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(54) **SYSTEM FOR CLAMPING REPLACEABLE ABRASIVE DISCS TO THE SIDES OF PLATES ON ROTATING DRESSERS**

ANORDNUNG ZUM KLEMMEN EINER AUSWECHSELBAREN SCHLEIFSCHEIBE AN EINEN TELLER EINER SCHLEIFMASCHINE

SYSTEME DE FIXATION DE DISQUES ABRASIFS REMPLA ABLES AUX FACES LATERALES DES PLAQUETTES D'APPAREILS ROTATIFS DE PON AGE

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(56) References cited:
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Description

[0001] This invention concerns dressing equipment for finishing the surfaces of manufactured articles or for preparing them for some further treatment.

[0002] Ordinary dressers, especially of the disc type, apply an abrasive part, in particular disc-shaped, to the surface of a structure such as the bodywork of a car or an article of wooden furniture or else a stone or wooden floor or threshold, to give it a finished appearance or to prepare the surface for further treatment such as painting.

[0003] Devices are present to draw up the dust produced by the abrasive part on the work surface, and to carry it into receptacles provided for the purpose so as to ensure a clean and healthy working environment.

[0004] Suction and removal of dust produced by this type of process is an aspect of first class importance

[0005] For this purpose a fan is fixed onto the shaft of the motor that rotates the plate and its abrasive disc, so that dust may be drawn up through a set of holes in the plate and in the abrasive disc, and from there carried through a pipe to a collecting receptacle.

[0006] To improve suction of dust other methods have been adopted such as mounting a separate electric aspirator whose pipe is connected to the dressing machine.

[0007] In all cases the plate contains within it radial tubes through which the holes on the working surface of the plate communicate with a chamber made inside the head of the dresser that supports both the electric motor and the plate itself.

[0008] Dressing is done by glueing abrasive discs onto the plate. Clearly the abrasive discs must also have holes in them the same as those on the Plate and in corresponding positions.

[0009] As the abrasive surface of the disc is subjected to such hard wear it needs frequent changing, a task attended with a certain amount of difficulty.

[0010] If the adhesive between plate and disk is weak, though easy to detach from the plate, it would be liable to shift during work considering the high speed, up to 8000 revs per minute, at which the plate rotates.

[0011] But if the glue is strong, detaching the worn disc, cleaning the surface of the plate and fixing a new disc are all time-consuming operations.

[0012] Once the glue has begun to harden it is obviously impossible to adjust the position of the disc which may be necessary to see that its holes fit over those in the plate.

[0013] As an alternative to glue there is another fixing method consisting of pairs of velcro pads placed on the working surface of the plate and on the back surface of the replaceable discs.

[0014] One way of doing this is to glue a piece of male velcro permanently onto the plate and to fix pieces of female velcro onto the surface of the disc.

[0015] A worn disc can therefore be pulled off the plate and a new one put on by simply pressing it into place.

[0016] But even this does not solve all the problems as fixing by velcro is inevitably rough and inaccurate and does not ensure stable adherence between plate and disc.

[0017] In addition it is practically impossible to align the holes in the plate with those in the disc as it is difficult to make said holes coincide and to match up the pieces of male and female velcro. This means that several attempts may have to be made before getting both disc and plate in their correct positions.

[0018] Application of velcro to the discs obviously implies a considerable increase in cost.

[0019] When discs are worn their disposal raises a problem since they would thus contain polluting properties.

[0020] Another proposal is to bend the outer rim of the disc onto a groove made all round the sides of the plate. An elastic ring placed round the bent rim of the disc determines its insertion inside this groove in the plate to give stability.

[0021] This being a difficult operation, a loading means has been proposed consisting of a disc with a flexible rim on which the elastic ring is placed; the disc has pins to fit into the holes in the plate and these pins guide the disc.

[0022] But neither does this suggestion solve the problem as the rim of the abrasive disc is generally not easy to bend. There would therefore have to be a disc with a flexible rim. Even so the operation would be lengthy and complex.

[0023] The prior patent US A 2 119 738 discloses a system for attaching replaceable abrasive disks to a rotating discoid body A with substantially cylindrical walls, comprising a discoid processing pad 1 of a substantially rigid base structure associated to a rubber superstructure 21 with rounded edges and a supporting discoid pad 2.

[0024] To assemble the abrasive disk B to the rotating body tongues 35 are provided on the edge of said disk, said tongues containing holes 36 to receive the pins 15 fixed on the face of the processing pad 1.

[0025] Application of the abrasive disk B to the processing pad 1 is rendered stable by the supporting pad 2 fixed on by the screw 50.

