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**(54) POSITIONING AND REPOSITIONING SYSTEMS FOR FIXING TOOLHOLDERS TO THE DRUMS
OF MILLING MACHINES**

POSITIONIER- UND NEUPOSITIONIERSYSTEME ZUR BEFESTIGUNG VON
WERKZEUGHALTERN AN DEN TROMMELN VON FRÄSMASCHINEN

SYSTEMES DE POSITIONNEMENT ET DE REPOSITIONNEMENT DE FIXATION DE
PORTE-OUTILS SUR DES TAMBOURS DE FRAISEUSES

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EP-A- 0 872 627 **US-A- 4 006 936**
US-A- 4 614 379 **US-A- 4 786 111**
US-A- 5 582 468

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Description

FIELD OF THE ART

[0001] The present invention concerns the technology of milling machines drums, especially systems to perform the positioning and assure repositioning for the fixing of toolholders placed around the cylindrical surface of the drums of milling machines. International classification B21d, E21c.

STATE OF THE ART

[0002] It is known, that the drums in milling machines are provided with a number of toolholders specifically located and oriented in different positions at different angles see for example EP 0 872 627 A. The right positioning of each toolholder requires the employment of complex gears for the industrial production of milling machines' drums.

[0003] It is also known that both tools and toolholders are worn out during the milling activity and the problem of replacing them often occurs. During the removal activity of the toolholder with oxyhydrogen flame often happens that even the references for repositioning of the spare toolholder are effaced. In cases of serious wear even the references consisting in prominent bases are erased, and also the references made by a flat surface on the drum in the position where the toolholder need to be fixed.

[0004] The problem to be solved is to preserve the specific repositioning references to always guarantee the right positioning of spare toolholders.

[0005] It should be pointed out that the replacement operations of the toolholders are done manually, without sophisticated industrial production tools.

[0006] The present invention suggests an improved system to solve the above mentioned problems, and guarantees the possibility to replace correctly the spare toolholders even in cases of serious wear around the fixing zone on the drum that causes the disappearance of references necessary to the positioning of spare toolholders.

DESCRIPTION

[0007] The invention is now disclosed with reference to the figures if the attached drawings as not limiting example.

[0008] Figure 1 shows in perspective a milling machine industrial drum provided with a plurality of toolholders especially placed and welded upon the cylindrical surface of the drum. It can be noticed that the toolholders have a specific angle that is obtained through the employment of complex equipment for the automatic placement operated by numeric control machines.

[0009] Figure 2 shows a toolholder provided with specific element of reference.

[0010] Figure 3 indicates an axial section of the drum shell, upon which are special through slots geometricaly congruent with the correspondent reference elements that each toolholders has.

[0011] Figure 4 shows a transversal section of the drum by a toolholder, which is already in place but not yet welded. It can be noticed the inserting of the reference element in the corresponding slot on the cylindrical shell of the drum.

[0012] Figure 5 highlights the welding to fix the toolholder, whose positioning is guaranteed by the reference element inserted in the congruent slot on the drum.

[0013] Figure 6 represents a toolholder with two cylindrical reference elements.

[0014] Figure 7 represents a toolholder with three cylindrical reference elements.

[0015] Figure 8 represents a toolholder with a shaped reference element.

[0016] Figure 9 shows a drum equipped with toolholders with their own milling tool.

[0017] In the figures each detail is marked as follows:

1 indicates the hollow cylindrical drum of a milling machine

2 are the through slots that go through the drum shell.

3 indicates a toll-holder

4, 4' and 4" indicate the reference elements with which the toolholders are provided.

[0018] It should be highlighted that said reference elements are geometrically congruent with the correspondent slots in which they are inserted to guarantee the right position of the toolholder on the drum.

[0019] 5 indicates the milling tool fixed onto the toolholder.

[0020] The clearness of the figures highlights the simplicity and total reliability of the improved system which is the object of the present invention.

[0021] It is evident that the slots that go through the hollow shell of the drum will be always present even in extreme situations in which each reference point could disappear, thus not being properly located.

[0022] The slots that go through the cylindrical mantel of the drum constitute the inventive core of the present improved system. These ineffaceable slots allow always for the exact repositioning of the spare toolholder, that could be welded upon the drum with its own original geometric set-up.

