J. G. JACKSON.

RUNNER FOR GRINDING MACHINES.

APPLICATION FILED MAR. 25, 1910.

1,013,777.

Patented Jan. 2, 1912.

FIG. 1.

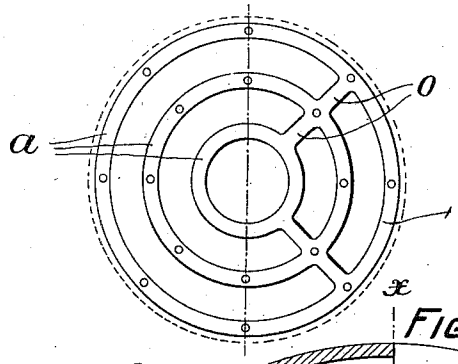


FIG. 2.

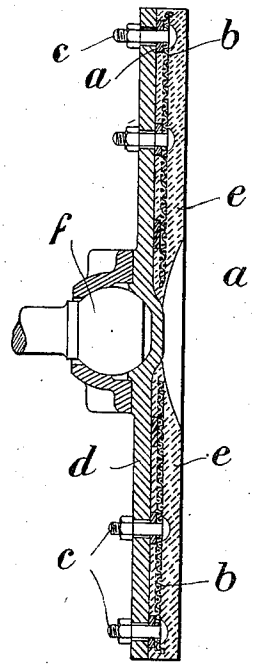


FIG. 3.

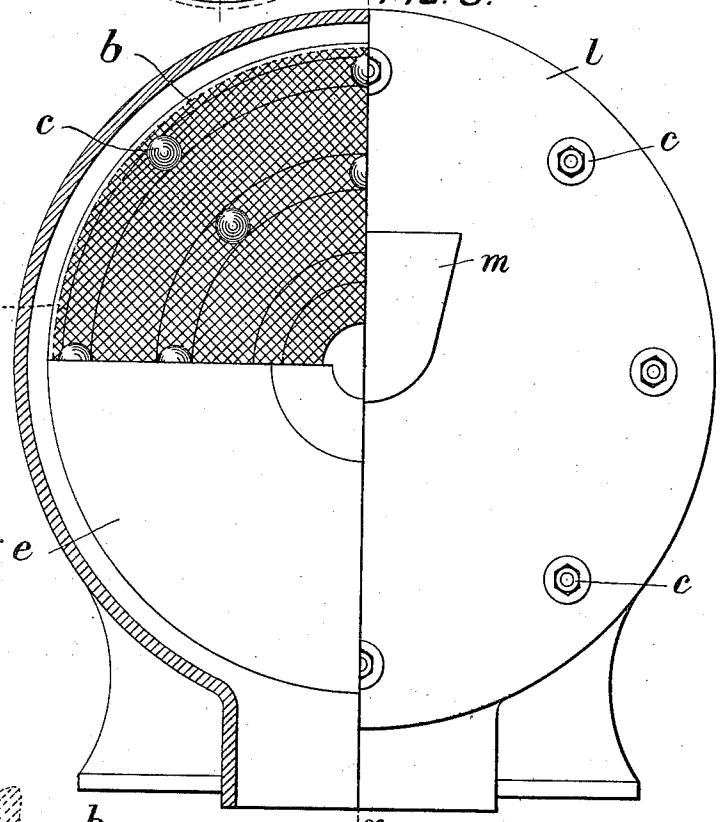


FIG. 4.

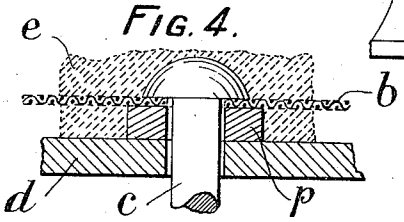
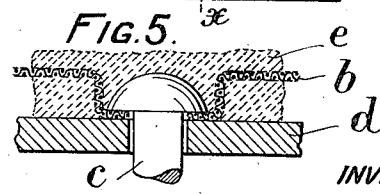


FIG. 5.



WITNESSES.

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RUNNER FOR GRINDING-MACHINES.

1,013,777. Specification of Letters Patent. Patented Jan. 2, 1912.

Application filed March 25, 1910. Serial No. 551,486.

To all whom it may concern:

Be it known that I, JAMES GEORGE JACKSON, a subject of the King of Great Britain, residing at Glasgow, Lanarkshire, Scotland, have invented a new and useful Improvement in Runners for Grinding-Machines, of which the following is a full and complete specification.

The present invention relates to improvements in the manufacture of the working plates of hulling, shelling, grinding, or crushing machines, having one or more rotating faces operating in conjunction with one or more fixed or non-rotating faces, and more particularly to those plates in which the crushing surfaces are formed of compositions. At the present time the composition or material forming the grinding surfaces is applied directly to the disks or parts carrying same so that when it is found necessary to re-make the grinding surface due to wear it is necessary to remove the carrying parts from the machine, clean the same free from the old composition and then apply the new in a plastic condition after which several days must pass to allow the composition to harden during which period the machine remains inoperative.

