W. D. GHERKY.

ABRASIVE ELEMENT FOR RECIPROCATING GRINDERS.

APPLICATION FILED JAN. 4, 1913.

1,095,994.

Patented May 5, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

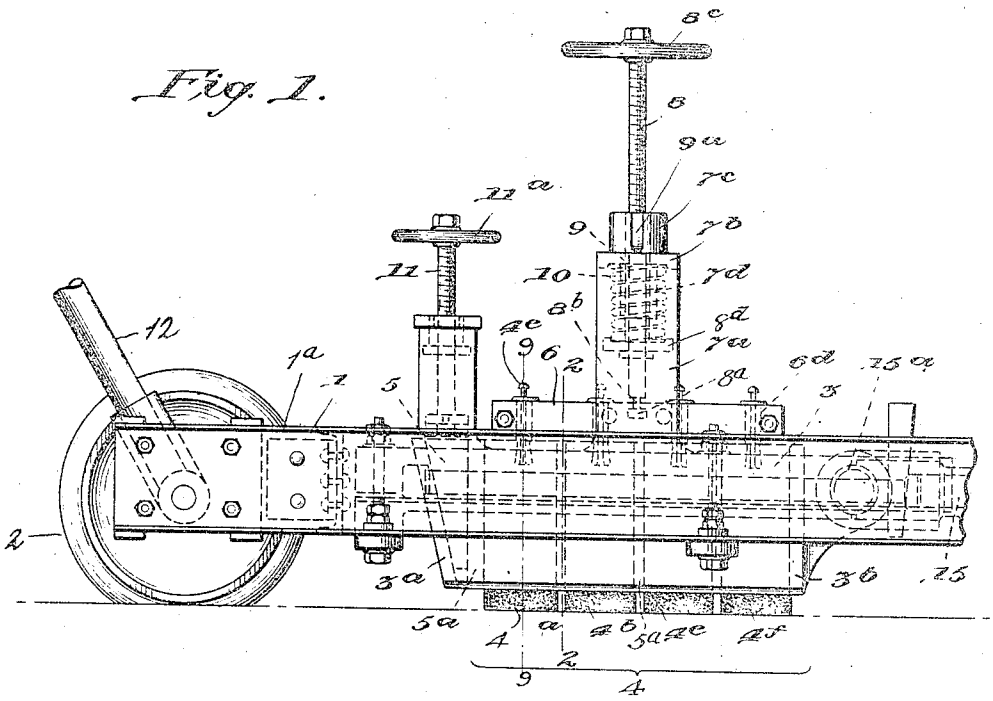


Fig. 2.

Fig. 2ª

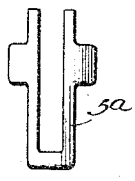


Fig. 2ᵇ

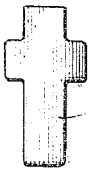
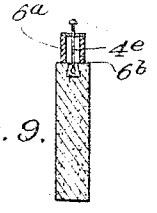
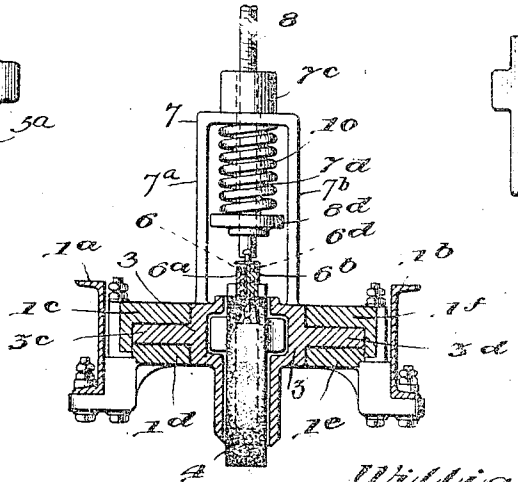


Fig. 3.





Witnesses

C. A. Grunsman.

F. F. Lowenstein.

Inventor

William D. Gherky

By Edward E. Clement

Attorney

W. D. GHERKY.

ABRASIVE ELEMENT FOR RECIPROCATING GRINDERS.

