

(No Model.)

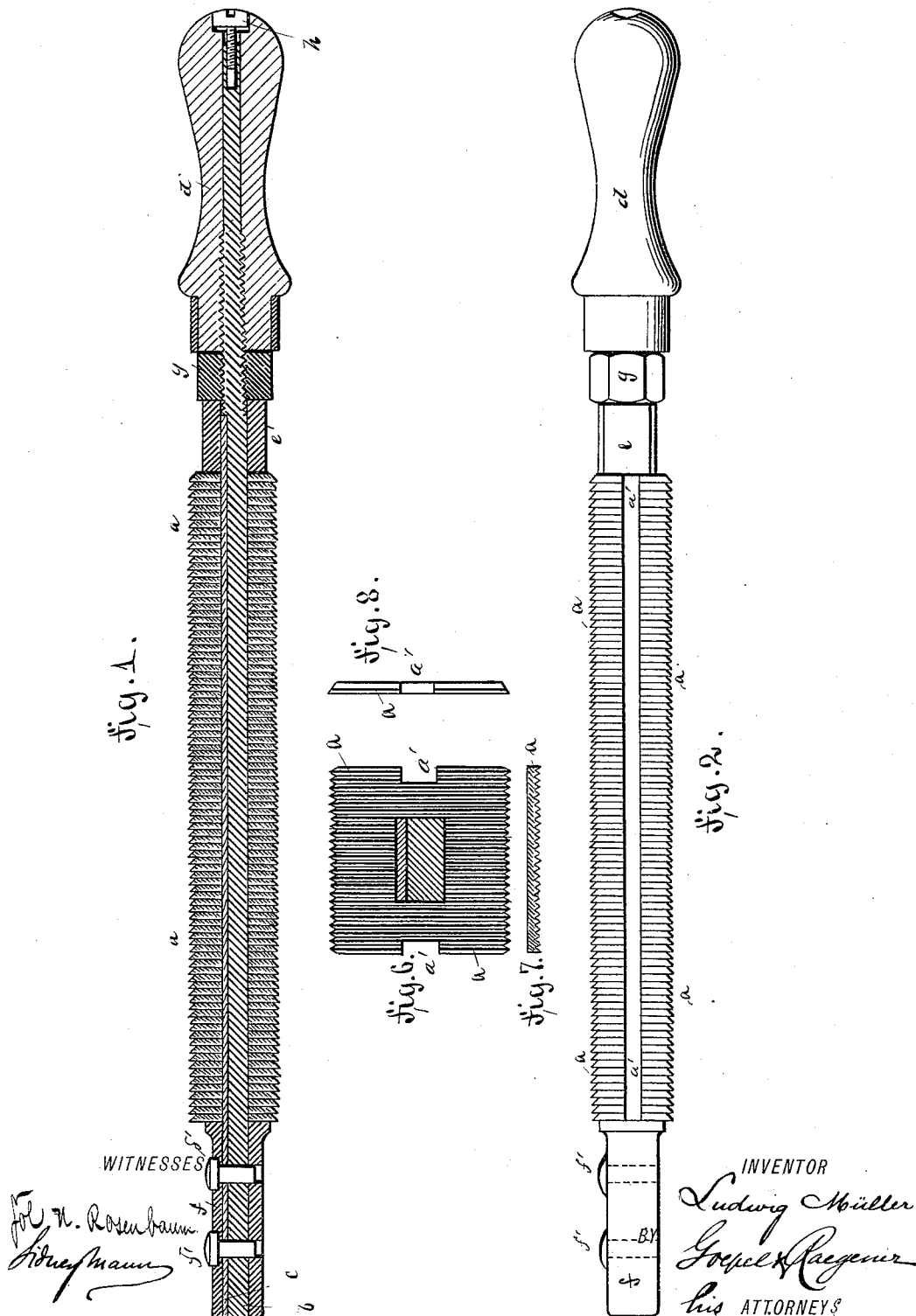
2 Sheets—Sheet 1.

L. MÜLLER.

FILE.

No. 348,290.

Patented Aug. 31, 1886.



(No Model.)

L. MÜLLER.

2 Sheets—Sheet 2.

FILE.

No. 348,290.

Patented Aug. 31, 1886.

fig. 3.

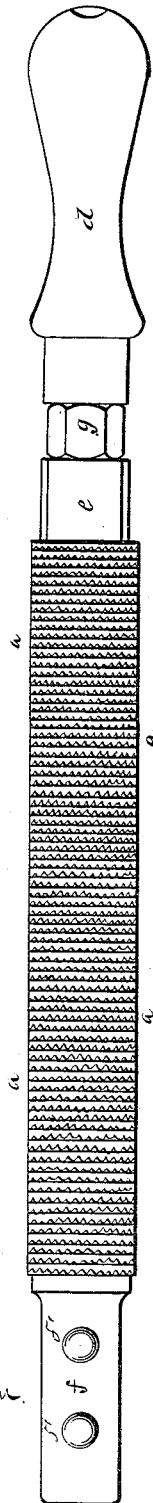


fig. 4.

