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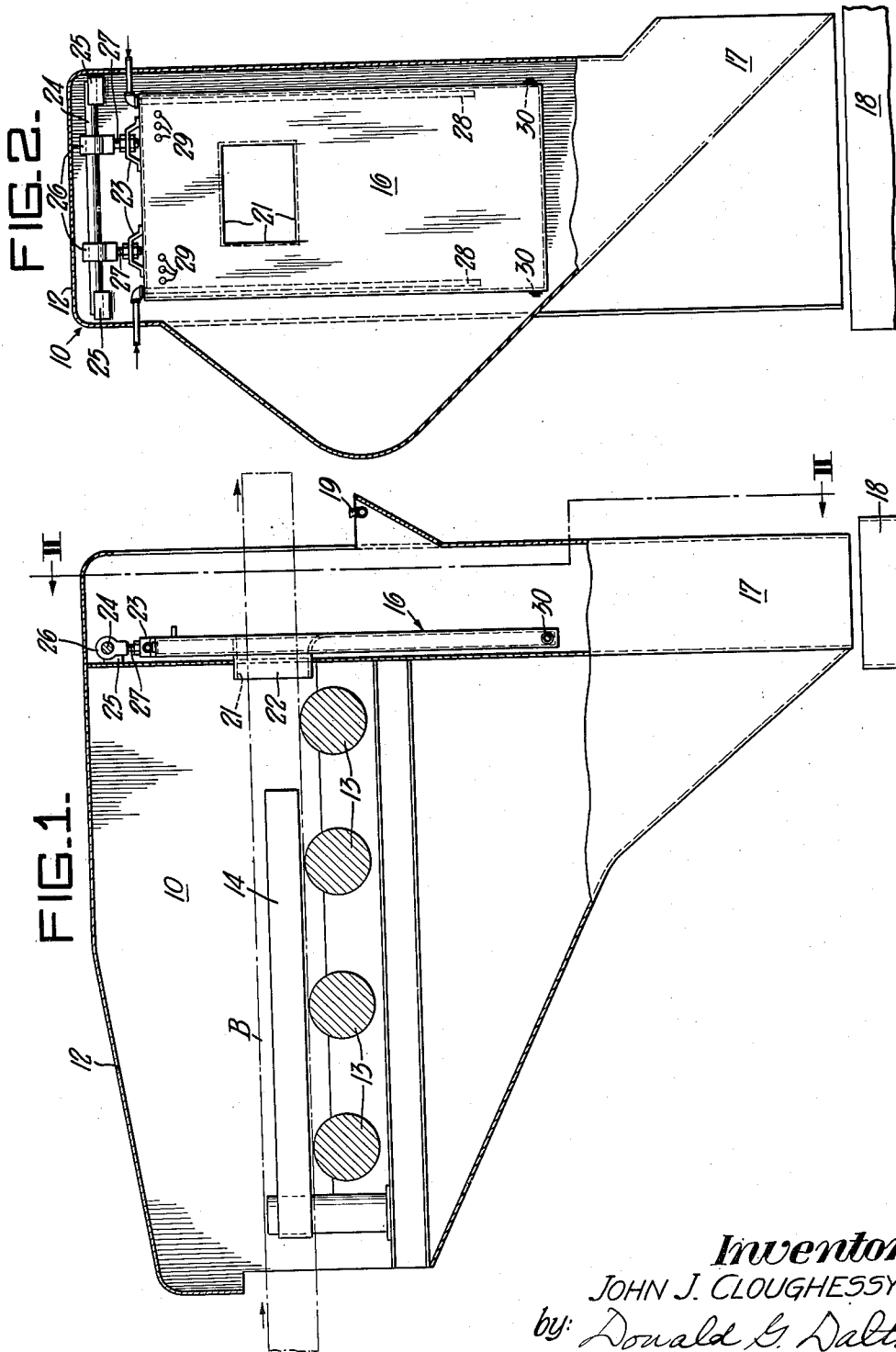
J. J. CLOUGHESY

