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ABRASIVE DISK

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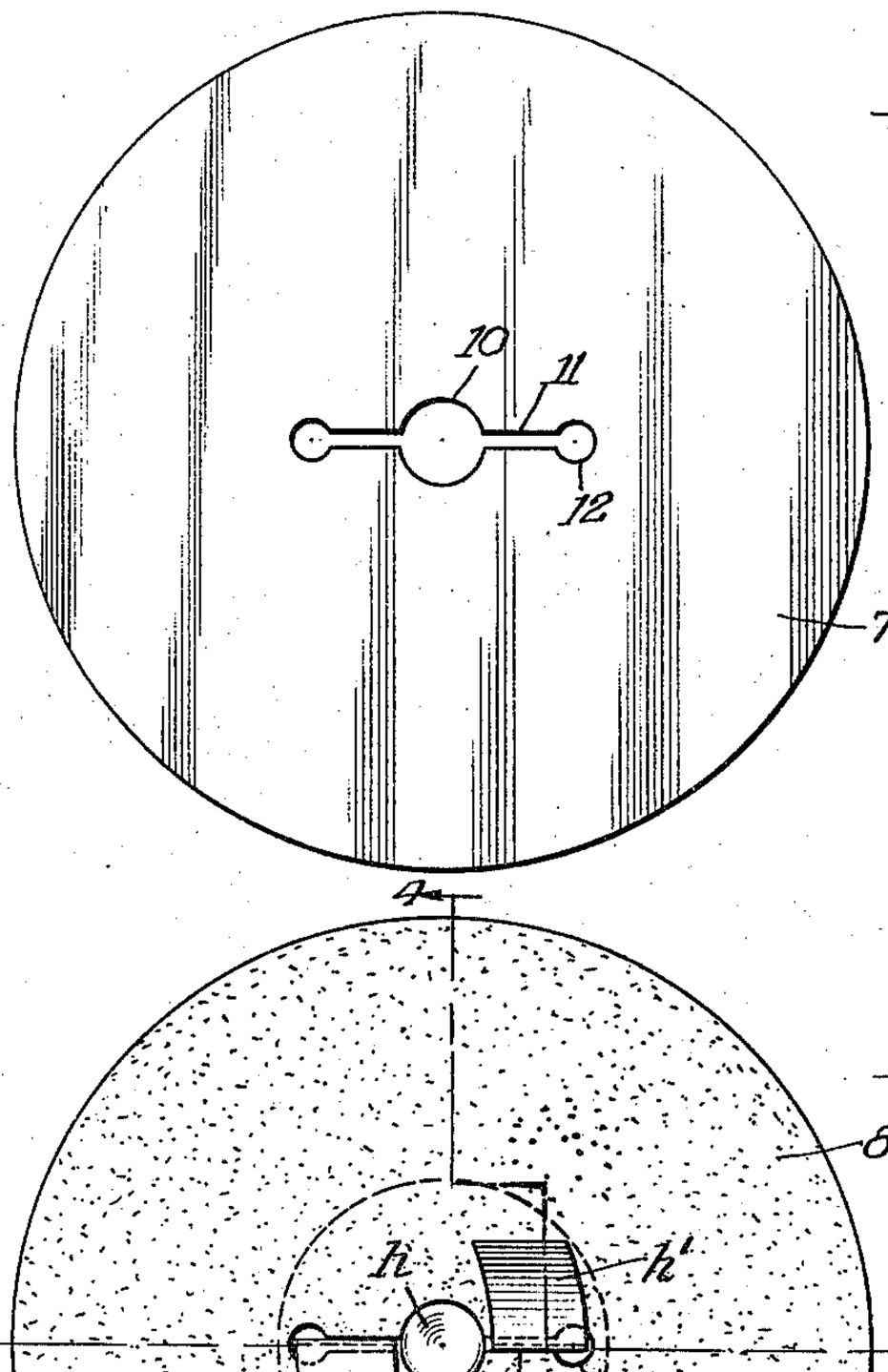

Fig. 1

Fig. 2

Fig. 5

Fig. 6

Fig. 3

Fig. 4

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ABRASIVE DISK

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2 Claims. (Cl. 51—195)

The present invention relates generally to abrasive disks for surfacing panels and other objects. More particularly the invention relates to that type of disk which is adapted to be mounted on the outer face of and driven by a rotary head having a centrally disposed centering hub and a pair of locking wings on opposite sides of the hub and extending in opposite directions and also outwardly of and in substantially parallel relation with the outer face of the head, consists of a comparatively stiff circular backing piece with a coating or facing of grit particles on its outer face, and has a hole in the central portion for receiving the centering hub of the head and also has a pair of diametrically opposite slots which radiate from the hole and are adapted to receive and interlock with the locking wings and form a driving connection between the head and backing piece.