[0026] Replacement of the abrasive disk is a complicated and time consuming operation.

[0027] The present invention simplifies the structures and the operation of replacing abrasive disks as will be explained below.

[0028] The present invention is a system having the features of independent claim 1.

[0029] In one type of execution the pin is made in one piece with the plate.

[0030] In another type of execution the pin, made separately, is firmly fixed in a hole made for it in the truncated cone-shaped side of the plate.

[0031] In one execution, the surface of the plate where the abrasive disk will be applied is roughened to produce maximum friction against the disk and therefore maximum reciprocal grip accentuated by the effect of working pressure.

[0032] The rough surface can be obtained by firmly fixing a disk with an outer rough face onto the surface of the plate.

[0033] The invention offers evident advantages.

[0034] Replacement of abrasive discs is quick and easy it being sufficient to bend one edge of the elastic plate to do it. Corresponding positions of the holes in the disc and the pins on the plate, of fundamental importance for the requirements of efficient dust collection, is automatically ensured, there being no need for any special expedient.

[0035] Even when the abrasive disc is subjected to greatest stress its position in relation to the plate does not vary.

[0036] The greater are these stresses the greater is the grip of the disc on the plate with its roughened surface obtained by stable application of the abrasive disc glued over it.

[0037] The replaceable discs no longer need glue, adhesive or velcro.

[0038] Cost of each disc is lower than those with velcro pads.

[0039] In conclusion, the method described offers a considerable reduction in cost of production and in operating costs and times, as well as full correspondence between disc holes and plate pins, maximum simplicity and speed of the process.

[0040] Characteristics and purposes of the invention will be made still clearer by the following examples of its execution illustrated by diagrammatically drawn figures.

Fig.1 Perspective view from above of the plate for dressers showing pins for holding the abrasive disc.

Fig.2 Perspective view of the disc with perforated tongues.

Fig.3 Perspective view of the disc mounted on the plate.

Fig.4 Cross section of the abrasive disc at the start of its application onto the plate.

Fig.5 Completion of the operation in Fig. 4 also showing the dresser's motor-driven head.

Fig.6 Perspective view from above of dresser plate with stably fixed separately made pins.

Fig.7 Cross section of the plate in Fig. 6 and its abrasive disc, fixed to the dresser's motor-driven head.

Fig.12 Perspective view from below of an abrasive disc with perforated tongues being placed over a dresser plate with fixing pins, fitted with an ordinary type of abrasive disc permanently glued on.

Fig.13 The plate in Fig. 12 fixed to the motor-driven head of a dresser.

[0041] The plate 10 with its elastic plastic body 11 has four pins 13-16 placed at equal angular distances on the plate's truncated-cone shaped sides 12, said pins being substantially orthogonal to the working surface.

[0042] The abrasive disc 20 with radial aspiration holes 22 and abrasive surface 21 has four tongue-shaped pieces 23-26 placed at an angular distance corresponding to that of the pins 13-16 on the plate 10.

[0043] Through each tongue there is a hole 27 whose diameter corresponds to that of the pins 13-16.

[0044] To fit the disc onto the plate it is sufficient to press one of the tongues, e.g. 24, onto the pin 14 and then, by bending the rim 17 of the side 12 with the fingers, fit the hole 27 in the tongue 26 onto the pin 16, this pin being in a position diametrically opposite to pin 14.

[0045] Having now placed said pin 16 in the hole 27, and allowing the rim 17 to resume its original shape, and having done the same with the other pins and the other tongues, the abrasive disc 20 will be held firmly on the plate 10.
(Figs. 3-5).

[0046] In place of the pins made in one piece with the body 11 of the plate 12, pins 33-36 can be stably inserted through holes 38 in the sides 32 of the body 31 of the plate 30. These pins function in the same way as those made in one piece with the body of the plate.

[0047] Stresses on the abrasive disc are extremely high and become more severe as its speed of rotation and working pressure increases.

[0048] To ensure maximum stability between disc and plate, an ordinary abrasive disc 60 is mounted with glue 61, the abrasive face 62 of said disc 60 being placed against the plate 10, as shown in Figs. 12 and 13.

[0049] The abrasive disc 20 is then fitted onto the pins 13-16 as already explained.

[0050] Application of abrasive discs therefore becomes quick and easy at the same time ensuring correspondence of position between the suction holes 15, 16 on the plate and those 27 on the abrasive disc, as well as maximum stability between plate and disc while work is proceeding.

[0051] The motor-driven head of the rotating dresser is shown in the figures by the number 18.

