

# UNITED STATES PATENT OFFICE.

CRAWFORD M. FAIRBANKS, OF LINCOLN, RHODE ISLAND.

## FILE.

SPECIFICATION forming part of Letters Patent No 371,184, dated October 11, 1887.

Application filed March 17, 1886. Serial No. 195,578. (No model.)

*To all whom it may concern:*

Be it known that I, CRAWFORD M. FAIRBANKS, of Lincoln, in the State of Rhode Island, have invented a new and Improved File; and I do hereby declare that the following specification is a full, clear, and exact description thereof.

File-blanks brought into shape by rolling or forging when hot have remaining upon their surface a scale or coating of ferro oxide which it is necessary to remove before cutting the teeth. This scale or oxide has heretofore been removed from file-blanks by grinding; but such grinding not only removes the scale or oxide, but more or less of the metal below it. The percentage of metal thus unnecessarily removed will of course vary somewhat according to the thickness and weight of the blank, and is taken from the exterior surface, which is, from its character, I believe, adapted to furnish the strongest and most durable teeth.

To thoroughly remove the oxide from the blanks without disturbing or removing the exterior surface of the metal below it and secure superior teeth, also to save the loss of metal and expense of grinding, are the objects of my

invention. This I accomplish by submitting the file-blank to the action of an acid solution before the cutting of the teeth thereon, which completely removes the oxide, but does not in any way affect the exterior surface of the metal. This removal of the scale may in some cases, particularly in making small files, be effected before the bar has been reduced to its ultimate shape for cutting the teeth, the bar being rolled cold after the scale is removed.

I prefer sulphuric acid, although other acids may be used to make the solution. The time required for the blanks to remain in the solution will of course depend upon its strength and temperature, and can be readily ascertained by the workmen in charge.

What I claim as my invention, and desire to secure by Letters Patent, is—

A file having its teeth cut upon the metal surface exposed by the removal by chemical agents of the scale or oxide from the surface of a rolled or hammered blank.

CRAWFORD M. FAIRBANKS.

Witnesses:

WALTER B. VINCENT,  
M. C. HERSEY.