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MEANS FOR ATTACHING BLADE-SHAPED GUIDES OR SUPPORTING MEMBERS IN GRINDING MACHINES, ESPECIALLY CENTERLESS GRINDERS

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FIG. 1.

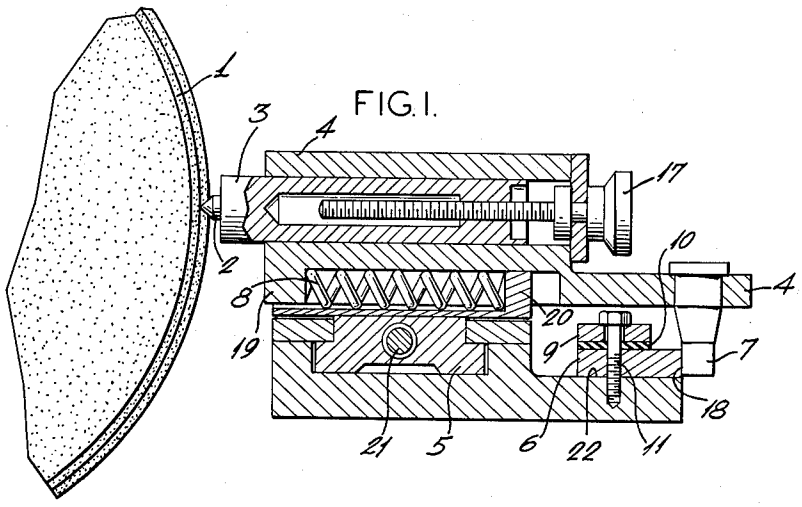


FIG. 2.

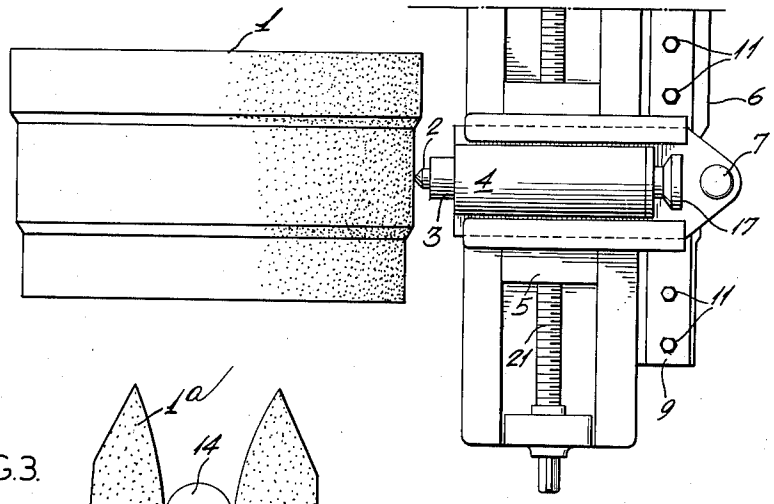
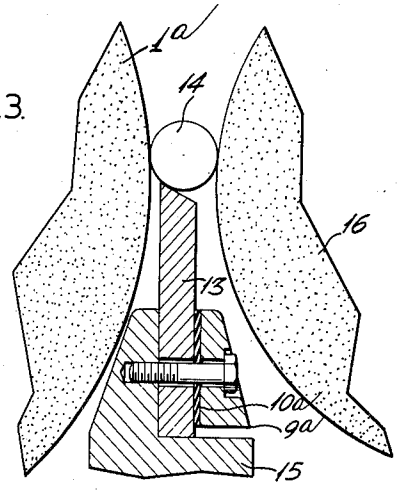


FIG. 3.



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MEANS FOR ATTACHING BLADE-SHAPED GUIDES OR SUPPORTING MEMBERS IN GRINDING MACHINES, ESPECIALLY CENTERLESS GRINDERS

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The present invention relates to means for attaching blade-shaped guides or supporting members in grinding machines, especially centerless grinding machines, and has for its purpose to improve the accuracy of certain parts which determine the accuracy of the grinding operation, for instance templets and supporting blades. Cylindrical or otherwise shaped work pieces are often ground by the method known as plunge grinding, in which the grinding wheel is shaped to suit the work pieces being ground by means of a dressing tool, such as a diamond, or by means of any other suitable tool, after which the grinding operation is carried out by feeding the grinding wheel radially towards the work piece. Very great accuracy is often required when grinding by this method, in many cases being of the order of one-thousandth of a mm.

When dressing the grinding wheel the tool is usually guided by a templet of such shape that as the dressing tool passes to and fro across the grinding wheel, it generates the proper shape required for the grinding of the work piece. The templet is demountable and exchangeable and preferably fixed to a support by screws which pierce the templet at certain distances from each other. The templet is engaged by a contact finger which is pressed against the templet by means of a helical spring or the like. The pressure of the contact finger against the templet must be great enough to counteract the pressure between the tool and the grinding wheel to make sure that the tool follows the contour of the templet.

Because of the great accuracy which is often required when grinding in this manner, the templet which determines the shape of the grinding wheel must be accurately fixed to its support so that it will not be deformed either by the fixing means or when the contact finger passes along the templet. It has been found that the usual manner of fixing the templet by merely screwing it to its support is not always satisfactory. A certain amount of yielding takes place in the portions of the templet between the screws with the result that the contour of the templet is distorted and the desired form can not be accurately transferred to the grinding wheel. The present invention has for its purpose to avoid these disadvantages in a simple and practical manner.

