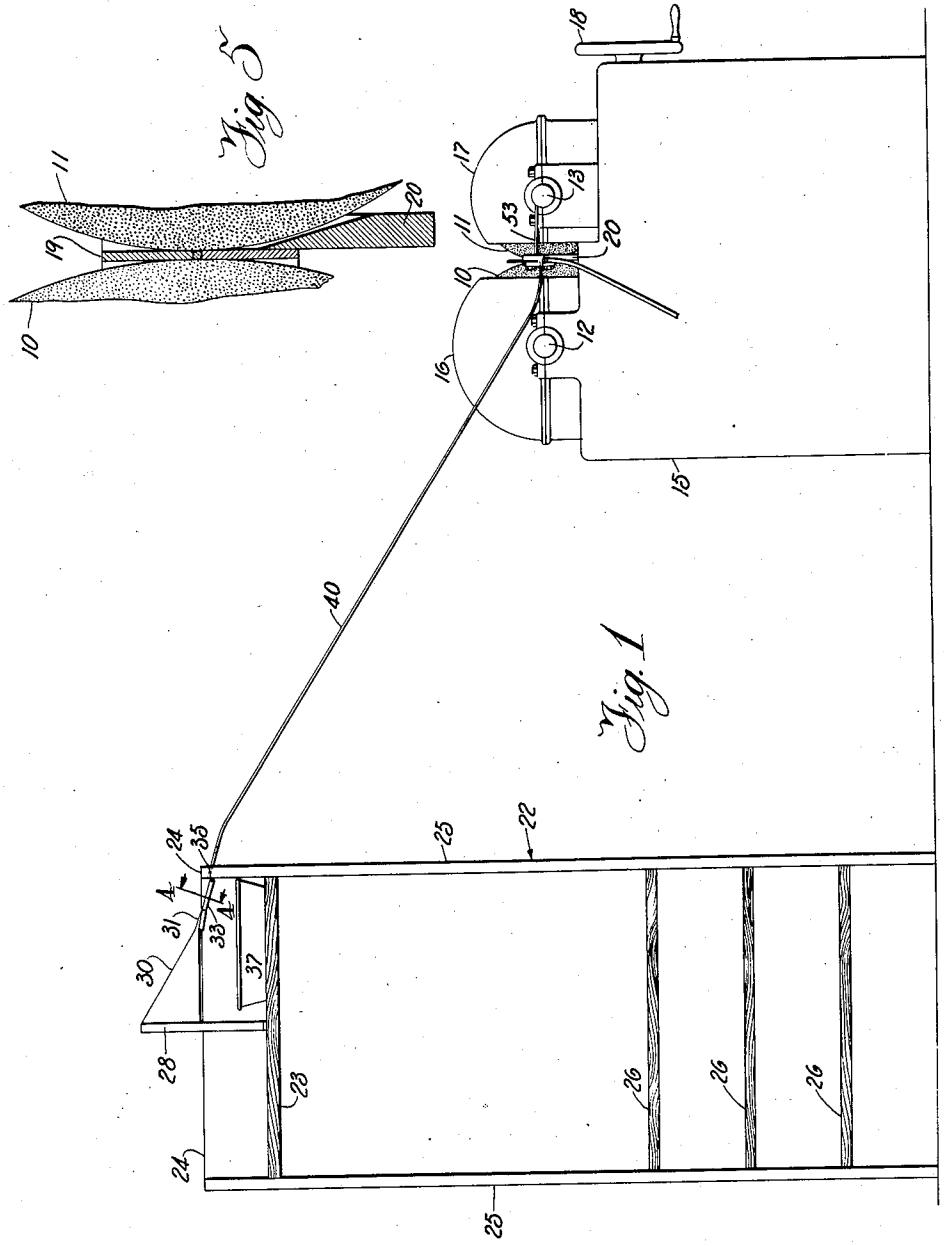
Feb. 5, 1935. K. L. HERRMANN 1,989,923

FEEDING DEVICE FOR CENTERLESS GRINDERS

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Fig. 2

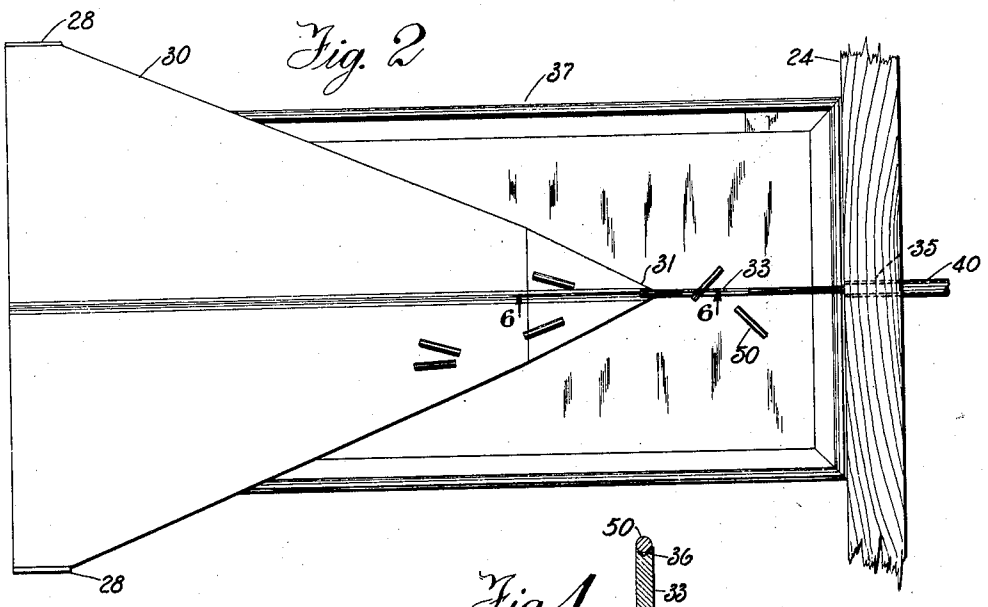


Fig. 4

Fig. 6

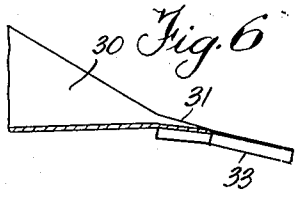


Fig. 3

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FEEDING DEVICE FOR CENTERLESS GRINDERS

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4 Claims. (Cl. 51—215)

This invention relates to improvements in centerless grinders and particularly to improvements in means for rapidly feeding small blanks into centerless grinders, and has for its principal object the provision of an automatic feeder system for centerless grinders.

A further object lies in the provision of automatic means for causing the blanks to move continuously along the feeder system without jamming or binding.

A still further object lies in the provision of a pneumatic induction system for forcing the blanks between the grinding wheels of the centerless grinder.

An additional object lies in the provision of means for automatically aligning the blanks to pass between the grinding wheels of the grinder.

It is also an object of the invention to provide a device of the character described which is simple and economical to construct, easy to operate, and which will not readily get out of order in use.

Other objects and advantages will appear as the description proceeds.

In the accompanying drawings I have illustrated a preferred mechanical embodiment of the idea of the invention. The drawings, however, are not to be taken as limiting the invention, the scope of which is to be measured entirely by the scope of the appended claims.

In the drawings:

Figure 1 is a side elevational view of a centerless grinder, showing a blank feeding device constructed according to the idea of this invention connected therewith.

Figure 2 is a plan view of a portion of the blank feeding device.

Figure 3 is a view partly in section showing my improved device for feeding the blanks between the grinding wheels of the grinder.

Figure 4 is a sectional view taken on the line 4—4 of Figure 1, and

Figure 5 is a sectional view through the grinding wheel and blank supporting device of the centerless grinder illustrated in Figure 1.

Figure 6 is a detailed sectional view taken on the line 6—6 of Fig. 2.