APPLICATION FILED JAN. 4, 1913.

1,095,994.

Patented May 5, 1914.

2 SHEETS—SHEET 2.

Fig. 3.

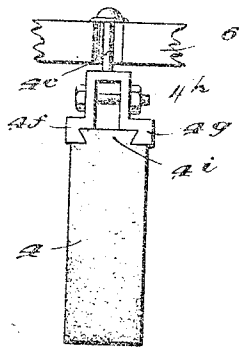


Fig. 4.

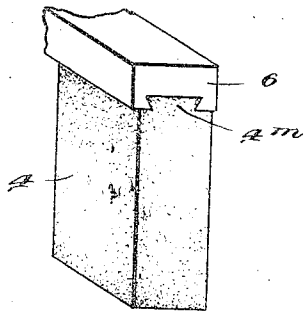


Fig. 5.

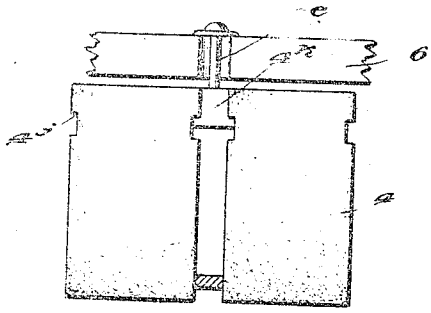


Fig. 6.

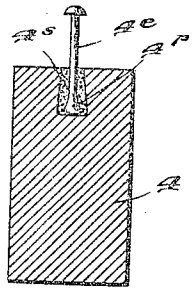


Fig. 7.

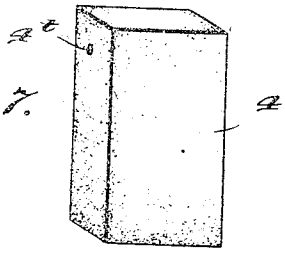
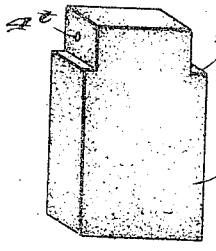


Fig. 8.



Witnesses

C. F. Brennan

F. P. Sweinstein.

Inventor

William D. Gherky.

By Edward E. Clement

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM D. GHERKY, OF PHILADELPHIA, PENNSYLVANIA.

ABRASIVE ELEMENT FOR RECIPROCATING GRINDERS.

1,095,994. Specification of Letters Patent. Patented May 5, 1914.

Original application filed June 5, 1912, Serial No. 701,929. Divided and this application filed January 4, 1913. Serial No. 740,205.

To all whom it may concern:

Be it known that I, WILLIAM D. GHERKY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Abrasive Elements for Reciprocating Grinders, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to grinding machines, and especially to the grinding elements used therein.

It contemplates certain structural improvements in the type of machine described and claimed in Letters Patent No. 944,147, granted to Henry B. Nichols, December 21, 1909, and the provision of a special form of grinding brick for use therein.

This application is a division of my copending application Serial Number 701,929, filed June 5th, 1912, and is directed particularly to cover the grinding brick as an abrasive element.

The object of my invention is to produce a grinding element of the general type shown in the Nichols Patent, which may be treated as a unit without the use of an inside frame or intermediate carriage.

I attain my object by providing a longitudinally reciprocating frame or carriage sliding in a fixed plane horizontally, and I suspend the bricks therein by means to be described so that they may be raised and lowered without raising or lowering the carriage. While grinding, the bricks are slightly clamped to prevent knocking through lost motion edgewise, the clamping mechanism being released in raising or lowering the bricks, if desired, or so lightly set as to permit vertical travel of the bricks.

Briefly stated, the means by which I obtain my object, which will be specifically described and claimed herein, include a bar extending lengthwise over and along the tops of the bricks, with means to suspend the bricks therefrom, and a feed screw carried by the reciprocating carriage, for raising and lowering the bricks through the agency of the common bar.

