S. F. BECK.

ABRASIVE FEEDING MECHANISM FOR GRINDING AND POLISHING MACHINES.

APPLICATION FILED JUNE 5, 1920.

1,391,875. Patented Sept. 27, 1921.

Fig. 1

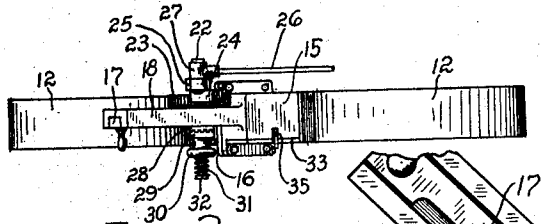


Fig. 2

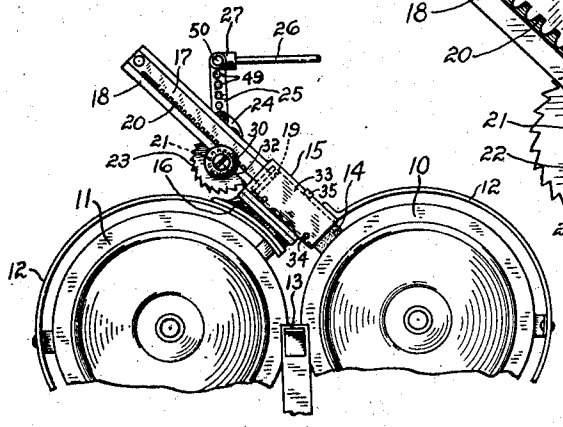


Fig. 3

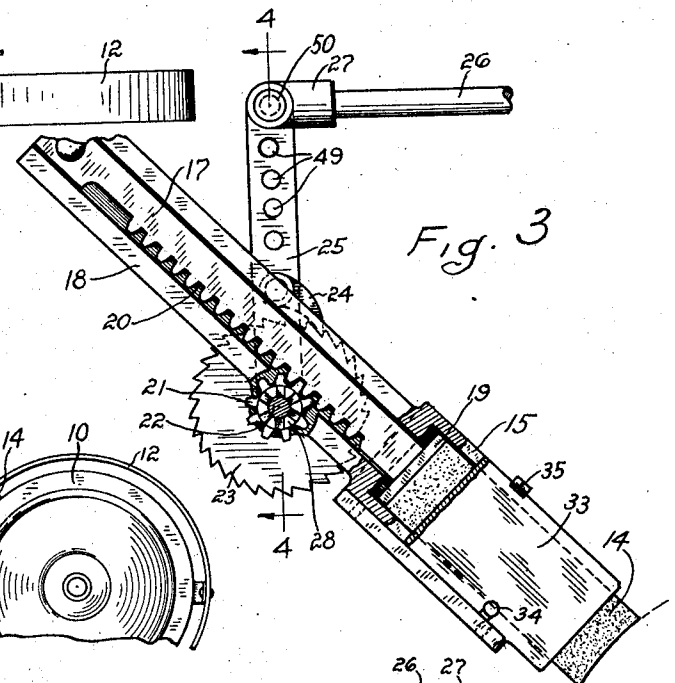


Fig. 4

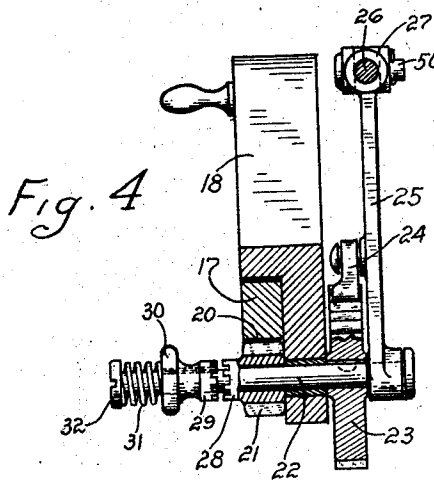


Fig. 5

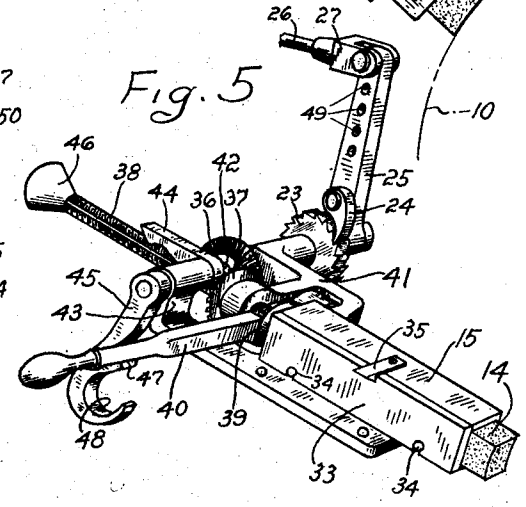
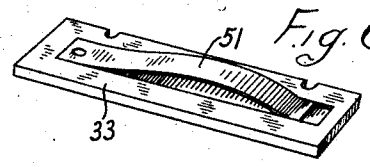


Fig. 6



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ABRASIVE FEEDING MECHANISM FOR GRINDING AND POLISHING MACHINES.

1,391,875. Specification of Letters Patent. Patented Sept. 27, 1921.

Application filed June 5, 1920. Serial No. 386,877.

To all whom it may concern:

Be it known that I, SIGMOND F. BECK, a citizen of the United States, residing at Westville, county of New Haven, State of Connecticut, have invented an Improvement in Abrasive Feeding Mechanisms for Grinding and Polishing Machines, of which the following is a specification.

This invention relates to grinding and polishing machines generally; in brief, to any machine in which abrasive or buffing material is used in the form of a solid cake.

My present invention has for its object to provide an automatic feeding mechanism which may be applied to all ordinary types of grinding and polishing machines and will insure a perfectly uniform and regular feed of the abrasive or buffing material, it being immaterial so far as the present invention is concerned what special type of machine is used or what special number or grade of abrasive or buffing material is used, it being well understood that various grades of emery, corundum, carborundum and other abrasive materials and various numbers or grades of buffing material are provided for use in the form of a cake held together by grease or any suitable binding material.

In the present instance I have illustrated my novel feeding mechanism as applied to a well known type of double-headed grinding and polishing machines, so called.

In the accompanying drawing forming a part of this specification,

Figure 1 is a plan view of my novel feeding mechanism;

Fig. 2 is a side elevation corresponding therewith, showing the grinding wheels and the work rest;

Fig. 3 an enlarged detail view partly in section corresponding with Fig. 2;

Fig. 4 a section, on an enlarged scale, on the line 4—4 in Fig. 3 looking in the direction of the arrows;

