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RESILIENT COUPLING

Filed July 16, 1959

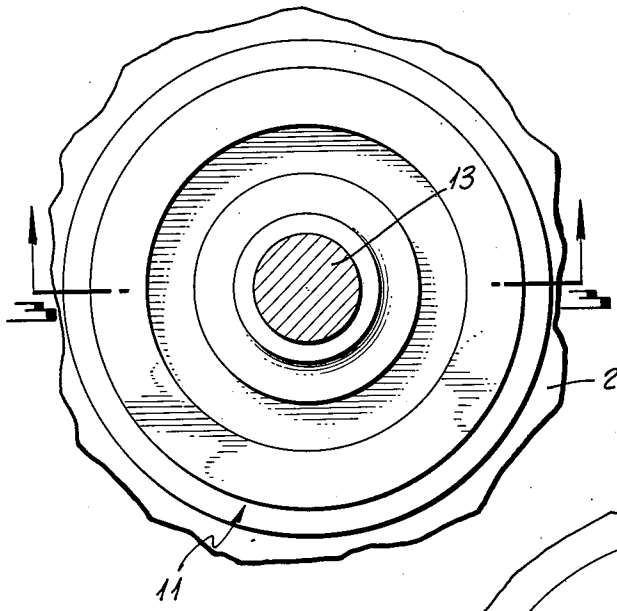


FIG_1

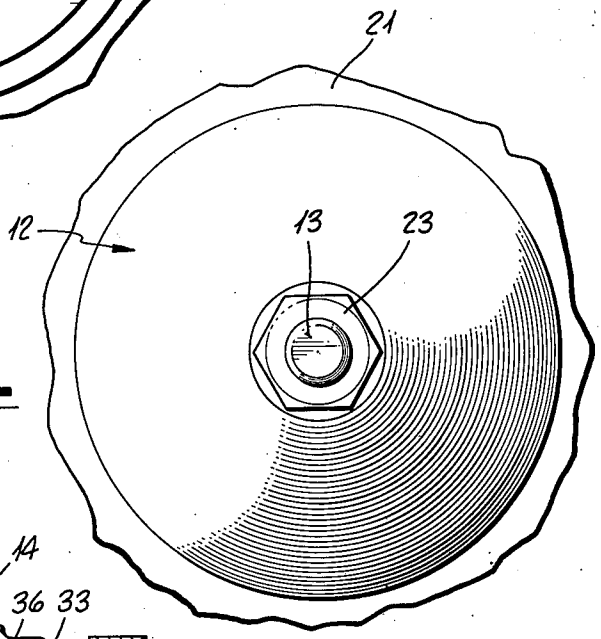


FIG_2

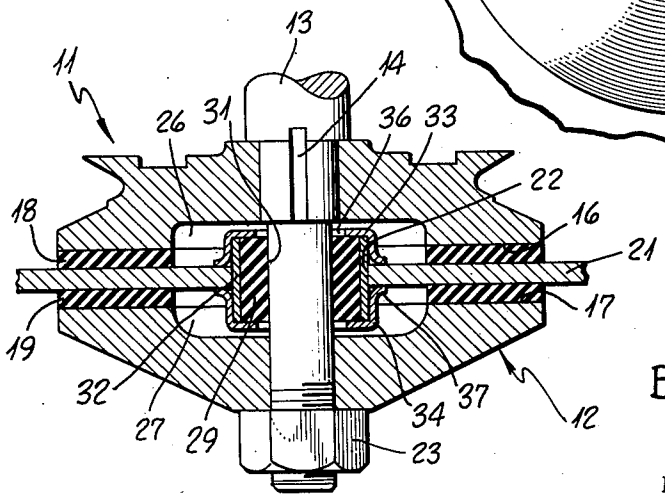


FIG_3

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RESILIENT COUPLING

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This invention relates to resilient coupling and more particularly to resilient coupling for use in masonry and concrete saws for coupling the cutting disc, blade or wheel to the arbor.

Resilient couplings heretofore provided have not been satisfactory for use in the mounting discs, blades or wheels in masonry saws. There is a need for a resilient coupling or mounting for the cutting wheels to prolong the life of the cutting wheels and also to reduce the shock and vibration imparted to the arbor.

In general, it is an object of the present invention to provide a resilient coupling suitable for use with masonry and concrete saws, cut-off wheels, and straight or snagging wheel grinders.

Another object of the invention is to provide a resilient coupling of the above character which materially reduces the shock imparted to the cutting wheels or discs.

