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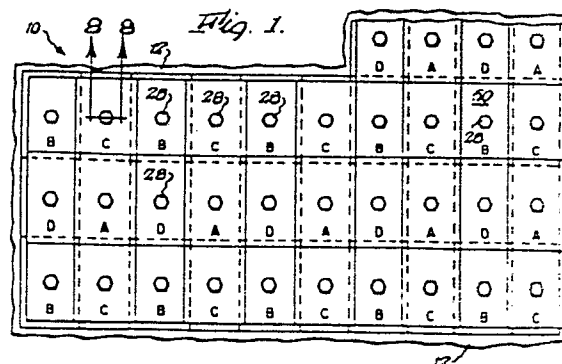
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54 Wear plates and wear plate system.

57 A paneling system for covering walls, ceilings and floors particularly useful, but not limited to, highly abrasive environments such as in blast cabinets wherein workpieces are subjected to a high velocity stream of abrasive particles for cleaning or peening the workpieces. The system is comprised of two different configurations of plates (A,B.;C,D.) each reversible, preferably made of wear-resistant material, the plates being particularly conformed to provide for simple and easy replacement of worn plates.



WEAR PLATES AND WEAR PLATE SYSTEM

Background of the Invention

Heretofore, paneling systems have been known wherein panels, or plates, have been affixed to walls, or ceilings, etc., by starting at an edge thereof and progressing across the surface to be paneled until the entire area is covered. Because of the close tolerance required in order to have tight joints, and because of tight joints, to remove and replace any of the first few plates, such as when it was desired to remove a worn or damaged plate, required the removal of all plates installed after that plate which is to be replaced.

An example of prior art plates for paneling systems in blast cabinets is exemplified by U.S. Patent No. 3,733,752, granted on May 22, 1973.

Summary of the Invention

The present invention relates to a paneling system and, more particularly, to a paneling system wherein wear-resistant plates are assembled in order to protect the walls, ceilings and floors of blast cabinets of the type wherein workpieces are subjected to an abrasive blast stream of abrasive grit and the like.

An object of the present invention is to provide a paneling system which includes two different panels or plates, each being generally flat and having a series of peripheral edges wherein a series of flange portions are provided for overlapping flange portions of adjacent plates when assembled upon a wall, ceiling, floor, etc.

More particularly, it is an object of the invention to

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provide for easy removal and replacement of damaged or worn plates in a simple and expedient manner by minimizing the number of plates which have to be removed in order to remove the damaged plate.

A prime object of the invention is to provide a paneling system comprising a first plate and a second plate; the first plate being generally flat and having a series of peripheral edges and having a first face and a second face, a series of flange portions, one portion for each edge of the first plate, the flange portions having a thickness less than the thickness of the first plate and each of the flange portions having a surface coplanar with the first face of the first plate; the second plate being generally flat and having a series of peripheral edges and having a first face and a second face, a series of flange portions, one portion for each edge of the second plate, the flange portions of the second plate having a thickness less than the thickness of the second plate, a first set of the series of flange portions of the second plate being spaced from each other and each having a surface coplanar with the first face of the second plate, and a second set of the series of flange portions of the second plate being spaced from each other and each having a surface coplanar with the second face of the second plate.

A further object of the invention is to provide a wear-resistant plate, the plate being formed of wear-resistant material and being generally flat and having a series of peripheral edges, the plate having a first face and a second face, a series of flange portions, one flange portion for each of the peripheral edges, the flange portions having a thickness

less than the thickness of the plate and each of the flange portions having a surface coplanar with the first face.

A still further object of the invention is to provide a wear-resistant plate, the plate being formed of wear-resistant material and being generally flat and having a series of peripheral edges, the plate having a first face and a second face, a series of flange portions, one portion for each edge of the plate, the flange portions having a thickness less than the thickness of the plate, a first set of the series of flange portions being spaced from each other and each having a surface coplanar with the first face of the plate, and a second set of the series of flange portions being spaced from each other and each having a surface coplanar with the second face of the plate.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claimed subject matter, and the several views illustrated in the accompanying drawings.

