

- [54] APPARATUS FOR SHAPING A GRINDING WHEEL
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133/169 C, 172 D, 174 L

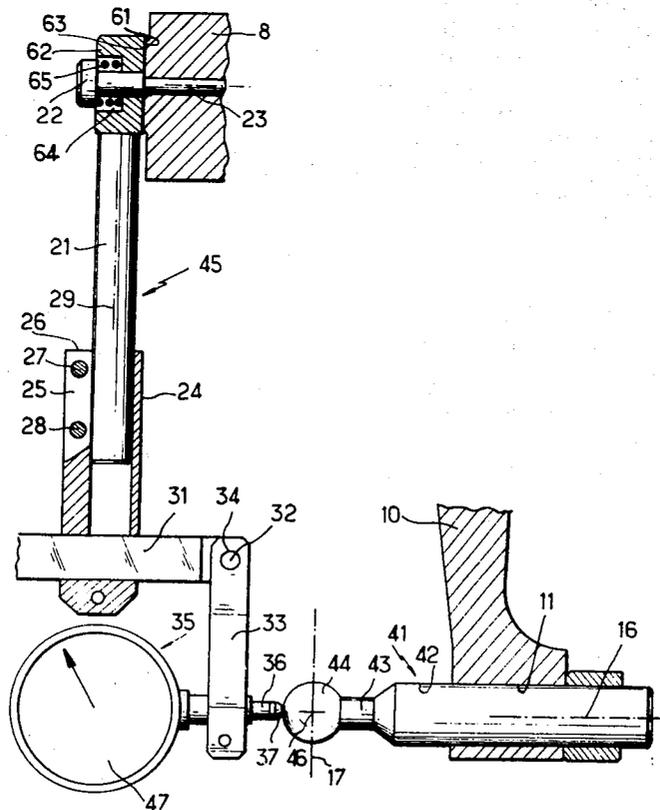
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[57] ABSTRACT

A device for adjusting the position of a diamond point in an apparatus for shaping a grinding-wheel. A holder for the diamond point is slidably mounted in an arm which is rotatably mounted about a working axis. The working axis intersects the axis of the path of travel of the diamond point. The device itself comprises a comparator including a probe retractably mounted on the apparatus. The probe is adapted to be brought into position along the axis of the path of travel of the diamond point. To check the position of the diamond point, the latter is removed from the holder and a measuring rod having a spherical end portion of predetermined diameter is substituted in its place. The coincidence of the center of the spherical portion along the working axis is checked on the dial of the comparator. The holder for the diamond point then put back in the arm and brought into position in contact with the probe; a particular value on the dial of the comparator indicates that the diamond point is on the working axis.