The object of the present invention is to simplify the means of applying the composition or re-making of the working face, and thereby increase the output of the machine.

Broadly the invention consists in forming the working plates of a reinforced material capable of being formed separately from the parts adapted to carry the same and adapted to be fixed thereto by bolts or in any other convenient manner.

In the accompanying drawings which illustrate this invention:—Figure 1. is a plan on a reduced scale showing two methods of forming the reinforcing support. Fig. 2. is a sectional view as on line *x*—*x* Fig. 3 showing a working plate attached to a supporting plate. Fig. 3. is a front elevation of a machine partly in section. Figs 4 and 5 are views on an enlarged scale of two further methods of attaching the reinforcing material and thereby the working plates to the supporting plate.

The working plate comprises one or more supporting rings *a* of metal or other suitable material placed concentrically one with the other, as shown on the left of Fig. 1, the larger or outer ring being slightly less in diameter than the diameter of the finished plate (indicated by dotted lines in Fig. 1) which is the same as the supporting plate to which it is to be attached. The working plate further comprises reinforcing material *b* consisting of a sheet of open wire mesh, expanded metal, or the like, which is adjacent the supporting rings *a* and entirely embedded in the composition *e* as shown in Fig. 2. A series of bolts *c*, having their heads embedded in the composition, pass through the reinforcing material and through holes in the rings *a* which bolts are employed for securing the working plate to the supporting plate *d* as shown in Fig. 2. The sheet of reinforcing material *b* is cut away in the center as shown to allow of the usual space being left in the center of the plate to receive the uncrushed material.

Fig. 2 illustrates a working plate, comprising the supporting rings *a*, the reinforcing material *b* and the composition face *e*, attached to a rotating supporting plate *d*, such plate being provided with the usual universal joint *f* to allow the plate to adjust itself to its opposing plate and to yield should a foreign substance enter the machine with the material being crushed. This plate is adapted to work in conjunction with a fixed plate attached to the door of the machine (not shown).

The supporting rings *a* may, if desired, be connected by radial arms *o* as shown on the right of Fig. 1, or the support may consist of a plate with large perforations undercut or not as desired to assist in holding the composition in place.

As an alternative to the above, it has been found sufficient to employ a series of washers *p* (Fig. 4.) which act merely to separate the supporting plate *d* from the reinforcing material *b*. A further alternative is to deform the material *b* at the desired points as shown in Figure 5, this allows the head of the bolt to sink in to the face of the material *b* and the deformation acts in the same manner as the washers *p*.

In Fig. 3, the right hand side shows the machine in elevation, the bottom left section shows the face of the working plate attached to the rotating supporting plate, and

the top left section shows the reinforcing material *b* and bolts *c* the composition being removed.

The working plates are formed as follows:—A suitable mold is provided, holes being formed in the bottom thereof to receive the shanks of the securing bolts *c*, the rings, or washers, if the same are used, and the reinforcing material or the reinforcing material formed as shown in Fig. 5, are placed in the mold and the bolts placed in position with their shanks pointing downward, the composition is then laid over the reinforcing material in a plastic condition and forced through the mesh and between the rings or other separating means making one mass of reinforced composition. When dry the plates are removed from the mold and are then ready for fixing in any machine. It will thus be seen that when it is desired to replace a working plate it is only necessary to remove the nuts from the bolts, lift off the plate and replace by a new plate and fix in position.

The working plates may be formed of a composition of equal grade throughout or they may be formed of two, three or more grades, in which case the coarsest material is placed toward the center of the plate, around this being a ring of finer grade, and, if desired, a further ring of a still finer grade may be placed around this and so on as desired, the different grades of materials being all completely intermixed at their line of contact one grade with another.

By constructing the working plates in the manner herein described, a series of plates may be provided for one machine, so that a plate of a certain degree of coarseness may be used for a particular material being treated in place of having a separate machine for each class of work.

The faces of the working plates may be molded in any shape to suit special requirements.

What I claim is:—

1. In a runner for grinding machines the combination of a supporting plate and a working plate, said working plate comprising a composition grinding face, wire mesh reinforcing material embedded in the grinding face, reinforcing means embedded in the back of said grinding face, and bolts having their heads embedded in said face and engaging said wire mesh and passing through said reinforcing means for detachably securing the working plate to the supporting plate, substantially as described.

2. In a runner for grinding machines the combination of a supporting plate and a working plate, said working plate comprising a composition grinding face, wire mesh reinforcing material embedded in the grinding face, concentric rings embedded in the back of said grinding face and in contact with said wire mesh, and bolts having their heads embedded in said grinding face and engaging the wire mesh and passing through said concentric rings for detachably securing the working plate to the supporting plate, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

JAMES GEORGE JACKSON.

Witnesses:
A. KNIGHT CROAD,
CHRISSIE CAMPBELL.