March 25, 1969 W. BLUBAUM 3,434,464

DEVICE WITH ADJUSTABLE TEMPLET FOR DRESSING PROFILED GRINDING WHEELS

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Fig.1

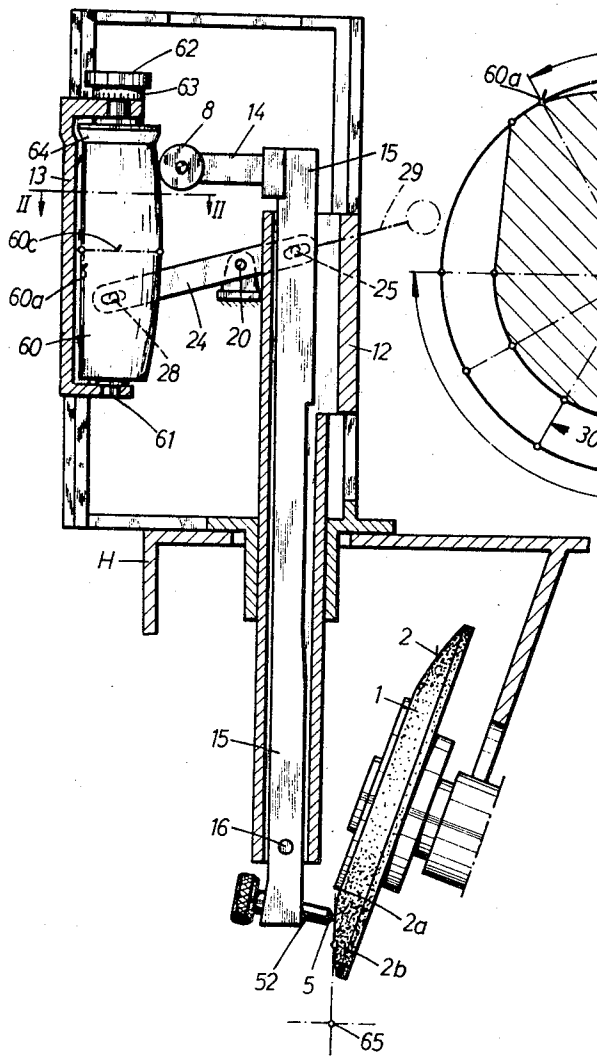
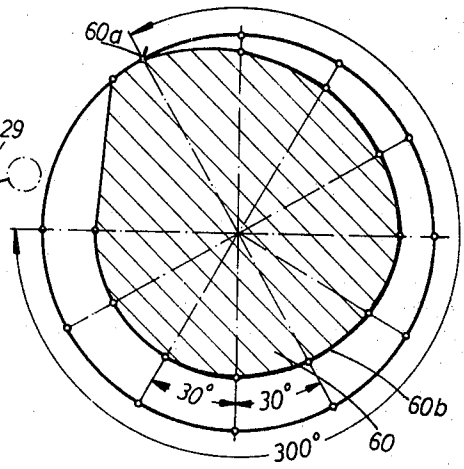


Fig.2



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DEVICE WITH ADJUSTABLE TEMPLET FOR DRESSING PROFILED GRINDING WHEELS

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U.S. Cl. 125—11 2 Claims

ABSTRACT OF THE DISCLOSURE

A grinding wheel dresser embodying a templet body in which the templet body is angularly adjustable about a predetermined axis and is traversed by a feeler in the axial direction during the dressing operation. The templet body has one axially extending surface region which is a straight line parallel to the axis and another axially extending surface region circumferentially spaced from the first region and outwardly curved with respect to the body while the portion of the body between said regions curves outwardly an ever increasing amount from the first surface region to the second surface region.

The present invention relates to a device for dressing profiled grinding discs, especially grinding discs for grinding the cutting surfaces of millers provided with helical cutting grooves. More specifically, the present invention relates to a device of the type just mentioned, which is provided with a carriage carrying a templet and with a dressing carriage carrying the dressing tool, while both carriages are movable in a direction opposite to each other and are pivotally connected to each other by means of a control plate rotatable about a tilting axis. Such a device employs a templet in form of a steel band the arching of which is obtained by adjusting elements spaced from each other at regular distances, said adjusting elements being adapted by means of adjusting screws to be subjected to pull or pressure. A templet in form of a steel band is frequently composed of a plurality of links, and the setting of the steel band in conformity with measured values is relatively complicated.

It is, therefore, an object of the present invention to provide a device for dressing profiled grinding discs, which is considerably simplified over heretofore known devices of the type mentioned above.

It is another object of this invention to provide a device for dressing profiled discs, which is equipped with a considerably simplified templet.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing, in which:

FIG. 1 is a section through a templet device according to the present invention.

FIG. 2 illustrates on a scale considerably larger than that of FIG. 1 a cross section through the templet taken along the line II—II of FIG. 1.

In order considerably to simplify the templet for use in connection with the dressing of profiled grinding discs, it is suggested in conformity with the present invention, on the templet carriage to provide a templet body which is rotatable about its longitudinal axis and has different curves in its longitudinal direction, said templet body carrying a feeler roller which is operatively connected to the rocker arm carrying the dressing diamond. The adjusting value for the templet is derived from the differential angle of the miller to be ground and the grinding disc angle as well as the diameter thereof. The differential

angle of the miller to be ground can be calculated from the diameter of the addendum circle and from the diameter of the dedendum circle as well as from the pitch of the cutting groove.

