

Oct. 28, 1930.

H. R. STRATFORD

1,779,682

SURFACING APPARATUS

Filed Nov. 16, 1928

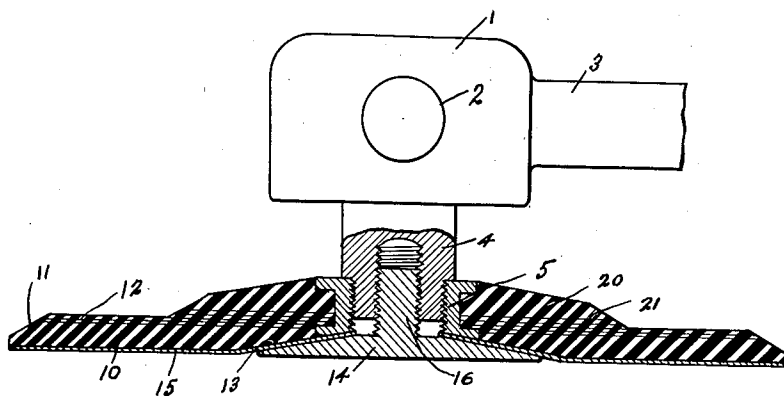


Fig. 1

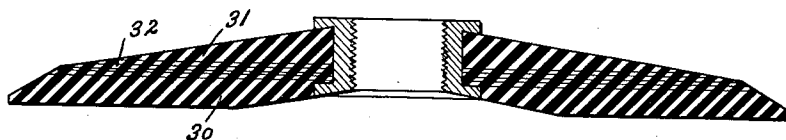


Fig. 2

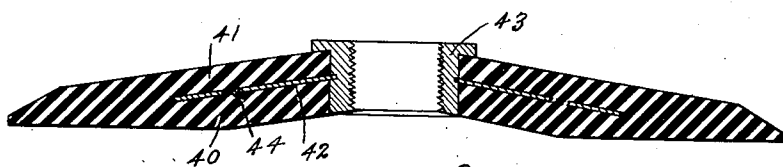


Fig. 3

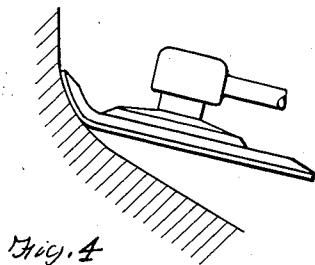


Fig. 4

INVENTOR.

Herbert R. Stratford

BY

Day, Oberlin & Day

ATTORNEYS

UNITED STATES PATENT OFFICE

HERBERT R. STRATFORD, OF CLEVELAND, OHIO, ASSIGNOR TO THE STRATMORE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

SURFACING APPARATUS

Application filed November 16, 1928. Serial No. 319,821.

The present invention, relating, as indicated, to surfacing apparatus is more particularly directed to an improved supporting pad for use in surfacing apparatus of the type now so commonly used for grinding, polishing, buffing and similarly treating surfaces such as panels of wood, metal and other material, and such articles as castings, automobile bodies, fenders, hoods and the like. The apparatus commonly employed for this purpose consists of a frame or casing provided with handles for an operator and with a projecting shaft, on the end of which is mounted a supporting pad, against which is removably secured a surfacing disk, usually constructed of abrasive adhesively secured to a suitable backing of paper, cloth or some combination of the two. The shaft on which the pad and disk are carried is operated through gearing journaled in the frame or casing and then by a flexible shaft extending to a suitable source of power, although in many cases the operating shaft which carries the pad and disk are operated directly from a self-contained air or electric motor mounted in the frame or casing.

The present invention is directed to a new and improved pad to be used in machines of the above construction and for the purposes, some of which are referred to above. The principal object of the invention is the provision of a simple and inexpensive pad for the purpose described and one which has a more universal application and usefulness than the more specialized and expensive pads which have heretofore been employed, but which have been better adapted to some individual type of surfacing operation than to general operations involving a considerable range of operations.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims; the annexed drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Fig. 1 is a side elevation partially in section showing my improved pad mounted on a surfacing apparatus of the character described; Fig. 2 is a transverse central section showing a modification of the pad of Fig. 1; Fig. 3 is a similar view showing another modification; and Fig. 4 is a side elevation showing the operation of my improved pad against one type of surface.

