E. O. PARTRIDGE.

GRINDING MACHINE.

APPLICATION FILED MAR. 24, 1913.

1,100,610.

Patented June 16, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

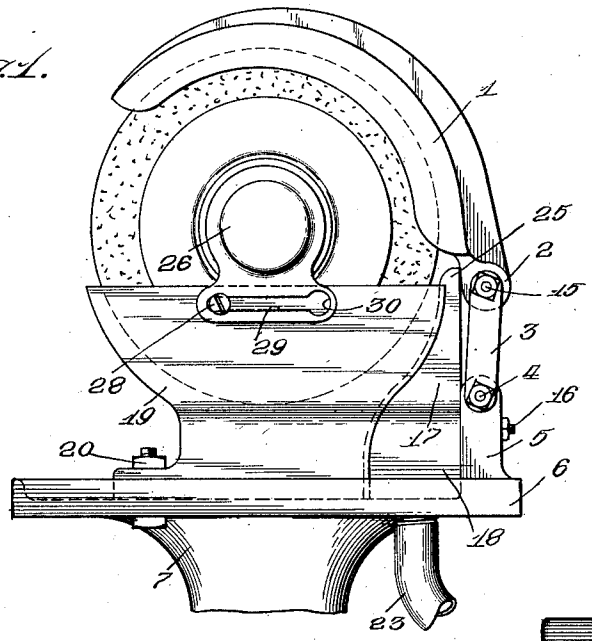
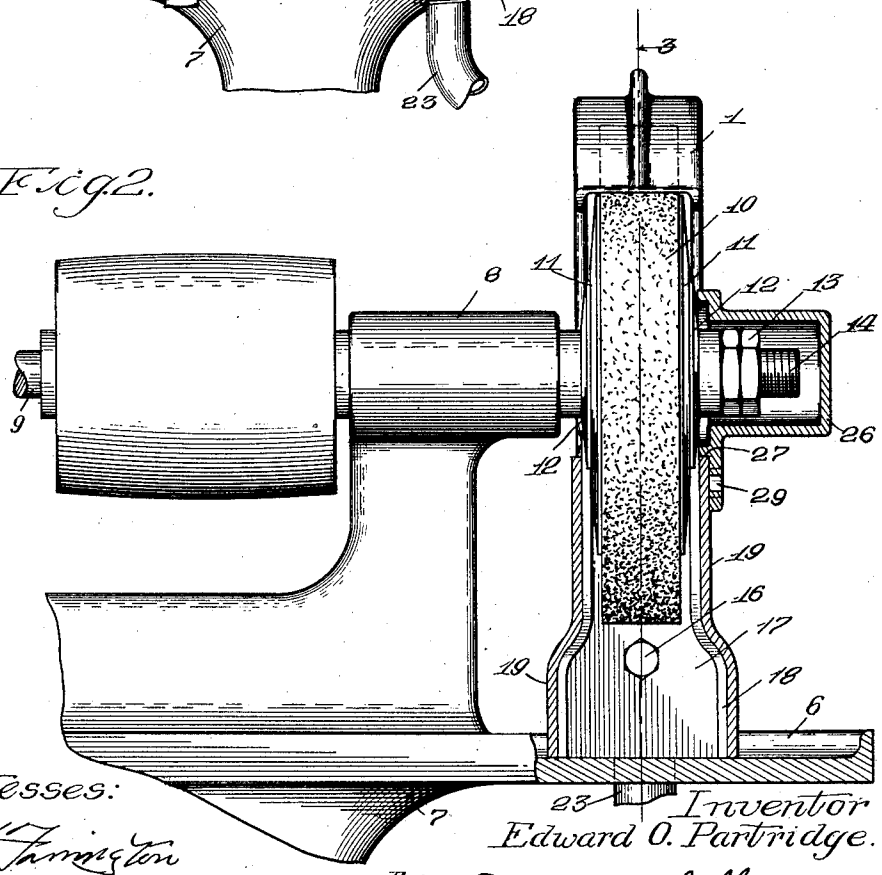