[0023] The invention of course allows several versions of practical realization, as far as the structural proportioning, the morphologic and technological choices of the reference elements and their congruent slots are concerned.

Claims

fond lors du retrait desdits porte-outils au moyen d'une flamme oxhydrique, libérant ainsi les trous traversants (2).

1. A drum (1) for a milling machine having a cylindrical shell with a plurality of through holes (2), toolholders (3) having at least one reference element (4),
characterized in that
said at least one reference element (4) engages said at least one through hole (2) so that the correct positioning and orientation of the toolholders (3) is guaranteed.
2. The drums of claim 1, **characterized by** the fact that the reference elements (4, 4', 4'') for the positioning and orientation of toolholders (3) are made of thermolabile material, which melt when removing said toolholders by means of a oxyhydrogen flame, thus freeing the through holes (2).

Patentansprüche

1. Trommel (1) für eine Fräsmaschine, die ein zylindrisches Gehäuse mit einer Vielzahl von Durchgangsbohrungen (2) und Werkzeughaltern (3) mit zumindest einem Bezugselement (4) aufweist,
dadurch gekennzeichnet, dass:
das zumindest eine Bezugselement (4) mit der zumindest einen Durchgangsbohrung (2) derart in Eingriff steht, dass die richtige Positionierung und Ausrichtung der Werkzeughalter (3) sichergestellt ist.
2. Trommeln nach Anspruch 1,
dadurch gekennzeichnet, dass
die Bezugselemente (4, 4', 4'') für die Positionierung und Ausrichtung von Werkzeughaltern (3) aus einem thermolabilen Material gefertigt sind, und diese schmelzen, wenn die Werkzeughalter mittels einer Knallgasflamme entfernt werden, wodurch die Durchgangsbohrungen (2) frei gemacht werden.

Revendications

1. Tambour (1) pour une fraiseuse, ayant une enveloppe cylindrique avec une pluralité de trous traversants (2), des porte-outils (3) ayant au moins un élément de référence (4), **caractérisé en ce que** ledit au moins un élément de référence (4) s'engage dans ledit au moins un trou traversant (2) de telle sorte que le positionnement et l'orientation corrects des porte-outils (3) soient assurés.
2. Tambours selon la revendication 1, **caractérisés en ce que** les éléments de référence (4, 4', 4'') pour le positionnement et l'orientation des porte-outils (3) sont réalisés en un matériau thermolabile qui