Fig. 5 a perspective view illustrating a modified form of the invention; and

Fig. 6 is a perspective inverted view of the removable side of the holder, showing the friction spring.

10 and 11 denote grinding or polishing wheels which may be of any ordinary or preferred type, as a cloth wheel, or a wood wheel leather faced, or a solid emery, corundum, or carborundum wheel, one of said wheels being bodily movable toward or from the other, 12 guards for the wheels, and 13 a work rest. It should be understood, however, that the special details of construction of the machine are wholly immaterial so far as the present invention is concerned.

14 denotes the cake of abrasive or buffing material which is adapted to be moved forward in a holder or case 15 carried by a bracket 16 which is rigidly secured to any convenient fixed portion of the machine, in the present instance to one of the guards. The cake is, of course, made of suitable shape to approximately fit the holder, which in the present instance is shown as square in cross section. If preferred, the cake and holder may be round or of any other form in cross section.

In Figs. 1 to 4 inclusive I have illustrated a form of the invention in which the cake is fed forward by means of a bar 17 which slides in a guide 18 and is provided with a head 19, within the holder, which bears against the cake. The guide and holder in the present instance are shown as made integral. The bar is provided with a rack 20, which is engaged by a pinion 21 loosely mounted on a shaft 22 which is journaled in the guide. The shaft carries a ratchet 23 which is engaged by a pawl 24 carried by a lever 25 mounted to oscillate on the shaft. 26 denotes a reciprocating rod carrying a yoke 27 which is pivoted to the free end of the lever and imparts oscillatory movement thereto. The lever is provided with a plurality of holes 49, either of which is adapted to receive the pivot pin 50 of the yoke, which enables me to adjust the feed of the cake by changing the throw of the lever. The pinion is provided with a clutch member 28 which is engaged by a sliding clutch member 29 which is keyed to the shaft. Clutch member 29 is provided with a handle 30, for convenience in operation, and is held in operative engagement with the other clutch member by means of a spring 31 which bears against the handle and against a head 32 at the end of the shaft.

