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Applicant: **AERTECNICA COMMERCIALE S.r.l., Via Montefiorino, 8/G, I-40134 Bologna (IT)**

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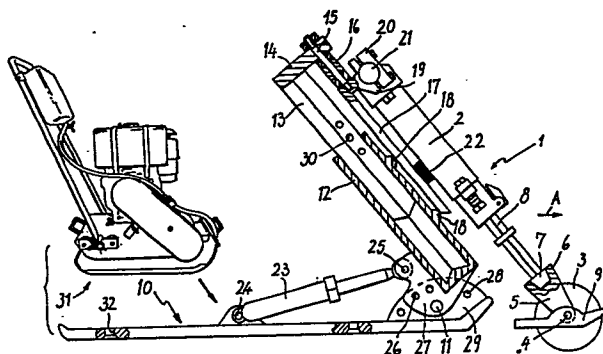
Inventor: **Pellicciari, Fulvio, Via Paganini 9, 40033 Casalecchio di Reno (Bologna) (IT)**

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Representative: **Modiano, Guido, MODIANO, JOSIF, PISANTY & STAUB Modiano & Associati Via Meravigli, 16, I-20123 Milan (IT)**

Device for cutting through pavement courses with a rotary disk tool.

The device comprises a pneumatic or hydraulic hammer (2) having a shank (8) where to a bracket (5) is secured. The bracket (5) carries a rotary disk toll bit (3) set for rotation in a plane transverse to the road course and has a ground contacting shoe (9) attached thereto. The hammer



**"DEVICE FOR CUTTING THROUGH PAVEMENT COURSES WITH A
ROTARY DISK TOOL"**

This invention relates to a device for cutting through pavement courses with a rotary disk tool.

As is known, to cut through the asphalt pavement course or wearing course in road works it is current
5 practice to preferably employ a traditional pneumatic or hydraulic hammer. It has been found, in fact, that rotary blade cutters provide a cut which is too neat and successively poses problems of achieving structural continuity when reconstructing of the road wearing course.

10 For an easier utilization of the pneumatic hammer, known have been carriages which hold the hammer with its axis perpendicular to the ground, and are systematically moved forward step by step as the cut progresses. The hammer is made rigid with a pneumatic device which controls its
15 upward and downward movements. Owing to the wedge-like shape of the pneumatic hammer tool bit, extraction of the tool from the ground, after it has been driven into it, is very difficult. Furthermore, the cut progress is made much slower by the need for raising, lowering, and
20 positioning the tool at each step.

It is the aim of this invention to solve the cited technical problems by providing a device which allows road wearing courses to be cut through in a quick and easy way, while obviating the drawbacks of known devices.

25 This aim is achieved by a device for cutting through pavement courses with rotary disk tools, characterized in that it comprises a pneumatic or hydraulic hammer having a shank whereto a bracket is secured which carries a rotary disk

tool bit set for rotation in a plane transverse to the road course, said bracket having a ground-contacting shoe articulated laterally thereto.

Further details will be apparent from the detailed description of a preferred embodiment of the device for cutting through pavement courses, as illustrated in the accompanying drawings, where:

Figure 1 shows a side view of the device according to the invention as mounted on a carrier slide, and in exploded representation thereto a perspective view of a vibrating plate (known per se); and

Figure 2 is a front view of the device.

With reference to the cited drawing figures, generally indicated at 1 is the device for cutting through road courses, which comprises a pneumatic or hydraulic hammer 2 of a conventional type. The device 1 is provided with a cutter bit including a rotatable disk 3 mounted for free rotary movement on an axial pin 4 which is carried at the ends of a bracket 5. The bracket 5 defines at the top an attachment seat 6 for a conical coupling 7 formed by the enlarged tip of the shank 8 of the hammer 2. Thus, the centre of the rotatable disk 3 is laid on the plane containing the axis of the hammer 2. To favor its penetration, the rotatable disk 3 has two faces converging toward its edge as shown in Figure 2.

A ground-engaging shoe 9 is articulated to the pin 4 externally to the bracket 5 and raised at the leading end in the forward direction of the device and enclosing the disk 3.

The hammer 2, is carried on a slide 10 equipped with suitable forward movement means and communicates through a pipe 2a with a source of pressurized fluid, for example a compressor, in a manner known per se, and no further described or illustrated herein. The slide 10 has, articulated frontally thereto on a cross-pin 11, a guide cylinder 12 having a square inside cross-section, wherein a complementary cross-section rod 13 is slidable which extends out of the cylinder. The rod 13 carries at its free end a bracket 14 whereto there is fastened, as by screw means 15 and with the interposition of a set of adjustment spacers 16, a plate 17 which bears onto a pair of external protuberances 18 on the cylinder 12.

