

J. HAPTONSTALL.

File.

No. 166,868.

Patented Aug. 17, 1875.

Fig. 1.

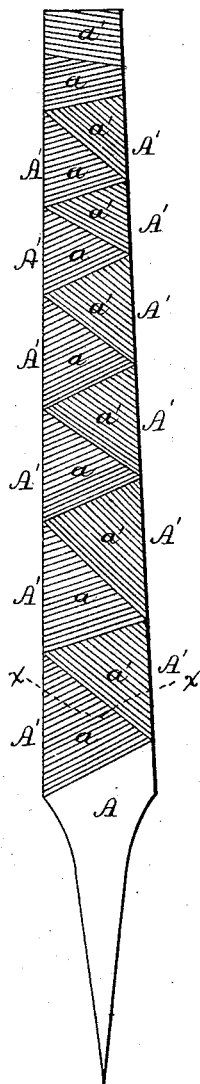


Fig. 2.

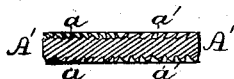


Fig. 3.



WITNESSES=  
Jas. Hutchinsson  
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INVENTOR.  
J. Haptonstall, by  
Prindle & Co. his Attys

# UNITED STATES PATENT OFFICE.

JOHN HAPTONSTALL, OF ADEL, IOWA.

## IMPROVEMENT IN FILES.

Specification forming part of Letters Patent No. **166,868**, dated August 17, 1875; application filed July 19, 1875.

*To all whom it may concern:*

Be it known that I, J. HAPTONSTALL, of Adel, in the county of Dallas and in the State of Iowa, have invented certain new and useful Improvements in Files for Drawboring Shot-Guns; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is a plan view of my improved file. Fig. 2 is a cross-section of the same upon line *xx* of Fig. 1; and Fig. 3 is a like view of a file used for drawboring gun-barrels, in which are embodied the same principles.

Letters of like name and kind refer to like parts in each of the figures.

In the use of files for finishing metallic surfaces great difficulty has been experienced in producing an even finish with the files commonly employed, in consequence of their liability to form tooth marks or scratches, the teeth of such files being arranged in regular order from end to end, and in most instances following each other in such manner as to cause the rear teeth to increase rather than remove such marks. This is more especially true with regard to files employed for drawboring gun-barrels, their position within the same being fixed and incapable of such variation as is practicable in other kinds of work.

To remedy these difficulties is the design of my invention, which consists in a file having

its abrading-surface formed by two series of diagonal teeth, which are arranged in alternate sections and have relatively opposite angles, substantially as and for the purpose hereinafter specified.

In the annexed drawings, A represents a file, which has any desired shape in cross-section, and is provided with one or more faces, as may be deemed best. Upon the face of the file A are provided two series of teeth, *a* and *a'*, which are each formed of single cuts, are arranged in alternate sections A' and A', and have relatively opposite angles, as shown. As thus constructed the cut of the teeth of each section will be in an opposite direction from that of the adjacent sections, whereby each section will correct errors of finish made by those in front and prevent the formation of scratches.

Having thus fully set forth the nature and merits of my invention, what I claim is—

As a new article of manufacture, a file having its abrading surface or face formed by two series of diagonal teeth, which are arranged in alternate sections and have relatively opposite angles, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of June, 1875.

JOHN HAPTONSTALL.

Witnesses:

J. B. WHITE,  
J. M. LANDIS.