5 Claims, 7 Drawing Figures

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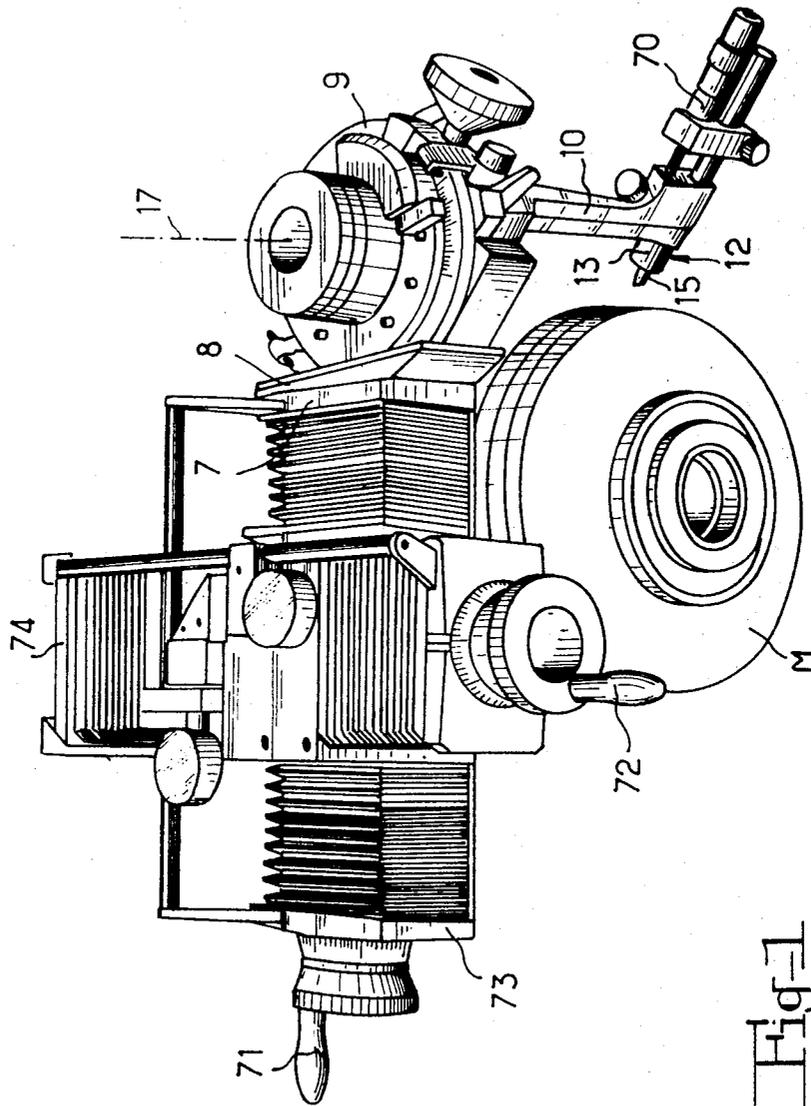


