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J. D. HARRIS

1,633,015

FLUXING AND CLEANING APPARATUS

Filed Jan. 28, 1922

Fig. 1.

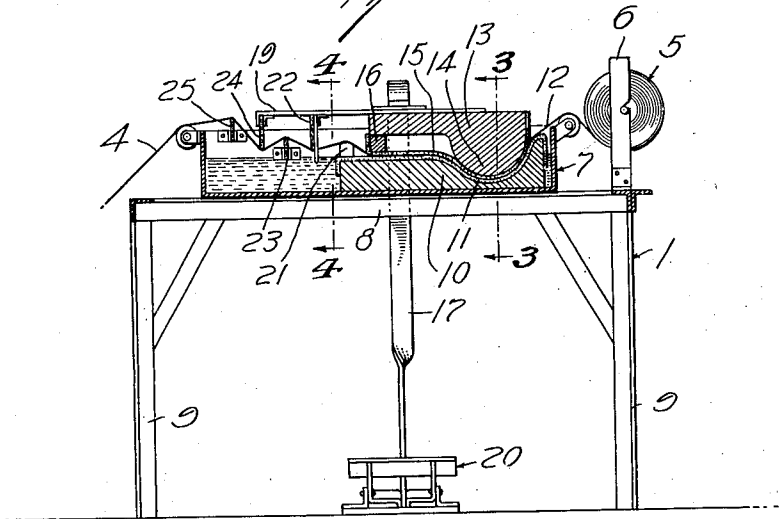


Fig. 2.

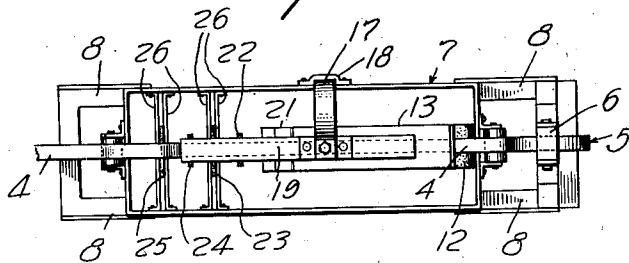


Fig. 3.

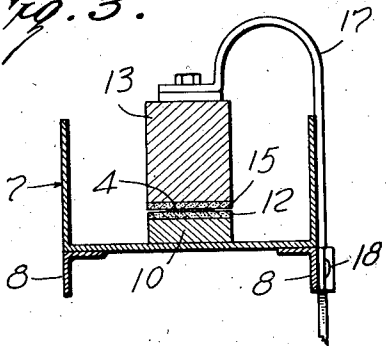
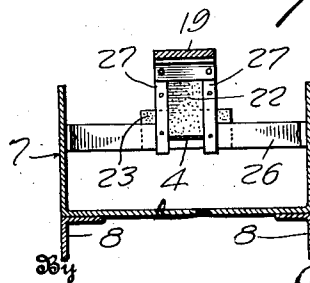


Fig. 4.



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FLUXING AND CLEANING APPARATUS.

Application filed January 28, 1922. Serial No. 532,484.

This invention relates to a fluxing and cleaning apparatus for use with metal coating machines, such as are employed for preparing sheet metal band or ribbon stock of copper or brass in the manufacture of automobile and other radiator tubes.

The main object of my invention is to provide a novel apparatus by which the metal stock may be continuously cleaned and fluxed as it passes through the apparatus on its way to the metal coating and chilling devices of the entire machine, and thus permit the rapid making of the tubes by a continuous and uninterrupted process.

The invention consists further in the matters hereinafter described and claimed.

In the accompanying drawings:—

Fig. 1 is a vertical longitudinal sectional view through the apparatus of my invention.

Fig. 2 is a top plan view of the same, and

Figs. 3 and 4 are vertical sectional views taken on lines 3—3 and 4—4, respectively, of Fig. 1.

As shown in the drawings, the sheet metal band or ribbon 4 is supplied to the apparatus 1 in coil or roll form 5 which is supported by an upright bracket 6 at the entrance end of the device.

The apparatus 1 has an upwardly opening tank 7 supported above the floor or other underlying surface by a bench like frame, comprising horizontal side members 8, 8 and vertical end members or legs 9, 9. Fixed in the tank 7 is a block 10. This extends lengthwise of the tank and has its sides short of the side walls of the tank, as shown in Fig. 3. Said block 10 is provided between its ends with a depression or concave recess 11, and the upper face of the block including this recess is shod or covered with a layer of fabric 12, as shown.

Arranged above the fixed block 10 is a movable block 13. This has a depending rounded portion 14, curved complementary to the recess 11 and designed to substantially fit in the same. Said curved portion 14 has its lower face shod or lined with a layer of fabric 15 which also follows the contour of the fabric 12 beyond the curved portion 14 and there is bent upward and secured about a cleat 16 carried by said block 13, as shown.

