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(54) **Polishing tool powered by air pressure**

Mit Druckluft angetriebenes Polierwerkzeug

Outil de polissage entraîné à l'air comprimé

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Description

The present invention relates to a polishing tool making use of rotation of an air motor used in a wax finishing process or the like in automobile plate coating.

DE-U1-89 04 020.1 discloses a polishing tool according to the precharacterising part of claim 1. This device has a complicated construction.

The object of the invention is to provide a polishing tool with a simple structure, which allows for a convenient way of cooling and cleaning the working piece.

This object is achieved by a polishing tool according to claim 1.

The present invention provides the advantage of a regulation of the driving of the motor, cooling and cleaning of the working piece by valves during polishing.

Further embodiments of the invention are given according to the subclaims.

A description of embodiments of the invention according to the figures is given as follows.

The drawings describe the invention, in which:

Fig. 1 is a longitudinal sectional view of the invention;

Fig. 2 is a front view of appearance showing an embodiment of the invention;

Fig. 3 is a top view of Fig. 1;

Fig. 4 is a side view of Fig. 1 as seen from the compressed air connection port side; and

Fig. 5 is a sectional view of a second embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to Fig. 1 to Fig. 4, a first embodiment of the invention is described below. In the following explanation, compressed air for action to be injected into the central area of the polishing surface is called "cooling air."

Fig. 2 is a side view of appearance of a polishing tool, and Fig. 3 is its plan view. Reference numeral 1 denotes a handle, and 2 is a side handle, and the operator holds two handles 1, 2 to do the polishing work. Reference numeral 3 is a main body of polishing tool, in which an air motor 11 is incorporated. Reference numeral 4 is a pad for polishing, and 5 is a compressed air connection port provided at the end of the handle 1, and by opening a main valve 9 by a main lever 8, the supplied compressed air manipulates an air motor control valve 10 by an air motor control lever 7 to drive an air motor 11, thereby driving the pad 4 which is eccentrically driven by a rotary shaft 12. By manipulating a cooling air control valve 13 by a cooling air control lever 6, the feed rate of the cooling air is controlled.

The pad 4 is fitted to a pad base 14 which rotates and oscillates, and is composed of sponge 15 and wool buff 16. At the end of the side handle 2 (Fig. 3), an air

motor exhaust filter 17 is provided. The pad base 14 is fitted to the rotary shaft 12 through a pad skirt 18.

The compressed air introduced into the main body 3 from the compressed air connection port 5 provided at the end of the handle 1 is led into a common passage 19 in the main body by releasing the main valve 9, and is then branched into a driving source passage 19a and a cooling air passage 19b. The compressed air led into the driving source passage 19a side is adequately controlled by the air motor control valve 10 to rotate the air motor 11, and passes through the passage in the side handle 2, and is filtered through the air motor exhaust filter 17 to be rid of oil content or the like, and is discharged.

On the other hand, the compressed air led into the cooling air passage 19b is adequately controlled by the cooling air control valve 13, penetrates obliquely in the main body 3, passes through an air passage 25 provided in a fixed shaft 24 in the upper part of the main body 3, and is injected through air vents 22, 23 through an air passage 21 in the rotary shaft 12. As shown in the drawing, the vent hole 23 is nearly in the middle of the working surface, and the compressed air forms a flow moving from here in the outer circumferential direction (see arrow a). By this flow of air, both the tool side and workpiece side are cooled. This flow of air also scatters the polishing waste chips remaining on the workpiece surface to clean the working surface.

Fig. 5 shows an example of leading the cooling air flowing path into the air passage 21 in the rotary shaft 12 by passing through a different passage from the embodiment above after branching off from the common passage 19 in the main body 3. In this embodiment, the cooling air passage 19b branching off from the common passage 19 descends the air passage 20 in the main body 3, and flows from the air passage 21a provided in the lateral direction in the rotary shaft 12 through the air passage 21 in the rotary shaft 12, and is injected through the air vents 22, 23.

By branching the compressed air during the polishing process, and partly injecting as cooling air, both the tool side and workpiece side are cooled. Moreover, by scattering the polishing waste chips by the flow of air, the working surface is cleaned, and therefore a favorable finished surface is obtained, while the working efficiency may be notably enhanced because it is not required to interrupt the work to cool or clean.