My invention is illustrated in the accompanying drawings in which:

Figure 1 is a side view of a portion of a grinding machine of the Nichols type, with my improvements applied thereto. Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1, and Figs. 2ª and 2ᵇ are details of spacing bars used between the grinding bricks. Figs. 3 to 8 are detailed views of different forms of suspension means for the bricks, the form shown in Fig. 6 being the same as that shown in Figs. 1 and 2. Fig. 9 is a detail sectional view on the line 9—9 of Fig. 1.

In the drawings I have illustrated only one end of the machine, comprising a portion of the frame 1, one of the tandem track wheels 2, the handle 12, and a portion of the reciprocating connecting rod 15, which is supposed to be driven back and forth horizontally by any suitable motor device, as for example that described in the Nichols Patent aforesaid, or in my own prior applications.

Referring particularly to Figs. 1 and 2, the main frame is composed of side channels 1ª and 1ᵇ, between which the carriage 3, connected by the knuckle joint 15ª with the connecting rod 15, slides back and forth in horizontal fixed guides 1ᶜ—1ᵈ—1ᵉ—1ᶠ bolted on the opposite sides of the frame 1, as best shown in Fig. 2. The carriage 3 is substantially a rectangular box open above and below with one end 3ᵇ vertical and the other end 3ª obliquely inclined for a purpose to be explained. Projecting horizontally from opposite sides of the carriage are the integral flanges 3ᶜ and 3ᵈ, which travel between the guides 1ᶜ—1ᵈ, 1ᵉ—1ᶠ. Above the carriage, and spanning its opening, is the bridge 7, having sides 7ª and a crown 7ᵇ with an upwardly projecting collar 7ᶜ slotted to receive one or more lateral projections 9ª on a nut 9 internally threaded to receive the vertical feed screw 8, by means of which the grinding elements or units are raised or lowered. This screw carries at its upper end a hand-wheel 8ᶜ, and at its lower end has a reduced neck 8ᵇ and a head 8ª, to engage the clamping bar 6.

Arranged vertically in the carriage 3 is a tandem grinding element 4 composed of a plurality of units as 4ª, 4ᵇ, 4ᶜ and 4ᵈ. These are held against lateral motion by direct engagement with the sides of the carriage 3, by which they are reciprocated back and forth along the top of the rail to be ground. In such grinding, it is necessary to provide some means for preventing motion of the bricks edgewise, that is to say in the direction of travel of the carriage. For this pur-

pose I provide an end wedge 5, one side of which is vertical and engages the end brick 4^a through a distance piece or separator 5^a; while the other side of the wedge is inclined to engage the inclined end 3^a of the carriage. The wedge is vertically movable by means of a screw 11 working in a bridge or projection on the carriage, and controlled by means of a hand-wheel 11^a. This wedge may be forced down firmly so as to force together the bricks and the interposed separators or Figs. 2^a and 2^b, against any motion, but preferably it is adjusted so that the engagement of the bricks and separators is sufficient to prevent knocking during grinding, but is insufficient to prevent raising and lowering of the bricks in the carriage. The construction and arrangement of these bricks is the characteristic and most essential feature of my invention. In all the machines heretofore used and within my knowledge, in which similar bricks are employed, they have been clamped in an inner frame or holder, which was adapted to travel vertically in slides in the carriage, but to reciprocate therewith. Such an arrangement has serious drawbacks. Not only must the excessive weight of the brick-holder be reciprocated, but it is impossible to keep out endwise play and consequent knocking between the inner holder and the carriage or outer frame. Such knocking results in rapid deterioration and serious annoyance, especially when the machine is being used at night, which the exigencies of railway traffic generally require. Moreover, such a construction causes a complication of parts and resultant increase in first cost as well as cost of maintenance.

According to my present invention, the brick-holder or inner frame is dispensed with, the bricks being merely dropped loosely into the single frame or carriage 3, slightly wedged lengthwise of the carriage to take out the knock, and held to a straight surface for the rail and for vertical adjustment by means of a common bar 6 extending above and along their upper ends. Each brick or unit is individually secured to this bar, by means which I will now describe, as such means form a part of my invention.