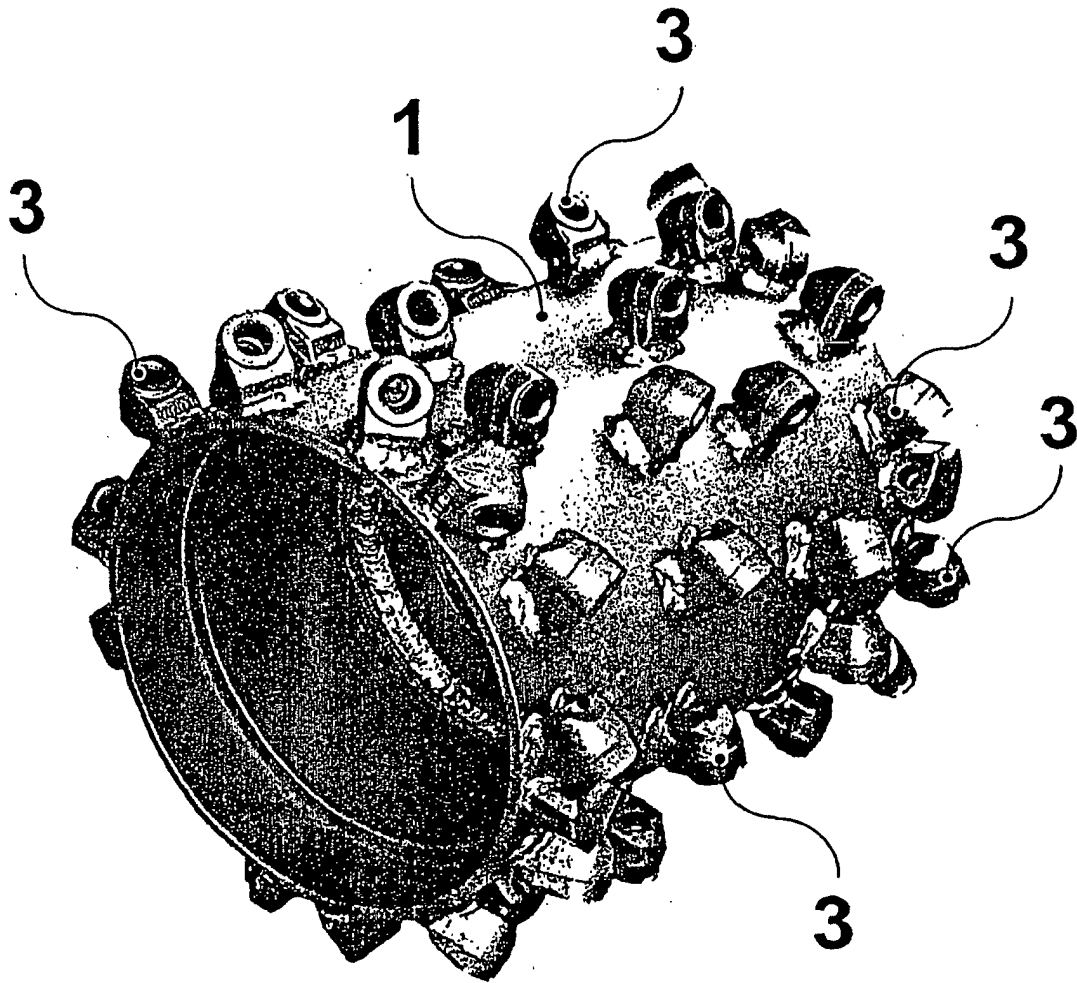


Fig. 1

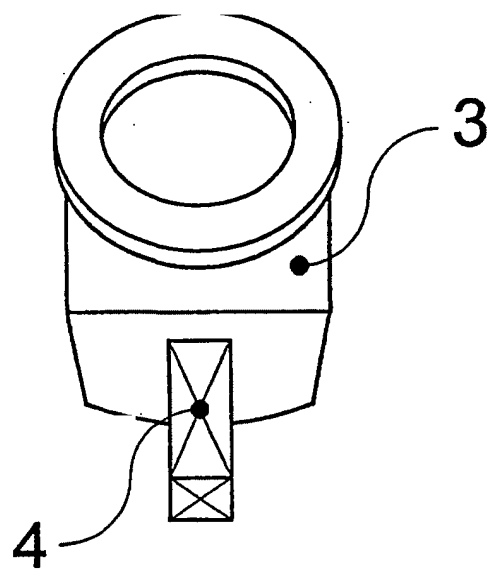


Fig. 2