Claims

1. A polishing tool powered by air pressure, comprising

a driving source passage (19a) in a main body (3) for supplying compressed air for working from a single connection port (5)

a cooling air passage (19b) for injecting air through an air passage (21) in a motor rotary

shaft (12) in the central part of the polishing working surface,
characterized in that

the driving source passage (19a) and the cooling air passage (19b) are both connected within the main body (3) with the single connection port (5) and
an independently acting control valve (10, 13) is provided in each individual passage (19a, 19b).

2. The polishing tool of claim 1,
wherein a main control valve (9) is provided in a connection passage between the single connection port (5) and the connection of the driving source passage (19a) and the cooling air passage (19b).

3. The polishing tool of claim 1 or 2,
wherein the outlet of the air motor (11) is connected to an exhaust filter (17) at the end of a side handle (2).

4. The polishing tool of one of claims 1 to 3,
wherein the cooling air passage (19b) is connected with the vent hole (23) through an air passage (21) in a rotary shaft (12) driving a polishing pad (4).

5. The polishing tool of one of claims 1 to 3,
wherein the cooling air passage (19b) is connected with the vent hole (23) through an air passage (21a) provided in a lateral direction to a rotary shaft (12) driving a polishing pad (4) and an air passage (21) in the rotary shaft (12).

Patentansprüche

1. Polierwerkzeug, das mit Druckluft angetrieben ist, mit

einem Antriebsquellendurchgang (19a) in einem Hauptkörper (3) zum Liefern von Druckluft zum Arbeiten von einer einzelnen Verbindungsöffnung (5),
einem Kühlluftdurchgang (19b) zum Injizieren von Luft durch einen Luftdurchgang (21) in einer Motordrehwelle (12) in den Mittelteil der Polierarbeitsoberfläche,
dadurch gekennzeichnet,

daß der Antriebsquellendurchgang (19a) und der Kühlluftdurchgang (19b) beide innerhalb des Hauptkörpers (3) mit der einzelnen Verbindungsöffnung (5) verbunden sind und
ein unabhängig wirkendes Steuerventil (10, 13) in jedem individuellen Durchgang (19a, 19b) vorgesehen ist.

2. Polierwerkzeug nach Anspruch 1,

bei dem ein Hauptsteuerventil (9) in einem Verbindungsdurchgang zwischen der einzelnen Verbindungsöffnung (5) und der Verbindung des Antriebsquellendurchganges (19a) und des Kühlluftdurchganges (19b) vorgesehen ist.

3. Polierwerkzeug nach Anspruch 1 oder 2,
bei dem der Auslaß des Druckluftmotors (11) mit einem Auspufffilter (15) an dem Ende eines Seitenhandgriffes (2) verbunden ist.

4. Polierwerkzeug nach einem der Ansprüche 1 - 3,
bei dem der Kühlluftdurchgang (19b) mit dem Entlüftungsloch (23) durch einen Luftdurchgang (21) in einer Drehwelle (12) verbunden ist, die ein Polierkissen (4) antreibt.

5. Polierwerkzeug nach einem der Ansprüche 1 - 3,
bei dem der Kühlluftdurchgang (19b) mit dem Entlüftungsloch (23) durch einen Luftdurchgang (21a), der in einer seitlichen Richtung zu einer Drehwelle (12) vorgesehen ist, die ein Polierkissen (4) antreibt, und durch einen Luftdurchgang (21) in der Drehwelle (12) verbunden ist.

Revendications

1. Outil de polissage actionné par pression pneumatique, comprenant

un passage de source d'entraînement (19a) dans un corps principal (3) destiné à délivrer de l'air comprimé qui agira à partir d'un seul orifice de raccordement (5)

un passage d'air de refroidissement (19b) destiné à injecter de l'air à travers un passage d'air (21) dans un arbre rotatif de moteur (12) dans la partie centrale de la surface du travail de polissage,

caractérisé en ce que

le passage de source d'entraînement (19a) et le passage d'air de refroidissement (19b) sont tous deux raccordés, à l'intérieur du corps principal (3), au seul orifice de raccordement (5), et une vanne de régulation à fonctionnement autonome (10, 13) est prévue dans chaque passage individuel (19a, 19b).