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

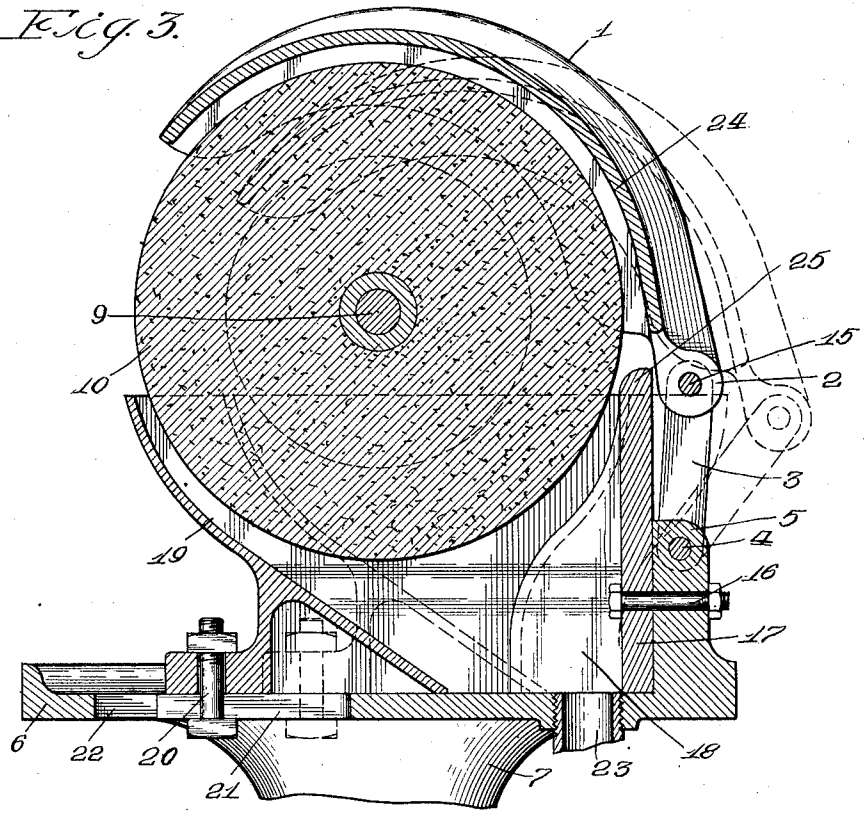
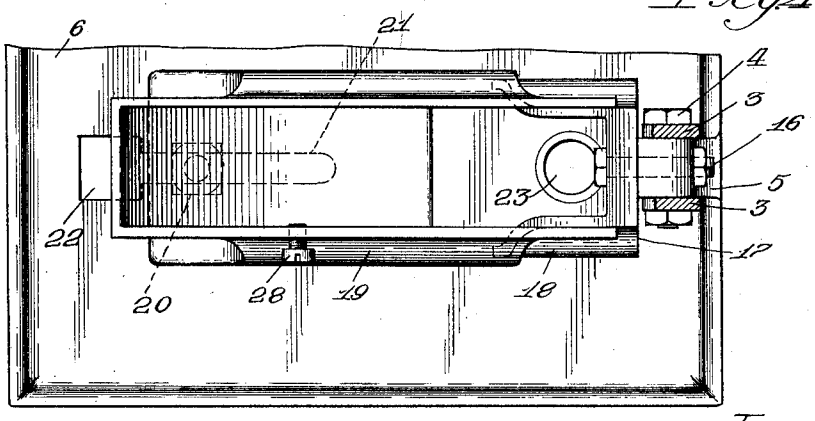


Fig. 4.



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GRINDING-MACHINE.

1,100,610. Specification of Letters Patent. Patented June 16, 1914.

Application filed March 24, 1913. Serial No. 756,446.

To all whom it may concern:

Be it known that I, EDWARD O. PARTRIDGE, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grinding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to grinding machines and more particularly to the class of such machinery having abrasive wheels rotating at high speeds.

One object of my invention is to provide a housing for partially incasing the abrasive wheel, which housing will be adapted to catch and halt detached particles of the abrasive wheel, such as would otherwise inflict damage upon workmen.

Another object is to provide a guard carried by a portion of the housing and adapted to incase the projecting end of the shaft upon which the abrasive wheel is mounted, together with any angular elements, such as nuts, upon this shaft end, so as to prevent injury to the hands of workmen in case of accidental contact with the said parts while revolving.