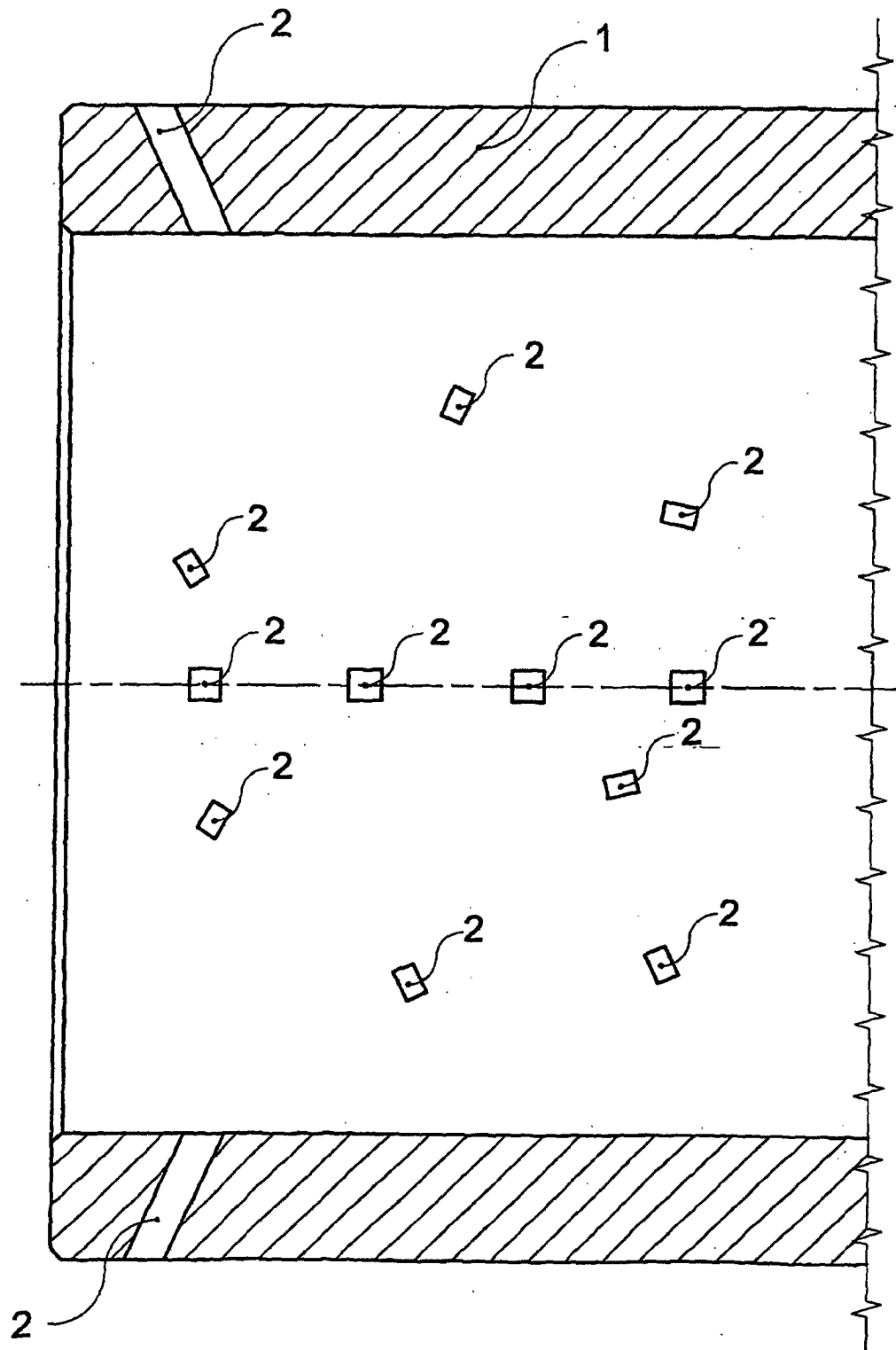


Fig. 3

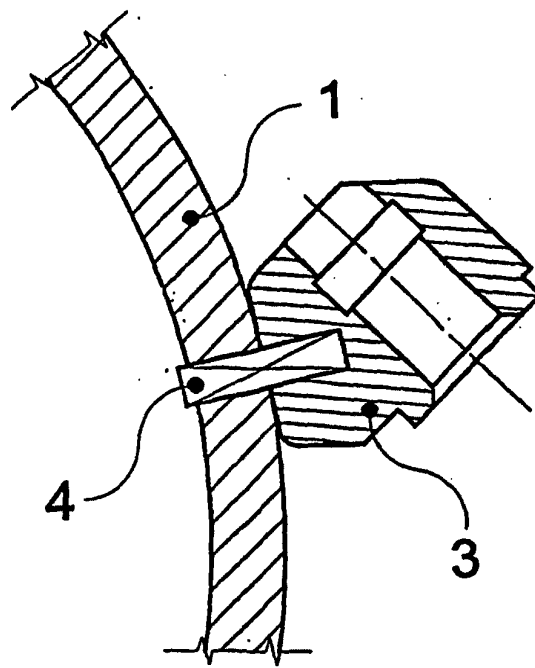


Fig. 4