Description of the Drawings

Fig. 1 is an elevational view of a wall, or a plan view of a ceiling or floor, showing a series of panels or plates assembled in accordance with the present invention.

Fig. 2 is a plan view of one side of a first plate constructed in accordance with the invention.

Fig. 3 is a plan view of the first plate, from the opposite side.

Fig. 4 is a plan view of one side of a second plate.

Fig. 5 is a plan view of the opposite side of the plate

shown in Fig. 4.

Fig. 6 is a perspective view of the first plate.

Fig. 7 is a perspective view of the second plate.

Fig. 8 is a fragmentary sectional view showing one form of attachment means for affixing one of the plates to an underlying substrate.

Detailed Description of the Invention

As is shown in Fig. 1, a paneling system, generally indicated by the numeral 10, includes a series of panels or plates fixedly secured to an underlying wall or substrate 12. For purposes of illustration, the respective plates shown in Fig. 1 are lettered A, B, C, and D, so that the sequence of attaching the respective plates to the substrate 12 is readily understandable.

Figs. 2, 3, and 6 show the details of a first plate 14, the plate 14 being generally flat and having a series of peripheral edges 16, a first face 18 and a second face 20. The first plate 14 is provided with a series of flange portions 22, one portion 22 for each peripheral edge 16 of the first plate 14. The flange portions 22 have a thickness less than the thickness of the plate 14, the preferred thickness being equal to one-half of the thickness of the plate, and each of the flange portions 22 have one surface thereof which is coplanar with the first face 18 as is best shown in Fig. 2. For attachment purposes, plate 14 may be formed with a centrally located opening 24 which passes through the total thickness of the plate 14 and is slightly oversized for receiving therethrough a threaded stud 26 (Fig. 8), the threaded stud 26 being shown as spot-welded to the wall or substrate 12 and having the

threads thereof protected by a cap-nut 28.

It will be apparent from the foregoing that the first plate or panel 14 is reversible and may be mounted upon substrate 12 in either of two positions, the first position being that shown in Fig. 2 (which will hereinafter be referred to as plate A) and the second position being that shown in Fig. 3 (which will hereinafter be referred to as plate B).

Figs. 4, 5, and 7 illustrate various views of a second plate 30 which is preferably formed of wear-resistant material, is generally flat and rectangular, is provided with a series of peripheral edges 32, and has a first face 34 and a second face 36. Second plate 30 includes a series of flange portions each having a thickness less than the thickness of the plate, a preferred thickness of the flange portions being one-half of the thickness of the plate 30, a first set of flange portions 38 being spaced from each other and each having a surface coplanar with the first face 34, as is best shown in Fig. 4. A second set of flange portions 40 are spaced from each other and each having a surface coplanar with the second face 36 of the plate 30, as is best shown in Figs. 5 and 7. It will be apparent that second plate 30 can be attached to the substrate 12 in two positions, the first position being that shown in Fig. 4 (hereinafter described as plate C), and the second position being that shown in Figs. 5 and 7 (hereinafter described as plate D). Second plate 30 is provided with a centrally located opening 42 which passes through the complete thickness thereof and is formed for receiving a mounting bolt, such as the threaded bolt 26 (Fig. 8) and can be attached to the substrate or wall 12 with a cap-nut 28.

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In the prior art, the wear plates or panels were usually assembled on a series of welded studs (such as studs 26) and fixed thereto by cap-nuts (such as cap-nuts 28). The welded studs were evenly spaced to form a grid and the plates would be positioned by starting at an edge and progressing across and up the wall until the total area was covered. Because of the tight joints and plate contours, to remove and replace any of the first few plates, such as when they became worn or damaged, required the removal of all plates installed after the plate to be replaced.