Claims

1. System in rotating dressers (18) comprising a replaceable rotating disk (20), a rotating supporting body (10, 30) for said disk (20) and pairs of mechanical holding means interacting between said abrasive disk (20) and said rotating supporting body (10,30) consisting of radial tongues (23-26), with hole (27), projecting from the rim of the abrasive disk (20) and of pins (13-16, 33-36), said pins being fixed to said rotating supporting body and facing in the direction opposite to the working surface

and orthogonal to said surface,
characterized in that the rotating supporting body is an elastic plate (10, 30) in the shape of a truncated cone, whose working surface is constituted by the greater base of the truncated cone and in that said pins (13-16, 33-36) whose diameters correspond to those of the holes (27) in the radial tongues (23-26) are placed on the truncated cone shaped sides (12, 32), so that, having fitted one of the tongues (24) on the abrasive disk to one of the pins (14, 34), a tongue (26) diametrically opposite to the first one (24) can be fitted onto a corresponding pin (16, 36) diametrically opposite to the first pin (14, 34), doing so by using the fingers to bend the rim (17) of the elastic plate (10, 30) in the area where said opposite pin (16, 36) is fixed, until said pin (16, 34) enters the above hole, the disk (20) then being held in a stable manner to the plate (10, 30) by spontaneous return of the elastic rim (17) to its former shape.

2. System as in claims 1,
characterized in that the pin (13-16) is in one piece with the plate (10).

3. System as in claim 1,
characterized in that the pin (33-36) is firmly fixed in a hole (38) made for it on the truncated cone-shaped sides of the plate (30).

4. System as in claim 1,
characterized in that, in addition to the holding means (13-16, 23-26, 33-36,), the surface of the plate (10, 30,) to which the abrasive disk (20, 50) is to be applied, is made as rough as possible to produce maximum friction against the disk (20,) and therefore maximum reciprocal grip created by working pressure.

5. System as in claim 4,
characterized in that said roughness is obtained by firmly glueing to the surface of the plate (10, 30,) a disk (60) with a rough external face (62).

Patentansprüche

1. System eingesetzt in rotierende Hohnmaschinen (18), beinhaltend eine austauschbare Schleifscheibe (20), einen Rotierkörper (10,30) zur Halterung dieser Schleifscheibe (20) und eine Reihe an Paarungsmitteln zur mechanischen Verankerung, die zwischen der genannten Schleifscheibe (20) und jenem Halterungsrotierkörper (10,30) wirken und die aus Radiallappen (23-26) bestehen, versehen mit einer Bohrung (27), die vom Rand der Schleifscheibe (20) hinausragen und weiterhin Zäpfchen (13-16, 33-36) aufführen, die einen Durchmesser haben, der mit dem der Bohrung (27) der Radiallappen (23-26) übereinstimmt, die auf dem Halterungsrotierkörper befestigt sind und die zur entgegengesetzten Seite gegenüber der Arbeitsfläche und rechtwinklig zu jener Fläche hin gewandt sind,
dadurch gekennzeichnet, daß der Halterungsrotierkörper eine elastische kegelstumpfige Platte (10,30) ist, deren Arbeitsfläche aus der größeren Basis des Kegelstumpfes besteht und dadurch, daß die genannten Zäpfchen (13-16, 33-36) auf den kegelstumpfigen Flanken (12,32) angeordnet sind, und dies um einen der Lappen (24), die auf der Schleifscheibe sind, auf eines der Zäpfchen (14,34) anbringen zu können; der zu diesem ersten Lappen (24) diametrisch entgegengesetzte Lappen (26) kann auf den entsprechenden Zapfen (16,36), der dem ersten Zapfen (14,34) diametrisch entgegengesetzt ist, angebracht werden;
um dies zu vollziehen verwendet man nur die Finger um den Rand (17) der elastischen Platte (10,30) in der Zone, Wo der genannte Zapfen (16,36) befestigt worden ist, zu biegen, bis der genannte Zapfen (16,36) in die obenverlegte Bohrung eingedrungen ist; die Schleifscheibe (20) wird dann von der Platte (10,30) auf feste Weise, durch die spontane Rückkehr des Randes (17) an seine vorherige Form aufgehalten.

2. System wie unter Anspruch 1),
dadurch gekennzeichnet, daß das Züpfchen (13-16) einstückig mit der Scheibe (10) ist.

3. System wie unter Anspruch 1)
dadurch gekennzeichnet, daß das Zäpfchen (33-36) stabil in eine dazu geeignete Bohrung (38), die auf den kegelstumpfigen Flanken (32) der Platte (30) voreingestellt worden ist, befestigt ist.

