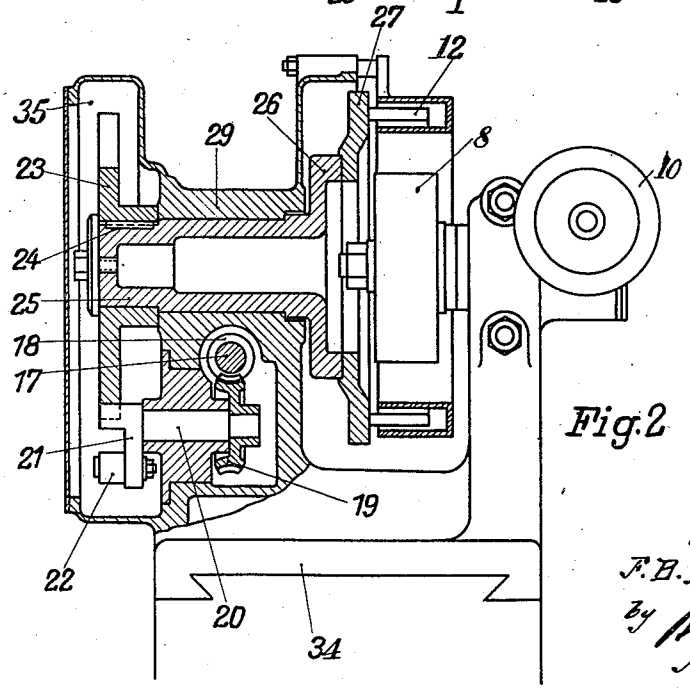


Fig.2

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Fig. 3

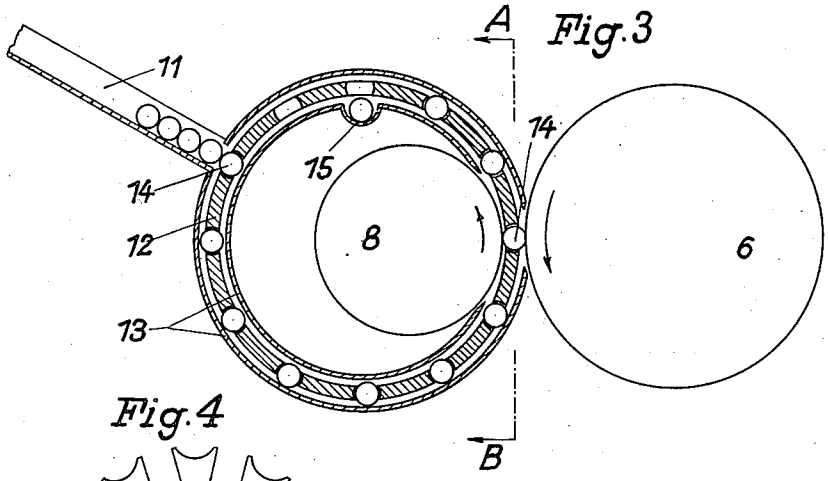
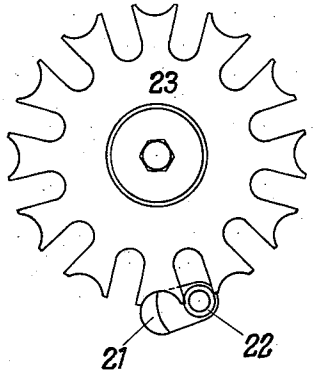


Fig. 4



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FEED MECHANISM FOR CENTERLESS GRINDING MACHINES FOR GRINDING AND POLISHING WORKPIECES

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Application April 24, 1935, Serial No. 17,951
In Switzerland April 26, 1934

2 Claims. (Cl. 51—103)

It is well known in centerless grinding machines to arrange the work pieces to be ground in a magazine placed outside the grinding disk and the counter disk and to convey the work piece from said magazine to the grinding disk. The known devices however do not afford means for the grinding in one operation for instance of spheric bodies or spheres in connection with conic shafts, parabolic bodies or for grinding the shaft of screws and simultaneously the face underneath their heads and so forth.