The invention may be applied to grinding machines having a blade member or work rest blade member fixed by means of screws or the like between a support and a pressure plate and is characterized mainly thereby that a pressure distributing member is applied between the blade-shaped member and the pressure plate, said pressure distributing member comprising one or more elastic inserts of rubber or the like and having substantially the same size and shape as the pressure plate.

By suitably choosing the dimensions of the pressure plate, the thickness and elasticity of the insert and the distance between the screws, the pressure to which the blade is subjected will be distributed so that variations in pressure and thereby changes in shape along the length of the blade will be kept within a predetermined permissible value.

Although the invention is intended mainly for use in attaching templets for the dressing of grinding wheels, it may also be used for fixing the supporting blade in centerless grinding machines, where it has been found that it will in many cases be of great advantage.

In machines of this kind it is necessary when grinding work pieces according to the method mentioned above, that the work pieces rest on an accurately fixed unyielding support if the necessary accuracy is to be obtained. It has been found that it is difficult to keep the contacting surfaces between the blade and the pressure plate entirely free from foreign substances, which cause deformation of the blade either when it is being fixed in place or due to the load to which it is subjected during the grinding operation.

The invention is illustrated in the accompanying drawings, in which FIGS. 1 and 2 show a form of the invention as used for fixing a templet for dressing grinding wheels, wherein FIG. 1 shows the device partly in section as seen in the direction of the axis of the grinding wheel and FIG. 2 is a view from above of the same device on a somewhat smaller scale. FIG. 3 shows another form of the invention as used for fixing a work rest blade member in a centerless grinder.

In FIGS. 1 and 2 the numeral **1** indicates a grinding wheel and **2** is a tool for dressing the wheel, for instance a diamond. The diamond **2** is fixed to a holder **3** which in its turn is mounted on a cross slide **4** movable in a direction perpendicular to the axis of the grinding wheel. The cross slide **4** is in its turn mounted on a slide **5** which is movable parallel to the axis of the grinding wheel by means of a screw **21**. The holder **3** is adjustable in its axial direction relative to the cross slide **4** by means of a screw **17**, whereby the diamond can be moved in a direction towards the grinding wheel. The diamond is thus movable in two directions perpendicular to each other in the same plane. A helical spring **8** which at one end thereof engages with a shoulder **19** on the cross slide **4** and at its other end engages a shoulder **20** on the slide **5** presses the cross slide **4** towards the left in the figure, until the edge **18** of the contact finger **7** on the cross slide **4** engages with the contoured edge of the templet **6** which determines the shape of the grinding wheel **1**. The templet is connected to a fixed base **22** of the frame of the machine by means of screws **11** through which it is fixed between a pressure plate **9** and the base. A resilient pressure-distributing member in the form of an elastic insert **10** of substantially the same size and shape as the pressure plate is applied between the templet and the pressure plate. In the present instance the pressure plate **9** is of generally rectangular shape and the elastic insert **10** is coextensive with the pressure plate **9**.

In FIG. 3 which shows the invention applied to a centerless grinding machine, the numeral 1^a designates a grinding wheel, **16** is a regulating wheel, and **13** a work rest blade member having oppositely disposed faces and an elongated supporting edge for supporting a round workpiece **14**. The work rest blade **13** is fixed to a fixed machine part **15** in a manner similar to that shown in FIGS. 1 and 2, i.e. by means of a pressure plate 9^a and screws **11**. The pressure plate 9^a presses the supporting blade **13** against its support **15** via an insert 10^a of rubber or the like.

I claim:

1. In a grinding machine having a support and a blade member having oppositely disposed faces and an elongated supporting edge, means for securing said blade member to said support with one of said faces engaging said support, comprising a pressure plate disposed adjacent the other face of said blade member, a resilient pressure-distributing member interposed between said

pressure plate and said blade member, and fastening means securing said pressure plate, resilient member and blade member together and to said support, said pressure-distributing member operable to prevent local elastic distortion of the supporting edge of said blade member.

2. In a grinding machine having a fixed support and a generally rectangular blade member having oppositely disposed faces and an elongated supporting edge, means securing said blade member to said support with one of said faces engaging said support, comprising a generally rectangular pressure plate disposed adjacent the other face of said blade member and coextensive in length therewith, at least one resilient pressure-distributing member interposed between said pressure plate and blade member, and co-extensive in length with said pressure plate and blade member, and a plurality of fastening elements securing said pressure plate, resilient member and blade member together and to said support member, said pressure-distributing member operable to prevent local elastic distortion of the supporting edge of said blade member.

3. In a grinding machine having a support, a dressing tool movably mounted on said support and a template having oppositely disposed faces and a contoured edge for guiding movement of said dressing tool, means for securing said template to said support with one of said faces engaging said support, comprising a pressure plate disposed adjacent the other face of said template, a

resilient pressure-distributing member interposed between said pressure plate and template, and fastening means securing said pressure plate, resilient member and template together and to said support, said pressure-distributing member operable to prevent local elastic distortion of the contoured edge of said template.

4. In a centerless grinding machine having a support and a work rest blade member having oppositely disposed faces and an elongated work supporting edge, means for securing said blade to said support with one of said faces engaging said support, comprising a pressure plate disposed adjacent the other face of said blade, an elongated resilient pressure-distributing member interposed between said pressure plate and blade member, said pressure plate and distributing member being spaced from the elongated work supporting edge of said blade, and fastening means securing said pressure plate, resilient member and blade member together and to said support, said pressure-distributing member being operable to prevent local elastic distortion of the work supporting edge of said blade.

References Cited in the file of this patent

UNITED STATES PATENTS

1,585,984	Heim	May 25, 1926
2,751,109	Moore	June 19, 1956
2,761,347	McKee	Sept. 4, 1956