The plate 17 is formed with a pair of supports 19 in the proximity of the area of attachment of the rod 13 to the bracket 14, said supports 19 being adapted for cooperation with respective brackets 20 in clamping the transverse handles 21 of the hammer 2 to the plate 17. The hammer 2 itself also bears onto the plate 17, through an elastic packing 22 and, accordingly, lies parallel to the guide cylinder 12.

The inclination of the guide cylinder 12 is adjustable in the vertical plane through inclination control means which, in the illustrated embodiment comprises a pneumatic cylinder 23 communicating with a source of pressurized fluid in a known manner (not illustrated) which is articulated at its ends, 24 and 25 respectively, to the slide 10 and a flange 26 rigid with the guide cylinder 12. Obviously, the pneumatic cylinder 23, may be

replaced by any suitable means for controlling the inclination of the guide cylinder 12, such as power assisted means or even a mechanical jack arrangement. To secure the guide cylinder 12 in a preset working position, the flange 26 is provided with a pair of holes 27 whose centres are arranged to lie on an arc radius of the cross pin 11 corresponding with the centres of a plurality of holes 28 formed in a further flange 29 which projects from the slide 10. Said pair of holes 27 being axially alignable with any equally spaced pair of said plurality of holes 28, thereafter locking means such as screw means can be inserted through the axially aligned holes 27, 28 to "lock" the guide cylinder 12 at a desired inclination. The flanges 26 and 29 are arranged to face each other and the articulation pin 11 is passed therethrough. Also adjustable is the position of the rod 13 along the guide cylinder 12, which may also be locked through the insertion of screw means engaging respective holes 30.

To move the device forwards, a vibrating plate indicated generally at 31 in the drawing and not described in detail because known per se is preferably mounted on the slide 10. Appropriate holes 32 are provided in the slide 10 for mounting the vibrating plate 31.

It should be noted that it would be possible to attach to the slide 10 the drive members alone for the vibrating plate 31, which would then be replaced by the slide itself.

It is obviously possible to provide different means for the device forward movement. The cylinder 12, for

example, may be mounted on a carriage which is moved forward by a pneumatic drive.

The operation of the device is apparent from the above description. The percussion action provided by
5 the pneumatic or hydraulic hammer 2 is transmitted to the rotary disk tool bit 3 which works as a rotary road course cutter.

In the working position, the hammer 2 has an axis which leans backwards with respect to the direction of
10 forward movement A of the device 1, this inclination being determined by the position of the guide cylinder 12 whereto said hammer is parallely secured. The inclination is adjustable, through the pneumatic cylinder 23, according to the characteristics of the pavement
15 course to be cut.

The presence of the shoe 9, which bears on the ground during the cut, ensures correct positioning of the tool, thereby avoiding excessive penetration.

By virtue of the combined effect of the forward
20 movement imparted to the device, either manually or preferably through the slide 10, and the inclination of the hammer 2, a rotational movement is imparted to the disk 3 causing it to rotate about its axis 4 and a simultaneous percussion action is provided by the hammer 2. This
25 combined, imparted rotational movement and percussion action facilitate withdrawal of the tool from the ground, which takes place accordingly without the previously experienced problems.

CLAIMS

1 1. A device for cutting through pavement courses
2 with rotary disk tools, characterized in that it comprises
3 a pneumatic or hydraulic hammer (2) having a shank (8)
4 whereto a bracket (5) is secured which carries a
5 rotary disk tool bit (3) set for rotation in a
6 plane transverse to the road course, said bracket
7 having a ground-contacting shoe (9) articulated
8 laterally thereto.

1 2. A device according to Claim 1, characterized
2 in that said hammer (2) is carried on a slide (10)
3 having forward movement means (31), in an angularly
4 adjustable manner on the longitudinal vertical plane
5 to the forward movement direction.

1 3. A device according to Claim 2, characterized
2 in that articulated to said slide (10) on said vertical
3 plane is a guide cylinder (12) wherein a rod (13) is
4 slidable whereto there is secured, on the exterior of
5 said cylinder, a plate (17) which bears on said cylinder
6 and is provided with means (19,20) for clamping said
7 jack (2) parallel to the guide cylinder.

