March 29, 1966 W. J. PHYSIOC III 3,242,615

APPARATUS FOR WIDENING THE ABRASIVE BLAST STREAM OF ABRASIVE BLASTING WHEELS

Filed Aug. 5, 1963

Fig. 1.

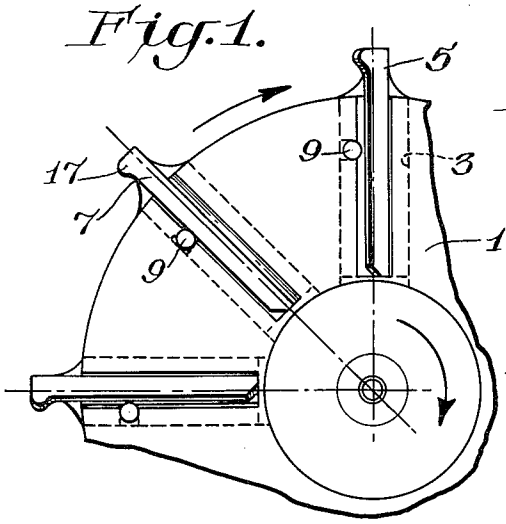


Fig. 8.

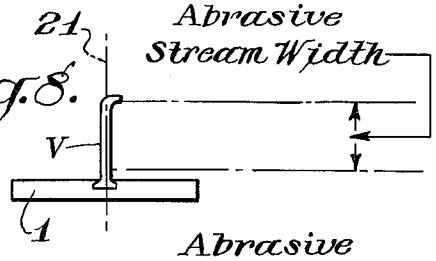


Fig. 9.

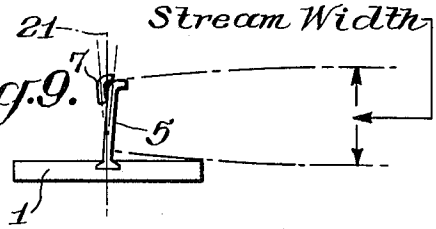


Fig. 3.



Fig. 4.

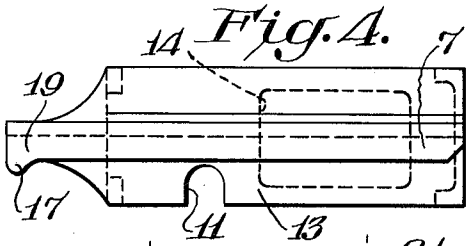


Fig. 2.

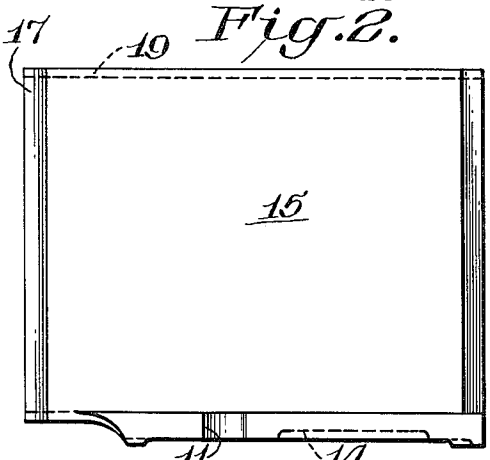


Fig. 5.

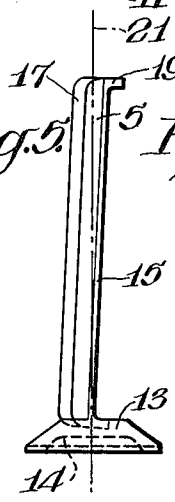


Fig. 6.

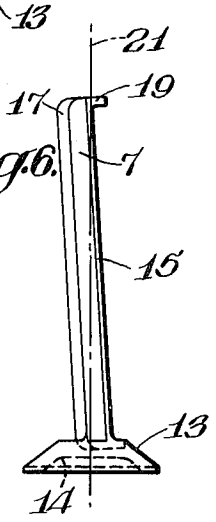
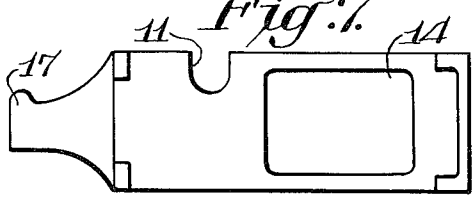


Fig. 7.



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APPARATUS FOR WIDENING THE ABRASIVE BLAST STREAM OF ABRASIVE BLASTING WHEELS

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1 Claim. (Cl. 51—9)

In many abrasive blasting operations, it is desirable to use as wide an extensive an abrasive blast pattern as possible. For instance, wide blast patterns are most desirable when treating strip or sheet metal such as sheet steel. The use of wider blast patterns reduces the number of blast wheels required for such operation.

