July 26, 1932. P. BUCHEISTER 1,868,492

GRINDING WHEEL

Filed March 28, 1929

FIG. 1.

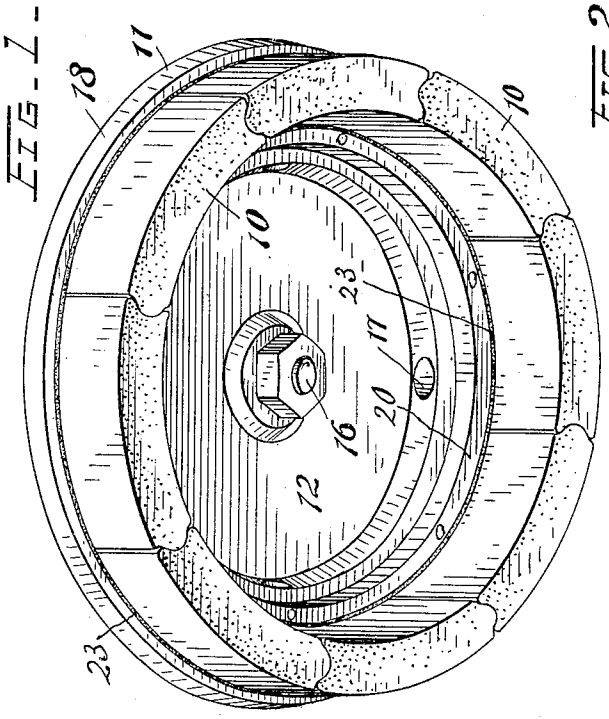


FIG. 2.

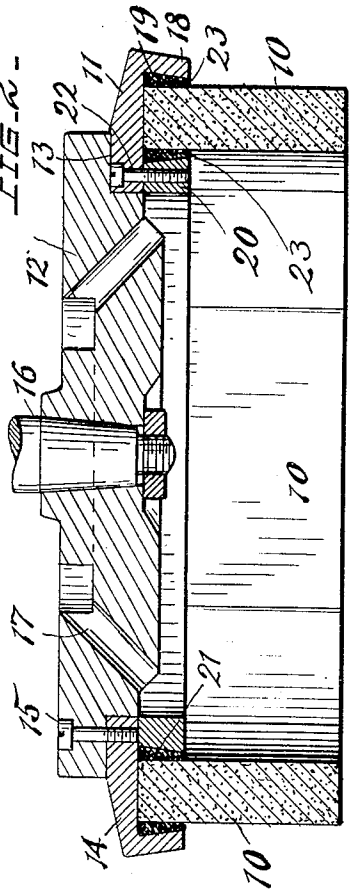


FIG. 3.

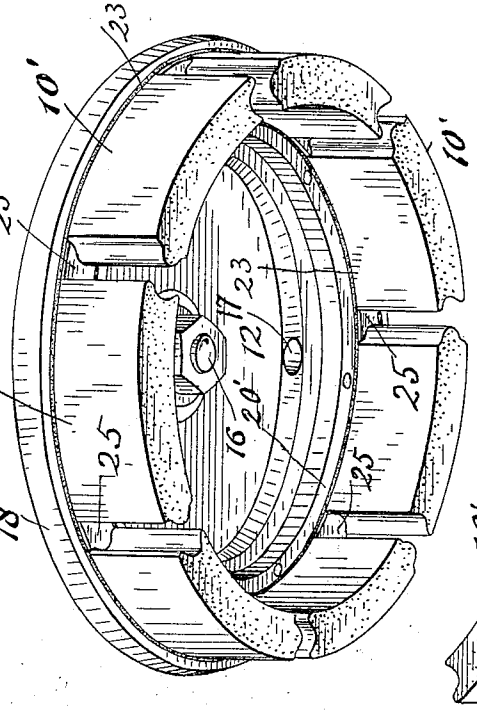
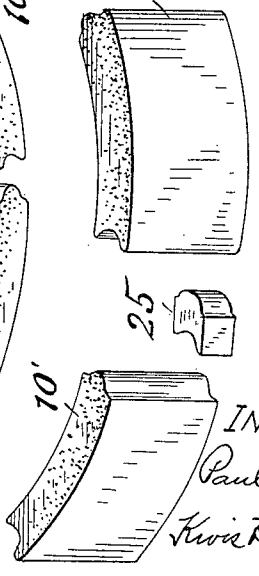


FIG. 4.



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UNITED STATES PATENT OFFICE

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GRINDING WHEEL

Application filed March 28, 1929. Serial No. 350,565.

This invention relates to grinding wheels and more particularly to segmental grinding wheels of the type used for grinding plain surfaces.

In using grinding machines it is sometimes desirable to shift from the solid type of grinding wheel to the segmental type of grinding wheel because of the advantages which the latter type of grinding wheel possesses over the former type. These advantages are principally the reduced cost of segmental wheels due to the fact that they can be manufactured cheaper and handled with less breakage than solid wheels; and the more efficient operation of segmental grinding wheels because of the reduced tendency for wheels of this type to become glazed. However, when such a change is to be made it is frequently found that the mount or chuck for holding the grinding wheel has been specially designed for holding a solid wheel and is not suitable for holding a segmental grinding wheel. In such cases it is necessary to replace the mount, furnished with the machine, with a mount which is suitable for holding grinding segments to form a segmental grinding wheel. This substitution of a new mount for the one furnished with the machine represents an additional expense, which I have found can be avoided by adapting the mount furnished with the machine so that it may be used for holding a segmental grinding wheel.

It is an object of this invention to provide an arrangement by which a mount designed for holding a solid grinding wheel may be adapted to hold a segmental grinding wheel.