1 4. A device according to Claim 3, characterized
2 in that said guide cylinder (12) has an adjustable
3 inclination by means of a pneumatic cylinder (23)
4 articulated between said slide (10) and the cylinder
5 (12), means (26-29) being provided for locking the
6 guide cylinder in the preset working position.

1 5. A device according to Claim 2, characterized
2 in that said forward movement means comprise a
3 vibrating plate (31) secured on said slide.

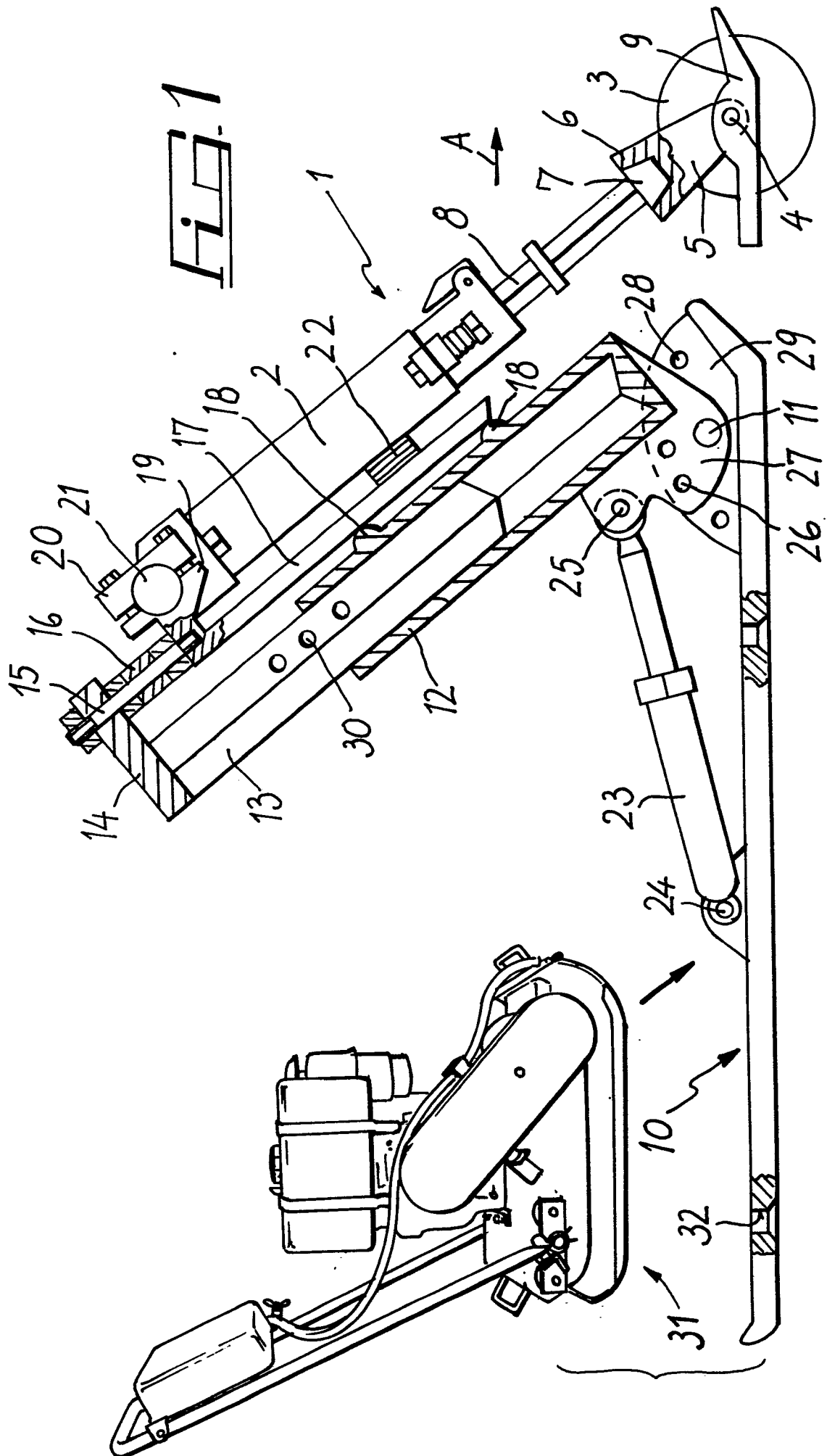


Fig. 2