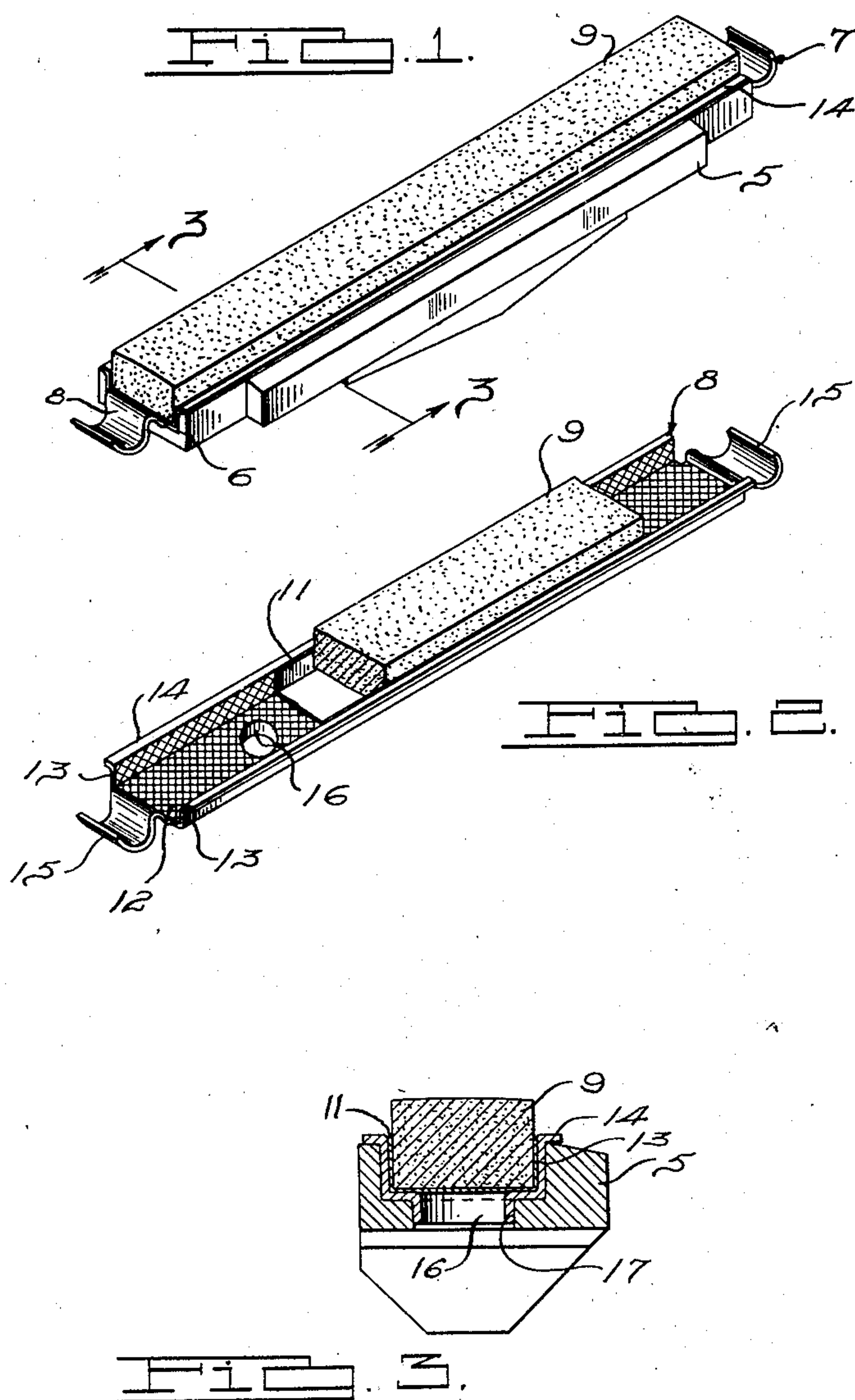


May 9, 1933.

G. M. CALVERT  
ABRASIVE STONE HOLDER

1,908,218

Filed Nov. 11, 1931



INVENTOR  
Glen M. Calvert.  
BY  
Hamm, Dickey, Pierce & Hann.  
ATTORNEYS.

## UNITED STATES PATENT OFFICE

GLEN M. CALVERT, OF GROSSE POINTE, MICHIGAN, ASSIGNOR TO MICROMATIC HONE CORPORATION, A CORPORATION OF MICHIGAN

## ABRASIVE STONE HOLDER

Application filed November 11, 1931. Serial No. 574,381.

This invention relates to improved holders for abrasive elements and particularly to a holder which is an improvement on that illustrated and described in the patent to F. J. Jeschke, No. 1,821,518 issued September 1, 1931, and assigned to the assignee of the present invention.