Another object of the invention is to provide resilient coupling of the above character which a resilient mounting can be mounted on the cutting wheel or disc and sold with the cutting wheel or disc.

Another object of the invention is to provide a resilient coupling of the above character in which the resilient coupling is readily mounted on the cutting wheel or disc.

Another object of the invention is to provide a resilient coupling of the above character which can be utilized with different thicknesses of cutting disc or wheels.

Another object of the invention is to provide a resilient coupling of the above character which contains a substantial mass for the absorption of shock.

Another object of the invention is to provide a resilient coupling of the above character which can be readily mounted on the arbor.

Additional features and objects of the invention will appeal from the following description in which the preferred embodiment has been set forth in detail in conjunction with the accompanying drawings.

Referring to the drawings:

FIGURE 1 is a rear elevational view of a resilient coupling incorporating the present invention.

FIGURE 2 is a front elevational view of the resilient coupling shown in FIGURE 1.

FIGURE 3 is a cross-sectional view taken along the line 3—3 of FIGURE 1.

The resilient coupling as shown in the drawing consists of a pair of cup-shaped flange members 11 and 12. The flange member 11 is affixed to the arbor 13 by suitable means such as a key (not shown) seated in the key-way 14. The flange members 11 and 12 are circular as shown and are provided with opposing annular faces 16 and 17. Annular members 18 and 19 of suitable resilient material such as rubber are mounted on the faces 16 and 17 and are adapted to engage the cutting disc wheel or blade 21 in a region spaced from a centrally disposed opening 22 in the disc.

The annular members 18 and 19 are urged into firm engagement with the cutting disc 21 by suitable means such as the nut 23 threaded onto the arbor 13. It is readily apparent that as the nut is tightened onto the arbor, the flange member 12 engages the disc 21 and urges the disc 21 into engagement with the annular member 18 carried by the flange member 11.

The flange members 11 and 12 are formed with centrally disposed recesses 26 and 27 which face each other

to provide a chamber as shown particularly in FIGURE 3. A resilient mounting assembly is disposed within the recesses 26 and 27 and is mounted on the arbor 13 and the disc 21. It consists of a member 29 of substantial mass formed of a suitable resilient material such as rubber. It is provided with a central bore 31 which adapts the member 29 for mounting on the arbor 13 as shown. The member 29 can be of any suitable shape but as shown, is preferably cylindrical. The resilient member is mounted within a cylindrical bushing 32 which has substantially the same outer diameter as the central opening in the disc 21. The bushing 32 with the resilient member 29 disposed therein is secured to the disc 21 by a pair of cup-shaped clamping members 33 and 34. Each of the clamping members 33 and 34 is provided with a central opening 36 which has a diameter substantially greater than the diameter of the arbor so that there is a space between each of the clamping members and the arbor. The clamping members 33 and 34 are of such a diameter that they clamp rather tightly over the bushing 32. They are provided with outwardly flared edges 37 which engage the portion of the disc immediately adjacent the central opening formed in the disc.

Use of the resilient coupling may now be briefly described as follows: The cutting disc or wheels 21 are normally fitted with the resilient mounting assemblies 28 and are normally supplied to the customer in this manner. The resilient mounting assemblies are secured to the cutting disc or wheel by first placing the bushing 32 with the resilient member 29 therein into the central bore in the cutting wheel or disc and then pressing the clamping members 33 and 34 over the bushing 32 to firmly secure the assembly 28 to the disc.

It is apparent however that if desired, the mounting assembly 28 may be supplied separately and if desired placed in the cutting wheel or disc by the user.

In placing the resilient coupling with the disc secured thereto on the arbor 13, the flange member 11 is first secured to the arbor and thereafter the cutting disc or wheel 21 together with the mounting assembly 28 is pressed onto the arbor and into engagement with the resilient annular member 18 carried by the flange member 11. Thereafter the second flange member 12 is positioned on the arbor and secured thereto by the nut 23. The nut 23 is tightened until the cutting wheel or disc 21 is firmly engaged by the resilient annular members 18 and 19.

In use, the arbor 13 is driven by a suitable motive means such as an internal combustion engine. The arbor 13 is supported in a suitable manner so that the cutting wheel or disc 21 is positioned to perform the desired cutting operation. For example, when the cutting wheel or disc 21 is utilized for cutting green concrete, the torque is transmitted from the arbor 13 through the flanges 11 and 12 and through the annular members 18 and 19 to drive the disc 21.