Heretofore it has been customary in the fabrication of a disk of this type to make the wing receiving slots of uniform width from end to end. In practice it has been found that an abrasive disk having slots of this character is defective or objectionable for two reasons. In the first place it is extremely difficult to mount the disk due to the fact that the portions of the backing piece which define the slots are so inflexible or stiff that they cannot readily be flexed or distorted in order to permit of entry of the locking wings of the head into the slots. Secondly, rupture or tearing of the backing piece is likely to occur at the outer ends of the slots in connection with a disk mounting operation due to the strain which is placed on the backing piece at these points when the slot defining portions are flexed or distorted sufficiently to permit the wings to pass into the slots.

One object of the invention is to provide an abrasive disk of the type under consideration which may be mounted with greater facility and less likelihood of rupture than previously designed abrasive disks of the same general character by reason of the fact that it has at the outer ends of the diametrically opposite wing receiving slots comparatively large circular holes which serve to free or disconnect the ends of the slot defining portions of the backing piece from the portions adjacent to the ends of the slots with the result that such slot defining portions can readily be flexed or distorted in connection with a disk mounting operation and when flexed or distorted sufficiently to permit of entry of the wings into the slots do not place tearing strain upon the portions of the backing piece adjacent to the ends of the slots.

Another object of the invention is to provide an abrasive disk of the aforementioned type in which the diametrically opposite wing receiving slots with the comparatively large holes at the outer ends thereof are arranged or positioned so that they extend at substantially right angles to the grain of the backing piece.

A further object of the invention is to provide an abrasive strip which is generally of new and improved construction.

Other objects of the invention and the various advantages and characteristics of the present abrasive disk will be apparent from a consideration of the following detailed description.

The invention consists in the severeal novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a bottom view of an abrasive disk embodying the invention;

Figure 2 is a plan view showing the disk mounted on a rotary head;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2 and showing in detail the manner in which the wings on the rotary head interlock with the diametrically opposite slots in the disk in order to form a driving connection between the head and the disk;

Figure 4 is a sectional view on the line 4—4 of Figure 2;

Figure 5 is a perspective showing the manner in which the holes at the outer ends of the wing receiving slots free the outer ends of the slot defining portions of the backing piece of the disk so that such portions may be readily flexed in connection with mounting of the disk and when flexed sufficiently to permit of entry of the wings of the rotary head do not impart tearing strain to the portions of the disk at the ends of the slots; and

Figure 6 is an enlarged section showing the extent to which it is necessary to flex or distort the slot defining portions of the backing piece in order to permit the wings to pass therebetween in connection with mounting of the disk on the head.

The abrasive disk which forms the subject matter of the invention is essentially a surfacing element. It is adapted for use with a rotary head

H and consists of a circular backing piece 7 with a coating 8 of grit particles on the outer or top face thereof. The rotary head H is shown in the drawing as being of conventional design and has on the front end thereof a centering hub h and a pair of wings h^1. It is adapted to be moved over the work as well understood in the art and is driven by an electric motor (not shown) through the medium of a flexible shaft h^2. The latter extends through a sheath h^3 and embodies a driving element h^4 which fits within a socket h^5 in the central portion of the rotary head H and is drivably connected to the head by means of a screw thread connection h^6. The hub h is formed as an integral part of the head. It is centrally positioned with respect to the head and is circular, as shown in Figure 3. The wings h^1 of the head are positioned on opposite sides of the hub h and project in opposite directions. The base portions of the wings extend radially outward from the hub and are anchored in any suitable manner on the head. The outer portions of the wings h^1 are spaced a small distance from the outer face of the head H and extend in a circumferential manner and in substantially parallel relation with the outer face of the head. A ring h^7 of rubber or like material is fixed to the front face of the head and surrounds the wings h^1. It forms part of the head and serves as a backing member for the disk.

The backing piece 7 is adapted when the disk is mounted on the head H, as hereinafter described, to fit against the front faces of the head H and the ring h^7. It is formed of processed or chemically treated paper and has the coating 8 of grit particles secured to its front face by means of a film 9 of cement. As shown in the drawing the backing plate is slightly larger in diameter than the ring h^7 of the rotary head H. The backing piece although comparatively thin is comparatively stiff due to its processing or chemical treatment and the fact that the coating 8 of grit particles is substantially rigid in characer due to embedment of the particles in the cementitious material which forms the film 9.

