

[54] **WATER JET DEVICE FOR INDUCTION HEATERS**

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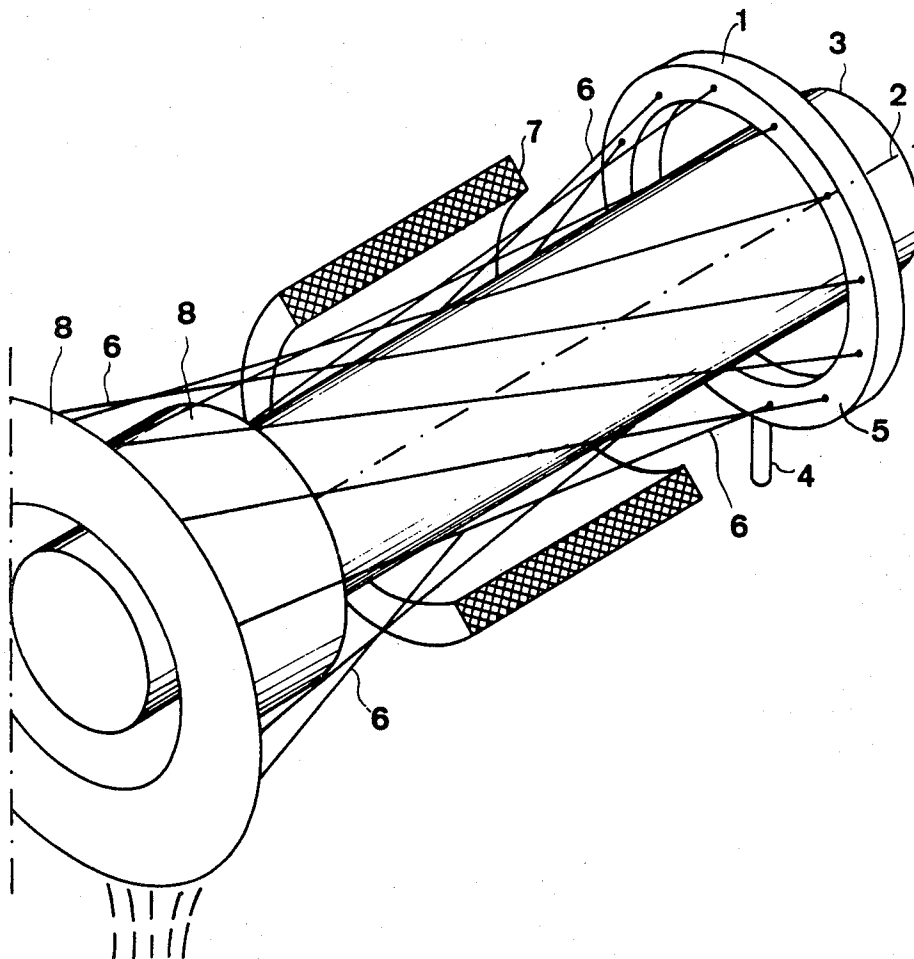
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[57] ABSTRACT

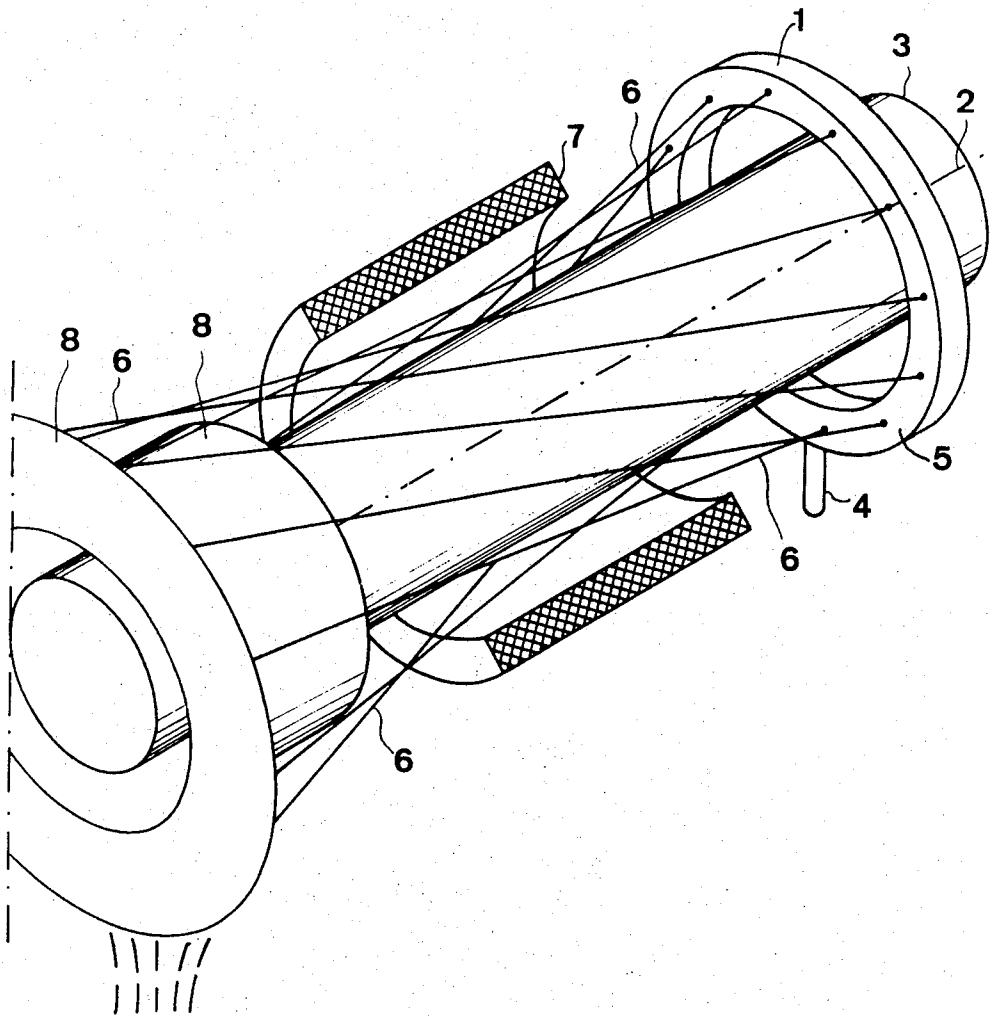
A guard shower surrounding a passageway wherein an article to be heated is moved. The guard shower comprises a ring set around the passageway for delivering jets of water, and a series of nozzles distributed on the periphery of the ring. The nozzles are inclined with respect to a plane defined by the ring and with respect to planes passing through the axis of the passageway so that the apparent surface formed by the jets looks like an hyperboloid through the neck of which runs the passageway.

