March 16, 1954 H. E. HICKMAN 2,671,994

RELEASE DEVICE FOR BUFFER AND SANDING DISKS

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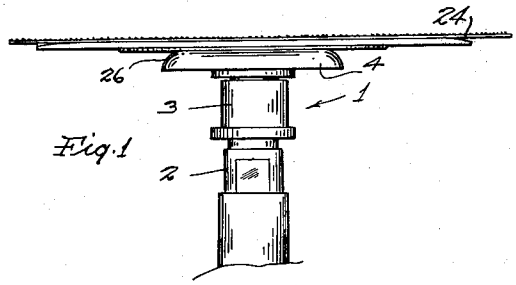


Fig. 1

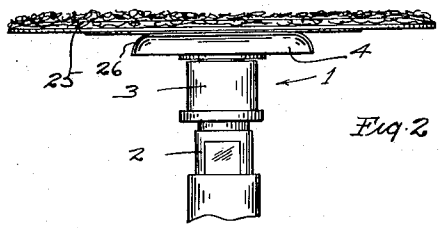


Fig. 2

Fig. 3

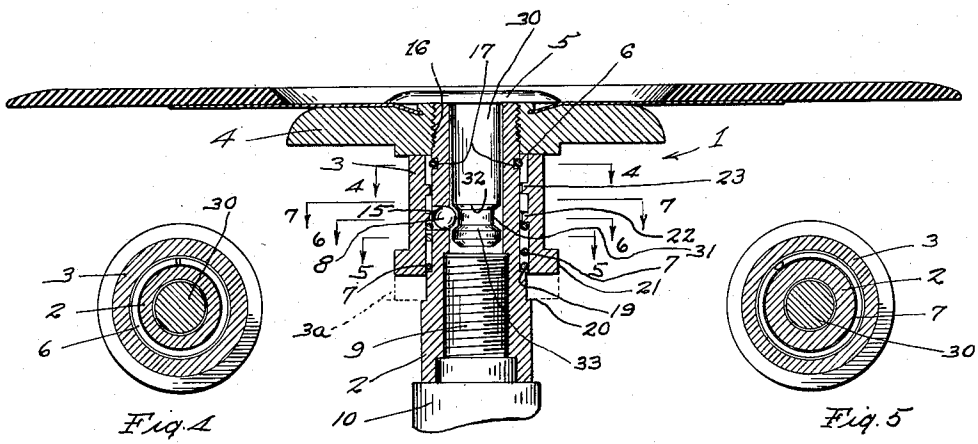


Fig. 4

Fig. 5

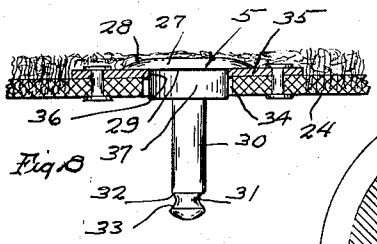


Fig. 8

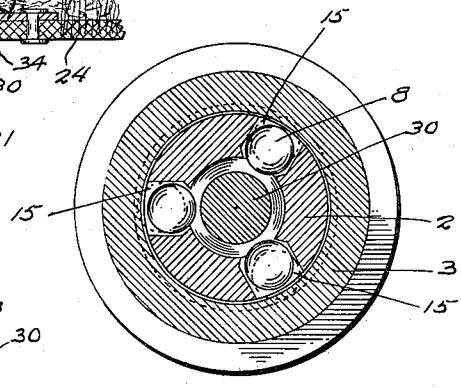


Fig. 6

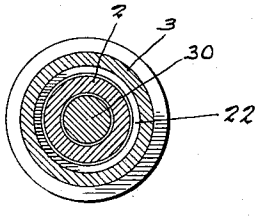


Fig. 7

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RELEASE DEVICE FOR BUFFER AND SANDING DISKS

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3 Claims. (Cl. 51—197)

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The device of this invention relates to power driven buffers of the type used in the automotive service field and, for other purposes and, more particularly within that type of device wherein means, such as a clutching means, are adapted and arranged to hold and release a buffer pad and/or sanding disc upon a rotatable head mounted on the shaft of a power driven unit for smoothing and polishing sheet metal work and for other useful purposes and, to this end it is an object of the invention to provide and incorporate therein those improvements which make for simplicity of operation, reliability in function and unfailing sturdiness, together with such other objects, features and advantages of the invention as may be noted from a study of the accompanying drawing, the detailed description and of the sub-joined claims.