Each surface line of the templet body in axial direction transforms at an angle of rotation of approximately 300° stepwise from a straight line to curves. According to a practical embodiment of the invention, this straight line may, for instance, transform to a curve with an arch height of 10 millimeters. The arch heights of the individual curves increase every 30° by 1 millimeter. The shape of this arch may be ascertained by means of a steel band templet.

From the course of the curves in axial direction, for the end face surfaces, confining lines are obtained which follow the course of Archimedes' spirals.

One end of the templet body may support an element by means of which during the dressing operation it is possible to move the dressing diamond away from the grinding disc so that the dressing diamond will move on the grinding disc along a lifting-off curve when the dressing operation has been completed.

The central cross section of the templet body is designed circularly so that when the feeler roller is in this central position, the dressing diamond will at the same time be located at the highest point of the dressing curve so that the tooth face to be ground will automatically be radial.

Referring now to the drawing in detail, the arrangement illustrated therein shows a templet carriage **13** which may be arranged in any standard manner. Templet carriage **13** has arranged thereon a templet body **60** which is rotatable about its shaft **61**. On the upper end (with regard to the drawing) of said shaft **61** there is provided an adjusting screw **62** with a dial **63**. Templet body **60** is engaged by a feeler roller **8** carried by a supporting arm **14** which in its turn is connected to a rocker arm **15**. Rocker arm **15** is pivotally supported by a bolt **16**. The lower end of rocker arm **15** carries a dressing diamond holder **52** which in its turn supports the dressing diamond **5** for dressing the flank **2** of the grinding disc **1**.

Templet body **60** has a straight line **60***a* which is parallel to the axis of rotation of said templet body and which over a circumferential angle of 300° gradually and steplessly transforms to a curve having an arch height of 10 millimeters. The height of the arch of all curves increases every 30° by 1 millimeter so that when viewing the cross section, curves **60***b* (FIG. 2) are obtained which follow the course of Archimedes' spirals. When the dial **63** fixedly connected to the templet body **60** is adjusted to the position "0," and if now the templet body **60** is moved, also the dressing diamond **5** will move along a straight line and the grinding disc **1** will be dressed according to a straight line.

When dial **63** and thus templet body **60** are rotated to a position corresponding to a curve between the said straight line **60***a* and a curve with the arch height of 10 millimeters, the dial will always indicate 1/10 of the arch height on the curve body. Since the maximum arch height is 10 millimeters, the dial will then be on 1 millimeter. Due to the lever ratio from the feeler roller **8** to the bolt **16** of rocker arm **15** and from the said bolt **16** to the tip of the diamond **5**, which ratio may for instance be constant 1:10, the diamond **5** circumscribes a curve the arch height or elevation of which will correspond to the value adjusted on the dial. The curve **2** obtained during the dressing operation on grinding disc **1** will then have an arch height or elevation corresponding to the dial value.

Mounted on the templet body **60** is a conical member **64** the upper end of which corresponds to the end face view of the templet body and at its upper end has a cylindrical shape. The purpose of this member **64** consists in lifting the diamond **5** off grinding disc **1** when

the dressing operation has been completed. Diamond **5** also forms the lifting curve **2***a* on grinding disc **1**.

The points located on the circumferential line **60***c* of the templet body **60** are in the axial section located on a circle. The said points simultaneously form the highest points of all curves **60***b* which can be represented on the templet body. On grinding disc **1**, the said points correspond to point **2***b* which is located perpendicularly above the center **65** of the miller to be ground. When feeler roller **8** moves along a straight line, the grinding disc is dressed not only rectilinearly but also so that the tooth face to be ground will be located radially.

When feeler roller **8** moves along a curve, also the highest point will be located on the grinding disc so that a radial line will be formed on the miller. In this way, a drawback of the steel band templet will be avoided with which these points **2***b* are not fixed but can move with each adjustment of the steel band. The entire dressing device according to the present invention, therefore, need no longer be arranged displaceably for the purpose of grinding millers with radial cutting surfaces but can be fixedly arranged on the hood H for the grinding disc.

It should be noted that the rocker arm **24** is arranged on a stationary pivot and that the left end **28** is connected to the carriage **13** while the right end **25** is connected to the carriage **12**. The rocker arm **24** is pivotable manually by means of lever **29**.

It is, of course, to be understood that the present invention is, by no means, limited to the particular arrangement shown in the drawing but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. A device for dressing a profiled grinding disc, especially a grinding disc for grinding the cutting surfaces of a miller with helical cutting grooves, which includes: guiding means, carriage means reciprocally mounted on said guiding means, templet body supported by said carriage means and angularly adjustable therein on a predetermined axis, said carriage means being reciprocal on said guiding means in the direction of said axis, said

templet body being defined by an outer surface whose curvature in axial direction gradually varies in circumferential direction of said templet body, rocker arm means pivotally supported in said carriage and moveable thereby in the axial direction of said templet body, feeler means connected to one end portion of said rocker arm means and engaging the circumferential surface of said templet body for movement axially along said body when said carriage and rocker arm means reciprocate on said guiding means, holding means connected to the other end portion of said rocker arm means for supporting a dressing diamond, and actuating means connected to said carriage means and said guiding means for effecting reciprocation of the carriage means on the guiding means.

2. A device according to claim **1** which includes a slide in which said templet is rotatably mounted on said axis and which slide is reciprocably mounted on said guiding means for movement in parallelism with said carriage means, said actuating means comprising a lever pivoted at a predetermined point to said guiding means and engaging said carriage means and said slide on respectively opposite sides of said point whereby said carriage means and slide reciprocate on said guiding means in respectively opposite directions when actuated by said actuating means.

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