No. 686,842. Patented Nov. 19, 1901.

C. P. BYRNES.

PICKLING BATH.

(Application filed Sept. 25, 1900.)

(No Model.)

Fig. 1.

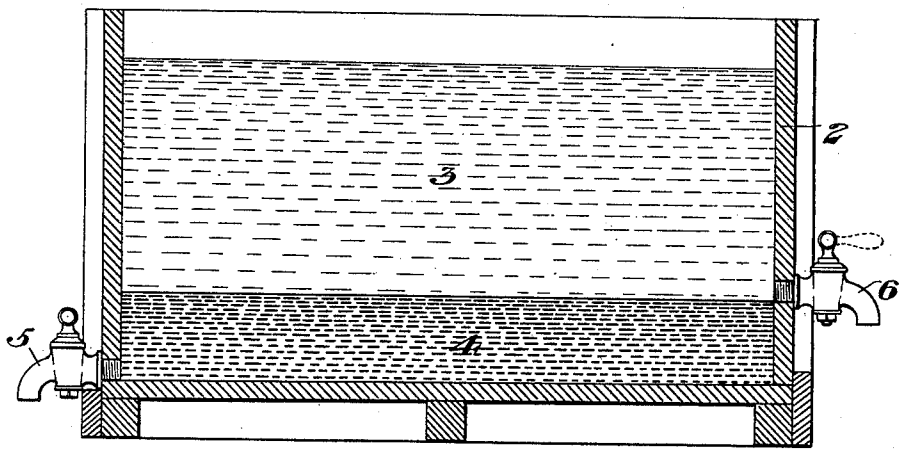
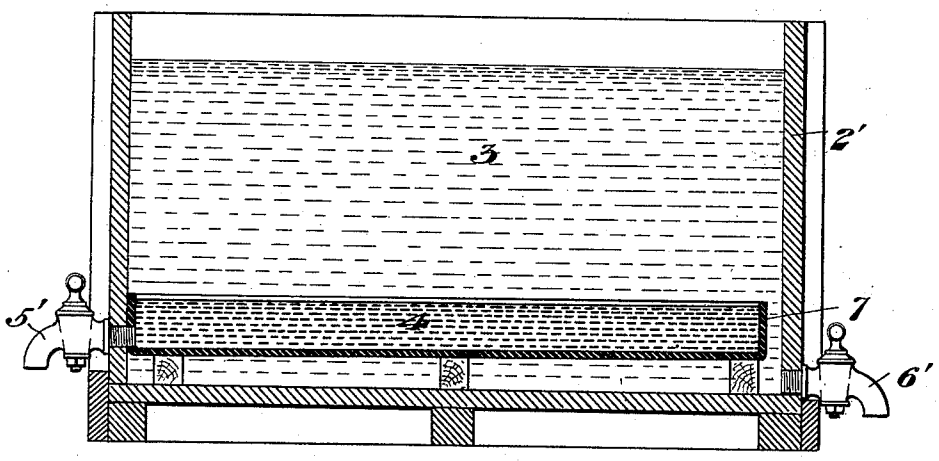


Fig. 2.



WITNESSES

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PICKLING-BATH.

SPECIFICATION forming part of Letters Patent No. 686,842, dated November 19, 1901.

Application filed September 25, 1900. Serial No. 31,031. (No specimens.)

To all whom it may concern:

Be it known that I, CLARENCE P. BYRNES, of Sewickley, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Pickling-Baths, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section showing a pickling-bath arranged in accordance with my invention, and Fig. 2 is a similar view showing a modified form.

My invention relates to the pickling of metal, and is designed to reduce the cost of this operation by preventing the pickling fluid from acting upon the oxid or other scale which drops from the metal being treated and accumulates in the bottom of the bath-receptacle.

To that end the invention consists in providing such a bath with a lower layer consisting of another and heavier liquid into which the scale or oxid will fall, and thus be shielded from the action of the bath fluid.

It further consists in using a lower layer of a fluid which is of greater specific gravity than the main bath fluid and is also substantially inert toward the bath fluid and the scale or oxid.

In the drawings, referring to the form of Fig. 1, 2 represents a pickling-tank, which may be of any desirable form and contains the pickling-bath 3. I provide this bath with a lower layer 4 of a liquid of greater specific gravity than the bath liquid and which in the case of the ordinary pickling-baths is preferably carbon disulfid, though other members of the same chemical group, such as chloroform, may be used, or any other liquid which is of greater specific gravity than the acid-bath, which is ordinarily formed of dilute sulfuric acid. The tank may be provided with draw-off cocks 5 and 6 for the different fluids and which may be lined with rubber or composed of any suitable material.

In carrying out the step of pickling the metal is immersed in the bath in the usual manner, and the oxid or scale dropping from the metal falls to the bottom and lies in a layer of non-active fluid, so that the acid-bath exerts its full strength in performing the pickling operation.

The apparatus may be widely varied. Thus in Fig. 2 I show the tank as provided with an inner tray 7 to contain the layer of heavier liquid. This tray may either be lowered into the tank after providing it with the heavier liquid or may be retained in the tank and provided with a suitable draw-off cock 5'.

The advantage of my invention lies in preventing the pickling solution from diminishing in strength by acting uselessly upon the scale or oxid which accumulates in the bottom.

The acid used in the pickling-bath, as well as the liquid in the lower layer, may be varied without departing from my invention as set forth in the claims.

I claim—

1. A pickling-bath having a lower layer consisting of a liquid different from the bath fluid and of greater specific gravity than said fluid; substantially as described.

2. A pickling-bath having a lower layer of a liquid which is substantially inert toward the bath liquid, and of greater specific gravity than said bath liquid; substantially as described.

3. A metal-pickling bath having a lower layer of a heavier liquid which is substantially inert toward the bath liquid and the metal scale or oxid, said heavier liquid being of less specific gravity than said scale; substantially as described.

4. A metal-pickling bath having a lower layer of carbon disulfid; substantially as described.

In testimony whereof I have hereunto set my hand.

CLARENCE P. BYRNES.

Witnesses:
H. M. CORWIN,
L. A. CONNER, Jr.