Such rotative bodies however, may be ground in one operation or be polished if, according to the present invention, the work pieces are placed on a rotatory plate the circumference of which extends into the space between the grinding disk and the counter pressure disk and the center of which is arranged eccentrically to the centres of grinding disk and counter pressure disk and if the plate is combined with a driving in such a way, that it remains together with the work piece stationary at the grinding place during the grinding process or is slowly moved along and while further rotating conveys the finished work piece in the same direction to an ejecting trough. The rotating plate may also be replaced by a vertical conduit wherein an upper controlled slide and a controlled counter slide is arranged, between which the work piece is conveyed to the grinding place and is removed when the grinding is done.

A first working example is shown in the Figures 1 to 4 and a second example in Figures 5 to 7.

Figure 1 shows a top view partly in section, and Figure 2 is a side view partly in section on line I—II of Figure 1.

Figure 3 is a section on line III—IV of the Figure 1.

Figure 4 is a detail.

A pedestal **5** carries a grinding disk **6** moved by means of a pulley **7** and a belt. Opposite the grinding disk is arranged an abutment disk **8** made of rubber carried by a pedestal **9** and driven by a worm, a worm wheel and a disk **10**. The disk **8** turns at a very limited number of revolutions, about 40 per minute, while the grinding disk **6** should run at about 2000 revolutions a minute.

The feed of the pieces to be ground or polished is automatic by means of a chute **11** (Fig. 3) leading to an annular ring **12** rotated stepwise in the direction of the arrow. A housing **13** is provided surrounding the ring **12** to prevent the work pieces **14** from dropping side ways and to guide the same.

The center of the receiving ring **12** is eccentric to the center of the disk **8**. The circumference of the ring **12** passes the space between the grinding disk **6** and the feed disk **8**. The arrangement may also be so, that the receiving ring **12** is disposed eccentrically to the grinding disk **6** or to the polishing disk taking its place. The driving of the controlling mechanism is effected by an electromotor **16** driving a shaft **17** and by means of a worm **18** and a worm wheel **19** a shaft **20**, by which shaft a crank **21** and a roller **22** is rotated. The roller **22** engages a maltese cross **23** protected by a dust safe casing **35**. Thereby this maltese cross is moved stepwise and is simultaneously blocked at the stops by a curved portion of the crank **21**. This stepwise movement of the maltese cross is transmitted by means of a wedge **24** to a hollow shaft **25** having a flange **26** and a receiving plate **27** attached thereto. The receiving plate **27** carries a ring **12** provided with apertures for receiving the work pieces **14**. The pedestal **9** and the housing **29** for the feed may be moved simultaneously by known means for instance by a spindle towards grinding disk **6**. The feeding housing **29** is slidably arranged, in a slide **34** which moves toward and from the axis of the grinding disk.

The working is as follows:—

The work piece **14** to be ground or to be polished is brought to a chute **11** and travels automatically by means of the rotating receiving ring **12** into the central plane A, B (Fig. 3). In this position the surface of the work piece **14** is machined, ground or polished. As the steps are effected for instance by the maltese cross **23** the ready machined work piece is fed stepwise upwards and reaches an inclined trough **15** (Fig. 3) wherefrom it is automatically removed.

What I claim as new:—

1. In a centerless grinding machine and in combination, a driving mechanism comprising a pedestal, a driving shaft and a driving pulley and a grinding disk secured thereto, an abutment disk facing said grinding disk and a separate driving mechanism of said abutment disk, a ring surrounding said abutment disk and adapted to convey the work pieces between grinding disk and abutment disk, and an inside and outside housing to guide the work pieces in said ring and an inclined trough in said inside housing to evacuate the ground work pieces, a chute located to feed the conveying ring, means for stepwise moving said conveying ring comprising a hollow shaft, a plate attached to said shaft and to the conveying ring, a maltese cross carried by said shaft and

a crank with a roller adapted to engage said cross, and a worm with worm wheel, as driving means of said crank, an electromotor as driving means of said hollow shaft and worm, and a slide supporting the abutment disk in relation to the grinding disk.

2. In a combination according to claim 1, the arrangement of having the axes of the grinding disk, the abutment disk and the conveying ring in one and the same plane and the abutment disk eccentrically arranged within the conveying ring.

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