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 [73] Assignee **United States Steel Corporation**

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[54] SINKER ROLL FOR HOT-DIP COATING BATH

4 Claims, 2 Drawing Figs.

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 429, 419, 420, 427, 428; 29/148.4 R, 132; 228/30,
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ABSTRACT: A sinker roll immersed in a bath of molten coating metal has molybdenum trunnions extending from the ends thereof, journaled in molybdenum sleeves set in aligned bearing hubs mounted on the vessel containing the bath.

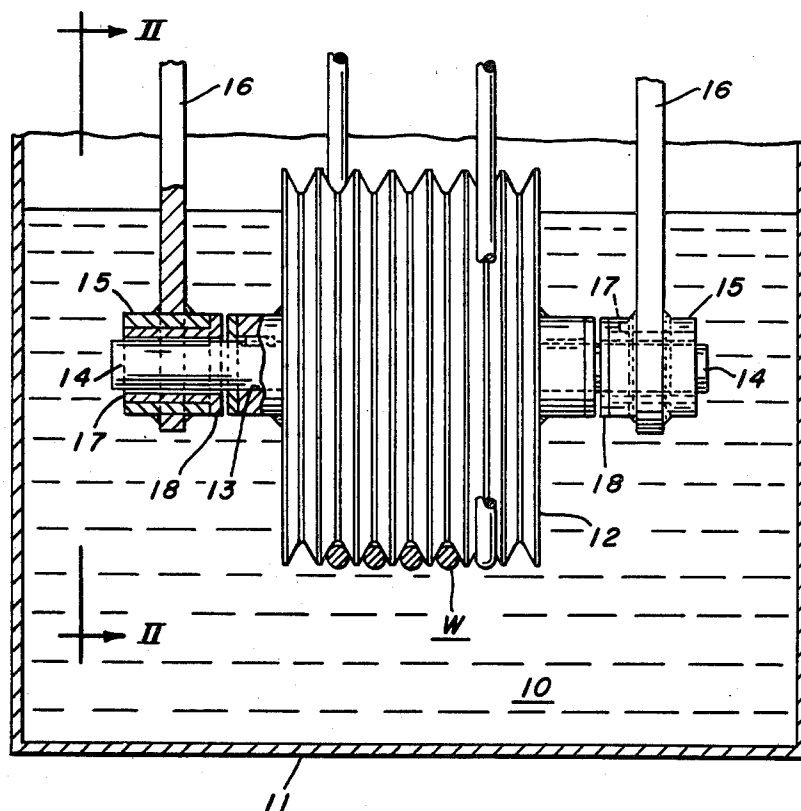


FIG. 1.

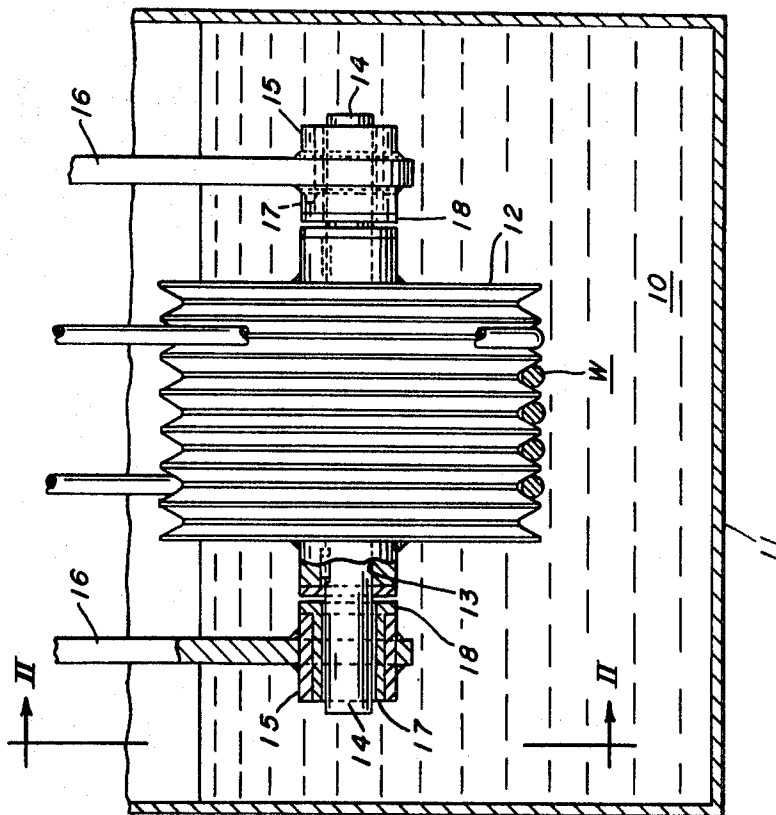
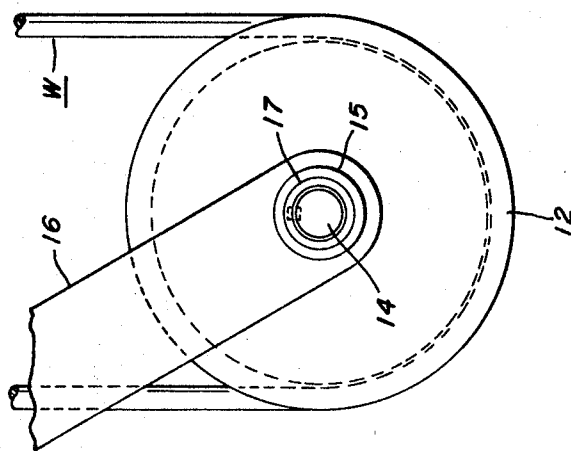