4. System wie unter Anspruch 1),
dadurch gekennzeichnet, daß den Verankerungsmitteln (13-16, 23-26, 33-36) die Voreinstellung der maximalen Rauheit - auf der Oberfläche der zur Anbringung der Schleifscheibe (20,50) bestimmten Platte (10,30) - assoziiert worden ist, um die höchste Reibung gegen die Schleifscheibe (20) und folglich die maximale gegenseitige, durch den Arbeitsdruck bewirkte Griffigkeit, zu bestimmen.

5. System wie unter Anspruch 4),
dadurch gekennzeichnet, daß die Rauheit erreicht wird, indem man auf stabile Weise auf die Oberfläche der Platte (10,30) eine Scheibe (60) mit rauher Aussenflanke (62) klebt.

Revendications

1. Système pour polisseuses rotatives (18) comprenant un disque (20) abrasif interchangeable un

corps (10, 30) rotatif supportant ledit disque (20), et un bon nombre de couples de moyens de fixation mécanique agissant entre le disque abrasif (20) et ce corps (10, 30) rotatif de support, consistant en languettes radiales (23, 26) percées d'un trou (27) saillant du bord du disque (20) abrasif et en petits ergots (13-16, 33-36) dont le diamèttre correspond à celui du trou (27) des languettes radiales (23-26) dudit corps rotatif de support et tournés du côté opposé au plan de travail et perpendiculaires à ce plan,
caractérisé par le fait que le corps rotatif de supporf est un plateau élastique tronconique (10, 30), dont le plan de travail est formé par la grande base du tronc de cône et par le fait que lesdits ergots (13-16, 33-36) sont disposés sur les côtés tronconiques (12, 32) de façon qu'il soit possible d'appliquer une des languettes (24) du disque abrasif à l'un des ergots (14, 34), la languette (26) diamétralement opposée à la première (24) pouvantt être appliquée sur l'ergot (16, 36) correspondant diamétralement opposé au premier ergot (14, 34), pour ce faire, il suffit de plier avec les doigts le bord (17) du plateau élastique (10, 30) dans la partie où est fixé cet ergot opposé (16, 36) jusqu'à ce qu'il pénètre dans le trou de la languette, le disque (20) étant retenu de façon fixe au plateau (10, 30) par le retour spontané du bord (17) à sa forme précédente.

2. Système conformément à la revendication 1), caractérisé par le fait que l'ergot (13-16) ne forme qu'une pièce avec le plateau (10).

3. Système conformément à la revendication 1), caractérisé par le fait que l'ergot (33-36) est fixé de façon stable dans le trou (38) ménagé sur les côtés (32) tronconiques du plateau (30).

4. Système conformément à la revendication 1), caractérisé par le fait qu'aux moyens de fixation (13-16, 23-26, 33-36) est associée la disposition sur la surface du plateau (10, 30) destiné à l'application du disque (20, 50) abrasif du degré maximum de rugosité de façon à déterminer le maximum de friction contre le disque (20) et par conséquent la meilleure prise réciproque par effet de la pression de travail.

5. Système conformément à la revendication 4) caractérisé par le fait que l'on obtient la rugosité en collant de façon stable sur la surface du plateau (10, 30) un disque (60) dont la face (62) extérieure est rugueuse.