The disk has a hole 10 in the center thereof and embodies a pair of diametrically opposite slots 11 with comparatively large holes 12 at their outer ends. The hole 10 is equal in diameter to the hub h and is adapted to receive the latter, as shown in Figure 3, when the disk is mounted on the head H. The slots 11 radiate from the hub-receiving hole 10 in the center of the disk and are adapted to receive the wings h^1 of the rotary head H and form a driving connection between the head and the disk. They intersect the hole 10 and are arranged so that they extend transversely of the grain of the backing piece 7. In connection with the mounting of the disk on the head H it is necessary to flex or distort the slot defining portions of the disk a sufficient distance to permit of entry of the wings h^1 into the slots. The holes 12 at the outer ends of the slots serve to free the outer ends of the slot defining portions of the disk so that such portions can readily be flexed or distorted. Preferably the holes are formed so that the diameter thereof is three times as large as the width of the slots 11. As a result of having the holes 12 of this diameter the slot defining portions of the disk, that is, the portions which define the sides of the slots are so free or severed with respect to the portions of the disks at the outer ends of the slots that they may be flexed or distorted sufficiently to permit of ready entry of the wings h^1 into the slots without imparting tearing strain or causing rupture of the disk outwardly from the outer ends of the slots. The holes 12 constitute the outer ends of the slots and, as shown in Figure 2, receive the outer portions of the base parts of the wings h^1.

In applying the disk to the head H the portions of the disk which define the sides of one of the slots 11 are deflected by the fingers, one upwards and one downwards as shown in Figure 6. While such portions of the disk are so deflected or flexed the disk is manipulated so as to bring one of the wings h^1 between the deflected disk portions. Thereafter the portions of the disk which define the sides of the other slot 11 are deflected one upwards and the other downwards and the disk is manipulated so as to bring the other wing h^1 therebetween. After manipulating the disk in this manner it is turned or rotated relatively to the head so as to bring the centering hub h and the base parts of the wings h^1 into seated relation with the hole 10 and the slots 11 respectively. By reason of the fact that the slots 11 extend crosswise of and are at substantially right angles to the grain of the backing piece 7 and the holes 12 are of the diameter hereinbefore specified, there is little if any likelihood of the portions of the disk which are disposed outwardly of the holes 12 being ruptured or torn during flexure of the slot defining portions of the disk in connection with mounting of the disk on the rotary head 8.

The herein described disk due to the fact that it includes at the outer ends of the slots 11 the holes 12 whereby the outer ends of the slot defining portions of the disk are freed or severed from the portions of the disk at the ends of the slots, may be readily mounted and is extremely durable. In order to reduce the cost of manufacture the hole 10, the slots 11, and the holes 12 are formed in the central portion of the disk by a single cutting operation.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. As a new article of manufacture, an abrasive disk in the form of a comparatively stiff backing piece with a coating of grit particles on one face thereof and adapted to be mounted on a rotary head having a centering hub and a plurality of oppositely facing wings positioned adjacent to the sides of the hub and extending outwardly and substantially parallel to the front face of the head, said disk having a hole in the central portion thereof for receiving the centering hub of the head and a plurality of slots extending outwardly from the hole and adapted to receive and interlock with the locking wings, and also having comparatively large holes at the outer ends of the slots serving to free or sever the outer ends of the slot forming portions of the disk and to permit such portions to be flexed or distorted out of the plane of the disk and without causing the disk to rupture or crack at the outer ends of the slots in connection with insertion of the wings into the slots during disk mounting.

2. As a new article of manufacture, an abrasive disk in the form of a backing piece of comparatively stiff paper with a coating of grit par-

ticles on one face thereof and adapted to be mounted on a rotary head having a centering hub and a pair of oppositely facing locking wings radiating from opposite sides of the hub and extending outwardly and substantially parallel with the front face of the head, said disk having a hole in the central portion thereof for receiving the centering hub of the head and a pair of diametrically opposite slots extending radially from the hole and transversely of the grain of the backing piece and adapted to receive and interlock with the locking wings, and also having comparatively large holes at the outer ends of the slots serving to free or sever the outer ends of the slot forming portions of the disk and to permit such portions to be flexed or distorted out of the plane of the disk and without causing the disk to rupture or crack at the outer ends of the slots in connection with insertion of the wings into the slots during disk mounting.

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