2,685,442

WATER-COOLED SWINGING TARGET

Filed Dec. 7, 1951

2 Sheets-Sheet 1



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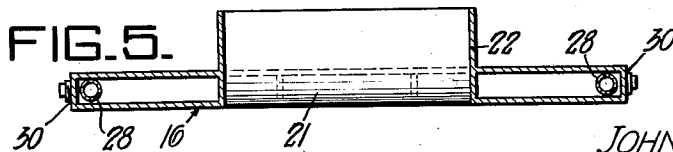
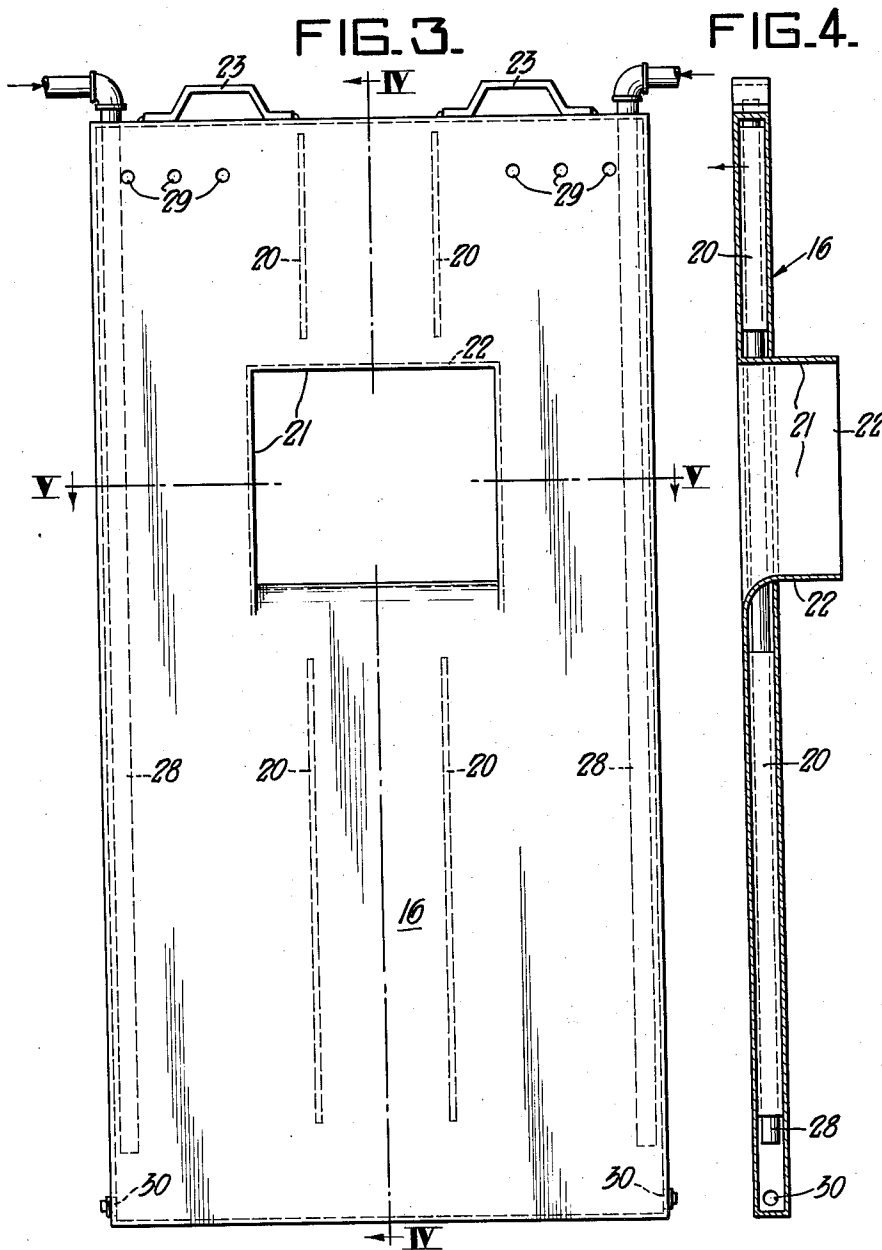
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UNITED STATES PATENT OFFICE

2,685,442

WATER-COOLED SWINGING TARGET

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3 Claims. (Cl. 266—23)

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This invention relates to an improved target for cinder handling equipment used with continuous scarfing machines.