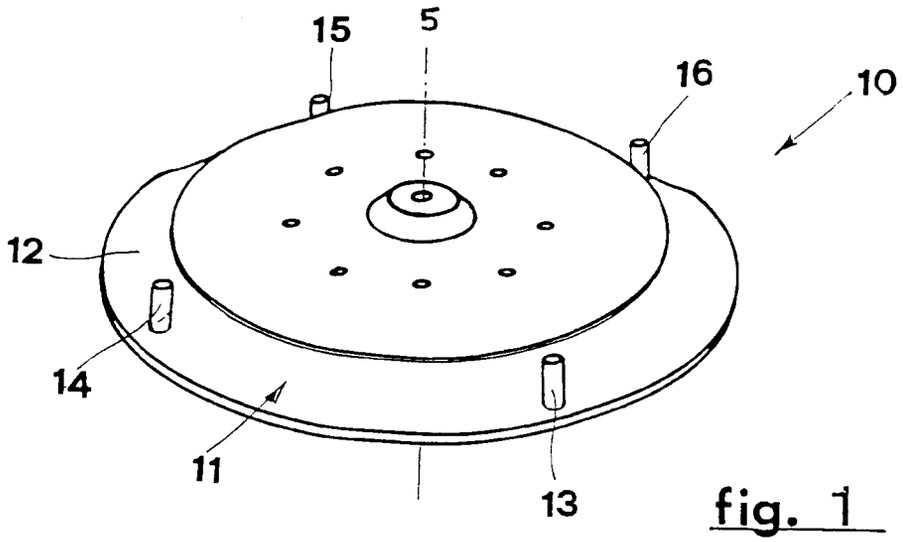

fig. 1

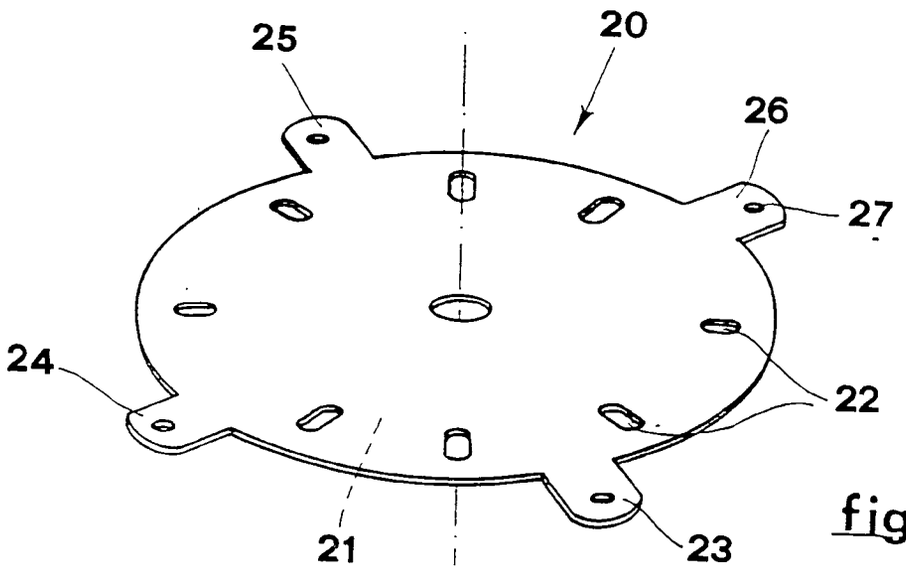

fig. 2

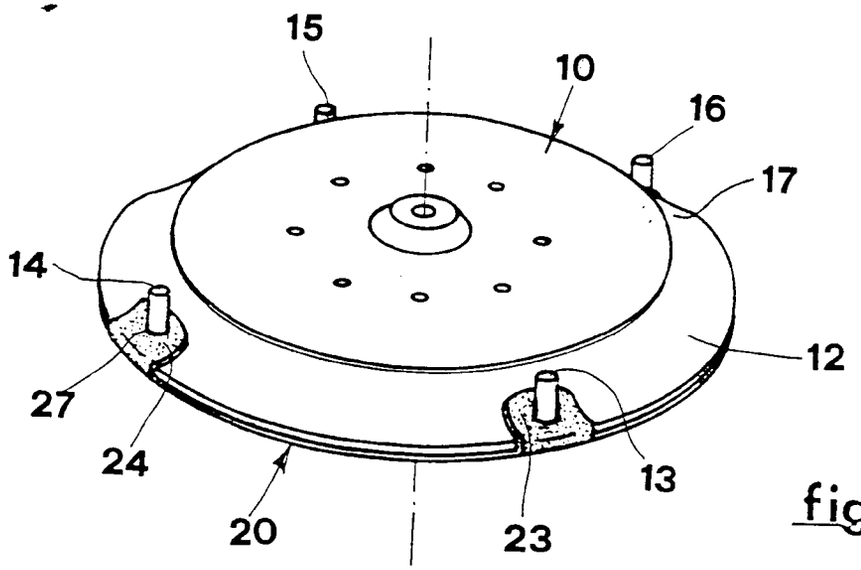

fig. 3

fig. 4

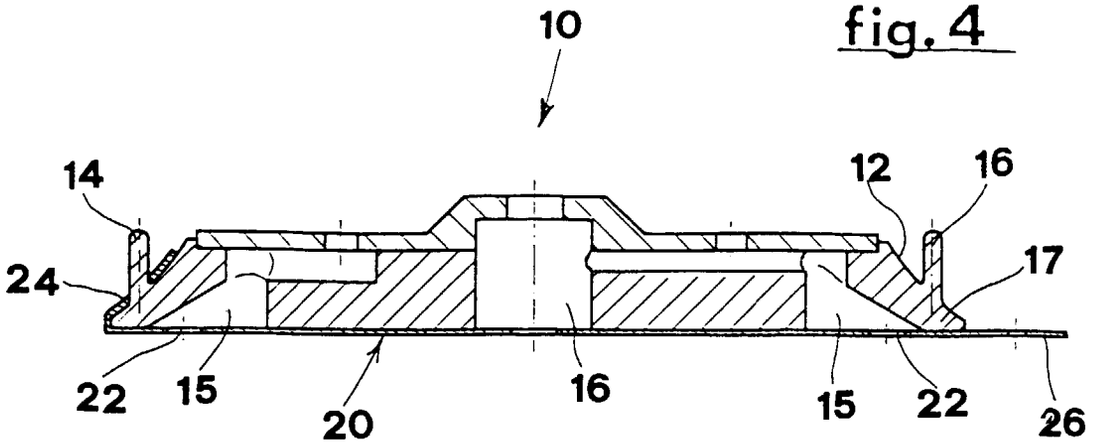
