

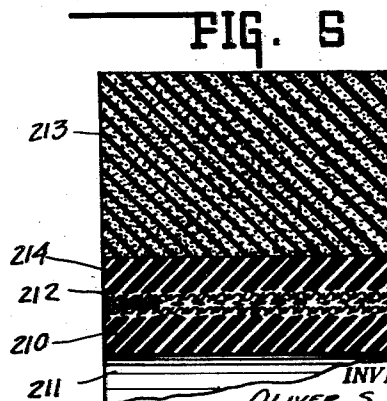
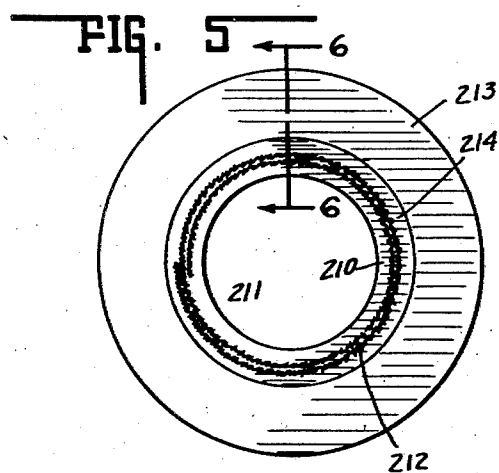
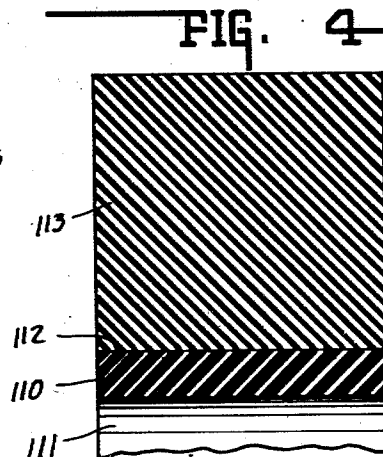
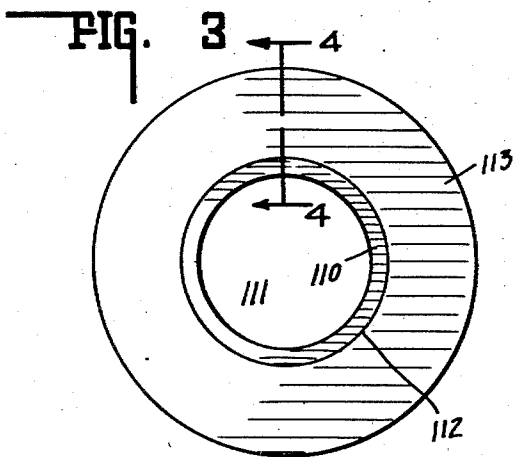
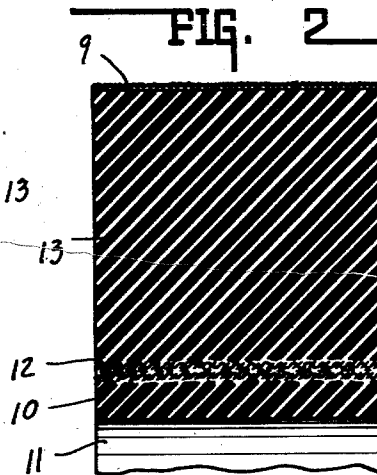
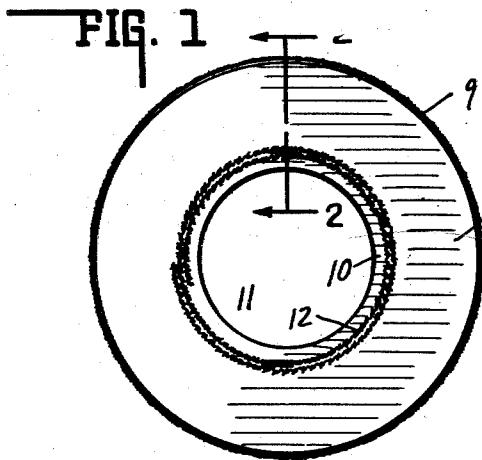
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EXPANDING HEAD FOR ABRASIVES

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EXPANDING HEAD FOR ABRASIVES

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This invention relates to an expanding head or wheel for receiving an endless band of abrasive material for grinding or polishing, wherein the abrasive is mounted about the head for encirclement thereof when at rest and upon rapid rotation the head is caused to expand into gripping relation with the surrounding abrasive under centrifugal force.

The object of this invention is to produce an expanding head of simple, economical construction, such as will control the extent of its expansion in operation, the pressure applied to the abrasive band as a result thereof, and the resiliency of its abrasive carrying surface so that it may be adapted to different uses and purposes.

The invention is accomplished by forming the entire expanding head of rubber having an inner core portion and an outer expanding portion which may be separated by an interposed annular breaker strip or the bonding of rubber having different densities. By the relation of the core portion and the expanding portion as to their respective diameters, various degrees of expanding characteristics, as well as varying degrees of yielding characteristics may be obtained to suit the desired purpose, as will be hereinafter more particularly set forth and described.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a side elevation of an expanding head with an abrasive band mounted thereabout.

