Sept. 12, 1939. D. G. KIMBALL 2,172,977

PUSH-ON TYPE HANDLE

Filed Oct. 12, 1937

Fig. 1.

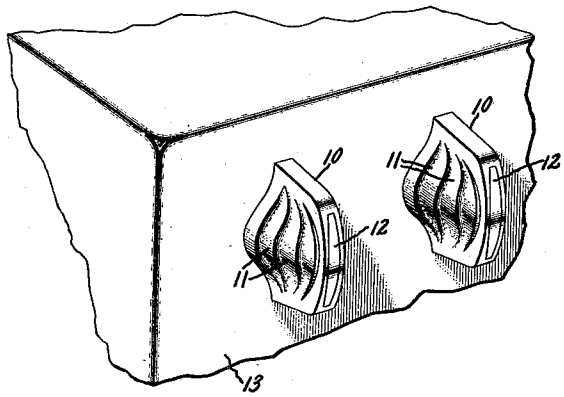


Fig. 2.

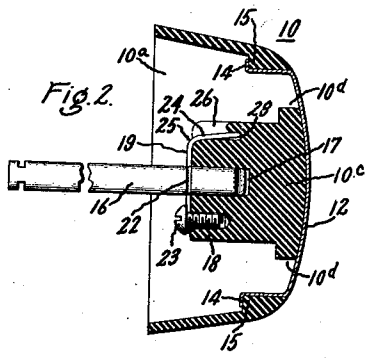


Fig. 3.

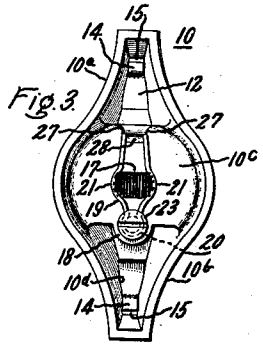
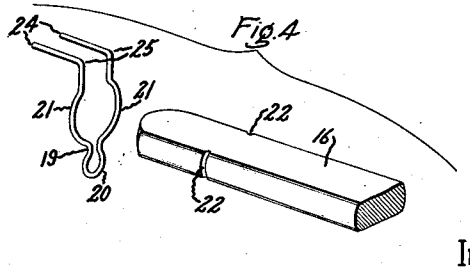


Fig. 4.



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PUSH-ON TYPE HANDLE

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Application October 12, 1937, Serial No. 168,620

1 Claim. (Cl. 287—53)

The present invention relates to handles or manipulating elements such as are commonly used on the control shafts of heaters, radio apparatus, or the like, in which the handles are provided with latching means so that they may be pushed onto the shafts of such electrical apparatus, and readily locked thereon. The latching means is such that it is automatically releasable to permit withdrawal of the handles from the shafts.

It is an object of this invention to provide an improved push-on type handle of the type described which may be manufactured economically, which may be assembled quickly and easily upon a shaft without the use of tools, and which is held rigidly mounted thereon without wobble or lateral side play.

Referring to the drawing, Fig. 1 is a perspective view of a plurality of handles mounted upon a piece of electrical apparatus; Fig. 2 is a view in cross-section through the handle; Fig. 3 is an end view of the interior of the handle, and Fig. 4 is an exploded view of the shaft and latching means.

The handle 10 represents a suitable manipulating or control element for an instrument shaft and may be formed of molded composition. The handle takes the form of a hollow shell and has side walls 10a and 10b which are flared outwardly at the center to provide for a web 10c which is placed centrally between the walls and is adapted to mount the handle upon a shaft and at the same time insure a rigid and sturdy construction. In the construction shown by Fig. 1 the handle is of generally oblong shape and is provided with decorative flutings 11 upon the outside wall surfaces and a metallic insert 12 upon the outer end surface which gives the handle a pleasing appearance. The handle is mounted upon a heater 13 which is illustrated merely as an example of the type of apparatus to which the handle may be connected. The decorative metallic insert 12 is formed with extending ends 14 which are inserted through openings 10d formed in the handle 10 and then bent over the shoulders 15 which are formed on the inner surface of the handle. By this construction the insert is held in position. It will be apparent that the insert may be omitted, if desired, and the handle formed entirely of composition material.

The heater or instrument 13 is provided with a control shaft 16 which is of non-circular cross-section and which is adapted to be inserted into a corresponding non-circular opening 17 formed in the central web portion 10c of the handle. By making the shaft and opening non-circular a close mating fit is obtained between the shaft and the handle, and accurate rotation of the shaft is insured upon rotation of the handle. Latching means for holding the shaft in the opening is provided in the form of a spring 19 mounted upon the handle overlying the recess 17. The spring is of substantially "hairpin" form and comprises a looped portion 20 together with oppositely disposed bowed portions 21 which are adapted to straddle the shaft and be seated in recesses or grooves 22 formed upon opposite sides of the shaft. A screw 23 passes through the loop 20 and is threaded into a hole in an extension 18 depending from the web 10c. The screw is located immediately adjacent the opening 17 and hence secures the spring to the web in a position overlying the opening 17. The distance between the bowed portions 21 is made smaller than the diameter of the shaft 16 so that as the shaft is pushed into the opening, it will spring the bowed portions apart as they straddle the shaft. When the shaft is fully seated in the opening the bowed portions will snap back into normal position in the recesses 22.

In order to prevent the bowed portions of the spring from springing too far apart as the shaft is inserted between them, the tang ends 24 of the spring are bent over at 25 and inserted into a recess 26 formed in the web 10c. The recess is formed with vertical sides 27 which engage the spring tangs and prevent them from springing apart and, in addition, is formed with a slot 28 which receives the ends of the tangs. The ends of the tangs grip the slot 28 under spring action and prevent the spring from pulling out of the recess when the handle is pulled off. The loop and tang ends of the spring are fastened to the web at points closely adjacent the shaft by means of the recess 26 and screw 23, so that repeated insertion and retraction of the shaft in the opening will not dislodge the spring. The recess 26 confines the tang ends of the spring and maintains the bowed portions 21 in position slightly covering the opening 17 where they may be sprung apart upon insertion of the shaft 16.

The handle is readily mounted upon and removed from a shaft and the spring latching means is effective to hold the handle securely upon the shaft and at the same time permit its quick removal. The latching structure is located within the interior of the handle and is completely hidden from view making possible a handle having a pleasing exterior design of decorative value. The handle may be assembled upon the shaft by a simple movement of the hand without

the use of tools and the extremely compact structure provides relatively few parts which may be manufactured at small cost.

What I claim as new and desire to secure by Letters Patent of the United States is:

In combination a push-on type handle having a non-circular recess therein adapted to receive a non-circular shaft having a grooved portion thereon, a bowed spring having tang ends with the bowed portions straddling said shaft to prevent lateral movement between said shaft and handle under normal conditions of use, means attaching the bowed end of said spring to said handle, said handle being provided with a second recess, the tang ends of said bowed spring being bent over within said second-mentioned recess and frictionally engaging the walls of the same to prevent lateral displacement of said spring and to prevent separation of the bowed portions of said spring.

DONALD G. KIMBALL.