Another object of this invention is to provide an improved form of grinding wheel.

The invention may be further briefly summarized as consisting in certain novel combinations and arrangements of parts hereinafter described and set out in the appended claim.

In the accompanying sheet of drawing forming a part of this application,

Fig. 1 is a perspective view showing a grinding wheel embodying my invention.

Fig. 2 is a transverse sectional view of the grinding wheel shown in Fig. 1.

Fig. 3 is a perspective view illustrating another form of grinding wheel embodying my invention.

Fig. 4 is a detailed view showing the form of the segments and spacers.

Referring now to the drawing for a detailed description of the grinding wheels of my invention, I show in Figs. 1 and 2 a segmental grinding wheel formed by a series of grinding sections or segments 10 arranged and held in a chuck or mount which is designated generally by the reference character 11. This chuck or mount may be a part of the regular equipment usually furnished with a grinding machine, and, as shown, comprises a face plate 12 having a shoulder 13 against which a wheel ring 14 is secured in any convenient manner such as by screws 15. The face plate is mounted upon an arbor 16, and may be provided with passages 17 for supplying water to the grinding wheel. The wheel ring 14 is provided with an axially extending flange 18 which is preferably undercut, as clearly shown in Fig. 2 and indicated by the reference character 19.

The grinding sections or segments 10 are arranged end to end adjacent the axially extending flange 18 to form a grinding wheel which is substantially concentric with this flange. For adjusting the segments to proper position, so that the circular grinding wheel which they form will be properly centered with respect to the axis of rotation of the mount, I prefer to use a tapered spring steel gauge or centering ring which is placed around the outer face of the segments with the tapered portion extending into the channel of the mount between the flange 18 and the segments. In this instance the grinding segments are shown as being formed with a recess or depression in one end and an extension at the opposite end. When the grinding segments are assembled to form the grinding wheel they are arranged with their end portions in interfitting engagement, that is, with the extension of one segment extending into the depression formed in the adjacent segment. I have found that a joint of this kind between the segments makes a stronger and more durable grinding wheel.

For retaining the segments in the mount, I provide a retaining ring 20, which is of smaller diameter than the flange 18, and has a tapered peripheral face, as indicated at 21, and is secured to the wheel ring 14 in concentric relation with this flange. To facilitate the mounting and removal of the segments, I have made the retaining ring 20 detachable by securing it to the wheel ring by means of screws 22. The axially extending flange 18 and the retaining ring 20 are of substantially equal height, and in the channel formed between these concentric members the grinding segments are arranged and securely held in place by cement, such as sulphur, indicated at 23, which fills the space between the segments and the inclined walls of the channel. The grinding segments are relatively high in comparison with the height of the flange 18 and the retaining ring 20, and when mounted in this manner they will be securely held in place for continuous grinding service until they are worn down to a height substantially equal to the height of the flange and retaining ring. When the segments are thus worn down they can be quickly and easily removed and replaced by removing the wheel ring and the detachable retaining ring.

In Fig. 3 of the drawing I have shown another form of grinding wheel constructed according to my invention. In this form of wheel, which is commonly referred to as a staggered grinding wheel, one of the grinding sections or segments of the arrangement shown in Fig. 1 is omitted and the remaining segments 10′ are arranged in spaced relation with substantially equal spaces between their end portions. For holding the segments in this spaced relation I provide spacers 25, which are relatively low in height in comparison with the height of the grinding segments. In this arrangement the spacers 25 and the segments 10′ are arranged alternately in a series in the channel formed between the wheel ring flange 18′ and the detachable retaining ring 20′, with the end portions of adjacent members in interfitting engagement, and with the spacers occupying a total space which is approximately equal to the space left by the omission of a segment. The spacers and segments are properly centered with respect to the axis of rotation of the mount by means of a centering ring and are securely held in this position by cement, such as sulphur, which fills the space between the spacers and segments and the inclined walls of the channel.

The size of these spacers is such that when they are assembled between adjacent segments their height will be approximately equal to the depth of the channel formed between the retaining ring 20′ and the axially extending flange 18′. The spacers are constructed, as clearly shown in Fig. 4, with an extension at one end, similar in shape to the extensions carried by the grinding segments, and a recess or depression in the opposite end, similar in shape to the recesses or depressions formed in the ends of the segments. When arranged between the end portions of adjacent segments the extensions and depressions of the spacers engage, respectively, in interfitting relation with the depressions and extensions of the end portions of adjacent segments. This arrangement of segments and spacers provides an efficient and durable grinding wheel, and, furthermore, with the spacers thus arranged between those parts of the segments which lie within the channel in which the segments are mounted, they require no adjustment, and do not interfere with the efficient operation of the grinding segments at any time during their useful life.

It will now be readily seen that I have provided an arrangement by which sections or segments can be quickly and easily secured in a mount to form an efficient grinding wheel, and when worn down can be easily and quickly removed and replaced by new sections or segments.

It is apparent that the particular form which I have shown and described for the end portions of the segments and spacers is not essential to the usefulness of my invention since spacers and segments of various shapes may be used.

It will be understood, of course, that I do not limit my invention to the precise details and arrangements shown and described, but regard my invention as including such changes and modifications as do not involve a departure from the spirit of my invention and the scope of the appended claim.

Having thus described my invention, I claim:

A sectional grinding wheel comprising a mount having a channel therein, a series of grinding sections in said channel each being formed with an extension at one end and a recess at the opposite end, and spacers between adjacent sections of said series, each of said spacers being approximately equal in height to the depth of said channel and having a recess at one end and an extension at the opposite end for interfitting engagement, respectively, with the extension and recess of the end portions of adjacent sections.

In testimony whereof, I hereunto affix my signature.

PAUL BUCHEISTER.