A further object is to mount the various parts of the housing and of the casing or hood for the end of the shaft adjustably, so as to maintain them in effective position with varying sizes of the abrasive wheel.

Still another object is to provide an effective suction attachment for a housing of this class whereby the detached particles of the abrasive wheel and of the materials ground upon the same may be drawn into a suitable suction pipe or chamber.

The device of my invention is particularly adapted for use with grinders employing wheels of emery or carborundum and is shown in this embodiment in the accompanying drawings in which:

Figure —1— is a fragmentary side view of a grinding machine equipped with my invention. Fig. —2— is a fragmentary elevation of the same, with parts of the support, housing and shaft-end casing cut away. Fig. —3— is a vertical section through Fig. —2— along the line 3—3. Fig. —4— is a plan view of the device of Fig. 3 with the wheel, shaft and a portion of the upper guard removed.

In the embodiment of the drawings, my invention comprises a lower casing or guard formation consisting of two relatively movable members; a shaft-end hood movably mounted upon one of the said members; a suction pipe attached to one of the said lower members; and an air deflector or guide secured to one of the lower members and extending in proximity to a guard or hood partially housing the upper portion of the wheel. The protecting guard or shield used over the upper portion of the wheel is preferably of the pivoted and adjustable type shown in my copending application for a grinding machine, filed January 17, 1913, Ser. No. 742565. It consists of a substantially crescent-shaped hood 1 having at its rear and trunnions 2 by which it is pivotally connected to the upper ends of links 3, the lower ends of which links are in turn pivoted upon a bolt 4 extending transversely through a pivot block 5. The block 5 is preferably cast integral with the top 6 of a column or support 7, which support also carries the bearing 8 for the shaft 9 upon which the abrasive wheel 10 is mounted. The wheel 10 is held between clamping rings 11 drawn against the wheel by washers 12 and held in position by nuts 13 upon the treaded end 14 of the shaft. By moving the links 3 relative to both the upper guard 1 and the pivot block 5, and by thereupon tightening the bolts 4 and 15 at the respective ends of the links, the hood 1 may be shifted in position as indicated in Fig. —3—, thereby enabling it to follow the periphery of the wheel as the latter is reduced in diameter by the wear upon it.

Secured to the shaft block 5 by a bolt 16 is a vertically channel-shaped hood portion 17 having sides 18 projecting upwardly toward the wheel but laterally spread at a greater distance from each other adjacent to their lower ends, which ends abut against the top of the table 6. Slidably interfitting the said hood portion 17 is the forward hood portion 19, the forward edge of which is adapted to closely follow the periphery of the wheel when the latter is of the maximum size for which the grinding machine is adapted. The forward hood 19 is secured to the table 6 by a bolt 20 sliding in a slot 21, which slot preferably has an enlarged portion 22 through which the bolt head may be raised for detaching the hood member 19 without entirely removing the said bolt. By

sliding the forward hood portion 19 relative to the interfitting rear portion 17, as shown by dotted lines in Fig. —3—, the adjoined hood partition will continue to incase the lower portion of the abrasive wheel. When the upper guard 1 is also adjusted in proximity to the decreased size of the wheel, the combined hoods will continue to partially house the wheel while still exposing the forward portion thereof for contact with the tools or other objects which are to be ground upon the wheel.