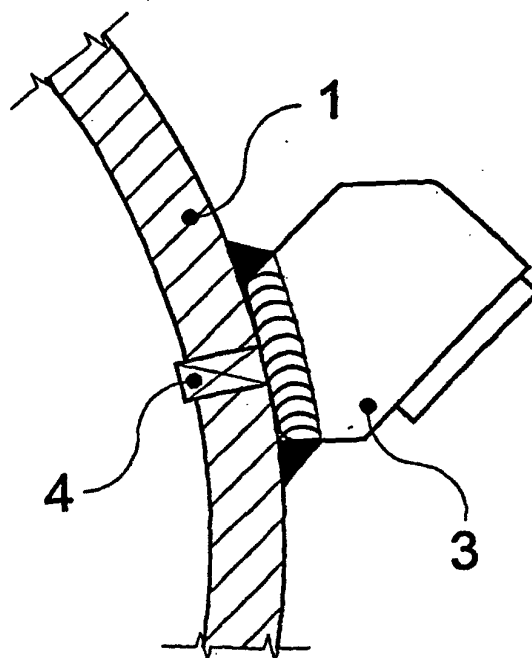
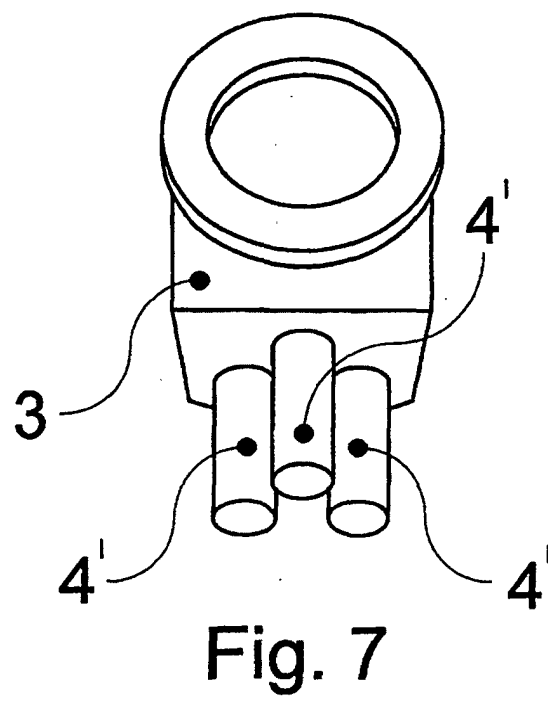
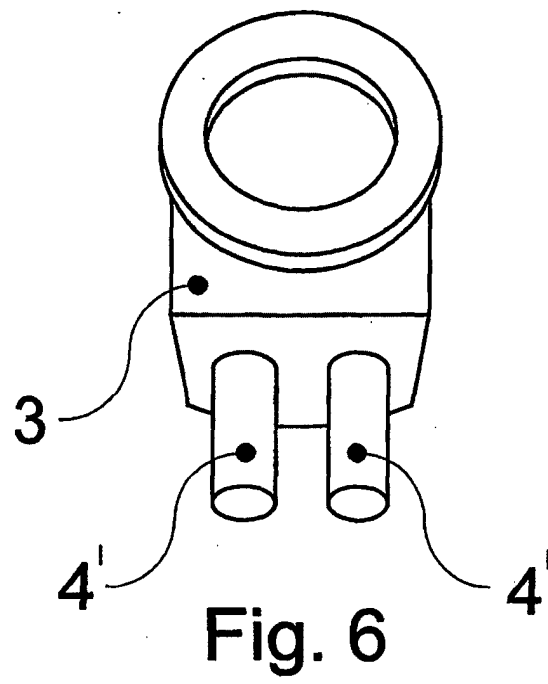