Fig. 1

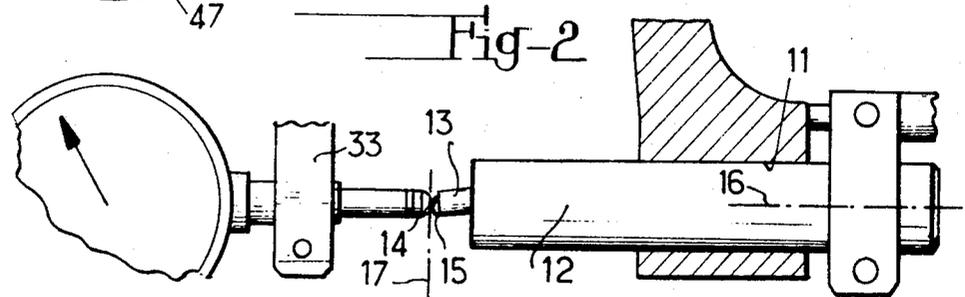
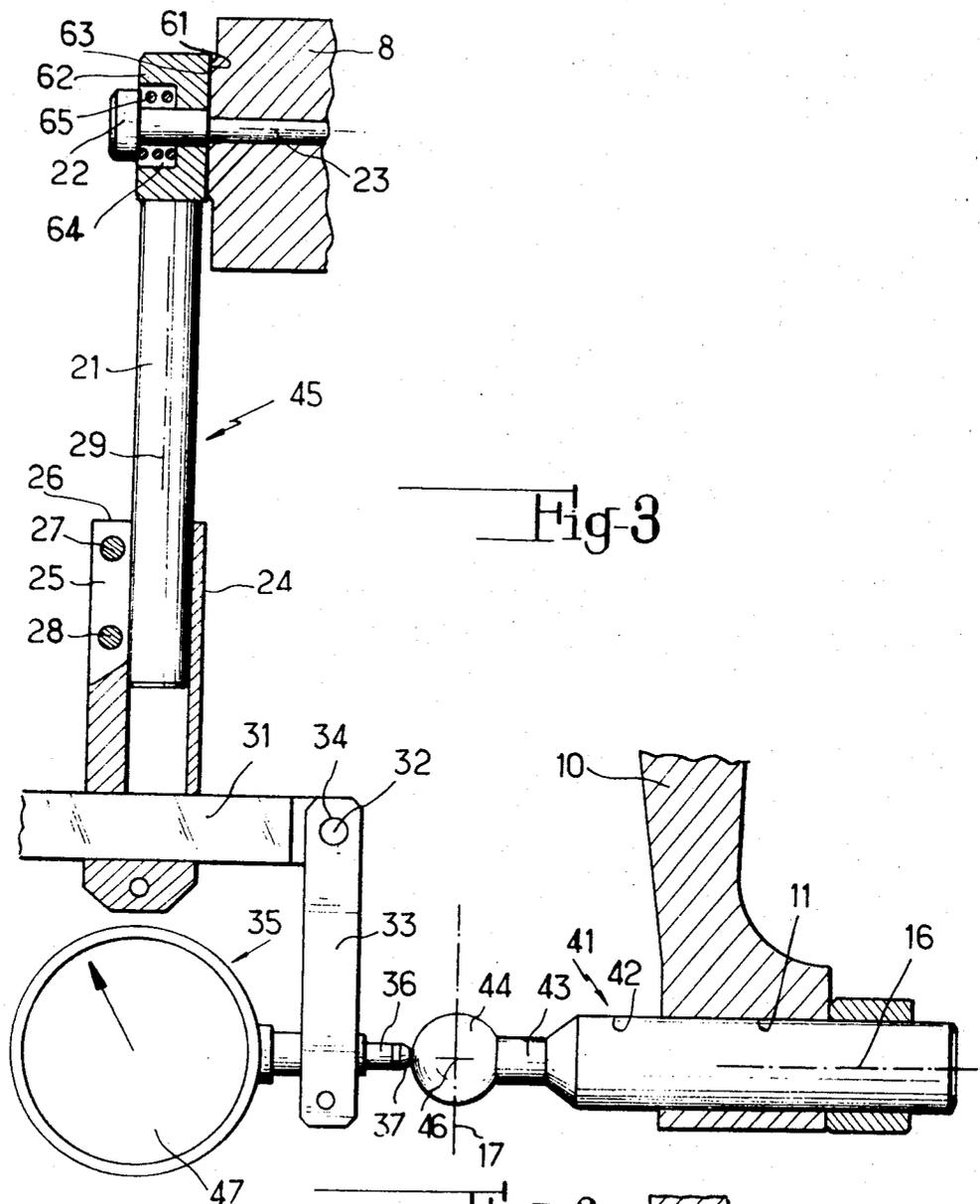