The holder illustrated and described in the patent was channel shaped in cross section to receive the base of the stone and constituted the means by which the stone was attached to the honing tool. The metal from which the holder was made, was comparatively soft, relative to the degree of hardness of the receiving member, which was part of the tool and so mounted as to be adjustable to permit the longitudinal tilting of the elements to conform to the slope of the inner wall of the cylinder. The sides of the channel shaped holder, when in contiguous relation to the groove in the receiving member, projected some distance above the edges of the receiving member and were advantageous in engaging the cylinder wall when the abrasive elements become worn before the hard metal of the receiving member came in contact therewith to prevent the hard metal from scoring the inner wall after the abrasive material is worn away.

I have found that the tilting of the member to permit the abrasive element to follow the longitudinal slope of the cylinder caused the abrasive elements to wear on one end faster than on the other and as a result a considerable amount of abrasive material was present on one end when the other end was worn down to the extending flanges of the channel members. Thereafter the abrasive elements could be employed for some time, the softer metal in no way interfering with the proper grinding of the cylindrical surface and was beneficial in that it reduced the wear of the abrasive material on that end of the stone while the material on the other end was worn away at a greater rate so that all the abrasive material of the elements could be utilized before the elements need be thrown away. Care, however, was exercised to prevent the wearing of the sides of the channel holder to such a degree as to

permit the hard material of the receiving member from contacting and damaging the cylinder surface.

In practicing my invention I extend the beneficial results obtained from the use of the channel shaped member by flanging the upstanding sides outwardly at right angles thereto, to reduce the height or the sides and at the same time to retain the holding effect by having the laterally extending sides engage the top surface of the receiving member. This construction not only exposes a greater depth of abrasive material but also protects the cylinder walls from the metal of the receiving member because of the laterally extending flanges which project over the top edges of the member. It was found from experiment that, when the upstanding sides of the channel member were flanged outwardly and reduced in height, the abrasive elements, when wearing faster on one end than on the other, will wear more rapidly on the one end when the end opposite thereto has the laterally extending flanges in engagement with the cylinder wall. The wearing of the abrasive material will be much more rapid than that of the metal flanges and all of the material will be worn down to the flange before one end of the flange will be worn through to expose the hard material of the retaining member, which thereby obviates the possibility of the retaining member ever engaging the cylinder wall and causing it to be scored.

The main objects of my invention are: to provide a backing member for an abrasive element which is of shallow channel section having the sides thereof extended laterally to form flanges which project over the element retaining member; to provide an adhesive substance for binding the abrasive elements to the metal member; and to provide a finish to the backing member which provides a rough surface to which the adhesive material adheres for firmly securing the abrasive element to the bottom and sides of the member.

Other objects and features of novelty of my invention will either be specifically pointed out or will become apparent when



referring, for a better understanding of my invention, to the following description in conjunction with the accompanying drawing, wherein:

5 Figure 1 is a perspective view of an abrasive element and holder mounted in a receiving member which forms part of the honing tool,

10 Fig. 2 is a perspective view of a honing element with the abrasive member and the adhesive material broken away to illustrate the relation of the member to the holder, and

15 Fig. 3 is a sectional view of the structure illustrated in Fig. 1, taken on the line 3—3 thereof.

My invention comprises in general a honing element receiving member 5 which is part of the honing tool and which is mounted therein in such manner as to have the element tiltable longitudinally of its length. A recess 6 is provided in the outer face of the member for receiving a honing element 7 which comprises a metal backing member 8 and an abrasive member 9 which is attached thereto through the medium of an adhesive material 11.

The backing member 8, as illustrated in the figures, is of shallow channel construction, being provided with a main web 12 having upstanding sides 13 which are flanged at 14 to extend laterally of the sides parallel to the plane of the web 12. The ends 15 of the web 12 are extended and bent in such shape, as illustrated in Figs. 2 and 3, as to engage the ends of the abrasive element and to receive supporting members by which the backing member is retained in fixed relation to the receiving member 5. The honing element is prevented from tilting relative to the receiving member 5 through the engagement of the sides 13 and the lateral flanges 14 with the sides and top thereof when supported thereagainst through the medium of the spring members (not shown) which engage the ends 15 of the backing member.

For preventing the relative longitudinal movement between the holding element 7 and the receiving member 5, I have provided a plurality of rearwardly extending projections 16 which are pressed from the web 12, as illustrated more clearly in Fig. 3, and which register with apertures 17 provided in the body portion of the receiving member.