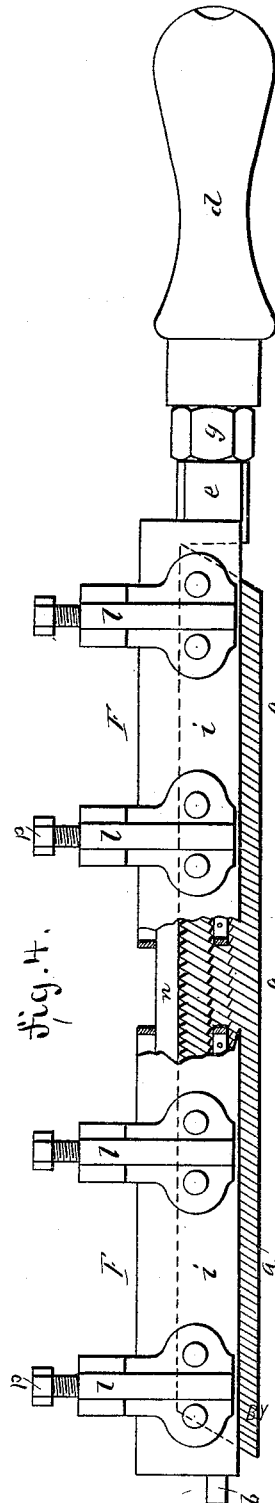
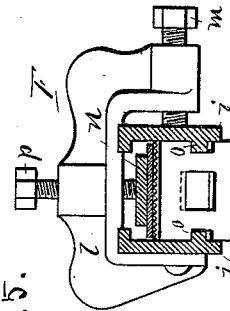


fig. 5.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## FILE.

**SPECIFICATION** forming part of Letters Patent No. 348,290, dated August 31, 1886.

Application filed May 11, 1886. Serial No. 201,829. (No model.) Patented in Germany January 1, 1884, No. 27,846; in England May 21, 1884, No. 8,006; in France May 30, 1884, No. 162,465; in Belgium May 30, 1884, No. 65,329; in Austria-Hungary July 30, 1884, No. 20,574 and No. 34,261; in Denmark December 20, 1884, No. 1,873; in Sweden February 10, 1885, and in Norway April 1, 1885.

*To all whom it may concern:*

Be it known that I, LUDWIG MÜLLER, of Dresden, in the Kingdom of Saxony and Empire of Germany, have invented certain new and useful Improvements in Files, (for which Letters Patent have heretofore been granted to me in Germany, No. 27,846, dated January 1, 1884; in France No. 162,465, May 30, 1884; in Belgium No. 65,329, May 30, 1884; in Great Britain No. 8,006, May 21, 1884; in Austria-Hungary No. 20,574 and No. 34,261, July 30, 1884; in Denmark No. 1,873, December 20, 1884; in Sweden February 10, 1885, and in Norway April 1, 1885,) of which the following is a specification.

The invention relates to an improved construction of files, so that the teeth can be sharpened on the surface of a grindstone without tempering the same at a considerable saving of time and labor; and the invention consists of a file the body of which is formed of a series of steel plates or teeth which have beveled and serrated edges, a central opening, and side recesses. Through the center openings of the steel plates or teeth is passed a stock that is provided with a handle at one end and a detachable abutment at the other end, the steel plates or teeth being locked to the stock by a longitudinal feather or key and a clamping device interposed between the teeth and the handle.

The invention consists, further, of a clamping-frame for sharpening the plates or teeth of the file, said frame being composed of side plates having longitudinal tongues fitting into the side recesses of the steel plates, and a longitudinal top plate and clamps having central and side screws by which the side and top plates are set to the steel plates, so as to hold them in inclined position for sharpening them on a grindstone.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my improved file. Fig. 2 is a side elevation. Fig. 3 is a top view; Fig. 4, a side elevation, with parts broken away, of the file and its clamping-frame, showing the file in position for sharpening its steel plates or teeth. Fig. 5 is a vertical transverse section of Fig. 4. Fig.