In Fig. 1 I have shown a surfacing apparatus consisting of the frame or casing 1 provided with annularly related handles 2 and 3, of which the handle 3 is hollow and is adapted to receive therein a flexible shaft (not shown) for the operation of suitable connecting gears (not shown) mounted in a casing 1 and adapted to operate a shaft 4 extending from the lower side of the casing. The shaft 4 is adapted to removably receive my improved supporting pad, which will now be described.

My improved pad consists of a circular disk 10 of some tough, resistant, compressible and flexible material, such for example as rubber, provided with a hub 5 disposed centrally therein and adapted to be removably engaged on the threaded lower end of the shaft 4. The pad is provided with a beveled edge portion 11 and with a number of layers of reinforcing material such as strong fabric 12 embedded in the rearward section of the pad. It is also provided with a recessed central portion 13, between which and the locking plate 14 there is adapted to be secured a circular abrasive disk 15 or similar surfacing device. The locking plate 14 is provided with a threaded hub portion 16 engaging within the threaded hollow end of the shaft 4.

The pad shown in Fig. 1 is provided with a central reinforcing section 20 consisting of rubber or similar material integrally united to the forward portion 10 of the pad, there being several layers of the reinforcing material 21 in the lower portion of this supporting section 20. The latter is also so formed as to progressively support the forward section 10 of the pad when under lateral pressure, permitting the pad when severely pressed out of its normal plane, as for example, when

operating under the conditions illustrated in Fig. 4, to bend through a considerable angle through the portion outside of the supporting section. It will be understood too that some flexibility is permitted at the outer edge of the supporting section, but this flexibility decreases toward the center of the pad, thus preventing the entire pad from being unduly flexible and given it a sufficient rigidity to allow it to cut even when pressed against concave surfaces.

A modification of the construction just described is shown in Fig. 2, in which a pad 30, also formed of the same type of material as already described, is provided with a rearward or reinforcing section 31 integrally united to the forward section 30, the two sections being reinforced through their common portion by layers of tough fabric 32. In this form of pad the reinforcing or stiffening effect of the rearward section is of course more pronounced than in the form previously described, since the reinforcing section extends radially from outward. The tapering of the reinforcing section, however, still permits of a considerable flexing of the entire pad through the outer or operating portion of the abrasive disk and permits substantially the same action as with the previous pad, and is illustrated in Fig. 4.

In Fig. 3 I have shown still another modification, in which a pad 40, also formed of the same tough material previously described, is doubly reinforced, first, by a tapered supporting section 31, and, second, by a semi-rigid reinforcing plate 42, which is secured in a suitable recess in a central hub member 43. The plate 42 may be formed either of metal, hard rubber, bakelite, or similar material, and may be provided with a plurality of openings 44 therethrough, through which the rubber or other material of the pad 40 may extend in order to securely and integrally unite the reinforcing plate to the material of the pad proper.

In a pad of the character described intended for a number of different operations and for use against different types of surfaces it is essential that the pad operate in as nearly as possible the same manner as relatively stiff pads when used on flat surfaces. If this action is not secured then the pad, even on flat surfaces, has to be applied to the work with considerable pressure to produce the desired cutting action, causing a considerable flexing and a resultant severe wear on the abrasive disk tending both to break the backing of the disk and to loosen the grain of abrasive therefrom. The present pad is well adapted to the varied service for which it is intended. It has sufficient rigidity to operate on flat surfaces without the use of any considerable pressure and is still sufficiently flexible to follow surfaces of considerable concavity when

required and when the machine is applied to the surface with heavy pressure.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A supporting pad of the character described comprising a circular disk of tough flexure-resistant compressible material having reinforcing material embedded therein and having an integrally united rearwardly extending portion of smaller area than the disk proper adapted to reinforce and progressively support said disk against flexure while permitting flexure of its outermost portions.

2. A supporting pad of the character described comprising a circular disk of tough flexure-resistant compressible material and a tapered annular rearwardly extending portion of the same material integrally united to said disk proper and adapted to progressively support said disk against flexure while permitting flexure of the outermost portion.

3. A supporting pad of the character described comprising a circular disk of tough flexure-resistant compressible rubber and a rearwardly extending portion integrally united thereto of smaller area than the disk proper adapted to reinforce and progressively support said disk against flexure while permitting flexure of its outermost portions.

Signed by me, this 10th day of November, 1928.

HERBERT R. STRATFORD.