The resilient members 18 and 19 serve to absorb any shock imparted to the blade which is created as the cutting wheel or disc cuts into the concrete. They also serve to absorb shock in a similar manner when the resilient mounting is used on cut-off and snagging wheels. However, it has been found that the resilient annular members 18 and 19 do not absorb all of the shock. Therefore, shock is also absorbed by the resilient mounting assembly 28 secured to the disc 21. The relatively large mass of the resilient member 29 serves to absorb any remaining shock waves transmitted through the cutting disc or wheel 21. In addition, it has been found that the resilient member 29 also serves to absorb shock transmitted through the arbor 13. This is particularly true when the arbor 13 is driven by an internal combustion engine.

It has been found that the addition of the resilient mounting assembly **28** to a disc greatly increases the life of the cutting wheel or disc. For example, it has been found that the life of a conventional diamond cutting wheel utilized for cutting concrete has been increased as much as 200%.

Since the resilient mounting assembly **28** is of relatively inexpensive construction, it can be thrown away when the cutting wheel or disc **21** is worn out.

It will be noted that the mounting assembly **28** has a width which is substantially greater than the width of the cutting wheel or disc **21**. This makes it possible to use the same mounting assembly for cutting discs of different thicknesses. It also has substantial thickness which prevents the blade from cutting into the same and damaging the shaft or bearings if bearings are utilized. The recesses in the flange members make possible the use of a resilient member **29** which has a substantial mass so that the resilient mounting is able to absorb the shock forces applied to it.

It is apparent from the foregoing that I have provided a new and improved resilient coupling suitable for use with cutting discs or wheels utilized for cutting concrete. The resilient coupling can also be used for discs and wheels which are utilized for finishing and cutting terrazzo, terra cotta, tile (stone) marble and other types of natural and artificial stones.

I claim:

1. In the combination of a resilient mounting and an abrasive disc adapted to be mounted on a rotating arbor, the abrasive disc having a central opening therein, the resilient mounting comprising a member of resilient material adapted to be mounted on the arbor, a rigid bushing enclosing the resilient member and disposed in the central opening in the disc, and clamping members engaging the margins of the disc defining the central opening in the disc and also engaging the bushing to provide a unitary assembly.

2. In the combination of a resilient mounting and an abrasive disc adapted to be mounted on a rotating arbor, an abrasive disc having a central opening therein, a resilient mounting comprising a member of resilient material adapted to be mounted on the arbor, the member of resilient material being disposed within the central opening of the disc, and clamping members engaging the margins of the disc defining the central opening in the disc and also engaging the member of resilient material to provide a unitary assembly.

3. In the combination of a resilient mounting and an abrasive disc adapted to be mounted on a rotating arbor, an abrasive disc having a central opening therein, a member of resilient material adapted to be mounted on the arbor and within the central opening of the disc, clamping members engaging the margins of the disc defining said central opening and also said resilient member to provide a unitary disc assembly, and opposed flange means mounted on the arbor and adapted to engage the abrasive disc in a region spaced from said central opening in the disc, said flange means including resilient members engaging the disc.

4. In a resilient coupling for an abrasive disc adapted to be mounted on a rotating arbor, an abrasive disc having a central opening therein, a pair of flanges adapted to be mounted on the arbor and having recesses forming a chamber and opposed annular faces, annular members of resilient material mounted on the faces of the flanges and adapted to engage the abrasive discs in a region spaced from the central opening in the abrasive discs, a resilient mounting adapted to be mounted on the arbor and adapted to be secured to the abrasive disc, said resilient mounting being adapted to be disposed in the chamber formed by the pair of flanges and comprising a resilient member adapted to be mounted on the arbor and adapted to be disposed in the central opening in the abrasive disc, means adapted to secure the resilient member to the abrasive disc, said last named means consisting of a cylindrical bushing enclosing the resilient member, the cylindrical bushing being axially aligned with the central opening in the abrasive disc, and a pair of cup-shaped clamping members having centrally disposed openings therein mounted on the bushing and being adapted to engage the abrasive disc.

5. A resilient coupling as in claim 4 wherein the central openings in the cup-shaped members having a diameter which is substantially greater than the diameter of the arbor.

6. A resilient coupling as in claim 5 wherein said resilient member has a thickness which is substantially greater than the thickness of the abrasive disc.

7. A resilient coupling as in claim 6 wherein said cup-shaped members are adapted to position the disc substantially equidistant from the ends of the resilient member so that the ends of the resilient member project beyond both faces of the disc.

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