UNITED STATES PATENT OFFICE.

JOHN F. BUDKE, OF CANNONSBURG, PENNSYLVANIA, ASSIGNOR TO THE CANONSBURG IRON AND STEEL COMPANY, OF SAME PLACE.

MANUFACTURE OF SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 574,781, dated January 5, 1897.

Application filed February 26, 1895. Serial No. 539,768. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN F. BUDKE, a citizen of the United States, residing at Cannonsburg, in the county of Washington and State of Pennsylvania, have invented or discovered certain new and useful Improvements in the Manufacture of Sheet Metal, of which improvements the following is a specification.

In the present practice of making metal sheets the sheet-bars are heated to a very high temperature, broken down, and rolled to the desired gage. The sheets are then pickled, washed, and cold-rolled, if a finished sheet is desired. The sheet-bars are heated to a much higher temperature than is required for rolling, for the reason that cinder and other impurities become embedded in the bars during their manufacture and it is desired to produce a heavy oxid scale which will surround and adhere to the cinder and other impurities and in flaking off during the rolling operation will carry the impurities with it. This method is very expensive on account of the loss of metal by excessive oxidation, and is only partially effective, as it will not remove the deeply-seated impurities, which become further embedded during the breaking down and rolling of the bars to sheets, and cannot be removed by the pickling of the sheets, thereby rendering the sheets unfit as first-class material.

The object of the present invention is to provide for the removal of the cinder and impurities from the sheet-bars prior to heating for breaking down, and in general terms the invention consists in the method hereinafter more fully described and claimed.

In the practice of my invention the sheet-bars are produced in the usual or any suitable manner. The bars are then placed in an acid-bath of sufficient strength to act upon and remove the cinder and other impurities, leaving the bars clean and in good condition. The bars are next washed to remove and neutralize the acid and placed in a heating-furnace, where they are heated not above a good rolling temperature, as the formation of an oxid scale or coating is not necessary or desirable. After the sheets have been reduced to the desired gage, *i. e.*, a gage such that subsequent treatment will produce the finished gage, they are pickled, washed, and cold-rolled in the usual manner.

I have found that acid which has become useless for cleaning the sheets is well adapted for cleaning the sheet-bars, so that the additional step adds very little to the cost of production of the sheets, and this added cost is more than compensated for in the saving resulting from the lower heating of the bars and the reduced percentage in defective sheets.

I have found in the practice of my invention that a loss of sheets due to impurities embedded in the surface of the same is practically avoided, and that the sheets come from the rolls with smooth surfaces of uniform color.

I claim herein as my invention—

As an improvement in the art of manufacturing iron or steel sheets, the method herein described, which consists in pickling the sheet-bars for the purpose of removing cinders or other impurities from the surface thereof, washing the bars, heating them to a good rolling-temperature, reducing them by rolling to approximately the finished gage, pickling and washing the sheets, and finally reducing them to the finished gage, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JOHN F. BUDKE.

Witnesses:

DARWIN S. WOLCOTT,

F. E. GAITHER.