Fig 5

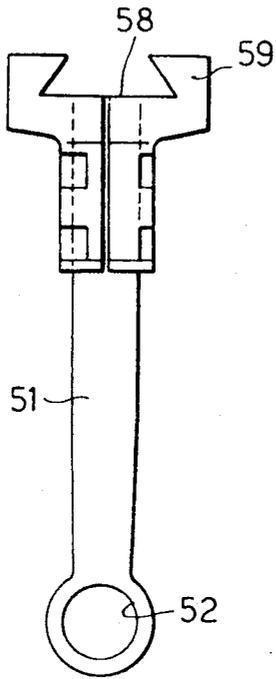


Fig 6

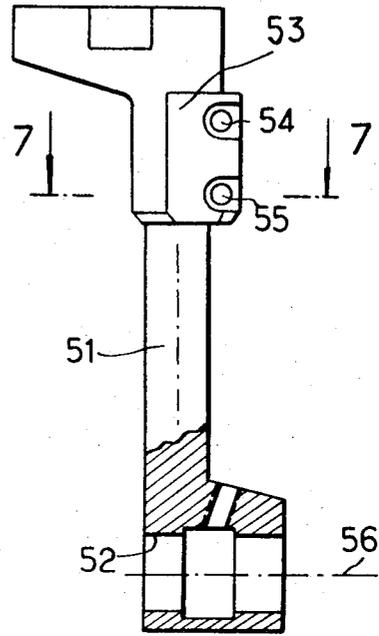


Fig 4

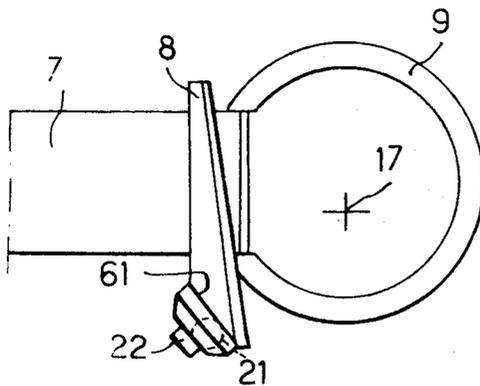
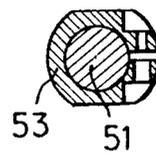


Fig 7



APPARATUS FOR SHAPING A GRINDING WHEEL

The present invention relates to a device for adjusting the position of the diamond point of an apparatus for shaping a grinding-wheel in which the holder for the diamond point is slidably mounted in an arm along an axis, the arm itself being rotatably mounted about a working axis.

In such devices, it is essential to precisely position the diamond point or the like initially in order to effect cutting along a desired profile.

It has already been proposed to effect such a positioning of the diamond point or the like relative to the axis of rotation of the device which is the working axis.

To this end until now, there is provided in the body of the device, on which is mounted the diamond holder, a frusto-conical seating along the working axis of the device, adapted to receive a frusto-conical spindle matingly engageable with the seating and having at its lower end portion a cylindrical rod against which the diamond point abuts in the course of sliding movement of the diamond holder for positioning the diamond point.

With such a device the desired precision is not always achieved owing to possible defects in the cooperation between the frusto-conical surfaces resulting, for example, from the presence of dust therebetween and owing to the uncertainty of the contact pressure between the diamond point and the rod.

The device according to the present invention overcomes these disadvantages.

According to one aspect of the present invention a comparator means is retractably mounted on the apparatus so that the probe of the comparator means can be brought in position along the axis along which slides the diamond holder, means being provided for checking on the comparator means the coincidence of the tip of the probe thereof with the intersection of said sliding axis and the working axis.

In the description that follows, made by way of example, reference is made to the accompanying drawing in which:

FIG. 1 is a schematic view in perspective of an apparatus for shaping a grinding-wheel adapted to be provided with the device according to the invention;

FIG. 2 is a view partly in section of a portion of an apparatus provided with the device according to the invention;

FIG. 3 is a view similar to that of FIG. 2 but more inclusive showing another operating condition;

FIG. 4 is a view of the top surface of a portion of an apparatus provided with the device according to the invention;

FIG. 5 is an elevation view relative to another embodiment;

FIG. 6 is a view corresponding to FIG. 5 but at 90° therefrom;

FIG. 7 is a view taken along the line 7—7 in FIG. 6.

A cylindrical bore 11 provided in an arm 10 is adapted to maintain a device 12 (FIGS. 1 and 2) comprising a holder 13 for a diamond point in such a manner that the point 14 of the diamond 15 is able to be displaced along the axis 16 of the bore 11 in both directions along the path of travel accurately determined and marked on a scale 70. The arm 10 is supported by an arrangement rotatably mounted about a working axis 17 by a platen 9 which is integrally fixed to a con-

necting member 8 of a device 7 adapted to be displaced along two perpendicular axes by adjusting actuating members 71 and 72 of two carriages 73 and 74 respectively. The axis 16 intersects the axis 17 and is perpendicular thereto.

An eye 62 integrally fixed to a rod 21 is rotatably mounted about an axis 23 perpendicular to and against an oblique surface 61 on the connecting member 8. The eye 62 has a plane surface 63 in contact with the surface 61 owing to the action of a spring 65 seated in a recess 64 in the eye 62 and supported against the head 22 of a rod having an axis 23.

The end of the rod 21 opposite the eye 62 is received in a sleeve 24 having a longitudinal slot 25 opening onto the upper side 26 with means for tightening 27 and 28, shown schematically, in order to permit the orientation of the sleeve 24 about the axis 29 common to the sleeve and to the rod 21 and to secure it in a desired position.

