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FENDER FOR SCARFING UNITS

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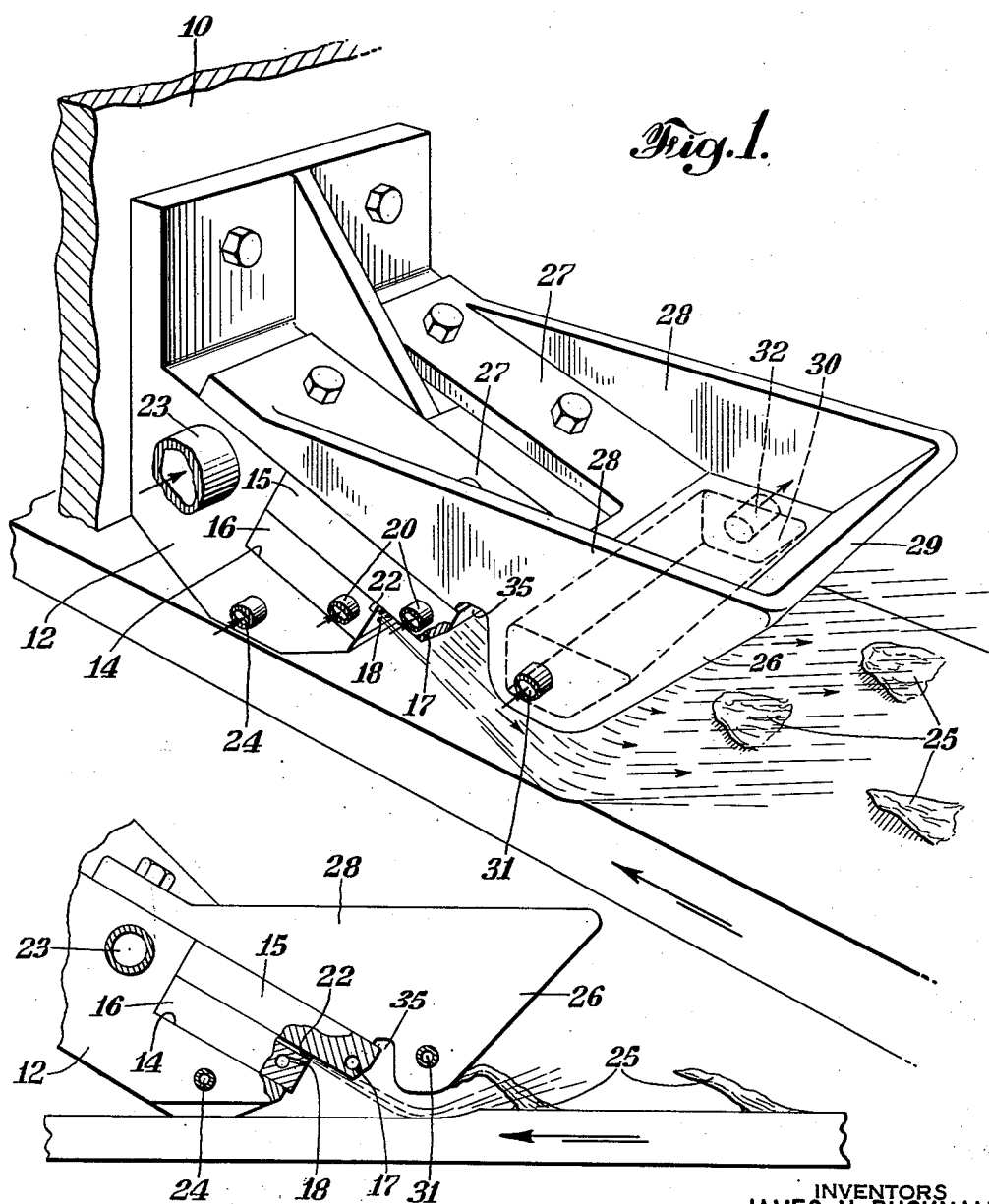


Fig. 2.

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FENDER FOR SCARFING UNITS

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3 Claims. (Cl. 266-23)

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This invention relates to a fender for a scarfing unit, and more particularly to a fender of this character for a scarfing unit for the thermochemical removal of metal from the surface of billets, blooms and the like.

The work to be desurfaced frequently has large scabs or slivers, which when fed to a desurfacing unit, strike against the unit and damage the precision-machined orifice means thereof, entailing costly replacement of parts, and loss of production due to the shut-down time required for repair.

It is therefore the main object of the present invention to flatten the steel projections or to lift the unit so as to prevent damaging contact with the precision-machined surface of the scarfing unit.

According to the present invention a fender is mounted ahead of and depending below the level of orifice means of a scarfing unit. A stream of scarfing medium is directed downwardly and forwardly from the orifice means against a work surface. The fender serves to protect the orifice means from damage by impact against projections from the work surface. The desurfacing medium is preferably oxidizing gas, the work surface is preferably metal and the stream is preferably directed by a wide thin slotted nozzle, in conjunction with a row of preheat flames parallel to the nozzle slot, to impinge against a transverse zone of the work surface. The fender is preferably mounted adjacent and parallel to such transverse zone. The slotted nozzle preferably has a forwardly extending upper wall overhanging the lower wall thereof, and directs a sheet of cutting oxygen against such zone at an acute dihedral angle to the work surface. The fender preferably has a forwardly and upwardly inclined cam surface, and is preferably hollow and provided with an inlet and an outlet for the circulation of cooling medium there-through. The fender is preferably carried by a frame secured to the top of the scarfing unit, preferably comprising a pair of arms secured near the respective sides of the scarfing unit and extending forwardly therefrom, the fender being carried by the front ends of these arms.