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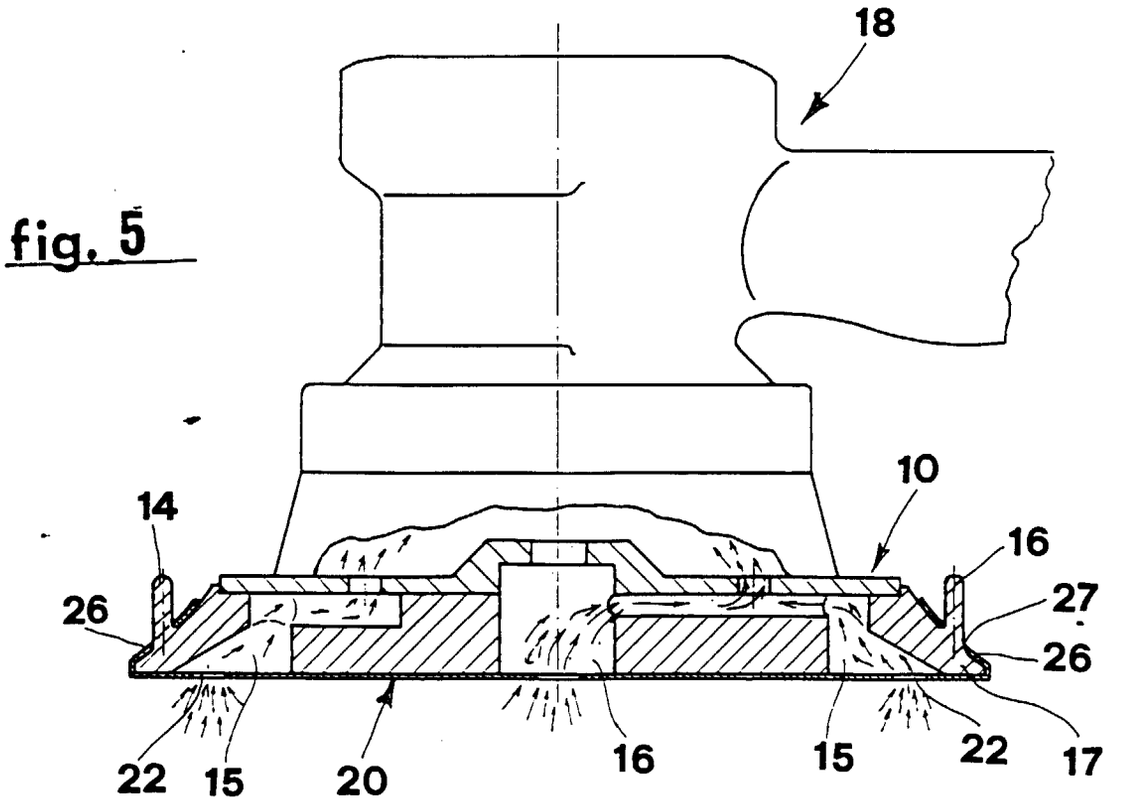
fig. 5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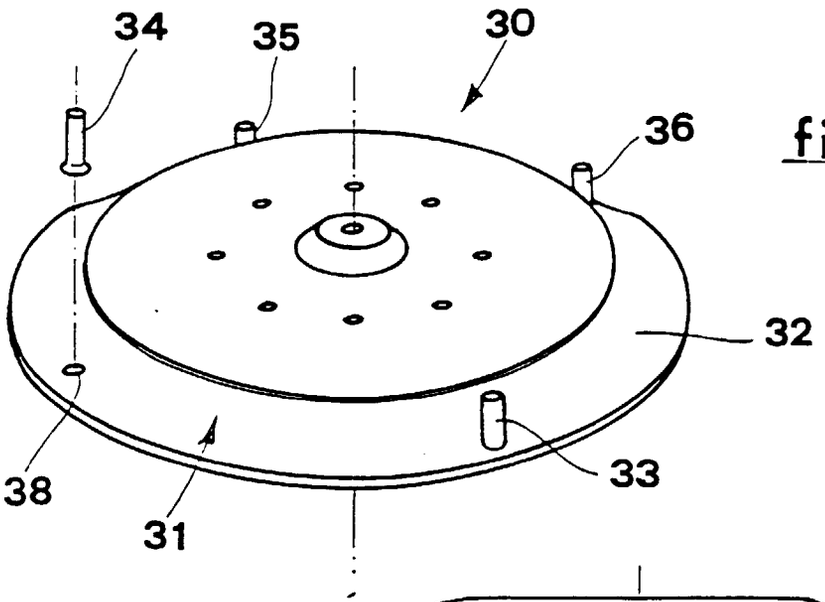