A bracket 31 having a square cross-section is mounted at the lower end of said sleeve 24 and has at one of its ends a pivot pin fixed thereto. The axis 32 of the pivot pin is perpendicular to axes 17 and 29 which are parallel to each other as well as to axis 16. An arm 33 is pivotally mounted about the axis 32 the arm 33 being integrally fixed to the bracket 31 by means shown schematically at 34. The arm 33 supports a comparator 35 having an operating member or probe 36 with a tip 37 extending towards the axis 17.

In order to position the diamond point, the device 12 of the arm 10 is removed, if necessary, and replaced by a measuring rod 41 having a cylindrical body 42 cooperating with the bore 11 followed by a portion of reduced section 43 and then a spherical portion 44 having a predetermined radius.

By the initial positioning device 45 comprising the comparator 35 and the rod 21, the sleeve 24, the bracket 31 and the arm 33, the measuring rod 41 is moved to a position in which the center 46 of the spherical portion 44 is on the axis 17 by adjusting the means for sliding said measuring rod in the bore 11 along axis 16. The position of the center 46 of the spherical portion 44 on the axis 17 is checked by turning the arm 10 about the axis 17 while assuring that the reading on the dial 47 of the comparator 35 is unchanged.

The measuring rod 41 is then removed. By means of the comparator which is adjusted in order that its reading during adjustment is equal to the radius of the sphere of the portion 44, the probe 36 is allowed to extend slightly beyond the axis 17. The support 12 of the holder 13 for the diamond point is put in position and its control means is adjusted until the diamond point 14 pushes the probe 36 back slightly for returning the reading on the dial 47 of the comparator 35 to zero. The diamond point 14 is then exactly on the axis 17 (FIG. 2).

The comparator device 45 is retracted by pivoting it about the axis 23. The shaping of a grinding-wheel M for a machine-tool may then begin.

The device enables at any moment the determination of the amount of wear of the diamond; it is simply necessary to re-position the comparator 45 and to re-use the probe thereof in order to measure the wear and take whatever remedy is necessary.

Reference is now made to FIGS. 4 to 6. In this embodiment, the arm 51 adapted to support the holder for the diamond point by its bore 52 is slidably mounted in

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a slotted sleeve or collar 53 with tightening means 54 and 55 so that it is possible to vary the distance between the axis 56 of the bore 52 and the dove-tail 58 provided for the sliding of the carriage 59 carrying the collar 53.

The arm 51 is also able to be pivoted about its axis common with the collar 53 in order to obtain the perfect perpendicularity of the axis 56 of the bore 52 and the axis 17.

I claim:

1. In an apparatus for the dressing of a grinding wheel comprising a sleeve support for a diamond-holder, said support being rotatably mounted around an axis and being slidable along two perpendicular directions, with means for marking and controlling the rotational displacement around said axis and the movement along said two directions, the improvement comprising: one arm of adjustable length pivotingly mounted on said support around an axis perpendicular to said axis of rotation, a comparator secured at one end of a bracket a branch of which is slidably mounted at the end of said arm opposed to the one attached to the support, and

means for adjusting the length of the arm and for positioning the bracket to bring the sensing finger of said comparator in alignment with the longitudinal axis of said sleeve in which a measuring-rod may be mounted adapted to cooperate with said sensing finger whereby the diamond tip is exactly located on said axis of rotation, when the measuring-rod has been replaced by the diamond holder.

2. Structure according to claim 1, wherein a micrometer is provided on the diamond-holder.

3. Structure according to claim 1, wherein said arm comprises a cylindrical part on which is slidably mounted a bushing, said means for adjusting the length of said arm comprising members for securing said bushing on said cylindrical part.

4. Structure according to claim 1, wherein the bracket has articulated branches.

5. Structure according to claim 1, wherein the support includes a platen on which the attachment end of said arm is fastened through spring means.

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