In Figs. 1 and 6 I have shown, and shall specifically claim herein, the preferred form of attachment or suspension device, but I also illustrate in Figs. 3—4—5—7 and 8 several modifications out of many which may be resorted to if desired, all of which are intended to be included within the scope of the generic claims appended hereto.

Referring to Figs. 1 and 6, the body of the brick 4 is provided with a stud hole 4^s made while the brick is soft, during the process of manufacture, and slightly undercut, as shown. A headed stud 4^e, preferably of metal, is inserted in the hole, with its expanded lower end 4^p at the bottom thereof. The brick and the stud or rivet are held in a jig, and Babbitt metal, lead, or other molten material poured in to fill the hole. When this material hardens the rivet or stud is integrally attached to the brick. The preferable material I employ for the filling is sulfur, as it appears to give the best results in practice, and its use avoids the need for undercutting the stud hole 4^s; also, the lower end of the stud may simply be screw-threaded or otherwise notched, for engagement with the sulfur.

Referring to Fig. 3, a stud 4^e of metal is shown secured to one side of a double clamp 4^f—4^g, which engages a dovetail projection with undercut sides, shown at 4^i. The two halves of the clamp are secured together by a rivet or bolt 4^h. In this case the dovetail is formed fore and aft, that is to say on the narrow ends of the brick.

In Fig. 4 the stud is eliminated, and the bar 6 which will be presently described is provided with a transverse dovetail channel fitting over a complementary dovetail 4^m on the upper end of the brick 4.

In Fig. 5 the stud 4^e is again employed, but is connected to a separator block 4^k lying between the bricks, and having opposite flanges engaging corresponding depressions 4^j in the bricks. In this case one stud is common to two bricks.

Figs. 7 and 8 show simple forms of brick, each with a transverse opening 4^t through it to receive a transverse pin passing through the opposite sides or ears on the common bar 6. The form in Fig. 8 in addition is shouldered at 4^v.

Returning now to Fig. 1, but referring also for modifications to Figs. 3—4—5—7 and 8, the bricks are all held in line, and are raised and lowered by means of the common bar 6. This bar is composed of two halves (in the form shown in Fig. 1) as best indicated at 6^a and 6^b in Fig. 2, the two halves having complementary semi-cylindrical channels 6^d and 6^e, the former (6^d) extending all the way through the bar from top to bottom, to receive the studs 4^e, and the latter (6^e) coming down half way from the top and of a diameter to receive the neck 8^b of the screw 8, and hold the head 8^a in the channel. The two halves of the bar may have dowels to aline them, and are bolted together as indicated in Fig. 1. By removing the bolts, not only is the bar detached from the screw 8, but it is also simultaneously detached from all the grinding units.

Attached to the screw beneath the bridge 7 is a collar 8^d, and depending from the underside of the bridge crown is a flanged sleeve 7^a. Around this sleeve, and bearing against the bridge crown at its upper end

and the collar 8ª at its lower end is a pressure spring 10, which tends constantly to force down the screw, the bar, and the bricks.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. An abrasive element for use in a machine of the class described, comprising a body with clamping faces, a grinding face, and a projecting stud or head integrally secured to the body for the purposes of adjustment.

2. An abrasive element for use in a machine of the character described comprising a block of abrasive material, having one face constituting a grinding face, and another a fastening face, the latter provided with an under-cut recess adapted to receive fastening means, fastening means within said recess and material cast within said recess around said fastening means and retaining said fastening means fixedly embedded therein.

3. An abrasive element for use in a machine of the class described comprising an elongated polygonal block of abrasive material, having one end face constituting a grinding face, side faces constituting clamping faces, and the other end face constituting a fastening face, the latter provided with a recess having walls over-hanging the bottom thereof and adapted to receive and hold fastening means, whereby the said abrasive block may be supported from above in a vertical plane.

4. An abrasive element for use in a machine of the class described comprising a polygonal block of abrasive material having one face constituting a grinding face and another a fastening face, the latter being recessed to receive fastening means, together with fastening means secured in said recess by cast sulfur.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM D. GHERKY.

Witnesses:
JAMES S. CLIFFORD,
WM. B. GOODALL.