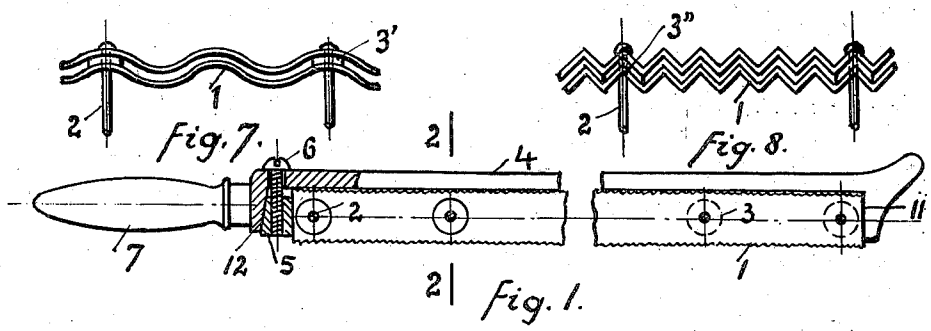
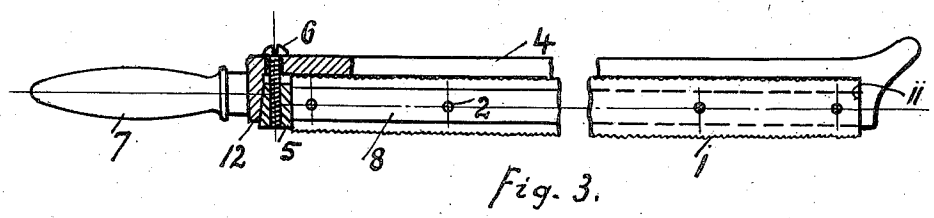
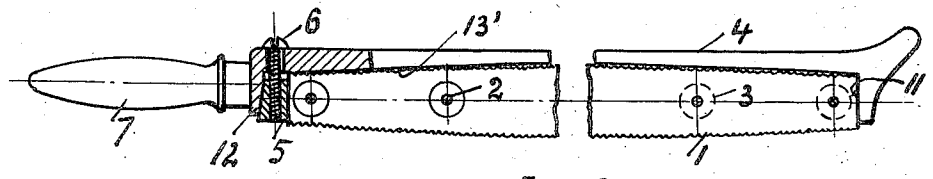
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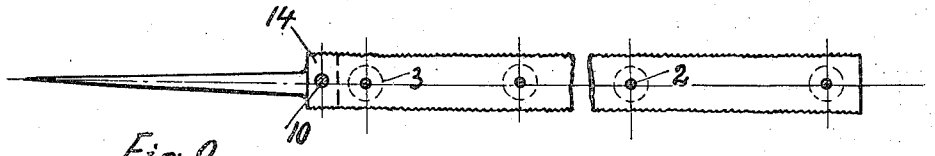
FILE AND RASP

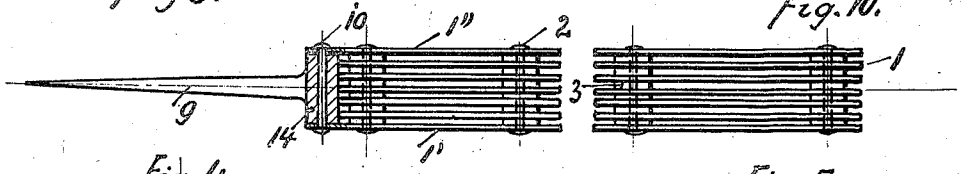
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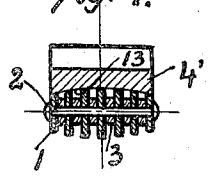


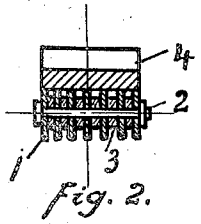


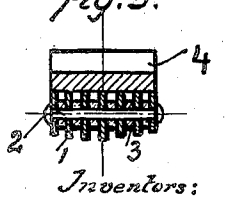












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FILE AND RASP

Simon Seifried and Ferdinand Ries, Munich, Germany

Application July 11, 1935, Serial No. 30,824
In Germany July 13, 1934

3 Claims. (Cl. 29—79)

The present invention relates to an improved file, more particularly to a file made up of a plurality of laminae.