In the drawing:

Figure 1 is generally illustrative of the appearance of the device of this invention as seen in side elevation and, wherein a sanding disc is mounted thereon; while,

Figure 2 is a similar type of view showing a polishing pad substituted for the sanding disc.

Figure 3 is a transverse sectional view showing the structure incorporated in this improvement, while,

Figures 4, 5, 6 and 7 respectively are transverse sectional views as seen along lines 4—4, 5—5, 6—6 and 7—7, all on Figure 3.

Figure 8 is a fragmental view of a buffer pad showing a center piece of non-chaffing material secured thereto as a means of facilitating accurate positioning of the releasing cap of the device of the invention as will hereinafter be more fully set forth.

The device of this invention is indicated as a whole by the reference numeral 1 and, comprises a tubular base element 2, a sleeve 3 for the part 2, a disc supporting base element 4, a detachable cap 5, a split ring keeper 6, a spring 7 and steel balls 8, and all of these component elements of the releasing device 1 rotate with the driven shaft 9 of a power unit of which only a portion of the bearing 10 for the shaft 9 is shown.

The tubular base element 2 is provided with an internal bore 11 which is threaded at 12 to receive the threaded end of the motor shaft 9, the engagement of which may be arrested by shoulders 13 or 14 or either thereof. Adjacent the end of the placed or inserted shaft 9 I form an opening 15 extending through the wall thereof for each of a number of the steel balls 8 as shown in Figures 3 and 6. The outer exterior end of the

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part 2 is threaded as at 16 to threadedly receive the base element 4 thereon, while adjacent the threads 16 I form an annular recess 17 within which I place the split ring 6 to serve the function of a keeper as will be more fully described, while upon the exterior of the part 2 I form shoulders 19 and 20. Shoulder 19 serving to provide a base support for one end of the spring 7 while shoulder 20 provides a limit stop for downward movement of the sleeve 3.

The sleeve 3 is of cylindrical form and upon its lower exterior surface a flange 21 is formed to provide a finger grip whereby the sleeve may be drawn downwardly to the dotted line position 3a thereof, while the bore within the sleeve is diametrically proportioned to slidably fit upon and be moved over the surface of the part 2 between shoulders 19 and 20 as shown. The inner surface of the bore within the part 3 is provided with annular flanges 22 and 23 and of these annular flanges, flange 22 serves as an upper abutment for the other of the ends of the spring 7 and, as a band which loosely retains the steel balls 8 within their openings 15 in the wall of the part 2 during normal use of the device, but which upon movement of the part 3 to its lower or dotted line position 3a permits such a degree of freedom of lateral movement of the balls 8 that the part 5 may be disjoined from the part 2 as will be described, while the flange 23 serves as a stop adapted to bear upon the split ring 6 whereby accidental separation of the parts 2 and 3 is inhibited.

The part 4 is the base support for the sanding disc 24 or the polishing disc 25 and, to facilitate the use to which these discs are put the transverse diameter of the part 4 is such as to give sufficient backing to the discs as to give a degree of rigidity thereto while the outer edges thereof are rounded at 26 to accommodate a bending or warping of the discs when under pressure without undue breaking of the backing material of which the discs are composed and upon which the abrading or polishing material is secured. The part 4 and the part 2 are threadedly united at 16 as aforementioned and when thus joined the top edges of this point of jointure should be flush as shown in Figure 3.

The cap 5 is in the nature of a stemmed button wherein 27 is the button head formed with a slightly rounded top surface 28 and a flat under-side 29 from which a stem 30 dependently hangs and in the lower end of the stem I form an annular groove 31 having shoulders 32 and 33 between which shoulders and the bottom of the

groove the steel balls 8 are adapted to lie in relative snugness when the parts are assembled as shown in Figure 3 and, as here shown, the clearance between the balls 8 and the groove 31 is somewhat exaggerated for the sake of clarity of illustration.