In the drawings:

Fig. 1 is a perspective view of a desurfacing unit provided with a fender according to the preferred embodiment of the present invention; and

Fig. 2 is a side elevation of the structure shown in Fig. 1.

The invention is illustrated in conjunction

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with a scarfing unit of the thermochemical metal removal type, particularly a slotted nozzle oxy-acetylene desurfacing head according to the co-pending application of Thompson et al., Serial No. 179,904, filed August 17, 1950.

The desurfacing unit comprises a carrier plate 10, on which is mounted a desurfacing head 12. The head 12 is provided with a deep groove 14 which receives upper and lower orifice plates 15 and 16. These plates are drilled to provide minute post-mixed preheat orifices 17 and 18 respectively, to which gases are supplied by preheat acetylene lines 20.

The plates 15 and 16 have therebetween a recess which forms a wide continuous thin slot 22 to which cutting oxygen is supplied by a cutting oxygen supply line 23. The upper wall of the slot 22 extends forwardly, overhanging the lower wall thereof, and the preheat orifices 17 and 18 are arranged in rows close to the slot 22, and converge toward the cutting oxygen stream. The desurfacing head 12 is water-cooled, cooling medium being supplied by an inlet 24.

The post-mixed preheat flames from the rows of orifices 17 and 18 raise the work to the kindling temperature, and the wide thin sheet or stream of cutting oxygen from the slot 22 impinges on a transverse zone of the work at an acute dihedral angle, so as to burn off the surface imperfections and scale.

It is desirable to have the preheat orifices 17 and 18, and the cutting oxygen slot 22, close to the work surface, which brings them into the path of the scabs or slivers 25 carried by the work piece, as shown in the drawing. To prevent these scabs or slivers from striking the front of the desurfacing head and damaging the parts having the expensive precision-machined orifices 17, 18, and 22, the fender 26 according to the present invention has been provided.

The fender 26 comprises supporting flanges 27 securely bolted to the top of the desurfacing head 12, and a pair of arms 28 secured to the flanges 27 near the sides of the head, and extending forwardly therefrom. The side arms 28 are connected by a transversely extending front flange 29 which is parallel to the work surface and depends below the level of the orifice means. The flange 29 is inclined upwardly and forwardly to deflect or bend down the scabs or slivers 25, or to cam the desurfacing head upwardly so as to ride over the scabs or slivers. The fender 26 is of hollow construction to provide a water jacket 30 close to the front flange 29, and is

provided with an inlet 31 and an outlet 32 for cooling medium.

It should be noted that the water jacket 30 is mounted above the path of the cutting oxygen from the slot 22, and is spaced ahead of the plate 15 to leave a transverse passage 35, through which air can be drawn in by the oxygen stream and carried forward as an air layer between it and the underside of the fender. This cooling action prevents burning of the fender, while enabling it to be mounted relatively close to the work surface and to the orifices to be protected.

We claim:

1. In a scarfing unit having spaced upper and lower nozzle walls defining therebetween a transverse oxygen slot, said nozzle walls extending downwardly and forwardly at an acute dihedral angle to a work surface, means rigid with said upper nozzle wall forming a transverse row of fuel gas orifices above said slot, the combination of a frame rigidly mounted on said unit with respect to said upper nozzle wall and extending forwardly from said slot and row of orifices, said frame having a forwardly and upwardly inclined front flange ahead of said slot and orifice row, the bottom of said flange depending below the level of the exit orifice of said nozzle slot but clear of the scarfing stream therefrom and transversely coextensive with said slot and continuous from one side to the other of said frame.

2. In a scarfing unit having spaced upper and lower nozzle walls defining therebetween a transverse oxygen slot, said nozzle walls extending downwardly and forwardly at an acute dihedral angle to a work surface, means rigid with said upper nozzle wall forming a transverse row of fuel gas orifices above said slot, the combination of a frame rigidly mounted on said unit with respect to said upper nozzle wall and extending

forwardly from said slot and orifices, said frame comprising a cooling jacket spaced ahead of said slot and orifice row, the bottom of said jacket depending below the level of the exit orifice of said nozzle slot but clear of the scarfing stream therefrom and transversely coextensive with said slot and continuous from one side to the other of said frame, said jacket having inlet and outlet orifice means for circulating cooling medium therethrough.

3. In a scarfing unit having spaced upper and lower nozzle walls extending downwardly and forwardly at an acute dihedral angle to a work surface, means rigid with said upper nozzle wall forming a transverse row of fuel gas orifices above said slot, the combination of a frame rigidly mounted on said unit with respect to said upper nozzle wall and extending forwardly from said slot and row of orifices, said frame comprising a rear wall spaced ahead of said slot and orifice row, the bottom of said rear wall depending below the level of the exit orifice of said nozzle slot, said rear wall forming with the front face of said nozzle an inverted trough open at the ends defining a passage through which air can be drawn in by the scarfing stream and carried forward as an air layer between it and the bottom of said rear wall.

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