An object of the present invention resides in the provision of a file which is self cleaning.

Another object of the present invention resides in the provision of a file composed of individual laminae which can easily be individually exchanged.

A further object of the present invention resides in the provision of a file comprising a two-faced file member and a file member holder permitting convenient exchange of the file member.

An object of this invention is to provide a file comprising a two-faced file member and a file member holder permitting exchange of the file member by one single screwing operation.

Another object of this invention is to provide a file producing powdered file dust and no filings of the customary type and which automatically removes the file powder so that brushing is not necessary.

Further and other objects of the present invention will be hereinafter set forth in the accompanying specification and claims and shown in the drawing which, by way of illustration, shows what we now consider to be a preferred embodiment of our invention.

In the drawing:

Fig. 1 is a longitudinal part sectional view of a file according to our invention.

Fig. 2 is a cross sectional view of a file according to our invention taken along line 2—2 of Fig. 1.

Fig. 3 is a longitudinal part sectional view of a modified file according to our invention.

Fig. 4 is a cross sectional view of a file according to our invention having a rounded profile.

Fig. 5 is a cross sectional view of a file according to our invention having a straight and a rounded profile.

Fig. 6 is a longitudinal part sectional view of a file according to our invention having a longitudinally curved face.

Fig. 7 is a top view of a pair of laminae having laterally corrugated cutting edges.

Fig. 8 is a top view of a pair of laminae having laterally serrated cutting edges.

Fig. 9 is a side view of a file according to our invention for direct attachment of the file handle and without file member holder.

Fig. 10 is a top view of a file according to our invention as shown in Fig. 9.

Like parts are designated by like numerals in all the figures.

Referring more particularly to the drawing: the file member is composed of a plurality of individual saw-blade-like laminae 1 which are located side by side and held together by a plurality of bolts 2, whereby distance pieces 3 consisting of washer-like steel plates are interposed between the individual laminae to permanently assure a predetermined lateral clearance between the individual laminae. The steel blades or rods 1 have finely or coarsely indented edges according to whether the file is used as a smooth file or as a rough file. One file member may be composed of a mixture of finely and roughly indented blades and can thus be adjusted for any purpose. Distance pieces and laminae may be tightly held together by providing the bolts 2 in the form of screws carrying a head on one side and a nut on the other side as shown in Fig. 2, or by riveting the bolts as shown in Figs. 4 and 5. The laminae or steel rods of which the file member is made up may also be welded together without departing from the scope of the present invention as long as there is a definite clearance maintained between the individual laminae.

The made up file member is placed into a laterally open holder 4 which has an abutment 11 at one end and an inclined face 12 at the other end; key 5 is inserted between face 12 and one end of the file member and adjustably held in position by screw 6, whereby the file member is forced against the abutment 11 and rigidly secured to the holder 4. Handle 7 is attached to the holder in the customary manner. If one cutting face of the laminae 1 is worn out, screw 6 is loosened and the file member turned around and again mounted to the holder by retightening screw 6. In the same manner, one file member may be replaced by another. It is obvious that, with the present construction, the face of the file member which is not in operation is well protected. Since holder 4 is open at the sides and the file member is of the same width as the holder, the file is suitable for filing corners.

Instead of using washer-like distance pieces, longitudinal strips 8 of steel extending substantially over the whole length of the laminae may by used as shown in Fig. 3. The width of the strips is smaller than the width of the file laminae leaving a freely projecting part of the laminae at both sides.