2. Outil de polissage selon la revendication 1,

dans lequel une vanne de régulation principale (9) est prévue dans un passage de raccordement entre l'orifice de raccordement unique (5) et le raccordement du passage de source d'entraînement (19a) et le passage d'air de refroidissement (19b).

3. Outil de polissage selon la revendication 1 ou 2,
dans lequel l'orifice d'évacuation du moteur

pneumatique (11) est raccordé à un filtre à échappement (17) à l'extrémité d'un manche latéral (2).

4. Outil de polissage selon l'une des revendications 1 à 3,

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dans lequel le passage d'air de refroidissement (19b) est raccordé à l'orifice d'aération (23) au moyen d'un passage d'air (21) dans un arbre rotatif (12) qui entraîne un patin de polissage (4).

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5. Outil de polissage selon l'une des revendications 1 à 3,

dans lequel le passage d'air de refroidissement (19b) est raccordé à l'orifice d'aération (23) au moyen d'un passage d'air (21a) prévu dans une direction latérale par rapport à un arbre rotatif (12) qui entraîne un patin de polissage (4) et un passage d'air (21) dans l'arbre rotatif (12).

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FIG.1

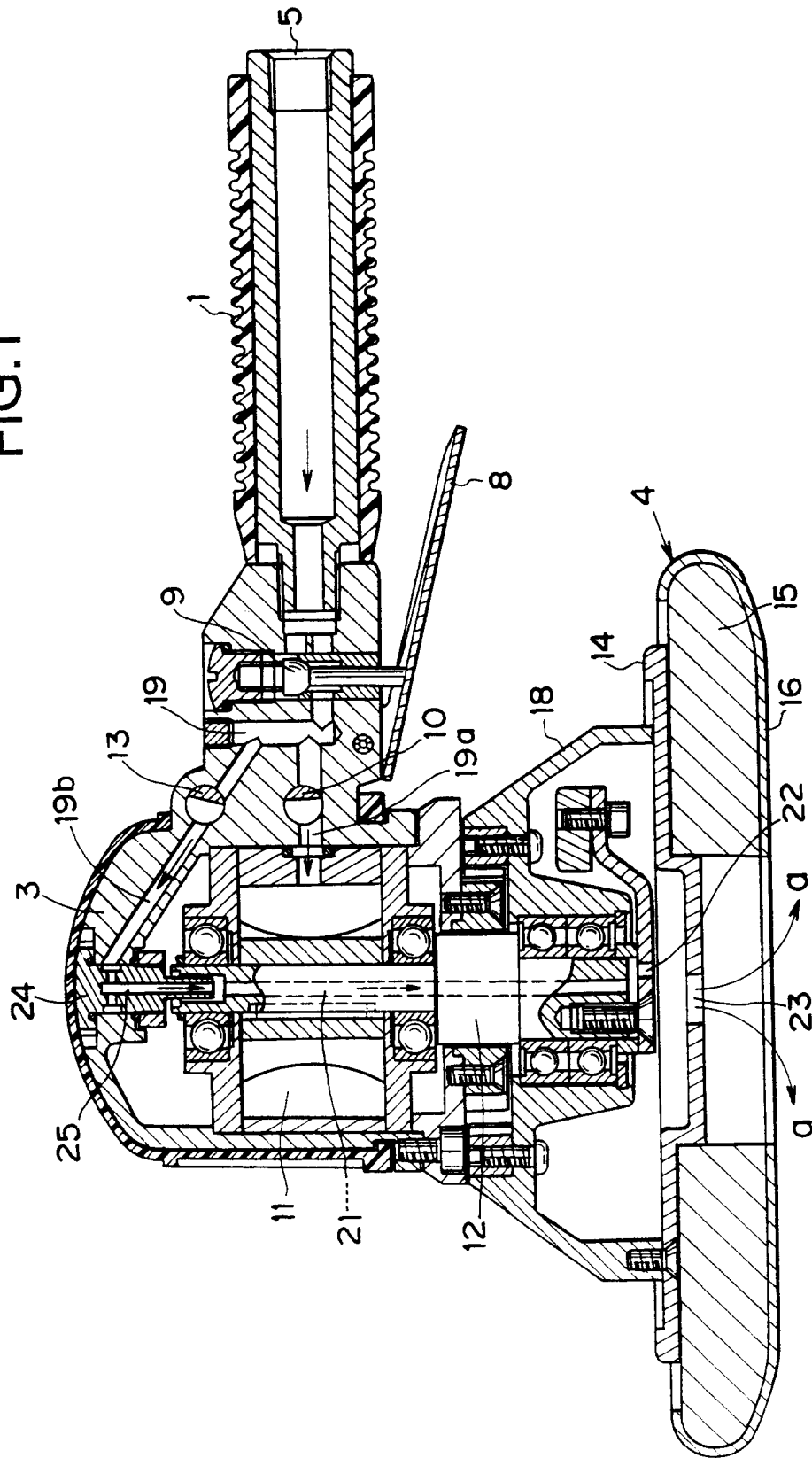


FIG.2

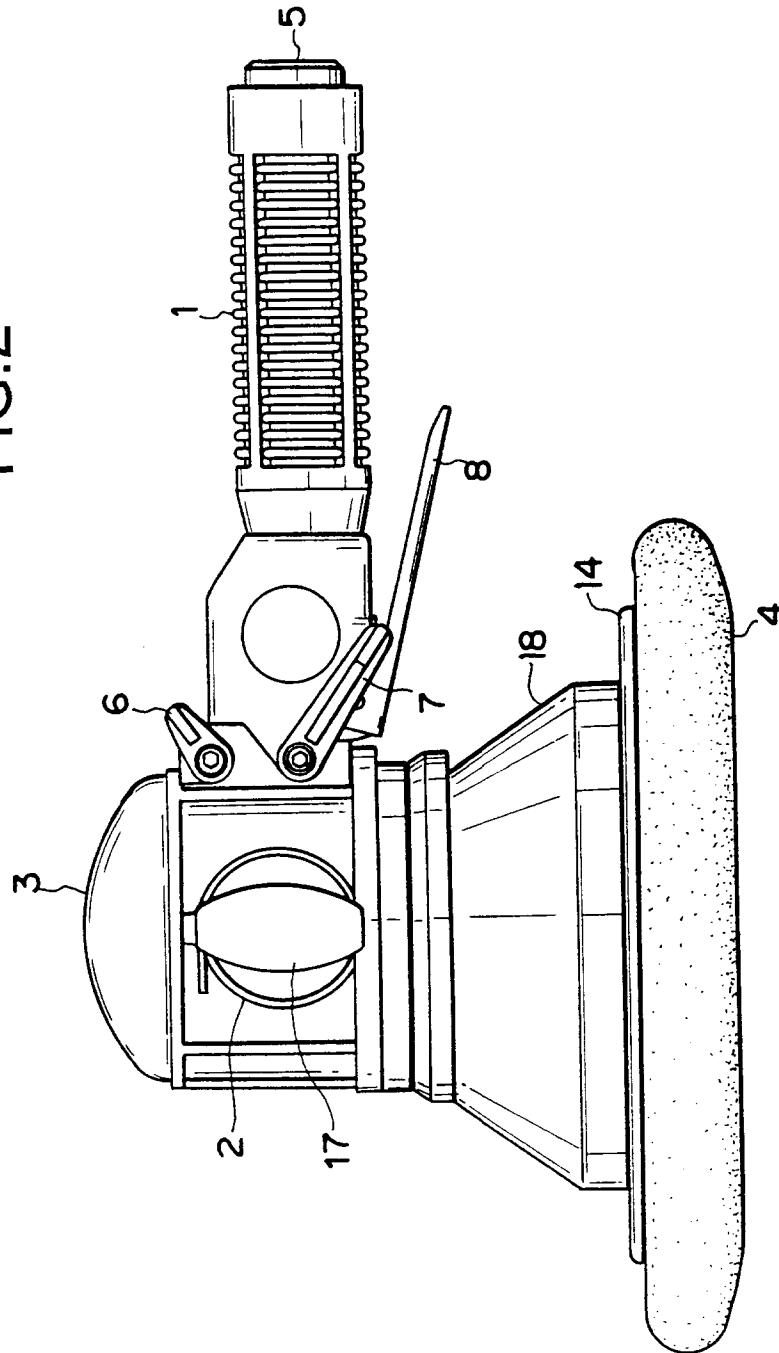


FIG.3

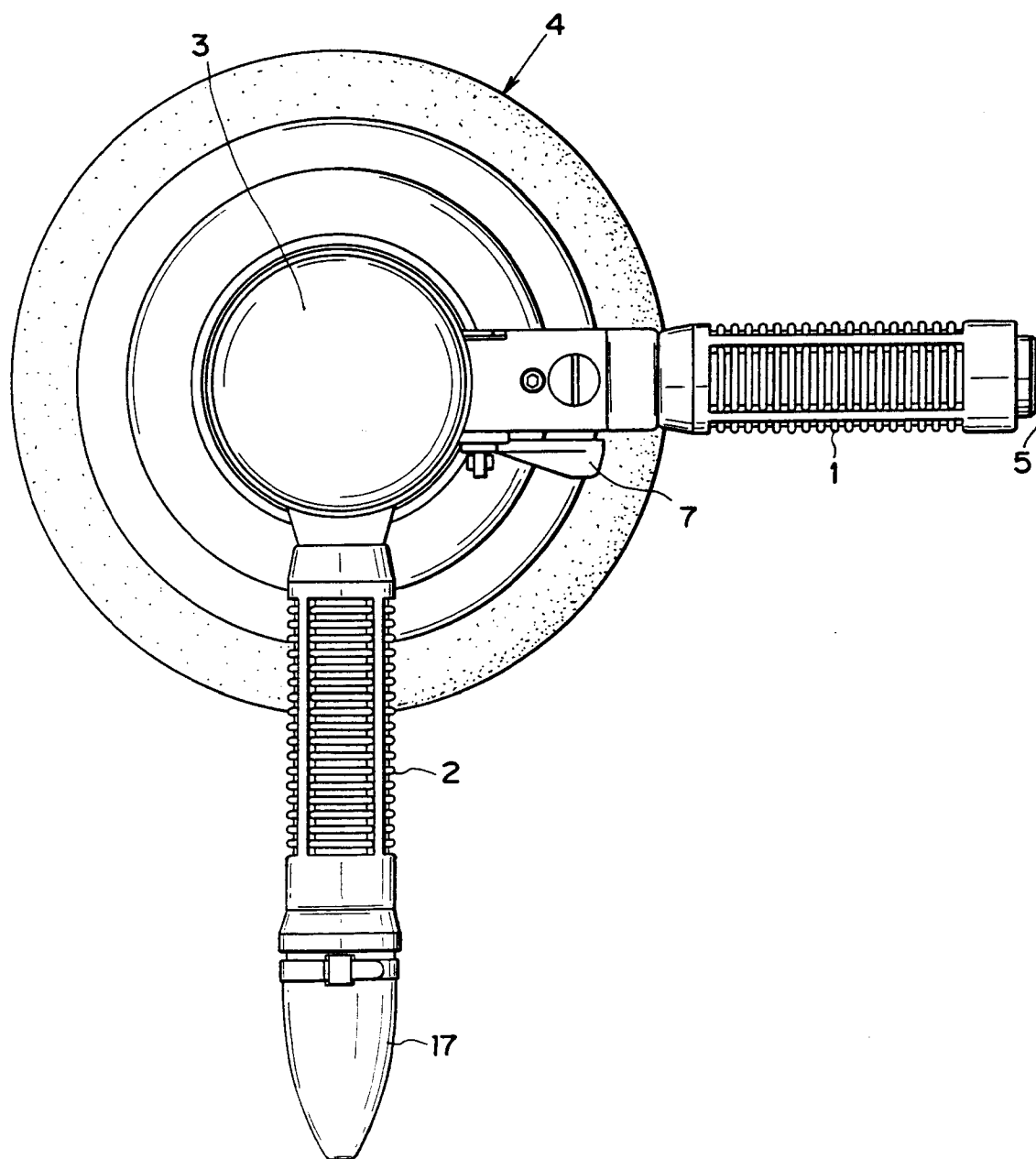


FIG.4