It is, therefore, one object of the present invention to provide a new and novel blast wheel assembly wherein wider abrasive blast patterns are achieved than with former abrasive blast wheels.

Another object of the invention is to provide a new and novel rotatable abrasive blast disc assembly wherein the disc has a surface perpendicular to the axis of rotation of the disc with radially extending channels in the disc surface for supporting abrasive throwing blades which blades extend outwardly from the disc surface. Every other blade is tilted so that the abrasive throwing surface is tilted at an acute angle to the disc surface, and every intervening blade is tilted in the opposite direction so that its abrasive throwing surface forms an obtuse angle to the disc surface.

Other objects and advantages of the invention will become more apparent from a study of the following description and drawings wherein:

FIGURE 1 is a plan view of the rotatable blast wheel assembly of the present invention;

FIGURE 2 is a side elevation of one of the vanes or blades used in the assembly of FIGURE 1;

FIGURE 3 is a top view of a blade which has its abrasive propelling face tilted at an acute angle with respect to the disc surface;

FIGURE 4 is a top view of a blade that has its abrasive propelling face tilted at an obtuse angle with respect to the disc surface;

FIGURE 5 is an end view of the blade of FIGURE 3;

FIGURE 6 is an end view of the blade of FIGURE 4;

FIGURE 7 is a bottom view of the blade of FIGURE 2;

FIGURE 8 is a detail showing the abrasive blast pattern used with prior art rotatable wheel assemblies wherein the blades all extend perpendicular to the face of the wheel; and

FIGURE 9 is a view of the expanded width abrasive blast pattern found with the present invention.

Referring now to the drawings, a rotatable blast wheel **1** is shown in FIGURE 1 which wheel has vane supporting channels **3** for supporting the alternately tilted vanes **5** and **7**. The vanes are held within the channels **3** by suitable locking pins **9** which fit into the channels **3** and the cut-outs **11** in the base **13** of the vanes (see FIGURES 3 and 4).

An indent **14** (see FIGURE 2) in the base of the vane houses a pressure spring which rests on the floor of the vane channel **3**. The spring (not shown) urges the blades **3** or **5** upwardly to give a good tight fit of the base walls of the blade against the channel walls in the wheel **1**.

The abrasive propelling face **15** of the vanes is shown better in FIGURE 2. A strengthening rib **17** is found at the outermost end of the face **15** of the vane. This provides reinforced strength for the vane during its rotation and operation. The vane has an outwardly extending edge or side **19** at the upper edge thereof by which an open trough or channel is formed with the face **15** along which abrasive flows.

FIGURE 3 is a top view of vane **5** of FIGURE 1 having its abrasive propelling face forming an acute angle with respect to the blade supporting surface of the wheel **1**. This is better shown in FIGURE 5 which also shows the slanting vane **5**. The degree of slant of the vane **5** is shown in FIGURE 5 by reference to the center line **21**.

FIGURES 4 and 6 show vane **7** having its abrasive propelling face forming an obtuse angle with respect to the blade supporting surface of the wheel **1**. The extent of the slant is also shown here by reference to the center line **21**. In other respects, the vane **7** is the same as vane **5**.

With both types of blades described above, the abrasive propelling surface is a straight planar surface.

FIGURE 8 shows the stream width of the expelled or accelerated abrasive after it has left the vanes V which represent the vanes used heretofore which vanes extend perpendicular from the wheel **1** as noted with respect to center line **21**. As seen in FIGURE 8, the abrasive stream width is limited to a rectangular pattern corresponding to the width of the vanes V used.

On the other hand, when the alternately slanting vanes **5** and **7** of the present invention are used the abrasive stream path fans out or is expanded as shown in FIGURE 9. Again, the slant or extent of the slant of the vanes **5** and **7** is shown with respect to center line **21**.

When comparing the two stream widths of abrasive of FIGURES 8 and 9, the advantage of the arrangement of the present invention becomes obvious. Expanded abrasive sprays can be achieved with the present invention which could not be heretofore achieved with the perpendicular position or supported vanes used heretofore.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is, therefore, to be understood that within the scope of the appended claim the invention may be practiced otherwise than as specifically described.

What is claimed is:

A rotatable abrasive blasting disc assembly comprising a rotatable disc having a surface perpendicular to the axis of rotation of the disc, abrasive throwing blade supporting channels cut into said surface of said disc, a blade having an abrasive throwing surface supported in each said channel of the disc which blade extends outwardly from said disc surface, every other blade being tilted so that the abrasive throwing surface is tilted at an acute angle to said surface of said disc, and every intervening blade being tilted in the opposite direction so that its abrasive throwing surface is tilted at an obtuse angle to said surface of said disc.

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