Said block 13 is raised vertically above and away from the block 10 by a vertical rod 17 extending upward above the tank 7 at one side of the same and guided by a strap 18 fixed to the machine, as shown in Figs. 2 and 3. The upper end of said rod 17 is curved inward over the tank 7 and downward to a flat horizontal bar 19. This is secured to the block 13 and extends beyond the same, as shown in Figs. 1 and 2. The rod 17 is moved upward to separate the blocks 10 and 13 by a depressible foot pedal 20 below the machine, as shown. When the block 13 is raised out of the tank 7, the blocks 10 and 13 are separated and the metal band or ribbon 4 from the roll 5 may be threaded or inserted between the blocks to lie in contact with and between the fabric layers 12 and 15 when the blocks are brought together, as shown in Figs. 1 and 3. The recess 11 being below the level of the fluxing solution in the tank 7 insures submerging of the metal band or ribbon 4 in the same and thus allows fluxing of the band on both sides, while being scoured and cleaned as the band is drawn between the fabric layers 12 and 15. This scrubbing action to which the band is subjected removes all grease and verdigris therefrom and all foreign substance deposited thereon and insures a thorough fluxing and cleaning of the ribbon, preparatory to coating with metal.

On leaving the block 13, the metal ribbon or band 4 passes over a fabric pad or wiper 21 on the lower block 10. From this, the ribbon engages a plurality of fabric pads or wipers 22, 23, 24, and 25, all arranged in the tank 7 beyond the blocks or pads 10 and 13 in the direction of travel of the metal band or ribbon 4. The second pad 23 is arranged between the first and third ones 22 and 24, and the last pad 25 is beyond the third, as shown in Fig. 1. The first and third pads 22 and 24 are carried by the bar 19 and engage the upper surface of the metal band or ribbon 4 passing under them. The second and third pads 23 and 25 engage the under side of the metal ribbon or band and are secured to and between cross bars 26 on the tank 7, as shown in Fig. 2. These pads or wipers 22 to 25 are above the level of the liquid or solution in the tank 7 and,

not only remove the surplus flux, but all foreign substance and sediment gathered, and assure a thorough and positive distribution of the flux through the wiping motion formed by the travel of the ribbon 4. To guide the ribbon 4 into engagement with said pads 22 to 25, there are laterally spaced guide rods 27, 27 carried by and depending from said bar 19 in advance of the pad 22, as shown in Figs. 1 and 4. On entering and leaving the tank 7, the ribbon 4 passes over rollers at the ends of the same, as shown.

The feed on the ribbon 4 in the tube mill (not shown) with which the fluxing and apparatus 1 is employed, draws the ribbon between the blocks and across the wipers in the apparatus 1 in accordance with the feed in the mill. From the apparatus 1, the ribbon passes through the metal coating apparatus which coats one or both sides of the ribbon with molten metal, such as solder, as required. The metal coating apparatus is disclosed and claimed in my patent No. 1,608,855, granted Nov. 30, 1926. From the coating device the ribbon 4 passes through a chilling apparatus (not shown) to harden the coated ribbon just prior to entry into the tube mill where the tubes are formed from the coated ribbon. By the arrangement described, the tubes may be made rapidly, economically, and efficiently, as the entire process or method is continuous and uninterrupted.

I claim as my invention:

- 35 1. A flux applying machine, comprising a tank adapted to contain a fluxing solution, two blocks arranged one above the other, one of said blocks being fixed in said tank and submerged in the solution therein, the other block being movable toward and from said fixed block, said blocks having fabric lin-

ings on their opposed surfaces to engage and clean both sides of the sheet metal band or ribbon drawn between them, and upright wipers above the solution in said tank and across which the band passes after leaving said blocks. 45

2. A flux applying machine, comprising a tank adapted to contain a fluxing solution, two blocks arranged one above the other, one of said blocks being fixed in said tank and submerged in the solution therein, the other block being movable toward and from said fixed block, said fixed block having an upwardly opening concave recess between its ends, said movable block having a depending rounded portion to fit in said recess, said blocks having fabric linings on their opposed surfaces to engage and clean both sides of the sheet metal band or ribbon drawn between them, and wipers above the liquid in said tank and across which the band passes after leaving said blocks. 55 60

3. A flux applying machine, comprising a tank adapted to contain a fluxing solution, two blocks arranged one above the other, one of said blocks being fixed in said tank and submerged in the solution therein, the other block being movable toward and from said fixed block, said blocks having fabric linings on their opposed surfaces to engage and clean both sides of the sheet metal band or ribbon drawn between them, and wipers above the solution in said tank and across which the band passes after leaving said blocks, certain of said wipers being carried by said movable block and others fixed in said tank. 65 70 75

In testimony that I claim the foregoing as my invention, I affix my signature this 24th day of January, A. D. 1922. 80

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