fig. 6

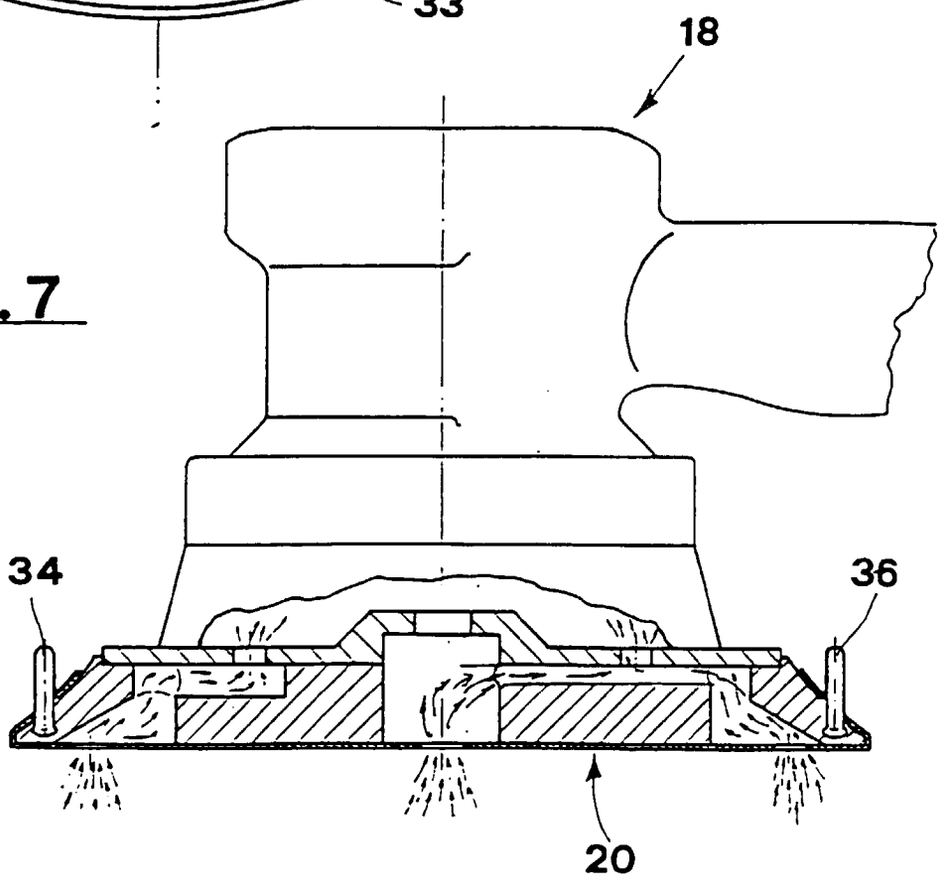

fig. 7

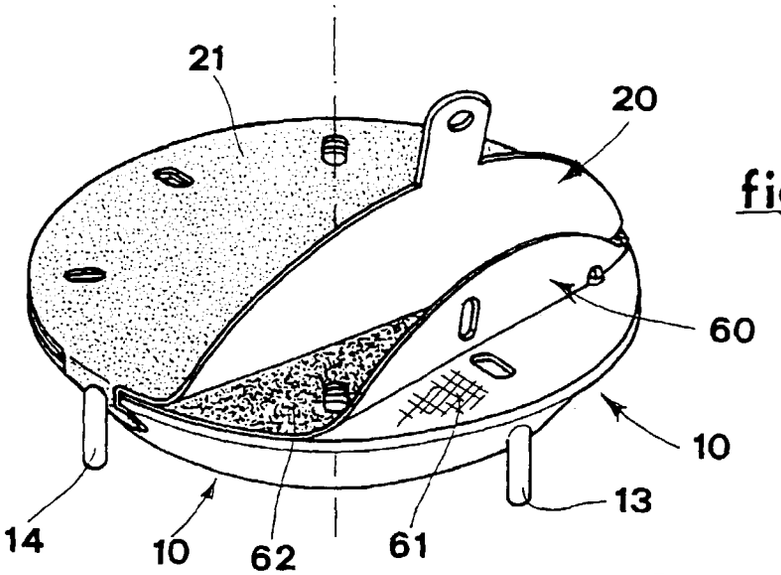