With the present invention, a paneling system 10 is provided wherein the area of the wall 12 can be easily paneled and the assembly procedure does not require the plates to be assembled from an edge. Assembly requires that the installer start by positioning a plate B and proceed outwardly in any direction in accordance with the assembly scheme depicted in Fig. 1. The beauty of the present invention is that, in order to remove and replace a worn or damaged plate, it is not necessary to remove all of the plates installed after the plate which is to be replaced. Every plate A can be removed and replaced without removing any other plate; it is only necessary to unscrew the cap-nut 28 and lift plate A off of its threaded stud 26. Plate C or plate D can be removed and replaced by simply removing an adjacent plate A and then removing the desired plate C or plate D. Thus, any plate C or plate D is replaceable by removing only two plates. Plate B is the most difficult plate to replace. In order to replace a plate B, such as the plate 50 in Fig. 1, it is necessary to first remove a total of five plates. Referring to Fig. 1, and the

plates surrounding plate 50, first remove any two plates A, the intervening plate C or D, and then the two plates C or the two plates D along opposite edges of the plate 50. After unscrewing cap-nut 28, the plate 50 may then be tipped from the stud 26 and removed. Thus, while it is necessary to remove five plates in order to replace a plate B, this is a distinct improvement over the prior art in which it might be necessary to remove an entire wall. Of course, the improvement over the prior art is readily apparent from the fact that any plate A may be removed by itself, and any plate C or plate D can be replaced by removing such plate following the removal of any single adjacent plate A.

It is to be understood that the first plate 14 and the second plate 30 may have various dimensions. As one example, the plates may be one-half inch thick, and the flange portions 22, 38 and 40 can be one-quarter inch thick and one-half inch wide. Referring to Figs. 2, 3, 4, and 5, respectively, and including the one-half inch width of the respective flanges with the dimensions of the surface with which they are coplanar, face 18 is ten and one-half inches by fifteen and one-half inches, face 20 is nine and one-half inches by fourteen and one-half inches, face 34 is ten and one-half inches by fourteen and one-half inches, and face 36 is nine and one-half inches by fifteen and one-half inches.

First plate 14 and second plate 30 are, preferably, integrally cast of wear-resistant material such as manganese or chrome-moly cast iron. It is to be understood, however, that the plates may also be fabricated instead of cast, such

as by forming each plate 14 and 30 from two separate sheets of metal or other material and affixing the two sheets together by welding, epoxy, etc.

Further, it will be obvious to those skilled in the art that the invention is not limited to the field of abrasive blast treatment but may also be utilized in the field of decorative panels, sound absorption panels, etc. The decorative or sound absorption patterns may be placed on the opposed faces of the respective plates, or, alternatively, may be placed on only a single face of the plates. In the latter instance, a total of four distinct plates would be required.

While the invention has been described herein with reference to a preferred embodiment, it is to be understood that various changes and modifications may be made by those skilled in the art without departing from the spirit and scope of the invention as defined in the following claimed subject matter.

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1. A paneling system comprising a first plate and a second plate; said first plate being generally flat and having a series of peripheral edges and having a first face and a second face, a series of flange portions, one portion for each edge of said first plate, said flange portions having a thickness less than the thickness of said first plate and each of said flange portions having a surface coplanar with said first face of said first plate; said second plate being generally flat and having a series of peripheral edges and having a first face and a second face, a series of flange portions, one portion for each edge of said second plate, said flange portions of said second plate having a thickness less than the thickness of said second plate, a first set of said series of flange portions of said second plate being spaced from each other and each having a surface coplanar with said first face of said second plate, and a second set of said series of flange portions of said second plate being spaced from each other and each having a surface coplanar with said second face of said second plate.

2. A paneling system as defined in claim 1, wherein said first and second plates are rectangular.

3. A paneling system as defined in claim 1, wherein said first and second plates are formed of wear-resistant material capable of withstanding attack from blast treatment media.

4. A paneling system as defined in claim 3, wherein said first and second plates are both reversible for exposing either of the respective first or second faces to said blast

treatment media.

5. A wear-resistant plate, said plate being formed of wear-resistant material and being generally flat and having a series of peripheral edges, said plate having a first face and a second face, a series of flange portions, one flange portion for each of said peripheral edges, said flange portions having a thickness less than the thickness of said plate and each of said flange portions having a surface coplanar with said first face.

