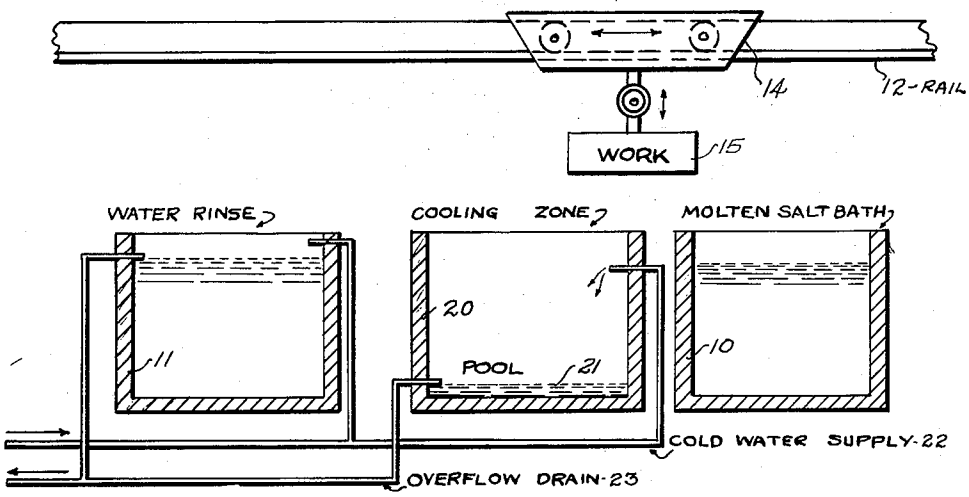
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METAL CLEANING METHOD

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METAL CLEANING METHOD

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1 Claim. (Cl. 134—30)

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This application relates to the cleaning of metal and particularly to the cleaning by molten salt baths.

Patent No. 2,458,661 describes a composition and process for cleaning of metal by means of molten salt baths. The molten salt bath of that patent is of the alkali metal salt type, and the specific formula of that patent is as follows: 1.5–3.0 parts of sodium hydroxide, 1 part of sodium nitrate, and 0.1–0.5 part of sodium chloride, all by weight.

In the process of that patent, work pieces are first immersed in a molten salt bath of the above formula and thereafter immersed in a water rinse bath and thereafter immersed in a subsequent oxide removal bath, such as a weak acid bath. This application relates to that process generally, but introduces into the series of steps or baths, an additional step and apparatus for such additional step which will hereafter be described upon reference to the following specification and to the appended drawing.

In such drawing the single figure diagrammatically illustrates apparatus for cleaning of metal by the process of the aforesaid patent, as supplemented by the improvement of this application.

Referring to the drawing, it will be observed that at 10 is shown a molten salt bath which may be of the character described in the aforesaid patent. At 11 is shown a water rinse bath into which the work pieces emerging from the molten salt bath are generally immersed for purposes of rinsing, with such water rinse bath being equipped with a conventional cold water inlet and an overflow pipe leading to a drain for maintaining the water rinse bath at a high enough level for complete immersion of the work pieces.

Above the baths 10 and 11 is shown a rail 12 along which rolls a conveyor 14 which suspends the work piece 15 and permits it to be lowered into and lifted from the baths 10 and 11. The apparatus thus far described is conventional and has long been well known for employing the process of the aforesaid patent. We now proceed to a description of the novel means of this application.

Between the salt bath 10 and the rinse bath 11 is shown a cooling pool 20 having a shallow pool 21 of cold water continuously running and supplied from a cold water inlet 22 and maintained at constant low level by an overflow pipe 23 leading to a drain. The sides of the tub or pool 20 are built fairly high but the pool 21 may be extremely shallow, just enough to provide a shallow stream or pool of cold running water.

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The functions of the tub 20 and the pool 21 are as follows. When a work piece 15 is of extremely complex and large form as, for example, when it is a large and complex casting, such as a large diameter piston used in diesel engines, it has been discovered important to permit the casting to cool for quite a while before the casting is introduced into the water rinse bath 11 after it leaves the molten salt bath 10. During the cooling period, molten salt, dripping off the work piece 15, but for the provision of the pool 21, would form hard deposits in the area under the suspended cooling work piece 15, and these hard deposits are extremely difficult to remove. In addition, the drippings tend to splatter and bounce with consequent danger and messiness.

The provision of the tub 20 with its high walls and the shallow pool 21 as the location in which the work piece 15 is disposed during its cooling eliminates all these difficulties. The pool 21 of cold running water receives the molten salt drippings and dissolves such drippings, flushing them out in solution into the drain 23. Thus, there is no formation of hard deposits of the salt dripping from the work piece. Likewise, there is no bouncing and splattering of the drippings, because as the drippings drop into the pool 21 they are immediately dissolved. The side walls of the tub 20 prevent any splattering that might take place but are really not necessary, since all, or practically all, of the molten salt will drip downwards from the work piece into the pool 21 and are there dissolved and carried off to the drain 23.

Now having described the apparatus and process hereof, reference should be had to the claim which follows.

I claim:

In a metal cleaning process, the steps of immersing a work piece in a molten alkali metal salt bath, thereafter suspending the hot work piece, dripping wet with molten salt, above a shallow pool of running water, and thereafter immersing the cooled work piece, from which much of the molten salt has dripped off, into a water rinse bath.

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