Close to the rear wall of the immovable hood member 17, I provide an opening in the plate 6 of the support for the grinder, into which opening I thread a suction pipe 23 connected to a suitable exhaust pump. When this pump is in operation, any detached particles of the abrasive material of the wheel, or of the materials ground upon the same, if in the interior of the adjoined hood members 19 and 17, will be drawn down the suction pipe 23, instead of being free to fly into the eyes of the workman. Likewise, if the suction through the pipe 23 is sufficiently powerful, any detached particles flying off the wheel between the periphery of the latter and the back 24 of the upper hood 1 will also be drawn down into the suction pipe. To enable the effect of the suction pump to extend more readily to the interior of the upper guard-hood I preferably provide an upward extension 25 upon the back of the lower hood member 17, which extension or screen tends to deflect the air drawn between the wheel and the back 24 of the upper hood, so that this extension serves as a continuation of the back 24 in forming a substantially continuous rear wall for the housing from which the air and the particles suspended therein are drawn by the suction pump. Likewise, I preferably contract the lower hood or shield members 17 and 19 laterally of the wheel, so that their upper edges come as close to the sides of the wheel as the clamping rings between which the wheel is held will permit, thereby confining the suction largely to the outer surfaces of the wheel. While the pivoted upper guard or shield 1 and the slidably adjoined lower guard-troughs 17 and 19 will thus inclose a large portion of the surface of the wheel and enable the loose particles to be withdrawn to points where they can do no damage, the hand of the operator might still be damaged by accidental contact with the sharp corners of the nuts 13 or with the threaded end 14 of the shaft. To avoid this, I preferably equip the sliding member 19 of the lower guard-hood with a cup-shaped casing 26 adapted to incase the end of the shaft and the nuts mounted thereon. The casing 26 preferably has a ledge 27 engaging the upper edge of one side of the sliding hood member 19, so that this casing may be maintained in alinement with the shaft when the hood portion upon which it is mounted is slid backward or forward. After the said sliding member 19 has been suitably adjusted in position to allow only a small opening between its forward edge and the periphery of the wheel (thereby preventing tools or other objects from slipping into the interior of the said hood accidentally) the casing 26 is locked in position by a screw 28 threaded to the hood member 19 and movable with respect to the casing 26 within a slot 29 formed in the latter. An enlargement 30 at one end of the slot 29 readily permits the casing to be detached without removing the screw, thereby making it easy to remove the casing when the wheel is to be replaced.

While I have illustrated the adjustably positioned lower guard or shield formation of my invention as used in connection with the adjustable guard-hood of my copending application heretofore mentioned, it will be evident that it could also be used with other arrangements of upper guard-hoods or without any upper guard whatever. It will also be evident that the method of securing the shaft guard to one of the guard members of my invention need not be limited to the particular arrangement of sliding ledge, slot and screw as illustrated herewith. Also, that the shapes of the interfitting guard or shield portions and other details of construction may be varied considerably without departing from the spirit of my invention.

I claim:

1. A grinder including a shaft; an abrasive wheel mounted thereon; a support for the shaft; a shield carried by the said support and partially housing a peripheral part of the lower portion of the said wheel, and an auxiliary shield slidably carried by the support and interfitting with the aforesaid shield, the said auxiliary shield partially housing another part of the lower portion of the wheel; and a suction pipe connected to the interior of the said interfitted shields.

2. A grinder including a shaft; an abrasive wheel mounted thereon a support for the shaft; a shield carried by the said support and partially housing the upper portion of the wheel, a second shield partially housing the lower portion of the wheel, and an air deflector carried by one of the said shields and extending between the other shield and the wheel.

3. A grinder including a shaft; an abrasive wheel mounted thereon; a support for the shaft; a shield carried by the said support and partially housing the upper portion of the wheel, a second shield partially housing the lower portion of the wheel, and an air deflector carried by one of the said

shields and extending between the other shield and the wheel; and means for adjusting the first-named shield relative to the shaft.

4. A grinder including a shaft; an abrasive wheel mounted thereon; a support for the shaft; a shield carried by the said support and partially housing the upper portion of the wheel, a second shield partially housing the lower portion of the wheel, and an air deflector carried by one of the said shields and extending between the other shield and the wheel; and a suction pipe connected to the interior of one of the said shields.

5. A grinder including a shaft; an abrasive wheel mounted thereon; a support for the shaft; a pair of shields carried by the said support, each thereof partially housing a part of the lower half of the wheel, the said shields relatively movable; and a guard adjustably mounted upon one of said shields and housing one end of the said shaft.

6. A grinder including a shaft; an abrasive wheel mounted thereon; a support for the shaft; a pair of shields carried by the said support, each thereof partially housing a part of the lower half of the wheel, the said shields relatively movable and interfitting; an auxiliary shield partially housing the upper half of the wheel, a suction pipe connected to the interior of the said interfitted shields, and a screen interposed between the wheel and the lower end of the said auxiliary shield.

In testimony whereof I have signed my name in presence of two subscribing witnesses.

EDWARD O. PARTRIDGE.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."