Oct. 24, 1933. A. J. WEATHERHEAD, JR 1,932,056

CONTROLLING DEVICE

Filed Aug. 1, 1929

FIG. 1

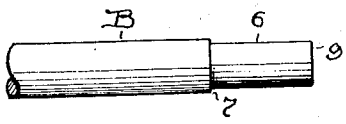


FIG. 2

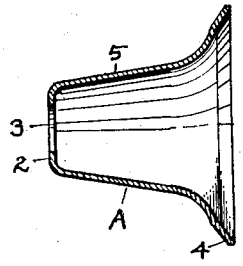


FIG. 3

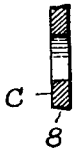


FIG. 4

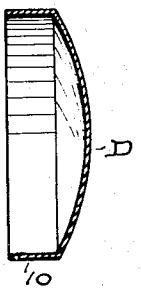


FIG. 5

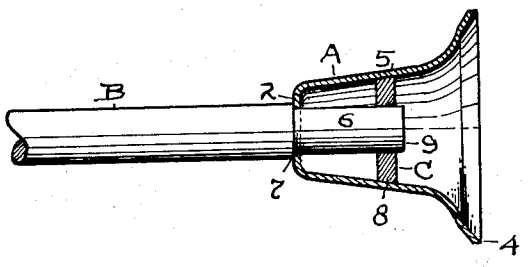
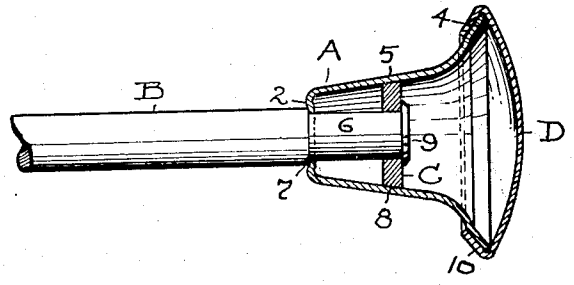


FIG. 6



INVENTOR

ALBERT J. WEATHERHEAD JR.

BY

Fisher, Moser & Moore.

ATTORNEY

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CONTROLLING DEVICE

Albert J. Weatherhead, Jr., Cleveland, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio, a corporation of Ohio

Application August 1, 1929. Serial No. 382,625

3 Claims. (Cl. 16—121)

This invention pertains to an improvement in controlling devices embodying knobs or handles, the purpose in general being to provide a controlling rod with a hollow knob or handle of substantial strength and durability and at a relatively low cost by the simple means and efficient steps herein shown and described.

In the accompanying drawing, Fig. 1 is a side elevation of a controlling rod or stem to which the hollow knob is to be affixed; Fig. 2 a sectional view of the shell or body; Fig. 3 a sectional view of the lock washer; and Fig. 4 a sectional view of the cap or cover. Fig. 5 is a sectional view of the shell and washer sleeved on the rod or stem; and Fig. 6 a similar view of the same parts secured together, including the cap or cover.

The present knob or handle was devised primarily for choke rods and similar controlling devices used on automobiles, aeroplanes, etc., where weight, strength and cost are factors closely considered. As constructed the knob comprises a thin shell or hollow body A drawn or pressed from thin sheet metal into a round elongated tapering form with an inturned flange 2 and an axial opening 3 at its smaller end, and with an outwardly-extending flaring rim or flange 4 at its larger outer end. Metal of relatively thin gauge is employed to produce shell A, and the round tapering shape given thereto stiffens the wall 5 and the spring or yielding characteristics inherent therein.

The smaller end opening 3 permits the shell to be sleeved over the reduced extension 6 on a round stem, rod or shaft B, having an annular shoulder 7 against which the inturned flange 2 of the shell may be brought to bear or abut. The length of extension 6 is less than the length of the shell, say approximately one-half the length thereof, so that the extremity of the extension will be located opposite the tapering wall 5 a substantial distance from shoulder 7 on the rod. A metal washer or disk C having a beveled edge 8 is sleeved over the outer end of extension 6, and the diameter of this washer is such that its beveled edge will engage wall 5 in a circular plane about midlength of the shell and a short distance inwardly beyond the outer end of extension 6, thereby permitting the end portion 9 of the rod to be upset and enlarged. In this operation the rod and shell are supported within suitable dies and an upsetting plunger strikes the end portion 9 to mushroom or spread it, thereby pressing washer C tightly against the tapered enclosing wall 5 of the shell. The end flange 2 may be caused to yield slightly in uniting the parts together in the manner described, thereby locking the shell in an exceptionally rigid way to the rod. It can readily be seen that a force will be applied longitudinally of the shell by the washer that will result in the deformation of the end wall to thereby lock the shell to the rod. Moreover, the shell is rigidly connected and supported at two spaced places on the rod, so that it will withstand and resist lateral pressures and racking movement as well as pushing and pulling strains, without loosening or breaking apart. Thus the perforated plate C supplements the end connection of the knob to the rod and serves also to stiffen and brace the knob internally between its ends.

The front end of the shell may be left open, but preferably a thin cap, cover or index plate D is attached to the flaring flange 4 of shell A. As shown plate D is concavo-convex and provided with an annular flange 10 interlocked with flange 4 on the shell. Flange 10 may also be offset the thickness of flange 4 on the shell to provide a smooth joint substantially as delineated in Fig. 6. In practice, the curved face of the cover plate D is impressed or embossed with a suitable description or letter to designate or identify the device under control, especially when a plurality of such controlling knobs are used on the same base or instrument board. It will be apparent that when the cap D is placed on the end of the shell and the flange 10 spun down over the flange 4 of the shell, a circumferential force will be applied to the shell that will further tend to stress and strain it and aid in the locking thereof to the rod.

What I claim is:

1. A controlling device, comprising a rod, a hollow shell sleeved on said rod, a locking and bracing member affixed to said rod internally of said shell remote from the small end, and a cover plate affixed to the outer end of said shell.

2. In a controlling device, the combination of a rod, a metal shell mounted on said rod having an open end and a radial wall, means for bracing said shell internally comprising a washer mounted on said rod, said washer being adapted to be wedged tightly against the said shell by upsetting the end of said rod to thereby apply a force on said shell that will result in the stressing and deforming thereof and the consequent locking of said shell to said rod.

3. A controlling device comprising, in combination, a rod, a hollow member mounted on said rod, said hollow member having a perforated radial wall, a washer mounted on said rod for bracing said hollow member internally, said washer being wedged against said hollow member by upsetting the end of said rod, thereby causing the radial wall of said hollow member to yield and lock said shell at least at one point to said rod.

ALBERT J. WEATHERHEAD, JR.