6 is a vertical transverse section of the file, and Figs. 7 and 8 are respectively a horizontal section and an end view of an individual steel plate or tooth of the file.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, *a a* represent a series of steel plates or teeth, which form together the body of my improved file. Each steel plate or tooth *a* is beveled at two opposite ends and ribbed at one side so as to form beveled serrated edges at opposite ends of each tooth. An opening of oblong shape is arranged at the center of each steel plate or tooth, *a*, through which a stock, *b*, of the same width but somewhat smaller height is passed. The straight intermediate sides of the steel plates or teeth *a a* are provided with recesses *a' a'*, as shown in Figs. 2, 6, and 8. The stock *b* is provided at one end with a threaded shank, *b'*, to which a handle, *d*, is applied, by means of a countersunk screw, *h*, that is screwed into the socket-shaped end of the shank *b'*, as shown in Fig. 1. Between the handle *d* and the body of the steel plates or teeth *a* is interposed a sleeve, *e*, and a screw-nut, *g*, which latter can be set forward or backward on the threaded shank of the stock, so as to clamp the steel plates or teeth rigidly together against a sleeve-shaped abutment, *f*, that is attached to the outer end of the stock *b*. A key or feather, *c*, is inserted between the stock *b* and the centrally-recessed steel plates or teeth *a a*, and extended longitudinally through all the central openings of the teeth *a* and through the abutment *f*. The abutment *f* is attached to the end of the stock *b* and the feather *c* by rivets or screws *f'*, which are passed transversely through the same and the abutment, as shown in Fig. 1, so as to support it rigidly in position and permit the clamping of the body of steel plates or teeth *a* between it and the clamping device between the handle and steel plates. By removing the abutment the stock can be removed from the steel plates and taken apart for replacing one or more of the individual steel plates in case it should be required.

The file can be used at the top and bottom

sides in the usual manner. When the teeth become dull by use, the rivets *f'* and abutment *f* are detached and the feather *c* removed, so that all the steel plates or teeth *a* can be set  
5 into an inclined position to the stock *b*, as shown in Fig. 4. In this position they are placed into a clamping-frame, *F*, that consists of two side plates, *i*, a top plate, *n*, and transverse clamps *l*. The side plates, *i*, are provided with longitudinal tongues *o*, which fit  
10 into the side recesses, *a'*, of the steel plates or teeth *a*, as shown in Figs. 4 and 5.

Between the top plate, *n*, and the steel plates or teeth *a* is interposed a rubber strip that  
15 protects the upper teeth of the steel plates *a*. The side plates, *i*, and top plate, *n*, are rigidly secured to the side recesses and top part of the steel plates *a* by the U-shaped clamps *l*, which are provided with central screws, *p*, for the top  
20 plate, and end screws, *m*, for the side plates, as shown clearly in Figs. 4 and 5.

When the steel plates *a* are rigidly secured in inclined position in the clamping-frame *F*, the lower beveled edges of the steel plates are  
25 in one and the same plane, so that the edges can be quickly and conveniently sharpened while in this position upon the surface of the grindstone without requiring tempering. When one side of the file is thus sharpened  
30 the body of the steel plates is detached from the clamping-frame and the same turned on the stock *b* into an inclined position opposite to the former position of the same, so that the upper edges are in one plane. The body  
35 of steel plates is then again placed in the clamping-frame *F*, but in such a manner that the sharpened edges are at the top and the unsharpened edges at the bottom, the steel plates being then clamped again by the screws *m* and  
40 *p*, as before, so that the unsharpened edges are in one plane and can be readily sharpened on the grindstone. The sharpening of the teeth of the file is thus accomplished with great facility, as it requires simply the change of  
45 position of the teeth from a position at right angles to the stock into an inclined position thereto and back again, and the teeth sharp-

ened without tempering, while a very powerful efficient double file is obtained.

Having thus described my invention, I claim 50 as new and desire to secure by Letters Patent—

1. A file consisting of a supporting-stock, a series of steel plates or teeth having central openings, and side recesses, a feather or key  
55 interposed between the stock and steel plates, and an abutment at one end of the stock, and a clamping device attached to the other ends of the stock for clamping the teeth in position on the stock, substantially as set forth.

2. The combination of a supporting-stock, 60 a series of steel plates or teeth having central openings and side recesses, a feather or key interposed between the stock and the steel plates, a sleeve-shaped abutment attached to the outer end of the stock and key, a handle  
65 attached to the opposite end, and a clamping-sleeve and screw-nut interposed between the handle and the steel plates or teeth, substantially as set forth.

3. In a file, a steel plate or tooth having beveled and serrated top and bottom edges, a central opening, and side recesses, substantially as  
70 set forth.

4. The combination, with a stock having a longitudinal recess and a series of steel plates  
75 or teeth having central openings and side recesses, of a clamping-frame formed of side plates having longitudinal tongues fitting into the side recesses of the teeth, a top plate and U-shaped clamps having set-screws for the  
80 side and top plates, substantially as set forth.

5. A clamping-frame for supporting the file-plates while sharpening the same, consisting of side plates having longitudinal tongue, and a top plate and transverse U-shaped clamps  
85 having set-screws for the side and top plates, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

LUDWIG MÜLLER.

Witnesses:

OTTO WOLFF,

PAUL DRUCKMÜLLER.