2 Claims, 1 Drawing Figure



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WATER JET DEVICE FOR INDUCTION HEATERS

The present invention relates to a water jet device surrounding a passageway along which, for instance, a bar to be heated is moved.

If the articles to be heated are, for example, rods joined end to end, the passageway may comprise a pair of rails; but for a lengthy bar, the term "passageway" is to mean the space occupied by this bar. Such a jet device surrounding a passage is not in itself bound to a specific use, but proves to be extremely useful, in particular, for the heating of crude bars which give off scale when heated to a high temperature by a heating coil. Short circuits may occur in the coil because of the falling scale and therefore may seriously perturbate the heating process.

On the other hand, the heavy infrared radiations emanating from the bar heated at high temperature at the inside of the coil may damage the insulation of the coil turns which therefore require suitable protection. Moreover, to obtain adequate efficiency of an induction heating system, the spacing between the article to be heated and the coil has to be maintained as low as possible.

The object of the invention is to provide a practical solution to the above-mentioned problems. In accordance with the invention, the jet device surrounding a passageway wherein an article to be heated is moved comprises a ring disposed around the passageway for delivering jets of water, and a series of jet nozzles distributed on the periphery of the ring, the nozzles being directed generally axially but inclined with respect to the plane of the ring and with respect to two planes going through the axis of the passage, so that the apparent surface created by all the shower jets looks like an hyperboloid through the neck of which passes the passageway.

The invention is hereafter described with respect to a preferred embodiment with reference to the accompanying drawing which represents a perspective view of a jet device according to the present invention.

A delivery ring 1 surrounds a passage referred to by its main axis 2, in which a cylindrical bar 3 is moved. The ring 1 is fed with water by means of a pipe 4. One face of the ring 1 bears a series of nozzles 5 from which jets of water are directed, these nozzles being equidistantly distributed on the periphery of the ring.

In the example, the nozzles 5 are constituted of apertures drilled in the wall of the ring 1. Moreover, the nozzles are inclined with respect to the plane defined by the ring 1 and also with respect to planes passing through the passage axis 2. Thus, a body of jets 6 coming out of the nozzles 5 from a predetermined surface looks like an hyperboloid through the neck of which passes the passage for the cylindrical bar. Around the hyperboloid neck, is set a cylindrical coil 7 which is illustrated partly cut for sake of clarity. The screen created by the jets of water from the nozzles or holes 5 get heavier up to about the middle of the coil 7 and becomes more splayed afterwards. The jets 6 do not wet the bar 3 at the hyperboloid neck. If the bar 3 has to be kept fully dry, a water collector 8 constituted of a piece of pipe having a wide side and located where the hyperboloid is splaying may be provided.

The water screen formed by jets 6 from the nozzles or holes 5 by getting heavier inside the coil 7 takes out a major portion of the infrared radiation emitted by the heated articles running through the passage 2.

The close proximity of jets to each other at the hyperboloid neck presents many advantages: the scale particles cannot fall through the substantially small interstices in the water screen without being caught by a jet 6. The amount of water crossing the neck is the same as that emitted by the ring 1. Owing to the above-described arrangement, the spacing between the coil 7 and the passageway may be maintained narrow.

I claim:

1. A jet device surrounding a passage way, wherein an article to be heated is moved, comprising a ring extending around said passage way and a series of nozzles distributed along a base circle on the periphery of the ring for directing jets of water in the direction of their axes, the axis of each said nozzle being inclined by the same predetermined angle with respect to the plane of the base circle and being tangent to a neck circle spaced from said plane and perpendicular to the radius of the point of contact on the neck circle, said neck circle being coaxial with and narrower than said base circle and coaxial with and wider than said passage way and being located inside an induction heating coil.

2. A device as claimed in claim 1, wherein a collector is provided past said neck for collecting the liquid from said ring.

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