It sometimes happens that during the use of metal finishing discs of the type herein contemplated to be used that the eye 34 in the disc 24 or 25 becomes enlarged due to wear with the result that the looseness between the parts causes a wobbling of the discs which is not conducive of best performance. To cure this defect I have found that if a piece of tough parchment or leather or of kindred material 35 is apertured at 36 to receive the body 37 of the capping 5 and the parts are aligned and then secured together as by riveting, the over-all life of the disc 24 or 25 is materially extended and the service derived therefrom is better than that which is now obtainable after a period of use and, this condition apparently stems from the fact that the material 35 being tougher than the base material of the discs upon which the abrading and/or polishing material is bonded does not yield to lateral force so readily and accordingly the discs remain centered upon their rotatable axis in better balance than has heretofore been customary.

The afore-described parts are assembled as follows: The spring 7 is slipped over the part 2 so as to rest upon the shoulder 19. The steel balls 8 are inserted in their respective openings 15 and thereafter the part 3 is slipped downwardly over the part 2 with the annular shoulder or flange 22 resting upon the upper end of spring 7. The part 3 may now be forced down to its dotted line position 3a against resistance of the spring 7 until the groove 17 is uncovered whereupon the split ring or keeper 6 is inserted therein. The base element 4 is now screw threaded upon the part 2 whereupon the assembly of the device is completed. To place the part 1 in use the part 2 is screw threaded upon the shaft 9. A disc 24 or 25 may now be centered upon the part 4 and the detachable cap 5 is applied to the unit with the stem 30 in the medial bore within the part 2, however, at this time the sleeve 3 is moved downwardly to position 3a so that the balls 8 are free to move outwardly in their openings 15 so that the stem 30 may pass therebetween. When the cap is seated, the part 3 is released and is under spring pressure and moves upwardly to its normal position in which position the flange 22 forces the balls 8 inwardly to a position fully occupying the openings 15 and extending into the anular groove 31 in the stem of the cap 5 and when thus positioned and held the balls serve the function of keys which lock the cap in the assembly.

To release a disc 24 or 25 from position upon the part 4 it is only necessary to force the part 3 down to its dotted line position 3a. In this position the flange 22 clears the balls 8 for outwardly lateral movement when merely nudged by the shoulder 33 upon the stem of the cap 5 as it is being lifted from the assembly. Removal of the cap 5 permits changing discs for any reason whatsoever and, the securing of the new disc in functional use position is merely repetitious of the previously described operation.

Having thus described my invention in its presently preferred form, that which I believe it be patentably novel is as follows.

I claim:

1. In a releasing device for sanding discs and the like, a tubular base element interiorly bored longitudinally thereof and arranged for threaded connection with a rotatable driving shaft and having upon its exterior surface a first shoulder and a second shoulder, a plural number of openings through the sides of said tubular base element, a steel ball in each of said openings, a sleeve slidable exteriorly of and upon said tubular base element between said first and said second mentioned shoulders whereby an annular space is created along the greater portion of the length of said sleeve, an annular rib upon the inner surface of said sleeve normally aligned across said openings in said tubular base element serving as a retainer for said steel balls against outward movement in their openings, a spring operably positioned between said annular rib and said first mentioned shoulder, a flanged base support element threadedly attached to the outer end of said tubular base element and, a cap having a stem slidably positioned in the bore in said tubular base element, said stem being so formed as to be releasably held in said tubular base element by said steel balls.

2. The structure set forth in claim 1, wherein said tubular base element is provided with a split ring circumferentially thereon and said sleeve is provided with an annular shoulder adjacent said split ring, said split ring and said annular shoulder constituting abutting surfaces adapted to hold said tubular base element and said sleeve in detachable union.

3. The structure set forth in claim 1, wherein said second mentioned shoulder constitutes a stop for said sleeve in moving the sleeve and the annular retainer rib therein from across said steel balls whereby upon application of a lifting pressure to said cap and movement of the sleeve to said stop said steel balls are outwardly movable for release of the stem of said cap and disconnection of the cap from said device.

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No references cited.