After the backing member 8 has been formed as illustrated in the figure, I rough the inner surface of the channel portion by sand blasting, etching, or like methods, for the purpose of roughing the surface to provide a bond between the adhesive material and the metal so that the abrasive element 9 may be securely attached thereto. It is to be understood that I may utilize the Parkerizing process which is a method well known in the art for providing a rust-proof coating on metal to prevent its oxidation, which I

have found to be sufficiently rough to effect a bond between the adhesive material 11 and the metal. The adhesive material may be any glue, shellac or cellulose compound well known in the art to be suitable for adhering an abrasive element to a roughened metal member. The employment of the well known Parkerizing process not only provides a roughened surface for effecting the bond, but also prevents the oxidation of the metal which goes to make up the backing element.

The honing element thus constructed has the advantage, over the honing element of the above mentioned patent, of having more of the abrasive material exposed because of the flanging of the sides of the channel backing member, while at the same time the security of the holder in the receiving member is retained, because of the engagement of the same amount of surface area between the elements. In addition, the projection of the sides of the holder over the receiving member prevents the edges of the hard metal thereof from contacting with the cylinder wall which would cause it to be scored. The lateral extending flanges are of further benefit in causing the stone to be worn until it substantially engages the flanges throughout the entire length of the backing member.

While I have described and illustrated but a single embodiment of my invention, it will be apparent to those skilled in the art that various changes, omissions, additions and substitutions may be made therein without departing from the spirit and scope of my invention as set forth in the accompanying claims.

I claim as my invention:

1. A honing element for a grinding tool including, an abrasive element and a metal backing member therefor having upstanding sides which are flanged laterally at their upper ends outwardly from the element.

2. A honing element for a grinding tool including, an abrasive element, and a metal backing plate therefor of channel section having the sides thereof flanged outwardly of said channel and having the web of the channel extended and shaped to project over the ends of the element.

3. A honing element for a grinding tool including, an abrasive element, and a channel shaped backing member for the element having the channel sides flanged laterally and having the web of the channel extended and shaped to project over the ends of the element and further extended and shaped to form retaining members for holding the element on the tool.

4. An abrasive element receiving member of a grinding tool having a longitudinally disposed slot therein, in combination with a backing plate for the abrasive element made of metal and of channel shape with the side



portions flanged for extending over the top surface of the receiving member.

5. An abrasive element receiving member for a grinding tool having a longitudinally disposed slot, in combination with an abrasive element, a backing member shaped to receive said abrasive element and to fit in the groove of said retaining member, and flanges on the side of said backing element extending laterally for projecting over the top surface of said receiving member.

6. An abrasive element receiving member for a grinding tool having a longitudinally disposed slot therein, in combination with an abrasive element, a backing member shaped to receive said abrasive element and to fit in the groove of said retaining member, flanges on the side of said backing element extending laterally for projecting over the top surface of said receiving member, and longitudinal projections on said backing member for engaging the ends of said abrasive element.

7. An abrasive element receiving member for a grinding tool having a longitudinally disposed slot therein, in combination with an abrasive element, a backing member shaped to receive said abrasive element and to fit in the groove of said retaining member, flanges on the side of said backing element extending laterally for projecting over the top surface of said receiving member, longitudinal projections on said backing member for engaging the ends of said abrasive element, said extension being further projected to form members by means of which the abrasive member is attached to the tool.

8. An abrasive element receiving member for a grinding tool having a longitudinally disposed slot, in combination, with an abrasive element, a backing member shaped to receive said abrasive element and to fit in the groove of said retaining member, flanges on the side of said backing element extending laterally for projecting over the top surface of said receiving member, and an adhesive material for retaining the abrasive element in firm fixed relation to the backing member.

9. A radially adjustable abrading element receiving member for a honing tool, in combination with a channel-shaped backing member for an abrading element with the side flanges extending outwardly, and means for positioning the backing plate relative to the adjustable element.

10. A radially adjustable abrading element receiving member for a honing tool, in combination with a channel-shaped backing member for an abrading element with the side flanges extended outwardly and the web portion extended and bent downwardly to extend over the ends of the receiving member.

11. A radially adjustable abrading element receiving member for a honing tool, in combination with a channel-shaped backing

member for an abrading element with the side flanges extended outwardly and the web portions extended and bent downwardly to extend over the ends of the receiving member, and further bent to provide holding means at the ends thereof.

12. A radially adjustable abrading element receiving member for a honing tool, in combination with a channel-shaped backing member for an abrading element with the side flanges extended outwardly and the web portions extended and bent downwardly to extend over the ends of the receiving member, a portion of said web engaging the ends of the abrading element.

13. A radially adjustable abrading element receiving member for a honing tool, in combination with a channel shaped backing member for an abrading element with the side flanges extended outwardly and the web portions extended and bent downwardly to extend over the ends of the receiving member and further bent to provide holding means at the ends thereof, with a portion of said web engaging the ends of the abrading element.

GLEN M. CALVERT.