In order to permit the convenient insertion of the cake, the holder is made with a removable side or cover plate 33 which may be retained by means of dowel pins 34 and a spring latch 35, or in any ordinary or preferred manner. In order to provide for reasonable variations in the size of the cake and to retain a cake in any position in which

it may be placed in the holder, I provide the inner face of the removable side with a slightly bowed friction spring 51, which is socketed in said side and bears against the cake and presses it against the opposite inner face of the holder with sufficient force to hold it until moved forward by the bar.

The operation will be obvious from the description already given. Briefly, when a cake has been used up the sliding clutch member is disengaged from the other clutch member by moving it outward on the shaft against the power of spring 31. The bar may then be drawn outward as the pinion will be free to rotate on the shaft. A new cake is placed in the holder and the removable side is secured in place, spring 51 preventing it from sliding forward. When the machine is in operation reciprocatory movement at the required speed is imparted to rod 26 which oscillates the lever and causes the pawl and ratchet to impart rotary movement to the shaft, which, by means of the pinion, the clutch members of course being in engagement, causes the bar to force the cake forward pressing it against one of the wheels.

The form illustrated in Fig. 5 differs in that a screw 38 is substituted for the bar, intermittent rotary movement being imparted to the screw to feed it forward. Shaft 23 carries a bevel pinion 36 which engages 2 bevel pinion 37 on the screw. Pinion 37 is keyed to the screw so as to impart rotary movement thereto and, at the same time, permit the screw to move forward. In order to produce the forward movement of the screw, it is caused to engage a half-nut 39 formed in a feed lever 40, the inner end of which is pivoted to a bracket 41 which carries shaft 22 and the holder. 42 denotes a short shaft adapted to oscillate in an extension 43 of bracket 41. Shaft 42 carries a releasing arm 44 and a latch arm 45. The releasing arm is shown as beveled at its free end and is adapted to be engaged by a cone 46 at the outer end of the screw. The latch arm is provided with a socket 47 which is adapted to be engaged by the feed lever as shown in Fig. 5, to retain the half-nut in engagement with the screw, and with a socket 48 which is adapted to receive and hold said lever, when it has dropped out of operative position.

The screw is made of a suitable length so that just before the cake is used up the cone will have moved into engagement with releasing arm 44 and will tilt said arm, causing an oscillation of short shaft 42 and swinging the latch arm so that socket 47 in said arm will move away from feed lever 40 releasing said lever, and permitting it to drop down into socket 48 in which position the half-nut will be wholly disengaged from the screw, so that the screw may be drawn outward as it will slide freely through bevel pinion 37. A new cake is then placed in the holder as before. The feed lever is then swung into operative position, with the half-nut in engagement with the screw, and is locked there by causing it to rest in socket 47 in the latch arm.

Having thus described my invention, I claim:

1. A machine of the character described comprising a holder for a cake for abrasive material, a member adapted to bear against a cake in the holder, said member being provided with rack teeth, a pinion engaging said teeth and imparting movement thereto, a shaft carrying said pinion, a ratchet wheel on said shaft, an oscillating lever carrying a pawl engaging said wheel, said lever being provided with a plurality of longitudinally arranged apertures, and a reciprocating rod pivotally connected to said lever in one of said apertures.

2. In a machine of the character described, an abrasive wheel, a holder for abrasive material adapted to be applied to said wheel, automatic mechanism for uninterruptedly feeding the abrasive material in said holder to the wheel, said mechanism being adapted for regulating the speed at which said material is continuously fed to the wheel.

3. In a machine of the character described, an abrasive wheel, a holder for abrasive material adapted to be applied to said wheel, means for uninterruptedly feeding the abrasive material in said holder to the wheel, and means for regulating the speed at which said material is continuously fed to the wheel.

4. In a machine of the character described, the combination with an abrasive wheel, of a holder for a cake of abrasive material, a feed member adapted to bear against a cake in said holder for constant engagement of the cake against the wheel, means for retaining said cake in any position in which it may be placed in the holder, means for imparting forward movement to the feeding member, and adjusting means associated therewith for regulating the speed of forward movement of said member.

In testimony whereof I affix my signature.

SIGMOND F. BECK.