6. A wear-resistant plate as defined in claim 5, wherein said plate is an integral one-piece casting.

7. A wear-resistant plate as defined in claim 5, wherein said plate is fabricated of two sheets of wear-resistant material.

8. A wear-resistant plate as defined in claim 5, wherein said plate has a centrally located opening formed therein for receiving a mounting bolt therethrough.

9. A wear-resistant plate, said plate being formed of wear-resistant material and being generally flat and having a series of peripheral edges, said plate having a first face and a second face, a series of flange portions, one portion for each edge of said plate, said flange portions having a thickness less than the thickness of said plate, a first set of said series of flange portions being spaced from each other and each having a surface coplanar with said first face of said plate, and a second set of said series of flange portions being spaced from each other and each having a surface coplanar

1 with said second face of said plate.

10. A wear-resistant plate as defined in claim 9,
wherein said plate is an integral one-piece casting.

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11. A wear-resistant plate as defined in claim 9,
wherein said plate is fabricated of two sheets of wear-
resistant material.

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12. A wear-resistant plate as defined in claim 9,
wherein said plate has a centrally located opening formed
therein for receiving a mounting bolt therethrough.

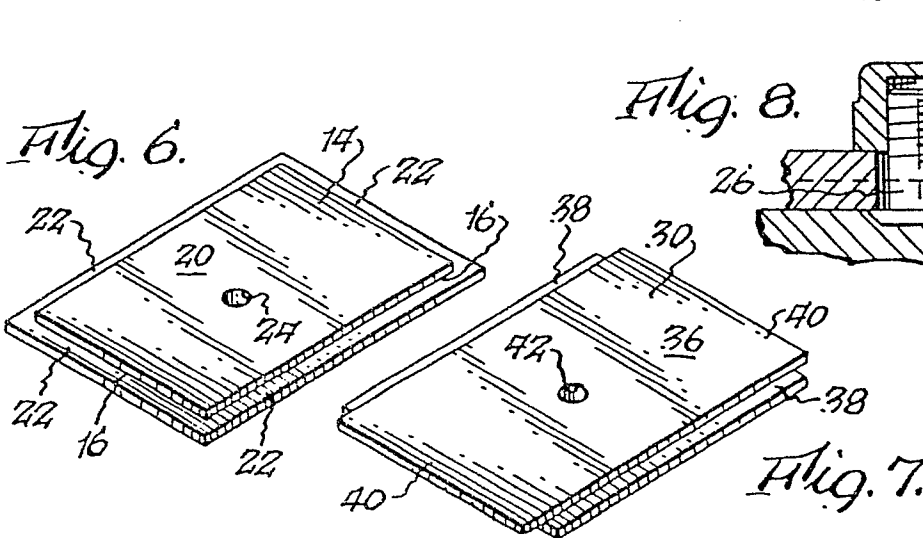
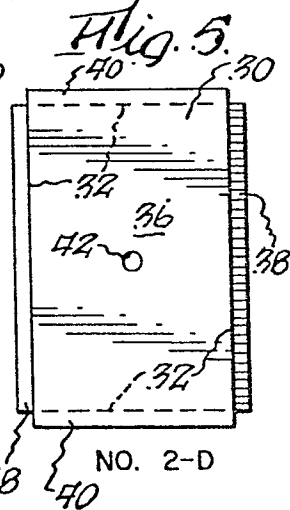
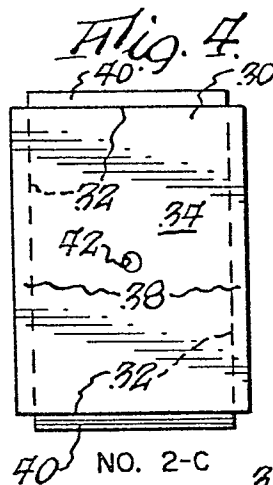
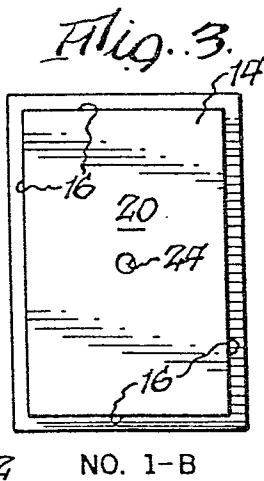
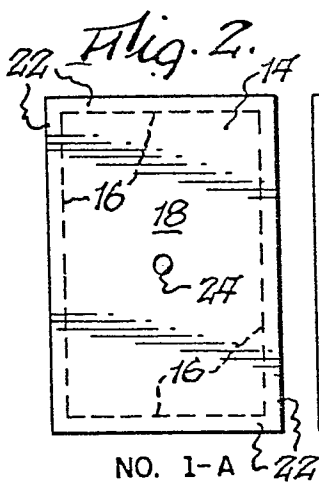
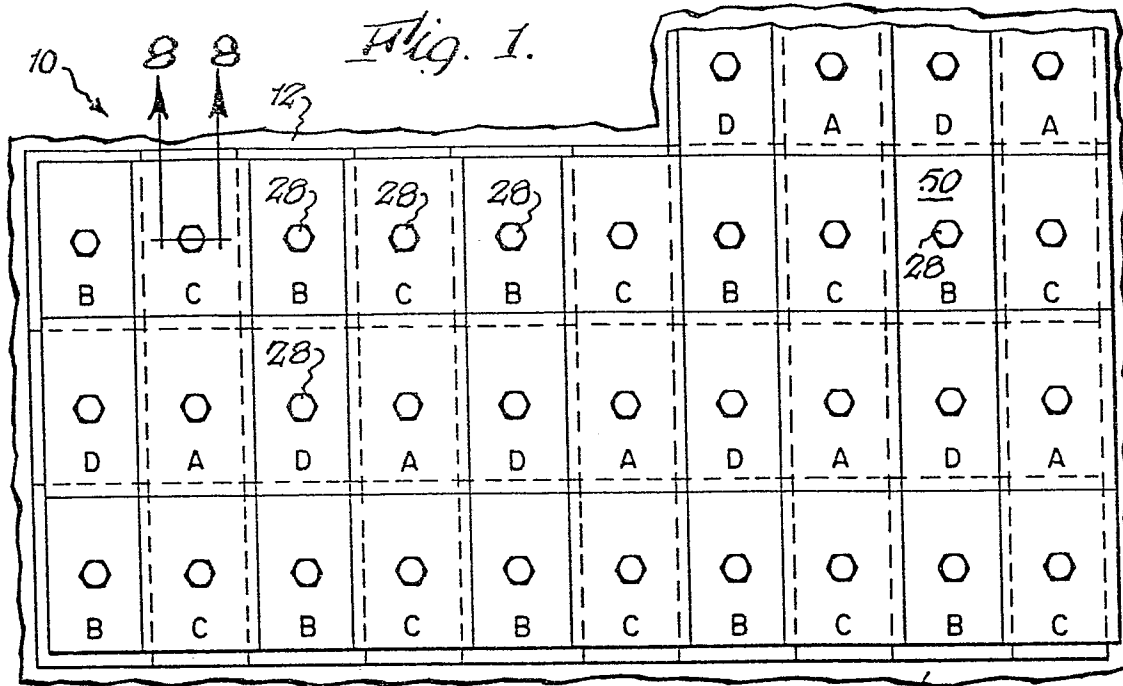
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European Patent
Office

EUROPEAN SEARCH REPORT

0011257
Application number
EP 79 10 4427

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	FR - A - 2 021 330 (ZANKE)		B 24 C 9/00
A	FR - A - 2 082 791 (ROCHER)		
A	US - A - 3 309 818 (BROWN)		
A	FR - A - 1 555 736 (PROMECAM. SISSON-LEHMANN)		
A	GB - A - 1 149 566 (ST. GEORGES)		
A	FR - A - 2 336 213 (FISCHER)		
-----			TECHNICAL FIELDS SEARCHED (Int.Cl. ³)
			B 24 C 9/00 E 01 C 5/00 E 04 F 13/00 B 02 C 17/00 B 02 C 1/00 B 02 C 13/00
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family, corresponding document
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	27-02-1980	PEETERS S	