Fig. 5



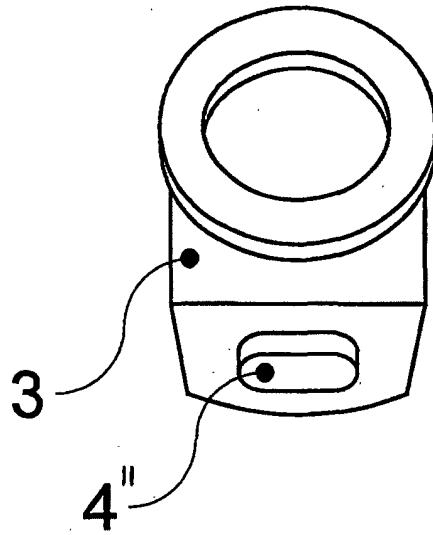


Fig. 8

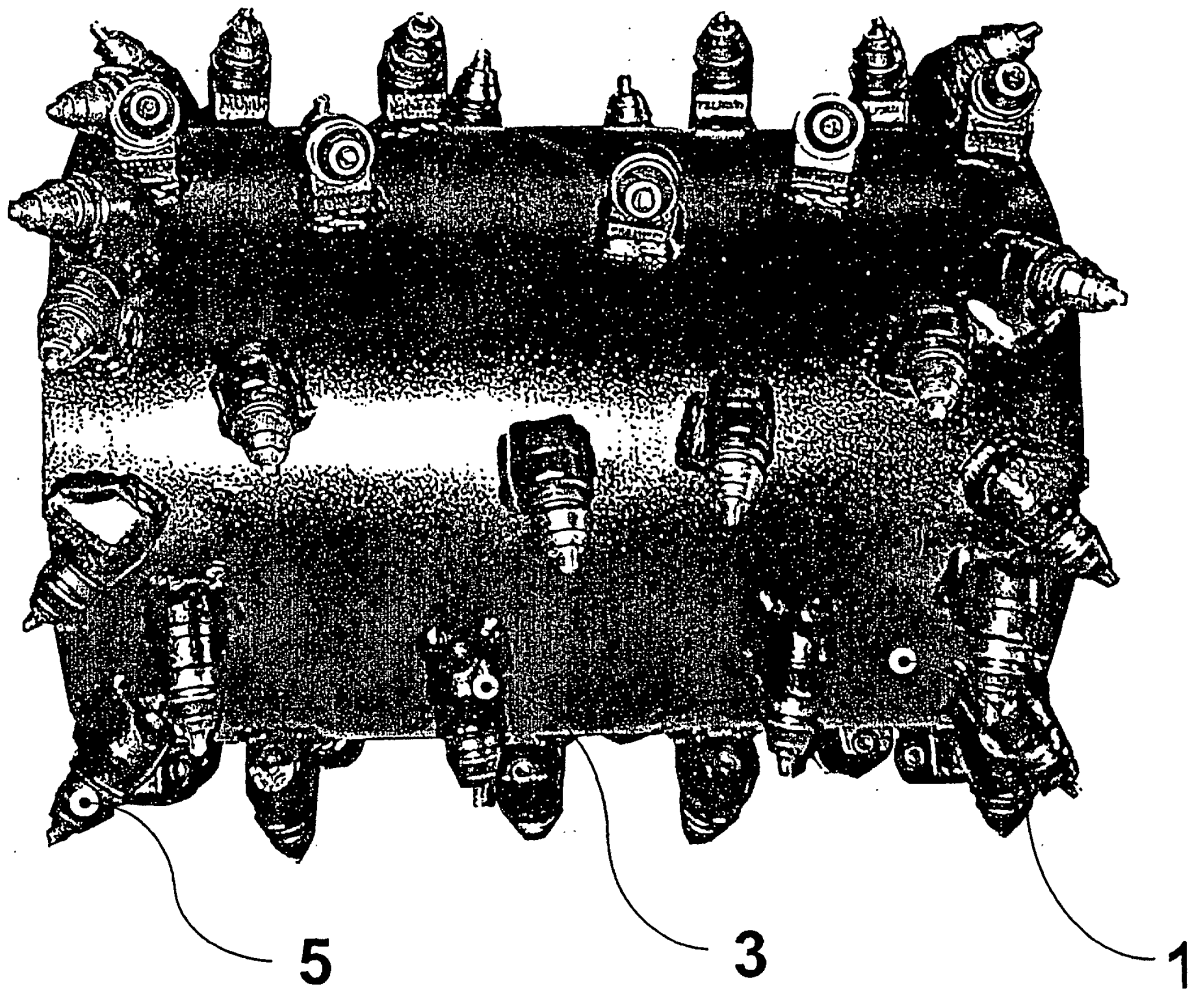


Fig. 9