Referring to the drawings in detail, and particularly to Figure 1, I have illustrated a centerless grinder comprising, opposed grinding wheels 10 and 11 supported by shafts 12 and 13 respectively in suitable bearings formed on a base 15. The grinding wheels may be covered with suitable hoods 16 and 17 respectively if desired and are adjustable to and away from each other by means of a convenient hand wheel 18. The blanks are supported between the grinding wheels by means of an apertured plate 19, particularly illustrated in Figure 5, mounted upon a stand 20.

In the operation of the centerless grinder, the peripheral speed of one of the grinding wheels 10 or 11 is greater than the peripheral speed of the corresponding wheel thereby causing the blanks to rotate between the wheels in order that a smooth, perfectly cylindrical finish may be imparted thereto. The shaft of one of the wheels is also preferably set at a slight angle to the shaft of the opposite wheel so that once the forward end of the blank has been inserted between the grinding wheels, the blank will be forced through the aperture in the plate 19 and out at the opposite side by the action of the grinding wheels themselves.

As stated in the objects of the invention, the purpose of this invention is to provide means for continuously and automatically feeding small blanks to the grinding wheels of a centerless grinder and to this end I have provided adjacent to the grinder a stand generally indicated at 22, having a flat top 23 surrounded by a ledge 24 supported at a height considerably above that of the center of the grinding wheels 10 and 11 by means of legs 25 connected by braces 26. On the flat top 23 I have mounted a pair of spaced uprights 28, which support at their upper ends a triangular-shaped pan 30, particularly illustrated in Figure 2. The sides and the triangular nose portion of the bottom of this pan 30 slope to a point 31 and from the point 31 a member 33 extends to an aperture 35 provided in the adjacent side of the ledge 24. The member 33 is illustrated in section in Figure 4 and comprises, a metal strip of rectangular cross-section having a V-shaped groove 36 in the top surface thereof, the bottom of this groove being even with the bottom of the pan 30 and the bottom of the aperture 35 when the strip is mounted in position.

A square pan or receptacle 37 is supported on the top 23 beneath the member 33 for a purpose to be later described.

