

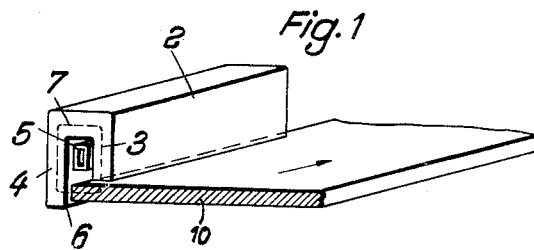
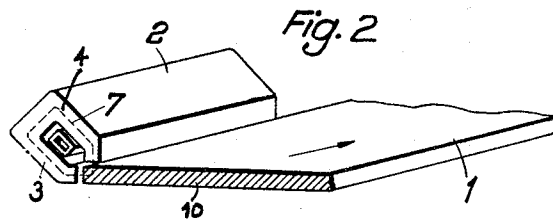
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INDUCTOR DEVICE

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INDUCTOR DEVICE

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4 Claims. (Cl. 219—10.43)

The invention relates to means for heating the edges of flat articles, such as sheets and bands which are moved in a longitudinal direction.

In order to realize this object, so-called "line-inductors" are generally used which are U-shaped and have a distance of their shanks or legs approximately equalling the thickness of the sheets of which the edges are to be heated.

The known inductors of this type have an insufficient work efficiency because the power lines created in the yoke of the inductors must cross through excessively large air passages.

This situation may be somewhat remedied by an enlargement of the entrance distance of the sheets or bands between the shanks of the inductor yokes. However, and as a consequence of this procedure the gap which remains between the edges of the sheets and the inductor shanks is during the passage of the sheets or bands through the line-inductors filled with scale which causes burning near the inductor shanks and the bands.

The invention relates to inductors for heating the edges of the plates or bands, which inductors consist in the customary manner of a conductor and a two-shank yoke surrounding said conductor and having its force lines closed by the plates or bands to be heated.

The novel feature of this inductor includes a formation of the yoke shanks whereby the operative area of the one end of the shank extends plan-parallel to the surface of the sheets or sections thereof to be heated; the operative area of the other end of the yoke extends parallel next to the outer face of the band edge, whereby the field of force created in the yoke of the inductor extends into the frontal area of the band section to be heated and exits from the same.

In the accompanying drawings

Fig. 1 is a perspective view of a line conductor in accordance with one embodiment of the invention with a sheet illustrated partly in section; and

Fig. 2 is a perspective view similar to Fig. 1 but embodying a modification.

The customary line-inductors have a U-shaped yoke provided with parallel legs or shanks of an equal length. If the edge of the sheet only reaches into the vicinity of the yoke shanks, large air passages result between the yoke and the sheet, which unfavorably influence the efficiency of the inductor.

If, on the other hand, the edge of the plates to be heated is pushed into the inductor, the lower air passage is filled with scale and molten metal, which causes burning of the plate and of the inductor.

In conformity with the instant invention as illustrated in Fig. 1, however, the inductor 2 is provided with shanks 3, 4 of an uneven length. The rod-shaped conductor

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5 is located between these shanks. The short shank 3 of the inductor extends with its inner face plan-parallel over the surface of the band section to be heated, whereas the longer shank 4 is with its operative end 6 oppositely located to the edge of the sheet 10 and extends parallel to the same. The field 7 shown in dashes extends hereupon through the frontal portion of the sheet up to the short shank 3 of the inductor and leaves the same in the direction of this short shank.

10 The operation of the device shown in Fig. 2 is the same as the one shown in Fig. 1; the only difference between the two devices consists therein that the inductor 2 of Fig. 2 is inclined.

15 In conformity with Figure 1 the inductor is provided with shanks 3, 4 of a different length; these shanks are arranged for the closure of the force-field in such a manner that the end of the shorter shank 3 extends plan-parallel over the surface of the sheet 10 and the longer shank 4 extends plan-parallel to the lateral edge of the band.

If edge-inclined bands are used, the operative end of the inductor shank must be provided with an inclination which corresponds to the inclination of the band edge.

25 It will be apparent to those skilled in the art that the novel principles of the invention disclosed herein in connection with specific exemplifications thereof will suggest various other modifications and applications of the same.

We wish it to be understood that we do not desire to be limited to the exact details shown and described, for obvious modifications will occur to a person skilled in the art.

What we claim is:

1. An inductor device, for use in heating an edge of a band shaped metal plate, comprising a channel-shaped rod of magnetically permeable material forming the yoke of a magnetic circuit, means surrounded by said channel-shaped rod and adapted to generate a magnetic field therein, the shanks of said rod having pole faces defining a gap between each other, said gap being adapted to receive a portion of said metal plate including said edge, one of said pole faces being disposed substantially vertically, its plane intersecting the plane containing the other one of said pole faces at an angle approximately equalling the angle between the faces of said metal plate where they intersect at said edge to be heated, the lower edge of said one pole face being disposed below said other pole face.

2. An inductor device, as claimed in claim 1, in which said angle is at least 90 degrees.

3. An inductor device as claimed in claim 1, in which the cross section of said channel-shaped rod is horseshoe shaped, the shanks thereof being of different lengths, the end face of one of said shanks forming one of said pole faces and the inner side face of the other one of said shanks forming the other pole face.

4. An inductor device as claimed in claim 1, in which the cross-section of said channel-shaped rod is horseshoe shaped, the shanks thereof being inclined at their ends and having end faces disposed substantially at said angle to each other, said end faces of said shanks forming said pole faces.

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