fig. 12

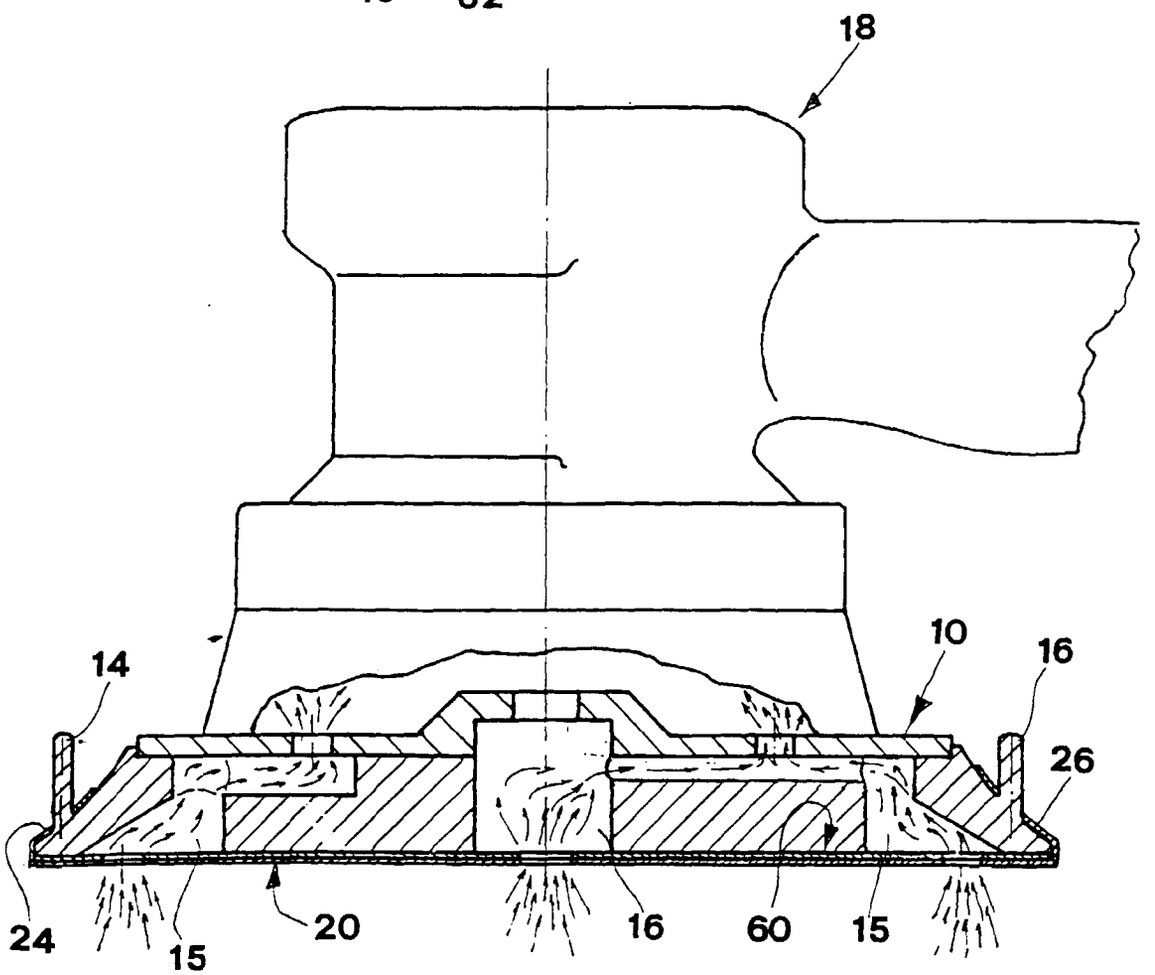

fig. 13