A slightly flexible tube 40 extends from the aperture 35 to the stand 20 and is secured at its lower end to the stand 20 by means of a clamp 41 and stud bolts 42 or other equivalent means. Referring now to Figure 3, it will be observed that the lower end of the tube 40 extends to the inner extremity of the stand 20 adjacent to the blank receiving end of the aperture in the blank supporting plate 19. A por-

tion of the tube 40 adjacent to the lower end thereof is surrounded by a sleeve 44 provided in one side thereof with an aperture 45 which is surrounded by the end of a compressed air conduit 47 welded or otherwise secured to the sleeve 44 surrounding the aperture 45. This conduit 47 extends to a compressed air tank or other suitable source of fluid pressure. It will be observed that the compressed air line is connected to the sleeve 44 at about the center of a bend in the sleeve, thereby providing a Y-shaped connection whereby air blown from the conduit 47 through the aperture 45 will tend to force the blanks 50 contained in the tube 40 along the tube toward the receiving end of the aperture in the supporting plate 19. A loop spring 53 surrounds the end of the sleeve 44 adjacent to the stand 20 and is provided with a straight end and a bent-over end 54 which rests against an extended portion of the stand. The shaft 13 is provided around the circumference adjacent to the end thereof with a series of holes or depressions 56 and it will be observed from an inspection of Figure 3 that the straight end of the spring 53 rides upon the extended end of the shaft 13 in a location to override the depressions 56 whereby the straight end of the spring 53 will be vibrated as the shaft 13 rotates and this vibration will be transferred from the spring to the sleeve 44 and tube 40, and from the upper end of the tube 40 to the member 33 to cause the blanks 50 to slide down out of the pan 30 and along the member 33 into the upper end of the aperture 35 from where they will be conveyed through the tube to the receiving end of the aperture in the plate 19.

From an inspection of Figure 2, it will be observed that if any of the blanks 50 are out of alignment with the grooves in the member 33 as they leave the pointed end of the pan 30, these blanks will be spilled into the pan 37. When a sufficient number of blanks have accumulated in the pan 37, this pan may be moved from its position beneath the member 33 and the blanks dumped back into the triangular pan 30, and this process may be repeated until all the blanks are fed from the pan 30 into the tube 40.

From the above description it will be seen that I have provided an automatic device for continuously and rapidly feeding small blanks into a centerless grinder as set forth in the objects of this invention.

While I have illustrated and described a specific mechanical embodiment of the idea of the invention, it is to be understood that the invention is not specifically limited to the construction so illustrated and described, but that such changes in the size, shape and arrangement of parts may be resorted to as come within the scope of the appended claims.

Having now described my invention so that others skilled in the art may clearly understand the same, what I desire to secure by Letters Patent is as follows:

1. In combination with a centerless grinder having a pair of opposed grinding wheels and an apertured blank supporting plate between said wheels, means for automatically feeding blanks into said aperture comprising, a pan having a substantially horizontal bottom portion and an inclined discharge portion supported at an elevation above said wheels, a tube having a fixed receiving end extending from said discharge portion to said aperture, pneumatic means for forcing the blanks from said tube into said aperture, and means for vibrating the discharge end of said tube.

2. In combination with a centerless grinder having a pair of opposed grinding wheels and an apertured blank supporting plate between said wheels, means for automatically feeding blanks into said aperture comprising, a pan supported at an elevation above said wheels, a tube having a fixed receiving end extending from a position adjacent to said pan to said aperture, pneumatic means for forcing the blanks from said tube into said aperture, means for vibrating the discharge end of said tube, and means between the upper end of said tube and said pan for spilling those blanks which are out of alignment with said tube.

3. In combination with a centerless grinder having a pair of opposed grinding wheels supported upon shafts, an apertured blank supporting plate between said wheels, and a stand for supporting said plate, means for automatically feeding blanks between said wheels comprising, a pan supported at an elevation above said wheels, a tube extending from said pan to the receiving end of the aperture in said blank supporting plate, pneumatic means connected adjacent to the lower end of said tube for forcing said blanks from said tube into the aperture in said blank supporting plate, and a loop spring surrounding the lower end of said tube having one end bearing upon said stand and the opposite end bearing upon one of said wheel supporting shafts, and a series of spaced depressions in said shaft adapted to pass beneath the end of said spring when said shaft is rotated to vibrate said spring and said tube.

4. In combination with a centerless grinder having a pair of opposed grinding wheels mounted upon shafts, an apertured blank supporting plate between said wheels, a stand for supporting said plate, means for feeding blanks between said grinding wheels comprising, a pan supported at an elevation above said wheels, a tube extending from a support adjacent to said pan to the receiving end in the aperture in said blank supporting plate, pneumatic means for forcing blanks in the lower end of said tube into the aperture in said plate, a spring for vibrating said tube, and a grooved member connecting said pan with the upper end of said tube adapted to spill blanks not in alignment with said tube, and a pan for receiving said spilled blanks.

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