FIG. 2.



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SINKER ROLL FOR HOT-DIP COATING BATH

This invention relates to the hot-dip coating of wire or strip and, in particular, to the bearings of a sinker roll mounted so it is immersed in the coating bath.

BACKGROUND OF THE INVENTION

It has been the practice heretofore to journal the sinker rolls of hot-dip coating bath, e.g., spelter or molten zinc, in bearings of iron or ceramic materials. Iron gradually reacts with the zinc and the bearings eventually seize because of the alloy buildup between the bearing sleeves and journals even though substantial clearance is provided. Ceramic bearing material is brittle and subject to breakage under thermal shock because its coefficient of thermal expansion is quite different from that of common metals.

BRIEF SUMMARY OF THE INVENTION

According to my invention, I provide bearing trunnions or journals and sleeves of molybdenum for rolls immersed in a molten metal bath. Molybdenum does not exhibit the property of alloying with or picking up and retaining zinc so the bearings are not subject to seizure as are iron bearings. The sleeves and journals may therefore be designed for a closer fit than iron bearings, thereby eliminating wobbling, excessive vibration and the like. In a preferred embodiment, molybdenum trunnions are mounted at the ends of a sinker roll and are rotatably carried in molybdenum sleeves seated in bearing hubs mounted on the vessel containing the bath.

BRIEF DESCRIPTION OF THE DRAWINGS

A complete understanding of the invention may be obtained from the following detailed description and explanation which refer to the accompanying drawings illustrating the present preferred embodiment. In the drawings:

FIG. 1 is an elevation of a sinker roll embodying the invention, with one of the bearing hubs partially broken away, showing the vessel containing the bath section; and

FIG. 2 is an end view taken along the plane of line II-II of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in detail to the drawings, a bath 10 of molten metal for coating metal strands of wire or strip by the hot-dip

process, is contained in a vessel 11. A sinker roll 12, fabricated from iron, guides wires W traversing the bath below the surface thereof, being partially immersed therein. Roll 12 has sockets 13 at the ends thereof adapted to receive therein trunnions 14 of molybdenum.

Bearing hubs 15 are carried by supports 16 mounted in the known manner (not shown) on vessel 11. Hubs 15 have molybdenum sleeves 17 fitted therein. These sleeves are bored to receive trunnions 14 with a close fit, and have outwardly turned flanges 18 at their inner ends. Collars or washers 19 of molybdenum on the trunnions are adapted to make face-to-face contact with flanges 18.

Trunnions 14 and the bore in sleeves 17 are dimensioned to provide a running clearance of from 0.02 to 0.08 inches, preferably about 0.03 inches. Clearance between flanges 18 and washers 19 should be from 0.02 to 0.125 inches, preferably about 0.03 inches.

Experience gained from an actual installation shows that molybdenum bearing parts immersed in spelter do not seize or bind even after prolonged periods of operation. Vibration and wobbling, furthermore, are eliminated by the snug fit of the trunnions in the bearing sleeves. Maintenance of the sinker roll is thus minimized as well as the frequency of roll replacement.

I claim:

1. In an apparatus for the continuous, high-speed, hot-dip coating of metal strands, which comprises a vessel for the containment of molten metal and a sinker roll assembly mounted within said vessel for guiding the path of said metal strand through its traverse of said molten metal, the improvement wherein excessive vibration of said metal strand is substantially eliminated by providing a clearance of from 0.02 to 0.08 inches between the abutting, journaled portions of said sinker roll assembly and wherein the useful life of said abutting portions is materially enhanced by employing a bearing surface comprising Mo for said abutting portions.

2. The apparatus of claim 1, wherein a clearance of about 0.03 inches is employed.

3. The apparatus of claim 1, wherein said sinker roll assembly comprises a hub means for receiving a shaft means, and a sinker roll fixed to trunnions, which are rotatably mounted within said hub means, and wherein said trunnions and hub means are provided with bearing sleeves consisting essentially of Mo.

4. The apparatus of claim 3, wherein all the abutting journaled surfaces are fitted with bearing sleeves consisting essentially of Mo.

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