In modern steel mill practice it is common to remove surface defects from semi-finished shapes by "scarfing," that is by burning away the defective surface. Continuous scarfers direct streams of oxygen against a hot workpiece, such as a billet, as it travels from a roll stand and thereby burn away the entire surface layer. The oxygen streams are directed counter to the movement of the workpiece and impinge on it at a low angle of incidence. The slag or cinder which results from oxidation of the metal bounces back against a target and thence to a disposal car. The target commonly is embodied in a smoke hood, which also collects gaseous fumes, and commonly is cooled externally by streams of water. Nevertheless in previous equipment with which I am familiar, cinder tends to collect on the target, and removal of such cinders is both difficult and time consuming.

An object of the present invention is to provide an improved target which eliminates any tendency for cinder to collect.

A more specific object is to provide an improved target which is free swinging and consequently not subject to warpage and is easily installed or removed, and which is water cooled both internally and externally to prevent collecting cinder.

In accomplishing these and other objects of the invention, I have provided improved details of structure, a single form of which is shown in the accompanying drawings, in which:

Figure 1 is a side elevational view, partly broken away, of a smoke hood equipped with a target embodying features of the present invention;

Figure 2 is a vertical sectional view taken on line II—II of Figure 1;

Figure 3 is a front elevational view of the target, and

Figures 4 and 5 are sectional views taken on lines IV—IV and V—V of Figure 3.

Figures 1 and 2 show somewhat diagrammatically a smoke hood 10 which has a housing portion 12 of any standard or desired construction. Workpieces B, for example steel billets, travel from left to right over conveyor rolls 13 and between centering guides 14, through the smoke hood and past a continuous scarfer, not shown, but which is situated to the right of the hood, as viewed in Figure 1. The front wall of the hood has an opening through which the workpieces

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pass to the scarfer and fumes from the scarfer into the hood. A target 16 constructed in accordance with the present invention hangs over the front of the hood. Cinder from the scarfer strikes this target and drops through a chute 17 into a disposal car 18. External water spray nozzles 19 are fixed to the front of the hood around the target and direct their sprays on the target. The scarfer commonly is of a type which scarfs all four surfaces of the workpieces. One example of such a scarfer is shown in Jones Patent No. 2,125,175.

As best shown in Figures 3, 4 and 5, the target 16 of the present invention comprises a hollow shell of substantially rectangular outline formed of stainless steel plates welded together and preferably rigidified by stiffeners 20. Stainless steel is employed to prevent rusting or pitting. The central portion of the target contains an opening 21 also of rectangular outline. The rear face carries a flange 22 which surrounds this opening and, when the target is installed, extends into the opening in the front wall of the smoke hood. The upper edge of the target carries a pair of hangers 23 which freely suspend the target from the hood. The preferred suspension means includes a shaft 24 rotatably supported in bearings 25, which are fixed to the front wall of the hood (Figure 2). The shaft carries brackets 26 to which the hangers are connected by bolts 27. Since the target can swing freely, it is not subject to damage from warping.

Within each of its side edges the target contains a vertically extending water inlet pipe 28 which terminates adjacent the lower edge of the target (Figure 3). These pipes are connected at their upper ends to a suitable water source not shown. The upper part of the front plate of the target has water outlet openings 29, so that cooling water substantially fills the interior of the target. The bottom of the target can be equipped with normally closed drains 30 used for cleaning purposes.

The internal cooling system and the sprays from the external nozzles 19 cooperate to maintain the target at a relatively cool temperature. Cinder from the scarfer solidifies as it strikes the target and drops to the disposal car. In actual use I have found that the target eliminates all tendency for cinder to collect.

While I have shown and described only a single embodiment of the invention, it is apparent that modifications may arise. Therefore, I do not wish to be limited to the disclosure set forth but only by the scope of the appended claims.

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I claim:

1. The combination with a smoke hood for a continuous scarfer, of a target comprising metal walls which define a relatively thin hollow shell of substantially rectangular outline having a central opening for passage of workpieces as they exit from said smoke hood, hangers joined to the top portion of said shell and pivotally connected to the upper front portion of said smoke hood and thus supporting said shell in front of said smoke hood for pivotal movement on a horizontal axis parallel to and adjacent the top of the shell, water inlet pipes extending within said shell and adapted to be connected to an outside water source, the front wall of said shell having water outlet openings adjacent the top thereof, and nozzles carried by said smoke hood adapted to

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direct water sprays against the front wall of said shell.

2. A combination as defined in claim 1 in which said walls are of stainless steel and are welded together.

3. A combination as defined in claim 1 in which said inlet pipes extend vertically from the top of said shell within each side edge thereof to points adjacent the bottom edge.

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