The file members may be composed of laminae of different widths and assembled to form a rounded operating surface on one side and a flat surface on the other side as shown in Fig. 5 or to form rounded surfaces on both sides as shown in Fig. 4. In the latter case, file holder 4' must

have a concave face 13, and a turning around of the file member is possible.

The file member may also be longitudinally rounded as shown in Fig. 6, whereby the width in the center of the individual laminae is greater than that at their ends. If both sides of the file member are longitudinally rounded or tapered, the inner face 13' of the file member holder must be shaped accordingly; such a file member can also be easily turned around and be provided with two filing faces, whereby the one not in use is well protected.

The individual laminae may be laterally corrugated as shown in Fig. 7 or laterally serrated as shown in Fig. 8. The distance pieces 3' and 3'' are then shaped accordingly as is shown in Figs. 7 and 8.

The spike 9 may also be directly attached to the file member as shown in Figs. 9 and 10. In this case, spike 9 is carried by a transverse part 14 which is riveted between the exterior blades 1' and 1'' by rivet 10. Blades 1' and 1'' are then somewhat longer than the rest of laminae 1.

The output of a file according to our invention is approximately three times as great as that of a customary file of equal weight, no matter for what kind of material it is used. The filing face of our improved file lasts many times as long as that of customary files. High quality material can be conveniently used for the individual blades or cutting edges thereof, and these can be hardened and rehardened without difficulty. All this constitutes great improvements of our new file construction as compared with conventional files.

The filing face is not filled up by file dust, even when filing soft alloys, bronze, aluminum, lead, tin, or other soft materials; this is because the material is reduced to a fine powder, and the vibration of the individual file blades causes a self cleaning of the file while filing. The distance between the individual blades and the distribution of bolts 2 is of decisive influence on the creation of the vibrations and the self cleaning effect and must be in proportion to the thickness and length of the blades and the purposes for which the file is used.

While we believe the above described embodiments of our invention to be preferred embodiments, we wish it to be understood that we do not desire to be limited to the exact details of design and construction shown and described, for obvious modifications will occur to a person skilled in the art.

What we claim and desire to secure by Letters Patent of the United States, is as follows:

1. In a file, a plurality of individual longitudinal file elements each having a file surface, means rigidly holding said file elements in position parallel to one another for forming a unified, selfcontained, individual file member composed of said elements, for forming a file surface composed of the file surfaces of said individual elements, and for maintaining a predetermined clearance between the file surfaces of said individual elements, and a holder provided with a handle for holding said file member, said holder having a plane abutment at each end, said file member also having plane ends, one of said abutments contacting one plane end of said file member, and a key contacting the other of said abutments and the other plane end of said member for forcing the first mentioned end of said member to its abutment and for securing said member to said holder and permitting easy removal of said member from said holder.

2. In a file, a plurality of individual longitudinal file elements each having at least two file surfaces, means rigidly holding said elements in position parallel to one another for forming a selfcontained, individual, unified file member having at least two file surfaces composed of the file surfaces of said individual elements and for maintaining a predetermined clearance between the file surfaces of said individual elements forming one file surface, and a longitudinal holder for removably holding said file member, said holder having a longitudinal inside surface and means for removably securing said file member to said holder, whereby one of said composed file surfaces is adjacent to and protected by said inside surface.

3. In a file, a plurality of individual longitudinal file elements of different width each having at least two file surfaces, means rigidly holding said elements in position parallel to one another for forming a selfcontained, individual, unified file member having at least two rounded transverse file surfaces composed of the file surfaces of said individual elements and for maintaining a predetermined clearance between the file surfaces of said individual elements forming one file surface, a longitudinal holder for removably holding said free member, said holder having a longitudinal transversely concave-shaped inside surface and means removably securing said file member to said holder, whereby one of said rounded file surfaces is adjacent to and protected by said transversely concave-shaped inside surface.

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