Fig. 2 is an enlarged cross section taken on the line 2—2 of Fig. 1.

Fig. 3 is the same as Fig. 1, showing a modified form of expanding head with the abrasive band removed.

Fig. 4 is an enlarged section taken on the line 4—4 of Fig. 3.

Fig. 5 is the same as Fig. 3, showing a further modification of the expanding head.

Fig. 6 is an enlarged section taken on the line 6—6 of Fig. 5.

In Figs. 1 and 2 of the drawings there is illustrated an expanding head for receiving an endless band of abrasive material indicated at 9. The relative diameters of the band and the head are such that the abrasive band may be readily placed about the head when at rest, and whereby the head will expand outwardly into gripping and containing engagement with the band under the action of centrifugal force when it is rapidly rotated.

The expanding head is formed of an inner and annular core 10, preferably formed of dense or

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hard rubber and provided with a bore 11 for receiving a driving spindle or shaft. The core of dense or hard rubber is surrounded by a breaker strip 12 of non-elastic material such as a woven fabric, wire or the like and is sufficiently strong to prevent any outward expansion of the core. Thus, the breaker strip is designed to confine the core within the prescribed limits. The core is vulcanized to and within the breaker strip, said breaker strip being surrounded by the elastic expandible portion 13 of the head having a prescribed degree of stretch. The expandible portion 13 may be of dense or hard rubber, depending upon the purpose and use of the head. However, since it is not confined, and has a certain degree of stretch, the action of the centrifugal force resulting from rapid rotation will cause a stretching or expanding of the expandible portion 13 radially to engage and grip the surrounding abrasive band 9.

As it is desirable to control the expandible characteristics of the head, the breaker strip 12 is located at a predetermined radial distance from the outer periphery of the expandible portion. The relative location of the breaker strip with respect to the periphery of the head determines its expansibility in conjunction with the character and density of the rubber used. Thus, the breaker strip is designed to break the stretching relation of the head as between the inner core portion and the outer expandible portion. Whereas in Figs. 1 and 2 the breaker strip is shown as being substantially closer to the bore of the core 10 than to the outer periphery of the expandible portion 13, depending upon the purpose and use, as well as the characteristics of the rubber, it may be located more nearly intermediate thereof or perhaps closer to the peripheral surface of the expandible portion.

In the modified form of Figs. 3 and 4, the core 110 having the bore 111 may be of exceedingly hard or dense rubber to which the more resilient and expandible rubber portion 113 is vulcanized at 112. Thus, the radial thickness of the hard rubber with respect to the radial thickness of the more resilient expandible rubber portion 113 controls the expansion of the head under centrifugal force. In this modification the vulcanized bond 112 serves in a similar manner to the breaker strip above described, as defining and limiting the body of the expandible portion for controlling the extent of its expansion.

In the modified form of the invention disclosed in Figs. 5 and 6, there is provided an inner hard rubber core 210 having a bore 211 confined by

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the breaker strip 212 in the manner and for the purpose above described in respect to Figs. 1 and 2. However, the expansible portion 213 of the head may be of sponge rubber or a very light and flexible material having a high degree of stretch and sufficiently resilient to provide an extremely soft cushion particularly adapted for polishing. Wherein the expansible portion 213 has a high degree of stretch due to its density and characteristics, it may be desirable to support it by an inner rim 214 of a dense or hard rubber which in turn surrounds and is bonded to the breaker strip 212. Thus, in this form, while the breaker strip serves in its capacity to limit and control the expansibility of the expandible portion 213 in the above described manner, the rim 214 serves in a similar capacity to some degree and further acts as a stabilizing support for the light and less dense expansible portion 213, such as sponge rubber.

By reason of the above described structure an expansible head may be conveniently molded of rubber or like material with the inner and outer portions thereof comprising material of the same or different densities, the desired expansibility of the head being controlled primarily by the location of the breaker strip molded and vulcanized therein.

The invention claimed is:

1. An expanding head for abrasive bands comprising a core of dense rubber, an annular outer expansible body portion of rubber having a degree of stretch, and a breaker strip of non-elastic material interposed and fixed to said core and body portion respectively at a predetermined radial distance inwardly from the outer periphery of the head to limit the expansion thereof to the stretch of said body portion.

2. An expanding head for abrasive bands com-

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prising a core of dense rubber, an annular outer expansible body portion of sponge rubber, an inner band of dense rubber bonded to said body portion, and a breaker strip of non-elastic material interposed between and bonded to said inner band and core respectively at a predetermined radial distance inwardly from the outer periphery of the head to limit the expansion thereof to the stretch of said body portion and inner band.

3. An expanding head for abrasive bands comprising a core of dense rubber, and an annular outer expansible body portion of rubber having a degree of stretch, said outer body portion surrounding said core and being bonded thereto at a predetermined radial distance inwardly from the outer periphery of the head to limit the expansion thereof to the stretch of said body portion.

4. An expanding head for abrasive bands comprising an annular wheel of rubber having a degree of stretch, and a breaker strip of non-elastic material imbedded and banded within said wheel at a predetermined radial distance from the outer periphery thereof for confining the inner portion thereof and limiting its expansibility to the outer portion.

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