

No. 644,574.

Patented Mar. 6, 1900.

E. I. BRADDOCK.
METHOD OF PICKLING METAL STRIPS.

(Application filed Nov. 3, 1899.)

(No Model.)

Fig. 1.

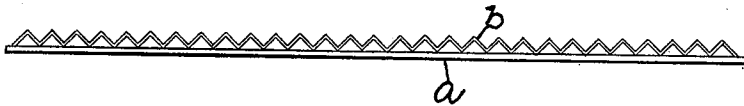
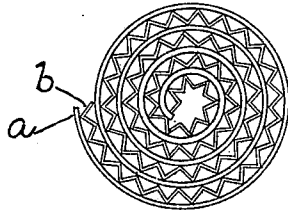


Fig. 2.



WITNESSES.

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METHOD OF PICKLING METAL STRIPS.

SPECIFICATION forming part of Letters Patent No. 644,574, dated March 6, 1900.

Application filed November 3, 1899. Serial No. 735,697. (No specimens.)

To all whom it may concern:

Be it known that I, EDWARD I. BRADDOCK, a citizen of the United States, residing in Winchester, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Methods of Pickling Metal Strips, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a novel method of pickling substantially long strips, sheets, and like pieces of iron or steel, whereby the said pieces of metal may be economically and efficiently pickled in a substantially small tank or vat.

My invention is particularly well adapted for pickling iron strips, sheets, and like pieces of comparatively great length—as, for instance, pieces or strips hundreds of feet in length.

In accordance with this invention the iron or steel strip, sheet, &c., is rolled into the form of a coil and the convolutions are separated from one another by a flexible separator, which is coiled simultaneously with the metal strip and makes contact with adjacent convolutions of said metal strip at different points and which may and preferably will be a corrugated strip, sheet, or piece of copper or lead. The iron strip, sheet, &c., when coiled, as described, with its convolutions separated from one another by the flexible separator is immersed in the pickling-bath, which effectively acts on both sides of the convolutions, removing the scale therefrom, and when sufficiently or properly pickled the coil is removed from the bath and unwound from the separator and preferably wound into the form of a coil ready for use. The flexible separator may be then coiled up with a new strip, sheet, or piece of iron or steel to be pickled.

Figure 1 represents a piece or strip of iron or steel which is to be pickled and a corrugated-metal separator laid upon the same in position to be coiled, and Fig. 2 represents the parts shown in Fig. 1 as rolled into the form of a coil ready for dipping in the pickling-bath.

Referring to Fig. 1, *a* represents a strip, sheet, or like piece of iron or steel to be

pickled by immersion in a suitable bath, and *b* represents a corrugated strip, sheet, or like piece of copper or other metal substantially unacted upon by the pickling-bath. These strips, sheets, &c., are rolled into the form of a coil, substantially as represented in Fig. 2, and when thus assembled the said coil is immersed in the pickling-bath. The corrugated strip, sheet, &c., *b* constitutes one form of flexible separator, which prevents contact of the adjacent or successive convolutions of the coiled strip *a*, and thereby affords opportunity for the pickling solution to act equally on both sides or surfaces of the strip or sheet *a* and thoroughly cleanse the same, and the surface-contact of the separator with the sheet *a* is made small, so that the pickling solution can act on the parts of the sheet or strip *a* with which the separator makes contact. In this manner strips or pieces of iron or steel hundreds of feet in length can be pickled by immersion in a tank or vat of substantially small size, thereby enabling long lengths of metal to be treated in manufacturing plants having limited floor area or space. I may prefer to make the flexible separator as a corrugated sheet, strip, or piece of metal; but I do not desire to limit my invention to the use of a flexible separator thus made, as it may be made of other materials and in other forms—as, for instance, pieces or bars of wood joined by copper or other wires.

The coils (shown in Fig. 2) when properly pickled are removed from the bath and may be placed upon a suitable spindle and the two parts of the coil unwound, and the pickled strip, sheet, &c., may be wound upon a suitable reel, and the flexible separator may be wound on a separate reel. In Fig. 2 the strip or sheet *a* and the flexible separator *b* are shown as coiled upon themselves; but in practice it may be desirable to coil the same upon a reel and immerse the coil and reel in the pickling solution, in which case the treated metal strip, &c., and the flexible separator may be readily and quickly unwound from the reel.

I claim—

1. The method of pickling strips, sheets, &c. of iron or steel, which consists in rolling the iron or steel strip into the form of a coil, in-

terposing between the convolutions of said coil a separator, and dipping the coil thus formed in a pickling-bath to cleanse the same, substantially as and for the purpose specified.

- 5 2. The method of pickling substantially-long strips, sheets, &c. of iron or steel, which consists in simultaneously rolling the substantially-long strip, sheet, &c. of iron or steel to be pickled, and a flexible separator, into
10 the form of a coil in which the flexible separator is interposed between successive or adjacent convolutions and makes contact there-

with at different points, dipping the coil thus formed into a pickling solution, removing the coil from the pickling solution, and unwinding the pickled strip, sheet, &c. from the separator, substantially as described. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD I. BRADDOCK.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.